The ageing of Asian migrant populations in Australia: projections and implications for aged care services

Tom Wilson*, Demography and Ageing Unit, Melbourne School of Population and Global Health, University of Melbourne, Australia.

* Corresponding author.

Email: wilson.t1@unimelb.edu.au

Mobile: +61 (0)423 342745

Postal address: Melbourne School of Population and Global Health, Level 5, 207 Bouverie St, University of Melbourne, Victoria 3010, Australia

ORCID: https://orcid.org/0000-0001-8812-7556

Jeromey Temple, Demography and Ageing Unit, Melbourne School of Population and Global Health, University of Melbourne, Australia.

Email: jeromey.temple@unimelb.edu.au

ORCID: https://orcid.org/0000-0002-2819-2863

Bianca Brijnath, National Ageing Research Institute (NARI), Australia

Email: B.Brijnath@nari.edu.au

ORCID: https://orcid.org/0000-0002-0536-6859

Ariane Utomo, School of Geography, Earth and Atmospheric Sciences, University of Melbourne, Australia.

Email: ariane.utomo@unimelb.edu.au

ORCID: https://orcid.org/0000-0003-2314-9513

Peter McDonald, Demography and Ageing Unit, Melbourne School of Population and Global Health, University of Melbourne, Australia.

Email: mcdonald.p@unimelb.edu.au

ORCID: https://orcid.org/0000-0001-5579-0335

Abstract

Until the 1970s the Asia-born population of Australia remained small due to the racist White Australia Policy which denied entry to non-Europeans. Following its abolition in the early 1970s, Asian immigration progressively intensified over the subsequent decades, and in 2016 the Asia-born population of the country reached a total of 2.7 million, though the older population aged 65+ remained relatively small. This paper presents new projections of Australia's older Asia-born populations from 2016 to 2056 created with a new birthplace projection model. The results show substantial growth of the older Asia-born population can be expected over coming decades, along with changing composition by country of birth. The Asia-born proportion of Australia's older population overall is projected to rise from just 6 per cent in 2016 to 19 per cent in 2056. These coming demographic changes present service providers and policy makers with a number of challenges and opportunities – in particular relating to the provision of culturally appropriate residential and community aged care.

Key words

Population projections; Australia; Asia; migrant populations; population ageing; aged care

Word count

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1. Introduction

Two important shifts in the composition of Australia's population are currently underway. The first, in common with many countries, is population ageing: a shift in the age structure of the population driven by below-replacement fertility and increasing life expectancy (McDonald 2016). The second is changing population composition owing to migration. As in many other immigrant-receiving high-income countries (Czaika and de Haas 2014), Australia's migrant populations are becoming increasingly diverse, with more migrants arriving from non-European origins over time (Hugo, 2008; Khoo 2003; Wilson et al. 2020). While immigration flows have the potential to decelerate population ageing, migrants themselves make-up an increasing share of the older population. Indeed, a considerable amount of literature has begun to examine population ageing in this context of greater diversity of origins in many countries (see Ciobanu 2019; Thompson 2014; Rallu 2017; Warnes and Williams 2006; Biggs and Daatland 2004).

From the time of Australia's creation as a federation of states in 1901 up until the early 1970s, immigration policy strongly favoured British and other European migrants, and discriminated against those from other parts of the world. The 1901 Immigration Restriction Act (the 'White Australia Policy') effectively prohibited non-Europeans from permanent settlement, although temporary migration for work or study was permitted in some cases (Jupp 1995). In the period after World War 2 some restrictions were eased and immigration of the Asia-born increased (Hugo 2003). According to the 1971 Census, Australia's Asia-born population totalled just over 100,000, representing 4 per cent of the overseas-born population at the time (Australian Bureau of Statistics 2014). The vast majority of the overseas-born (86 per cent) remained European. With the dismantling of the racist White

Australia Policy in the late 1960s and early 1970s, immigration flows from non-European origins, particularly Asian countries, progressively increased (McDonald 2019). By 2016, the Asia-born population of Australia had grown to 2.7 million, comprising 39 per cent of the overseas-born, whilst the Europe-born share stood at 34 per cent (Australian Bureau of Statistics 2019a).

In this paper, we examine the possible future size and age structure of Asian migrant populations, focusing primarily on the older population. The fundamental purpose is to provide the demographic context for informing aged care policy and service provision for the coming growth and changing age structure of Australia's diverse migrant populations. Following convention, we define the older population as those aged 65 years and above. Population ageing is viewed from two perspectives: *numerical* ageing, which is defined as an absolute increase in population size in the older ages, and *structural* ageing, which refers to an increasing proportion of the population in the older ages. Asia is defined as those regions classified as Asian in the Australian Bureau of Statistics' classification of birthplace regions (shown in Table 1). We present projections of population ageing for the Asia-born population of Australia overall, the broad regional birthplace categories, as well as selected individual countries of birth with the largest migrant populations in Australia in 2016, namely Thailand, Vietnam, Indonesia, Malaysia, Philippines, China (excluding Special Autonomous Regions and Taiwan), South Korea, India, Pakistan, and Sri Lanka.

[Table 1 about here]

Over the last few decades only a small amount of research has been undertaken on the future demographic development of these growing and ageing migrant populations and their needs.

In a recent paper we provided an overview of the likely future of Australia's older population by migrant origins (Wilson et al. 2020). But that work was prepared prior to the enormous disruption to Australia's immigration intake created by the COVID-19 pandemic, and consisted of a broad overview of all migrant populations without a detailed demographic and policy focus on older populations of Asian origin. Prior to that, the most recent projections of older migrant populations in Australia were produced by Gibson et al. (2001) nearly 20 years ago. No official projections by country of birth or ethnicity exist in Australia, except for projections of the Aboriginal and Torres Strait Islander population (e.g. Australian Bureau of Statistics 2019e). Birthplace and ethnic group projections are relatively uncommon internationally as well, probably at least in part due to the substantial data requirements and modelling complexity. Only a few national statistical agencies produce such projections of their populations, including Statistics Canada (Morency et al. 2017), Statistics New Zealand (2017), and the US Census Bureau (2018). Academic projections of this nature are also relatively rare, but examples include Rees et al. (2017) and Lomax et al. (2020) for the UK, Rallu (2017) for France, and Edmonston et al. (2002) for the US.

The aim of this paper is to chart the likely future growth and development of Australia's older migrant populations born in Asia over the period from 2016 to 2056, taking into account the likely changes to demographic trends created by COVID-19. Specifically, we seek to address three questions:

(1) To what extent are Australia's Asia-born populations likely to experience population ageing in coming decades?

(2) What demographic factors will drive the projected changes? and

(3) What are the implications for aged care policy, planning, and provision for Australia's older migrant populations from Asia?

2. An overview of Asian migration to Australia

The ageing of contemporary Asian migrant populations is a function of historical trends in international migration to Australia. In 1861, the first year that the six Australian colonies held simultaneous censuses, there were 38,258 migrants in Australia who were born in China. However, from the 1870s racially restrictive migration policies were implemented in Australia, the United States, Canada, and New Zealand (Price 1974). In 1901, the first Act to be passed by the first Australian Parliament was the Immigration Restriction Act to exclude the entry of non-Europeans, which became known as the White Australia Policy (McDonald 2019). Demonstrating the effectiveness of the policy is the fact that the 1921 Census enumerated 14,859 Chinese males and 365 Chinese females in Australia, essentially the survivors of the 1850s gold rush (Wickens 1924).

While by 1961 there were 20,282 persons in Australia recorded as born in "British India", 6,018 born in Indonesia, and 8,852 persons born in Malaysia and Singapore, the effectiveness of the White Australia Policy is indicated by the fact that most of these people were of European origin (Commonwealth Bureau of Census and Statistics 1963). At the 1961 Census, only 679 persons born in Asia were 'Indian or Pakistani race' and only 276 persons born in Asia were Indonesian races (Commonwealth Bureau of Census and Statistics 1967). In the colonial period, many Europeans were employed in the colonies that their countries held and had their children in these countries. With independence across Asian countries, most people who had been born in Asian colonies but were European in their origin returned to the country of birth of their parents or migrated to countries such as Australia. Dutch people had also fled from Indonesia to Australia when Japan invaded Southeast Asia.

There are two main points to be made about this history. First, by the time the White Australia Policy was abolished in the early 1970s, there were very few people of Asian origin in Australia. Second, among older people in the 2016 Census, based on tables of country of birth by ancestry, around 40-50 per cent of those born in South Asia and Southeast Asia were European in origin (Australian Bureau of Statistics 2020).

Between 1966 and 1976, there was a small increase in the numbers from various countries of birth, especially India (Australian Bureau of Statistics 2019a). Independent India, more than any other country, was critical of countries that excluded Asians on the basis of race (for example, Chandrasekhar, 2011, first published in 1954). However, the first real test of the new non-discriminatory policy of migration to Australia was the arrival of very large numbers of refugees from Vietnam, Cambodia and Laos. By 1996, there were 159,000 Vietnam-born persons in Australia, a substantial increase from around 2,000 in 1976.

The next major surge was in the 1990s when large numbers of Chinese students in Australia were permitted to remain in Australia following the Tiananmen Square protests. However, the largest increase in Asia-born residents of Australia came with the general expansion of international education in Australia that has been taken up by students from many countries, but especially those from China and India. The number of China-born persons rose from 153,000 in 2001 to 558,000 in 2016 while, in the same period, the number of India-born rose from 98,000 to 489,000 (Australian Bureau of Statistics 2019d). These massive increases were driven by initial entry as an international student but by subsequent conversion to permanent residence and nomination of family members as residents of Australia (McDonald, Moyle, & Temple, 2019).

Overall, there has been a fundamental shift in the flows of Asian migration to Australia in the post-White Australia Policy period. While earlier waves of Asian migrants saw large numbers arriving under humanitarian channels, large numbers in the recent waves arrived under the skilled migration streams (Millbank 1996). On the one hand, such shifts the size and composition of Asian migration to Australia is shaped by the change in Australia's migration policy, particularly the government's support for temporary migration for international students and for skilled migration scheme in the late 1990s (Ben-Moshe, Pyke, & Kirpitchenko 2016; Robertson 2011). On the other hand, they are also driven by transformative socio-economic change across major sending countries in the region. Asia is a highly diverse continent where sixty-one per cent of the global population (4.7 billion) lives (United Nations 2019), and is currently the top source region of skilled migration to countries like Australia, Canada, and New Zealand. With increasing income levels across Asia, the increasing flow of migration from the region to Australia thus reflect transformative changes in its population's capability and aspirations to migrate overseas for education and employment opportunities (see De Haas 2010). Former students taking up permanent residence in Australia are, by definition, well-educated and most find jobs with relatively high levels of remuneration. Implications for future service provision derive not from the former students themselves but more from their parents who have also taken up residence in Australia. Older Chinese speakers in Australia in 2016 were the leading group that had poor English skills (McDonald et al., 2019).

3. Data and methods

3.1. Input data

Nearly all data for this study was obtained from the Australian Bureau of Statistics (ABS), though some data adjustment, disaggregation and estimation was necessary to prepare the required projection model inputs. The projection model required for each birthplace population 'jump-off' populations, age-specific rates of mortality and emigration, and age-specific immigration numbers, and national age-specific fertility rates.

Estimated Resident Populations (ERPs) for mid-2016 were prepared broken down by birthplace, sex and single years of age. The most detailed age groups in ERPs by birthplace published by the ABS are for five-year age ranges (Australian Bureau of Statistics 2019d) so these were disaggregated to single years of age using 2016 Census counts of populations by country of birth. Iterative proportional fitting was applied to ensure consistency with national ERPs (without birthplace detail) by sex and single years of age.

Age-specific fertility rates for the national Australian population were obtained from the ABS for 2011-18 (Australian Bureau of Statistics 2019b). The projection model (described in section 3.3 below) does not require fertility by country of birth. Mortality data by country of birth available from the ABS consisted of deaths by sex and age group for selected countries (Australian Bureau of Statistics 2019c). Deaths were aggregated for the five-year period from mid-2011 to mid-2016 and divided by country of birth populations to create death rates. Abridged life tables were then calculated for the selected countries of birth (Preston et al. 2001). For those countries excluded from the ABS dataset we used the average mortality of the overseas-born as a whole.

Immigration and emigration flows by country of birth, sex, and single years of age for 2011-16 were purchased from the ABS. Minor adjustments were made to these data ensure population accounting consistency over the 2011-16 base period. Both immigration and emigration were adjusted by the same proportional amount so that 2011 ERPs when subject to immigration, emigration, deaths, and (for the Australia-born only) births, resulted in or were close to the 2016 ERPs.

3.2. Projection assumptions

Projection assumptions were formulated to create a projection which incorporates the possible impact of the COVID-19 pandemic over the next few years before returning to long-run historical trends. Informed by the fertility projections by McDonald (2020), fertility rates were assumed to experience a temporary fall due to the COVID-19 recession, reaching a TFR of 1.55 in 2020-21 (the 12 month projection interval starting on 1 July 2020 and ending on 30 June 2021), followed by gradual recovery and modest recuperation. The national long-run TFR was set at 1.70.

Immigration assumptions were prepared as birthplace-specific age-specific immigration flows, while emigration assumptions were projected using birthplace-specific age-specific emigration rates. This is a common approach in national population projections (Wilson and Rees 2021). Both immigration and emigration were assumed to drop dramatically in 2020 due to the closure of the Australian border in March 2020. From a total of 536,000 recorded in 2018-19, annual immigration was projected to drop to just 25,000 in 2020-21 before recovering to 150,000 in 2021-22, and then increasing over the next few years to a typical pre-COVID intake of 500,000 by 2025-26, and increasing by 1 per cent per year thereafter.

These assumptions were based on judgement, informed by the Australian Government's short-term migration forecasts published as part of the 2020 budget (Australian Government 2020). Birthplace-specific immigration flows were assumed to fall, and then recover, by the same proportion as the national immigration trend. The shape of all immigration age profiles, however, was held constant throughout the projection horizon.

Emigration rates were similarly assumed to fall dramatically, resulting in total net international migration values of about -50,000 in 2020-21 and 25,000 in 2021-22, with gradual increases in emigration rates over the next three years. Emigration rates observed in 2011-16 were assumed to remain unchanged from 2025-26. All birthplace-specific emigration rates were assumed to experience a short-term drop due to the border closure in parallel with the national trend. The shape of the emigration rate age profiles was assumed to be constant throughout the projection horizon.

Because of the considerable uncertainty surrounding the future of migration – due to policy settings, global economic trends, and post-COVID realities – we assumed a return to a 'business as usual' approach for our main migration assumption. However, to allow for possible higher or lower migration outcomes, we also created High and Low immigration scenarios. In the High immigration scenario, annual immigration flows to Australia are 25 per cent higher than in the main series projection from 2021-22 onwards. Immigration increases from the small COVID-related immigration numbers of 2020-21 to reach 625,000 by 2025-26, increasing by 1 per cent per year thereafter. In the Low immigration scenario, immigration is 25 per cent lower than the main series from 2021-22 onwards, rising to 375,000 by 2025-26 and also increasing by 1 per cent from then on. In both scenarios all birthplace-specific immigration flows are raised or lowered by 25 per cent, mirroring the

national assumption. Emigration rates remain unchanged from the main scenario, though projected emigration flows vary according to the higher and lower populations-at-risk in these scenarios.

Given the limited effect of the COVID-19 pandemic on mortality in Australia to date, we assume no interruption to long-run mortality trends. Using Ediev's (2008) mortality projection method, we projected national female life expectancy at birth increasing to 90.5 years by 2055-56 with male life expectancy reaching 88.5 years by this time. Death rates for birthplace populations were calculated by using the projected national life tables as model life tables (Wilson 2018). There were three steps. First, the difference between birthplace-specific life expectancy at birth by sex and national life expectancy at birth for the 2011-16 period was calculated. Second, birthplace-specific life expectancy projections were created by taking the national life expectancy projection and maintaining the life expectancy differentials throughout the projection horizon. Third, age-specific death rates for each birthplace-specific population were obtained from various points in the national life tables where the death rates matched the birthplace-specific life expectancy assumptions.

Clearly, these assumptions represent just one possible future. In the long run, fertility, mortality and migration will certainly deviate to some extent from the assumptions used here. For the overseas-born older populations, mortality is the key demographic component, though international migration is also important in the longer term. We do not know for sure if the life expectancy improvements of the last few decades will continue or not (Garssen 2006), though in the short run life expectancy is usually quite predictable. International migration, however, tends to be much more volatile and projection errors quite high (Wilson 2007). But it tends to be relatively low at the older ages, so the main effects of migration

only emerge indirectly further into the future when younger cohorts, which experienced higher levels of migration when they were in the young adult ages, move into the older age groups. We therefore expect our projections of the older overseas-born populations to be reasonably accurate for the first decade or two of the projection horizon, and gradually decline in accuracy over future decades. The effects of mortality and migration on the projections are quantified in the decomposition (introduced in section 3.4 and reported in section 4.3).

3.3. Projection model

Population projections were produced by a birthplace-specific cohort-component projection model. The core of the model consists of population accounting equations based on movement population accounts (Rees 1984). For any period-cohort (except newly-born babies) the population is projected forwards in time and age using the accounting equation:

$$P^{i}_{s,a+1}(t+1) = P^{i}_{s,a}(t) - D^{i}_{s,a\rightarrow a+1} + I^{i}_{s,a\rightarrow a+1} - E^{i}_{s,a\rightarrow a+1} \quad (1)$$

where P is population, D is deaths, I is immigration, E is emigration, i is a birthplace population (referring to any overseas-born population or Australia), s is sex, t a point in time, $t+1$ one year after t, a is age group, and $a \rightarrow a+1$ is a period-cohort aged a at time t and aged $a+1$ at time $t+1$.

Deaths and emigration are calculated as a rate multiplied by the number of person-years at risk (approximated as the mean of the start- and end-of-interval period-cohort populations). For example, the number of deaths is projected as:

$$D^{i}_{s,a\rightarrow a+1} = d^{i}_{s,a\rightarrow a+1}\ \tfrac{1}{2}\left(P^{i}_{s,a}(t) + P^{i}_{s,a+1}(t+1)\right) \quad (2)$$

where d is the death rate. The equations are calculated in an iterative manner so that the end-of-interval population on the right-hand side of equations 2 and 3 can be updated in

successive iterations (Rees 1984). We prefer this approach over a matrix arrangement because it produces the projected demographic components of change directly and is simple to program. Immigration is projected directly as a migration flow because it is affected less by populations-at-risk and more by migration policies.

Because all births to overseas-born mothers which take place in Australia are, by definition, part the Australia-born population, births were calculated using fertility rates and populations-at-risk for the whole Australian population without birthplace disaggregation. Thus:

$$B^{Aus} = \sum_a \left(b_a \ \frac{1}{2}\left[P_{f,a}(t) + P_{f,a}(t+1)\right]\right) \quad (3)$$

where Aus is Australia-born, b is the age-specific fertility rate, and f denotes female. For the Australia-born population aged 0 at time $t+1$, the accounting equation differs from equation 1 because births replace the start-of-interval population:

$$P_{s,0}^{Aus}(t+1) = B_s^{Aus} - D_{s,b\to 0}^{Aus} + I_{s,b\to 0}^{Aus} - E_{s,b\to 0}^{Aus} \quad (4)$$

where $b \to 0$ refers to the cohort born during the projection interval and aged 0 at time $t+1$. The equivalent for any overseas-born population aged 0 at time $t+1$ is:

$$P_{s,0}^{i}(t+1) = I_{s,b\to 0}^{i} - \ D_{s,b\to 0}^{i} - E_{s,b\to 0}^{i} \quad (5)$$

which excludes births by definition (because all births to overseas-born populations which occur in Australia are part of the Australia-born population).

3.4. Decomposition

To quantify the contributions of different demographic factors affecting the growth of the older migrant populations, we undertook a simple decomposition similar to that of Bongaarts and Bulatao (1999). This revealed the extent to which growth of the older populations over the projection horizon was due to (i) increasing life expectancy, (ii) international migration,

and (iii) cohort flow – the effect of different cohort sizes in the initial 2016 populations which move up into the 65+ population over time. In addition to the projections already calculated (referred to as the Standard projection for the purposes of the decomposition), two hypothetical variant projections were created in which all assumptions were the same as in the Standard projection except for one factor. They were:

(1) the Fixed Mortality variant, which included the Standard projection assumptions for the TFR, immigration and emigration, but life expectancy was held constant throughout the projection horizon;

(2) the No Migration variant, which included the Standard projection assumptions for the TFR and life expectancy, but zero immigration and emigration.

The effect of life expectancy improvements was calculated as the difference in populations between the Standard projection and the Fixed Mortality variant; the contribution of international migration was determined as the difference between the Standard projection and the No Migration variant. The remaining growth was assigned to cohort flow[1]. This type of decomposition approach has been applied to determine the relative contributions of demographic processes driving population growth in a number of studies, including the United Nations global and national population projections (Andreev at al. 2013) and subnational ethnic group projected population growth in the UK (Rees et al. 2013).

4. Results

[1] There is actually a small degree of approximation in this approach to decomposition because it does not account for interaction between migration and mortality. To assess the extent of the approximation, we created a separate projection variant which removed both international migration and life expectancy improvements. The difference between the standard projection and this additional variant is an alternative estimate of the impact of cohort flow, and it was close to our residual estimate. The advantage of our approach is its simplicity and the fact that the three contributors to growth sum exactly to actual projected growth.

4.1. Numerical ageing

The projected sizes of older Asia-born migrant populations are shown in Table 2a alongside selected past estimates to provide context. For the Asia-born as a whole, the population aged 65+ is expected to continue the rapid growth of the last two decades, increasing from 222,000 in 2016 to 1.54 million by 2056. This represents an increase of 595 per cent between 2016 and 2056. As a comparison, the 65+ age group of the non-Asian migrant population ('Rest of the world' birthplaces) is projected to grow by 52 per cent over the projection horizon and the Australia-born by 117 per cent. The Europe-born component of the older non-Asian migrant population has a much older age structure and is projected to peak in size in the 2030s and then start declining (Wilson et al. 2021). Consequently, the Asia-born proportion of Australia's older population is expected to rise, increasing from a 6 per cent share in 2016 to 19 per cent in 2056.

[Table 2a about here]

Among the regional categories, substantial growth of the older population is anticipated for all six Asian birthplace regions. The largest increase (in both numerical and proportional terms) is projected for the Southern Asia-born, for which the older population of 50,000 in 2016 is projected to increase to nearly 10 times that number over the 40 years to 2056 (an increase of 883 per cent). The next largest numerical increase is expected for the Chinese Asia-born population, which is projected to grow from 65,000 in 2016 to 404,000 by 2056 (a 517 per cent increase). Older populations born in Japan & the Koreas and Central Asia are currently much smaller but will grow rapidly. For the selected individual countries of birth, absolute growth is projected to strongest for the larger China-born and India-born populations, followed by those born in Vietnam and the Philippines.

Projections of the 65+ population according to the High and Low immigration scenarios are shown in Tables 2b and 2c. Despite the substantial differences in migration assumptions between scenarios, the effect on the size of the projected 65+ age group is modest. Under the Low immigration scenario, the Asia-born population of Australia aged 65+ reaches 1.40 million by 2056 (9 per cent lower than in the main series) while under the High immigration scenario it grows to 1.68 million (8 per cent higher). The projected populations of each of the selected birthplace groups aged 65+ according to all three scenarios are presented in Appendix Figure A. These graphs demonstrate that notable differences in population size between scenarios only emerge towards the end of the projection horizon. The reason for this is because the majority of immigration and emigration flows are concentrated in the young adult ages. It takes many decades for cohorts subject to the bulk of the High/Low variation in migration flows to work their way up into the 65+ age group.

[Tables 2b and 2c about here]

Table 3 presents projections for those aged 80 years and above, the age group of the population with the greatest health and aged care needs. Although absolute projected growth is of course smaller at these high ages, proportional growth is very high. The overall Asia-born 80+ population is projected to grow from 46,000 in 2016 to 468,000 by 2056 (a huge increase of 912 per cent). For non-Asian migrant birthplaces, the 80+ population is projected to grow by 135 per cent over the projection horizon, while the equivalent Australia-born figure is 236 per cent. The Asia-born share of Australia's 80+ population is therefore expected to rise from just 5 per cent in 2016 to 15 per cent by 2056.

Projected growth of the regional birthplace populations aged 80+ is numerically greatest for those born in Chinese Asia (16,000 in 2016 to 126,000 in 2056) and Southern Asia (11,000 to 110,000), followed closely by Mainland South East Asia and Maritime South East Asia. Among the selected individual countries of birth, the greatest projected increases are for China, Vietnam, and India.

[Table 3 about here]

4.2. Structural ageing

The past and projected shares of population in the 65+ age group amongst the Asia-born populations are presented in Table 4. For the Asia-born as a whole, the share of population aged 65+ is projected to increase from 8.3 per cent in 2016 to 22.2 per cent by 2056. This is faster ageing than for the non-Asian overseas-born migrant populations ('Rest of the world' birthplaces in Table 4) for which the share aged 65+ is projected to increase only from 27.4 per cent in 2016 to 30.4 per cent by 2056. The majority of this latter group consists of longer-established Europe-born migrant populations.

The projected amount of structural ageing varies among the six birthplace regions, with smallest percentage point increase of the 65+ population share expected for Southern Asia (6.3 per cent aged 65+ in 2016 to 19.3 per cent in 2056) and the largest for Mainland South East Asia (9.7 per cent to 29.8 per cent). Much depends on the volume and age structure of the net gain in international migration in the young and middle adult ages over the course of the projection horizon. Among the selected individual countries of birth, the Pakistan-born population is projected to age the least and the Vietnam-born the most. But none of the

populations shown in Table 4 will experience only modest structural population ageing; ageing will be considerable for all these migrant populations over the next few decades.

[Table 4 about here]

4.3. Demographic factors behind growth

The population pyramids in Figure 1 show the projected progression of population age-sex structures for the Asia-born population as a whole and the four larger regional birthplace populations. They provide useful clues about the demographic drivers of growth and ageing, and are particularly good at illustrating cohort flow (the shift of cohorts up the population pyramid to older age groups over time) for the middle and older adult ages, and net international migration gains at the young adult ages (where there is much less cohort flow and little mortality). For the Asia-born population overall, the 2016 age structure is dominated by the young adult ages, indicating considerable flows of recent immigration. Many are international students and recent graduates. The huge growth in population across these younger ages by 2036 and 2056 is the result of continued large net international migration gains over the coming decades. Growth in the middle and older adult ages is also expected to be considerable, due to immigrants who arrived in earlier years moving up the population pyramid as they age (cohort flow), supplemented by some net international migration gains.

[Figure 1 about here]

The Chinese Asia-born and Southern Asia-born populations in 2016 are also dominated by the young adult ages. This is as expected, given that the majority of net international

migration gains are in the young adult ages and the growth of these two birthplace group populations has been very high over the last two decades. According to 2016 Census data, 70 per cent of the Southern Asia-born arrived in the period from January 2006 up until the Census date in August 2016, whilst 55 per cent of the Chinese Asia-born did so, and these recent migrants entirely account for the young adult bulges in their respective age structures (Australian Bureau of Statistics 2020). Projected growth across all ages to 2036 and then on to 2056 is the result of large net international migration gains and the movement of earlier immigrant cohorts to older ages. The 2016 population age structures of the Mainland South East Asia-born and the Maritime South East Asia-born are less dominated by young adults. This is due to a more even distribution of the population across migration arrival years from the 1970s onwards (which is confirmed by 2016 Census data). Both South East Asia-born populations are also noticeably female dominated. Projections indicate both continued net international migration gains, most obvious at the younger adult ages, and cohort flow of earlier migrant cohorts to older ages.

Figure 2 illustrates population pyramids for selected individual country of birth populations. The China-born population in 2016, like the Asia-born overall, is dominated by recently arrived young adults. Indentations in the age structure at older ages are indicative of event-driven migration flows in earlier years, such as the decision to allow Chinese students to stay in Australia following the Tiananmen Square protests of 1989 (the age structure peak at age 53 is due to migrants who arrived in Australia between 1988 and 1990). The India-born population is similarly dominated by recently arrived young adults. The effect of future cohort flow, supplemented by net international migration gains in the young adult ages, is clear in the population pyramids for both these two populations.

[Figure 2 about here]

The Vietnam-born population was first established in Australia in substantial numbers in the late 1970s and early 1980s in the aftermath of the Vietnam war (Ben-Moshe et al. 2016). Later immigration was more female dominated (Raymer et al. 2018), and this is evident in the 2016 age-sex structure below age 45. The effect of future cohort flow and net international migration gains are revealed by the 2036 and 2056 age-sex structures. The Thailand-born population is even more obviously female-dominated. This is in large part due to marriage migration (Khoo et al. 2013). Khoo et al. (2009) found that over one third of women from Thailand, Japan and the Philippines living in Australia were married to Australia-born men. The Malaysia-born population age structure in 2016 has a noticeable student peak around ages 20-22 and a female dominance in the middle adult ages. It is clear that larger cohorts are projected to expand the older age groups by 2036 and 2056. The South Korea-born population is projected to grow considerably by net international migration in the younger age groups and by cohort flow at the older ages, but it is expected to retain a clear pyramidal shape above age 30. The marked depletion of population size with age is affected by mortality but also, in this case, by net international migration losses in the middle and older adult ages.

To further examine the demographic drivers of the numbers of older migrants in Australia, we present (1) population accounts by broad birthplace group for three selected projection intervals, 2016-17, 2036-37 and 2055-56 for the Standard projection (see section 3.4), and (2) a decomposition to reveal the demographic drivers of population change by birthplace over the full projection horizon using the hypothetical variant projections. First, Table 5 displays summary population accounts for each Asian region, as well as for the total

population born in Asia. Following the demographic accounting equation, for each birthplace population, the end-of-interval population aged 65+ equals the start-of-interval population aged 65+, plus cohorts entering the 65+ age group during the interval, minus deaths, plus immigration, minus emigration. For example, the Asia-born population as a whole aged 65+ starts the 2055-56 interval with a population of 1,498,000. During the year about 88,000 people join the 65+ population from younger ages, 28,000 die, the immigration flow is about 6,000 while emigration is 22,000. Total population change sums to 45,000, giving an end-of-interval population aged 65+ of 1,543,000.

[Table 5 about here]

The population accounts, although providing estimates of the number of deaths, migrants and jump-off and terminal populations, do not provide information on the *relative* contributions of increasing life expectancy, net overseas migration, and cohort flow from younger ages on population change at older ages. For example, it is not possible from the population accounts to assess the role of increased life expectancy to population growth at older ages. To decompose the relative contributions outlined above, three projections are required: (1) the Standard projection (see section 3.4), (2) the Fixed Mortality variant (life expectancy fixed at jump-off year values) and (3) the No Migration variant (where all immigration and emigration flows are zero). The differences between these hypothetical projections illustrate the role of particular demographic processes in population growth. For example, the impact of rising life expectancy is determined as the difference in population sizes by 2056 between the Standard projection and the Fixed Mortality variant.

Figure 3 quantifies the influence of the three key drivers of population change over the full projection horizon. The decomposition of projected population growth in the older age groups into the three key factors of increasing life expectancy, international migration, and cohort flow quantifies the dominance of cohort flow in driving the growth of the 65+ populations. Contributions to growth from anticipated increases in life expectancy at birth vary between 6 and 18 per cent among the birthplace categories shown in the graph. International migration mostly makes a modest contribution to growth, though for Japan & the Koreas and a few individual countries of birth, there is a small net migration loss overall among those cohorts which form part of the 65+ population at some point during the projection horizon. But cohort flow clearly dominates for most birthplace categories. Only for the Central Asia-born is cohort flow relatively small. Cohort flow generates over half the expected growth for all individual country of birth older populations.

[Figure 3 about here]

5. Discussion: implications for aged care services

Our study contributes to the limited number of demographic studies that project the future ethnic composition of national populations. In the UK, Lomax et al. (2020) observe that regardless of reasonable variations in future migrant composition, the UK population will continue to grow, age and diversity with regards to its ethnic composition. Edmonston et. al's (2002) projections of the US population show a future of heightened ethnic diversity compared to the past. Rallu (2017), focusing on projections of older migrants, reaches a similar conclusion regarding the French population, with an increasing number of older people born in Morocco, Turkey and sub-Saharan Africa. Although migrant source countries

vary considerably between countries, our analysis is consistent with these studies, showing continued growth, ageing and diversification by birthplace in Australia's future population.

Specifically, our projections demonstrate that Australia's older Asia-born populations are rapidly growing due to increasingly large cohorts of migrants who arrived in earlier decades reaching older ages, continued immigration, and increasing life expectancy. The growth and ageing of these populations raise important policy, planning, and service delivery implications for Australian governments, private sector organisations and the not-for-profit sector. There is now considerable scholarship demonstrating that Asian understandings of care differ considerably from Australia's predominantly Western-centred, person-centred, English-speaking aged care system (Buch 2015; Boughtwood et al. 2011; Sagbakken et al. 2017; Oxlund 2018; Lo and Russell 2007). There is a strong expectation in many Asian societies, including in Australian-Asian and other Asian migrant families, that adult children will provide care in old age or in the event of a chronic illness (Baghirathan et al. 2018; Shanley et al. 2012; Boughtwood et al. 2011; Rees and McCallum 2018). Cultural concepts such as filial piety (popular in Confucian philosophy) (Chow 2006), *seva* or service (popular in South Asian communities) (Brijnath 2014), and Qur'anic exhortations to care for older people (popular in the Middle East and part of Maritime South-East Asia) (Bensaid and Grine 2014) underscore the venerated role of older people and intergenerational living within Asian families.

These cultural beliefs and practices also manifest as a strong preference for family and community care rather than residential care in many Asian families, including those in Australia (Brijnath 2011; Haralambous et al. 2007; Low et al. 2011). Currently, older Australian migrants are over-represented in their use of community aged care services and

under-represented in residential aged care (Aged Care Financing Authority 2013). Not surprisingly, many Asian migrant communities are also unfamiliar with the concept of formal care, and there is a stigma attached to relinquishing care for relatives to 'strangers', particularly in residential facilities (Boughtwood et al. 2011; Baghirathan et al. 2018; Rees and McCallum 2018; Shanley et al. 2012). However, with increased migration, urbanisation, participation of women in the workforce, and smaller houses, there is reduced capacity in families to exclusively care for older relatives as well as reduced availability of extended family support for family carers (Sagbakken et al. 2017). These changes underscore the need for a comprehensive aged care policy and service response to meet the challenges associated with the substantial growth in numbers of older Asian Australians.

As well as projecting a large increase in Asian migrants in older age groups in Australia, we also observe important compositional changes. This includes major age structure shifts of populations from Southern Asia, China Asia, Maritime and Mainland South-East Asia. These demographic changes happen mainly from 2036 to 2056; until then, the Asian migrant populations remain relatively young and in the labour force. However, some populations will experience population ageing before others, for example the Vietnamese, and are a useful forerunner to test different models of aged care. The data also show that there are some outliers such as Japanese and South Korean migrants, where there is a small decline in older populations over time due to a net international migration effect. However, this is relatively minor.

These coming demographic changes will drive changes in aged care policy and services in Australia. The growth in older Asian migrants signals greater demand for culturally specific and safe aged care, which in turn means an expansion of ethno-specific and mainstream aged

care services targeted to these groups. Compared to other Asian groups, some communities, such as the Chinese, are relatively well-serviced due to a longer presence in Australian society, ageing in place, and establishing aged care services to meet current needs. By contrast, newer arrivals, such as Indians and other Southern Asians have few ethno-specific aged care services to access. Consequently, new sub-sections of the ethno-specific and mainstream aged care sector will need to be developed to meet the rising demand generated by these new ageing cohorts. This will require an expansion of the aged care workforce and represent new jobs. Already, Australia's health and social assistance industry is poised to make the largest contribution to employment growth – 250,300 jobs – over the next 5 years (Department of Jobs and Small Business 2018). The bulk of these jobs will come from aged care, an industry that must increase its workforce to nearly 1 million by 2050 because of population ageing (Department of Jobs and Small Business 2018).

Facilitating a pathway for migrant job-seekers into aged care offers one avenue to fulfil this demand – while concurrently benefit the individual's settlement into their new life in Australia. Asian migrant care workers are already well represented in aged care. For example, a recent survey revealed that 40 per cent of newly hired staff in residential aged care homes were migrants (Commonwealth of Australia 2017), mostly employed as personal care attendants (PCAs). Most PCAs are from India and the Philippines, but increasingly they are drawn from newer migrant origins such as Iraq and Sudan (Commonwealth of Australia 2017; Nichols et al. 2015). Thus, while difficulties may remain, and indeed increase for culturally matching older European- and Anglo-Australian clients, this will be less of an issue for older Asian populations.

Realising these scenarios requires reimagining aged care in Australia from its current foundations as Western, individually-oriented, and English-speaking to care practices that are more collectivist, reciprocal, and culturally diverse. As discussed in the introduction there are different understandings of ageing and aged care in Asian societies (Buch 2015; Brijnath 2014; Lo and Russell 2007; Boughtwood et al. 2011; Sagbakken et al. 2017; Oxlund 2018). In responding to the huge growth of older Asian migrants, these untapped cultural infrastructures of care must be harnessed. Arguably, one the biggest spin-offs will be a shift in care from institutionalised to home-based services, which is a preference strongly shared not only in Asian families but also by all older Australians, and governments across the world. Therefore, as new models of care are developed to meet the needs of older Asian migrants, this is also an opportunity to reimagine the practices and location of aged care in Australia from institutionalised to home-based care models.

6. Conclusions

This paper has presented new projections of Australia's older Asia-born population. Over the next few decades this population will grow rapidly in number, comprise an increasing share of Australia's older population overall, and change in composition by individual country of birth. Decomposition of the demographic factors driving growth in the 65+ age group showed that cohort flow from younger ages will be the dominant driver of growth. Rapid structural ageing of Asian migrant populations in Australia will also occur. We have therefore stressed how vital it is that service providers and policy makers are aware of the considerable demographic changes which lie ahead and plan for the rising demand for culturally appropriate aged care services.

Of course, it is important to mention some of the limitations of our work. Population projections are dependent on their assumptions, and these nearly always differ from reality to some extent; our projections will be no exception. In the long-run, it is quite possible that both immigration and emigration rates will change as a result of migration policies and global economic forces, and fertility will also deviate from our assumed trajectory. It is generally the case that the further projections extend into the future, the greater their discrepancy from eventual trends. Nonetheless, the broad features of the projections – huge growth and increased diversity of the older migrant population – should be robust to even quite large changes in demographic trends. In addition, our projections also focused solely on country of birth. Future research could extend this to consider ethnicity, the effect of mixed ancestry partnerships, English proficiency and immigrant generation, and also create projections for subnational areas.

Declaration of interest

No potential conflict of interest was reported by the authors.

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Data availability

Projections data produced for this study may be obtained on request from the corresponding author.

Ethics approval

Ethics approval for this project was provided by the Melbourne School of Population and Global Health (MSPGH) Human Ethics Advisory Group (Ethics ID: 2056200.1).

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Table 1: The ABS classification of countries of birth for Asia

Birthplace region	Constituent countries/territories
Mainland South East Asia	Myanmar, Cambodia, Laos, Thailand, Vietnam
Maritime South East Asia	Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Timor-Leste
Chinese Asia	China (excludes SARs and Taiwan), Hong Kong (SAR of China), Macau (SAR of China), Mongolia, Taiwan
Japan & the Koreas	Japan, Democratic People's Republic of Korea (North), Republic of Korea (South)
Southern Asia	Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka
Central Asia	Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan

Source: https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/2901.0Chapter1102016

Table 2a: The estimated and projected size of Asia-born migrant populations aged 65+ in Australia, 1996-2056, according to the main projection scenario (thousands)

	Estimates		Projections				
Birthplace	1996	2006	2016	2026	2036	2046	2056
							thousands
Main groups							
Mainland South East Asia	12	19	38	88	146	202	241
Maritime South East Asia	13	23	56	110	162	221	283
Chinese Asia	20	35	65	135	211	288	404
Japan and the Koreas	2	4	9	17	30	47	65
Southern Asia	16	26	50	91	150	276	495
Central Asia	0	1	3	7	16	32	56
Asia total	64	108	222	449	715	1,066	1,543
Individual countries							
Thailand	0	1	2	5	10	19	28
Vietnam	8	13	26	64	106	145	166
Indonesia	4	5	8	12	17	23	29
Malaysia	3	8	21	38	52	65	79
Philippines	5	7	19	44	73	108	148
China (excl. SARs and Taiwan)	18	30	52	101	164	227	324
South Korea	1	2	6	12	21	35	50
India	10	17	31	53	87	167	309
Pakistan	0	1	2	5	9	19	39
Sri Lanka	5	8	16	28	42	61	85
Australia	1,514	1,739	2,290	3,111	3,926	4,472	4,978
Rest of world‡	614	817	1,160	1,362	1,522	1,605	1,769

Source: ABS; authors' projections

Note. ‡ Birthplaces other than Asia and Australia

Table 2b: The estimated and projected size of Asia-born migrant populations aged 65+ in Australia, 1996-2056, according to the High immigration scenario (thousands)

	Estimates		Projections				
Birthplace	1996	2006	2016	2026	2036	2046	2056
							thousands
Main groups							
Mainland South East Asia	12	19	38	89	148	210	258
Maritime South East Asia	13	23	56	111	167	233	310
Chinese Asia	20	35	65	137	224	317	454
Japan and the Koreas	2	4	9	18	31	50	72
Southern Asia	16	26	50	92	157	292	530
Central Asia	0	1	3	7	17	34	61
Asia total	64	108	222	454	745	1,136	1,684
Individual countries							
Thailand	0	1	2	5	11	20	31
Vietnam	8	13	26	65	108	150	177
Indonesia	4	5	8	12	17	25	32
Malaysia	3	8	21	39	54	70	88
Philippines	5	7	19	44	74	113	160
China (excl. SARs and Taiwan)	18	30	52	103	176	252	367
South Korea	1	2	6	12	22	37	55
India	10	17	31	54	91	177	331
Pakistan	0	1	2	5	10	20	42
Sri Lanka	5	8	16	28	43	64	92
Australia	1,514	1,739	2,290	3,113	3,937	4,500	5,038
Rest of world‡	614	817	1,160	1,370	1,561	1,695	1,940

Source: ABS; authors' projections

Note. ‡ Birthplaces other than Asia and Australia

Table 2c: The estimated and projected size of Asia-born migrant populations aged 65+ in Australia, 1996-2056, according to the Low immigration scenario (thousands)

	Estimates		Projections				
Birthplace	1996	2006	2016	2026	2036	2046	2056
							thousands
Main groups							
Mainland South East Asia	12	19	38	88	143	194	224
Maritime South East Asia	13	23	56	110	158	209	256
Chinese Asia	20	35	65	133	198	259	353
Japan and the Koreas	2	4	9	17	28	44	58
Southern Asia	16	26	50	90	143	259	460
Central Asia	0	1	3	7	15	30	51
Asia total	64	108	222	444	685	995	1,402
Individual countries							
Thailand	0	1	2	5	10	18	26
Vietnam	8	13	26	64	104	139	154
Indonesia	4	5	8	12	16	22	26
Malaysia	3	8	21	38	51	61	70
Philippines	5	7	19	44	71	103	135
China (excl. SARs and Taiwan)	18	30	52	99	153	202	280
South Korea	1	2	6	12	20	32	45
India	10	17	31	52	82	157	288
Pakistan	0	1	2	4	9	18	36
Sri Lanka	5	8	16	28	41	58	78
Australia	1,514	1,739	2,290	3,110	3,915	4,443	4,917
Rest of world‡	614	817	1,160	1,354	1,483	1,516	1,598

Source: ABS; authors' projections

Note. ‡ Birthplaces other than Asia and Australia

Table 3: The estimated and projected size of Asia-born migrant populations aged 80+ in Australia, 2016-2056 (thousands)

	Estimates	Projections			
Birthplace	2016	2026	2036	2046	2056
					thousands
Main groups					
Mainland South East Asia	8	14	37	71	99
Maritime South East Asia	9	19	48	73	97
Chinese Asia	16	24	55	97	126
Japan and the Koreas	2	4	7	12	21
Southern Asia	11	20	39	66	110
Central Asia	0	1	3	8	15
Asia total	46	83	189	327	468
Individual countries					
Thailand	0	1	2	4	8
Vietnam	6	10	27	53	73
Indonesia	2	3	6	7	10
Malaysia	3	8	19	26	31
Philippines	3	6	17	30	44
China (excl. SARs and Taiwan)	14	20	38	71	98
South Korea	1	3	5	9	15
India	7	12	22	37	65
Pakistan	0	1	2	4	7
Sri Lanka	4	7	13	20	28
Australia	588	779	1,224	1,645	1,977
Rest of world‡	300	440	568	651	704

Source: ABS; authors' projections

Note. ‡ Birthplaces other than Asia and Australia

Table 4: The estimated and projected share of those aged 65+ in Asia-born migrant populations in Australia, 1996-2056 (per cent)

	Estimates		Projections				
Birthplace	1996	2006	2016	2026	2036	2046	2056
							per cent
Main groups							
Mainland South East Asia	5.2	7.2	9.7	18.1	24.1	28.4	29.8
Maritime South East Asia	4.9	6.3	10.1	16.1	19.1	21.9	24.2
Chinese Asia	9.4	9.7	9.2	13.9	16.5	18.4	22.0
Japan and the Koreas	4.2	4.5	5.7	8.6	12.0	16.1	19.3
Southern Asia	10.8	9.1	6.3	7.8	9.1	13.1	19.3
Central Asia	4.0	3.8	4.1	7.3	11.2	16.8	23.3
Asia total	6.9	7.8	8.3	12.4	15.0	18.1	22.2
Individual countries							
Thailand	1.3	1.6	2.6	5.6	8.7	13.3	17.1
Vietnam	4.9	7.4	10.8	21.7	29.2	34.0	34.5
Indonesia	8.0	7.7	10.3	13.9	16.0	19.8	22.2
Malaysia	3.8	7.2	13.4	21.5	24.3	26.5	28.4
Philippines	4.5	5.0	7.6	12.9	16.2	19.5	22.6
China (excl. SARs and Taiwan)	14.9	12.0	9.3	13.0	15.8	17.8	21.6
South Korea	4.0	4.2	5.2	8.5	11.7	15.9	19.7
India	12.9	10.0	6.3	7.4	8.8	13.2	20.2
Pakistan	4.5	3.3	2.5	3.8	5.1	8.0	13.3
Sri Lanka	10.1	11.2	13.2	17.5	20.1	23.9	28.1
Australia	10.8	11.3	13.3	16.4	18.9	19.8	20.3
Rest of world‡	18.5	22.5	27.4	30.8	31.6	30.5	30.4

Source: ABS; authors' projections

Note. ‡ Birthplaces other than Asia and Australia

Table 5: Population accounts of Asian-born migrant populations aged 65+ in Australia, 2016-17, 2036-37 and 2055-56

		Mainland SE Asia	Maritime SE Asia	Chinese Asia	Japan & Koreas	Southern Asia	Central Asia	Asia total
(A) Start-of-interval	2016-17	38,238	56,358	65,448	9,110	50,378	2,510	222,041
65+ population	2036-37	145,535	162,274	211,233	29,824	149,999	15,935	714,800
	2055-56	237,306	277,222	392,394	63,083	475,395	52,900	1,498,300
(B) Entry to 65+	2016-17	4,229	6,025	5,980	781	4,148	254	21,417
age group	2036-37	9,301	9,957	12,642	2,588	11,282	1,314	47,084
	2055-56	10,562	14,357	24,128	3,548	31,703	3,483	87,782
(C) Deaths	2016-17	844	1,251	1,395	232	1,182	52	4,957
	2036-37	2,202	3,786	2,963	621	2,797	285	12,654
	2055-56	5,497	7,006	6,568	1,314	6,263	930	27,577
(D) 65+ entrants	2016-17	3,384	4,774	4,585	549	2,966	202	16,460
minus deaths	2036-37	7,099	6,171	9,679	1,966	8,485	1,030	34,430
	2055-56	5,065	7,351	17,560	2,234	25,440	2,554	60,204
(E) Immigration	2016-17	449	854	2,022	326	1,258	130	5,038
	2036-37	464	882	2,088	336	1,299	134	5,203
	2055-56	560	1,065	2,522	406	1,570	162	6,285
(F) Emigration	2016-17	329	630	1,548	202	741	3	3,452
	2036-37	1,263	1,534	4,700	586	2,190	16	10,289
	2055-56	2,119	2,504	8,664	1,048	7,320	51	21,706
(G) Net overseas	2016-17	120	224	474	123	517	127	1,585
migration	2036-37	-799	-652	-2,613	-250	-891	118	-5,087
	2055-56	-1,559	-1,439	-6,142	-642	-5,750	111	-15,421
(H) Total population	2016-17	3,504	4,998	5,059	672	3,483	329	18,045
change	2036-37	6,300	5,518	7,067	1,717	7,595	1,147	29,344
	2055-56	3,506	5,913	11,418	1,592	19,690	2,665	44,784
(I) End-of-interval	2016-17	41,743	61,356	70,506	9,782	53,862	2,839	240,087
65+ population	2036-37	151,835	167,792	218,300	31,541	157,594	17,082	744,144
	2055-56	240,812	283,135	403,812	64,675	495,085	55,565	1,543,083

Source: authors' projections

Notes: The population accounting terms in the table are defined as follows:

(A) Start-of-interval population: the population aged 65+ at the start of each period, by birthplace.

(B) Entry to 65+ group: the number of people turning age 65 from age 64 the preceding year.

(C) Deaths: total deaths to persons aged 65+

(D) 65+ entrants minus deaths, i.e. B minus C.

(E) Immigration: number of people 65+ added between t and t+1 through immigration to Australia.

(F) Emigration: number of people 65+ leaving Australia between t and t+1 through emigration from Australia.

(G) Net Overseas Migration (NOM) = Immigration minus Emigration, i.e. E - F

(H) Total population change = D + G

(I) End-of-interval 65+ population = A + H

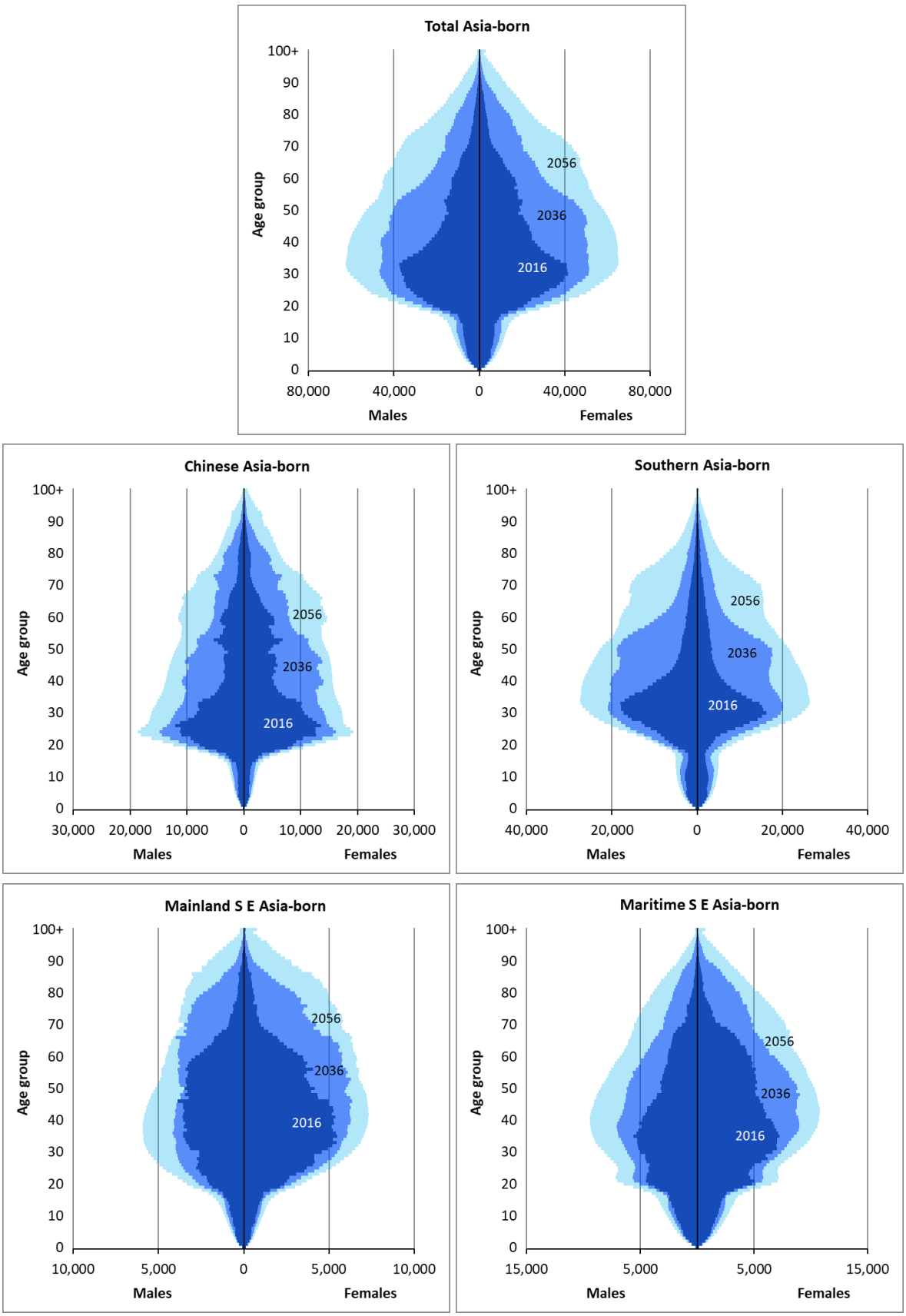

Figure 1: The age-sex structure of the largest main regional birthplace populations in Australia, 2016 (estimated) and 2036 and 2056 (projected)

Source: ABS; authors' projections

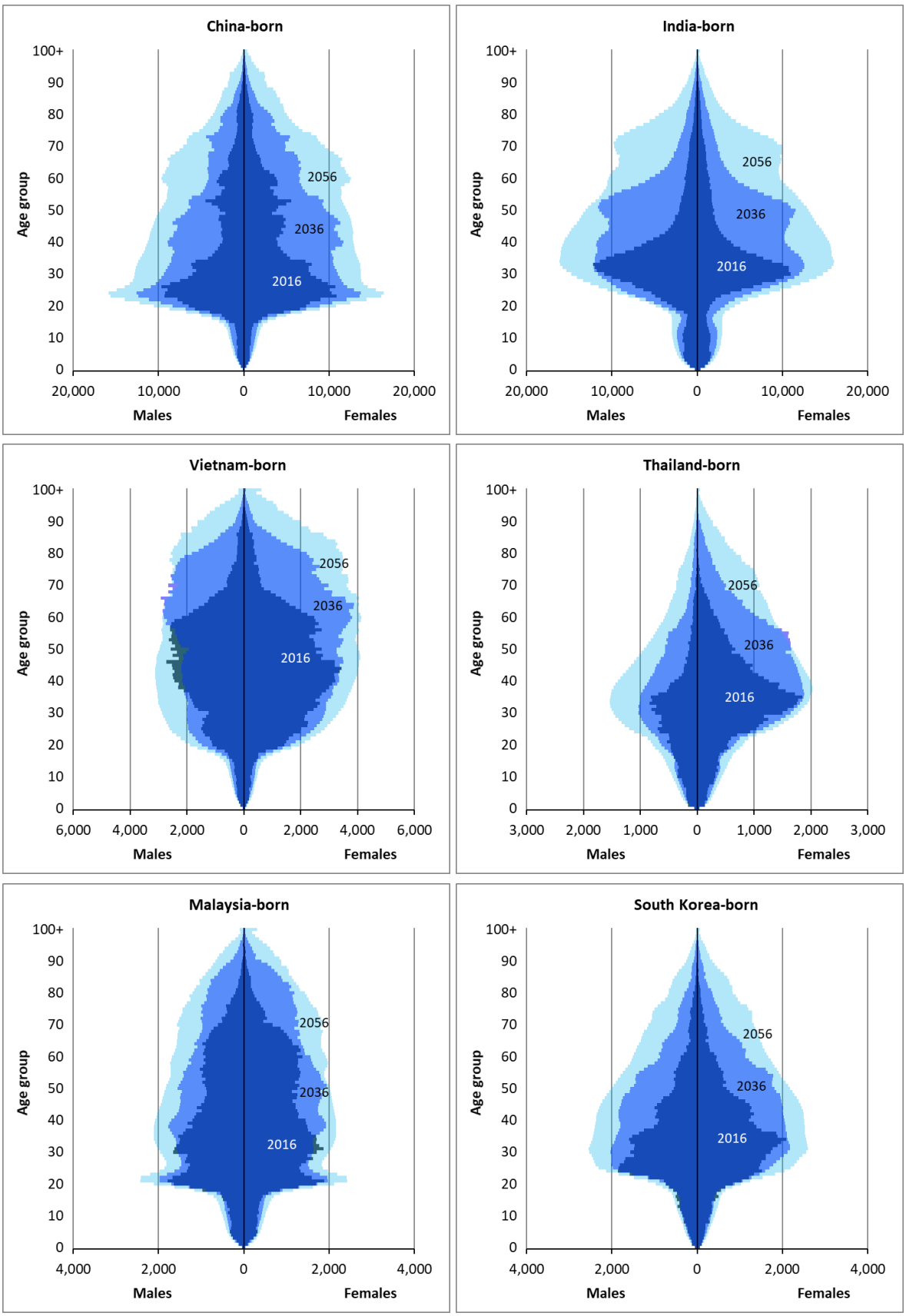

Figure 2: The age-sex structure of selected individual country of birth populations in Australia, 2016 (estimated) and 2036 and 2056 (projected)

Source: ABS; authors' projections

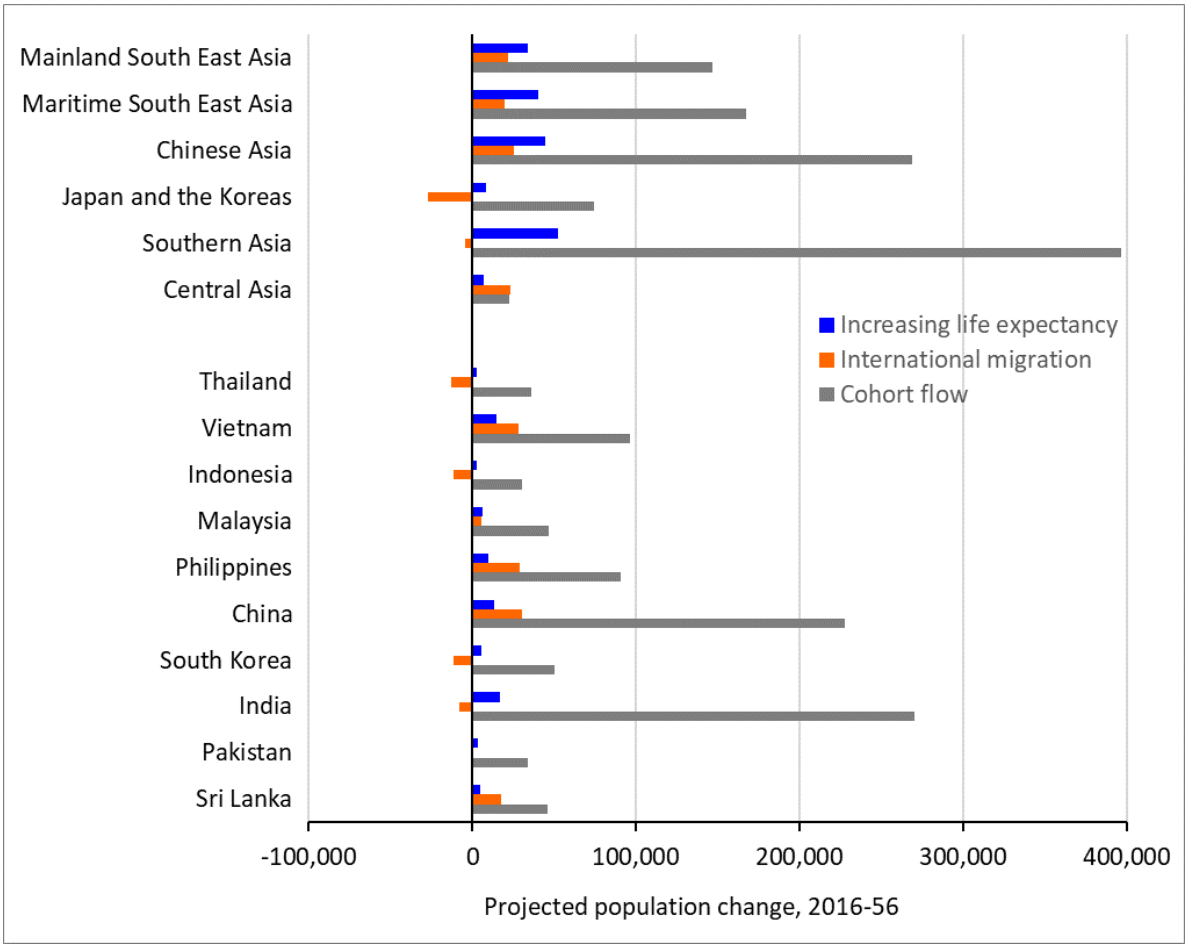

Figure 3: Demographic contributions to the growth of the 65+ population by main regional birthplace category and selected individual countries of birth, 2016-56

Source: authors' projections

Appendix

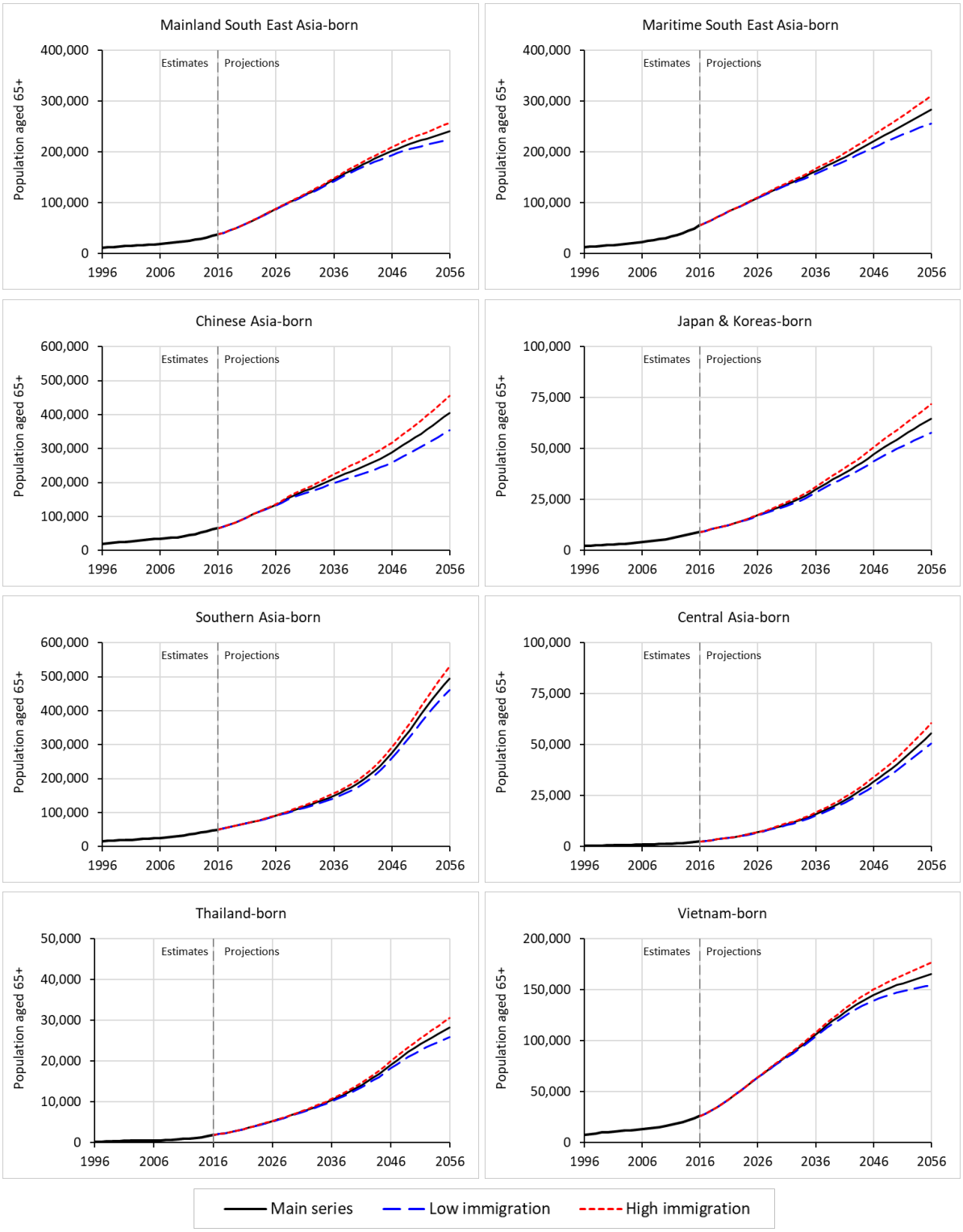

Figure A: Estimated and projected birthplace population aged 65+ by migration scenario, 1996-2056

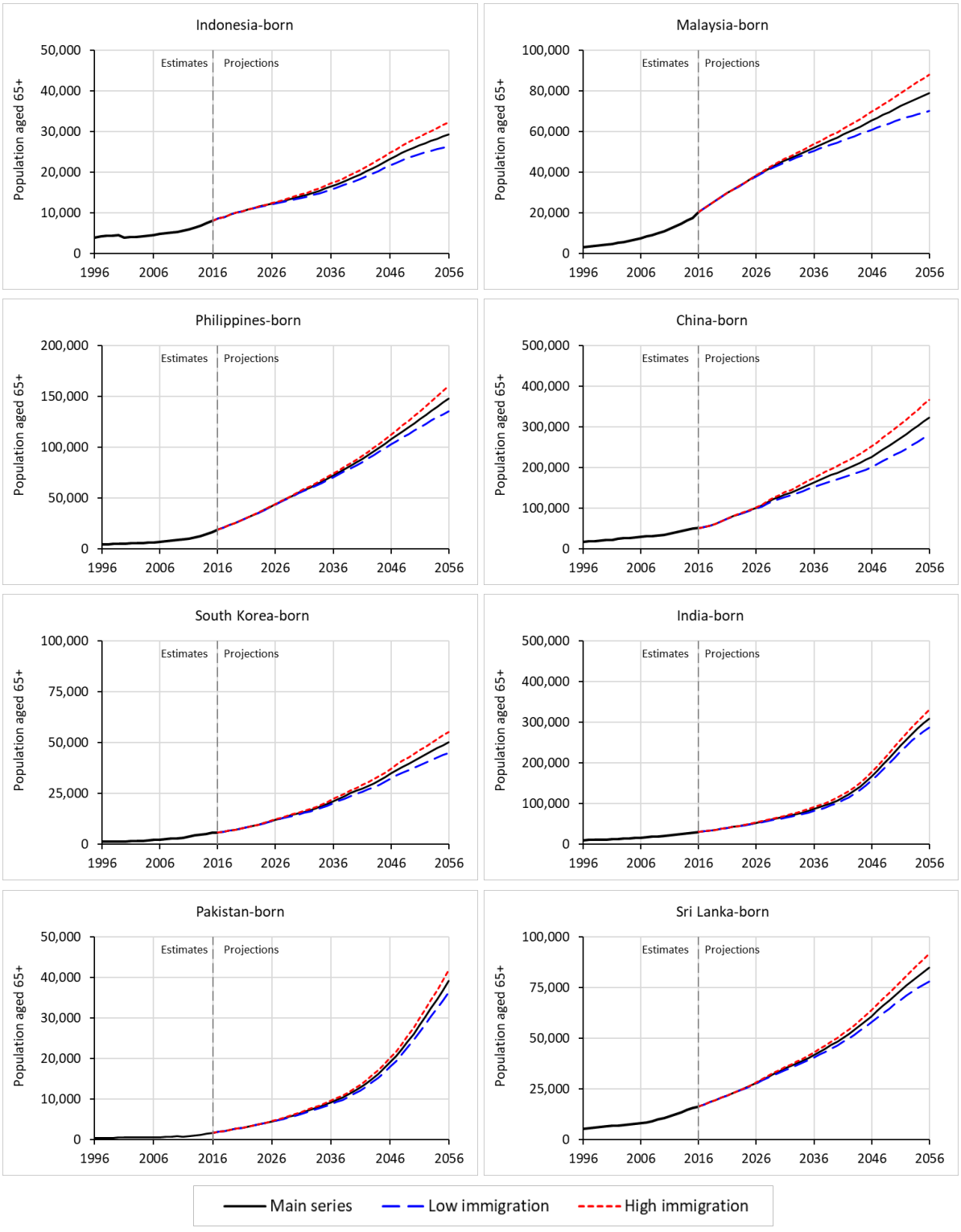

Figure A continued

Figure captions

Figure 1: The age-sex structure of the largest main regional birthplace populations in Australia, 2016 (estimated) and 2036 and 2056 (projected)

Figure 2: The age-sex structure of selected individual country of birth populations in Australia, 2016 (estimated) and 2036 and 2056 (projected)

Figure 3: Demographic contributions to the growth of the 65+ population by main regional birthplace category and selected individual countries of birth, 2016-56

Figure A: Estimated and projected birthplace population aged 65+ by migration scenario, 1996-2056