BMJ Open

Life expectancy and geographic variation in mortality: an observational comparison study of six high-income Anglophone countries

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To cite: Wilkie RZ, Ho JY. Life expectancy and geographic variation in mortality: an observational comparison study of six high-income Anglophone countries. *BMJ Open* 2024;**14**:e079365. doi:10.1136/bmjopen-2023-079365

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (https://doi.org/10.1136/bmjopen-2023-079365).

Received 30 August 2023
Accepted 17 June 2024

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ABSTRACT

Objective To compare life expectancy levels and within-country geographic variation in life expectancy across six high-income Anglophone countries between 1990 and 2018.

Design Demographic analysis using aggregated mortality data.

Setting Six high-income Anglophone countries (USA, UK, Canada, Australia, Ireland and New Zealand), by sex, including an analysis of subnational geographic inequality in mortality within each country.

Population Data come from the Human Mortality Database, the WHO Mortality Database and the vital statistics agencies of six high-income Anglophone countries.

Main outcome measures Life expectancy at birth and age 65; age and cause of death contributions to life expectancy differences between countries; index of dissimilarity for within-country geographic variation in mortality.

Results Among six high-income Anglophone countries, Australia is the clear best performer in life expectancy at birth, leading its peer countries by 1.26–3.95 years for women and by 0.97–4.88 years for men in 2018. While Australians experience lower mortality across the age range, most of their life expectancy advantage accrues between ages 45 and 84. Australia performs particularly well in terms of mortality from external causes (including drug- and alcohol-related deaths), screenable/treatable cancers, cardiovascular disease and influenza/pneumonia and other respiratory diseases compared with other countries. Considering life expectancy differences across geographic regions within each country, Australia tends to experience the lowest levels of inequality, while Ireland, New Zealand and the USA tend to experience the highest levels.

Conclusions Australia has achieved the highest life expectancy among Anglophone countries and tends to rank well in international comparisons of life expectancy overall. It serves as a potential model for lower-performing countries to follow to reduce premature mortality and inequalities in life expectancy.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ We use high-quality data on age- and cause-specific mortality and decomposition methods to examine life expectancy trends and levels among six high-income Anglophone countries with distinct cultural, linguistic and institutional similarities.
⇒ This study evaluates differences in geographic inequality in mortality within these countries, which have received much less attention in cross-national comparisons of life expectancy.
⇒ Limitations of our study include potential differences in cause of death coding across countries and the lack of data availability for smaller subnational geographic units.

INTRODUCTION

Life expectancy in high-income countries indicates the frontiers of what is attainable in contexts with high standards of living and ample resources directed towards improving health and well-being. While high-income countries achieved robust life expectancy gains during the 20th century, trends have been much less favourable in the 21st century, even prior to the COVID-19 pandemic. Several countries experienced large, simultaneous life expectancy declines between 2014 and 2015[1] and overall slowdowns in gains since 2010.[2 3] Stalled reductions in cardiovascular disease mortality, along with rising drug overdose and mental and nervous system disease mortality, are key contributors to these trends.[2–4] Notably, sizeable mortality inequalities across socioeconomic status[5–10] and geographic region[11–18] exist *within* most of these countries and have tended to widen in recent decades.[12 16 19–23] There is widespread interest in understanding the drivers of this widening.[7 19 24–32]

Prior studies of cross-national life expectancy differences focused on explaining why US life expectancy lags behind other high-income countries.[4 33–36] One study provided evidence of similarities across Anglophone countries, which experience relatively high younger age (below age 50) and external cause

mortality compared with other high-income countries.[33] Traditionally classified as liberal welfare regimes, Anglophone countries have a greater focus on private versus collective responsibility for individuals, lower public benefits and lower regulation of labour markets compared with social democratic or conservative regimes.[37 38] Furthermore, these countries share a common language and some cultural similarities (eg, diet and lifestyle), as well as current and historically high levels of income inequality.[39] Some typologies further separate out Australia and New Zealand (and sometimes Ireland and the UK) as 'radical' welfare state regimes that use redistribution to address poverty and income inequality.[38] Previous research identified shared mortality trends in the USA and UK—both countries experienced sizeable life expectancy declines between 2014 and 2015 and marked slowdowns in improvements since 2010[1 3 40]—and in the USA and Canada, which have severe drug overdose epidemics.[41–44] There are also important differences between these countries, which could contribute to differences in mortality. They are spread across geographically diverse continents and regions and differ in their healthcare systems, welfare systems, policy environments, cultures and behaviours, inequality, racial and ethnic composition, and history of immigration. For example, the UK has a socialised health system free to users, while the others have varying combinations of private and government-subsidised healthcare. The USA and Ireland are outliers as they lack universal healthcare, although Ireland's healthcare reform is slated for completion by 2030.[45 46]

These similarities and differences have not been fully explored. This article compares mortality among six high-income Anglophone countries: Australia, Canada, the Republic of Ireland (Ireland), New Zealand, the UK and the USA. We also characterise the extent of geographic variation in mortality *within* each country, an important dimension that has received less attention in cross-national comparisons.

DATA AND METHODS

We obtained national life tables for men and women in six Anglophone countries and 14 additional high-income countries (Austria, Belgium, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Sweden and Switzerland) from the Human Mortality Database (HMD) between 1990 and 2019.[47] The 14 additional countries are used to contextualise life expectancy in the Anglophone countries and are dropped for the rest of the analysis. We compared life expectancy across the six Anglophone countries and assessed how they rank among the broader set of 20 countries. The life tables are also the source of the all-cause, age-specific death rates used in our analyses.

Detailed mortality data for each Anglophone country by sex, age and cause of death come from the WHO Mortality Database.[48] We combined the HMD and WHO mortality data and used Arriaga's decomposition[49 50] to calculate age and cause of death contributions to the difference in life expectancy at birth between Australia and each of the other countries. For Australia, Canada, Ireland, the UK and the USA, we use data from 2018. For New Zealand, we used the cause-specific proportions of total deaths from 2016 (the most recent year available) applied to the life table quantities from 2018. We do not expect the proportions in 2016 and 2018 to be very different. As a robustness check, we repeated the analyses using data from 2015 for all countries (results available upon request) and found very similar results.

We used 18 mutually exclusive and exhaustive cause of death categories (online supplemental table 1), capturing a diverse and meaningful set of causes, including those identified in prior studies as important contributors to mortality trends within these countries.[3 4 34 51] In the main text, we combine some categories so that for each age group, the five leading contributors and one category containing all remaining causes are shown for that age group. This allows for a clearer and more parsimonious presentation of results. Online supplemental figures 1 and 2 show all 18 categories.

We obtained life tables by subnational region from each Anglophone country's national vital statistics agency. We aimed to maximise the comparability of these geographic units across countries in terms of population size (online supplemental table 2). We created choropleth maps of life expectancy at birth and age 65 to illustrate within-country geographic inequalities. To measure geographic inequality within each country, we used 4-year average age- and sex-specific death and population counts (2013–2016 for New Zealand and Yukon territory in Canada, 2015–2018 for all other countries) to calculate the index of dissimilarity (ID), a commonly used measure of inequality.[52] The ID is interpreted as the proportion of total deaths that would need to be reallocated to a different subnational region for a given country to achieve geographic equality in mortality.

Patient and public involvement

Patients and the public were not involved in the design, conduct, reporting, or dissemination plans of this research.

RESULTS

Life expectancy levels and trends

Among these high-income Anglophone countries, Australia has been the best performer in life expectancy at birth since the early 1990s (figure 1). For most of the period between 1990 and 2019, Canada had the second-highest life expectancy. Most recently, Ireland and New Zealand converged with Canada. In every year since 2001, the USA has been the worst performer. In the most recent decade, the UK generally had the second-lowest life expectancy. Similar trends are observed for life expectancy at age 65, with Australia generally performing the best and the US the worst. Two differences are that the

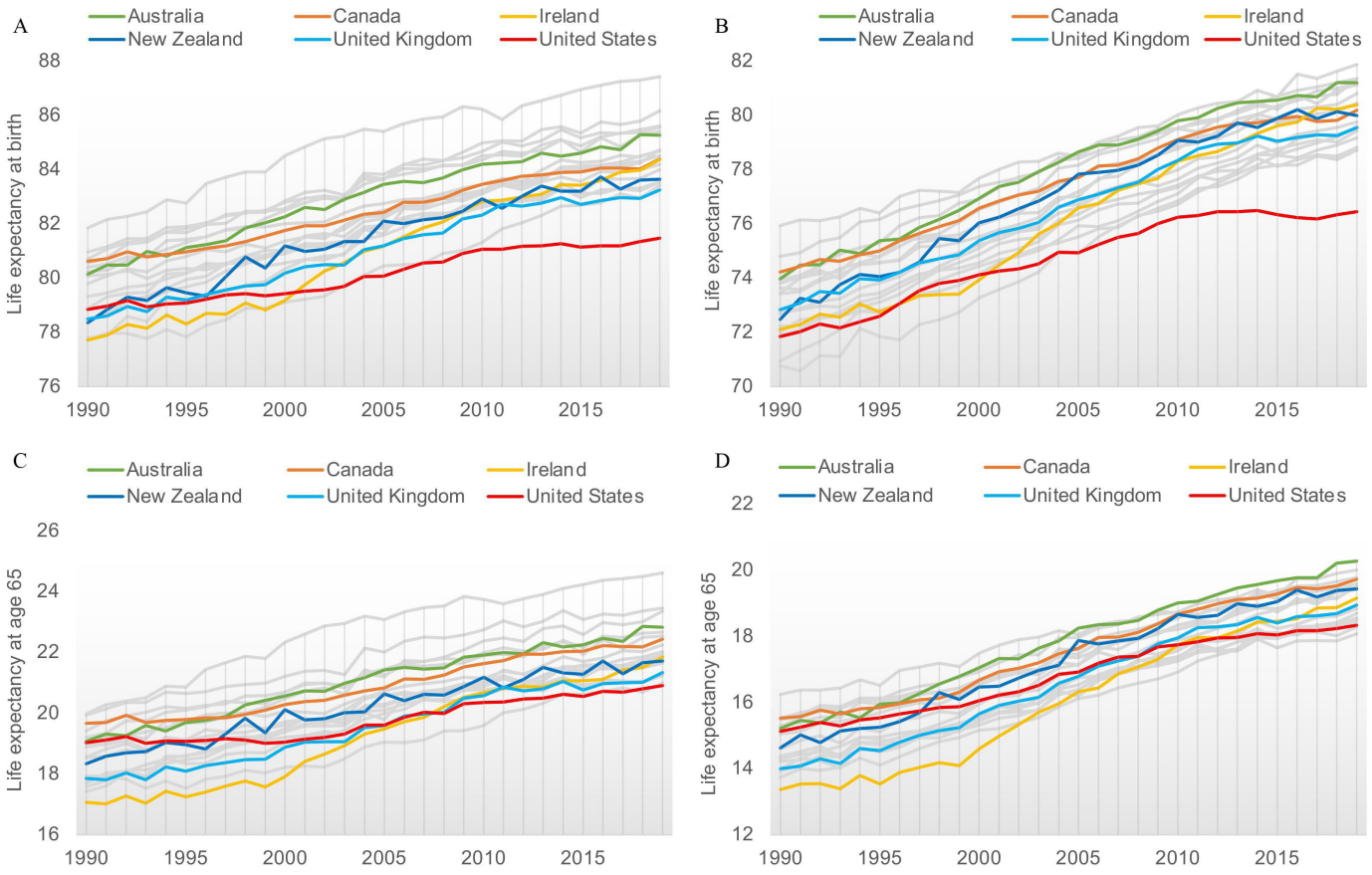

Figure 1 Life expectancy at birth for (A) women and (B) men and at age 65 for (C) women and (D) men, 20 high-income countries, 1990–2019.

USA's poor performance in life expectancy at age 65 emerged more recently and New Zealand performs relatively better at age 65.

Ireland experienced remarkable life expectancy gains between 1990 and 2019: its life expectancy at birth increased by 8.29 (men) and 6.66 (women) years. Initially, Irish men and women had the lowest or second-lowest life expectancy among these countries; by 2019, they ranked second (men) and third (women). After Ireland, New Zealand, Australia and the UK had the largest gains, while Canada and the USA experienced the smallest gains.

The gaps in life expectancy at birth between the best- and worst-performing Anglophone country widened over time. In 1990, Canadian men and women had the highest life expectancies—74.23 and 80.63 years, respectively. American men and Irish women had the lowest life expectancies—71.85 and 77.72 years, respectively. The corresponding gaps were 2.38 and 2.91 years. By 2019, these gaps had doubled to 4.75 years for men and increased by 30% for women to 3.80 years.

Comparisons to 14 additional countries contextualise where these Anglophone countries stand among the broader set of high-income countries typically considered in cross-national comparisons. Anglophone countries never ranked among the top performers in female life expectancy over this period, but they ranged from performing fairly well to having the lowest life expectancy. For example, in 2019, the best-ranked Anglophone country (Australia) had the sixth-highest life expectancy, while the worst-ranked Anglophone country (USA) had the lowest life expectancy.

In contrast, men in most Anglophone countries (except the USA) perform more favourably, typically ranking in the top half over the past decade. Australian men ranked in the top four in all but 1 year between 1990 and 2019. American men have had the lowest life expectancy since 2005. The patterns for life expectancy at age 65 are very similar. Men in high-performing Anglophone countries perform even better at age 65. For example, Australian men have been the world leaders in life expectancy at age 65 since 2009.

Age group contributions

In the subsequent analyses, we focus on comparisons across Anglophone countries. Differences in life expectancy between Australia, the best-performing country, and the other countries are shown in table 1. The contributions sum to the total difference in life expectancy at birth between each focal country and Australia. The country with the smallest gap was Canada (women, 1.26 years) or Ireland (men, 0.97 years); the country with the largest gap was the USA (3.95 and 4.88 years for women and men, respectively).

Table 1 Contributions of age groups (years and %) to differences in life expectancy at birth between each country and Australia, 2018

	Canada	Ireland	New Zealand	UK	USA
Country	Years (%)	Years (%)	Years (%)	Years (%)	Years (%)
Women					
0–24	0.24 (19.4)	−0.05 (−3.9)	0.20 (12.0)	0.06 (2.7)	0.37 (9.5)
25–44	0.15 (11.6)	0.01 (0.6)	0.11 (6.7)	0.12 (5.1)	0.58 (14.7)
45–64	0.25 (20.2)	0.11 (8.3)	0.27 (16.3)	0.49 (21.0)	1.19 (30.1)
65–84	0.67 (52.8)	1.02 (77.7)	0.76 (45.0)	1.26 (53.4)	1.55 (39.3)
85+	−0.05 (−3.9)	0.23 (17.3)	0.34 (20.0)	0.42 (17.8)	0.25 (6.4)
Total	1.26 (100.0)	1.32 (100.0)	1.68 (100.0)	2.36 (100.0)	3.95 (100.0)
Men					
0–24	0.23 (16.4)	−0.14 (−14.5)	0.16 (14.9)	0.02 (0.8)	0.59 (12.1)
25–44	0.25 (18.1)	−0.13 (−13.7)	0.04 (3.3)	0.14 (7.1)	1.03 (21.0)
45–64	0.31 (22.2)	0.06 (5.7)	0.15 (14.0)	0.48 (24.7)	1.68 (34.4)
65–84	0.58 (42.0)	0.99 (101.5)	0.52 (48.7)	1.10 (56.0)	1.47 (30.1)
85+	0.02 (1.2)	0.20 (21.0)	0.20 (19.0)	0.22 (11.3)	0.11 (2.3)
Total	1.38 (100.0)	0.97 (100.0)	1.07 (100.0)	1.96 (100.0)	4.88 (100.0)

The contribution of mortality differences at the youngest ages (0–24) varies across countries. This age group contributes to Australia's life expectancy advantage relative to New Zealand, the USA and Canada (women only), accounting for 12%–16% of life expectancy gaps for men and 9.5%–20% for women. It makes almost no contribution for the UK, while Ireland and Canadian men have lower mortality at these ages than Australia.

The next two age groups, 25–44 and 45–64, account for 45% (women) and 55% (men) of the US life expectancy shortfall. Recent mortality trends for these age groups have been particularly adverse in the USA.[12 51] These ages tend to make smaller contributions for the other countries. It is striking that even among these countries, which share relatively high levels of younger-age mortality, mortality at the young and prime adult ages still accounts for a substantial portion of the US life expectancy gap.

The 65–84 age group typically makes the single largest contribution to life expectancy gaps (American men, for whom the 45–64 age group makes the largest contribution, are the exception). Its contribution ranges from 39% (USA) to 78% (Ireland) among women, and from 30% (USA) to 100% (Ireland) among men. The open-ended age group, 85+, accounts for relatively small proportions of the gaps in the USA and Canada. Its contribution is more important for the other countries, accounting for about a fifth (women) and 11%–21% (men) of the gaps.

Cause of death contributions

Next, we examine which causes of death account for life expectancy differences between each country and Australia (figure 2). Negative bars indicate mortality from a particular cause narrows the gap; positive bars indicate a cause widens the gap. For a given country, the bars sum across the five panels to the total difference in life expectancy at birth between that country and Australia. Within each age group, five age-group-specific leading causes are highlighted, with the sixth category consisting of all remaining causes.

Starting with women, for four countries, perinatal conditions and congenital anomalies in the 0–24 age group are key contributors to life expectancy gaps; however, they are not major contributors for Ireland. Mortality from motor vehicle accidents and other external causes is higher in the USA, Canada and New Zealand, but lower in the UK and Ireland than in Australia. Drug overdose contributes to the gaps for Canada and the USA, but not for the other countries. Irish women's mortality advantage relative to Australian women at these ages comes mainly from motor vehicle accidents, drug overdose and other external causes. In the 25–44 age group, drug overdose, other external causes and cancers dominate. Drug overdose makes the largest contribution to the gap for the USA and also contributes to the gaps for Canada and the UK. Motor vehicle accidents contribute to the gaps for the USA and New Zealand, but other countries experience lower mortality than Australia. Australian women experience an advantage in cancer mortality compared with all other countries except Canada. Firearm-related deaths are only key contributors to the gap between American and Australian women.

At ages 45–64, ischaemic heart disease, other circulatory diseases, cancers and respiratory diseases are key contributors. Drug overdose continues to make sizeable contributions to the USA and UK shortfalls. The same four causes contribute to life expectancy gaps in the 65–84 age group, as do mental disorders and nervous system diseases (Alzheimer's disease and related dementias (ADRD) account for most of this category). Finally,

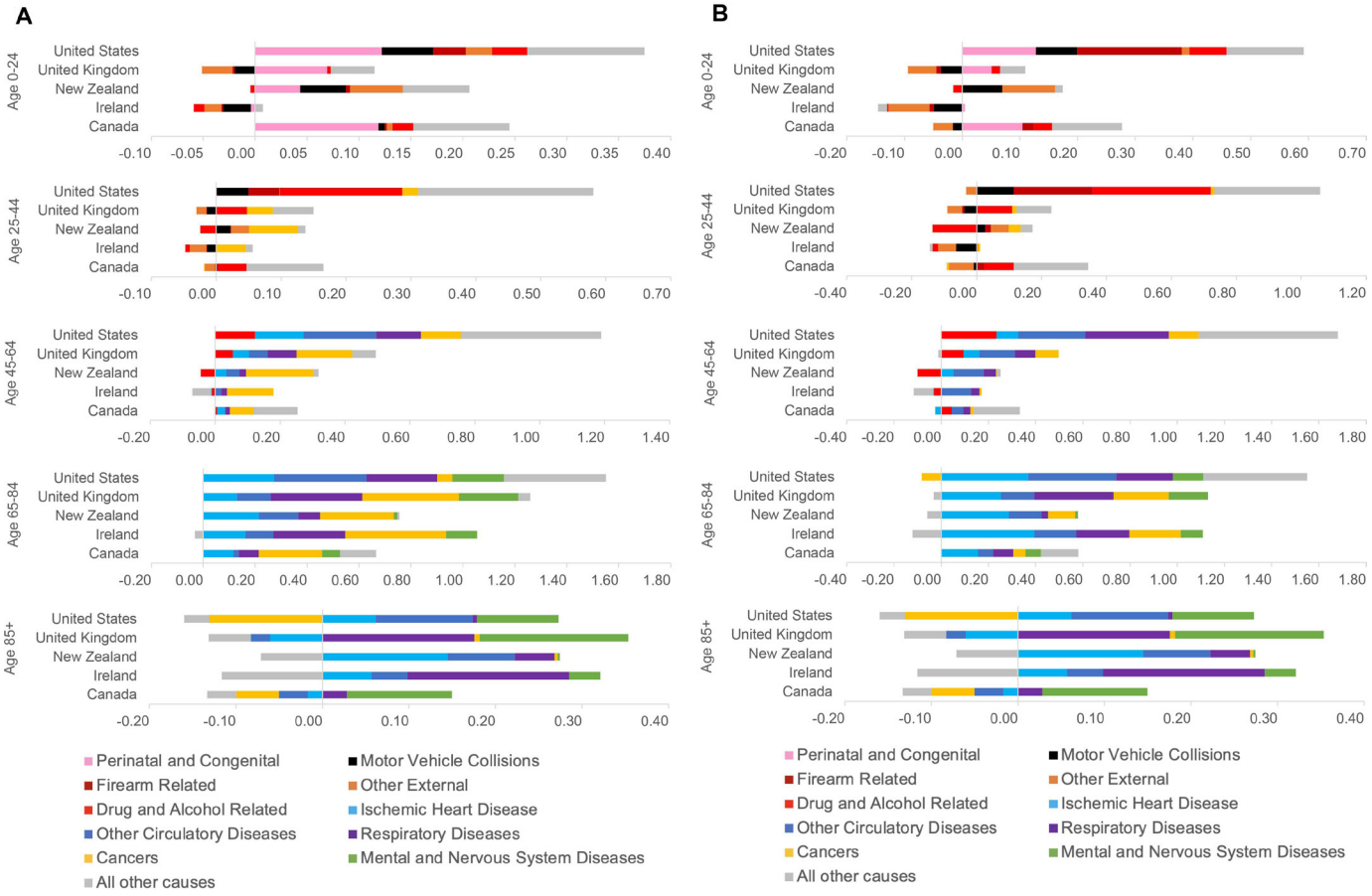

Figure 2 Cause decomposition of differences in life expectancy at birth between five Anglophone countries and Australia by age group for (A) women and (B) men, 2018. For each age group, five leading causes of death are shown, with the sixth 'all other causes' category consisting of all remaining causes of death. The 'all other causes' category differs across age groups. See online supplemental figures 1 and 2 for more detailed cause-of-death groupings.

ischaemic heart disease, other circulatory diseases, respiratory diseases and mental disorders and nervous system diseases are key contributors at ages 85+. Australian women have lower circulatory disease mortality than women in the USA, New Zealand and Ireland, but higher mortality than women in the UK and Canada. American and Canadian women have lower cancer mortality than Australian women.

Overall, the patterns for men are highly similar. Moving from younger to older age groups, we see a shift from external causes (eg, drug overdose and firearm-related deaths) and perinatal conditions and congenital anomalies as key contributors to circulatory diseases, respiratory diseases, cancers and mental disorders and nervous system diseases. Key differences are that external causes like drug overdose, alcohol-related mortality, firearm-related deaths and motor vehicle accidents make much larger contributions for men than women, and their influence persists into older age groups for men. While Australian men experience mortality advantages from cancer, these contributions tend to be smaller than for women. Circulatory and respiratory diseases are especially important contributors to the gaps for men aged 65+.

Geographic inequality within countries

We examine geographic variation in life expectancy at birth within each country (figure 3; online supplemental figures 3, 4 and table 3 show life expectancy at age 65; online supplemental figures 5–8 show additional maps). Canada and the USA contain the lowest-performing regions (13 US states in the lowest category for men and women), while all regions in the UK and Ireland have life expectancies above 81 years for women and 76.5 years for men. Australia performs particularly well: except for the Northern Territory, all Australian states fall in the top two (men) or three (women) categories. In all of the other countries except the USA, male life expectancy in at least some regions also falls into the highest category. In contrast, only one region in New Zealand falls into the top category for female life expectancy; none of the subnational regions in the other four countries reach this level of female life expectancy.

Next, we examine the index of dissimilarity, an age-specific measure of evenness in the spatial distribution of mortality within each country (table 2). Values shaded in darker red (blue) indicate higher (lower) inequality. Geographic inequality in mortality is typically highest at younger ages and decreases with age in all countries. For

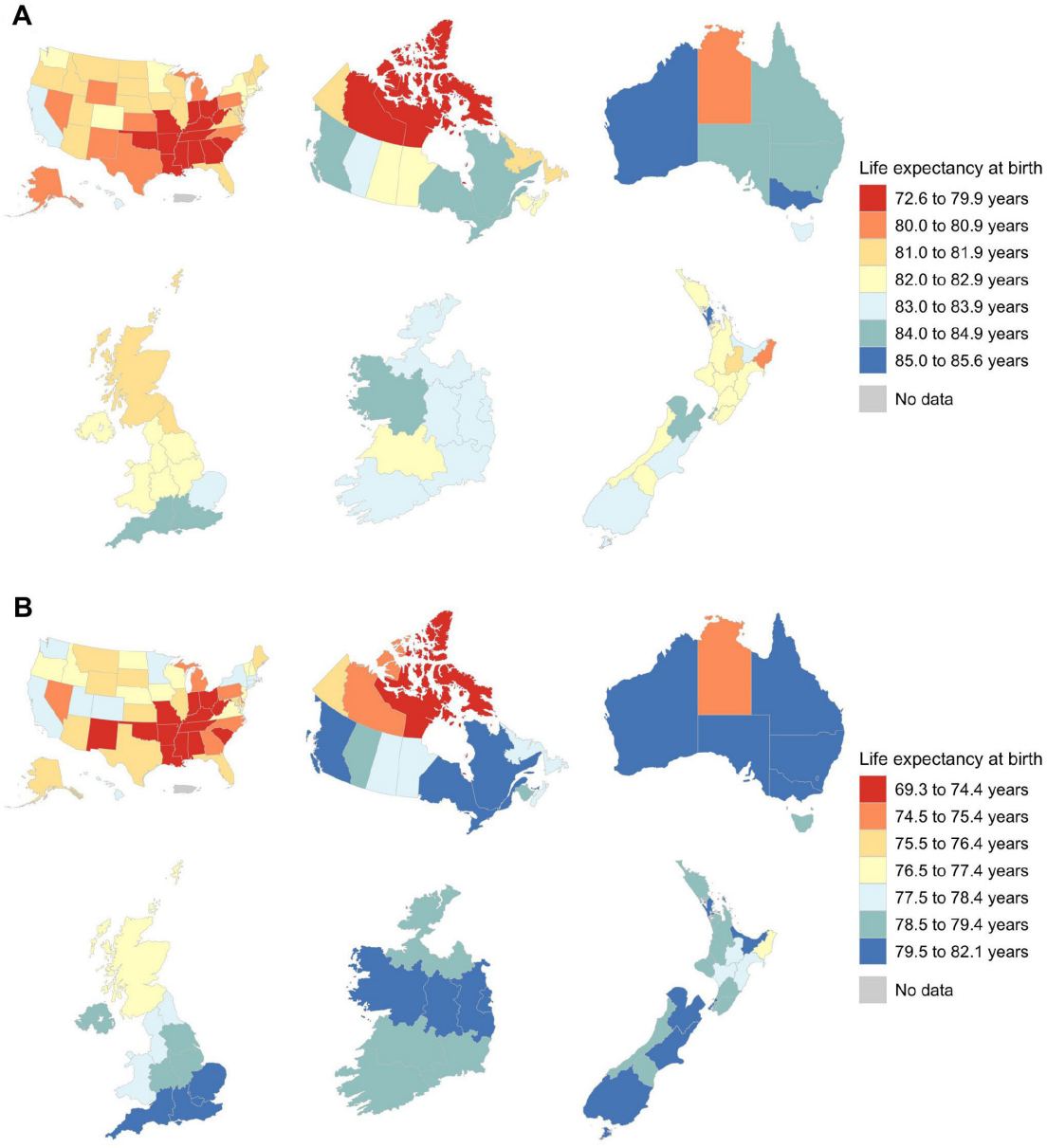

Figure 3 Life expectancy at birth by subnational region, six Anglophone countries, (A) women and (B) men, 2018. Data are for 2018 except for Yukon territory (2014–2016), Nunavut territory (2016–2018), Northwest Territories (2016–2018) and Prince Edward Island province (2016–2018) in Canada and Ireland (2016). See online supplemental figures 3 and 4 for life expectancy at age 65 and online supplemental figures 5 and 6 for additional maps using 2014–2016 for all provinces/territories in Canada.

both men and women, Australia has the lowest inequality, especially at ages above 40, followed by Canada. Among women, inequality tends to be highest in New Zealand, Ireland and the USA; among men, it is highest in New Zealand, the UK and the USA. The ID values tend to be similar for men and women within each country, with somewhat larger sex differences observed for the UK and Ireland.

DISCUSSION

The six Anglophone countries in our study represent some of the richest economies in the world and range from the worst (USA) to the best (Australian men) performers in life expectancy among high-income countries. Compared with their counterparts in other high-income countries, men in Anglophone countries tend to perform better than women. With the exception of the USA, these countries tend to have lower ratios of female-to-male life expectancy compared with other high-income countries, an interesting observation that could be explored in future research.

Australia is clearly the best-performing Anglophone country. While Australian men and women have lower mortality at nearly all ages, their mortality advantage at ages 45–84 accounts for the bulk of Australia's life expectancy advantage. At younger ages, Australia has lower mortality from perinatal conditions and congenital anomalies, drug- and alcohol-related mortality and

Table 2 Subnational indices of dissimilarity in mortality by age and country

Age	Australia	Canada	Ireland	New Zealand	UK	USA	Legend
Women							
0	0.071	0.052	0.043	0.103	0.092	0.079	0.000–0.019
5	0.075	0.066	0.105	0.178	0.071	0.083	0.020–0.044
10	0.097	0.103	0.172	0.298	0.064	0.073	0.045–0.059
15	0.064	0.151	0.156	0.195	0.069	0.090	0.060–0.069
20	0.088	0.144	0.165	0.166	0.085	0.096	0.070–0.079
25	0.051	0.107	0.181	0.195	0.086	0.116	0.080–0.099
30	0.092	0.089	0.121	0.164	0.091	0.117	0.100–0.159
35	0.054	0.093	0.071	0.133	0.113	0.111	0.160–0.299
40	0.049	0.074	0.057	0.097	0.092	0.102	
45	0.033	0.050	0.074	0.074	0.070	0.088	
50	0.027	0.040	0.077	0.065	0.057	0.083	
55	0.024	0.028	0.077	0.070	0.057	0.079	
60	0.022	0.036	0.068	0.065	0.058	0.070	
65	0.019	0.033	0.053	0.064	0.059	0.065	
70	0.018	0.027	0.070	0.056	0.057	0.063	
75	0.014	0.031	0.056	0.045	0.051	0.057	
80	0.012	0.028	0.067	0.036	0.039	0.050	
85	0.005	0.016	0.070	0.022	0.029	0.032	
Men							
0	0.065	0.094	0.062	0.103	0.066	0.085	
5	0.078	0.066	0.091	0.177	0.160	0.082	
10	0.050	0.068	0.094	0.298	0.107	0.087	
15	0.063	0.062	0.141	0.185	0.112	0.087	
20	0.093	0.048	0.130	0.165	0.143	0.079	
25	0.071	0.092	0.138	0.201	0.164	0.097	
30	0.090	0.110	0.127	0.167	0.133	0.110	
35	0.071	0.111	0.107	0.136	0.056	0.099	
40	0.048	0.110	0.077	0.097	0.080	0.093	
45	0.034	0.085	0.064	0.078	0.088	0.080	
50	0.036	0.058	0.046	0.070	0.086	0.073	
55	0.041	0.054	0.030	0.075	0.080	0.073	
60	0.028	0.048	0.024	0.064	0.076	0.070	
65	0.020	0.047	0.027	0.060	0.074	0.060	
70	0.019	0.044	0.031	0.049	0.059	0.059	
75	0.012	0.038	0.030	0.043	0.071	0.054	
80	0.013	0.034	0.029	0.044	0.062	0.048	
85	0.005	0.028	0.017	0.035	0.070	0.037	

IDs were calculated using 4-year average death and population counts from 2015 to 2018, with the exception of New Zealand IDs, which were calculated using 2013–2016 death and population counts due to a lack of subnational data published since 2016. Values shaded in darker red (blue) indicate higher (lower) inequality.
ID, index of dissimilarity.

external causes. Australia has lower motor vehicle accident mortality than similarly large (in terms of land area) countries with high driving rates, like the USA and Canada. Chronic diseases, including circulatory disease, respiratory diseases and cancers, make substantial contributions at ages 65–84. At the oldest ages, mental and nervous system diseases are important contributors to life expectancy gaps between Australia and Canada, the UK

and the USA. Possible reasons for this include differences in chronic disease burdens and smoking and alcohol consumption.[53] ADRD will likely play an increasingly important role in cross-national life expectancy differences in the coming decades.

Geographic inequalities within countries vary greatly. Our results show large and striking inequalities in Canada, reaching 12.19 (women) and 11.36 years (men). They are driven by very low life expectancy in Nunavut and the Northwest Territories, which have high percentages of people who identify as indigenous (85.8% in Nunavut and 49.6% in the Northwest Territory, respectively).[54] Previous studies found that life expectancy differentials of 10 years between indigenous (First Nations, Métis and Inuit) and non-indigenous populations in Canada.[55 56] Areas with a high percentage of residents identifying as First Nations had much higher all-cause and injury-related mortality.[57]

Indigenous inequalities are also relevant for Australia. While Australia had the lowest within-country geographic inequality, we still found disparities. Life expectancy in the worst-performing Northern territory, where Aboriginal and Torres Strait Islanders make up 30.8% of the population,[58] was 6.20 (men) and 4.96 (women) years lower than in the highest-performing state. A prior study found that the gap in life expectancy between indigenous and non-indigenous people in the Northern Territory was 16.7 years in 2000 and primarily resulted from high cardiovascular disease and diabetes mortality.[59] Indigenous populations in Australia experience higher socioeconomic disadvantage and have higher rates of smoking and obesity.[60] Interestingly, we find little variation in life expectancy among the higher-performing states in Australia.

Southern states in the USA had the lowest life expectancy, in line with prior studies.[11–13 16–18 61] Consistent with our ID results showing higher inequality in mortality at younger ages, Dollar *et al*[62] found a persistent younger age mortality disadvantage attributable to motor vehicle accidents and firearm homicides in the South, which also has higher firearm suicide rates than other regions.[63] State policies may influence these inequalities.[29] For example, southeastern states tend to have less restrictive laws regulating firearm possession.[62] Racial inequalities and behavioural factors, such as poor diet and high smoking rates, may also contribute to this disadvantage.[13 52]

In the UK, we find a distinct North-South inequality, with Northern regions having a lower life expectancy. Mortality differences between Scotland and England have historically been explained by higher levels of poverty and deprivation in Scotland.[64 65] In England and Wales, life expectancy has stalled (and the gap between the most and least deprived regions has widened) since 2011, which some hypothesise may be related to austerity measures.[66–68] Our ID analysis showing higher levels of geographic inequality for men than women in the UK suggests that men may be particularly affected.

Geographic inequality in mortality, particularly at younger ages, is generally higher for Ireland and New Zealand compared with the other countries. One potential explanation is the smaller geographic units used for these countries. However, studies have found high within-country inequalities in healthcare access, which may also contribute to subnational inequalities in Irish mortality.[45 69–71] In New Zealand, inequalities between indigenous (Māori) and non-indigenous populations[72 73] and by neighbourhood socioeconomic deprivation[74] may contribute to geographic inequalities in mortality.

Given their proximity, it is interesting that Australia outperforms New Zealand. To the best of our knowledge, this question has not been extensively explored by existing studies. Prior explanations include differences in historical migration streams (ie, Australia received more migrants from Northern and Southern Europe while New Zealand received more migrants from Northern Europe and the Pacific Islands, who had potentially higher circulatory disease rates[75]), healthcare systems and population composition.[75 76] While indigenous groups like the Aboriginal and Torres Strait Islanders experience large disadvantages in Australia, these populations make up a very small percentage of the overall population (3.8% in 2021)[58] and are concentrated in the Northern Territory. In contrast, indigenous populations constitute a much higher proportion of the population (16.5% in 2018)[77] in New Zealand.

Several factors may explain why life expectancy in Australia is higher than in other Anglophone countries more generally. Australia has the highest foreign-born share of its population, reaching nearly 30% in 2018.[78] Prior studies have found that immigrants, who tend to have higher life expectancy than the native-born, can make important contributions to national life expectancy.[79–81] In 2000, immigrants contributed 0.3–0.4 years to Australian life expectancy.[79] These contributions reached 1.4–1.5 years in the USA[80] and 0.16–0.17 years in some Nordic countries in the 2010s.[81] The foreign-born share of the population is around half of Australia's in lower-performing countries like the USA and the UK. How immigration influences Australia's advantage is unclear but constitutes a fruitful area for future research.

Considering health behaviours, Australia had a less severe smoking epidemic, particularly compared with the USA and the UK. Australian men have had faster reductions in smoking-attributable mortality since the 1980s and, along with men in New Zealand, they had the lowest level of smoking-attributable mortality by the early 2000s among these six countries.[82] Among these countries, Australian women had the lowest levels of smoking-attributable mortality in 1980 and 2003.[82] These patterns could contribute to Australia's lower mortality from respiratory diseases, cancers and circulatory diseases.[83] However, Australia has the second-highest obesity rate, suggesting that its health and life expectancy levels could be improved further.

Australia tends to have lower firearm-, drug- and alcohol-related mortality. This may be related to its strong public health efforts. In 1996, Australia instituted strong gun law

reforms, followed by substantial buyback programmes.[84] In 2006, Australia implemented an innovative national network for youth mental healthcare (headspace), which may have improved mental health literacy and provided timely access to mental health services.[85 86] These, in turn, may reduce suicide and drug- and alcohol-related mortality. Finally, a 2021 Commonwealth Fund report found that Australia's healthcare system outperformed that of the UK, New Zealand, Canada and the USA.[87 88] Australia experiences a mortality advantage from circulatory and respiratory diseases, cancers and perinatal and congenital conditions, which are linked to superior healthcare system performance (eg, cancer screening and treatment, influenza vaccination, and cardiovascular disease prevention, diagnosis and treatment).

Cross-national differences in cause of death coding are one potential limitation of our study. This may be particularly relevant for causes like ADRD and the 'symptoms, signs and abnormal clinical and laboratory findings' category,[89] and for mortality at the oldest ages, as causes of death may be harder to differentiate among people with multiple chronic conditions.[90] These issues are important to keep in mind when considering findings at the oldest ages (eg, the 85+ age groups in figure 2). However, all of the countries in this study are high-income, developed countries with well-functioning vital registration systems. We used categories that are broad enough to avoid relying on fine distinctions between causes but still informative enough to draw meaningful conclusions.

We have maximised comparability across countries given the limited availability of subnational mortality data. However, it is possible we might find larger inequalities if data for smaller geographic units were available. For example, previous studies have found that life expectancy varied by up to 17.4 years for men between local neighbourhoods in Glasgow in 2017–2019.[91] However, understanding disparities at the state or regional levels is important given that health or economic policymaking often occurs at these levels.

CONCLUSIONS

Although Anglophone countries have shared characteristics, large differences exist among them. In 2019, period life expectancy at birth for men in Australia, the best-performing country, was 4.75 years higher than in the USA, the worst-performing country. Australia's life expectancy advantage comes from its consistently lower mortality from perinatal conditions, drug overdoses, cancers, circulatory diseases, respiratory diseases and mental and nervous system diseases. Not only does Australia exhibit superior performance at the national level, but it also has the lowest within-country geographic inequality. Australia performs well but still has room for improvement, particularly in the area of reducing inequalities among its indigenous populations. Overall, Australia offers a potential model for lower-performing Anglophone countries, such as the USA and UK, to follow to reduce both premature mortality and inequalities in life expectancy.

Contributors JYH conceived and designed the study. JYH and RZW collected and analysed the data. JYH and RZW drafted the initial manuscript and revised the manuscript. All authors approved the final version of the paper. JYH and RZW are responsible for the overall content as guarantors.

Funding Research reported in this publication was supported by the National Institute On Aging of the National Institutes of Health under Award Numbers R01 AG060115 and R01 AG080438. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval Ethics approval was not required for this study since it is not considered human subjects research. The study is based on secondary analysis of aggregate vital statistics data.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available in a public, open access repository. All data used in this study are publicly available from the Human Mortality Database, the WHO Mortality Database and the respective vital statistics agencies of the countries considered in this study.

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