

Huang, Guogui et al.

Article — Published Version

The 'Healthy Migrant Effect' and Ageing: Life Expectancy and Healthy Life Expectancy of the Migrant and Native-born Populations in Australia

Social Indicators Research

Suggested Citation: Huang, Guogui et al. (2026) : The 'Healthy Migrant Effect' and Ageing: Life Expectancy and Healthy Life Expectancy of the Migrant and Native-born Populations in Australia, Social Indicators Research, ISSN 1573-0921, Springer Netherlands, Dordrecht, Vol. 182, Iss. 3, <https://doi.org/10.1007/s11205-026-03840-w>

This Version is available at:

<https://hdl.handle.net/10419/342146>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<http://creativecommons.org/licenses/by/4.0/>



The ‘Healthy Migrant Effect’ and Ageing: Life Expectancy and Healthy Life Expectancy of the Migrant and Native-born Populations in Australia

Guogui Huang¹ · Fei Guo² · Lucy Taksa³ · Zhiming Cheng^{2,4} · Lihua Liu⁵ · Klaus F. Zimmermann⁶ · Massimiliano Tani⁷ · Marika Franklin⁸

Received: 20 June 2023 / Accepted: 16 March 2026 / Published online: 2 April 2026
© The Author(s) 2026

Abstract

How health status changes as migrants age and become to their host country remains underexplored. This study investigates two key indicators—life expectancy (LE) and healthy life expectancy (HLE)—among migrants in Australia using nationally representative secondary data, including census-based Estimated Resident Population, 1% Census sample, and mortality statistics. LE refers to the average number of years a person is expected to live, while HLE refers to the expected healthy years. Results show that, compared with the Australian-born population, the overseas-born population enjoys higher LE (e.g., LE at birth: 83.4 vs 81.1 years in 2006; 83.9 vs 81.7 in 2011; 84.8 vs 82.4 in 2016). However, the overseas-born population shows higher HLE at younger ages but significantly lower HLE in later life. With increasing age, both HLE and the HLE/LE ratio of the overseas-born population declines more rapidly than among Australian-born, though this trend slows at very advanced ages. Overseas-born females experience earlier and greater health deterioration than their male counterparts, highlighting the importance of gender-sensitive approaches to migrant health and ageing. From 2006 to 2016, LE for the overseas-born population increased by 1.4 years. Over the same period, HLE for the overseas-born population rose by only 0.2 years, and the HLE/LE ratio declined by 1.3%. These findings suggest nuanced ageing trajectories among migrants, with implications for life-course health interventions and policy. The results underscore the need for migrant-inclusive and gender-sensitive health strategies to support healthy ageing in Australia.

Keywords Healthy life expectancy · Quality of life · Migrants’ wellbeing and health · The healthy migrant effect · Nativity difference

1 Introduction

International migration, largely driven by globalisation and international socioeconomic inequalities, has profoundly transformed the demographic profiles of major migrant-receiving societies (Castles, 2013; Hauer et al., 2024). Countries such as the United Kingdom (UK), the United States (US), Australia, and Canada have all experienced remarkable growth in their international migrant population over recent decades (United Nations, 2019). This demographic shift has made substantial social, cultural, and economic contributions to host societies, and has also had far-reaching implications for healthcare systems and policies (De Haas et al., 2019; McAuliffe & Triandafyllidou, 2021; Van Doorn et al., 2023). More recently, the COVID-19 pandemic has disrupted global migration flows and amplified pre-existing health inequalities, with migrant communities experiencing reduced healthcare access, heightened mental health burdens, and interruptions in continuity of care, factors likely to have long-term consequences for their health trajectories (El Arab et al., 2023; Hintermeier et al., 2024; Mantu et al., 2025; Matlin et al., 2021). Within this broader global landscape, Australia represents a particularly distinctive case, with its long-standing multicultural policies and predominantly skilled migration program shaping both the scale and characteristics of its migrant population (Cheng et al., 2025). However, relatively little is known about how ageing, acculturation, and social inequalities interact to shape migrants' long-term health outcomes in Australia's large and diverse migrant population (Australian Bureau of Statistics, 2025).

A pressing issue in migrant health research centres on the way that migrants' health outcomes evolve as migrants integrate and acculturate into the host society (Peiro & Benedict, 2010; Rechel et al., 2013). A large body of work indicates that migrants typically arrive with better health profiles than the locally-born population, a pattern commonly described as the 'healthy migrant effect' (Anikeeva et al., 2010; Biddle et al., 2007; Cunningham et al., 2008; Simon-Kumar et al., 2025; Vang et al., 2017). This advantage is particularly evident in mortality outcomes (Anikeeva et al., 2010; Ruiz et al., 2013; Vang et al., 2017) and tends to be more pronounced among men and individuals of working age (Garcia & Chiu, 2016; Trovato & Odynak, 2011). However, research also shows that this initial health advantage diminishes with increased duration of residence, and some migrant groups experience worse health outcomes in later life compared with native-born populations (Biddle et al., 2007; McDonald & Kennedy, 2004). This paradox highlights the need to understand how morbidity and mortality patterns shift across the life course as migrants age and adapt to the host environment.

Healthy life expectancy (HLE), defined as the expected number of healthy or disease-free years remaining at a given age, is frequently used to capture both longevity and quality of life (Jagger & Robine, 2011). Prior studies of HLE suggest that although migrants often exhibit longer life expectancy (LE) than native-born individuals, they may experience comparable or lower HLE at older ages, indicating that the healthy migrant effect is less evident for morbidity in later life (Eschbach et al., 2007; Garcia & Chiu, 2016; Garcia et al., 2018; Huang et al., 2023, 2024; Reus-Pons et al., 2017). Much of these existing evidence, however, originates from North America (Garcia et al., 2015, 2018, 2019) and Western Europe (Carnein et al., 2014; Wohland et al., 2015), limiting its applicability to other major migrant-receiving nations with different immigration policies, integration pathways, and health systems. Moreover, most studies focus primarily on older migrants, overlooking how HLE

patterns vary across the entire life course (Garcia & Chiu, 2016; Garcia et al., 2015, 2017, 2018, 2019; Reus-Pons et al., 2017; Wohland et al., 2015). These limitations underscore the need for more comprehensive, age-differentiated analyses of migrant HLE.

To address these gaps, the present study provides the first systematic assessment of LE and HLE among overseas-born and Australian-born populations across three time points (2006, 2011, and 2016). Australia provides a distinctive case due to its skilled migration program in the past more than two decades, long-standing multicultural policy, and high proportion of overseas-born residents (more than 30% of the population in 2024), making it an ideal setting to explore long-term migrant health outcomes (Australian Bureau of Statistics, 2025). Using nationally representative data, this study employs a successive cross-sectional design that includes all age groups and examines variations by gender, age, and period. By explicitly analysing both mortality and morbidity patterns across the life course, the study advances understanding of migrant health trajectories and offers new insights into the dynamics of the healthy migrant effect within the Australian context over time.

2 Literature Review

2.1 Paradox of Migrant Health

The phenomenon of the healthy migrant effect, initially dubbed the 'Hispanic health paradox', was first reported in the US (Bradshaw & Fonner, 1978). Early studies showed that Hispanic Americans in south-western states had similar or better mortality outcomes than US-born populations despite lower socioeconomic status (Bradshaw & Fonner, 1978). Subsequent research found that this mortality advantage extended to a wide range of other migrant groups, including those from China, South Korea, and Germany (Cunningham et al., 2008). Evidence of lower mortality among migrants relative to native-born populations has since been reported in many other migrant-receiving countries, including the UK (Kennedy et al., 2015), Canada (Kennedy et al., 2015), Australia (Hormazábal-Salgado et al., 2025; Renzaho, 2016; Salant & Lauderdale, 2003), New Zealand (Hajat et al., 2010; Salant & Lauderdale, 2003; Simon-Kumar et al., 2025), Germany (Holz, 2022; Razum et al., 1998), Sweden (Helgesson et al., 2019; Sundquist & Johansson, 1997), and Spain (Gimeno-Feliu et al., 2015). Recent reviews further suggest that migrants may have better outcomes for certain chronic conditions and indicators of physical health (Anikeeva et al., 2010; Constant & Milewski, 2021; Cunningham et al., 2008; Vang et al., 2017). However, evidence of morbidity advantages remains inconsistent (Aglipay et al., 2013; Anikeeva et al., 2010).

Several hypotheses have been proposed to explain the healthy migrant effect, though no single mechanism fully accounts for the patterns. The migration selectivity hypothesis suggests that healthier individuals are more likely to migrate and pass health screening requirements in receiving countries (Puschmann et al., 2017). Cultural buffers, such as health-promoting behaviours and social norms from migrants' home countries, may initially protect their health during early stages of settlement (Page, 2007). The 'salmon bias' hypothesis proposes that ill or elderly migrants may return to their country of origin, artificially inflating the health profile of those who remain (Markides & Eschbach, 2005; Palloni & Arias, 2004). Other explanations include the ethnic enclave hypothesis, which emphasises the role of concentrated co-ethnic communities in providing social support (Guo et

al., 2022), inconsistency in the estimation of mortality rates between migrant and native populations (Smith & Bradshaw, 2006), biased ethnic self-identification of the descendants of migrants (Antman et al., 2020), and reporting bias arising from migrants' initially lower engagement with healthcare systems (McDonald & Kennedy, 2004). Nevertheless, there continues to be a lack of consensus about the cause of the healthy migrant effect.

A defining characteristic of this effect is its tendency to diminish over time, eventually resulting in similar or worse health outcomes among migrants in older age (Biddle et al., 2007; McDonald & Kennedy, 2004). In the US, for instance, foreign-born adults exhibit lower rates of obesity, circulatory disease, and mental disorders on arrival, but these advantages are not sustained into later life (Cunningham et al., 2008). Similarly, in Canada, the prevalence of conditions such as asthma, back pain, and hypertension among migrants from non-English-speaking countries increases substantially after arrival and converges with that of the Canadian-born population within about two decades (McDonald & Kennedy, 2004). These patterns suggest that the post-migration environment plays a critical role in shaping long-term health.

Several factors may contribute to this deterioration. Migration-related stress, including protracted visa processes, trauma related to conflict or displacement, and fear of exploitation among undocumented migrants, can have long-lasting effects on mental health (Jasso et al., 2005). The challenges of adaptation, including isolation and loneliness, further affect psychological wellbeing (Jasso et al., 2005). Third, as pointed out by Acculturation Theory (Berry, 2000, 2005), acculturation processes may lead migrants to adopt unhealthy behaviours over time, such as increased smoking, alcohol consumption, and intake of processed foods (Vang et al., 2017). Structural factors, including socioeconomic disadvantage, limited access to culturally appropriate healthcare, and shifting health entitlements, can also exacerbate health risks (Dey & Lucas, 2006; Fennelly, 2007; Safi, 2009). For example, as highlighted by the Social Determinants of Health framework (Marmot & Wilkinson, 2005), post-migration socioeconomic disadvantage (e.g., economic insecurity, housing instability and social marginalisation) is often linked to higher risks of chronic diseases and psychological distress over time (Fullin & Reyneri, 2011). Barriers to healthcare, including language difficulties and lack of culturally responsive services, may further delay prevention, diagnosis, and treatment (Anikeeva et al., 2010; Dombou et al., 2023; Vang et al., 2017).

The extent to which migrants experience these stressors varies by age, gender, and migration pathway. Older migrants may be more susceptible to health decline due to age-related vulnerabilities and barriers to culturally appropriate care (Bhatia et al., 2024; Gubernskaya et al., 2013). Female migrants may face additional challenges such as gendered discrimination, caregiving burdens, and limited social support, contributing to higher levels of psychological distress (Pulver et al., 2016; Stevenson et al., 2023). Younger migrants, while more resilient physically, may be more susceptible to adopting unhealthy behaviours as part of their acculturation process, particularly in relation to diet and substance use (Warner et al., 2010). Despite these insights, empirical evidence capturing the dynamic interactions between ageing, acculturation, and health remains limited, leaving important gaps in understanding migrants' long-term health trajectories (Simon-Kumar et al., 2025).

2.2 Migrants' Life Expectancy and Healthy Life Expectancy

Healthy life expectancy (HLE) is an increasingly important indicator of population health, combining mortality and morbidity into a single measure that reflects not only how long people live but also the quality of life during those years (Jagger & Robine, 2011). A growing literature has investigated HLE in relation to migrant populations, consistently showing that migrants and native-born populations differ in both longevity and health status (Chen et al., 1996; Eschbach et al., 2007; Garcia & Chiu, 2016; Garcia et al., 2017, 2018, 2019; Huang et al., 2023, 2024; Reus-Pons et al., 2017). Existing studies generally find that migrants tend to have a significantly higher LE compared with native-born populations, while their HLE, particularly their HLE/LE ratio, is often lower than that of native-born populations (Garcia et al., 2015, 2018, 2019; Reus-Pons et al., 2017; Wohland et al., 2015). For example, Eschbach et al. (2007) note that foreign-born Mexican Americans have a higher LE at age 65 years than do US-born Mexican Americans (16.5 years v. 15.3 years for males and 19.0 years v. 18.2 years for females); however, the proportion of HLE at age 65 is lower than that of their US-born counterparts (83% v. 85% for males and 75% v. 77% for females). Likewise, in Belgium, although migrants' LE at age 50 (28.3 years for males and 33.2 years for females) exceeds that of the Belgium-born population (27.8 years for males and 32.8 years for females), migrants' HLE at age 50 (12.5 years for males and 12.8 years for females) is remarkably lower than that of the Belgium-born population at the same age (14.4 years for males and 15.6 years for females) (Reus-Pons et al., 2017). These findings correspond to the previously reported mortality advantage of migrants but suggest that migrants may not have health advantages in relation to morbidity in old age.

2.3 Australia's Migration Profile

Australia has a distinct migration profile compared with that of North American and Western European countries. In 2024, the overseas-born population represented 30.1% of the Australian population (Australian Bureau of Statistics, 2025), which is significantly higher than that of other major migrant-receiving countries such as the US (13.6% in 2019), the UK (13.7% in 2019) (OECD Stat, 2023), and Canada (23% in 2021) (Statistics Canada, 2022). The composition of Australia's migrant population is also distinct: most migrants in Australia originate from Asia (52.5% in 2024) given its geographic proximity (Australian Bureau of Statistics, 2025), while most in the US originate from Latin America (50.4% in 2018) (Pew Research Centre, 2020) and most in the European Union originate from other European countries (more than 50% in 2016) (OECD, 2018). In addition, since the mid-1990s, Australia has shifted towards a predominantly skilled migration intake, rising from 29.1% in 1993 to approximately 70% from 2005 onward (Hugo, 2014). This emphasis on skilled migration distinguishes Australia from countries such as the US, where family reunion remains the dominant migration pathway (National Immigration Forum, 2024). These structural differences in migration flows and migrant composition are likely to shape distinct health trajectories and needs among migrant populations.

2.4 Limitations of the Literature

Despite the expanding literature on migrants' HLE, several significant gaps remain. First, most existing studies have been conducted in North American and Western European contexts (Carnein et al., 2014; Garcia & Chiu, 2016; Garcia et al., 2017, 2018, 2019; Reus-Pons et al., 2017; Wohland et al., 2015). This means that the life outcomes of migrants in other destinations (including Australia), where the pre- and post-migration environments and the composition of the migrant population differs significantly from those in North America and Western Europe, have been overlooked. Second, most of the existing research focuses on migrants' HLE at 50 or 65 years of age (Angel et al., 2015; Garcia et al., 2015, 2018, 2019; Reus-Pons et al., 2017), with few studies exploring migrants' HLE over their entire life course. This limits a comprehensive understanding of changes in migrants' health and wellbeing as they age and acculturate to the host society. Third, the existing research on migrants' HLE is largely based on data from a single year rather than from multiple years (Carnein et al., 2014; Garcia & Chiu, 2016; Garcia et al., 2015, 2017, 2018; Wohland et al., 2015), which makes it difficult to trace changing trends in migrants' HLE over time. The present study fills these important gaps in the literature by comparing the LE and HLE of overseas- and native-born Australians across the entire lifespan using successive years of data to provide a more comprehensive understanding of migrants' health and wellbeing in a national context that remains underexplored.

3 Data and Methods

3.1 Data

To estimate the HLE of the Australia- and overseas-born populations in 2006, 2011, and 2016, this study uses three data sources from the Australian Bureau of Statistics (ABS): annual Estimated Resident Population (ERP) surveys,¹ 1% of data randomly selected from the Census of Population and Housing (CPH)², and annual mortality statistics.³ Total population counts were obtained from the ERP, while population sizes for Australian-born and overseas-born groups were derived from the 1% CPH sample and scaled to match ERP totals using the ratio between the ERP and the sample. Information on health status was also obtained from the 1% CPH sample. Data on deaths by nativity were sourced from ABS annual mortality statistics.

All data were aggregated into 11 age groups: 0 years, 1–4 years, 10-year age groups from 5–14 years to 75–84 years, and 85+ years. This study aggregates data by 10-year age groups rather than the commonly adopted 5-year age groups because of the limited availability of

¹ Source: <https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Jun%202018?OpenDocument>

² Source: <https://www.abs.gov.au/statistics/microdata-tablebuilder/available-microdata-tablebuilder/census-population-and-housing#using-the-basic-curlf>

³ Source: mortality data in 2016, <https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3302.02016?OpenDocument>; mortality data in 2011, <https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3302.02011?OpenDocument>; mortality data in 2006, <https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3302.02006?OpenDocument>.

mortality data by nativity and migrant status. That is, the ABS provides data on the number of deaths by nativity in 10-year age intervals in its annual mortality statistics.

3.2 Measurement of Health

In the CPH, health is measured according to whether help or assistance is needed in at least one of three core activities: self-care, mobility, and communication. This classification aligns with the World Health Organization's *International Classification of Functioning, Disability and Health* (ICF), which provides a global standard for describing health and disability (World Health Organization, 2025). Self-care is defined as the ability to independently conduct activities of daily living such as eating, showering, dressing, and toileting (ICF codes: d510–d560); mobility is defined as the ability to move such as getting out of bed and moving around at or away from the home (ICF codes: d410–d465); and communication is defined as the ability to understand or be understood by others (ICF codes: d310–d345). If respondents report that they need help or assistance with any of these three core activities because of disability, a chronic health condition (lasting longer than 6 months), or old age, they are considered unhealthy. Respondents who have no difficulty in conducting any type of core activity are considered healthy. Those reporting limitations due to short-term conditions (less than six months), limited English proficiency, or other temporary causes are classified as healthy, following ABS definitions.

3.3 Methods

HLE was calculated using the Sullivan method (Sullivan, 1971), a widely used and internationally recommended approach for estimating HLE from cross-sectional data (Imai & Soneji, 2007; Jagger et al., 2014; Mathers et al., 2001). The method integrates standard period life tables with age-specific prevalence of health states, making it especially suitable when transition probabilities or longitudinal data, required for multistate life tables or Bayesian methods, are not available. Given that health and mortality data by nativity are available only cross-sectionally, the Sullivan method represents the most appropriate and feasible analytical approach. In addition, the widespread use of the Sullivan method in international research and by global health agencies enhances the comparability of our estimates with studies conducted in other migrant-receiving countries (Imai & Soneji, 2007; Mathers et al., 2001). However, it should be noted that the Sullivan method assumes current age-specific morbidity patterns remain constant over the life table period, which may oversimplify the dynamic health transitions experienced by migrant populations (Jagger et al., 2014).

The following equation shows the computation based on the Sullivan method:

$${}_nHLE_x = \frac{\sum_{x=0}^{\omega-n} (1 - {}_n\pi_x) * {}_nL_x}{{}_nl_x},$$

where x represents age, ω denotes the highest age and n denotes the age group. ${}_n\pi_x$ is the proportion of unhealthy people in the age group $(x, x + n)$, ${}_nL_x$ is the number of person years lived in the same age group, and ${}_nHLE_x$ is the corresponding HLE. Computation of ${}_nL_x$ follows the conventional life table method, which is elaborated in standard textbooks and published papers (Chiang, 1979).

4 Results

This study provides a comprehensive assessment of the LE and HLE of overseas-born and Australian-born populations in 2006, 2011, and 2016. Absolute values and differences by age, gender, and year are examined. Key findings are summarised below.

4.1 Crude Death Rate and Health Status of Migrant and Australia-born Populations

Table 1 shows the age-standardised crude death rates and the proportion of people classified as unhealthy in the overseas- and Australian-born populations across the three study years. Using the 2006 Australian population as the standard, the overseas-born population consistently exhibited lower crude death rates and lower proportions of unhealthy status than the Australian-born population. For example, in 2016 the age-standardised crude death rate among the overseas-born population was 5.8 per 1,000 persons, compared to 6.8 per 1,000 among the Australian-born. Similarly, the proportion of unhealthy individuals in 2016 was 4.1% among the overseas-born, slightly lower than the 4.4% observed for the Australian-born. These patterns persisted across all three years.

Age-specific patterns, however, reveal a divergence between mortality and morbidity. Although crude death rates for the overseas-born population were lower at all ages, the proportion of unhealthy individuals converged with, and eventually exceeded, that of the Australian-born population in older age groups. This crossover was more pronounced among overseas-born females. In 2016, the proportion of unhealthy overseas-born individuals surpassed that of Australian-born individuals from age 55–64, with the turning point occurring slightly later (age 65–74) among overseas-born males but earlier (age 55–64) among females.

Trends over time also differed for mortality and morbidity. Between 2006 and 2016, age-standardised crude death rates declined for both groups (from 6.8 to 6.1 per 1,000 for the Australian-born, and from 5.8 to 5.1 per 1,000 for the overseas-born). In contrast, the proportion of unhealthy individuals increased steadily across the decade (from 4.4% to 5.2% for the Australian-born, and from 4.1% to 4.8% for the overseas-born).

4.2 Life Expectancy and Healthy Life Expectancy of Migrant and Australia-born Populations

Table 2 and Figure 1 present LE, HLE, and the HLE/LE ratio for the two populations across the life course. Clear differences emerge between overseas- and Australian-born individuals, and these differences vary substantially with age.

Overall, the overseas-born population had higher LE at every age, though the magnitude of this advantage decreased steadily with age. In 2016, LE at birth was 84.8 years for the overseas-born and 82.4 years for the Australian-born, a difference of 2.4 years. This margin remained relatively stable until age 25 but narrowed progressively thereafter. By age 85+, the advantage had fallen to less than 0.8 years. Similar patterns were observed for both sexes in 2006 and 2011, illustrating a persistent but diminishing mortality advantage among migrants. This suggests that compared with the Australian-born population, the Australian overseas-born population has a significant mortality advantage throughout their entire life course, in line with previous studies that note the existence of the healthy migrant effect

Table 1 Crude Death Rate (CDR) and Prevalence of Unhealthy Status by Age Group and Sex for Australia-born and Overseas-born Populations, 2006, 2011 and 2016

Age group	CDR (per 1,000 persons)						Unhealthy Status (%)					
	Male			Female			Both			Male		
	AUB	OVB	Both	AUB	OVB	Both	AUB	OVB	Both	AUB	OVB	Both
2006												
0	5.4	1.6	4.2	0.0	0.0	4.8	0.8	0.8	0.3	1.2	0.1	0.3
1-4	0.2	0.0	0.2	0.1	0.1	0.2	0.1	0.1	1.4	1.5	0.1	0.8
5-14	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	2.8	1.8	0.4	1.1
15-24	0.7	0.5	0.3	0.2	0.2	0.5	0.3	0.3	1.8	0.8	0.5	0.6
25-34	1.0	0.6	0.4	0.3	0.3	0.7	0.4	0.4	1.7	0.8	0.6	0.7
35-44	1.6	1.0	0.8	0.6	0.6	1.2	0.8	0.8	2.4	1.4	1.3	1.4
45-54	3.2	2.3	1.9	1.5	1.5	2.6	1.9	1.9	3.2	2.6	2.8	2.7
55-64	7.2	6.2	4.3	3.6	3.6	5.7	4.9	4.9	5.9	5.6	5.0	5.3
65-74	19.8	16.2	11.4	9.7	9.7	15.4	13.1	13.1	7.7	8.4	10.4	9.4
75-84	57.5	49.1	36.9	34.2	34.2	45.5	41.3	41.3	18.4	19.6	29.2	24.7
85≤	161.5	142.6	136.2	116.9	116.9	144.0	126.1	126.1	44.2	42.8	58.8	53.1
Total (age standardised)	8.3	6.9	5.6	4.8	4.8	6.8	5.8	5.8	4.4	3.9	4.3	4.1
2011												
0	4.3	1.4	3.6	0.9	0.9	4.0	1.1	1.1	0.3	0.3	0.3	0.4
1-4	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	1.6	1.5	0.3	0.9
5-14	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.7	2.3	1.9	1.5
15-24	0.6	0.4	0.3	0.1	0.1	0.4	0.3	0.3	2.4	1.0	0.6	0.8
25-34	1.0	0.5	0.4	0.2	0.2	0.7	0.4	0.4	1.9	0.7	1.6	0.6
35-44	1.5	0.8	0.9	0.6	0.6	1.2	0.7	0.7	2.5	1.3	2.3	1.4
45-54	3.1	2.1	2.0	1.3	1.3	2.6	1.7	1.7	3.6	2.7	3.5	3.0
55-64	7.0	6.0	4.1	3.4	3.4	5.5	4.7	4.7	6.0	5.8	6.2	6.0
65-74	16.9	15.2	10.4	9.2	9.2	13.5	12.3	12.3	9.0	9.8	11.4	10.5
75-84	52.8	47.0	34.7	29.1	29.1	42.5	37.6	37.6	17.9	21.7	30.1	26.1
85≤	159.9	141.8	136.1	116.5	116.5	143.9	126.1	126.1	43.6	44.6	60.4	54.4
Total (age standardised)	7.8	6.7	5.5	4.5	4.5	6.5	5.5	5.5	4.8	4.2	4.7	4.5

Table 1 (continued)

Age group	CDR (per 1,000 persons)						Unhealthy Status (%)					
	Male			Female			Both			Male		
	AUB	OVB		AUB	OVB		AUB	OVB		AUB	OVB	
2016												
0	3.4	1.0		2.8	0.0		3.1	0.6		0.4	0.5	
1-4	0.2	0.1		0.1	0.2		0.2	0.1		1.8	2.1	
5-14	0.1	0.1		0.1	0.1		0.1	0.1		4.8	3.2	
15-24	0.5	0.4		0.2	0.2		0.4	0.3		3.3	1.4	
25-34	0.9	0.4		0.5	0.2		0.7	0.3		2.4	0.8	
35-44	1.7	0.8		0.9	0.5		1.3	0.6		2.8	1.3	
45-54	3.1	2.1		1.9	1.3		2.5	1.7		4.0	3.0	
55-64	6.8	5.2		4.0	3.0		5.4	4.1		6.0	5.8	
65-74	15.5	13.6		9.5	8.1		12.4	10.9		9.6	10.2	
75-84	47.2	40.9		31.9	27.5		38.7	34.0		18.1	21.4	
85≤	151.2	134.7		130.8	116.5		137.9	123.9		43.0	45.8	
Total (age standardised)	7.3	6.0		5.2	4.3		6.1	5.1		5.3	4.5	

This table presents the CDR per 1,000 population alongside percentages of individuals reporting unhealthy status, stratified by age groups and sex. Comparisons highlight differences between Australia-born and overseas-born groups across three census years, illustrating mortality and health disparities by demographic factors

'AUB' is 'Australia-born' and 'OVB' is 'overseas-born'; age standardisation uses Australian population in 2006 as the standard population

Table 2 LE, HLE and the Ratio of HLE to LE at Birth for Australia-born and Overseas-born Populations with 95% Confidence Intervals (CI), 2006, 2011 and 2016

	LE (years, 95% CI)			HLE (years, 95% CI)			Ratio of HLE/LE (% 95% CI)		
	Male		Female	Both		Female	Male		Both
	Male	Female	Both	Male	Female	Both	Male	Female	Both
AUB	2006								
	78.5(78.5-78.6)	83.5(83.4-83.5)	81.1(81.0-81.1)	74.1(74.0-74.2)	77.6(77.5-77.7)	75.8(75.8-75.9)	94.3(94.2-94.4)	93.0(92.9-93.0)	93.6(93.5-93.6)
OVB	2011								
	81.2(81.0-81.3)	85.6(85.5-85.6)	83.4(83.3-83.4)	76.6(76.4-76.8)	78.5(78.4-78.6)	77.5(77.4-77.6)	94.3(94.1-94.6)	91.7(91.5-91.8)	93.0(92.8-93.1)
AUB	2016								
	79.4(79.4-79.4)	83.8(83.8-83.9)	81.7(81.6-81.7)	74.5(74.4-74.6)	77.6(77.6-77.7)	76.1(76.0-76.1)	93.8(93.7-93.9)	92.6(92.5-92.7)	93.1(93.1-93.2)
OVB	2016								
	81.7(81.6-81.9)	86.2(86.1-86.3)	83.9(83.8-84.0)	76.6(76.5-76.8)	78.4(78.2-78.5)	77.5(77.4-77.6)	93.8(93.6-94.0)	90.9(90.7-91.0)	92.3(92.2-92.4)
AUB	2016								
	80.2(80.1-80.2)	84.5(84.5-84.5)	82.4(82.3-82.4)	74.7(74.6-74.8)	77.8(77.7-77.8)	76.2(76.1-76.3)	93.2(93.1-93.3)	92.0(91.9-92.1)	92.5(92.5-92.6)
OVB	2016								
	82.8(82.8-82.9)	86.8(86.7-86.8)	84.8(84.7-84.8)	77.2(77.0-77.3)	78.4(78.3-78.5)	77.7(77.7-77.8)	93.2(93.0-93.3)	90.3(90.2-90.4)	91.7(91.6-91.8)

This table reports LE, HLE, and the proportion of expected life spent in good health (HLE/LE ratio) at birth for both population groups, including confidence intervals to indicate statistical precision. Trends over the three time points reveal differences in longevity and health quality between Australia-born and overseas-born populations. 'AUB' is 'Australia-born' and 'OVB' is 'overseas-born'

(Anikeeva et al., 2010; Cunningham et al., 2008; Vang et al., 2017). However, it should be noted that the mortality advantage of Australian migrants decreases with increasing age, particularly after about age 25.

Patterns in HLE differed sharply from those for LE. Although the overseas-born population had higher HLE at younger ages, this advantage declined rapidly with age and reversed in later life. In 2016, HLE at birth among the overseas-born exceeded that of the Australian-born by 1.5 years and remained stable until about age 25. Thereafter, the gap narrowed quickly: HLE became roughly equal by middle age, and by age 55–64 the overseas-born population had lower HLE than the Australian-born. The largest deficit occurred at age 75–84 (–0.3 years), after which the difference stabilised. This pattern produces an asymmetrical V-shaped trajectory, indicating that morbidity advantages erode more rapidly for migrants across adulthood. This age variation in migrants' HLE suggests that migrants' morbidity advantage varies with increasing age and that migrants suffer worse morbidity outcomes in later life, despite their relatively better health status at younger ages.

Differences in the HLE/LE ratio also followed a V-shaped pattern (Figure 1g). Prior to age 25, ratios differed by less than 1%. From ages 25 to 84, however, the gap widened markedly, reaching its lowest point at age 75–84 (–3.8% in 2006, –6.0% in 2011, and –6.7% in 2016). The ratio then converged slightly after age 85. These results indicate that the deterioration in morbidity among migrants intensifies with age, particularly during the working and early older adult years.

4.3 Gender Differences in Life Expectancy and Healthy Life Expectancy

Prominent gender differences were observed in migrants' LE, HLE, and HLE/LE ratio and between the overseas- and Australian-born populations. In general, although the LE and HLE of overseas-born females exceeded those of overseas-born males, the ratio of HLE/LE of overseas-born females was lower than that of overseas-born males by more than 2.6% at all ages and was more than 15.8% at old age (see Table 2). This suggests that female migrants, despite enjoying a longer lifespan, have a lower quality of life compared with male migrants.

Differences between overseas- and Australian-born populations also varied by gender. The LE advantage of overseas-born women over Australian-born women was generally smaller than the corresponding advantage among men (Figure 1b and c). In terms of HLE, Australian-born women surpassed overseas-born women from age 35 onward, while male migrants retained an HLE advantage over Australian-born males across all ages (Figure 1e and f). Differences in the HLE/LE ratio further indicate more rapid and severe health deterioration among female migrants: the migrant–native gap ranged from 0.1% to –4% among men but from –1.3% to –10% among women (Figure 1h and i). Together, these findings suggest that the healthy migrant effect is weaker and less sustained for women.

4.4 Changes in Life Expectancy and Healthy Life Expectancy over Time

Figure 2 presents the changing trends in LE, HLE, and HLE/LE ratio at birth over the period 2006–2016 for the Australian- and overseas-born populations. LE, HLE, and the HLE/LE ratio in these three years show contrasting changes. Specifically, from 2006 to 2016, while the LE of the Australian- and overseas-born populations increased from 81.1 to 82.4 years

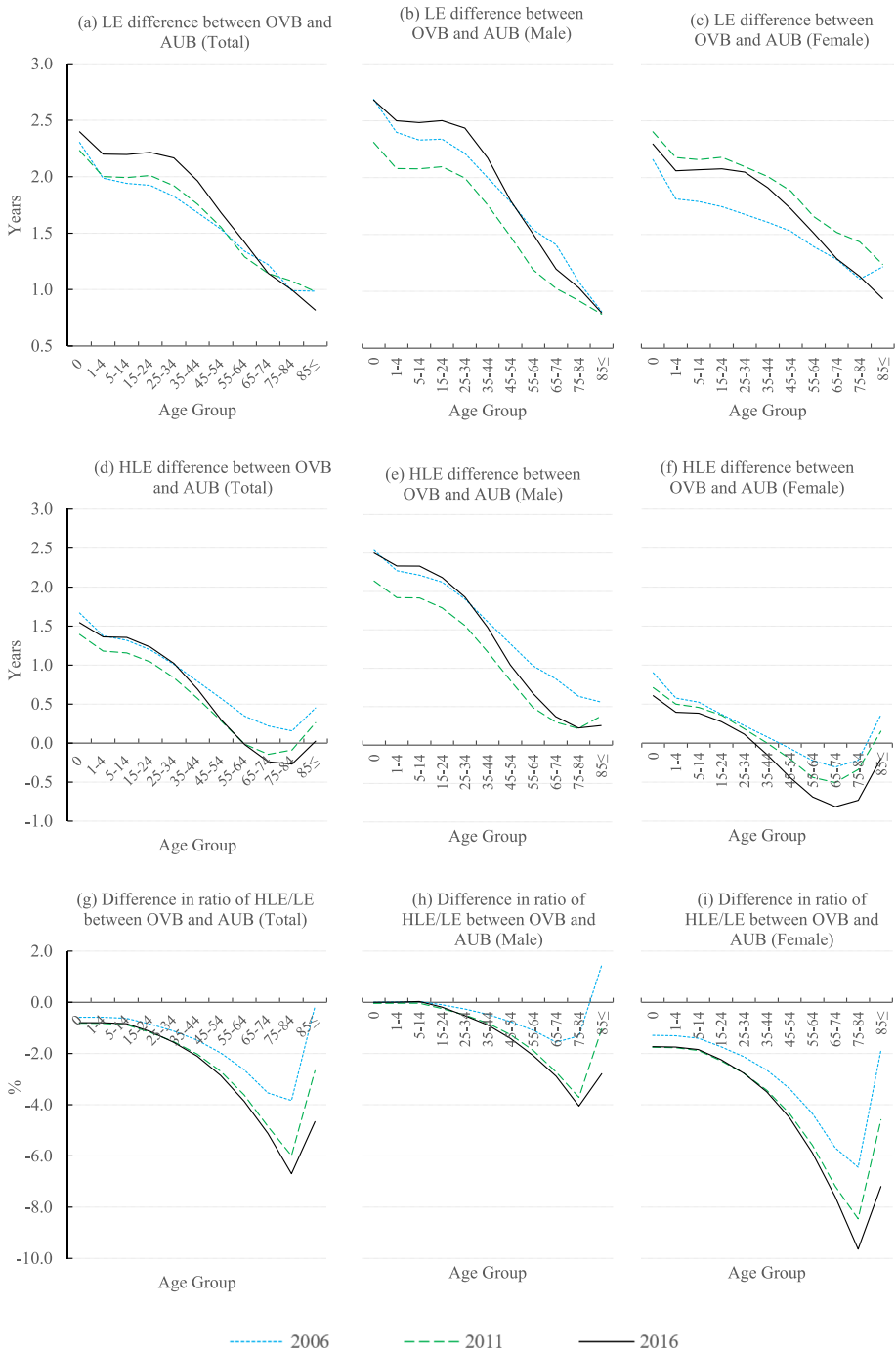
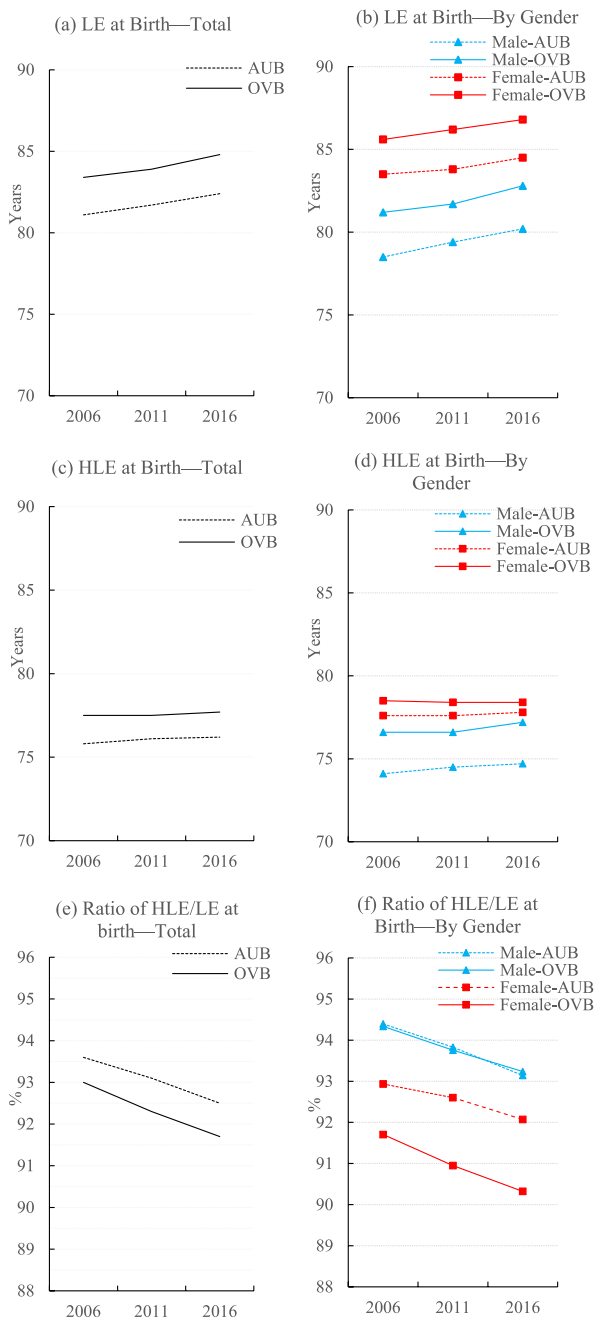


Fig. 1 Age Differences in LE, HLE, and the Ratio of HLE/LE between Overseas-born and Australia-born Populations in 2006, 2011 and 2016. Note: 'AUB' is 'Australia-born' and 'OVB' is 'overseas-born'

Fig. 2 Trends from 2006 to 2016 in LE, HLE, and the Ratio of HLE/LE at Birth for Australia-born and Overseas-born Populations. Note: This figure depicts temporal changes in LE, HLE, and the proportion of life spent in good health at birth for both groups, showcasing how longevity and health quality have evolved over the decade for Australia-born and overseas-born populations. ‘AUB’ is ‘Australia-born’ and ‘OVB’ is ‘overseas-born’



and 83.4 to 84.8 years, respectively (see Figure 2a and b), the HLE of the Australian- and overseas-born populations remained almost unchanged, increasing minimally from 75.8 to 76.2 years and 77.5 to 77.7 years, respectively (see Figure 2c and d). Over the same period, given the prolonged LE but a largely stagnant HLE, the HLE/LE ratio decreased steadily

from 93.6% to 92.5% for the Australian-born population and from 93.0% to 91.7% for the overseas-born population (see Figure 2e and f). These contrasting trends in LE, HLE, and HLE/LE ratio imply that the Australian-born and overseas-born populations enjoyed a prolonged lifespan over the study years but that the quality of life of both these populations worsened over time.

5 Conclusion and Discussion

HLE is a key indicator of population health, and this study provides one of the first comprehensive examinations of LE and HLE among migrants in Australia, including variations by age, gender, and time. The results show that, compared with the Australian-born population, Australia's overseas-born population has higher LE at all ages and higher HLE up to about age 55. However, these advantages diminish substantially with increasing age, particularly after age 25. The HLE/LE ratio for Australia's overseas-born population is consistently lower than that of the Australian-born population and declines sharply from early adulthood. Health deterioration is more pronounced among female migrants, who experience an earlier, larger, and faster decline in health status than male migrants. The study also reveals that although LE increased for both overseas- and Australian-born populations from 2006 to 2016, HLE remained largely stagnant, resulting in a worsening proportion of life lived in good health. Together, these findings advance understanding of migrant health trajectories in Australia and offer new insights into how health and wellbeing evolve alongside acculturation and ageing.

5.1 Migrant Health Advantages in the Australian Context

The results from the present study are in line with those of previous studies on the healthy migrant effect (Anikeeva et al., 2010; Cunningham et al., 2008; Ruiz et al., 2013; Vang et al., 2017), as well as earlier studies on migrants' HLE that migrants have longer LE (Angel et al., 2015; Carnein et al., 2014; Garcia & Chiu, 2016; Garcia et al., 2015, 2017, 2018; Wohland et al., 2015). However, whereas studies conducted in North America and Europe have reported similar or even lower HLE among migrants, particularly in relation to instrumental activities of daily living and cognitive functioning, compared to natives (Carnein et al., 2014; Garcia et al., 2017, 2018, 2019; Reus-Pons et al., 2017; Wohland et al., 2015), our findings reveal a slightly higher HLE before age 55 among migrants in Australia, as well as smaller differences in the HLE-to-LE ratio between the overseas- and Australian-born population.

These health advantages may be partly explained by factors such as the selection process for migrants and cultural health buffers. Like many other migrant-receiving countries, Australia imposes health requirements on prospective migrants, reducing the likelihood that individuals with serious health conditions enter the country. In addition, migrants' health outcomes are often shaped by cultural practices from their countries of origin. For example, Italian and Greek migrants, two long-established communities in Australia since WW2, frequently maintain elements of the traditional Mediterranean diet, which has been linked to better cardiovascular health and lower mortality (Anikeeva et al., 2010). Beyond diet, many migrant communities also benefit from strong collectivist family structures, inter-

generational support, and close-knit community networks, which can buffer stress, enhance social connectedness and facilitate healthier coping strategies during the settlement process (Wong et al., 2006).

In addition to these general factors, Australia's distinct migration profile may also contribute to the health advantages observed among migrants. Australia's geographic isolation and strong border controls mean that the proportion of undocumented migrants is considerably lower than in many other migrant-receiving countries (generally below 0.5% [Parliament of Australia, 1999; Department of Immigration and Multicultural and Indigenous Affairs, 2004] vs 4% in the US [Pew Research Centre, 2019a], 1.2–1.8% in the UK, and 1.2–1.4% in Germany [Pew Research Centre, 2019b]), resulting in a migrant population that more consistently meets health and screening requirements. Moreover, most undocumented migrants in Australia are visa overstayers rather than individuals exposed to the trauma and risks often associated with irregular border crossings (Parliament of Australia, 1999; Australian Government, 2019). Most importantly, most recent Australian migrants are skilled migrants, accounting for almost 70% of the Australian migrant population (Australian Government, 2019). This is significantly higher than the percentage of skilled migrants in the US (13.9%) (Department of Homeland Security of United States, 2019), the UK (29.1%) (Home Office of United Kingdom, 2019), and even Canada (58.0%) (Department of Citizenship and Immigration Act of Canada, 2019). Skilled migrants typically have higher education levels, stronger labour market attachment, and higher income compared with other migrant groups (Boucher, 2007; Hugo, 2014). This favourable socioeconomic profile likely contributes to the more positive health outcomes observed among migrants in Australia.

5.2 From Earlier Advantage to Late Vulnerability

The results also show that migrants' early-life health advantages narrow substantially over time and vary across the life course. These advantages remain evident during the working years and early older age but diminish sharply thereafter, becoming less pronounced in the oldest age group. This pattern is particularly notable for morbidity outcomes, which follow an asymmetrical V-shaped trajectory: characterised by a steady decline in HLE through midlife, a pronounced low point in early older age, and a slight recovery after age 85 (see Figure 1g–i). These age-patterned shifts, from strong early advantages to later-life disadvantages, closely reflect the core dynamics of the 'healthy immigrant paradox,' where migrants initially exhibit superior health but subsequently experience accelerated health decline as exposure to post-migration environments accumulates. This finding aligns with earlier work showing deteriorating health outcomes among migrants with longer residence in Australia (Biddle et al., 2007) and extends existing research by highlighting the different rates of change across age groups. While most existing evidence on age-related variation in migrants' HLE comes from North American contexts, our study shows that similar but context-specific patterns emerge in Australia's specific migration environment. This also aligns with previous studies conducted in the US, which found that those who migrated at younger or middle ages tend to have better HLE compared to those who migrated at old ages (Garcia & Chiu, 2016; Garcia et al., 2017, 2018).

Migrants' rapidly vanishing health advantage from age 25 to 84 years may be understood through the lens of Acculturation Theory (Berry & Hou, 2017), which posits that migrants undergo significant psychological and behavioural adjustments in response to a new cultural

environment. These adjustments often involve stressors such as cultural dissonance, language barriers, and role conflicts. In addition, migrants follow divergent paths of integration into the host society, with those on downward trajectories more likely to encounter systemic barriers such as discrimination, precarious employment, and limited access to healthcare, factors that adversely affect health outcomes (Zhou, 1997). The cumulative stress of adapting to a new sociocultural context, compounded by the loss of transnational family ties, reduced community support, the adoption of less healthy lifestyles, and inconsistent health-care access, can accelerate health deterioration, especially during midlife and early later life (Gee et al., 2007; Hovey & Magaña, 2000; Sirin et al., 2013).

In contrast, the detrimental effects of acculturation may be less pronounced for migrants aged 85 years and older, who are likely to have developed greater familiarity with their surroundings and established more stable social networks, thereby experiencing lower levels of acculturative stress. Additionally, the slower rate of health decline observed in advanced age may also be interpreted through the age-as-leveller hypothesis (Dupre, 2007), which suggests that the influence of social, economic, and cultural disparities on health outcomes diminishes in very old age due to the predominance of biological ageing processes. As individuals reach advanced ages, biological frailty tends to override earlier life-course inequalities, leading to a convergence in health outcomes regardless of previous socioeconomic or cultural disadvantages.

5.3 Gendered Health Disparities

Another important finding is that female migrants have poorer mortality and morbidity outcomes compared with male migrants and experience earlier, greater and faster health deterioration during the acculturation and ageing process. This aligns with previous studies on migrants' HLE reporting a disadvantage for female migrants relative to native-born females both in terms of absolute years and as a proportion of LE (Carnein et al., 2014; Garcia et al., 2018, 2019; Reus-Pons et al., 2017). Our findings further confirm that this disadvantage persists across the lifespan. These gender differences suggest that female migrants are less likely to experience the healthy migrant effect and are more vulnerable to the negative effects of acculturation.

This vulnerability may be explained by the gender differences related to pre- and post-migration environments. Males are more likely than females to migrate for occupational opportunities, which are typically associated with health requirements and functional demands, while females are more likely to migrate for family reunification, which does not necessarily require a health examination (Angel et al., 2010; Treas, 2015). In Australia, female migrants represent approximately 35% of skilled migrants and 63% of migrant spouses (Boucher, 2007), suggesting a lower probability of females migrating for employment, thus subject to a less stringent selection regime during the migration process. Cultural and socioeconomic factors further compound these gendered health outcomes. In many developing countries, including some of the major Australian migrant countries of origin such as China, India, and South-East Asian countries, females often experience socioeconomic disadvantages such as lower educational attainment, limited income and reduced social capital (Ahmed et al., 2010; Jayachandran, 2020; Batra & Reio, 2016; Chikh-Amnache & Mekhzoumi, 2024; Tripathi & Mishra, 2024). In some migrant communities, traditional gender roles, where males are the main income earners and females are the pri-

mary caregivers, can restrict female migrants' financial independence and social integration in the host country, limiting their opportunities for acculturation and health promotion (Garcia et al., 2015). In Australia, overseas-born females have a substantially lower employment rate (65.3%) than do overseas-born males (79.7%) or native-born females (72.6%) (OECD Data Statistics, 2019). Moreover, gendered expectations within some migrant communities slow females' acculturation process, increase caregiving burdens and elevate psychosocial stress (Ghuman, 2000). Access to healthcare is another critical cultural factor impacting female migrants. Language barriers, cultural beliefs about health and illness, and limited health literacy can hinder healthcare utilisation (Gee et al., 2007; Sentell & Braun, 2012). Combined with caregiving responsibilities that constrain time and resources, these factors reduce female migrants' capacity to manage their health effectively.

These intersecting cultural, socioeconomic, and structural barriers contribute to what has been termed the 'double disadvantage' in health (Donato et al., 2014), where gender-based inequalities overlap with migration-related vulnerabilities. These patterns can also be explained by intersectionality theory (Crenshaw, 2013a, b; Crenshaw, 2013a, b), which emphasises how multiple identities, such as gender, migration status, and socioeconomic position, combine to produce compounded health disadvantage. That is, as females, they may face structural gender inequalities such as lower socioeconomic status and reduced access to education and healthcare, while as migrants, they encounter additional barriers including acculturative stress and language challenges. When these two sets of disadvantages intersect, they compound each other, leading to earlier and more pronounced health deterioration compared to both male migrants and native-born females. These findings underscore the need for gender-sensitive interventions, such as improving migrant women's access to culturally appropriate healthcare, strengthening social support networks, and providing targeted mental health and employment services, to address the compounded vulnerabilities faced by female migrants.

5.4 The Longevity Paradox: Declining Quality of Life Amid Longer Lifespans

This study also revealed a lower quality of life for both the migrant and Australian-born populations during the period 2006–2016, reflecting that although Australians are living longer, they have more years of poor health, regardless of place of birth. This finding mirrors those of previous studies showing that the Australian population is living longer but in poorer health (Davis et al., 2002; Lynch et al., 2007) and further demonstrates that this trend in reduced quality of life also occurs in Australian migrants. This decline in quality of life aligns with some previous studies reporting reduced ratio of HLE/LE in Europe and other countries (Campolina et al., 2014; Crimmins et al., 2021; Jagger et al., 2010; Kyu et al., 2018; Zimmer et al., 2015), echoing the hypothesis that people are more likely to live with illness and experience a longer but unhealthier life whereby medical advances and declining mortality. This contributes to what has been dubbed the 'failure of success' (Gruenberg, 1977) and represents the trade-off between longer life and worsening health (Olshansky et al., 1991). Within the Australian context, these patterns may also reflect increasing pressure on Medicare (Australia's government-funded public health insurance system) and the aged-care system, where rising rates of chronic conditions, fragmented preventive care, and variability in access to culturally appropriate services contribute to prolonged but poorer health outcomes, particularly for migrants. The concerning trends in quality of life among

both Australian migrants and the Australia-born population call for greater attention from both policymakers and healthcare providers to enable increased efforts to improve quality of life in addition to the traditional efforts to extend lifespan.

5.5 Policy Implications

The findings of this study have important implications for Australian health policy by indicating the need to strengthen access to culturally and linguistically appropriate primary care within Medicare, enhance settlement support and early mental health services, and provide gender-sensitive interventions, particularly for migrant women, through mechanisms such as the National Primary Health Care Strategy, the National Preventive Health Strategy and Primary Health Networks. Over the longer term, addressing structural determinants of migrant health, including secure housing, stable employment, and equitable education, will be essential, alongside strengthening chronic disease management and culturally responsive care within Medicare-funded primary care and aged-care systems. These priorities align with multicultural health frameworks adopted by several Australian state governments, such as Victoria's Multicultural Health Action Plan 2023–27 and Queensland's Multicultural Health Policy and Action Plan 2024–2029, as well as with the ongoing aged-care reforms following the federal Aged Care Royal Commission, all of which emphasise the need for culturally safe care for culturally and linguistically diverse older adults. Finally, improving national data infrastructure by leveraging linked datasets such as the Australian Census Longitudinal Dataset (ACLID), Person Level Integrated Data Asset (PLIDA), and linked health–immigration records will be critical for monitoring migrant health trajectories and informing long-term planning. Together, these strategies underscore the need for a coordinated and culturally responsive approach to improving both lifespan and healthspan for Australia's increasingly diverse population.

5.6 Limitations

Some limitations of this study must be acknowledged. First, by using the life table method, the study assumes the population in a specific year represents a hypothetical cohort, meaning that the mortality and morbidity prevalence in a given year are treated as if experienced by a real cohort over the life course. This cross-sectional approach may mask changes in cohort health trajectories over the life course. As such, the computed LE and HLE estimates should be interpreted with caution. Nevertheless, the life table method is a standard method used widely in the literature to calculate LE (Chiang, 1984; Schöley et al., 2022; Woolf & Schoomaker, 2019). Future researchers are recommended to explore changes in migrants' health and wellbeing based on longitudinal data if available. Second, the use of the Sullivan method, which applies cross-sectional data to estimate HLE, assumes that current age-specific morbidity patterns are representative of lifetime experiences. However, this approach does not fully capture cohort effects in migrant populations, where health outcomes may vary significantly by age at migration, length of stay, or changing social and healthcare contexts. As such, the method does not reflect declining health or other cohort-specific changes over time. Future research employing longitudinal data and multi-cohort analysis is needed to more accurately assess these dynamics.

Third, the study treats migrants as a homogeneous group, without disaggregating by country of origin or ethnicity. Prior research shows that health outcomes can vary significantly by region or country of birth due to differing sociocultural norms, migration motives and pre- and post-migration experiences (Huijts & Kraaykamp, 2012; Simon-Kumar et al., 2025; Wohland et al., 2015). This lack of granularity may limit the applicability of the findings to specific migrant communities. Future research should aim to disaggregate migrant groups where data permit. Fourth, it is important to acknowledge that the use of 10-year age groupings may reduce the granularity of our analysis. Aggregating data in this way can obscure more nuanced age-specific variations in health status and mortality, potentially limiting the sensitivity of our findings to detect subtle demographic trends. This approach was adopted due to constraints in data availability and the need to ensure sufficient sample sizes within each stratum, but future research using finer age intervals could provide more precise insights. Fifth, this study relies on self-reported health measures, which may introduce reporting bias. Self-assessments of health do not always capture less visible or undiagnosed conditions that may not be perceived or disclosed by respondents. As a result, the calculated estimates of HLE may understate the true extent of health loss in the population. Future studies incorporating objective health assessments or administrative health data could provide a more comprehensive evaluation of population health.

Despite these limitations, this study provides one of the first comprehensive examinations of migrants' HLE in Australian, a major migrant-receiving country, and offers a more nuanced understanding of how health outcomes evolve throughout the acculturation and ageing process. The findings highlight the need for future research that disaggregates migrant populations by ethnicity, country of origin, duration of residence, and visa category to identify more fine-grained health patterns. Longitudinal studies are also essential for capturing the dynamics of health decline, adaptation and resilience across the life course, and across generations. Together, these efforts will support the development of more equitable and effective public health strategies tailored to Australia's increasingly diverse population.

Funding Open Access funding enabled and organized by CAUL and its Member Institutions. This work was supported by Australian Research Council under the Discovery Project 'Demographic and Social Dimensions of Migrant Ageing and Wellbeing in Australia' (grant number DP190102778).

Declarations

Conflict of interest The authors report there are no competing interests to declare.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Aglipay, M., Colman, I., & Chen, Y. (2013). Does the healthy immigrant effect extend to anxiety disorders? Evidence from a nationally representative study. *Journal of Immigrant and Minority Health*, 15(5), 851–857.
- Ahmed, S., Creanga, A. A., Gillespie, D. G., & Tsui, A. O. (2010). Economic status, education and empowerment: Implications for maternal health service utilization in developing countries. *PLoS One*, 5(6), e11190.
- Angel, R. J., Angel, J. L., Díaz Venegas, C., & Bonazzo, C. (2010). Shorter stay, longer life: Age at migration and mortality among the older Mexican-origin population. *Journal of Aging and Health*, 22(7), 914–931.
- Angel, R. J., Angel, J. L., & Hill, T. D. (2015). Longer lives, sicker lives? Increased longevity and extended disability among Mexican-origin elders. *Journals of Gerontology Series b: Psychological Sciences and Social Sciences*, 70(4), 639–649.
- Anikeeva, O., Bi, P., Hiller, J. E., Ryan, P., Roder, D., & Han, G.-S. (2010). The health status of migrants in Australia: A review. *Asia Pacific Journal of Public Health*, 22(2), 159–193.
- Antman, F. M., Duncan, B., & Trejo, S. J. (2020). Ethnic attrition, assimilation, and the measured health outcomes of Mexican Americans. *Journal of Population Economics*, 33(4), 1499–1522.
- Australian Government (2019). 2018–19 Migration Program Report. (pp. 12).
- Australian Bureau of Statistics (2025). Australia's population by country of birth. <https://www.abs.gov.au/statistics/people/population/australias-population-country-birth/latest-release>. Accessed 4 June 2024.
- Batra, R., & Reio, T. GJr. (2016). Gender inequality issues in India. *Advances in Developing Human Resources*, 18(1), 88–101.
- Berry, J. W. (2000). Acculturation and adaption in a new society. *International Migration*, Nr.
- Berry, J. W. (2005). Acculturation: Living successfully in two cultures. *International Journal of Intercultural Relations*, 29(6), 697–712.
- Berry, J. W., & Hou, F. (2017). Acculturation, discrimination and wellbeing among second generation of immigrants in Canada. *International Journal of Intercultural Relations*, 61, 29–39.
- Bhatia, P., McLaren, H., & Huang, Y. (2024). Exploring social determinants of mental health of older unforced migrants: A systematic review. *The Gerontologist*, 64(6), gnac003.
- Biddle, N., Kennedy, S., & McDonald, J. T. (2007). Health assimilation patterns amongst Australian immigrants. *Economic Record*, 83(260), 16–30.
- Boucher, A. (2007). Skill, migration and gender in Australia and Canada: The case of gender-based analysis. *Australian Journal of Political Science*, 42(3), 383–401.
- Bradshaw, B. S., & Fonner Jr, E. The mortality of Spanish-surnamed persons in Texas: 1969–1971. In *Studies in Population*, 1978 (pp. 261–282)
- Campolina, A. G., Adami, F., Santos, J. L. F., & Lebrão, M. L. (2014). Expansion of morbidity: Trends in healthy life expectancy of the elderly population. *Revista Da Associacao Medica Brasileira*, 60(5), 434–441.
- Carnein, M., Milewski, N., Doblhammer, G., & Nusselder, W. J. (2014). Health inequalities of immigrants: patterns and determinants of health expectancies of Turkish migrants living in Germany. *Health among the elderly in Germany: new evidence on disease, disability and care need*. Leverkusen: Barbara Budrich, 157–190.
- Castles, S. (2013). The forces driving global migration. *Journal of Intercultural Studies*, 34(2), 122–140.
- Chen, J., Wilkins, R., & Ng, E. (1996). Health expectancy by immigrant status, 1986 and 1991. *Health Reports-Statistics Canada*, 8, 29–38.
- Cheng, Z., Wang, B. Z., Jiang, Z., Taksa, L., & Tani, M. (2025). English skills and early labour market integration: Evidence from humanitarian migrants in Australia. *International Migration*, 63(1), e12889.
- Chiang, C. L. (1979). *Life table and mortality analysis*. World Health Organization.
- Chiang, C. L. (1984). *The life table and its applications*. Krieger Malabar.
- Chikh-Amnache, S., & Mekhroumi, L. (2024). The influence of socioeconomic factors on female entrepreneurship in Southeast Asian countries. *Journal of Entrepreneurship in Emerging Economies*, 16(1), 33–70.
- Constant, A. F., & Milewski, N. (2021). Self-selection in physical and mental health among older intra-European migrants. *The Journal of the Economics of Ageing*, 19, 100322.
- Crenshaw, K. W. (2013). Mapping the margins: Intersectionality, identity politics, and violence against women of color. In *The public nature of private violence* (pp. 93–118): Routledge.
- Crenshaw, K. (2013). Demarginalizing the intersection of race and sex: A black feminist critique of anti-discrimination doctrine, feminist theory and antiracist politics. In *Feminist legal theories* (pp. 23–51): Routledge.

- Crimmins, E. M., Zhang, Y. S., Kim, J. K., & Levine, M. E. (2021). Trends in morbidity, healthy life expectancy, and the compression of morbidity. In *Handbook of the Biology of Aging* (pp. 405–414): Elsevier.
- Cunningham, S. A., Ruben, J. D., & Narayan, K. V. (2008). Health of foreign-born people in the United States: A review. *Health & Place*, 14(4), 623–635.
- Davis, P., Mathers, C. D., & Graham, P. (2002). Health expectancy in Australia and New Zealand. *Determining Health Expectancies*, 15, 391–408.
- De Haas, H., Czaika, M., Flahaux, M. L., Mahendra, E., Natter, K., Vezzoli, S., et al. (2019). International migration: Trends, determinants, and policy effects. *Population and Development Review*, 45(4), 885–922.
- Department of Immigration and Multicultural and Indigenous Affairs (2004). Onshore Compliance—Visa Overstayers and Non-Citizens Working Illegally.
- Department of Citizenship and Immigration Act of Canada (2019). Annual Report to Parliament on Immigration 2019.
- Department of Homeland Security of United States (2019). Major Class of Admission: Fiscal Years 2017 to 2019. <https://www.dhs.gov/immigration-statistics/yearbook/2019/table6>. Accessed November 08 2020.
- Dey, A. N., & Lucas, J. W. (2006). Physical and mental health characteristics of US-and foreign-born adults, United States, 1998–2003.
- Dombou, C., Omonaiye, O., Fraser, S., Cénat, J. M., Fournier, K., & Yaya, S. (2023). Barriers and facilitators associated with the use of mental health services among immigrant students in high-income countries: A systematic scoping review. *PLoS One*, 18(6), e0287162.
- Donato, K. M., Piya, B., & Jacobs, A. (2014). The double disadvantage reconsidered: Gender, immigration, marital status, and global labor force participation in the 21st century. *International Migration Review*, 48(1_suppl), 335–376.
- Dupre, M. E. (2007). Educational differences in age-related patterns of disease: Reconsidering the cumulative disadvantage and age-as-leveler hypotheses. *Journal of Health and Social Behavior*, 48(1), 1–15.
- El Arab, R. A., Somerville, J., Abuelas, F. H., Rubinat-Arnaldo, E., & Sagbakken, M. (2023). Health and well-being of refugees, asylum seekers, undocumented migrants, and internally displaced persons under COVID-19: A scoping review. *Frontiers in Public Health*, 11, 1145002.
- Eschbach, K., Al-Snih, S., Markides, K. S., & Goodwin, J. S. (2007). Disability and active life expectancy of older US-and foreign-born Mexican Americans. In *The health of aging Hispanics* (pp. 40–49): Springer.
- Fennelly, K. (2007). The "healthy migrant" effect. *Minnesota Medicine*, 90(3), 51–53.
- Fullin, G., & Reyneri, E. (2011). Low unemployment and bad jobs for new immigrants in Italy. *International Migration*, 49(1), 118–147.
- Garcia, M. A., Angel, J. L., Angel, R. J., Chiu, C.-T., & Melvin, J. (2015). Acculturation, gender, and active life expectancy in the Mexican-origin population. *Journal of Aging and Health*, 27(7), 1247–1265.
- Garcia, M. A., & Chiu, C.-T. (2016). Age at migration and disability-free life expectancy among the elder Mexican-origin population. *Demographic Research*, 35(51), 1523.
- Garcia, M. A., Downer, B., Chiu, C.-T., Saenz, J. L., Rote, S., & Wong, R. (2019). Racial/ethnic and nativity differences in cognitive life expectancies among older adults in the United States. *The Gerontologist*, 59(2), 281–289.
- Garcia, M. A., Saenz, J. L., Downer, B., Chiu, C.-T., Rote, S., & Wong, R. (2018). Age of migration differentials in life expectancy with cognitive impairment: 20-year findings from the Hispanic-EPSE. *The Gerontologist*, 58(5), 894–903.
- Garcia, M. A., Valderrama-Hinds, L. M., Chiu, C. T., Mutambudzi, M. S., Chen, N. W., & Raji, M. (2017). Age of migration life expectancy with functional limitations and morbidity in Mexican Americans. *Journal of the American Geriatrics Society*, 65(7), 1591–1596.
- Gee, G. C., Spencer, M., Chen, J., Yip, T., & Takeuchi, D. T. (2007). The association between self-reported racial discrimination and 12-month DSM-IV mental disorders among Asian Americans nationwide. *Social Science & Medicine*, 64(10), 1984–1996.
- Ghuman, P. A. S. (2000). Acculturation of south Asian adolescents in Australia. *British Journal of Educational Psychology*, 70(3), 305–316.
- Gimeno-Feliu, L. A., Calderón-Larrañaga, A., Diaz, E., Poblador-Plou, B., Macipe-Costa, R., & Prados-Torres, A. (2015). The healthy migrant effect in primary care. *Gaceta Sanitaria*, 29(1), 15–20.
- Gruenberg, E. M. (1977). The failures of success. *The Milbank Memorial Fund Quarterly. Health and Society*, 3–24.
- Gubenskaya, Z., Bean, F. D., & Van Hook, J. (2013). (Un) healthy immigrant citizens: Naturalization and activity limitations in older age. *Journal of Health and Social Behavior*, 54(4), 427–443.
- Guo, M., Wang, Y., Liu, J., & Dong, X. (2022). Ethnic enclaves, social capital, and psychological well-being of immigrants: the case of Chinese older immigrants in Chicago. *Aging & Mental Health*, 1–9.
- Hajat, A., Blakely, T., Dayal, S., & Jatrana, S. (2010). Do New Zealand's immigrants have a mortality advantage? Evidence from the New Zealand census-mortality study. *Ethnicity & Health*, 15(5), 531–547.

- Hauer, M. E., Jacobs, S. A., & Kulp, S. A. (2024). Climate migration amplifies demographic change and population aging. *Proceedings of the National Academy of Sciences*, 121(3), e2206192119.
- Helgesson, M., Johansson, B., Nordquist, T., Vingård, E., & Svartengren, M. (2019). Healthy migrant effect in the Swedish context: A register-based, longitudinal cohort study. *BMJ Open*, 9(3), e026972.
- Hintermeier, M., Gottlieb, N., Rohleder, S., Oppenberg, J., Baroudi, M., Pernitez-Agan, S., et al. (2024). COVID-19 among migrants, refugees, and internally displaced persons: systematic review, meta-analysis and qualitative synthesis of the global empirical literature. *EClinicalMedicine*, 74.
- Holz, M. (2022). Health inequalities in Germany: Differences in the 'Healthy migrant effect' of European, non-European and internal migrants. *Journal of Ethnic and Migration Studies*, 48(11), 2620–2641.
- Home Office of United Kingdom (2019). Immigration statistics data tables, year ending December 2019. <https://www.gov.uk/government/statistical-data-sets/immigration-statistics-data-tables-year-ending-december-2019>. Accessed November 08 2020.
- Hormazábal-Salgado, R., Whitehead, D., Osman, A. D., & Hills, D. (2025). Migration experiences and mental health of older Latin American immigrants in Australia: R. Hormazábal-Salgado et al. *Journal of International Migration and Integration*, 26(2), 901–922.
- Hovey, J. D., & Magaña, C. (2000). Acculturative stress, anxiety, and depression among Mexican immigrant farmworkers in the Midwest United States. *Journal of Immigrant Health*, 2, 119–131.
- Huang, G., Guo, F., Cheng, Z., Liu, L., Zimmermann, K. F., Taksa, L., et al. (2023). Nativity in the healthy migrant effect: Evidence from Australia. *SSM-Population Health*, 23, 101457.
- Huang, G., Guo, F., Taksa, L., Cheng, Z., Tani, M., Liu, L., et al. (2024). Decomposing the differences in healthy life expectancy between migrants and natives: the 'healthy migrant effect' and its age variations in Australia. *Journal of Population Research*, 41(1), 3.
- Hugo, G. (2014). Skilled migration in Australia: Policy and practice. *Asian and Pacific Migration Journal*, 23(4), 375–396.
- Huijts, T., & Kraaykamp, G. (2012). Immigrants' health in Europe: A cross-classified multilevel approach to examine origin country, destination country, and community effects. *International Migration Review*, 46(1), 101–137.
- Imai, K., & Soneji, S. (2007). On the estimation of disability-free life expectancy: Sullivan's method and its extension. *Journal of the American Statistical Association*, 102(480), 1199–1211.
- Jagger, C., Gillies, C., Cambois, E., Van Oyen, H., Nusselder, W., & Robine, J.-M. (2010). Trends in Disability-free Life Expectancy at age 16 and age 65 in the European Union 1995-2001: a comparison of 13 EU countries.
- Jagger, C., Van Oyen, H., & Robine, J.-M. (2014). Health expectancy calculation by the Sullivan method: a practical guide. *Nihon University Population Research Institute (NUPRI) Research Paper Series*(68).
- Jagger, C., & Robine, J.-M. (2011). *Healthy life expectancy. In International handbook of adult mortality.* Springer.
- Jasso, G., Massey, D. S., Rosenzweig, M. R., & Smith, J. P. (2005). Immigration, health, and New York City: Early results based on the US New Immigrant Cohort of 2003. *FRBNY Economic Policy Review*, 11(2), 127–151.
- Jayachandran, S. (2020). Social norms as a barrier to women's employment in developing countries. National Bureau of Economic Research.
- Kennedy, S., Kidd, M. P., McDonald, J. T., & Biddle, N. (2015). The healthy immigrant effect: Patterns and evidence from four countries. *Journal of International Migration and Integration*, 16(2), 317–332.
- Kyu, H. H., Abate, D., Abate, K. H., Abay, S. M., Abbafati, C., Abbasi, N., et al. (2018). Global, regional, and national disability-adjusted life-years (DALYs) for 359 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, 392(10159), 1859–1922.
- Lynch, C., Holman, C. D. A. J., & Moorin, R. E. (2007). Use of Western Australian linked hospital morbidity and mortality data to explore theories of compression, expansion and dynamic equilibrium. *Australian Health Review*, 31(4), 571–581.
- Mantu, S., Berntsen, L., de Lange, T., Böcker, A., & Skowronek, N. (2025). EU migrant workers and the right to health in the Netherlands during and beyond the COVID-19 pandemic. *Transfer: European Review of Labour and Research*, 10242589251318693.
- Markides, K. S., & Eschbach, K. (2005). Aging, migration, and mortality: current status of research on the Hispanic paradox. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 60(Special Issue, 2), S68–S75.
- Marmot, M., & Wilkinson, R. (2005). *Social determinants of health.* Oup Oxford.
- Mathers, C. D., Sadana, R., Salomon, J. A., Murray, C. J., & Lopez, A. D. (2001). Healthy life expectancy in 191 countries, 1999. *The Lancet*, 357(9269), 1685–1691.

- Matlin, S. A., Karadag, O., Brando, C. R., Góis, P., Karabey, S., Khan, M. M. H., et al. (2021). COVID-19: marking the gaps in migrant and refugee health in some massive migration areas. *International Journal of Environmental Research and Public Health*, 18(23), 12639.
- McAuliffe, M., & Triandafyllidou, A. (2021). Word migration report 2022.
- McDonald, J. T., & Kennedy, S. (2004). Insights into the 'healthy immigrant effect': Health status and health service use of immigrants to Canada. *Social Science & Medicine*, 59(8), 1613–1627.
- National Immigration Forum (2024). Legal Immigration to the United States: National Quotas & America's Immigration System. <https://immigrationforum.org/article/legal-immigration-to-the-united-states-national-quotas-americas-immigration-system/>. Accessed 4 June 2024.
- OECD, E. (2018). Settling in 2018: Indicators of immigrant integration. OECD Publishing, Paris.
- OECD Data Statistics (2019). Foreign-born employment. <https://data.oecd.org/migration/foreign-born-employment.htm#indicator-chart>. Accessed November 08 2020.
- OECD Stat (2023). Population Statistics. <https://stats.oecd.org/>. Accessed 15 December 2022.
- Olshansky, S. J., Rudberg, M. A., Carnes, B. A., Cassel, C. K., & Brody, J. A. (1991). Trading off longer life for worsening health: The expansion of morbidity hypothesis. *Journal of Aging and Health*, 3(2), 194–216.
- Page, R. L. (2007). Differences in health behaviors of Hispanic, White, and Black childbearing women: Focus on the Hispanic paradox. *Hispanic Journal of Behavioral Sciences*, 29(3), 300–312.
- Palloni, A., & Arias, E. (2004). Paradox lost: Explaining the Hispanic adult mortality advantage. *Demography*, 41(3), 385–415.
- Parliament of Australia (1999). Boat People, Illegal Migration and Asylum Seekers: in Perspective. https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/Publications_Archive/CIB/cib9900/2000CIB13#over. Accessed 3 August 2021.
- Peiro, M.-J., & Benedict, R. (2010). Migrant health policy. *Migration and Health in the European Union*, 16(1), Article 1.
- Pew Research Centre (2019b). 5 facts about unauthorized immigration in Europe. <https://www.pewresearch.org/fact-tank/2019/11/14/5-facts-about-unauthorized-immigration-in-europe/>. Accessed November 08 2020.
- Pew Research Centre (2019a). 5 facts about illegal immigration in the U.S. <https://www.pewresearch.org/fact-tank/2019/06/12/5-facts-about-illegal-immigration-in-the-u-s/>. Accessed November 08 2020.
- Pew Research Centre (2020). Facts on U.S. immigrants, 2018. <https://www.pewresearch.org/hispanic/2020/08/20/facts-on-u-s-immigrants-previous-years-data/>. Accessed 8 November 2020.
- Pulver, A., Ramraj, C., Ray, J. G., O'Campo, P., & Urquía, M. L. (2016). A scoping review of female disadvantage in health care use among very young children of immigrant families. *Social Science & Medicine*, 152, 50–60.
- Puschmann, P., Donrovich, R., & Matthijs, K. (2017). Salmon bias or red herring? *Human Nature*, 28(4), 481–499.
- Razum, O., Zeeb, H., Akgün, H. S., & Yilmaz, S. (1998). Low overall mortality of Turkish residents in Germany persists and extends into a second generation: Merely a healthy migrant effect? *Tropical Medicine & International Health*, 3(4), 297–303.
- Rechel, B., Mladovsky, P., Ingleby, D., Mackenbach, J. P., & McKee, M. (2013). Migration and health in an increasingly diverse Europe. *Lancet*, 381(9873), 1235–1245.
- Renzaho, A. (2016). Migration and the healthy migrant effect in Australia: current knowledge, gaps and opportunity for future research. *Globalisation, migration and health: Challenges and opportunities*, 363–389.
- Reus-Pons, M., Kibele, E. U., & Janssen, F. (2017). Differences in healthy life expectancy between older migrants and non-migrants in three European countries over time. *International Journal of Public Health*, 62(5), 531–540.
- Ruiz, J. M., Steffen, P., & Smith, T. B. (2013). Hispanic mortality paradox: A systematic review and meta-analysis of the longitudinal literature. *American Journal of Public Health*, 103(3), e52–e60.
- Safi, M. (2009). Immigrants' life satisfaction in Europe: Between assimilation and discrimination. *European Sociological Review*, 26(2), 159–176.
- Salant, T., & Lauderdale, D. S. (2003). Measuring culture: A critical review of acculturation and health in Asian immigrant populations. *Social Science & Medicine*, 57(1), 71–90.
- Schöley, J., Aburto, J. M., Kashnitsky, I., Kniffka, M. S., Zhang, L., Jaadla, H., et al. (2022). Life expectancy changes since COVID-19. *Nature Human Behaviour*, 6(12), 1649–1659.
- Sentell, T., & Braun, K. L. (2012). Low health literacy, limited English proficiency, and health status in Asians, Latinos, and other racial/ethnic groups in California. *Journal of Health Communication*, 17(sup3), 82–99.

- Simon-Kumar, R., Sharma, V., Ramalho, R., & Peiris-John, R. (2025). Beyond the healthy migrant effect: New thinking in ethnic minority health research in Aotearoa New Zealand. *Kōtuitui: New Zealand Journal of Social Sciences Online*, 20, 270–278.
- Sirin, S. R., Ryce, P., Gupta, T., & Rogers-Sirin, L. (2013). The role of acculturative stress on mental health symptoms for immigrant adolescents: A longitudinal investigation. *Developmental Psychology*, 49(4), 736.
- Smith, D. P., & Bradshaw, B. S. (2006). Rethinking the Hispanic paradox: Death rates and life expectancy for US non-Hispanic White and Hispanic populations. *American Journal of Public Health*, 96(9), 1686–1692.
- Statistics Canada (2022). Immigrant population by selected places of birth, admission category and period of immigration, 2021 Census. <https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/dv-vd/imm/index-en.cfm>. Accessed 5 March 2023
- Stevenson, K., Fellmeth, G., Edwards, S., Calvert, C., Bennett, P., Campbell, O. M., et al. (2023). The global burden of perinatal common mental health disorders and substance use among migrant women: A systematic review and meta-analysis. *The Lancet Public Health*, 8(3), e203–e216.
- Sullivan, D. F. (1971). A single index of mortality and morbidity. *HSMHA Health Reports*, 86(4), 347.
- Sundquist, J., & Johansson, S.-E. (1997). Long-term illness among indigenous and foreign-born people in Sweden. *Social Science & Medicine*, 44(2), 189–198.
- Treas, J. (2015). Incorporating immigrants: Integrating theoretical frameworks of adaptation. *Journals of Gerontology Series b: Psychological Sciences and Social Sciences*, 70(2), 269–278.
- Tripathi, T., & Mishra, N. K. (2024). Female self-employment in India: informality, low pay, and intersectional disadvantages. In *Research Handbook on Self-Employment and Public Policy* (pp. 155-170): Edward Elgar Publishing.
- Trovato, F., & Odynek, D. (2011). Sex differences in life expectancy in Canada: Immigrant and native-born populations. *Journal of Biosocial Science*, 43(3), 353–367.
- United Nations (2019). International migrant stock 2019. <https://www.un.org/en/development/desa/population/migration/data/estimates2/estimates19.asp>. Accessed 15 December 2021.
- Van Doorn, N., Ferrari, F., & Graham, M. (2023). Migration and migrant labour in the gig economy: An intervention. *Work, Employment and Society*, 37(4), 1099–1111.
- Vang, Z. M., Sigouin, J., Flenon, A., & Gagnon, A. (2017). Are immigrants healthier than native-born Canadians? A systematic review of the healthy immigrant effect in Canada. *Ethnicity & Health*, 22(3), 209–241.
- Warner, T. D., Fishbein, D. H., & Krebs, C. P. (2010). The risk of assimilating? Alcohol use among immigrant and US-born Mexican youth. *Social Science Research*, 39(1), 176–186.
- Wohland, P., Rees, P., Nazroo, J., & Jagger, C. (2015). Inequalities in healthy life expectancy between ethnic groups in England and Wales in 2001. *Ethnicity & Health*, 20(4), 341–353.
- Wong, S. T., Yoo, G. J., & Stewart, A. L. (2006). The changing meaning of family support among older Chinese and Korean immigrants. *The Journals of Gerontology Series b: Psychological Sciences and Social Sciences*, 61(1), S4–S9.
- Wolf, S. H., & Schoemaker, H. (2019). Life expectancy and mortality rates in the United States, 1959-2017. *JAMA*, 322(20), 1996–2016.
- World Health Organization (2025). International Classification of Functioning, Disability and Health. <https://icd.who.int/browse/2025-01/icf/en>. Accessed 4 June 2025.
- Zhou, M. (1997). Segmented assimilation: Issues, controversies, and recent research on the new second generation. *International Migration Review*, 31(4), 975–1008.
- Zimmer, Z., Hidajat, M., & Saito, Y. (2015). Changes in total and disability-free life expectancy among older adults in China: Do they portend a compression of morbidity. *International Journal of Population Studies*, 1(1), 4–18.

Authors and Affiliations

Guogui Huang¹  · **Fei Guo²** · **Lucy Taksa³** · **Zhiming Cheng^{2,4}** · **Lihua Liu⁵** · **Klaus F. Zimmermann⁶** · **Massimiliano Tani⁷** · **Marika Franklin⁸**

✉ Guogui Huang
guogui.huang@mq.edu.au

¹ Centre for Health Systems and Safety Research, Macquarie University, Level 6, 75 Talavera Road, North Ryde, New South Wales 2109, Australia

² Department of Management, Macquarie Business School, Macquarie University, Sydney, New South Wales, Australia

³ Deakin University Business School, Deakin University, Burwood, Victoria, Australia

⁴ Social Policy Research Centre, University of New South Wales, Sydney, New South Wales, , Australia

⁵ Department of Population and Public Health Sciences, Keck School of Medicine, University of Southern California, Los Angeles, CA, USA

⁶ Global Labor Organization (GLO), Bonn University, Germany

⁷ School of Business, University of New South Wales, Canberra, Australian Capital Territory, Australia

⁸ Faculty of Medicine & Health, University of Sydney, Sydney, New South Wales, Australia