Asia Aging: Demographic, Economic, and Health Transitions

International Population Reports

By Wan He, Daniel Goodkind, and Paul Kowal
With Issa Saleem Almasarweh, Thanh Long Giang, Mohammad Mainul Islam, Samsik Lee, Bussarawan Teerawichitchainan, and Nai Peng Tey

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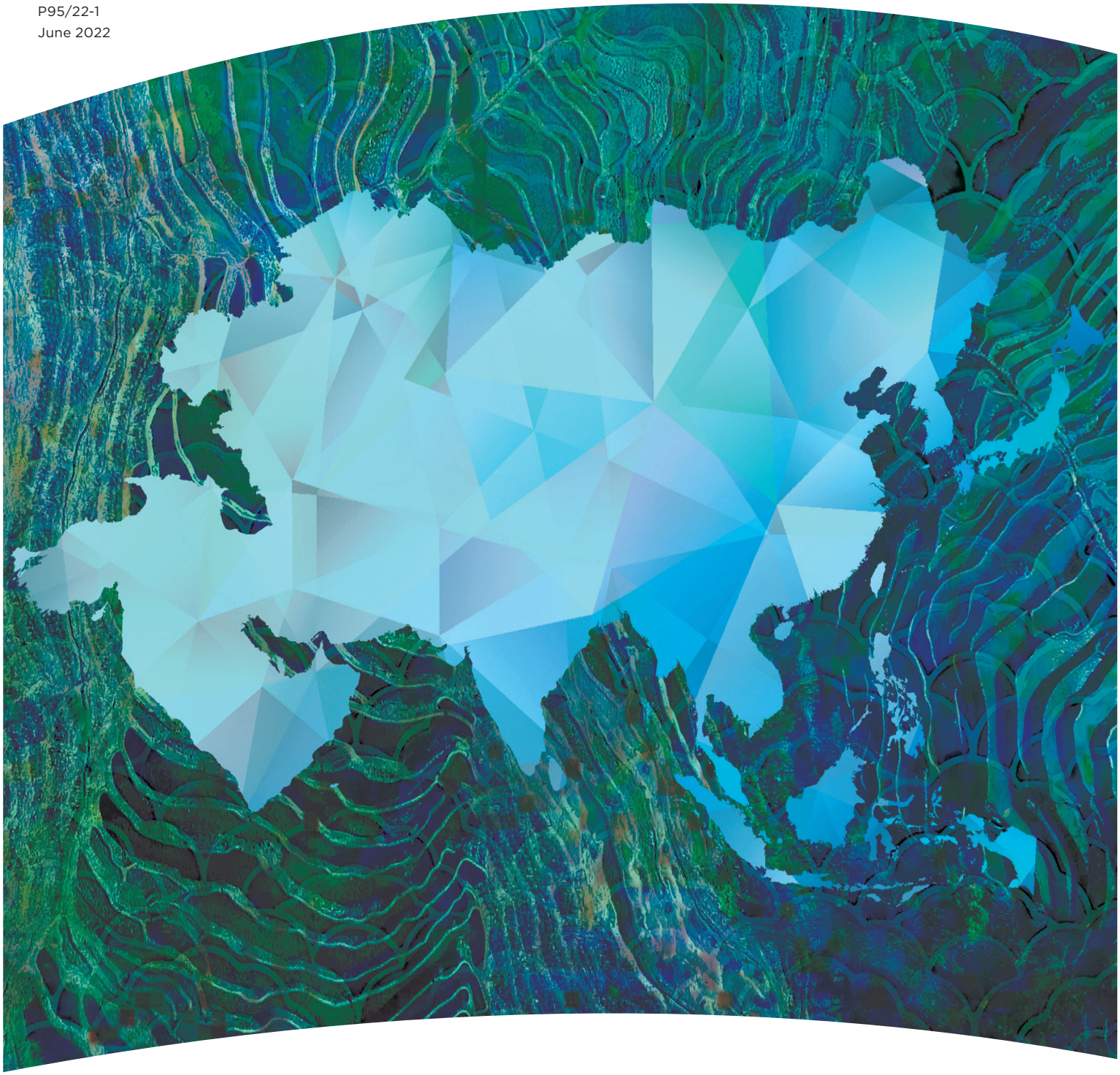

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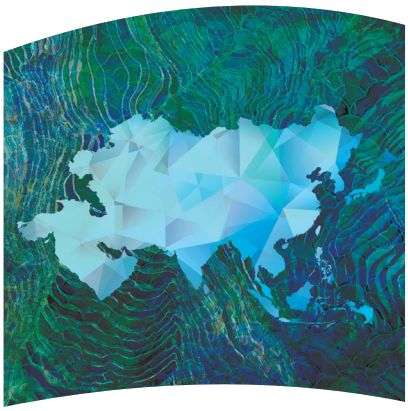

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Chapter 1.

Introduction

WHY STUDY AGING IN ASIA?

Among the world's most significant demographic trends in recent decades, increasing attention has been paid to aging in Asia. The reasons are obvious when one considers that Asia's population is aging faster than any other world region (United Nations, 2019). Population aging is driven by falling birth and death rates, a demographic transition that has been completed relatively quickly in most Asian countries. This decline in vital rates has been accompanied by, and may have facilitated, rising prosperity in many countries due to falling proportions of child dependents and rising proportions of working-age adults, an age structure dynamic commonly known as the demographic dividend. These demographic dynamics have helped propel Asia's economic growth, which in turn has elevated the financial resources for many older adults in the region.

Just as significant as these dynamics are the sheer numbers involved. The population in Asia exceeds 4.5 billion (including China and India, the two countries with well more than one billion each), more than one-half the world's total (U.S. Census Bureau, 2021). As of 2020, the population in Asia aged 65 and older was estimated at 414 million, some 20 percent higher than the U.S. population of all ages (331.4 million) (U.S. Census Bureau, 2021; Hartley, Perry, and Rogers, 2021). Even more noteworthy, by 2060 older Asians are projected to exceed 1.2 billion, which implies that one out of every ten people in the world will be an older Asian (U.S. Census Bureau, 2021).[1]

These massive numbers raise obvious questions on the care for Asians in their older and especially oldest-old ages. Asians are living longer—when assessed by life expectancy at birth and also at the age of 60. However, using another population health measure, healthy life expectancy at the age of 60, the extra years of life lived may not be lived in full health. Whether older Asians with health care needs receive adequate and good-quality care is critical to their well-being in late years.

For centuries, the primary source of financial security for Asians reaching advanced age was their own family. As a result, having many children provided an old-age insurance. However, as birth rates have fallen precipitously over the past 2 decades (Stone, 2019), the pool of potential future caregivers is declining; at the same time, individual and societal wealth has increased, and many Asians have long working lives and high savings rates at older ages (Wei, 2010; Timinksy, 2019). These observations lead to a range of questions:

As their numbers and proportions grow, are Asians more likely to remain in the labor force compared with adults from other world regions? To what extent are pension programs available to reduce reliance on their own earnings and resources traditionally provided by families? Are older Asians living longer and healthier than older adults in other world regions, and how do such patterns differ between men and women? What are the most common causes of mortality and morbidity in Asia, and how has COVID-19 impacted the region's health and health care systems?

This report seeks to answer these questions by exploring the demographic, economic, and health transitions that have taken place in Asian countries. One of the challenges in making generalizations is the considerable diversity in economic development throughout Asia, which will be demonstrated in the report.

SCOPE AND DATA SOURCES

In its scope and source materials, this report differs in several ways from previous studies on this topic.[2] First, it provides wide comparative perspectives on aging in Asia. In addition to examining aging trends in Asia compared to other world regions, this report considers variations among Asia's five subregions as well as country differences within each subregion.[3] Comparisons reveal that there is no typical pattern of aging across Asia; the rapidly aging societies of Eastern Asia, which are particularly well covered in recent literature, provide just one example (World Bank, 2016). In addition, to explore in greater detail some of the issues raised in the

[1] In this report, older population or older people are defined as aged 65 and older, unless otherwise specified.

[2] For examples, refer to Hermalin, 2002; Smith et al., 2012; UNESCAP, 2017a, 2017b; UNFPA, 2017.

[3] These geographical subdivisions were newly proposed by the United Nations in 2020 and now include Central Asia, a subregion that had previously been subsumed within West Asia.

main text, each chapter provides separate text boxes written by population aging researchers and experts with considerable knowledge and experience in Asia. Most of these are case studies focused on a single country.

The sources for economic and health data in this report are diverse and unique. All data presented reflect the latest available at the time the report was written, including population and housing censuses as well as surveys on older adults. Although many of these are available online from various organizations or disseminated publications, other information was gathered by participating coauthors from sources specific to their countries that are otherwise not readily obtainable—from Bangladesh, Burma, Jordan, Malaysia, South Korea, Thailand, and Vietnam.[4, 5] Some of these countries have not received a lot of attention in prior studies of aging in Asia.

The mixed comparative approach of this report provides a fuller and deeper understanding of aging trends and challenges, which is critical for policymaking. The issues it speaks to include budgetary priorities for old-age support, the choice of statutory retirement ages, public health projects and planning, and many other policy initiatives. While this report identifies some of the challenges posed by population aging to governments, it offers no policy recommendations.

OUTLINE AND CONTENT

Following this introductory Chapter 1, "Chapter 2. The Demography of an Aging Asia," focuses on the demographics of aging trends in Asia, including the aforementioned forces that drive it—low fertility and mortality. The discussion highlights similarities and differences between Asia and other world regions, as well as between the five Asian subregions and countries within and across the subregions, with an emphasis on changing proportions of the population aged 65 and older. Estimates and projections data from the Census Bureau's International Database (IDB) are used to analyze patterns of the recent past and present (2020), and present projections of such measures out to 2060, almost two generations from now.

"Chapter 3. Work, Income, and Retirement," looks at the economic and social aspects of aging, which include work and retirement systems, as well as income sources for the older population. As countries develop, the sources of older age support for those no longer working typically shift away from the family (intergenerational households and/or financial support from family members) to private savings, pensions, and public social security systems (Yeung and Cheung, 2015). This chapter reviews regional and intercountry differences in labor force participation, mandatory public pension systems, as well as the proportions of the older population covered by such systems. It also analyzes broader intersections between aging and economic change such as the implications of aging on budget allocations by Asian governments, the extent to which pensions replace earnings, and differences in income replacement between men and women.

"Chapter 4. Health and Health Care," examines the health of older adults and health care systems in Asian countries. The chapter opens by comparing life expectancy at the age of 60 to healthy life expectancy at the same age. It then proceeds to examine the primary causes of mortality and morbidity, which are increasingly resulting from noncommunicable diseases and disability. Concurrent infectious diseases, in particular the COVID-19 pandemic, pose additional challenges to the health of older Asians and the health care systems in Asian countries. This timely topic is discussed in this chapter. The second half of the chapter focuses on health care systems. Shifts towards chronic diseases will have significant implications for health and social system costs. This chapter also examines health systems quality and coverage, as well as old-age care provided by families as suggested by the living arrangements of older Asian adults.

"Chapter 5. Summary and Discussion," provides a brief synthesis of the findings from this report and concludes with a discussion of their implications for future research.

SPECIAL NOTES

This report follows the UN definitions of world regions and subregions. Appendix A lists subregions of Asia and countries in each subregion. More information on geographic regions for statistical use by the UN is available at <https://unstats.un.org/unsd/methodology/m49/>. World regions defined by the ILO and the WHO are different from the UN

[4] Some data in this report come from the following U.S. government agencies and international organizations including, but not limited to, U.S. Census Bureau, U.S. Social Security Administration, International Social Security Association, United Nations (UN), International Labour Organization (ILO), World Health Organization (WHO), and Organization for Economic Development and Cooperation.

[5] In this report, Democratic People's Republic of Korea is referred to as North Korea, and Republic of Korea is referred to as South Korea. Myanmar is referred to as Burma.

geographic regions and are specified where ILO or WHO regional data are used in this report.

Country or place names used in this report and boundaries depicted in the maps reflect U.S. government policy wherever possible. For more information, visit U.S. Department of State at <www.state.gov/independent-states-in-the-world/>, <www.state.gov/dependencies-and-areas-of-special-sovereignty/>, or <https://geonode.state.gov/layers/catalog:geonode:LSIB>.

The majority of demographic estimates and projections data in Chapter 2 and Appendix B come from the IDB, which is maintained and updated by the Census Bureau's Population Division and is current as of December 2021. Projections for countries in the IDB are updated periodically and incorporate the latest data available at the time of the update. Therefore, the IDB data in this report may not reflect the latest available for every country and, by extension, for groups of countries aggregated into subregions and regions.

Box 1-1.

International Database, U.S. Census Bureau

By Lisa Lollock, U.S. Census Bureau, Population Division

Demographic data provided in this report come largely from the U.S. Census Bureau's International Database (IDB). The IDB was developed by the Census Bureau in the 1960s to provide access to accurate and timely demographic measures for populations around the world. Through sponsorship from various U.S. government agencies, the IDB has been updated on a regular basis to provide a comprehensive set of indicators. Such information is needed for research, program planning, and policymaking decisions in the United States and globally.

The IDB provides estimates and projections for 227 countries and areas that have populations of 5,000 or more and are recognized by the U.S. Department of State. Population size (by single year of age and sex) and components of change (fertility, mortality, and migration) are provided annually from an initial or base year through 2100. This level of detail provides an important foundation for tracking the demographic impacts of pandemics and related health crises, as well as other events of concern that are affecting populations around the globe.

Data included in the IDB consist of indicators developed from the results of censuses, surveys, administrative records, and special measures of HIV/AIDS-related mortality. Through evaluation and adjustment of source data, measures of population, mortality, fertility, and net migration are estimated for current and past years and then used as the basis for projections to 2100. As of 2020, IDB indicators included special accounting for the impacts of HIV/AIDS for 45 countries, given the relatively high prevalence of HIV/AIDS within their populations. In countries and areas updated since 2020, impacts of the COVID-19 pandemic on mortality, fertility, and net migration have also been considered.

The Census Bureau's IDB estimates and projections have several distinctive features. For each of the 227 countries and areas, population size and components of change are provided for each calendar year beyond the initial or base year through 2100. Within this time series, sex ratios, population, and mortality measures are developed for single-year ages through the age of 100 and older. As a result of single-year age and calendar-year accounting, IDB data capture the timing and demographic impact of important events, such as wars, famine, and natural disasters, with a precision exceeding that of other online resources for international demographic data. The IDB also provides ready-made population age and sex pyramids, maps, and other visuals for all countries included in the database.

More information on the IDB is available at <www.census.gov/data-tools/demo/idb>.

REFERENCES

Hartley, Christine, Marc Perry, and Luke Rogers, "A Preliminary Analysis of U.S. and State-Level Results From the 2020 Census," WP-104, U.S. Census Bureau, Washington, DC, 2021, <www.census.gov/content/dam/Census/library/working-papers/2021/demo/pop-twps0104.pdf>.

Hermalin, Albert (ed.), "The Well-Being of the Elderly in Asia: A Four-Country Comparative Study," University of Michigan Press, Ann Arbor, Michigan, 2002.

Smith, James P., and Malay Majmundar (eds.), "Aging in Asia: Findings From New and Emerging Data Initiatives," National Academies Press, 2012, <www.ncbi.nlm.nih.gov/books/NBK109230/>.

Stone, Lyman, "A 'New' Normal? An Updated Look at Fertility Trends Across the Globe," Institute for Family Studies, October 15, 2019, <https://ifstudies.org/blog/a-new-normal-an-updated-look-at-fertility-trends-across-the-globe>.

Timinsky, Samuel J., "The Nation That Never Rests: Japan's Debate Over Work-Life Balance and Work That Kills," *The Asia-Pacific Journal*, Volume 17, Issue 10, No. 2, May 15, 2019, <https://apjjf.org/2019/10/Timinsky.html/>.

United Nations, "World Population Ageing 2019: Highlights," Department of Economic and Social Affairs, Population Division, New York, 2019, <www.un.org/en/development/desa/population/publications/pdf/ageing/WorldPopulationAgeing2019-Highlights.pdf>.

United Nations Economic and Social Commission for Asia and the Pacific, "Ageing in Asia and the Pacific: Overview," United Nations, 2017a, <www.unescap.org/sites/default/d8files/knowledge-products/SDD%20Ageing%20Fact%20Sheet%20Overview.pdf>, accessed December 21, 2020.

_____, "Addressing the Challenges of Population Ageing in Asia and the Pacific: Implementation of the Madrid International Plan of Action on Ageing," United Nations, 2017b, <www.unescap.org/sites/default/files/publications/Addressing%20the%20Challenges%20of%20Population%20Ageing%20in%20Asia%20and%20the%20Pacific.pdf>, accessed December 21, 2020.

United National Population Fund, "Perspectives on Population Ageing in the Asia-Pacific Region, 2017—Where Do Selected Countries Stand 15 Years After the Adoption of the Madrid International Plan of Action on Ageing?," September 2017, <https://asiapacific.unfpa.org/sites/default/files/pub-pdf/Perspectives%20on%20%20Population%20Ageing%20Report_for%20Website.pdf>.

U.S. Census Bureau, International Database, 2021.

Wei, Shang-Jin, "Why Do The Chinese Save So Much?," Forbes, February 2, 2010, <www.forbes.com/2010/02/02/china-saving-marriage-markets-economy-trade.html?sh=6fec7fbf7a83>.

World Bank, "Live Long and Prosper: Aging in East Asia and Pacific," World Bank, Washington, DC, 2016, doi:10.1596/978-1-4648-0469-4.

Yeung, Wei-Jun Jean, and Adam Ka-Lok Cheung, "Living Alone: One-Person Households in Asia," *Demographic Research*, Volume 32, 2015, pp. 1099–1112.

Chapter 2.

The Demography of an Aging Asia

Demographic changes in Asia, a region that contains nearly 60 percent of the world population (Figure 2-1), have profound global consequences. Two ongoing trends capture the key changes. First, Asia's share of the global population is projected to decline between now and 2060—from 59.1 to 51.4 percent, due largely to the projected rapid growth of Africa whose share of world population will increase relative to other regions (Figure 2-1). Second, low fertility levels in combination with marked improvements in longevity (discussed in this chapter), will lead to an increase in Asia's share of the world's older population (from 56.7 to 61.5 percent) over the same period of time.[1] These two opposing trends, grand in size as they are in the Asian context, reflect the dynamics typical of countries going through the demographic transition—a gradual decline in overall population growth and, later on, an outsized growth in the number and share of its older population.

NUMERICAL AND PROPORTIONATE GROWTH OF ASIA'S OLDER POPULATION

The number of older Asians will nearly triple over the next 4 decades.

Common benchmarks of population aging include both the number of people at older ages and the share of the older group within the total population (United Nations, 2017a). The number of people aged 65 and older is projected to rise dramatically throughout the world in the next several decades, from 730 million in 2020 to nearly 2 billion by 2060 (Figures 2-1 and 2-2). Of that 1.25 billion increase, about 800 million (or 64 percent) is expected to occur in Asia, where the older population is set to nearly triple, from 414 million to over 1.2 billion over the same interval.

Among the older Asians in 2060 (1.22 billion), the vast majority of them will be in Eastern Asia (491 million) and Southern Asia (464 million) as shown in Figure 2-3.[2] This is not surprising, given that China and India—both "population billionaires"—reside in each of these two regions (Table 2-1; Table B-1). Other Asian countries with the largest population aged 65 and older include Indonesia, Pakistan, Bangladesh, Japan, Vietnam, Iran, Turkey, the Philippines, and Thailand. The growth of the older population in these countries is illustrated by those that will surpass numerical thresholds (Figures 2-4). Besides China and India, four Asian countries currently have 10 million or more people at the age of 65 and older (Bangladesh, Indonesia, Japan, and Pakistan)—by 2060, they will be joined by seven more countries (Table B-1).

Asian countries also comprise a growing share of the world's top ten countries ranked by older population size (Table 2-1). In 2020, two of these countries (in addition to China and India) belonged to the top 10—Japan and Indonesia. By 2060, two additional countries, Pakistan and Bangladesh, are projected to join the world's ten most populous, with Vietnam, Iran, and Turkey all moving into the top 15.

Even more dramatic than the rising numbers of older Asians will be the increased proportions of people aged 65 and older.

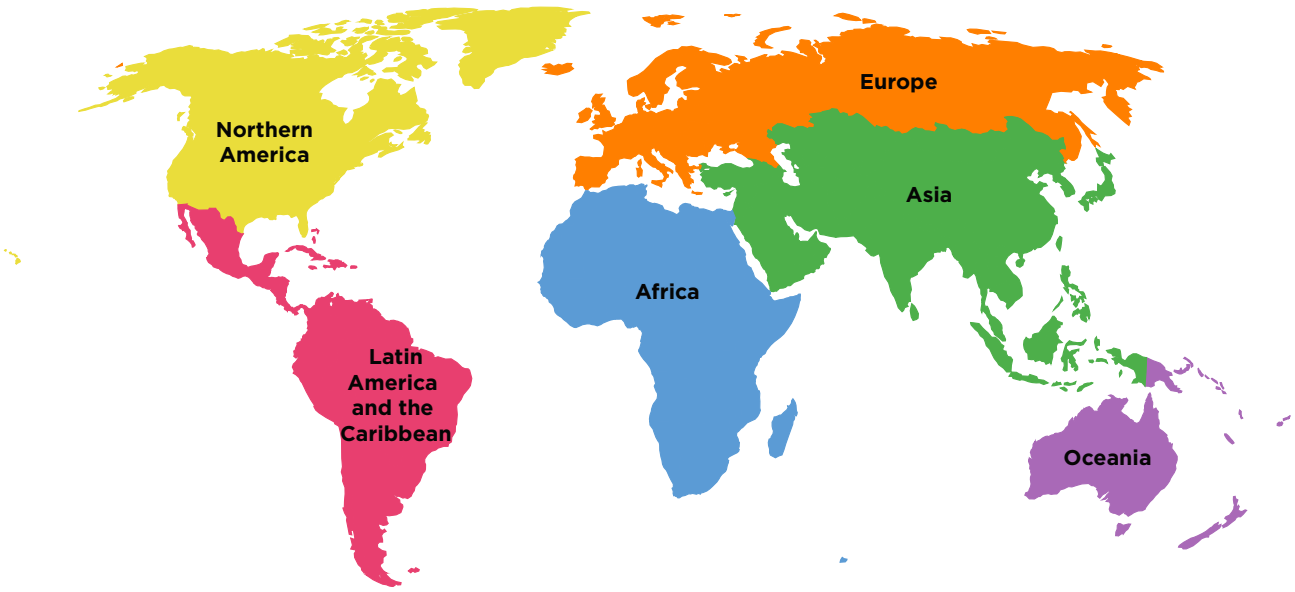
Even more dramatic than the growing numbers aged 65 and older are the rising proportions at those ages throughout Asia (Figures 2-5). A common benchmark used to denote an aging society is when 7 percent of the population reaches older ages. In 2020, 33 of the 52 Asian countries and areas had not reached that mark, and another 14 countries surpassing that mark had yet to reach 14 percent, the next multiple of 7 percent (Table B-1). In all, only five countries and areas had older population shares of 14 percent or more. By 2060, this distribution is expected to reverse—42 Asian countries or areas are projected to have surpassed 14 percent. Over the same period, the number of countries surpassing 28 percent (quadruple the original benchmark) is projected to rise from just one (Japan) to 12, with only one country (Qatar) to still not have crossed the 7 percent threshold.

Among subregions, 33.7 percent of Eastern Asia's population is projected to be aged 65 and older by 2060 (Figure 2-3). That projected share is not only the highest in Asia, but also the highest of all world regions, surpassing even the projected older share (30.8 percent) in Europe, a region commonly known as the oldest in the world (Figure 2-1). In contrast, Southern and Western Asia will be the least old among Asian subregions.

[1] In this report, older population, older people, or older adults are defined as aged 65 and older, unless otherwise specified.

[2] These geographical subdivisions were newly proposed by the United Nations in 2020 and now includes Central Asia, a subregion that had previously been subsumed within West Asia.

Figure 2-1.
Population Aged 65 and Older by World Region: 2020 and Projected 2060
(Numbers in millions)

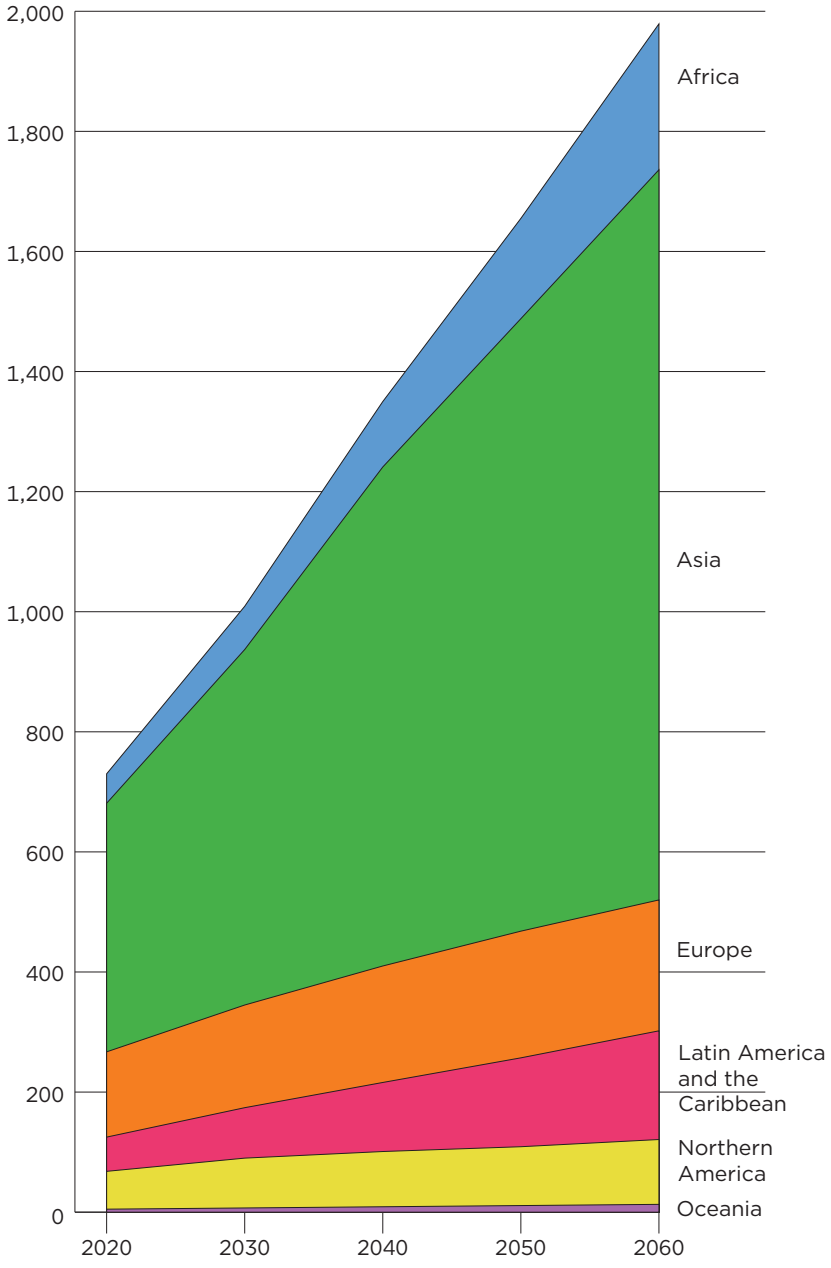


Region	Total population		Population aged 65 and older			
			2020		2060	
	2020	2060	Number	Percent	Number	Percent
World	**7,693**	**10,218**	**730**	**9.5**	**1,978**	**19.4**
Asia	4,547	5,253	414	9.1	1,216	23.1
Africa	1,342	2,980	49	3.6	243	8.2
Europe	747	708	142	19.0	218	30.8
Latin America and the Caribbean	646	770	57	8.8	181	23.5
Northern America	370	450	63	17.1	108	24.0
Oceania	41	57	5	13.2	13	22.6

Region	Share of world total population		Share of world population aged 65 and older	
	2020	2060	2020	2060
World	**100.0**	**100.0**	**100.0**	**100.0**
Asia	59.1	51.4	56.7	61.5
Africa	17.4	29.2	6.6	12.3
Europe	9.7	6.9	19.4	11.0
Latin America and the Caribbean	8.4	7.5	7.8	9.1
Northern America	4.8	4.4	8.7	5.5
Oceania	0.5	0.6	0.7	0.7

Source: U.S. Census Bureau, International Database, 2021.

Figure 2-2.
Population Aged 65 and Over by Region: 2020 Projected to 2060
(Numbers in millions)



Source: U.S. Census Bureau, International Database, 2021.

DRIVERS OF POPULATION AGING—LOW FERTILITY AND LOW MORTALITY

Asia has experienced a rapid demographic transition from higher to lower birth and death rates.

The demographic patterns described above will be driven by two basic forces—low fertility and mortality. One of the most profound demographic changes that occurs as societies become more prosperous is the transition in birth and death rates from high to low. Although the onset and pace of this demographic transition varies, the change is common to all societies as they develop (Notestein, 1945; Kirk, 1996).

Death rates tend to fall first, followed after some time by a fall in birth rates. Death rates decline due to a variety of factors such as improved nutrition and public health advances. Given that these improvements result in higher proportions of infants and children surviving to adulthood, parents can achieve their ultimate family size goal with fewer births (Rutstein, 2005; DaVanzo et al., 2008). In addition, rising levels of education, income, and urbanization eventually lead to lower birth rates given the increasing availability and acceptability of contraception, expanded opportunities for work outside the home (especially for mothers), and the increased cost of raising children (Mather et al., 2021). Family planning programs have also played a role in fertility reduction through provision of contraception and

Figure 2-3.

Total Population and Those Aged 65 and Older for Asia by Subregion: 2020 and Projected 2060

Region	Total population		Population aged 65 and older			
			2020		2060	
	2020	2060	Number	Percent	Number	Percent
Central Asia	70.0	85.6	4.4	6.3	19.1	22.4
Eastern Asia	1,631.0	1,455.5	223.8	13.7	491.1	33.7
South-Eastern Asia	675.0	828.8	47.7	7.1	172.6	20.8
Southern Asia	1,897.2	2,497.0	122.5	6.5	463.8	18.6
Western Asia	273.8	386.4	15.8	5.8	69.3	17.9

Source: U.S. Census Bureau, International Database, 2021.

Table 2-1.

Ten Asian Countries With Largest Populations Aged 65 and Older in World Ranking: 2020 and Projected 2060

(Numbers in thousands)

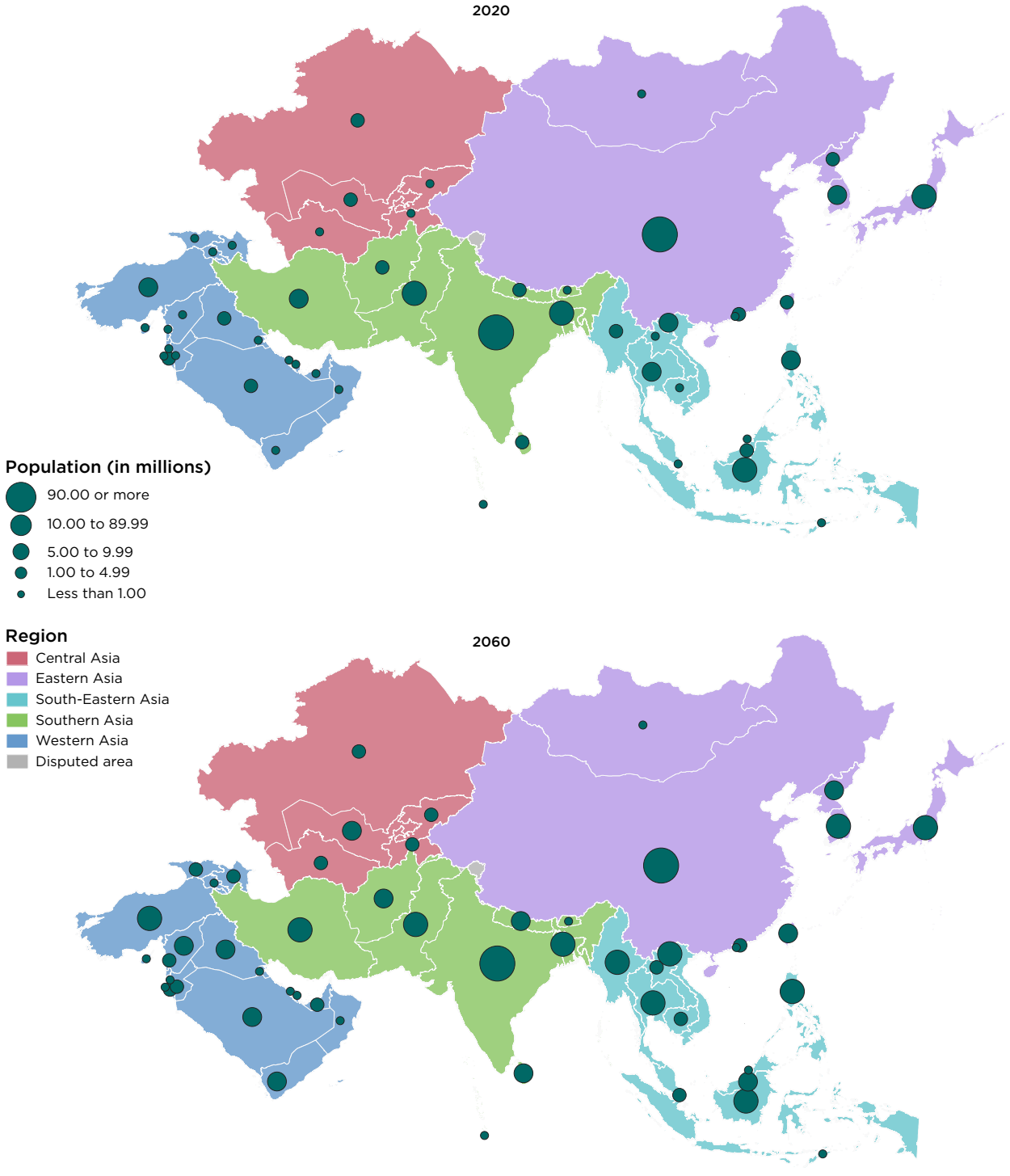
Country	2020		Country	2060	
	65 and older population	World ranking		65 and older population	World ranking
China	176,643	1	China	445,306	1
India	95,225	2	India	317,751	2
Japan	35,726	4	Indonesia	67,736	4
Indonesia	18,943	7	Pakistan	48,644	6
Bangladesh	11,153	12	Bangladesh	43,611	7
Pakistan	10,426	13	Japan	38,475	8
Thailand	8,729	16	Vietnam	30,372	12
South Korea	8,244	17	Iran	27,391	13
Vietnam	7,016	22	Turkey	23,673	15
Turkey	6,872	23	Philippines	23,166	17

Source: U.S. Census Bureau, International Database, 2021.

Figure 2-4.

Population Aged 65 and Older for Asian Countries: 2020 and Projected 2060

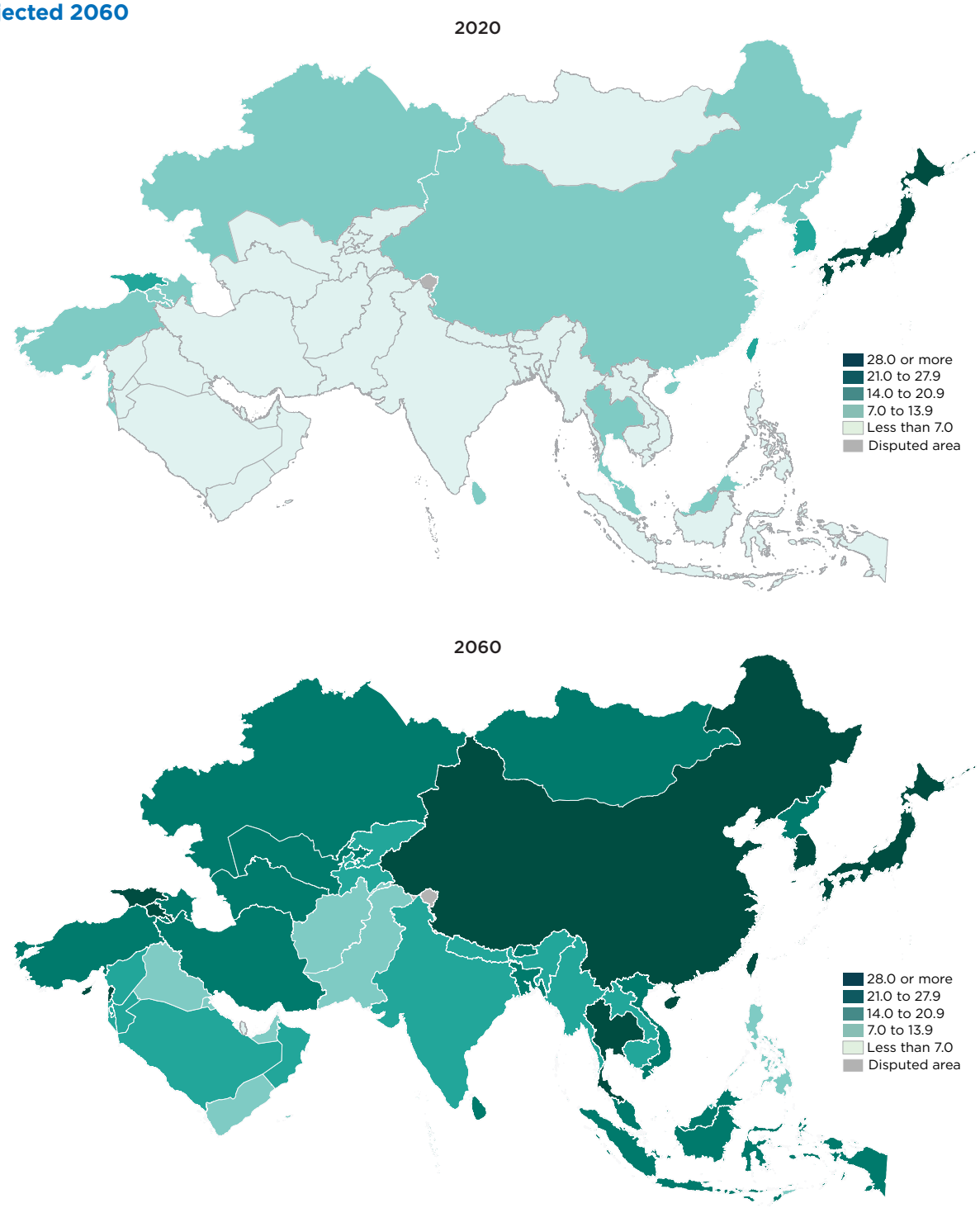
(Numbers in millions)



Source: U.S. Census Bureau, International Database, 2021.

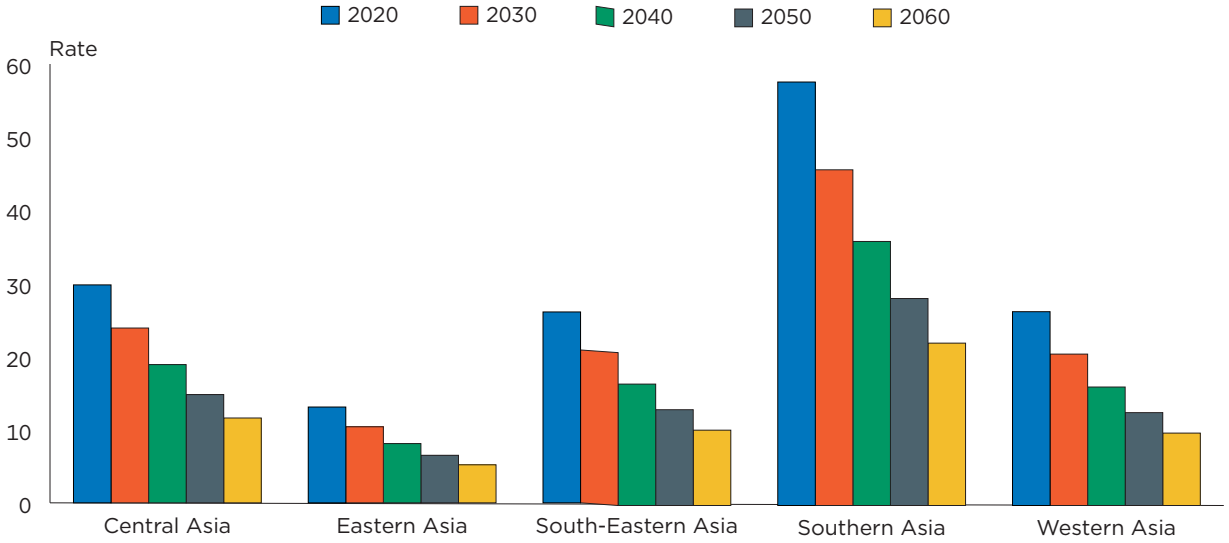
Figure 2-5.

Percentage of Total Population Aged 65 and Older for Asian Countries: 2020 and Projected 2060



Source: U.S. Census Bureau, International Database, 2021.

Figure 2-6.
Mortality Rates for Children Under Age 5 by Asian Subregions: 2020 Projected to 2060



Note: The under-age-5 mortality rate is the number of deaths of infants and children under 5 years old per 1,000 live births.
Source: U.S. Census Bureau, International Database, 2021.

related services—notably, Asian and its subregions have had many of the most vigorous programs in the world (Ross and Stover, 2001). Lowered birth rates may in turn result in further health benefits as parents focus greater resources on fewer children, which may help propel further declines in child mortality even in areas where it is currently highest (Figure 2-6).

These shifts in birth and death rates are closely connected to population growth. Given that death rates tend to fall before birth rates, the excess in birth rates results in rapid population growth until both rates fall to similarly low levels. The pace at which this occurs will vary from society to society and region to region. Figure 2-7 shows this transition in Eastern Asia and Southern Asia, where each subregion's transition is predominantly impacted by a country with over 1 billion people (China and India, respectively). Eastern Asia experienced a more rapid decline in mortality, which was followed by an unusually rapid fertility decline in the 1970s due in part to China's birth restrictions. In contrast, the more gradual pace of fertility declines in Southern Asia resulted in a larger and sustained excess in birth rates over death rates.

For quite some time, demographers have expected that India's population will overtake China's around the year 2025 (U.S. Census Bureau, 2011). Yet from a regional perspective, the population of Southern Asia (which includes Bangladesh, Pakistan, and others, in addition to India) already surpassed that of Eastern Asia about 2 decades ago (U.S. Census Bureau, 2021), and the gap between them is expected to widen into the foreseeable future.

Birth rates—just how low can they go?

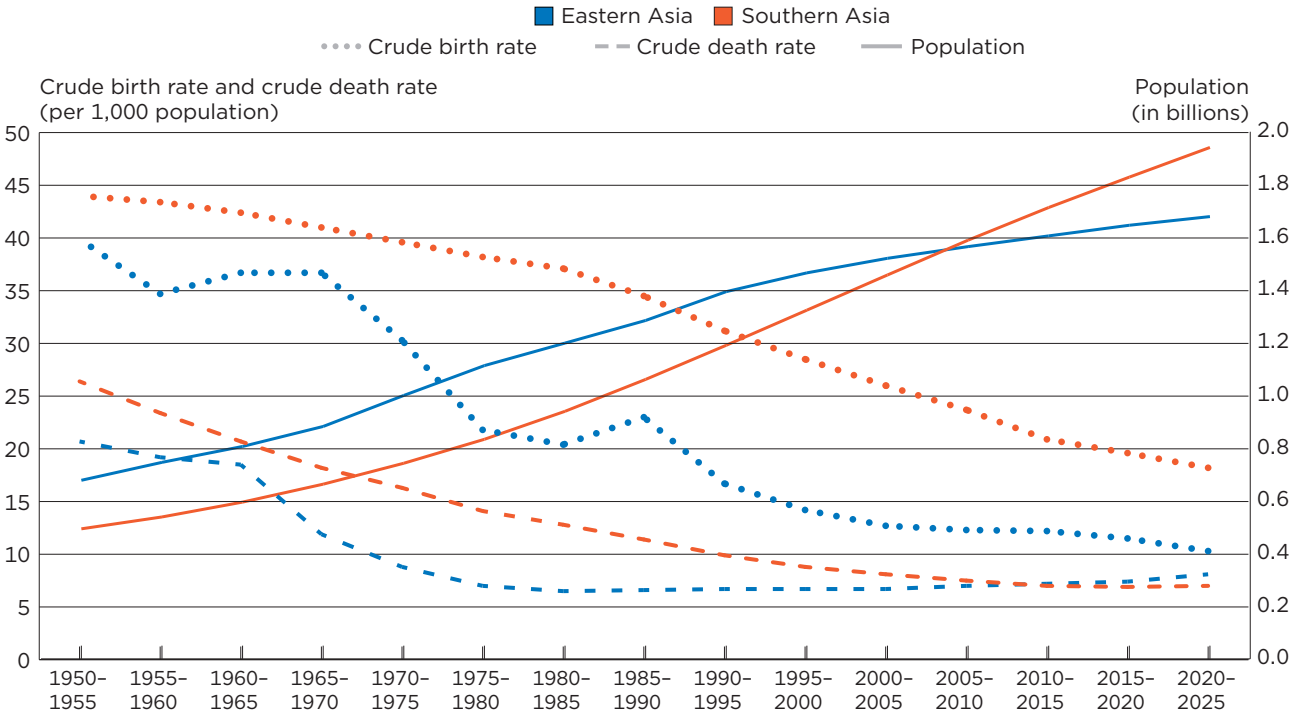
Table 2-2 shows current estimates of the total fertility rate (TFR) in Asian countries and areas in 2020 and projected levels in 2060.[3] In most countries where the TFR has fallen below two children per woman, the level at which each couple "replaces itself," the TFR never exceeds replacement again. The forces associated with this change appear to be as irreversible as those that drove the Industrial Revolution (Komlos, 1990).

What remains uncertain is how low birth rates may go in each

[3] TFR is the average number of children that would be born per woman if all women lived to the end of their childbearing years and bore children according to a given set of age-specific fertility rates.

Figure 2-7.

Demographic Transition in Eastern Asia and Southern Asia: 1950–1955 to 2020–2025

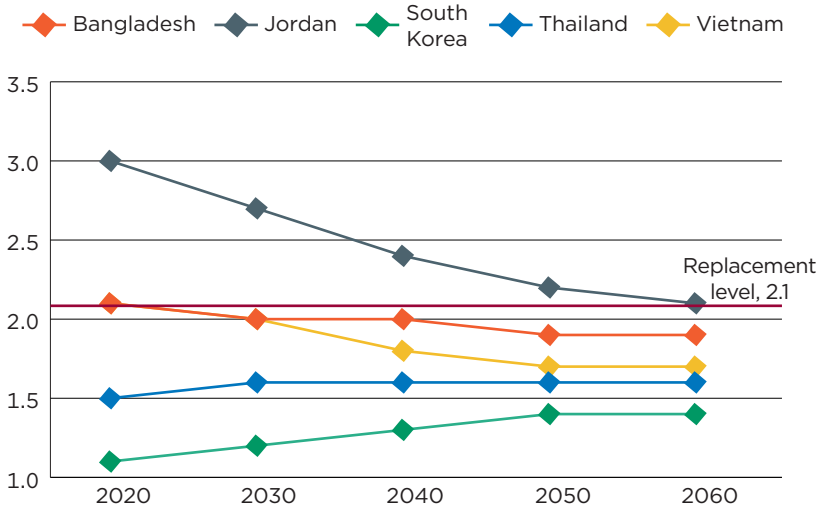


Source: U.S. Census Bureau, United Nations, World Population Prospects, 2019.

country. Figure 2-8 presents estimated TFRs from 2020 and projected forward to 2060 in Bangladesh, Jordan, South Korea, Thailand, and Vietnam. With the exception of Jordan (with a TFR of 3.0), the TFR in 2020 was no more than the replacement level of 2.1. Note that Jordan's relatively high fertility should not be taken as representative of Western Asia, nor other countries with large Muslim populations in Western, Southern, and Southeastern Asia. Among the top five most populous Asian countries with Muslim majorities, four have TFRs in 2020 at or below 2.1 (Bangladesh, Indonesia, Iran, and Turkey), the exception being Pakistan (TFR of 3.6) (Table B-2).

Figure 2-8.

Total Fertility Rates for Selected Asian Countries: 2020 Projected to 2060



Note: The total fertility rate is the average number of children that would be born per woman if all women lived to the end of their childbearing years and bore children according to a given set of age-specific fertility rates. The replacement level is the level at which each couple "replaces itself."
Source: U.S. Census Bureau, International Database, 2021.

Table 2-2.

Total Fertility Rates for Asian Subregions and Countries: 2020 and Projected 2060

Subregion and country	2020	2060
CENTRAL ASIA		
Kazakhstan	2.2	1.7
Kyrgyzstan	2.5	1.9
Tajikistan	2.5	2.0
Turkmenistan	2.0	1.9
Uzbekistan	1.7	1.7
EASTERN ASIA		
China	1.3	1.6
Hong Kong	1.2	1.4
Japan	1.4	1.6
Korea, North	1.9	1.7
Korea, South	1.1	1.4
Macau	1.2	1.5
Mongolia	2.0	1.7
Taiwan	1.1	1.4
SOUTH-EASTERN ASIA		
Brunei	1.8	1.7
Burma	2.1	1.7
Cambodia	2.3	1.7
Indonesia	2.1	1.7
Laos	2.5	1.7
Malaysia	1.8	1.7
Philippines	3.5	1.9
Singapore	1.1	1.4
Thailand	1.5	1.6
Timor-Leste	4.4	2.1
Vietnam	2.1	1.7
SOUTHERN ASIA		
Afghanistan	4.8	2.6
Bangladesh	2.1	1.9
Bhutan	1.8	1.7
India	2.1	1.7
Iran	1.9	1.7
Maldives	1.7	1.7
Nepal	2.0	1.7
Pakistan	3.6	2.1
Sri Lanka	2.0	1.7
WESTERN ASIA		
Armenia	1.6	1.7
Azerbaijan	1.9	1.7
Bahrain	1.7	1.6
Cyprus	1.5	1.6
Gaza Strip	3.6	2.0
Georgia	1.8	1.7
Iraq	3.4	2.1
Israel	2.6	2.1
Jordan	3.0	2.1
Kuwait	2.3	1.9
Lebanon	1.7	1.7
Oman	2.8	1.9
Qatar	1.9	1.8
Saudi Arabia	2.0	1.7
Syria	2.9	2.0
Turkey	2.0	1.7
United Arab Emirates	1.7	1.6
West Bank	3.1	2.1
Yemen	3.2	2.0

Note: The total fertility rate is the average number of children that would be born per woman if all women lived to the end of their chldbearing years and bore children according to a given set of age-specific fertility rates.

Source: U.S. Census Bureau, International Database, 2021.

The TFRs in Thailand and South Korea are currently far lower than the replacement level, only about 1.5 and 1.1, respectively. For several years already, South Korea's fertility has been among the lowest in the world, a distinction that few observers would have predicted a half century ago (Haub, 2010). Current projections assume that this very low fertility may rebound somewhat, which could result in a slower pace of aging. Even so, the population will eventually decline, given that fertility is not projected to return to replacement levels.

That fertility in these countries truly will rebound is, of course, uncertain as projections are subject to many unforeseen circumstances. And demographers have long debated the relative roles of fertility desires, family planning programs, and developmental factors in bringing about such low rates (Pritchett, 1994). But there is a strong consensus about the general trend of the future. Once fertility falls well below replacement levels, pronatal policies can do little to raise them, and any increase brought about by such policies will be extremely expensive. A review of countries implementing such incentives found that even if they represented 10 percent of household incomes, fertility would increase by no more than 0.5 to 4.1 percent (Stone, 2020)—for countries with a TFR of 1.5, that would amount to no more than 0.06 additional births.

Box 2-1.

Fertility Stalling and Aging—The Case of Jordan and Egypt

By Issa Masarweh, Arab Institute for Training and Research in Statistics, Jordan

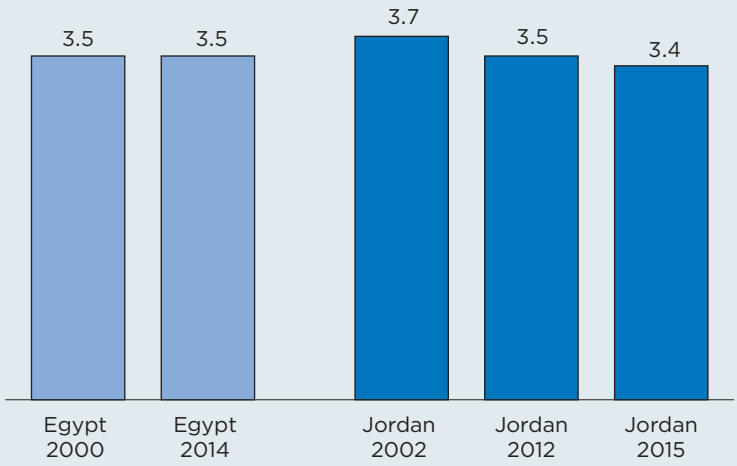
Jordan and Egypt are neighboring countries separated by the Gulf of Aqaba, and the majority of both populations are Sunni Muslims. After decades of fertility decline in the last quarter of the twentieth century, in recent years fertility has leveled off in these two countries. Recent Demographic and Health Survey data suggests an enduring stalling in total fertility at 3.5 births per woman (Figure 2-9). This trend is not due to data errors. It is real (Cetorelli and Leone, 2012; Al Zalak and Goujon, 2017).

Two key determinants of fertility may explain the recent fertility stalling in these two countries (Table 2-3). The first is that the percentage of married women among those at reproductive ages (15–49 years old) has increased since the beginning of the 2000s, which implies a greater number of women at risk for becoming pregnant. The second is that the modern contraceptive prevalence rate has barely increased. Thus, the control of fertility through modern contraception has not kept pace with the increase in the pool of potential mothers-to-be.

The stalled fertility decline has slowed the pace of aging. According to the latest population censuses in Egypt (2017) and Jordan (2015), the share of persons below the age of 15 remained just over one-third of the total population in these two countries, which indicates a still young population structure. The corresponding share of their populations aged 65 and older was 3.9 percent and 4.2 percent, respectively.

However, the populations of Jordan and Egypt will age rapidly once the fertility decline resumes. In Figure 2-10, we present a pair of projections of the percentage aged 65 and over in both Egypt and Jordan from 2020–2050 taken from the United Nations World Population Prospects (United Nations, 2019). The first projection assumes that fertility will remain frozen at the current stalled levels and the second assumes renewed decline according to the United Nations medium variant assumptions. Even under the constant fertility assumption, the proportion aged 65 and over is projected to increase due largely to current age structure and projected declines in old-age mortality, which presage increases in those at older ages. Yet the second scenario of falling fertility implies a comparatively larger reduction of the younger population, which would propel population aging further. The latter scenario suggests that resumed fertility decline after the stalling will put extra pressure on social security systems as well as health care needs and programs.

Figure 2-9.
Total Fertility Rates for Jordan and Egypt: 2000 to 2015



Source: The Demographic and Health Survey. For Jordan 2015, Population and Housing Census, 2015.

Continued on next page.

Table 2-3.

Proximate or Direct Determinants of Fertility in Jordan and Egypt: 2000 to 2017/2018

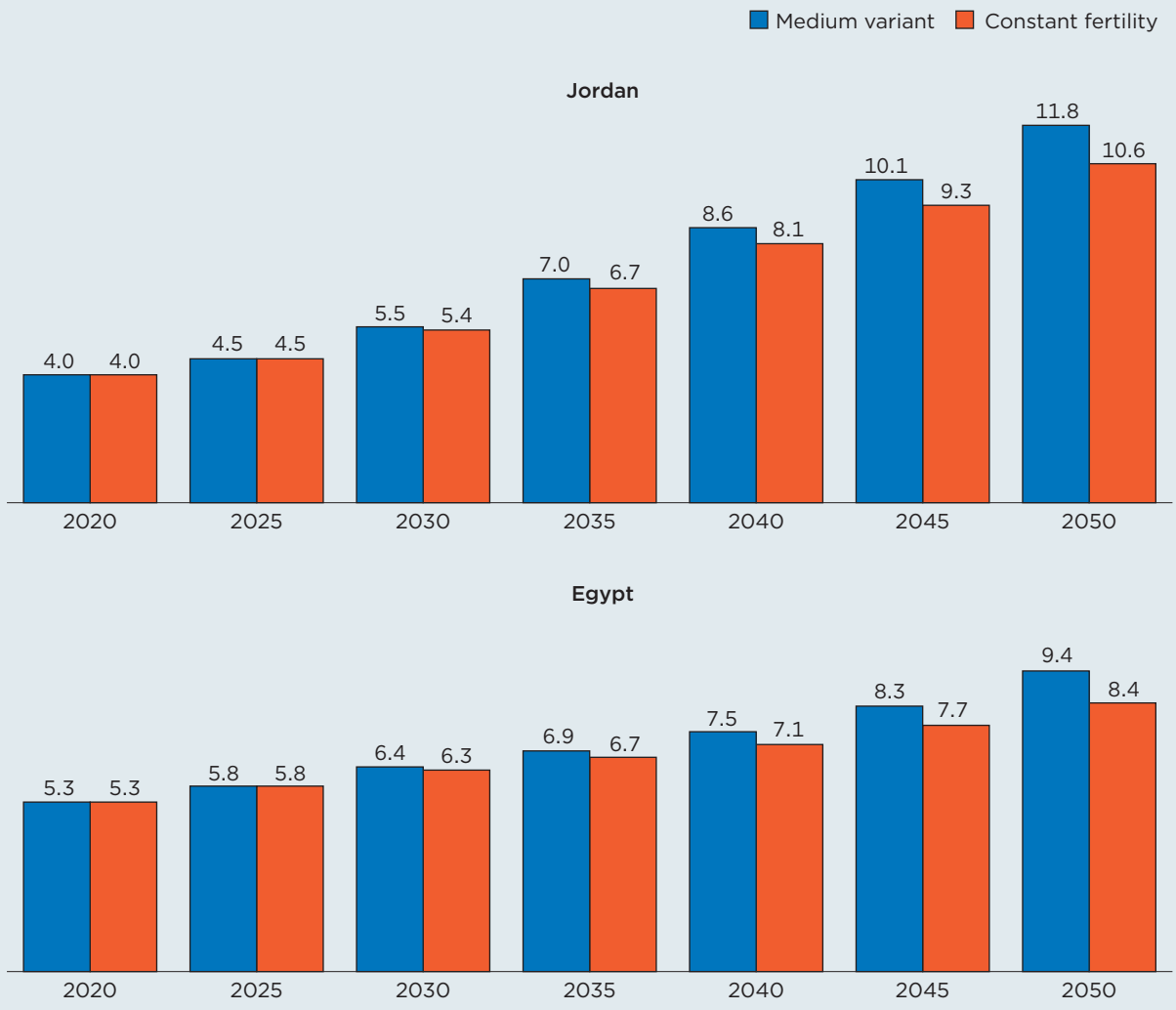
(In percent)

Year	Jordan		Year	Egypt	
	WRA currently married	Modern CPR		WRA currently married	Modern CPR
2002	51.7	41.2	2000	62.8	53.9
2007	54.6	41.9	2003	62.3	56.6
2009	55.9	42.0	2005	62.1	56.5
2012	54.3	42.3	2008	64.5	57.6
2017/2018	55.8	37.4	2014	69.7	56.9

Note: WRA is women of reproductive age; CPR is contraceptive prevelance rate for married women.
Source: The Demographic and Health Surveys Program, 2000–2017/2018.

Figure 2-10.

Percentage of Population Aged 65 and Older in Jordan and Egypt: 2020 to Projected 2050



Source: United Nations, World Population Prospects, 2019.

Lower birth rates result in fewer children today and fewer mothers tomorrow.

As birth rates fall, the number of births (and children) will naturally be smaller than they would have been if such rates remained high. The impact of lower birth rates on age and sex structure is illustrated in Figure 2-11. In Jordan, where the TFR is about three per woman (down from nearly five in the early 1990s; U.S. Census Bureau, 2021), that structure as of 2020 still resembles the classic "population pyramid." The pyramid shape is caused by higher birth rates, which results in a larger base at the youngest ages, as well as higher death rates, which winnow each cohort as it gets older. In Vietnam, where the TFR has been about 2.0 for almost 2 decades (U.S. Census Bureau, 2021), the age structure below the age of 20 has a more rectangular shape. However, even at the youngest ages, each succeeding generation is slightly larger than its predecessor because the number of mothers who bore them was growing due to higher fertility in the past.

The number of births that occur each year reflects both current birth rates and the number of potential mothers experiencing those rates. The number of such mothers is itself determined in part by birth rates in the past. The profound implications of this dynamic for aging societies are illustrated by South Korea, where the TFR first fell below 1.5 in 1998 and has remained well below that level ever since, plummeting in recent years to an average of about 1.1 (U.S. Census Bureau, 2021). Protracted low fertility has caused its age structure to invert into a vase shape extending through younger adult ages (Figure 2-11). Given that shape, the number of potential mothers each year will inevitably shrink throughout the next generations. In fact, the total population of South Korea already began to contract in 2020.

Such a shrinkage in the number of mothers has led South Korea into what has been called a "low fertility trap" (Lutz et al., 2006). Even if its TFR were to rise back up to two births per woman (which seems unlikely), the population would still be destined to shrink due to the current vase-shaped structure of young adults. The projection to 2060 assumes that South Korea's TFR will remain very low, albeit rising somewhat, resulting an inverted pyramid shape below the age of 70.

Lower mortality results in more people living to older ages, especially women.

In addition to low fertility, which constricts the base of a population's age-sex structure, lower mortality implies that higher proportions of people will survive to older ages. This contributes to population aging because the pyramid at older age groups narrows less quickly than when mortality levels were high. In fact, at certain times and places, the increase in numbers at older ages near the top of the pyramid may be large enough to offset the declining numbers at younger ages caused by low birth rates (Guillot, 2005).

Life expectancies at birth have been increasing throughout Asia over the past 2 decades. Similarly, life expectancies at older ages have also improved. In the year 2000, eight Asian countries had life expectancies at age 60 (LE60) of 20 years or more—by 2019, 17 countries had reached or surpassed this threshold (Table B-5). The top five highest LE60 for 2019 were in Japan (26.7 years), Singapore (25.3), South Korea (25.1), Israel (24.9), and Taiwan (23.9; Table 2-4). Japan, South Korea, and Singapore also had the highest LE60 in the world (World Health Organization, 2020).

Table 2-4.
Ten Highest and Lowest Life Expectancy at Age 60 for Asian Countries: 2015–2020

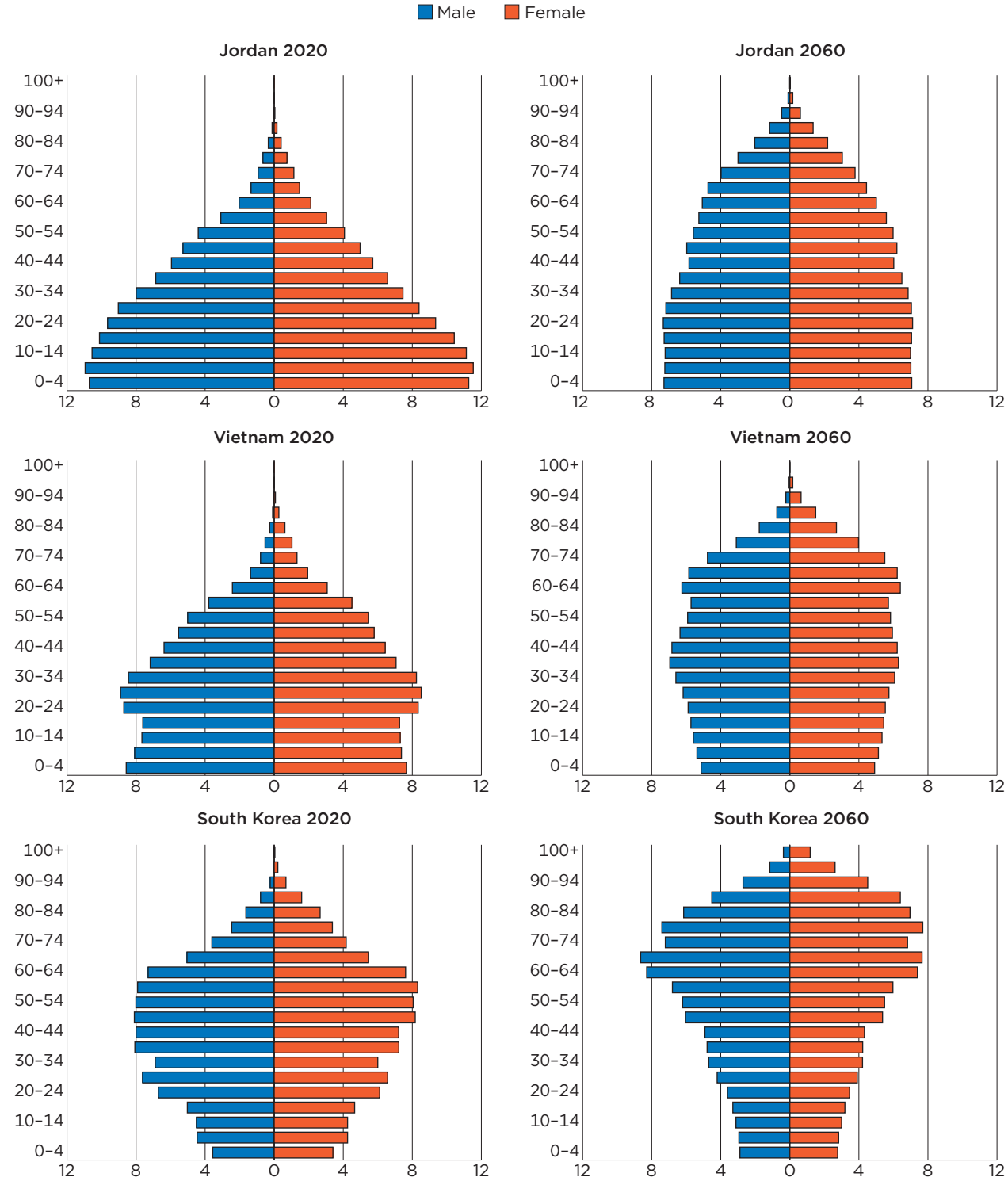
Country	Highest	Country	Lowest
Japan	26.7	Uzbekistan	17.5
Singapore	25.3	Turkmenistan	17.5
South Korea	25.1	Mongolia	17.3
Israel	24.9	Timor-Leste	17.2
Taiwan	23.9	Kyrgyzstan	17.2
Cyprus	22.8	Laos	17.0
Thailand	22.7	Tajikistan	16.9
Turkey	22.2	Burma	16.9
Qatar	22.1	Yemen	16.5
Lebanon	22.0	Afghanistan	16.4

Source: United Nations, World Population Prospects 2019.

Figure 2-11.

Population by Age and Sex for Selected Asian Countries: 2020 and Projected 2060

(In percent)



Source: U.S. Census Bureau, International Database, 2021.

Box 2-2.

The Many Shapes of Age and Sex Structure in Western Asia

By Daniel Goodkind, U.S. Census Bureau, Population Division

The age and sex structure of a society reflects not only levels and trends in fertility and mortality. In some cases, migration can also have a profound impact on such structure (United Nations, 2017b).

The impact of international migration on population structure is well illustrated by the Gulf States of Western Asia, where large proportions of residents are noncitizen migrants from other countries, especially from Southern and Southeastern Asia (Ishii et al., 2020; Bastaki, 2020). The six countries composing the Gulf Cooperation Council (GCC—Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates/UAE) have encouraged such migration to address severe labor shortages (Connor, 2016; Robinson, 2021). International migrant workers are essential to the region's oil industry and other related industrial and service occupations. They are typically males who arrive at younger adult ages and later return home, a pattern that demographers refer to as "circular migration" (Sole, 2016). The return home may be after a brief stint or a lifetime of work that ends only upon their reaching older ages, or somewhere in between.

The impact of migration in GCC countries is indicated by the excess of those at working ages, especially males, as the figures of age-sex distribution indicate (Figure 2-12). One of the most extreme distortions is in Qatar, where a disproportionately large concentration of males appears between the age of 20 and 59. In fact, about 95 percent of Qatar's employed population are noncitizens, the highest share in the GCC (Gulf Labor Markets and Migration Database, 2021). Yet even in Saudi Arabia, where that share is around 57 percent, the GCC's lowest, noncitizen migrants constitute the majority of the labor force.

Throughout the GCC, age-sex distortions stand out compared to other Western Asian countries where migration is less prevalent. One caveat about the impact of migration on age structure is that its magnitude and directional flow can change rapidly, as was the case in the wake of COVID when migration from India to the GCC declined (Calabrese, 2020).

Consideration of international migration, whatever the future flows may be, can help us better interpret demographic indicators such as the old-age dependency ratio. For instance, in GCC countries, such ratios are lower than in many other countries because the denominators at working ages are inflated by noncitizen migrants; if those denominators were limited to citizens at working ages, old-age dependency estimates would be much higher. Yet international migrants may also provide indirect support and benefits to the local older population, in addition to older relatives in their countries of origin.

Continued on next page.

Figure 2-12.

Population by Age and Sex for GCC and Other Western Asian Countries: 2020

(In percent within each sex)

Note: GCC is the Gulf Cooperation Council. GCC countries include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates/UAE.
Source: U.S. Census Bureau, International Database, 2021.

Yet there are significant health disparities between lower and higher income Asian countries. Four countries (Afghanistan, Burma, Tajikistan, and Yemen) in the region had LE60 lower than 17 years, with Afghanis aged 60 expecting to live an average of just 16.4 years, 10.1 years less than in Japan. Nevertheless, even in countries with comparatively lower life expectancy, the numbers of older persons are projected to rise through 2060, just like everywhere else (Table B-1). (Refer to Chapter 4 for discussion on healthy life expectancy at the age of 60, an indicator that examines longevity and health further.)

As is the case for the rest of the world, females tend to live longer than males in Asia. The female advantage in life expectancy at birth in Asia currently averages 5.0 years (77.3 years for females vs. 72.3 years for males), although that advantage varies widely across countries—from –0.1 years in Qatar to 9.0 years in Georgia and Mongolia (Table B-5). The highest female LE60 was in Japan (28.6 years), with South Korea and Singapore also both higher than 27 years, while women living in Afghanistan and Tajikistan had LE60 of 15.1 and 17.2 years, respectively—a difference of 13.5 years between the highest and lowest. The highest average male LE60 was in Japan and Singapore (23.9 and 23.8 years), with three more countries at higher than 23 years. Men living in Tajikistan had an average LE60 of 15.1 years, and in Mongolia just 14.2 years.

Table 2-5 shows LE60 for males and females in Asia's five subregions. Since the early 1950s, the female advantage has increased in every subregion. Key reasons for that expanding advantage include behavioral and lifestyle differences (such as smoking and alcohol consumption), declining fertility (which reduces the likelihood of maternal mortality), as well as sex differences in the prevalence of heart disease and cancers, causes of death that have become more common due to the decline in infectious disease overall (Beltrán-Sánchez, Finch, and Crimmins, 2015).

The relative increase in female longevity contributes to a growing feminization of widowhood as wives outlive their husbands, a trend that is compounded by the fact that brides typically marry husbands several years older than they are (Jones and Yeung, 2014; Raymo et al., 2015). As a result, wives tend to reach older ages later than their husbands do and can expect to live longer after their husband's death than a husband would live after the death of a wife. In China, for instance, about 68 percent of spousal deaths among married couples occur among husbands rather than wives (Jiang, Li, and Sanchez-Barricarte, 2014). In Thailand and Burma (Myanmar), more than three quarters of all widows and widowers above the age of 60 are female, while in Vietnam, more than 85 percent of them are female (Teerawichitchaninan and Knodel, 2017; United Nations Population Fund, General Statistics Office Viet Nam, and Japan Fund for Poverty Reduction, 2021)—this excess imbalance in Vietnam may be temporary, given that it is exacerbated by excess male mortality and international migration in the past owing to military conflicts (Goodkind, 1997). Given that older women in many countries have not worked for pay or otherwise accumulated their own financial resources, a life that is both longer and lived in poverty constitutes a serious concern.

POPULATION AGE STRUCTURE AND OLD-AGE DEPENDENCY RATIOS

Median age in Eastern Asia is projected to rise well past the typical childbearing ages.

The impact of aging is further illustrated by two additional measures. One of these is the median age, the age above and below which the population is equally divided. As mortality and fertility fall, proportional shifts towards older ages cause the median age to rise. Given female advantages in survival, the median age is typically higher among females than males.

In Eastern Asia, the median age for both sexes combined is projected to rise from 39.4 at present to 51.3 by 2060, reaching 50.0 for males and 52.9 for females (Table 2-6). The latter statistic is particularly noteworthy because more than one-half of females are expected to be beyond typical childbearing ages. Moreover, that half or more of Eastern Asians will be above the age of 50 implies increased proportions of older persons relative to those at working ages who can support them, which will create challenges for both families and public support systems going forward (Chapter 3). Even in other subregions of Asia, median ages are projected to rise to 40 or more for females and to 39 or more for males.

The ratio of the older population to those at working ages will continue to increase.

A second measure of aging is the old-age dependency ratio, which compares the number of people at older ages (65 and above in this report) by the number of people

Table 2-5.

Life Expectancy at Age 60 for Asian Subregions by Sex: 1950–1955, 2000–2005, 2005–2010, 2010–2015, and 2015–2020

(In years)

Subregion/region	1950–1955	2000–2005	2005–2010	2010–2015	2015–2020
ASIAN SUBREGIONS					
Male					
Central Asia	13.5	14.8	15.0	15.3	16.0
Eastern Asia	10.5	17.8	18.1	18.6	19.5
South-Eastern Asia	12.3	16.3	16.8	17.3	18.0
Southern Asia	12.0	16.2	16.7	17.2	17.5
Western Asia	13.5	17.1	17.5	18.3	18.8
Female					
Central Asia	17.2	18.7	18.9	18.8	19.8
Eastern Asia	12.6	20.9	21.5	22.4	23.3
South-Eastern Asia	14.4	19.0	19.9	20.8	21.4
Southern Asia	12.7	17.5	17.9	18.5	18.8
Western Asia	14.9	20.3	21.0	21.6	22.1
Female Advantage (Female - Male)					
Central Asia	3.7	3.9	3.9	3.5	3.8
Eastern Asia	2.0	3.1	3.4	3.8	3.9
South-Eastern Asia	2.1	2.7	3.2	3.5	3.5
Southern Asia	0.7	1.3	1.2	1.2	1.3
Western Asia	1.4	3.2	3.5	3.3	3.3
WORLD REGIONS					
Male					
Africa	12.5	14.4	14.9	15.5	16.0
Asia	11.3	17.0	17.4	17.9	18.6
Europe	15.5	17.7	18.8	19.8	20.4
Latin America and the Caribbean	14.4	18.9	19.4	19.8	20.2
Northern America	16.0	20.3	21.3	21.9	22.2
Oceania	13.7	20.4	21.4	22.2	22.8
Female					
Africa	13.4	16.1	16.6	17.2	17.7
Asia	12.9	19.5	20.1	20.8	21.5
Europe	17.8	22.1	23.0	23.9	24.5
Latin America and the Caribbean	15.8	21.9	22.4	23.0	23.5
Northern America	19.1	23.5	24.4	24.9	25.2
Oceania	16.6	23.5	24.2	24.8	25.4
Female Advantage (Female - Male)					
Africa	0.9	1.7	1.7	1.7	1.7
Asia	1.7	2.5	2.6	2.9	2.9
Europe	2.4	4.4	4.2	4.1	4.1
Latin America and the Caribbean	1.4	3.0	3.1	3.2	3.2
Northern America	3.1	3.2	3.0	3.0	3.0
Oceania	2.9	3.1	2.8	2.5	2.6

Source: United Nations Population Division, World Population Prospects, 2019.

Table 2-6.

Median Age for Asian Subregions by Sex: 2020 and Projected 2060

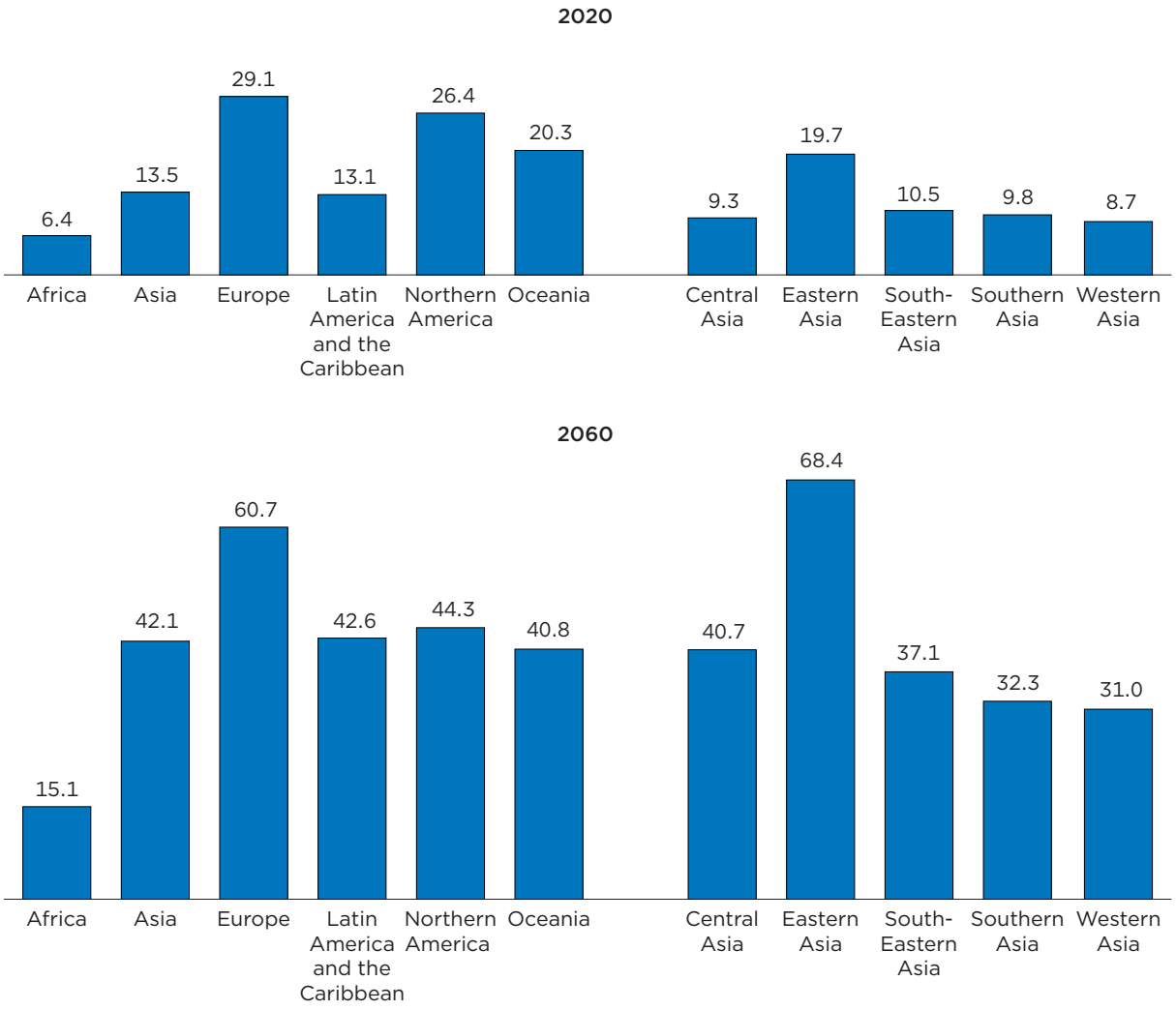
(In years)

Subregion	Both sexes		Male		Female	
	2020	2060	2020	2060	2020	2060
Central Asia	29.6	42.5	28.8	41.2	30.5	43.8
Eastern Asia	39.4	51.3	38.3	50.0	40.5	52.9
South-Eastern Asia	30.1	41.8	29.3	40.6	30.9	42.9
Southern Asia	27.9	40.3	27.3	39.8	28.5	40.7
Western Asia	28.2	39.6	28.7	39.3	27.7	40.0

Source: U.S. Census Bureau, International Database, 2021.

Figure 2-13.

Old-Age Dependency Ratios for World Regions and Asian Subregions: 2020 and Projected 2060



Note: Old-age dependency ratio is population aged 65 and older divided by population aged 20–64.
Source: U.S. Census Bureau, International Database, 2021.

at working ages (20–64 in this report). Because those under the age of 20 are not included in the old-age dependency ratio, this metric has advantages compared to the median age because it is unaffected by recent changes in fertility. It also provides an intuitive way of understanding the economics of aging—on average, how many people at working ages will be supporting each older person?

An important note about the old-age dependency ratio is that the working-age population support children as well. The youth dependency ratio compares the numbers of youth aged zero to 19 to the working-age population. The old-age dependency ratio and youth dependency ratio combined make up the total dependency ratio. More importantly, the key age marker upon which the old-age dependency ratio is based does not indicate precisely who is economically dependent or active. Some people continue to work past the age of 65 and some people at working ages do not work. Thus, the metric provides only a rough approximation of societal dependency.

The current old-age dependency ratio in Asia is 13.5 older persons for every 100 at working ages (Figure 2-13), which roughly

translates into six working-age adults supporting one older person. This ratio is comparable to that of Latin America and much lower than those of Europe and Northern America. Despite variation in those ratios across Asian subregions—from 19.7 (per 100) in Eastern Asia to 8.7 in Western Asia—in Asia as a whole, old-age dependency is expected to increase faster than in any other world region in the decades to come.

Such broad shifts in age structure are typically reflected in living arrangements. For example, household size tends to shrink as birth rates fall. Yet despite that tendency, other traditional features of coresidence have persisted. For instance, multigenerational households where children, parents, and grandparents coreside, remain common in much of Asia, especially in South and Southeast Asia (Kamiya and Hertog, 2020). In East Asia as well, socioeconomic development and ultra-low birth rates have not been accompanied by a convergence towards Western models of family structure or the value of individualism upon which they rest (Raymo et al., 2015).

No matter how family systems evolve in the future, rising dependency ratios indicate how important it is for Asian countries to prepare for their older population's economic security and health security. Falling birth rates, in addition to reshaping overall population structure, affects the size and composition of individual families, and that composition in turn reshapes key life course decisions made by older persons and those that care for them. Examples of related concerns—such as when and if to stop working, whether older persons will rely more on family or institutional programs for economic support, and what health challenges may arise—will be explored in the next two chapters.

REFERENCES

Al Zalak, Zakarya, and Anne Goujon, "Exploring the Fertility Trend in Egypt," *Demographic Research*, Volume 37, Article 32, 2017, pp. 995–1030, <www.demographic-research.org/Volumes/Vol37/32/>.

Bastaki, Jinan, "Labour Migration and the Gulf Arab States: Some Observations on the Potential of the GCR," *Journal of Refugee Studies*, Volume 34, Issue 3, 2020, pp. 2912–2932, <https://doi.org/10.1093/jrs/feaa093>.

Beltrán-Sánchez, Hiram, Caleb E. Finch, and Eileen M. Crimmins, "Twentieth Century Surge of Excess Male Mortality," proceedings of the National Academy of Sciences of the United States, Volume 112(29), July 2015, pp. 8993–8998, <https://doi.org/10.1073/pnas.1421942112>.

Calabrese, John, "India-Gulf Migration—A Testing Time," Middle East Institute, April 14, 2020, <www.mei.edu/publications/india-gulf-migration-testing-time>.

Cetorelli, Valeria and Tiziana Leone, "Is Fertility Stalling in Jordan?," *Demographic Research*, Volume 26(13), 2012, pp. 293–318.

Connor, Phillip, "Middle East's Migrant Population More Than Doubles Since 2005," *Pew Research Center*, 2016.

DaVanzo, Julie, Lauren Hale, Abdur Razzaque, Mizanur Rahman, "The Effects of Pregnancy Spacing on Infant and Child Mortality in Matlab, Bangladesh: How They Vary By the Type of Pregnancy Outcome That Began the Interval," *Population Studies*, Volume 62(2), 2008, pp. 131–54, <https://pubmed.ncbi.nlm.nih.gov/18587691/>.

Goodkind, Daniel, "The Vietnamese Double Marriage Squeeze," The International Migration Review, Volume 31(1), 1997, pp. 108–127, <https://doi.org/10.2307/2547260>.

Guillot, Michel, "The Momentum of Mortality Change," *Population Studies*, Volume 59:3, 2005, pp. 283–294, <https://www.jstor.org/stable/30040472?seq=1>.

Gulf Labor Markets and Migration Database, Gulf Research Center—Graph 6 and 7, Gulf Cooperation Council, <https://gulfmigration.grc.net>, accessed July 8, 2021.

Haub, Carl C., "Did South Korea's Population Policy Work Too Well?," *Population Reference Bureau*, 2010,<www.prb.org/resources/did-south-koreas-population-policy-work-too-well/>.

Ishii, Masako, Naomi Hosoda, Masaki Matsuo, and Koji Horinuki (eds.), "Asian Migrant Workers in the Arab Gulf States—The Growing Foreign Population and Their Lives, Volume 10," Brill, The Netherlands, 2019, "The Intimate and the Public in Asian and Global Perspectives," ISBN: 978-90-04-39540-4.

Jiang, Quanbao, Xiaomin Li, Jesus J. Sanchez-Barricarte, "Elderly Widowhood in China," *Asian Population Studies*, Volume 11(1), 2015, pp. 7–16, <www.tandfonline.com/doi/abs/10.1080/17441730.2014.981328>.

Jones, Gavin W., and Wei-Jun Jean Yeung, "Marriage in Asia," *Journal of Family Issues*, Volume 35, Issue 12, October 2014, pp. 1567–83, <https://doi.org/10.1177/0192513X14538029>.

Kamiya, Yumiko, and Sara Hertog, "Measuring Household and Living Arrangements of Older Persons Around the World: The United Nations Database on the Households and Living Arrangements of Older Persons 2019," Technical paper No. 2020-3, United Nations, Department of Economic and Social Affairs, Population Division, December 2020, <www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/desa-pd-technicalpaper-living_arrangements_of_older_persons_2019.pdf>.

Kirk, Dudley, "Demographic Transition Theory," *Population Studies*, Volume 50(3), 1996, pp. 361–387.

Komlos, John, "Nutrition, Population Growth, and the Industrial Revolution in England," *Social Science History*, Volume 14(1), 1990, pp. 69–91, <https://doi.org/10.1017/S0145553200020654>.

Korean Statistical Information Service (KOSIS), Statistical Database, <https://kosis.kr/eng>, accessed September 10, 2021.

Lutz, Wolfgang, Vegard Skirbekk, and Maria Rita Testa, "The Low Fertility Trap Hypothesis: Forces That May Lead to Further Postponement and Fewer Births in Europe," *Vienna Yearbook of Population Research 2006*, Verlag der Österreichischen Akademie der Wissenschaften, Vienna, Austria, 2007, pp. 167–192, <www.jstor.org/stable/23025482>.

Mather, Mark, Linda A. Jacobsen, and Paola Scommegna, "Population: An Introduction to Demography," *Population Bulletin*, Volume 75, no. 1, , 2021, <www.prb.org/wp-content/uploads/2021/03/sample-population-an-introduction-to-demography.pdf>.

Notestein, Frank W., "Population-The Long View," in Schultz, Theodore W. (ed.), *Food for the World*, 1945, University of Chicago Press, Chicago, IL, pp. 36–57.

Pritchett, Lant H., "Desired Fertility and the Impact of Population Policies," *Population and Development Review*, Volume 20, Issue 1, 1994, pp. 1–55, <www.jstor.org/stable/2137629>, accessed June 29, 2021.

Raymo, James M., Hyunjoon Park, Yu Xie, and Wei-jun Jean Yeung, "Marriage and Family in East Asia: Continuity and Change," *Annual Review of Sociology*, Volume 41, 2015, pp. 471–492.

Robinson, Kali, "What Is the Kafala System?" *Council on Foreign Relations*, March 23, 2021, <www.cfr.org/backgrounder/what-kafala-system>.

Ross, John, and John Stover, "The Family Planning Program Effort Index: 1999 Cycle," *International Family Planning Perspectives*, Volume 27(3), 2001, pp. 119–129,<https://doi.org/10.2307/2673833>.

Rutstein, Shea O., "Effects of Preceding Birth Intervals on Neonatal, Infant and Under-Five Years Mortality and Nutritional Status in Developing Countries: Evidence From the Demographic and Health Surveys," *International Journal of Gynecology & Obstetrics*, Volume 89, Supplement 1, 2005, pp. S7–S24, <https://doi.org/10.1016/j.ijgo.2004.11.012>.

Solé C., S. Parella, T. Martí, S. Nita (eds.), *Impact of Circular Migration on Human, Political and Civil Rights*, United Nations University Series on Regionalism, Volume 12, Springer International Publishing, Switzerland, 2016, Chapter 3, "Circular Migration and the Gulf States," <https://doi.org/10.1007/978-3-319-28896-3>.

Stone, Lyman, "Pro-Natal Policies Work, But They Come With a Hefty Price Tag, Institute for Family Studies," 2020, <https://ifstudies.org/blog/pro-natal-policies-work-but-they-come-with-a-hefty-price-tag>.

Teerawichitchainan, Bussarawan Puk, and John Knodel, "Late-Life Widowhood in Developing Southeast Asia: Comparative Perspectives From Myanmar, Thailand, and Vietnam," Singapore Management University, 2017, <https://ink.library.smu.edu.sg/cgi/viewcontent.cgi?article=3698&context=soss_research>.

United Nations, "Changing Population Age Structures and Sustainable Development. A Concise Report," Department of Economic and Social Affairs, Population Division, New York, 2017a, <www.un.org/en/development/desa/population/publications/pdf/trends/ConciseReport2017/English.pdf>.

_____, "Migration and Population Change—Drivers and Impacts," *Population Facts*, Department of Economic and Social Affairs, Population Division, New York, No. 2017/8, December 2017b. <www.un.org/en/development/desa/population/migration/publications/populationfacts/docs/MigrationPopFacts20178.pdf>.

_____, "World Population Prospects 2019: Methodology of the United Nations Population Estimates and Projects," Department of Economic and Social Affairs, Population Division, Online Edition, Rev. 1, 2019.

United Nations Population Fund, General Statistics Office, Viet Nam, and Japan Fund for Poverty Reduction, "Older Persons in Vietnam: An Analysis of the Population Change and Family Planning Survey in 2021," Youth Publishing House, Hanoi, 2021.

U.S. Census Bureau, International Database, 2021, <www.census.gov/data-tools/demo/idb/#/country?YR_ANIM=2021>.

_____, "U.S. Projected to Remain World's Third Most Populous Country Through 2050, Census Bureau Reports," June 27, 2011, <www.census.gov/newsroom/releases/archives/international_population/cb11-116.html>.

World Health Organization, Global Health Observatory, 2020.

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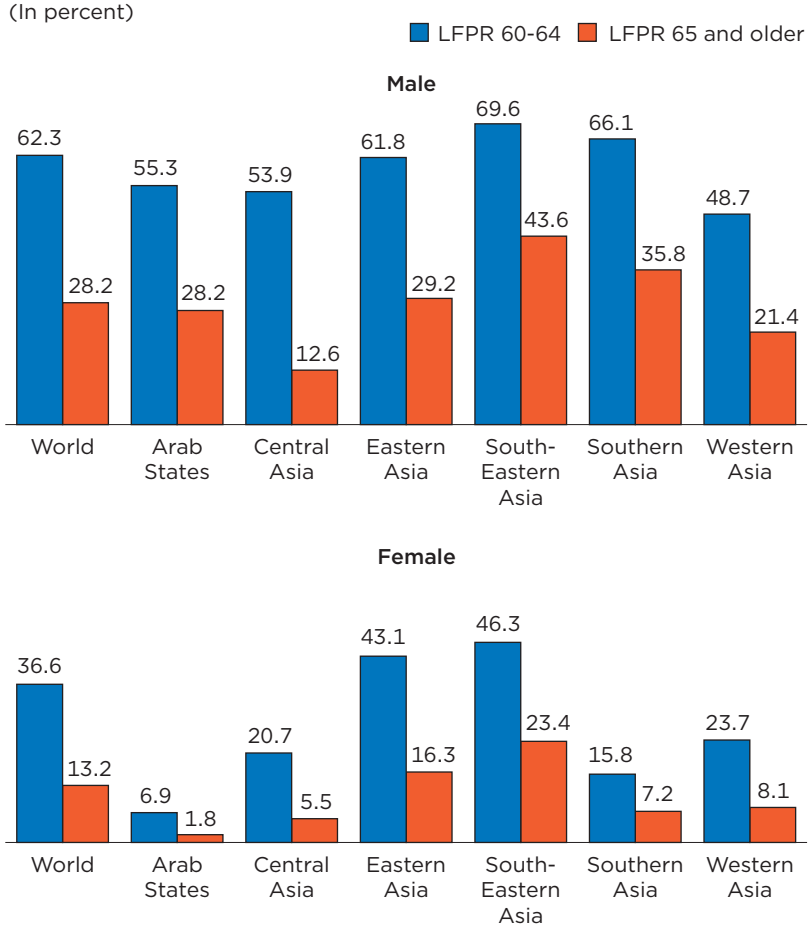
Chapter 3.

Work, Income, and Retirement

The demographic transition from high to low rates of births and deaths has caused populations throughout the world to get older, including in Asia. An accompanying transition in responsibilities for the social and economic security of the older population has recently taken place. As societal prosperity grows, the coverage of old-age social security systems tends to broaden, along with the emergence of other institutional sources of financial support. These sources of support augment and may partially replace the traditional sources from one's own work, savings, and family (Bloom et al., 2010; Klassen, Higo, and Dhirathiti, 2018; Teerawichitchainan et al., 2021). Yet even for countries at similar stages of development, there is considerable diversity within Asia's older population in regard to work, source of income, and the availability of old-age security systems.

Figure 3-1.
Labor Force Participation Rates (LFPR) by Age and Sex for International Labour Organization Asian Regions: 2019
(In percent)



Source: International Labour Organization modelled estimates, 2021.

LABOR FORCE PARTICIPATION AND OTHER INCOME SOURCES

Labor force participation differs widely by region, between men and women, and across older age groups.

Labor force participation rates (LFPRs) indicate the proportion of all people of particular age groups who are either working or looking for work. LFPRs at the age of 60–64 provide a particularly useful measure for this report because that age group is close to the age when many workers consider stop working. Asian LFPRs in general are close to worldwide averages of such rates for both males (62.3 percent) and females (36.6 percent), yet there are major differences across the subregions and by sex. Figure 3-1 illustrates that variation based on estimates from the International Labour Organization (ILO), which provides them for the subregions of Asia.[1]

Among males, the LFPR at the age of 60–64 is near or above the worldwide average in Southeastern Asia (69.6 percent), Southern Asia (66.1 percent), and Eastern Asia (61.8 percent), whereas it is below that average in Arab States (55.3 percent), Central Asia (53.9. percent), and Western Asia (48.7 percent). For individual countries, refer to Table B-3. For females aged 60–64, LFPR is lower than for males

[1] For more information on ILO regions and ILO modeled estimates, refer to <www.ilo.org/global/regions/lang--en/index.htm> and <www.ilo.org/ilostat-files/documents/tem.pdf>.

everywhere and more regionally divided, ranging from highs in Southeastern Asia (46.3 percent) and Eastern Asia (43.1 percent) to lows under 25 percent in all other regions, the lowest being in Arab States (6.9 percent). Particularly large differences between male and female LFPRs at the age of 60–64 are observed in Southern Asia (66.1 vs. 15.8 percent), about a 50 percentage-point gap.

In addition to these distinct patterns by region and sex, there are equally dramatic differences across older age groups. LFPR at the age of 65 and over is less than one-half of what it was at the age of 60–64. The proportional decline across these age groups is steepest in Central Asia, which shows a 77.0 percent drop for men (53.9 percent vs. 12.6 percent) and 74.0 percent drop for women (20.7 percent vs. 5.5 percent).

Among these disparities in labor force participation, those related to advancing age are perhaps the most readily explained given that physical and mental capabilities for work inevitably decline at older ages. Differences in labor force participation across regions and by sex require additional explanation, as they involve a variety of social, cultural, and institutional factors such as statutory retirement ages and norms regarding the division of household responsibilities between men and women. For example, Asian women are not only less likely to enter the labor force, but they are more likely to retire from it earlier than men (Tanaka and Muzones, 2016).

The lowest labor force participation rates for women are concentrated in Western Asia and Southern Asia, with considerable diversity within the same regions.

In addition to diverse LFPRs across the major subregions in Asia, there is also diversity among countries within each region. Such diversity is illustrated by the composition of the ten countries having the highest and lowest participation at the age of 60–64 (Table 3-1). For men, those shares range from highs of more than 85 percent in Timor-L'este, Qatar, and Japan, to under 33 percent in Brunei, Mongolia, and Jordan. The three countries at each extreme are regionally diverse and span the development spectrum as measured by the United Nations' Human Development Index (Human Development Index, 2021).

In contrast, countries showing the highest and lowest LFPRs by women aged 60–64 are more consistent with regional averages. Those rates range from over 60 percent in Timor-Leste, Cambodia, and Japan, to under 6 percent in Oman, Yemen, and Jordan. All ten countries with the lowest female LFPRs are in either Western Asia or Southern Asia. These especially low female LFPRs at older ages in Western and Southern Asia likely are in line with very low female labor force participation at all ages in this region owing to the sharper division of work roles between husbands and wives (Takaka and Muzones, 2016).

That division of work roles by sex is further highlighted by a comparison of adults aged 65 and older in Bangladesh, a Southern Asian country, and South Korea (Table 3-2). For males, the LFPRs are slightly higher in Bangladesh than in South Korea. Yet, among females, as is typical of Southern Asia, Bangladesh (8.7 percent) shows a far lower rate than their male counterparts, and much lower than South Korean older women with a 19 percentage-point difference.

How long to stay in the labor force is an individual decision, but a society's level of economic development seems to have an impact on the general work force. In low- and middle-income countries, where large portions of the population tend to work in the agricultural sector and old-age social security systems have limited coverage, older people may remain in the labor force longer because once they stop working, they may be fully reliant on their families for financial support (Giridhar, 2014). In contrast, the impact of old-age security systems on work decisions in higher income countries depends in part on their benefits. Systems that offer larger benefits at lower statutory ages may encourage early retirement from the labor force (Clark et al., 1999). However, as health and longevity improve, many societies increase the statutory age in order to maintain a balance between workers and retirees (Chapter 2) and that raised age provides incentives to work longer to maximize pension benefits (Organisation for Economic Co-operation and Development, 2017).

Table 3-1.

Ten Highest and Lowest Labor Force Participation Rates for Asian Countries by Sex at Ages 60–64: 2020 or Latest Year Available

(In percent)

Highest		Lowest	
Country	Percent	Country	Percent
BOTH SEXES		**BOTH SEXES**	
Timor-Leste	81.0	Yemen	31.3
Cambodia	74.1	Azerbaijan	30.0
Japan	73.1	Laos	28.8
Qatar	69.0	Iraq	27.4
Singapore	65.0	Turkey	27.4
Indonesia	64.4	Brunei	26.0
Israel	64.2	Nepal	24.3
South Korea	64.2	Iran	23.7
United Arab Emirates	61.3	Mongolia	22.5
Thailand	56.5	Jordan	11.8
MALE		**MALE**	
Timor-Leste	88.1	Iraq	47.8
Qatar	87.7	Malaysia	46.8
Japan	85.3	Turkey	41.7
United Arab Emirates	82.9	Iran	39.4
Cambodia	79.7	Laos	37.0
Bangladesh	78.3	Nepal	34.7
Singapore	77.8	Azerbaijan	33.5
Indonesia	77.7	Brunei	31.1
South Korea	75.5	Mongolia	30.2
Maldives	75.2	Jordan	22.1
FEMALE		**FEMALE**	
Timor-Leste	74.4	Nepal	15.7
Cambodia	70.3	Qatar	14.0
Japan	61.0	Turkey	13.5
Israel	55.6	Saudi Arabia	10.0
South Korea	53.2	Iraq	9.7
Singapore	52.6	Afghanistan	8.6
Indonesia	51.3	Iran	6.7
Thailand	47.1	Oman	5.4
Armenia	42.5	Yemen	5.2
Cyprus	42.2	Jordan	0.8

Source: International Labour Organization, ILOSTAT, 2021.

Table 3-2.

Labor Force Participation for Adults Aged 65 and Older in Bangladesh and South Korea by Sex: 2020

(In percent)

Age and country	Both sexes	Male	Female
Bangladesh	31.0	47.1	8.7
South Korea	35.3	44.9	28.0

Source: Bangladesh Labour Force Survey, 2016–2017; Statistics Korea, Economically Active Population Survey, 2020.

Box 3-1.

Active and Productive Aging: Older Workers in Malaysia

By Nai Peng Tey, University of Malaya

Malaysia's population is undergoing a dramatic age structural shift. It is projected that Malaysia will become an aging nation in 2030 when the number of persons aged 60 and older reaches 5.2 million, or 14.3 percent of the total population. The life expectancy at the age of 60 is 18.4 years for males and 21.2 years for females (Department of Statistics, Malaysia, 2020). Population aging poses serious challenges to health care and social protection systems, but it also presents an opportunity to tap the large reservoir of retirees with immense experience.

In 2010, there were about 530,000 workers aged 60 and over in Malaysia, making up about 4 percent of the labor force. About one-third of men and one in eight women aged 60 and over continued working beyond the age of 60. The 2020 Labor Force Survey shows that the labor force participation of males and females aged 60–64 remained at around the same level over the decade (55.3 percent for the males and 23.1 percent or the females) (Department of Statistics, Malaysia, 2021).

Older men were more likely to be self-employed rather than employed by others, while the reverse is true for older women (Table 3-3). However, the 2-percent sample of the 2010 census shows that, as with their female counterparts, higher educated males were also much more likely to work as employee than self-employed.

Older workers were concentrated in the agriculture, wholesale and retail trade, and manufacturing industries (Table 3-4). Related data on occupations from the 2010 census show that about 26 percent of the older workers were agricultural workers, 22 percent were sales and service workers, 18 percent were elementary workers, 10 percent were craft and related trade workers, and 10 percent were plant and machine operators and assemblers.

Some older people have to continue working to support themselves and their dependents. The Employee Provident Fund (EPF) and Pension (for civil servants) that cover a little less than two-thirds of adults aged 60 and older (Social Security Administration, 2019), are inadequate to meet the financial needs for daily living of the older people (Holzmann, 2014). A study found that among EPF members aged 51–55 years, 21.5 percent had zero balance and 46.2 percent had less than RM50,000 in their savings (Jaafar et al., 2020). Moreover, demographic and social changes have eroded the family care and support in old age; declining fertility levels resulted in a smaller pool of potential caregivers within the family.

The National Policy for the Elderly 1995, revised as the National Policy for Older Persons 2010 calls for efforts to encourage and facilitate the older persons to participate actively in social and economic activities (Economic Planning Unit, 2010; 2015). The mandatory retirement was increased to 60 years across the public and private sectors in 2012 and 2013 (Economic Planning Unit, 2015). Under the budget for 2021, the government provided tax relief on remuneration for employers who hire senior citizens, and provided an allocation of RM50,000 for 285 senior citizen activity centers to conduct courses on entrepreneurial skills, especially for home-based small businesses for senior citizens (Ministry of Finance, Malaysia, 2020). Companies or organizations, such as Hire.Seniors, connect retirees to companies in need of experienced and skilled resources, ranging from senior management professionals with many years of experience to management general administrative and business support, as well as general workers.

Many nongovernmental organizations (NGOs), societies, clubs and associations (including resident associations), religious organizations, and political parties provide a venue for seniors to play an active role in the society. The national umbrella body of these NGOs is the National Advisory Council for Senior Citizens of Malaysia, which advocates for the development of policies, programs, projects, and services that will enhance the quality of life and well-being of older persons.

The healthy older workers can be just as productive or even more productive than younger ones, especially in work tasks where experience and verbal abilities matter more (Skirbekk, 2004; Malmberg, Lindh, and Halvarsson 2008; Van Ours and Stoeldraijery, 2010; Lee, Park, and Yang, 2018).

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Relieved of the responsibility to care for the young and the old in their family, they are able to spend more time at work. Older workers who are willing and healthy enough to continue working tend be more dedicated to their work and can be relied on. Moreover, they can also be good mentors to guide younger workers. The use of information and communication technology will open up more work opportunities for teleworking among older people.

Table 3-3.
Population Aged 60 and Older by Employment Status and Age: Malaysia
(In percentage of population at each age group)

Employment status	60 and older	60–64	65–69	70–74	75 and older
MALE					
Total workers	**33.4**	**53.4**	**26.8**	**19.6**	**16.1**
Employer	1.8	2.9	1.4	1.4	0.7
Government employee	2.3	3.4	1.6	1.4	2.0
Private employee	11.3	23.2	4.5	2.8	4.8
Self-employed	17.2	22.4	18.9	13.8	8.4
Unpaid family worker	0.7	1.5	0.3	0.2	0.3
FEMALE					
Total workers	**12.3**	**24.4**	**6.9**	**5.2**	**4.7**
Employer	0.3	0.5	0.3	0.2	0.2
Government employee	0.6	0.9	0.3	0.3	0.6
Private employee	6.2	14.8	1.4	0.9	2.0
Self-employed	4.3	6.4	4.5	3.5	1.7
Unpaid family worker	0.9	1.9	0.4	0.3	0.2

Source: Based on the 2-percent sample of the 2010 Population Census, Malaysia.

Table 3-4.
Distribution of Workers Aged 60 and Older by Industry and Sex: Malaysia
(In percent)

Industry	Both sexes	Male	Female
TOTAL	**100.0**	**100.0**	**100.0**
Agriculture, forestry and fishing	33.9	36.4	28.1
Wholesale and retail trade	16.1	15.5	17.7
Manufacturing	12.5	11.9	13.8
Construction	8.0	7.9	8.3
Accommodation and food and beverage service activities	7.4	6.3	9.9
Transportation and storage	4.4	4.4	4.3
Public administration and defence, compulsory social security	3.0	3.5	1.8
Administrative and support service activities	2.9	2.7	3.4
Education	2.7	2.4	3.2
Other	9.1	9.0	9.5

Source: Based on the 2-percent sample of the 2010 Population Census, Malaysia.

Education is positively associated with labor force participation, but in some high-income Asian countries, women with higher-education work far less than expected.

Education is positively associated with labor force participation in Asia, as better educational attainment provides greater job skills and availability, especially for women (Kinoshita and Guo, 2015; Heath and Jayachandran, 2017). In general, as living standards rise and technology advances, education is necessary for people to participate in emerging occupations (Oztunc, Oo, and Serin, 2015). For example, a study of 28 Asian-Pacific countries by the International Labor Force found that the unemployment rate in the majority of these countries was highest among adults with secondary education, which would seem to confirm an increased "hollowing out" of middle-skilled jobs (ILO, 2018).

However, in high-income Asian countries like Japan and South Korea where there is little remaining gender gap in education, higher education levels were associated with lower female labor force participation, suggesting an

Box 3-2.

Retirement Expectations by Older Populations in China and United States—Findings From the China Health and Retirement Longitudinal Study and the Health and Retirement Study

By Wan He and Daniel Goodkind, U.S. Census Bureau, Population Division; Yaohui Zhao and Xinxin Chen, Peking University CHARLS Team, China

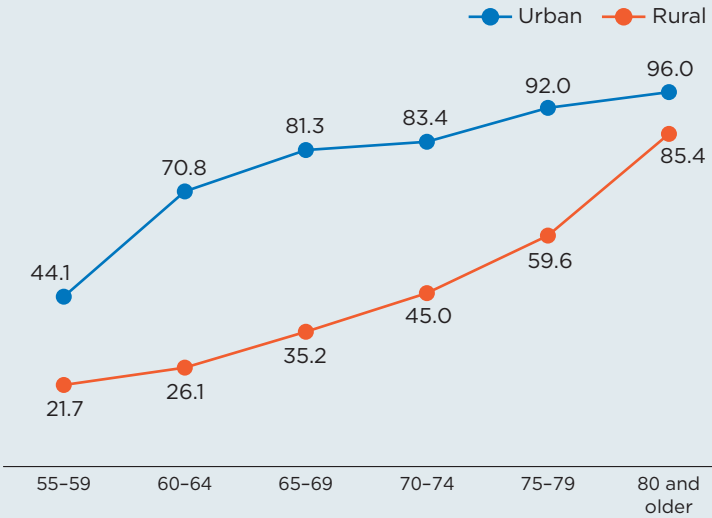
China and the United States are two of the world's most populous countries. Based on the 2020 censuses in both countries, the total population of China was 1.41 billion and for the United States, 331.4 million (National Bureau of Statistics of China, 2021; Hartley, Perry, and Rogers, 2021). Also notable was the numerical size of their older populations. At 264.0 million, China had the world's largest population aged 65 and over, almost five times that of the United States, and comprising 13.5 percent of its total population.

The fertility and mortality patterns in China have set the stage for its population aging in the decades to come (Chapter 2). Against this demographic backdrop, adults in China, and the United States, face retirement expectations and planning as they approach older ages. Among the contextual differences between these two countries is their social insurance systems. The United States has a centralized old-age social insurance system which covers about 94 percent of its workforce (Social Security Administration, 2015). In China, such systems have been developed in recent years but the benefits are very low (Lei, Zhang, and Zhao, 2015).

Decisions in the United States about when to retire are often associated with eligibility age to receive Social Security benefits (age 65 or older, depending on year of birth). There exists a clear age "cutoff" pattern for not staying in the labor force once people become eligible for Social Security benefits.[1] According to data by the U.S. Bureau of Labor Statistics (BLS), in 2019, 65.3 percent of the civilian noninstitutional population aged 55–64 were in the labor force; the rate declined to 27.8 percent by the age of 65–74, and further dropped to 9.1 percent for those aged 75 and older (BLS, 2021). This pattern was similar between men and women albeit at different levels, despite the trend that older Americans have been increasingly more likely to stay in the labor force in recent 2 decades.

In comparison, as the country displays a dual economic structure favoring the urban sector, China's retirement pattern by age must be examined by urban/rural residence registration status separately. That status is largely determined based on the registration of one's parents, and changes from rural to urban registration is restricted. While urban Chinese enjoy social pensions at statutory and mandatory retirement ages (60 years for men, 50 years for blue-collar women, and 55 years for white-collar women), the typical social pension received by rural residents at age 60 is very small (Giles et al., 2021). Figure 3-2 indicates drastically different retirement trends by age between urban and rural residents. By the age of 60–64, the majority (70.8 percent) of urban Chinese workers had retired, and that proportion exceeded 90 percent by the age of 75–79. In contrast, just over a one-quarter of

Figure 3-2.
Retirement Rate for Population Aged 55 and Older in China by Urban/Rural Residence and Age: 2018
(In percent)



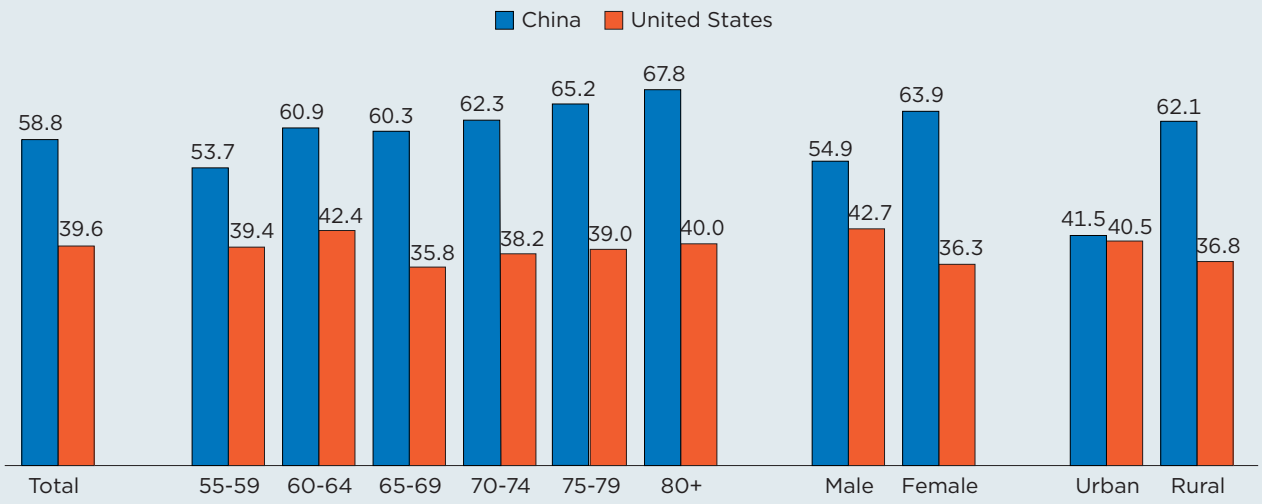
Note: In the China Health and Retirement Longitudinal Study, urban/rural residence is defined by the respondent's residence registration "(hukou)."
Source: China Health and Retirement Longitudinal Study, 2018.

[1] A relatively small portion of workers in the United States face a mandatory retirement age.

Continued on next page.

Figure 3-3.

Population Aged 55 and Older Not Yet Retired Who Expect Never to Retire in China and the United States by Age, Sex, and Urban/Rural Residence: 2014



Source: China Health and Retirement Longitudinal Study, 2015; Health and Retirement Study, 2014.

rural residents had retired by the age of 60–64, a proportion rising to only 59.6 percent by the age of 75–79, which implies that about 40 percent were still working.

Given these labor force participation rates and retirement rates, older people's expectation that they will never retire could shed light on future retirement trends. Two major ongoing longitudinal surveys addressing retirement and health in China and the United States contain standardized comparable information on retirement expectations—the China Health and Retirement Longitudinal Study (CHARLS) and the Health and Retirement Study (HRS) in the United States. Key variables common to both CHARLS and HRS are the expected age at retirement (or actual age, if already retired), and the proportion who plan to never stop working.

Figure 3-3 shows retirement expectations for people aged 55 and older in China and the United States. Consistent with the sharp differences in social insurance systems and labor force participation rates/retirement rates between these two countries discussed earlier, older Chinese were much more likely than older Americans to express the wish or plan to never retire.[2] Noteworthy is the high proportion in adults aged 70–74, 75–79, and even 80 and older in both countries who plan never to retire—over 60 percent of Chinese and a lower percentage but significant proportion (around 40 percent) in the United States.

CHARLS and HRS also provide information on main reasons for retirement. Among the Chinese aged 55 and older who had already retired, poor health was the number one reason why they had retired (2015 CHARLS). While poor health also played a role in older Americans' consideration for retirement, wishing to spend more time with family was the number one reason for them (2014 HRS). In contrast, only less than 8 percent of the Chinese retirees viewed spending time with family as an important factor for retirement decision. Part of the differences in their wish to retire in order to spend more time with family may be that the majority of older Chinese are living with an adult child or having children live nearby (Lei et al., 2015).

China's population aging will accelerate in the next few decades; adults aged 65 and older are expected to make up for one-third of China's total population in 2060, according to projections by the U.S. Census Bureau International Database. These two longitudinal surveys will continue to offer data and insight on older population's retirement trend, expectations to retire, and reasons to stop working in both China and the United States.

[2] Note the expected age to never retire does not mean that people who wish never to retire in actuality do not retire; retirement systems and reasons for retirement discussed provide insight on why people stop working.

Table 3-5.
Educational Attainment for Older Population in Selected Asian Countries: 2017–2020

(In percent)

Country	Less than primary education	Some or completed primary education	Some or completed secondary education	Some or completed tertiary education
Bangladesh (60+)	69.3	16.6	11.1	3.0
Burma (60+)	22.0	59.9	15.6	2.5
Jordan (65+; male)	41.3	15.4	14.9	28.4
Jordan (65+; female)	69.4	10.9	9.4	10.3
Malaysia (65+)	17.8	48.9	26.7	6.6
South Korea (65+)	10.9	32.0	44.4	12.7
Thailand (60+)	9.7	76.2	7.5	6.6
Vietnam (65+)	37.4	23.1	32.6	6.8

Note: Jordan's educational attainment data are available only by males and females separately. Tertiary education is postsecondary education, based on classification of education by the International Standard Classification of Education of the United Nations available at <http://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-isced-2011-en.pdf?msclkid=8450564eaab211ecb694d4b6d66e21bf>.

Source: Study on Older Population in Bangladesh, 2019; Myanmar Aging Survey, 2012; Jordan Population and Family Health Survey, 2017–2018; Malaysian Ageing and Retirement Survey, 2019; South Korea Population and Household Census, 2020; Survey of Older Persons in Thailand, 2017; Survey on Health Insurance and Older Persons in Vietnam, 2019.

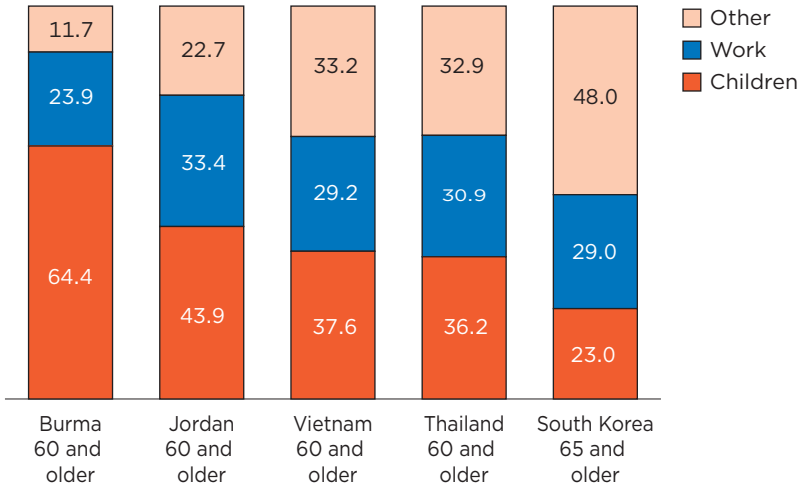
underutilization of women with higher education (Kinoshita and Guo, 2015; Asian Development Bank, 2016). Gender wage gaps or the lack of child care may partly explain why many women with university degrees are not in the labor force in these two countries.

Table 3-5 shows educational attainment for older adults in selected Asian countries. Education levels differ vastly among these countries. In Bangladesh, for instance, 69.3 percent of the older population had less than a primary school education, compared to only 10.9 percent in South Korea where the majority had either completed secondary school or had a tertiary degree. Interestingly, despite that difference, LFPR for men aged 60–64 in Bangladesh and South Korea are both among the highest in Asia, as shown in Table 3-1 (78.3 percent and 75.5 percent, respectively). That similarity may reflect the fact that the dominant economic sectors in each country—agriculture in Bangladesh (O'Neill, 2021a) and the service industry in South Korea (O'Neill, 2021b) combined with expected benefits (or lack of them) upon ceasing work, provide very different incentives to continue working at older ages.

As societies develop, the main source of income for older Asians typically shifts from own income and dependence on children to other sources of support.

The diversity in labor force participation of the older population in Asia provides insights into their financial well-being. Several potential sources of financial support include earnings from their own ongoing work, children's support, savings, investments, pensions, and other public sources. As to sources of income, the share of older people primarily dependent on their own income falls to one-third or less of the total income sources (23.9 to 33.4 percent) among the five countries that span the development spectrum in Figure 3-4. The key

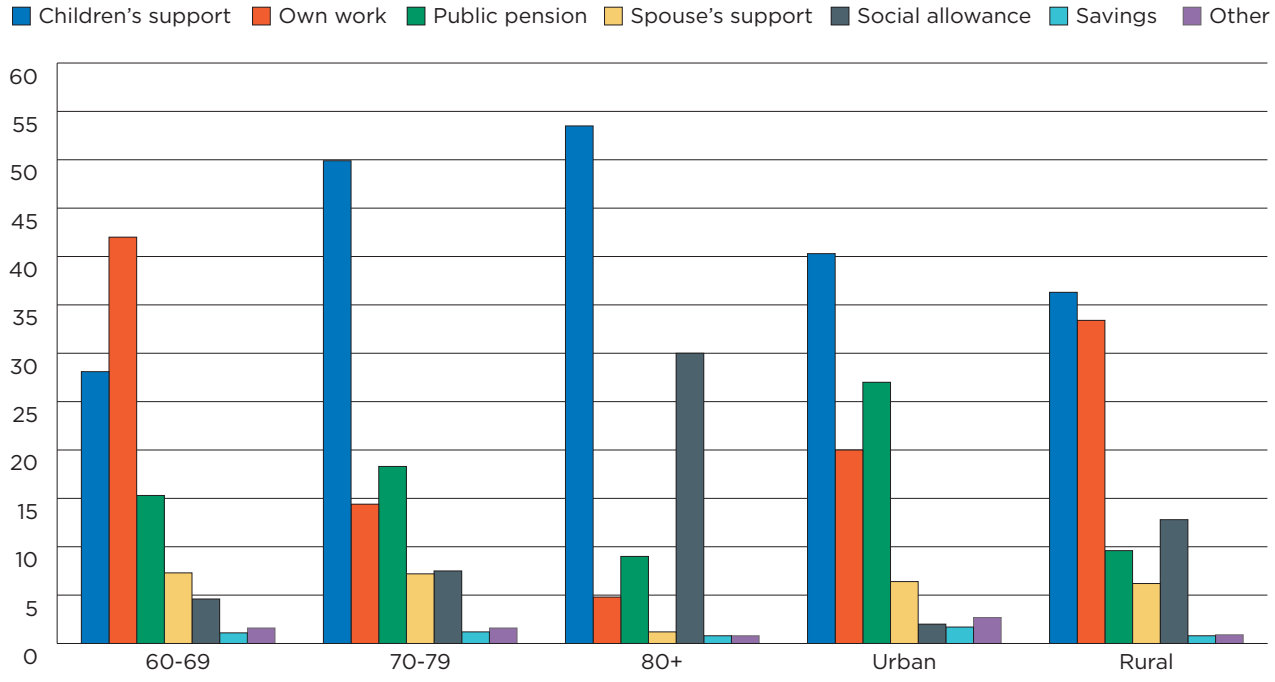
Figure 3-4.
Main Sources of Income for Older Population in Selected Asian Countries



Note: Other sources include social allowance, private pension, savings/investments, spouse's support, or others. For South Korea, income from "Children" may include other sources from private transfer income.

Source: Myanmar Aging Survey, 2012; Jordan Household Expenditures and Income Survey, 2017; South Korea 2019 Social Survey, Statistics Korea; Survey of Older Persons in Thailand, 2017; Survey on Older Persons and Health Insurance in Vietnam, 2019.

Figure 3-5.
Percent Distribution of Source of Income of the Older Population in Vietnam by Age and Urban/Rural Residence: 2019



Source: Survey on Older Persons and Health Insurance in Vietnam, 2019.

difference as societies develop is a shift between the two other broad categories shown, from solely dependent on children to several other sources of support, including public sources. In Burma, for instance, 64.4 percent of adults aged 60 and older report children as their primary source of financial support, compared to only 23.0 percent for South Koreans (65 years and older). Conversely, 11.7 percent of older Burmese report all other income sources as a main source, compared to 48.0 percent in South Korea.

The main sources of income among the older population differ based on their age and rural/urban location. Figure 3-5 examines such sources in Vietnam as an example. Among age groups, between the ages of 60–69 and 70–79, there is a notable shift towards child support from income based on their own work. Above the age of 80, although child support constitutes the main source of income for most people, social allowances constitute the second most prevalent source, which suggests just how vital family support systems are to older people at progressively older ages. By rural/urban location, older rural residents are also more likely to rely on social programs as their main income source compared to their urban counterparts, and, due in part to the lack of pension programs in a rural area, they also rely more on their own work. It is worth noting that own savings have made up a negligible portion of older people's income source in Vietnam.

OLD-AGE SOCIAL SECURITY SYSTEMS IN ASIA

The economic well-being of the older population is best understood by considering various "pillars" of support (World Bank, 2016; Yeh, Cheng, and Shi, 2020). Two of the traditional pillars for the older population include earnings from their own ongoing work as well as financial support from other family members, especially children. However, as societal prosperity grows, public and institutional systems develop additional pillars of social insurance that may augment or substitute to some extent for the traditional pillars. Government spending devoted to old-age security tends to correspond to the share of the older population in the overall population. Figure 3-6 shows a general association

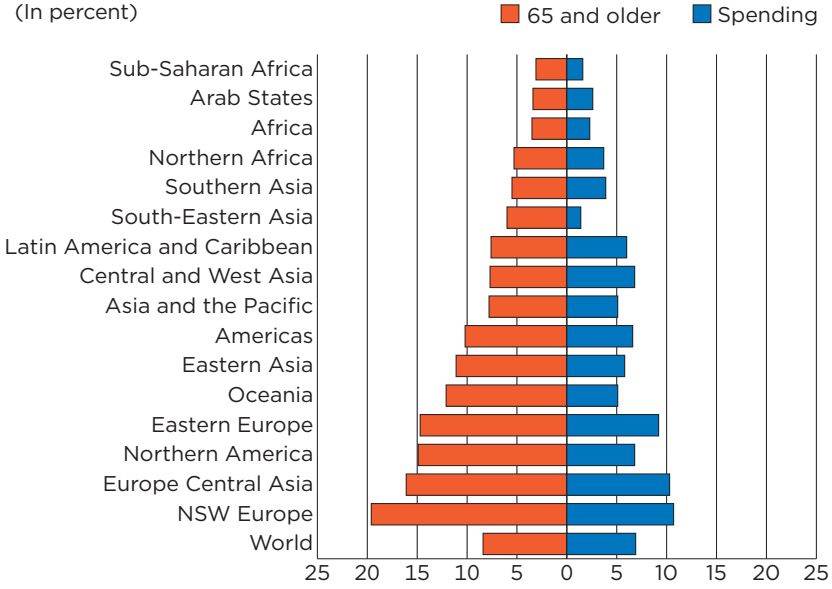
between the proportion of the population above the age of 65 and the share of all nonhealth social protection expenditures for older adults (as a percentage of gross domestic product, or GDP) across major regions of the world. This graphic suggests that South-Eastern Asia is somewhat exceptional for its low share of spending on social protection programs for the older population given the share of older adults in the population. Eastern Asia also compares somewhat unfavorably to the ILO region of the Americas, with a higher proportion at older ages yet a lower share of GDP spent on social protection for the older population.

Although old-age security systems exist throughout Asia, their provisions and coverage vary widely based on each country's age structure, development, and regulatory decisions.

Governments offer old-age social security system pensions as part of a broader system of social insurance that encompasses illness, disability, and unemployment (Social Security Administration, 2019). Such government systems usually include old-age pensions that provide a regular stream of income based on one's wage earnings, the number of years worked, and other factors. For workers covered by such systems, the receipt of a social pension requires a minimum number of years of employment and a minimal age.

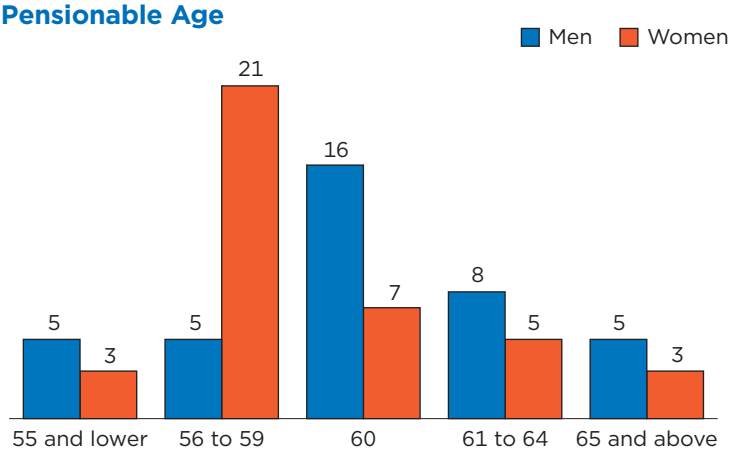
In recent years, the statutory modal age for receiving standard benefits in Asia has been 56–59 for women and 60 for men, a notable gap (Figure 3-7; Table B-4). At the extremes, the statutory ages range from 55 and below to 65 and above. By country, the lowest statutory ages by

Figure 3-6.
Share of People Aged 65 and Older and Public Expenditures on Social Protection for Those at or Above Mandated Pensionable Ages for International Labour Organization World Regions: 2010–2015
(In percent)



Note: NSW is Northern, Southern, and Western Europe.
Source: International Labour Organization, World Social Protection Database.

Figure 3-7.
Number of Asian Countries With Statutory Public Pensions by Pensionable Age



Note: Azerbaijan women's statutory pensionable age is 60.5 and is included in the "61 to 64" grouping in this chart.
Source: Social Security Administration and the International Social Security Association, 2019; Social Security Programs Throughout the World: Asia and the Pacific, 2018.

Box 3-3.

Perceptions of Older People Regarding Social Safety Net Programs in Bangladesh

By Mohammad Mainul Islam, University of Dhaka, Bangladesh

The Government of Bangladesh (GoB) initiated several Social Safety Net Programs (SSNPs) in the country to socially and financially enable the older population to lead a better life. Those social safety net programs are both in the form of "cash" and "in-kind" transfers. The objective of the old-age allowance program is to ensure socioeconomic development and social safety of older people, increase their dignity in the family, improve their mental strength by increasing financial capability to some extent, and increase health support and supply of nutritional assistance.

SSNPs includes two components which are Social Protection and Social Empowerment. Social protection is implemented through a Cash Transfer and Food Security Program. Cash transfers under social protection include various allowance programs that were first introduced in the late 1990s (GoB, 2021a). Social Empowerment includes cash transfers, a micro-credit program, and miscellaneous funds. Selection criteria include eligible age (65 years for men and 62 years for women), income (annual income of the beneficiary no more than BDT 10,000 or US$120), and citizenship, and preference would be given to homeless and landless and eldest of older adults, and older adults who are physically unable to work would be preferred. At the initial phase of the program, nearly 400,000 people were covered under the program; in 2021, 4.9 million older people were given the allowance (GoB, 2021b).

According to the Study on Older Population in Bangladesh conducted by the Department of Population Sciences of the University of Dhaka (DPSDU) with assistance from the United Nations Population Fund (UNFPA) Bangladesh, more than 80 percent of the respondents knew that government or private organizations were working in their locality and the differences regarding this issue varied significantly by sex and residence (DPSDU and UNFPA, 2019).

Almost all of the respondents, irrespective of age, sex, or residence knew about an old-age allowance, followed by a widow allowance (Table 3-6). About a third of them were aware of the Vulnerable Group Development or Vulnerable Group Feeding

Table 3-6.
Knowledge About and Coverage of Social Safety Net Programs Among Older People in Bangladesh: 2019
(In percent)

Programs	All	Age			Sex		Residence	
		60–69	70–79	80 and older	Male	Female	Urban	Rural
Know about various SSNPs:								
Old age allowance	98.1	99.3	99.8	98.7	98.9	97.4	98.2	98.0
Pension	7.7	7.5	7.3	6.4	12.7	3.8	8.3	7.5
Medical allowance	7.3	8.5	7.4	5.1	9.8	5.3	11.8	5.9
Freedom Fighter allowance	23.7	24.9	27.0	17.4	37.4	12.7	24.0	23.5
Allowance for disabled people	11.1	11.2	10.3	7.7	15.0	7.9	10.1	11.4
VGD/VGF	31.2	32.6	34.4	25.9	35.7	27.7	19.9	34.8
Widow allowance	80.2	82.0	80.8	76.9	78.5	81.5	83.1	79.2
Consider oneself eligible for old age allowance	89.5	89.4	89.7	89.9	87.6	91.2	89.7	89.5
Respondents receiving any allowance	24.3	17.5	31.3	40.7	25.3	23.5	22.1	25.0

Note: SSNPs is Social Safety Net Programs. Freedom fighters were those who fought for independence of their country in 1971. VGD is Vulnerable Group Development. VGF is Vulnerable Group Feeding.
Source: Study on Older Population in Bangladesh, 2019.

Continued on next page.

program and Freedom Fighter allowance.[1] Among the study respondents, 89.5 percent of the older people considered themselves eligible to receive the old-age allowance; however, only 24.3 percent of them actually received such allowance. Across various demographic characteristics such as age, sex, and urban/rural residence, the oldest old (80 years and older) had the highest proportion (40.7 percent) receiving an allowance. This compared with just 17.5 percent of those aged 60–69 years old. Older men were more likely than women to receive an allowance, and rural residents more likely than urban residents, whereas around 22 to 25 percent for these four groups benefited from the SSNP allowance.

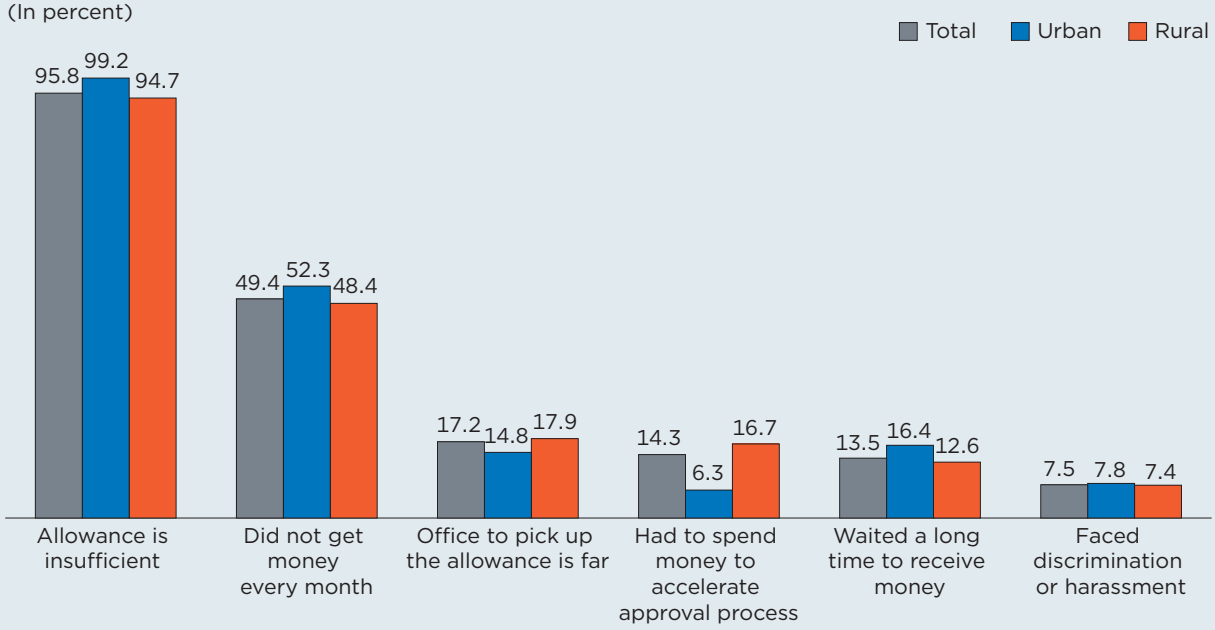
The vast majority (87.7 percent) of the older people receiving SSNP reported that they had control over their SSNP allowance money (DPSDU and UNFPA, 2019). The variation of SSN benefits among those aged 60 to 69 (92.5 percent), 70 to 79 (86.9 percent), and 80 and older (79.7 percent) were significant. While most older recipients could spend their SSNP allowances by their choice, they reported that the coverage of the allowances was not sufficient.

Among those getting allowances, various issues or difficulties have contributed to their dissatisfaction of SSNP allowances (Figure 3-8). Main causes of dissatisfaction include insufficient money (95.8 percent), followed by not receiving money on a monthly basis (49.4 percent), long-distance between home and office to pick up allowance (17.2 percent), having to spend money in order to accelerate the SSNP allowance approval process (14.3 percent), long waiting time (13.5 percent), and facing harassment (7.5 percent).

[1] Freedom Fighters are those who fought for independence of the country in 1971.

Continued on next page.

Figure 3-8.
Main Reasons for Dissatisfaction of Social Safety Net Programs by Recipients Aged 60 and Older in Bangladesh by Urban/Rural Residence: 2019
(In percent)



Source: Study on Older Population in Bangladesh, 2019.

Urban recipients had a higher degree of dissatisfaction about the SSNP programs than their rural counterparts in sufficiency of the allowances, almost all of them (99.2 percent vs. 94.7 percent of rural recipients) considered the allowance insufficient for their living, and half of them (52.3 percent vs. 48.4 percent of rural recipients) did not receive money every month. On the other hand, a greater proportion of rural residents (17.9 percent vs. 14.8 percent urban recipients) complained about the long distance between their home and the office to receive the allowance, or having to pay money in order to accelerate the approval process (16.7 percent vs. 6.3 percent of urban recipients).

A qualitative study by DPSDU and UNFPA (DPSDU and UNFPA, 2019) found various limitations of allowances in greater detail, including preferential treatment for people with political influences, nepotism of local leaders, insufficient supply of SSNP allowance from the government, older people not fully informed about allowances, discrimination or harassment in beneficiary selection, and payment process. All these limitations worked as impediments to the full implementation of the SSNP allowance programs.

In the 2020–2021 fiscal year, following the existing policy, 100 percent of poor elderly people in the most poverty-stricken 112 Upazilas (subdistricts) have been brought under the coverage of old-age allowance. According to the National Budget Speech 2021–2022, from the 2021–2022 fiscal year, the coverage of the 100-percent-eligible beneficiaries (poor senior citizens) will be extended to another 150 such Upazilas (subdistricts) in the extremely high and high poverty groups. This will add 800,000 new beneficiaries. Initiatives are underway to give this allowance through G2P (Government to Person) processes.

In sum, the Old-Age Allowance helps older people in terms of social and economic aspects within their community; however, the current allowance has been frequently considered insufficient by older people and coverage needs to expand. Expanded pension or allowance programs need to be planned and implemented to ensure the coverage of the older people under the allowance.

sex were 53 for males in Kuwait and 50 for females in Sri Lanka, whereas the highest were both in Israel—70 for males and 68 for females. Israel's statutory pension ages are several years older than the next highest ages, 65 for both males and females in Japan and Hong Kong. Note that in some areas of Asia, such as China, the statutory age is a mandatory retirement age, not a minimal one to qualify for a pension (Lei, Zhang, and Zhao, 2015). Countries may mandate retirement at certain ages to open up employment opportunities for younger workers, including migrants (Gustafsson et al., 2021).

Over the course of development, statutory pension age differences between men and women tend to narrow or disappear. Among 18 Asian countries without any difference in pensionable age by gender, national incomes (GDP/capita, PPP) are more than double those of the 20 countries where men have higher ages than women (Table B-4).[2] The earlier statutory age for women in one-half of these countries may reflect social norms such as the expectation that women nearing older ages will be responsible for the caregiving of both younger and older dependents (Tao, 2014; Tan, 2018). Whatever the reason, younger statutory retirement ages for women often results in lower pensions for women given fewer years worked, which compounds the fact that women earn less during their working years. This outcome is particularly concerning given that women tend to live longer than men (Maestas, 2018).

[2] PPP is purchasing power parity. GDP estimates are converted into international dollars using PPP rates.

Statutory pension ages tend to rise as longevity improves, with pensions funded by payroll tax contributions from both employees and employers.

Over time, given improvements in life expectancy and population aging more generally, the statutory age tends to rise. Countries with the highest statutory retirement ages—age 65 or higher for both sexes—include Israel, Japan, Singapore, and South Korea, all of which have exceptionally high life expectancy at birth or above 60 years for both men and women. Payroll taxes are contributed by both workers and employers as a percentage of wages, although the combined contributions as well as the balance between the two, are quite varied throughout Asia. Among the 38 Asian countries where contribution data were assembled by the International

Social Security Association, the half with the highest GDP/capita have total contribution rates of 17.0 percent or higher, compared to 15.8 percent or lower for the one-half with the lowest incomes (Table B-4). On average, employer's contribution is roughly double that of individual workers, an excess of four or five percentage points. Countries with the largest excesses of employer contributions compared to individual contributions (15 percentage points or more) include Azerbaijan, Tajikistan, Turkmenistan, and Uzbekistan, all of which were formerly part of the Soviet Union. Two of the three countries in which individuals contribute more than employers (Armenia, Kazakhstan, and Singapore) are also former states of the former Soviet Union.

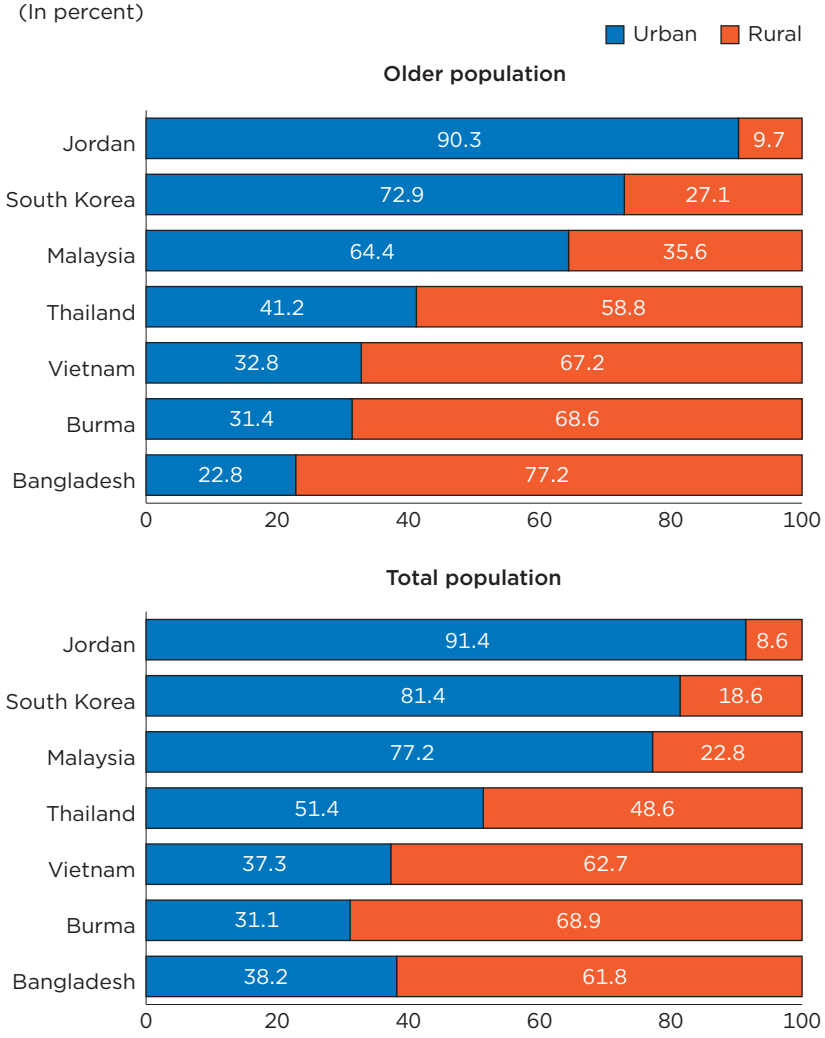
COVERAGE AND WAGE REPLACEMENT OF OLD-AGE SOCIAL SECURITY PENSIONS

There are at least two ways to measure how well old-age social security systems address the needs of the older population. The first concerns the portion of the labor force it covers. Such systems are of limited benefit if the proportion covered is low. The second concerns the size of the pension received compared to the income earned by the same worker during their employed lives—how well pensions replace those earnings. These two critical features of the old-age social security system and the surprising relationship between them in Asian countries are explored below.

The proportion of the older people covered by mandatory old-age pensions varies widely throughout Asia and reflects urbanization, occupational patterns, and societal resources.

As noted earlier, the proportion of the older population covered by such old-age security systems reflects a variety of developmental factors. One of these is the proportion of the population residing in urban areas, where wage labor may be more common than agricultural occupations in rural areas. In South Korea, where the majority of the older population resides in urban areas (72.9 percent), pension coverage is high (Figure 3-9 and Table 3-7).

Figure 3-9.
Percent Distribution of Older Population and Total Population by Urban/Rural Residence for Selected Asian Countries
(In percent)



Notes: Older population is aged 65 and older for Bangladesh, Jordan, Malaysia, South Korea, and Vietnam; aged 60 and older for Burma and Thailand.
Source: Bangladesh Bureau of Statistics Report on Sample Vital Statistics 2019; Myanmar Aging Survey, 2012; Jordan Population and Family Health Survey 2017–18; Malaysia 2010 Population Census; South Korea 2020 Population and Household Census; Survey of Older Persons in Thailand, 2017; Vietnam: Survey on Older Persons and Health Insurance 2019.

Conversely, among the other countries shown on Figure 3-9, less than one-third of the older populations in Burma, Bangladesh, and Vietnam live in urban areas, and these areas tend to have lower coverage.

The number one concern about social security pension systems in many parts of Asia is this low coverage of the labor force (OECD,

Table 3-7.

Coverage, Net Replacement, and Inequality in Old Age Social Security Pensions Systems in Selected Asian Countries: 2018

Country	Labor force covered (percent)	Net replacement for those covered (percent)	Replacement ratio by sex (male vs. female)	Replacement ratio by male wage level (low vs. high)	Human Development Index, 2019
India	9.1	99.3	1.05	1.02	0.65
Pakistan	10.3	80.8	1.14	1.78	0.56
Indonesia	17.8	66.0	1.07	1.01	0.72
Vietnam	21.9	81.5	1.00	1.00	0.70
Philippines	27.3	88.1	1.00	0.96	0.72
Sri Lanka	29.8	44.2	1.20	1.00	0.78
Thailand	35.9	39.3	1.00	2.09	0.78
Malaysia	46.0	85.5	1.08	0.89	0.81
China	51.2	83.2	1.16	1.39	0.76
Singapore	61.2	58.6	1.12	1.64	0.94
Hong Kong	70.7	44.5	1.10	1.37	0.95
South Korea	79.9	45.1	1.00	2.43	0.92
Japan	95.4	40.0	1.00	1.70	0.92

Source: Organisation for Economic Co-operation and Development, Pensions at a Glance Asia/Pacific, 2018.

2018). Such coverage is especially low in India, Pakistan, and Indonesia, below 20 percent, in sharp contrast to 79.9 percent in South Korea and 95.4 percent in Japan (Table 3-7), countries with far higher average incomes per capita (Table B-4). These differences indicate that old-age social security coverage is related to national prosperity.

These dynamics are further illuminated by the lower panel on total population of Figure 3-9, which shows that the share of the older population residing in urban areas is typically lower than the share of urban residents among the total population. The two key explanations for this finding both relate to migration. First, the most common form of migration is that by young adults moving from rural to urban areas for school or work (Datta, 2018), which results in larger urban concentrations for them compared to older adults who do not make such moves (Charles-Edwards et al., 2019). Second, migrants who remain in urban areas for long periods of time may return to the rural areas from which they originated when they themselves reach older ages (Namer and Razum, 2018). These migratory dynamics remind us that the well-being of the older population would be better understood in the context of their life trajectories as well as that of their children (Fong and Shibuya, 2020).

How well do pensions replace earnings? Higher coverage vs. lower replacement rates.

The other key measure of generosity of old-age security systems is the extent to which pensions replace the income earned during one's working years. One of the most useful measures of such is the net replacement ratio, which indicates the ratio between pension benefits and preretirement earnings after taxes and contributions to the pension system are considered (OECD, 2018). These considerations are important because tax rates and payroll contribution rates may differ sharply between workers and retirees and across societies (Table B-4).

In Asia, the net replacement rate varies from about 40 percent in Thailand and Japan to over 80 percent in India, Philippines, and Malaysia (Figure 3-10).

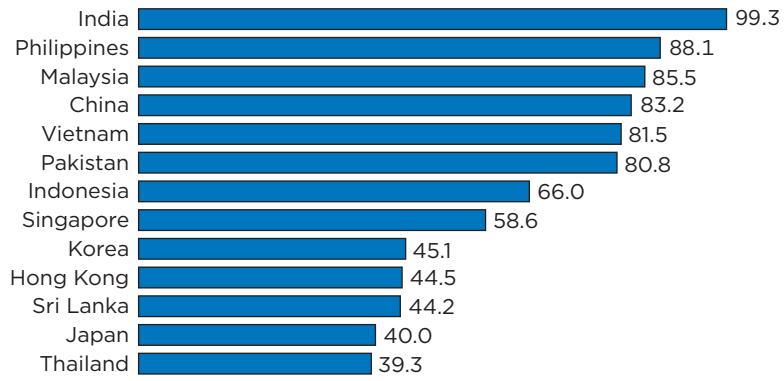
One factor contributing to the great variation in replacement levels are coverage rates. Countries with broader coverage tend to have lower net replacement rates (Figure 3-11; Table 3-7). This is due in part to the fact that less affluent societies have lower wages which could impact the contributions rates and other considerations unique to each country.

Another consideration is that additional pillars of support emerge as countries develop such as savings, investments, and private pension insurance. In fact, old-age social security systems are rarely designed to provide a comfortable lifestyle by themselves—rather, they provide insurance against poverty (Yeo, 2019). In South Korea, for example, which is highly affluent, less than one-tenth of the older population receive a pension that exceeds the minimum cost of living.

Figure 3-10.

Net Replacement Rates of Mandatory Pensions vs. Earnings for Selected Asian Countries

(In percent)

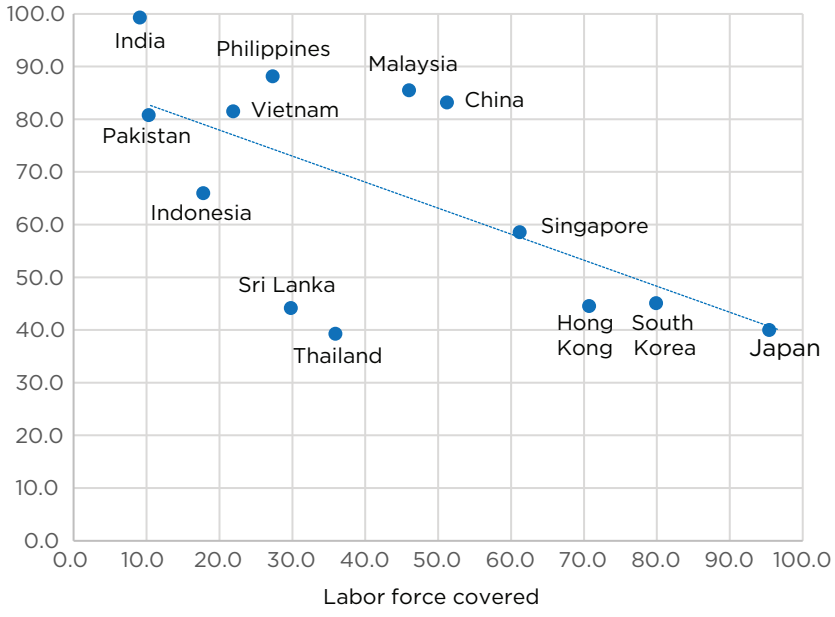


Note: The net replacement rate is the ratio between pension benefits and preretirement earnings after taxes and contributions to the pension system are considered.
Source: Organisation for Economic Co-operation and Development, Pensions at a Glance Asia/Pacific, 2018.

Figure 3-11.

Labor Force Covered and Net Replacement Rate for Mandatory Public Pension Systems in Selected Asian Countries: 2018

(In percent)



Sources: Organisation for Economic Co-operation and Development, Percent Labor Force Covered and Net Replacement Rate, 2018.

Most Asian countries have progressive net replacement rates across income levels, and sex differences tend to disappear in higher income countries.

Some additional evidence for the relationship between societal affluence and net replacement emerges by examining differences in replacement across income levels. Many mandatory pension systems are progressive. That is, for those making lower incomes, the net replacement rate is greater than for those making higher incomes. Table 3-8 illustrates such replacement for those making half of average earnings (50 percent), average earnings (100 percent), and double the average earnings (200 percent). It includes selected countries in the OECD and selected Asian countries outside the OECD (OECD, 2017).

In the OECD, the excess of net replacement for those making half the average earnings compared to those making double average earnings is 19 percentage points (73.9 versus 55.0 percent), which suggests that pensions of those making lower incomes replace a higher proportion of their wage earnings. That greater replacement for lower income earners in Asian countries outside the OECD is not as high, averaging 10 percent. Note that the large gap in net replacement in the OECD is likely owing to the scaling back of benefits at higher income levels in societies with broader coverage. In contrast, four Asian countries outside the OECD have identical net replacement rates across these income categories for those covered (India, Pakistan, Sri Lanka, and Vietnam) and one suggests a mildly regressive system (Philippines).

Table 3-8.

Net Pension Replacement Rates of Average Earnings for Selected Asian and OECD Countries by Sex and World Region: 2018

Region and country	Men			Women		
	50 percent	100 percent	200 percent	50 percent	100 percent	200 percent
EAST ASIA/PACIFIC						
China	104.4	83.2	74.9	89.7	71.5	64.6
Hong Kong	56.7	44.5	41.4	53.8	40.4	36.1
Indonesia	65.3	66.0	64.5	60.8	61.6	60.0
Malaysia	81.4	85.5	91.3	75.1	78.9	84.3
Philippines	86.8	88.1	90.6	86.8	88.1	90.6
Singapore	57.4	58.6	34.9	51.1	52.2	31.1
Thailand	40.3	39.3	19.3	40.3	39.3	19.3
Vietnam	81.5	81.5	81.5	81.5	81.5	81.5
SOUTH ASIA						
India	99.3	99.3	97.6	94.4	94.4	92.6
Pakistan	80.8	80.8	45.4	79.4	70.7	39.7
Sri Lanka	44.2	44.2	44.4	36.9	36.9	37.1
OECD REGION OF ASIA/PACIFIC						
Australia	95.0	42.6	47.0	91.8	38.8	42.9
Canada	62.2	53.4	30.2	62.2	53.4	30.2
Japan	52.6	40.0	31.0	52.6	40.0	31.0
Korea	63.8	45.1	26.3	63.8	45.1	26.3
New Zealand	80.7	43.2	23.7	80.7	43.2	23.7
United States	59.9	49.1	37.1	59.9	49.1	37.1
OTHER OECD						
France	70.4	74.5	65.8	70.4	74.5	65.8
Germany	54.7	50.5	38.9	54.7	50.5	38.9
Italy	93.0	93.2	91.4	93.0	93.2	91.4
United Kingdom	52.1	29.0	16.3	52.1	29.0	16.3
OECD	**73.9**	**63.1**	**55.0**	**73.4**	**62.5**	**54.4**

Note: OECD is Organisation for Economic Co-operation and Development.
Source: OECD, Pensions at a Glance Asia/Pacific, 2018.

There are also some differences in replacement rates between men and women. In Asian countries outside the OECD, male net replacement exceeds that for females by an average of 5 percentage points (Table 3-8). However, OECD countries (including South Korea and Japan) show no difference in net replacement by sex. As in the case for statutory differences in pensionable ages by sex (Table B-4), differences in replacement rates by sex tend to decline as societies develop and greater proportions of women are in the labor force.

REFERENCES

Asian Development Bank, "Female Labor Force Participation in Asia: Key Trends, Constraints, and Opportunities," ADB Briefs No. 71, 2016, <www.adb.org/publications/series/adb-briefs>.

Averett, Susan L., Laura M. Argys, and Saul D. Hoffman (eds.), *The Oxford Handbook of Women and the Economy*, 2017, "The Causes and Consequences of Increased Female Education and Labor Force Participation in Developing Countries," <http://doi.org/10.1093/oxfordhb/9780190628963.013.10>.

Bloom, David E., Ajay Mahal, Larry Rosenberg, and Jaypee Sevilla, "Economic Security Arrangements in the Context of Population Ageing in India," *International Social Security Review*, Special Issue—"Social Security and the Challenge of Demographic Change," Volume 63(3–4), 2010, pp. 59–89, <https://doi.org/10.1111/j.1468-246X.2010.01370.x>.

Charles-Edwards, Elin, Martin Bell, Aude Bernard, and Yu Zhu, "Internal Migration in the Countries of Asia: Levels, Ages and Spatial Impacts," Asian Population Studies, Volume 15:2, 2019, pp. 150–171, <www.doi.org/10.1080/17441730.2019.1619256>.

Clark, Robert L., E. Anne York, and Richard Anker, "Economic Development and Labor Force Participation of Older Persons," *Population Research and Policy Review*, Volume 18, 1999, pp. 411–432, <https://www.jstor.org/stable/40230241>.

Datta, Amrita, "Pride and Shame in the City: Young People's Experiences of Rural–Urban Migration in India," *Children's Geographies*, Volume 16:6, 2018, pp. 654–665.

Department of Population Sciences of the University of Dhaka and United Nations Population Fund, "Study on Older Population in Bangladesh," Dhaka, Bangladesh, 2019.

Department of Statistics Malaysia, "Abridged Life Tables, Malaysia, 2018–2020," Putrajaya, Malaysia, 2020.

_____, "Labour Force Survey Report," Putrajaya, Malaysia, 2021.

Economic Planning Unit, Malaysia, "Eleventh Malaysia Plan," Putrajaya, Malaysia, 2015.

_____, "Tenth Malaysia Plan," Putrajaya, Malaysia, 2010.

Fong, Eric, and Kumiko Shibuya, "Migration Patterns in East and Southeast Asia: Causes and Consequences," *Annual Review of Sociology*, Volume 46:1, 2020, pp. 511–531, <www.doi.org/10.1146/annurev-soc-121919-054644>.

Giles, John, Xiaoyan Lei, Gewei Wang, Yafeng Wang, and Yaohui Zhao, "One Country, Two Systems: Evidence on Retirement Patterns in China," *Journal of Pension Economics and Finance*, 2021, forthcoming.

Giridhar G., K. M. Sathyanarayana, Sanjay Kumar, Moneer Alam, K. S. James, Moneer Alam (eds.), *Living Arrangements of Elderly in India: Policy and Programmatic Implications*, Cambridge University Press, pp. 74–93, 2014, Chapter 3, "Population Aging in India."

Government of Bangladesh, "Social Protection in Bangladesh/Data, Planning Commission," 2021a, <http://socialprotection.gov.bd/data/>, accessed on June 11, 2021.

_____, "The National Budget Speech 2021–2022," Ministry of Finance, Dhaka, Bangladesh, 2021b.

Gustafsson, Bjorn, Ludmila Nivorozhkina, and Haiyuan Wan, "Working Beyond the Normal Retirement Age in Urban China and Urban Russia," IZA Institute of Labor Economics Discussion Paper Series, *IZA Journal of Development and Migration*, IZA DP No: 14294, 2021, <www.doi.org/10.2478/izajodm-2021-0005>.

Hartley, Christine, Marc Perry, and Luke Rogers, "A Preliminary Analysis of U.S. and State-Level Results From the 2020 Census," WP-104, U.S. Census Bureau, Washington, DC, 2021, <www.census.gov/library/working-papers/2021/demo/POP-twps0104.html>.

Holzmann, Robert, "Asia-Pacific Employment and Social Outlook," Geneva, 2018.

_____, "Old-Age Financial Protection in Malaysia: Challenges and Options," SSRC working paper series, No. 2014–3, Kuala Lumpur: Social Wellbeing Research Centre, University of Malaya, 2014.

Jaafar, Mohd Noor Ismawati, Halimah Awang, Norma Mansor, Rohana Jani, and Nur Hairani Abd Rahman, "Examining Withdrawal in Employee Provident Fund and Its Impact on Savings," *Ageing International*, Volume 46, 2020, pp. 70–82, 2020, <www.doi.org/10.1007/s12126-020-09369-8>.

Kinoshita, Yuko and Fang Guo, "What Can Boost Female Labor Force Participation in Asia?," International Monetary Fund Working Paper WP/15/56, 2015.

Klassen, Thomas R., Masa Higo, Nopraenue S. Dhirathiti, and Theresa W. Devasahayam, "Ageing in Asia-Pacific: Interdisciplinary and Comparative Perspectives," Routledge, London, 2018.

Lee, Bokwon, Joowoong Park and Jae-Suk Yang, "Do Older Workers Really Reduce Firm Productivity?," *The Economic and Labour Relations Review*, Vol. 29(4), 2018, pp. 521–542, <www.doi.org/10.1177/1035304618811008>.

Maestas, Nicole, "The Return to Work and Women's Employment Decisions," Working Paper 24429, National Bureau of Economic Research, 2018, <www.nber.org/system/files/working_papers/w24429/w24429.pdf>.

Malmberg, Bo, Thomas Lindh, and Max Halvarsson, "Productivity Consequences of Workforce Aging: Stagnation or Horndal Effect?," *Population and Development Review*, Volume 34, 2008, pp. 238–256, <www.jstor.org/stable/25434766>.

Ministry of Finance Malaysia, "Budget 2021," Putrajaya, Malaysia.

Namer, Yudit, and Oliver Razum, "Convergence Theory and the Salmon Effect in Migrant Health," Oxford Research Encyclopedias: Global Public Health, 2018, <www.doi.org/10.1093/acrefore/9780190632366.013.17>.

National Bureau of Statistics of China, "Communiqué of the Seventh National Population Census (No. 5) Age Composition," May 11, 2021, <www.stats.gov.cn/english/PressRelease/202105/t20210510_1817190.html>.

O'Neill, Aaron, "Employment by Economic Sector in Bangladesh 2019," *Statistica*, 2021a, <www.statista.com/statistics/438360/employment-by-economic-sector-in-bangladesh/>.

_____, "Employment by Economic Sector in South Korea 2019," *Statistica*, 2021b, <www.statista.com/statistics/604702/employment-by-economic-sector-in-south-korea/>.

Organisation for Economic Co-operation and Development, "Current Retirement Ages," OECD Publishing, Paris, 2017 "Pensions at a Glance 2017: OECD and G20 Indicators," <www.doi.org/10.1787/pension_glance-2017-9-en>.

_____, "Pensions at a Glance Asia/Pacific 2018," OECD Publishing, Paris, 2018, <https://doi.org/10.1787/pension_asia-2018-en>.

Oztunc, Hakan , Zar Chi Oo, and Zehra Vildan Serin, "Effects of Female Education on Economic Growth: A Cross Country Empirical Study," *Educational Sciences: Theory & Practice*, Volume 15(2), April 2015, pp. 349–357, <http://doi.org/10.12738/estp.2015.2.2351>.

Skirbekk, Vegard, "Age and Individual Productivity: A Literature Survey," *Vienna Yearbook of Population Research*, Volume 2, 2004, pp. 133–153.

Social Security Administration, "Annual Statistical Supplement, 2015," Social Security, Office of Retirement and Disability Policy, 2015, <https://www.ssa.gov/policy/docs/statcomps/supplement/2015/oasdi.html>.

_____, "Social Security Systems Throughout the World: Asia and the Pacific, 2018," Office of Retirement and Disability Policy, Office of Research, Evaluation and Statistics, 2019, <www.ssa.gov/policy/docs/progdesc/ssptw/2018-2019/asia/ssptw18asia.pdf>.

Tan, Poh Lin, "Dual Burdens of Care: 'Sandwiched Couples' in East Asia," *Journal of Aging and Health*, Volume 30(10), 2018; pp. 1574–1594, <https://pubmed.ncbi.nlm.nih.gov/30182782/>.

Tanaka, Sakiko, and Maricor Muzones, "Female Labor Force Participation in Asia: Key Trends, Constraints, and Opportunities," Asian Development Bank Briefs, No. 71, October 2016.

Tao, Hung Lin, "Why Do Women Interact With Their Parents More Often Than Men? The Demonstration Effect vs. the Biological Effect," *The Social Science Journal*, Volume 51, 2014, pp. 350–360.

Teerawichitchainan, Bussarawan, Wiraporn Pthisiri, John Knodel, and Vipan Pruchuabmoh, "Thailand's Older Persons and Their Wellbeing. An Updated Based on the 2017 Survey of Older Persons in Thailand," *Help-Age International*, 2021, <https://ageingasia.org/thailand-older-persons-wellbeing-2019/>.

United Nations Development Programme, "Human Development Index (HDI)," 2021, <https://hdr.undp.org/en/content/human-development-index-hdi>.

U.S. Bureau of Labor Statistics, "Civilian Labor Force Participation Rates by Age, Sex, Race, and Ethnicity, 1999, 2009, 2019, and Projected 2029," 2021, <www.bls.gov/emp/tables/civilian-labor-force-participation-rate.htm>.

U.S. Census Bureau, "Estimates of the Total Resident Population by Single Year of Age and Sex for the United States: April 1, 2010 to July 1, 2020," 2021, <www.census.gov/programs-surveys/popest/technical-documentation/research/evaluation-estimates/2020-evaluation-estimates/2010s-national-detail.html>.

Van Ours, Jan C., and Lenny Stoeldraijery, "Age, Wage and Productivity," Center Discussion Paper, 2010, No. 12, Tilburg University, 2010.

World Bank, "Live Long and Prosper: Aging in East Asia and Pacific," World Bank, Washington, DC, 2016.

Yeh, Chung-Yang, Hyunwook Cheng, and Shih-Jiunn Shi, "Public-Private Pension Mixes in East Asia: Institutional Diversity and Policy Implications for Old-Age Security," *Ageing and Society*, Volume 40(3), 2020, pp. 604–625, <www.doi.org/10.1017/S0144686X18001137>.

Yeo, Eugene, "Old-Age Poverty and Old-Age Income Security in Korea," Research in Brief, Korea Institute for Health and Social Affairs, Volume 44, 2019, pp. 1–9.

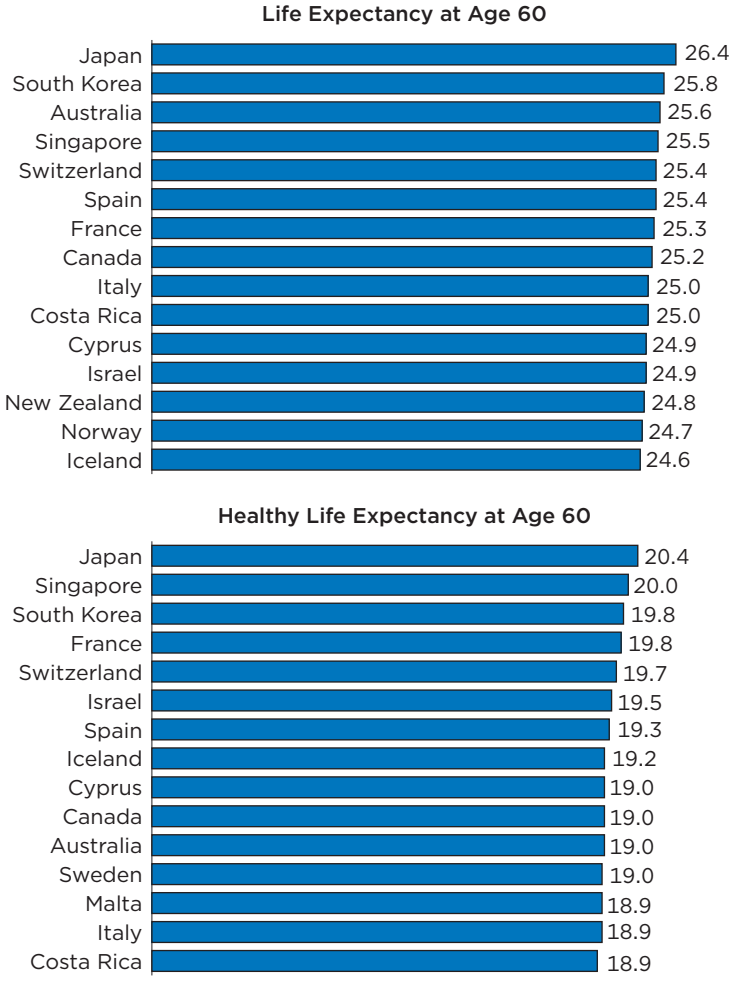
Zhuang, Juzhong, Paul Vandenbert, and Yiping Huang (eds.), *Managing the Middle-Income Transition: Challenges Facing the People's Republic of China*, The Asian Development Bank and Edward Elgar Publishing, 2015, "Old-Age Support and Protection."

Chapter 4.

Health and Health Care

The ongoing transformations in population structure and economic support systems occurring in many Asian countries are crucial in understanding the well-being of their older population. As longevity has improved, the causes of death and illness have shifted from mostly communicable diseases—such as measles, tuberculosis, and polio—to mostly noncommunicable diseases (NCDs) such as cancer and heart disease. Meanwhile, it took the global pandemic of COVID-19 to amplify the challenges of multimorbidity and to severely test public health and health care systems around the globe and in Asia (Nature, 2021). The absence of access to health care yielded poorer health outcomes. This devastating communicable disease has also highlighted the underlying conditions that contributed to the high death rates of COVID-19—adults and especially older adults with NCDs are at particularly high risk (Bollyky, Tohme, and Kiernan, 2021).

Figure 4-1.
Countries With Highest Life Expectancy and Healthy Life Expectancy at Age 60: 2019
(In years)



Source: World Health Organization, Global Health Observatory, 2021.

HEALTHY LIFE EXPECTANCY AT AGE 60 IN ASIA

The extra years of life gained were not necessarily lived in good health.

Populations across Asia are living longer, as discussed in Chapter 2. Asian countries have among the longest life expectancy at age 60 (LE60) in the world (Figure 4-1). In addition, South-East Asia ranked top among all world regions in gains from 2000 to 2016 (U.S. Census Bureau, 2021a).

Despite these positive health gains in the region overall, not all people in Asia have fared equally well in terms of their health and longevity. While South Korea's LE60 gained 5.1 years and Kazakhstan increased 4.2 years between 2000 and 2019, Timor-Leste had no gain, and Syria and Tajikistan both lost 1.1 years (Table 4-1).

Longer lives may not necessarily be healthier lives. One measure to gauge that is healthy life expectancy (HALE). HALE reflects the average length of time an individual can expect to live without disease or injury. It takes into consideration the number of years lost due to morbidity and captures the average number of years one can expect to live in a state of "full health" (World Health Organization, 2014).

Table 4-1.
Asian Countries With Most and Least Improvement in Life Expectancy at Age 60: 2000 to 2019

Country	Both sexes	Country	Male	Country	Female
MOST		**MOST**		**MOST**	
South Korea	5.1	South Korea	5.3	Maldives	5.3
Kazakhstan	4.2	Kazakhstan	4.5	South Korea	5.2
Maldives	4.1	Qatar	4.2	Jordan	4.2
Bahrain	4.0	Bahrain	4.2	Singapore	4.1
Singapore	4.0	Singapore	4.1	North Korea	4.0
North Korea	3.6	North Korea	3.3	Bahrain	3.8
Qatar	3.6	Maldives	3.3	Mongolia	3.6
Kyrgyzstan	3.3	Bangladesh	3.2	Kazakhstan	3.6
Jordan	3.2	Israel	3.0	Kyrgyzstan	3.4
Bangladesh	3.1	Cyprus	2.9	Cyprus	3.2
LEAST		**LEAST**		**LEAST**	
Vietnam	0.7	Sri Lanka	0.5	Indonesia	0.9
Lebanon	0.7	Turkey	0.5	Afghanistan	0.9
Azerbaijan	0.5	Vietnam	0.5	Nepal	0.9
Turkey	0.5	Philippines	0.3	Timor-Leste	0.9
Nepal	0.4	Nepal	0.1	Yemen	0.8
Indonesia	0.3	Lebanon	–0.1	Turkey	0.5
Philippines	0.2	Indonesia	–0.1	Azerbaijan	0.4
Timor-Leste	Z	Syria	–0.8	Philippines	–0.1
Syria	–1.1	Timor-Leste	–0.8	Tajikistan	–0.8
Tajikistan	–1.1	Tajikistan	–1.3	Syria	–1.3

Z Represents or rounds to zero.
Source: World Health Organization Global Health Observatory, 2021.

Similar to trends in LE60, HALE at the age of 60 (HALE60) varies between higher and lower income countries across Asia. Gains of 2 or more years in HALE60 between 2000 and 2019 were seen in 14 countries, including South Korea (3.9 years), Singapore (3.4 years), Maldives (3.1 years), and Kazakhstan (3.0 years) (Table B-5). On the other hand, 15 countries in the region had gains of less than 1 year, with Tajikistan's HALE60 decreasing by 0.9 years over this time period.

Most Asian countries had gains in HALE60, with considerable differences based on country wealth.

Using life expectancies as a measure of population health, the general health situation across Asia looks to be improving—with some considerable differences to note based on country wealth. All countries had gains in LE60, and most had gains in HALE60 (Table B-5). However, the vast majority of countries in the region had larger gains in LE60 than in HALE60, indicating that on average, the extra years of life gained were not necessarily years lived in good health.

The female advantage in LE60 in a majority of Asian countries discussed in Chapter 2 was also observed in HALE60. In Georgia, Vietnam, Mongolia, and Kazakhstan, women aged 60 were expected to live a healthy life of over 3 years longer than men on average, at 3.7, 3.5, and 3.2 years, respectively (Figure 4-2). However, in some countries (Afghanistan and Qatar), older men live both longer and healthier than women.

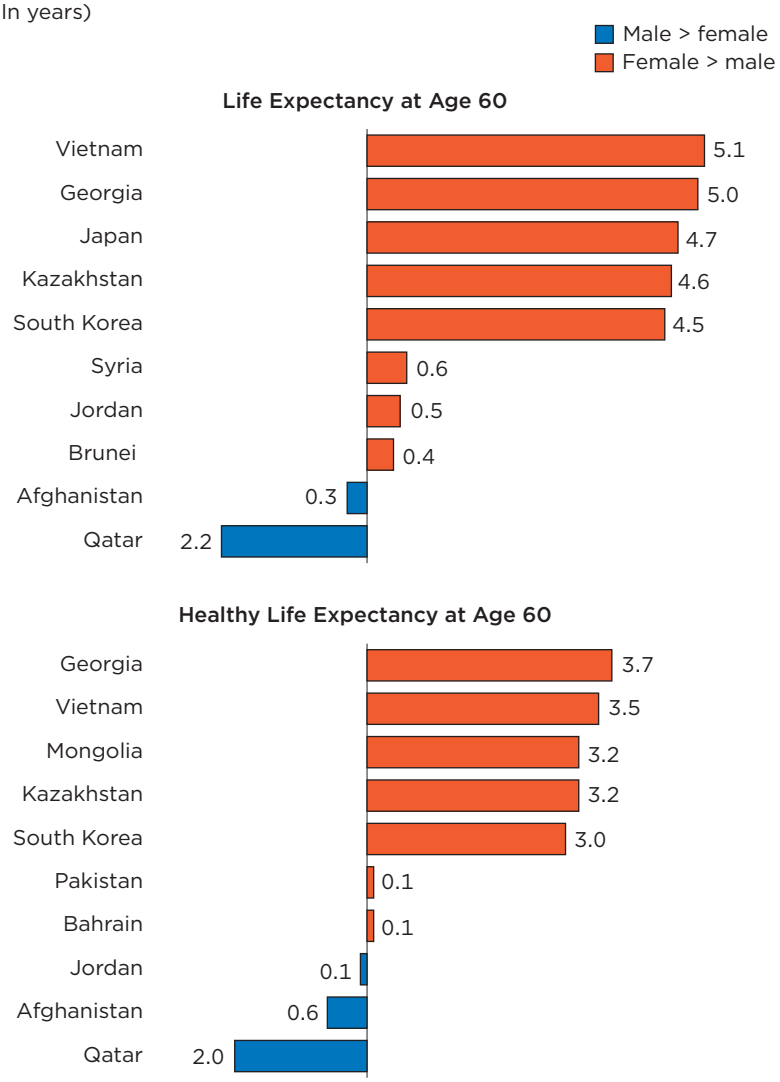
The ratio of healthy to overall life expectancy indicates the proportion of overall life lived in good health. A ratio that increases over time implies a compression of morbidity—maximizing healthy lifespan or minimizing the time spent ill or disabled (Stallard, 2016). However, in 2019 most Asian countries either maintained the same HALE60/LE60 ratios of 2010 or experienced a slight decrease. Only a very small number of countries showed improvements (including Kyrgyzstan, Nepal, and Syria; Table B-5).

NONCOMMUNICABLE DISEASES AND THE BURDEN OF MULTIMORBIDITY

Total deaths for older Asians attributable to noncommunicable diseases have risen in last 2 decades.

One possible explanation for the lack of improvement in the HALE60/LE60 ratio in many Asian countries involves its epidemiological transition, which has accompanied the demographic transition and improved longevity. As is now commonplace across the world, all Asian countries have experienced changes in the composition of disease burden between 2000 and 2019, with notable increases in the burden from NCDs (IHME, 2019). In 2000, about 62 percent of the total deaths in Asia were attributable to NCDs; in 2019, it was 77 percent. With continued population aging, it is estimated that the number of NCD cases across Asian-Pacific countries would increase by an average of about 40 percent between the late 2010s and 2030 (Marsh & McLennan Companies, 2017). Rapid urbanization, lack of physical activity, unbalanced diets, and population aging all contributed to the new reality that NCDs have become one of the biggest health care concerns (Clarke, 2017; Teh, Tey, and Ng, 2014).

Figure 4-2.
Female-Male Differences in Life Expectancy and Healthy Life Expectancy at Age 60 for Selected Asian Countries: 2019
(In years)



Source: World Health Organization, Global Health Observatory, 2021.

Box 4-1.

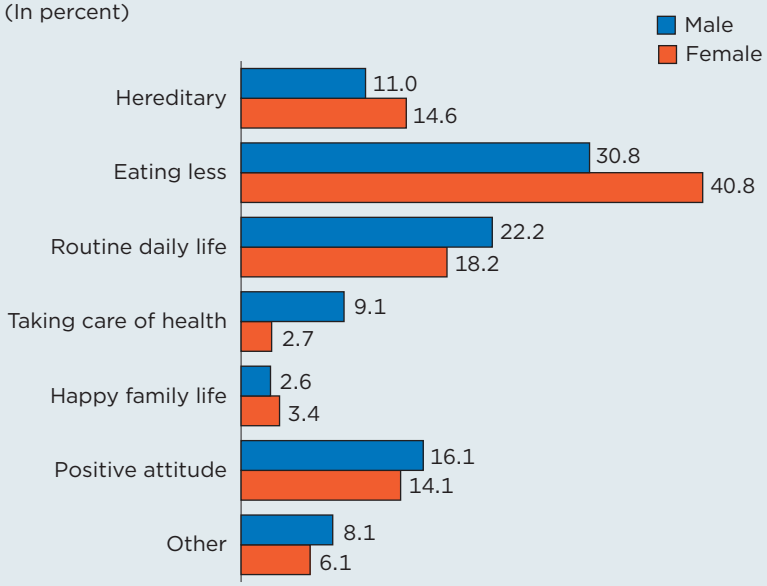
Reasons for Longevity—The Case of South Korea's Centenarians

By Hyungseog Kim, Asia Pacific Population Institute, South Korea

With prolonged life expectancy at birth and also at older ages in all Asian countries, increasing attention and focus have shifted to the oldest-old adults, especially centenarians, those 100 years or older. Researchers and the public alike are fascinated and curious to learn what enables centenarians to live so long.

According to the 2015 Population and Housing Census of South Korea, 3,159 individuals, or 48 out of 100,000 people aged 65 or older, were aged 100 years or older. Among Korean centenarians, the vast majority (86.5 percent) were women. About two-thirds (64.5 percent) lived in urban areas.

Figure 4-3.
Reasons for Longevity Reported by Centenarians in South Korea by Sex: 2015
(In percent)



Source: Statistics Korea, The 2015 Centenarian Survey as part of the 2015 Population and Housing Census.

As part of the 2015 census operations, Statistics Korea visited all people who were over 98 years old in a follow-up centenarian survey.[1] The survey asked what the centenarians considered as the reasons for their longevity. Less than 15 percent of them selected genes as the most important determinant, with women more likely (14.6 percent) than men (11.0 percent) to select hereditary effects (Figure 4-3). Eating less was the most prominent reason for longevity, four in ten women (40.8 percent) and three in ten men (30.8 percent) reported restricting food intake as the reason that they had lived over 100 years, followed by keeping a routine in daily life and positive moods/attitudes.

The centenarian survey included 31 questions about health and lifestyle, and found that a very high proportion of centenarians never smoked cigarettes (79.0 percent) or drank alcohol (76.7 percent). This is remarkable, particularly in view of the historic eras that these centenarians spent

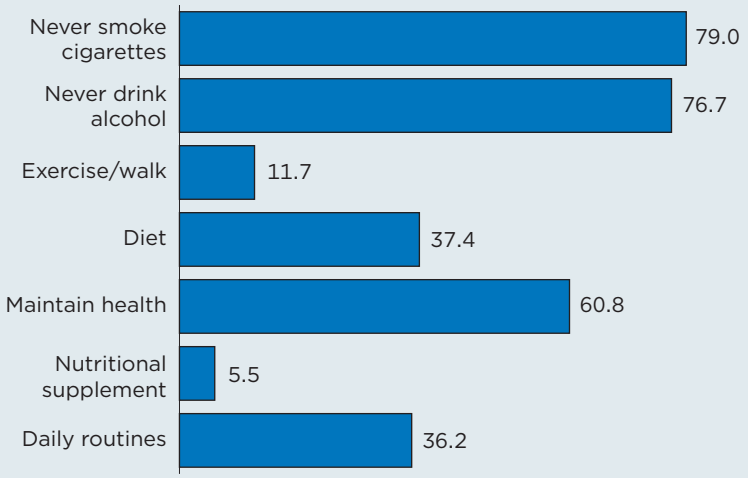
Continued on next page.

[1] The age 98 years old was used for the follow-up survey to account for potential age misreporting by the super-old people. To verify and ascertain the accuracy of age reporting by centenarians, several questions were asked at the beginning of the survey including reported ages by lunar and solar years, zodiac signs, registered date of birth, age of first child and ages of successive children reported by the centenarians to match with their children's ages, and other measures.

their adulthood when smoking was highly prevalent (Hoffman et al., 2019). Cigarette smoking multiplies the risk of cancer and drinking alcohol may lead to stomach or liver disease, and abstinence from these two health risk factors is the most common characteristic among centenarians in South Korea.

In addition to avoiding harmful health behaviors, most of the centenarians (60.8 percent) have also made conscientious efforts to maintain their health. Over one-third (37.4 percent) of the centenarians reported diet as their preferred method for living long; interestingly, taking nutritional supplements did not play much of a role (5.5 percent) (Figure 4-4). Keeping a daily routine (36.2 percent) and exercise/walking (11.7 percent) were also among the health behaviors of these centenarians.

Figure 4-4.
Health Behavior of Centenarians in South Korea
(In percent)



Source: Statistics Korea, The 2015 Centenarian Survey as part of the 2015 Population and Housing Census.

In South Korean centenarians, vegetables were the most preferred food (53.6 percent), followed by meat (45.1 percent), soy products (30.1 percent), and seafood (29.2 percent) (Table 4-2). Men preferred meat more than women, 57.5 percent and 43.2 percent, respectively. The reverse gender pattern could be observed regarding vegetables, 41.1 percent of men and 55.5 percent for women. Among the variety of foods asked, grain was the least preferred, accounting for 15 percent or lower.

These findings provide direct insights from centenarians about living a long life. It is apparent that the South Koreans who were still living beyond 100 years had lived a healthy lifestyle, avoided risky behaviors, and ate balanced diets. Interestingly, they considered genes only as a small role in their longevity, and few of them had taken nutritional supplements.

Table 4-2.
Food Preference by Centenarians in South Korea by Sex: 2015
(In percent)

Sex	Vegetable	Meat	Seafood	Fruit	Soy products	Grain	Other
Both	53.6	45.1	29.2	19.8	30.1	14.8	30.8
Male	41.1	57.5	35.5	15.7	28.0	12.9	32.0
Female	55.5	43.2	28.2	20.4	30.4	15.0	30.6

Note: Respondents may select multiple categories and the row total does not add up to 100 percent.
Source: Statistics Korea, The 2015 Centenarian Survey as Part of the 2015 Population and Housing Census.

Table 4-3.
Leading Noncommunicable Diseases in Population Aged 55 and Older for Selected Asian Countries: 2019

(In percent)

Disease/country	Deaths	DALYs
CARDIOVASCULAR DISEASES		
Turkmenistan	70.6	54.3
Uzbekistan	68.8	54.3
Azerbaijan	65.8	49.8
Tajikistan	65.3	50.5
Kyrgyzstan	65.1	47.3
Georgia	64.7	46.9
Syria	59.7	45.1
Iraq	59.5	44.5
Yemen	58.9	46.3
Kazakhstan	55.7	40.5
DIABETES MELLITUS		
Bahrain	20.5	22.1
Qatar	13.6	18.7
Sri Lanka	11.1	13.3
Brunei	10.6	13.7
Palestine	10.1	11.2
Jordan	8.6	10.0
UAE	8.3	10.9
Oman	8.0	9.6
Iraq	6.7	8.8
Taiwan	6.6	8.0
CHRONIC RESPIRATORY DISEASES		
Nepal	28.0	21.8
Bhutan	18.0	14.2
India	17.2	13.7
North Korea	16.1	13.1
Myanmar	13.9	11.6
Sri Lanka	11.7	8.7
China	11.6	8.7
Pakistan	11.1	9.3
Bangladesh	11.0	9.4
Maldives	10.7	8.9
CANCER		
South Korea	32.5	23.4
Japan	31.2	23.7
Taiwan	29.9	24.0
Israel	29.6	23.0
Singapore	29.3	21.0
Mongolia	29.3	25.6
Brunei	28.2	22.6
Cyprus	25.9	20.7
China	24.5	20.7
Thailand	24.2	18.3

Note: DALY is defined as disability-adjusted life year. Myanmar is Burma. UAE is United Arab Emirates.
Source: Institute for Health Metrics and Evaluation, Global Burden of Disease, 2019.

Cardiovascular disease (CVD) accounted for more than one-half of the deaths among older adults in many Asian countries, most notably in Turkmenistan and Uzbekistan where about seven in ten deaths of those aged 55 and older occurred due to CVD (Table 4-3; Table B-6). Cancer accounted for about one-third of NCD-related deaths in South Korea and Japan. Over 20 percent of NCD-related deaths were attributed to diabetes in Bahrain, while chronic respiratory diseases contributed to 28.0 percent of deaths in Nepal and 18.0 percent of deaths in Bhutan.

Another method of assessing overall disease burden in a population is through the disability-adjusted life year (DALY). A DALY incorporates both mortality and morbidity; one DALY represents the loss of the equivalent of 1 year of full health (World Health Organization, 2011a). Consistent

with cause of deaths in some Asian countries, one-quarter to more than half of the DALYs were attributed to NCDs such as CVD (Table B-6). Economic output loss associated with NCDs can be substantial—and may increase if the age of onset for NCDs is decreasing. It is estimated that in Indonesia, for example, the impact of a set of common NCDs combined could cost $4.47 trillion (or $17,863 per capita) from 2012 to 2030 (Bloom et al., 2015).

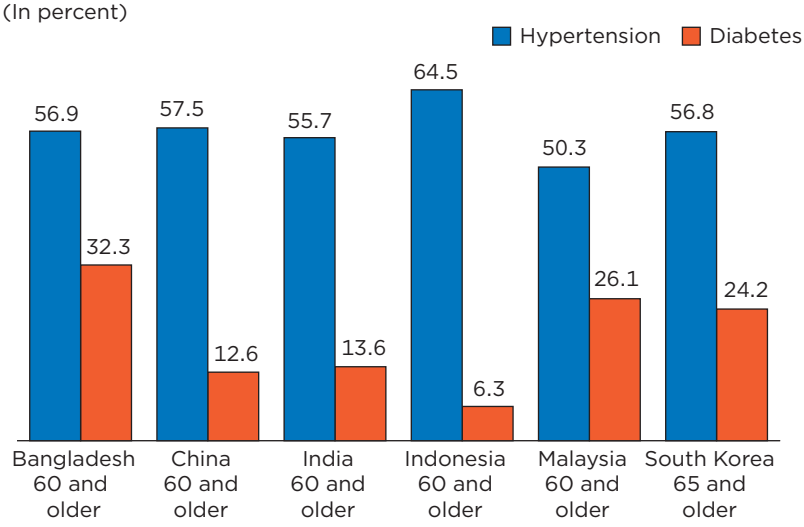
Median age of onset of NCDs has been getting younger in some Asian countries.

A high prevalence of hypertension was seen in lower and higher income Asian countries. In the selected Asian countries shown in Figure 4-5, more than one-half of the older adults in each of these countries reported having hypertension, the highest prevalence being among older Indonesians at 64.5 percent.[1] Considering that four countries are in the top ten in population size in the world in 2020 (China, number 1; India, number 2; Indonesia, number 4; and Bangladesh, number 8; U.S. Census Bureau, 2021b), these high hypertension rates translate into hundreds of millions of older adults inflicted with this health condition. Diabetes prevalence was 32.3 percent in Bangladeshis and 26.1 percent in Malaysians aged 60 and older, and 24.2 percent in South Koreans aged 65 and older (Figure 4-5).

Although recent cohorts entering older ages may be healthier than previous ones as evidenced by increasing HALE in many countries (Vaupel, 2010; Sanderson, 2010), the onset of NCDs may occur at younger ages, which would slow future gains in HALE. Median age of onset of a range of NCDs (including diabetes, hypertension, heart disease, mental health conditions, and chronic respiratory diseases) decreased from 57 to 53 years old between 2004 and 2018 in India (Mohanty, 2021). In Qatar, for example, among adults visiting a public primary health center in 2017 who reported one or more of the "big four" NCDs—cardiovascular disease, cancer, chronic lung disease, and/or diabetes mellitus—high prevalence rates were found in those aged 30–49 (Syed, 2018). This points to factors contributing to its 10-year difference in life expectancy versus HALE at birth (77.2 years versus 67.1 years, both sexes combined, 2019; Table B-5). In a large population of Syrian refugees in Lebanon aged 40–59, 17.9 percent had hypertension, 11.6 percent diabetes, and 8.6 percent had cardiovascular diseases (Saleh, 2020).

Taking this further, common risk factors that contribute to NCDs (tobacco use, harmful use of alcohol, unhealthy diet, insufficient physical activity, and hypertension) are also of high concern. Age-related patterns of NCD risks typically mirror those of NCDs themselves—with higher prevalence at later ages. However, similar to what appears to be a pattern of decreasing age of onset for many NCDs, NCD risks may also be accumulating at earlier ages. For example, 22.4 percent of women aged 40–49 in Nepal were current tobacco users, 34.2 percent were overweight or obese, and 24.9 percent had hypertension (Bista et al., 2020). Even risk factors like sedentary behaviors seen in childhood and adolescents showed increased risks for metabolic disturbances and obesity (Bornhorst, 2020).

Figure 4-5.
Prevalence of Hypertension and Diabetes Among Older Population in Selected Asian Countries
(In percent)



Note: Age for older population differs by country, per availability in their surveys.
Source: For Bangladesh: Takim, Biswas, and Ottawa, 2014; for China and India: World Health Organization, Study on Global Ageing and Adult Health, 2015–2016; for Indonesia: Indonesia Family Life Survey, 2014–2015; for Malaysia: Hamid, 2019; for South Korea: Survey on the Actual Conditions of Older Persons in Korea, 2020.

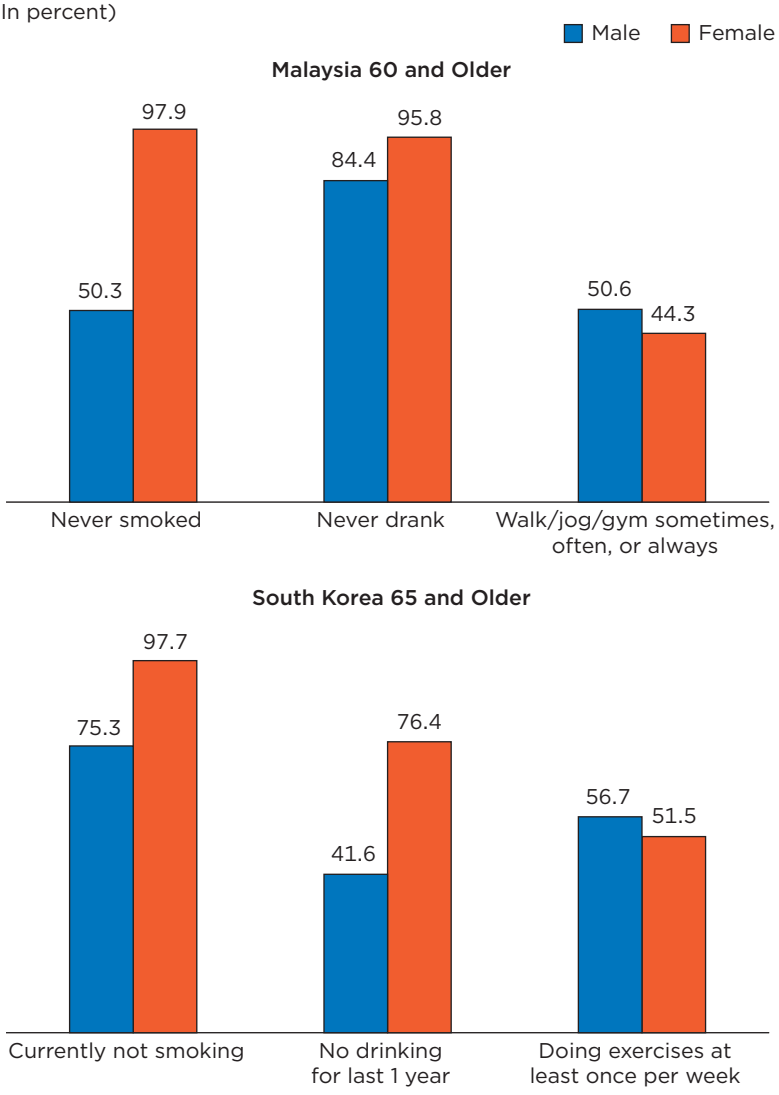
[1] Note that accurate estimates or harmonization of NCD prevalence is difficult.

Some Asian countries are showing positive shifts in risk factor behaviors.

The highest rates of NCD risk factors are typically seen in older age groups, yet many of these factors are modifiable—reduction or elimination of these risks will decrease the likelihood or severity of an NCD or even a disability (Mehta, 2017; Adams, 2019). In a study of the global burden of disease estimates, 22.3 percent of total global, disability-adjusted life years lost due to dementia in 2016 could be attributed to four modifiable risk factors—overweight, high blood glucose, diet, and tobacco use (Global Burden of Disease Collab, 2019).

Some countries have positive news on risk factor behaviors at older ages. Figure 4-6 shows healthy behaviors among older people in Malaysia and South Korea. One of the notable positive health behaviors is that almost all older women in Malaysia and South Korea, and most South Korean older men, never smoked or have stopped smoking (currently not smoking). Smoking causes lung disease, heart disease, cancer, respiratory problems, osteoporosis, eye diseases, or diabetes (National Institute on Aging, 2021), but tobacco consumption is avoidable and has been evidenced in some low- and middle-income countries (LMICs) (He, Muenchrath, and Kowal, 2012). Over 50 percent of older Malaysian and South Korean men engage in physical activities or hobbies that contribute to good health and well-being.

Figure 4-6.
Health Risk Factors for Older Population in Malaysia and South Korea by Sex
(In percent)



Note: Age for older population differs by country, per availability in their surveys.
Source: Malaysian Ageing and Retirement Survey, 2018–2019; Survey on the Actual Conditions of Older Persons in Korea, 2020.

Concurrent infectious and noninfectious diseases pose challenges of multimorbidity.

Despite the high prevalence of NCDs and high overall disease burden attributed to NCDs, infectious diseases still constitute a serious disease burden for some Asian countries. For example, rates of dengue fever, the most common arthropod-borne viral infection endemic in tropical and subtropical countries, have increased in Malaysia in recent years at an annual average rate of 30.7 percent between 2011 and 2016 (Ministry of Health Malaysia, 2020). Other infectious diseases such as HIV, despite steady decreases in recent years, are still prevalent among some special population groups in a number of Asian countries (Ministry of Health Malaysia, 2020).

Box 4-2.

Nutritional Status of Older People in South Korea

By Ae Son Om, Hanyang University, South Korea

Older people may acquire nutritional imbalances due to loss of taste, smell, and teeth, and impaired digestibility. This is one of the reasons why morbidity is increased and can exacerbate conditions in older ages (Ministry of Food and Drug Safety, South Korea, 2015). In general, nutrient intake and diet quality in older adults have statistically significant associations with mortality risk (Kurotani et al., 2016). When nutrient intake and lifespan were analyzed, malnourished older South Koreans had 1.47 times higher mortality rate (Ministry of Health and Welfare South Korea, 2008). This is comparable to data found in Sweden (Shakersain et al., 2016). Balanced dietary habits and nutrition are crucial in disease prevention and healthy adult life.

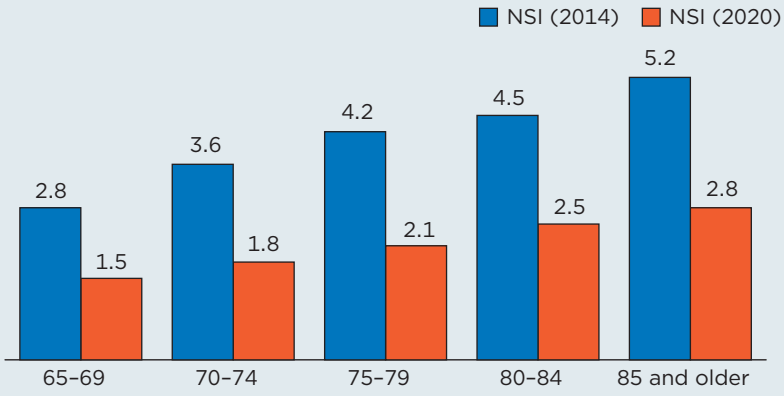
The typical measures used to assess nutritional status, 24-hour recall, dietary records, and food-frequency questionnaires, may be less accurate in older adults because of changes in memory (Nieman and Lee, 2018). The accuracy of these methods may lessen due to declining memory of the elderly and hence various evaluation tools are developed. The Ministry of Health and Welfare of South Korea uses an alternate measure for this population, the Nutritional Screening Initiative (NSI).[1] The NSI is a checklist that includes malnutrition risk factors such as diseases, eating poorly, tooth loss, mouth pain, economic hardship, reduced social contact, multiple medications, involuntary weight loss or gain, need for assistance in self-care, and aged over 80 years.

The NSI data published in 2014 and 2020 showed that in general, older Koreans fared well in nutritional status; most scored in the low-risk group (0.0–2.9) or moderate-risk group (3.0–5.9), and no high-risk scores (6.0 and over) were recorded (Figure 4-7). When the NSI mean scores of 2014 are compared with 2020, improvements can be observed in all age groups, most notably in the oldest age group, those 85 years and older.

Nutrient intake increases with household income (Khil, 2021; Hassen et al., 2016; de Mestral et al., 2017). In South Korea, income levels in 2017 compared to 2014 increased in 65–69, 70–74, 75–79, 80–84, and 85 and older age groups by 8.2 percent, 13.6 percent, 25.7 percent, 6.5 percent, and 32.2 percent, respectively (Ministry of Health and Welfare, South Korea, 2020). Improvement of overall economic status in older South Koreans could have contributed to their improved nutritional status.

Additionally, widened government policy is also showing visible effects. Budgets on programs like older adult care service increased by 49.3 percent from $7.9 billion in 2014 to $11.8 billion in

Figure 4-7.
Nutritional Status Scores for People Aged 65 and Older in South Korea by Age: 2014 and 2020



Note: NSI is Nutritional Screening Initiative. Low risk = score of 0.0–2.9, moderate risk = score of 3.0–5.9, high risk = score of 6.0 or higher.
Source: Ministry of Health and Welfare, South Korea, 2015, 2018. Survey on the Actual Conditions of Older Person in Korea, 2014 and 2020.

[1] The NSI checklist was jointly developed by the American Academy of Family Physicians, the American Dietetic Association, and the National Council on Aging in 1990 to assess nutritional risk and utilize in regional elderly community for nutrition management.

Continued on next page.

2017 (Ministry of Health and Welfare, South Korea, 2020). Meal delivery service included in customized services (Lee et al., 2020) and nutritional education changed dietary behavior, resulting in improved nutritional status (Kim et al., 2014).

On the other hand, the oldest age group (80 years and older) showed relatively little improvement in nutritional status, which could be related to underlying diseases. This group has approximately three types of chronic diseases, which is similar to 70–74 and 75–79 age groups. However, 50.4 percent of old people aged 80 and older had poor teeth conditions, and the chewing ability deteriorated with increasing age (Im, 2020). As a result, oldest people may experience nutritional deficiency by limited food consumption due to poor chewing ability.

In summary, nutritional status in older Koreans is likely affected by factors such as chronic illnesses or dysfunction as age increases. In the future, regular health management, such as active exercise, expansion of nutrition support projects for older people, and targeted health care services, could further their nutritional improvement. In addition, consumption of nutrient reinforced silver food (more than three nutrients among protein, vitamin A, C, and D, riboflavin, niacin, calcium, potassium, and dietary fiber) should be added to older peoples' diet per government recommendation established in 2019 (Ministry of Food and Drug Safety South Korea, 2021). Silver food is expected to have a beneficial effect on older South Koreans' nutritional status and ultimately help them live long and healthy.

It has taken an infectious disease pandemic to significantly raise the profile of the importance of addressing NCDs in Asia and across the globe, not to mention the challenges of multimorbidity. The United Nations' "Sustainable Development Goals Report 2020" pointed out that prevention and treatment services for noncommunicable diseases have been severely disrupted since the COVID-19 pandemic began, with low-income countries most affected (United Nations, 2020). Concurrent infectious and noninfectious diseases represent a growing concern, as demonstrated by COVID-19. Recent estimates suggest one in five adults worldwide are at increased risk of severe COVID-19 due to older age and the presence of one or more chronic conditions (Clark, 2020; McQueenie, 2021). Meanwhile, more evidence is emerging about the increasing prevalence and impacts of multiple chronic conditions, including in LMICs. A study published in 2015 estimated that 7.8 percent of those in LMICs suffered from multimorbidity (Afshar, 2015). In all 28 countries in this study, multimorbidity increased significantly with age and with country gross domestic product (GDP). In Singapore, a high-income country, multimorbidity prevalence was 26.2 percent in a sample of over 1.1 million (Low, 2019).

As of the writing of this report in 2021, no global data aggregators have provided age breakdowns of COVID-19 deaths or infections and few countries themselves have provided age-disaggregated data. Yet accumulating evidence points to a strong age-related risk gradient for severe disease, hospitalization, and death (Holt, 2020). The World Health Organization (WHO) estimated in December 2020 that in late November of 2020, the South-East Asia region was one of the three WHO regions that had the highest number of new daily cases, with India being one of the four countries to account for more than 50 percent of all deaths from COVID-19 worldwide (WHO, 2020). In addition, socioeconomic inequality is related to COVID-19 infection rates, as evidenced by the fact that the two countries with the greatest numbers living in poverty in Southeast Asia—Indonesia and the Philippines—also have the highest numbers of COVID-19 infections in the Southeast region. Intersecting this with the additional impact of older ages on susceptibility and severity of COVID-19, we have seen health systems' limitations and gaps exposed.

AGE-RELATED DISABILITY IN ASIA

Increases in NCDs may cause considerable cognitive and physical impairments and disability.

An estimated 15 percent of the global population are living with disabilities (WHO, 2011b; United Nations Development Programme, 2018). Roughly 690 million people in Asia and the Pacific have cognitive or physical impairments such as blindness, poor vision, deafness, loss of hearing, impaired movement, cognitive disabilities, and neurological disorders, as well as those with multiple disabilities (United Nations Economic and Social Commission for Asia and

Box 4-3.

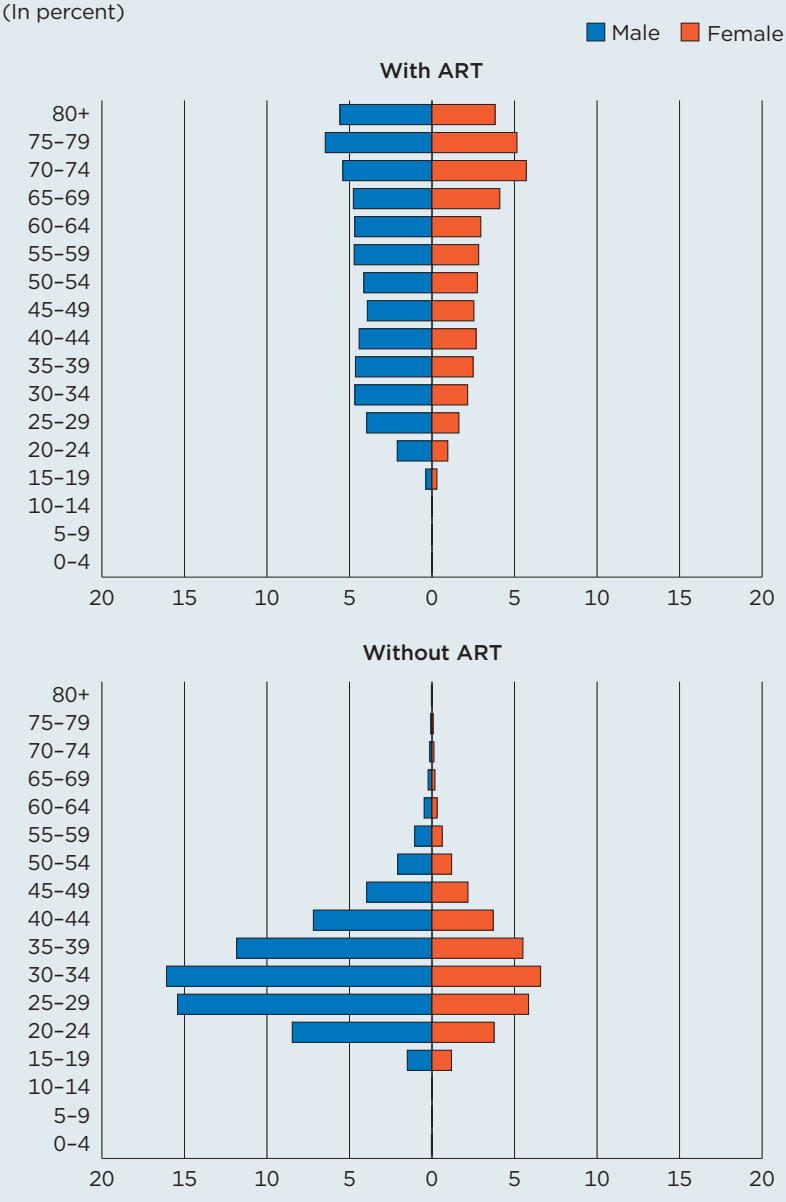
Gender Variations in HIV Population Aging in Asia

By Festus Ukwuani, U.S. Census Bureau, Population Division

The HIV/AIDS epidemic in Asia is characterized as a concentrated epidemic. Most countries have a prevalence level less than 1 percent, and high-risk key population groups such as sex workers, men who have sex with men (MSM), injecting drug users (IDU), and prisoners drive the epidemic. The prevalence among these key populations is usually high, compared with the low prevalence in the general population (Joint United Nations Programme on HIV/AIDS, 2014; 2016). For the MSM, in 2015, 19 countries had HIV prevalence higher than 5 percent and was as high as 28.6 percent in Bangkok (Joint United Nations Programme on HIV/AIDS, 2016). National efforts to reach high-risk groups has helped to reduce HIV infection in countries like Cambodia and Thailand, while new infections are rising in other countries including Indonesia, Pakistan, and the Philippines. The number of people living with HIV in the Asia and Pacific regions is still high and ranks second behind Africa. However, the region is falling behind Africa in HIV response (Joint United Nations Programme on HIV/AIDS, 2020).

Antiretroviral Therapy (ART) helps to prolong the lives of people living with HIV (PLHIV) by slowing virus progression from developing into the advanced stage of the disease known as AIDS. A PLHIV is expected on average to live for 3 years if not receiving antiretroviral drugs. With antiretroviral drugs, PLHIV can expect similar life expectancy as uninfected people (Moss et al., 1988; Bhatti, Usman, and Kandi, 2016). Figure 4-8 demonstrated

Figure 4-8.
Age and Sex Distribution for HIV Population by ART Status in Thailand: Projected 2050
(In percent)



Note: ART is antiretroviral therapy.
Source: U.S. Census Bureau, International Programs projections based on UNAIDS Spectrum files, 2020.

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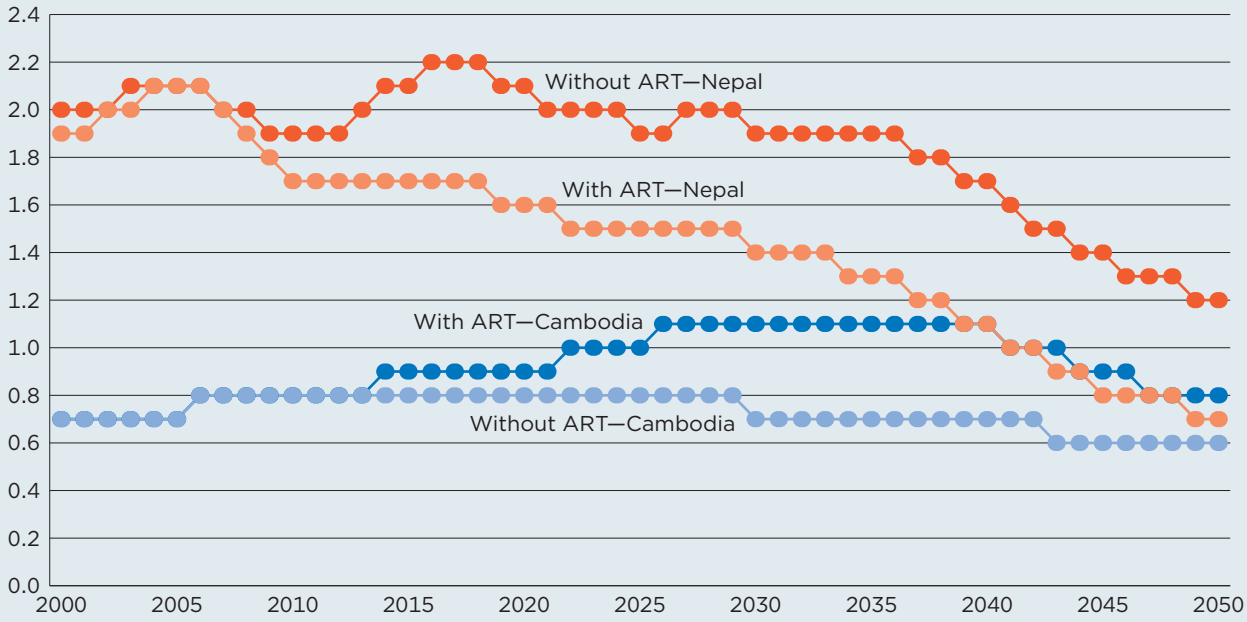
Figure 4-9.

Sex Ratio of HIV Population Aged 65 and Older in Cambodia and Nepal: 2020 Projected to 2050



Note: ART is antiretroviral therapy. Sex ratio is the number of men per 100 women; a ratio higher than 1.0 means more men than women, a ratio lower than 1.0 means more women than men.
Source: U.S. Census Bureau, International Programs projections based on UNAIDS Spectrum files, 2020.

that for Thailand, without ART, those infected by HIV rarely survive to older ages, as many die before reaching the age of 65. However, with ART, most PLHIV survive to older ages.

Gender is an essential determinant of survival to old age, both for PLHIV and in the general population (Brañas et al., 2020). In most populations, the sex ratio at birth favors males.[1] Then it reverses at older ages as females are more likely to survive to older ages than males (Ritchie and Roser, 2019).

The older PLHIV consists of people infected by the virus at 50 years and older and those infected at younger ages that survive to the 50 years and older age group (Joint United Nations Programme on HIV/AIDS, 2014). While ART is beneficial, survival rates may be different for men versus women due to socioeconomic and biological factors (Brañas et al., 2020; Mosha, 2020). As shown in Figure 4-9, without ART, the sex ratio of HIV population aged 65 and older is below 1.0, indicating that in Cambodia, women are more likely to survive to older ages than men. However, in Nepal, the sex ratio is greater than 1.0. The graph shows that the sex ratio gets closer to 1.0 when HIV patients are on ART, indicating better survival on ART for males in Cambodia and females in Nepal.

As highlighted by the above results, while ART use helps to prolong the lives of HIV patients, the experience could be different for men and women in different countries. More women than men survived and reached undetectable levels of the virus in their bodies after 1 year on ART, but women later lost their immunological advantage due to more unsatisfactory socioeconomic conditions (Mosha, 2020). Women living with HIV had better immunological recovery than men living with HIV, but their physical function and quality of life were worse (Branas et al., 2020), and women older than 65 years had better immunological recovery than men (Foca et al., 2019).

Improving ART coverage for PLHIV is an important public health policy. Our data showed gender differences in ART survival and socioeconomic conditions. Public health policy will benefit from country-specific evaluations of gender variations in the survival of HIV patients on ART to old age and the impact of associated socioeconomic and biological factors influencing the outcome.

[1] Sex ratio is defined as the number of males per 100 females.

Box 4-4.

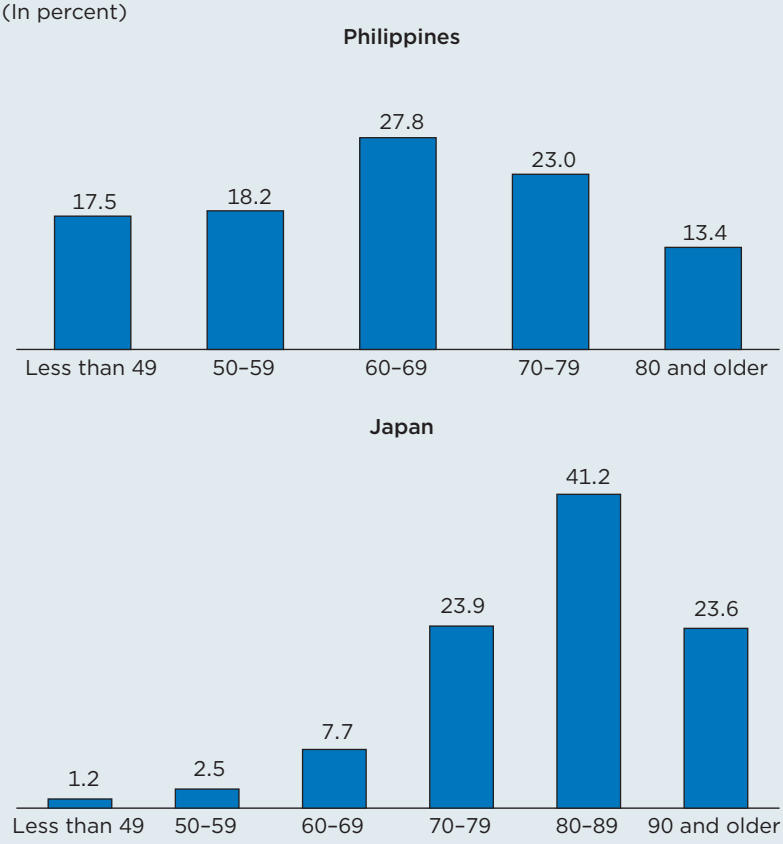
COVID-19 and Older Asians

By Eduardo Klien, HelpAge International, Asia Pacific

After China's initial COVID-19 outbreak, the early global narrative of the pandemic was driven by the stories, evidence, and images emerging from high-income Western economies—particularly in North America and Europe. In Western countries, deaths from COVID-19 were overwhelmingly among older people, in some countries more than 90 percent of all deaths (Kluge, 2020), residential care homes were decimated and senior citizens were left isolated.

For much of 2020, Asia was assumed to have escaped the worst of the pandemic. But the geographic focus began shifting with the rapidly escalating case numbers in India. As 2020 approached an end, India accounted for about three-quarters of all cases in the region and had broken into global headlines (HelpAge International, 2020). The narrative began to reverse; perhaps this was not best characterized as a pandemic of rich Western countries after all (The Brookings Institute, 2021).

Figure 4-10.
Percent Distribution of COVID-19 Deaths by Age for Philippines and Japan as of July 2021
(In percent)



Source: Department of Health, Government of Philippines, 2021; Ministry of Health, Labor and Welfare, Government of Japan, 2021.

With this turn to Asia, the assumptions about impacts on older people that had emerged from the early COVID-19 needed to be examined further and explored by context. In addition, there could be no single "Asia story" across countries as different as Japan and India, or Iran and Singapore.

On average, while the majority of deaths across Asia were among older people, the statistics seemed to be less overwhelmingly lopsided by age. Part of the explanation was age structure, as a higher direct death toll from COVID-19 might be expected in countries with older population profiles, as illustrated by the contrast between Japan (an older population) and the Philippines (a younger country) in Figure 4-10. While Asian populations are aging rapidly, the percentage of the population aged 60 and older in Asia is about half that of Europe (United Nations Economic and Social Commission for Asia and the Pacific, 2019). Living arrangements also mattered. Only a small percentage of Asians live in residential care facilities (Irving and Bloom, 2020). By contrast, in Belgium and

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Ireland, nearly two-thirds of COVID-19 deaths were occurring in such facilities as the pandemic flared in mid-2020 (European Centre for Disease Prevention and Control, 2020).

Less robust health systems in middle-income Asian countries left many people infected by COVID-19 at risk of death—not only older people but the middle-aged as well, thus skewing national death rates lower by age. In many cases, flawed statistics, including inaccurate records of cause of death, provided a misleading picture of trends in Asian countries with weaker data collection capacity.

The secondary health impacts arising from the first waves of the pandemic took an even greater toll on older Asians than COVID-19 infection (HelpAge International, 2020). Some COVID-19 public health measures had the unintended effect of reducing access to noncommunicable disease prevention and management health services such as for cardiovascular diseases and cancer, rehabilitation services, and inpatient and outpatient hospital care.

Many older Asians, particularly those living alone or in care facilities, faced severe social isolation. Although one-half of older people (aged 60 and older) live in extended-family households in Asia-Pacific, compared to just 7 percent in North America (Pew Research Center, 2020), movement restrictions cut people off from friends outside the home and community events, despite that community organizations found creative ways to keep people connected. Evidence from other regions suggests that older groups may actually have been more emotionally resilient than younger people during the crisis (HelpAge International, 2020).

Many older Asians faced economic hardship because of the informality of their economies and the lack of state protections. On average, older people in Asia work mainly in the informal sector, which provides little protection against income shocks and was hit particularly hard by COVID-19 (International Labour Organization, 2018). The pandemic reduced older people's income from their own work and reduced the ability of family members to provide material and financial support.

So, what can we say about the impacts of the first waves of the COVID-19 pandemic on older Asians? The pandemic has highlighted the situation of older people as never before. In Asia, as globally, older populations suffered the most severe death toll of any age group. Beyond the well-documented mortality risk, it is difficult to make sweeping generalizations about older Asians because of the diversity of Asia and the lack of age-disaggregated evidence. Ultimately, the pandemic highlighted the stark inequalities between and within Asian countries. Effective and inclusive state systems put some countries in a better position to respond. Among individuals, advantages or disadvantages accumulated throughout life influenced personal outcomes.

the Pacific, 2019). This estimate is expected to increase in the next decades due to a number of factors, including population aging and longer life expectancy.

The prevalence of disability varies widely across countries in Asia, from 18.3 percent in Georgia and 10.9 percent in the Maldives, to 3.4 percent in Cambodia and 1.1 percent in Brunei (United Nations Economic and Social Commission for Asia and the Pacific, 2019).[2] The variability is partly related to the different conceptual approaches to understanding and defining disability—and the policy implications of investing in accessibility for people living with disability.

When using similar definitions from a range of studies (Table 4-4), sensory impairment, such as vision difficulty and ambulatory (moving around) disability, were among the most prevalent types of disabilities in the older adults—for vision difficulty, 45.6 percent in Bangladesh and 35.0 percent in South Korea; for ambulatory difficulty, 43.6 percent in Bangladesh, 42.7 percent in Burma, and 36.6 percent in Jordan. In all countries, women were more likely to report difficulties than men for all six disability types, most notably in Burma (ambulatory) and Thailand (independent living).

Despite some encouraging health behaviors (such as those demonstrated in Figure 4-6), the increases in conditions like diabetes and dementia may lead to rising disability levels. Diabetes prevalence is rising faster in LMICs than in high income countries. Diabetes can lead to diabetic retinopathy and neurological and microvascular changes that lead to limb amputation (Yau, 2012). In LMICs, obesity, stroke, and heart conditions are increasing, and may cause an upward trend in the incidence and prevalence

[2] Note disability definition and measurement often are country- or culture-specific, and disability rates for some countries may differ from those defined and reported by the United Nations (UN) or WHO.

Table 4-4.

Older Population With a Disability in Selected Asian Countries by Type and Sex

(In percent)

Disability/country	Both sexes	Male	Female
VISION			
Bangladesh (65+)	45.6	45.5	45.7
Burma (60+)	28.5	23.1	33.1
Jordan (65+)	30.9	29.8	32.0
South Korea (65+)	35.0	32.3	37.0
Thailand (60+)	15.5	12.5	18.0
Vietnam (60+)	24.5	22.2	26.2
HEARING			
Bangladesh (65+)	41.8	39.3	44.5
Burma (60+)	14.0	12.8	15.1
Jordan (65+)	24.2	22.6	25.9
South Korea (65+)	24.6	23.4	25.6
Thailand (60+)	12.9	11.7	13.9
Vietnam (60+)	19.0	17.2	20.4
COGNITIVE			
Bangladesh (65+)	35.9	31.8	40.0
Burma (60+)	17.5	14.7	19.9
Jordan (65+)	18.8	16.2	21.3
South Korea (65+)	25.3	25.4	25.2
Thailand (60+)	N	N	N
Vietnam (60+)	20.9	18.0	23.1
AMBULATORY			
Bangladesh (65+)	43.6	45.5	50.6
Burma (60+)	42.7	34.1	49.1
Jordan (65+)	36.6	31.2	42.1
South Korea (65+)	22.1	16.5	26.3
Thailand (60+)	18.4	13.4	22.4
Vietnam (60+)	26.3	22.5	29.2
SELF-CARE/ADL			
Bangladesh (65+)	42.1	37.6	46.6
Burma (60+)	22.0	17.8	25.5
Jordan (65+)	16.2	13.0	19.5
South Korea (65+)	5.6	5.0	6.0
Thailand (60+)	7.6	6.3	8.6
Vietnam (60+)	15.0	13.0	16.6
INDEPENDENT LIVING/IADL			
Bangladesh (65+)	30.6	26.7	34.7
Burma (60+)	37.0	30.7	42.4
Jordan (65+)	N	N	N
South Korea (65+)	12.0	11.4	12.4
Thailand (60+)	24.6	17.8	30.4
Vietnam (60+)	12.2	10.5	13.6

N Not available.

Note: ADL is activity of daily living; IADL is instrumental activity of daily living.

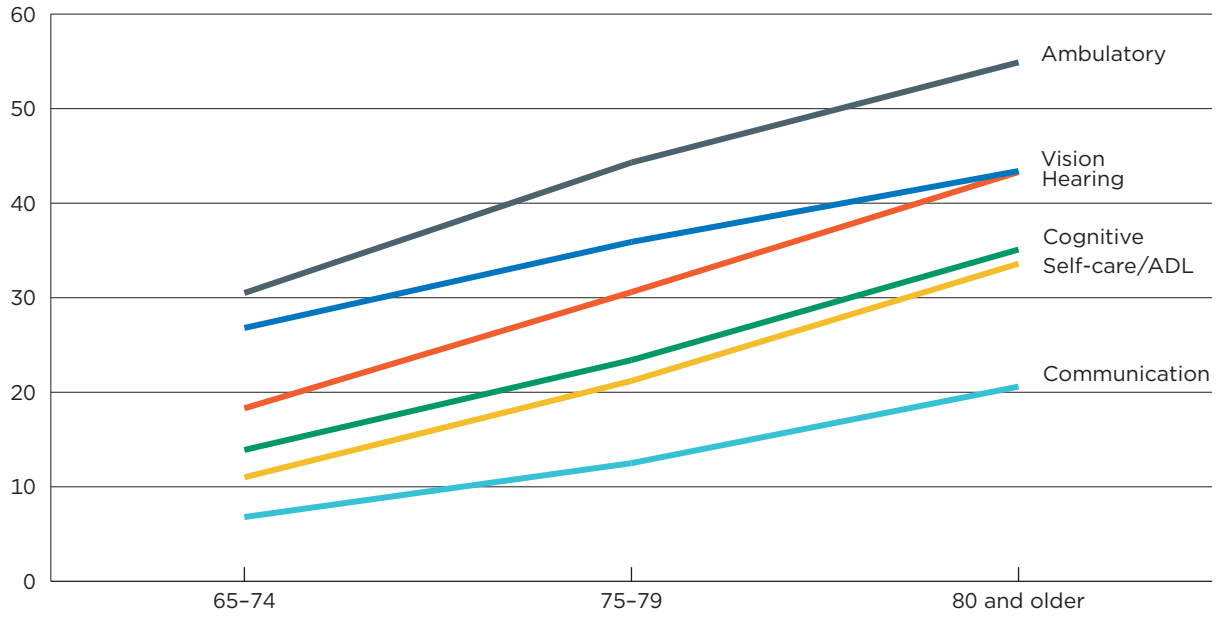
Source: Bangladesh Household Income Expenditure Survey, 2016; Myanmar Aging Survey, 2012; Jordan 2015 Population and Housing Census; South Korea Ministry of Health and Welfare, Survey on the Actual Conditions of Older Persons in Korea, 2020; Survey of Older Persons in Thailand, 2017; Survey on Older Persons and Health Insurance in Vietnam, 2019.

Table 4-5.
Estimated Number of People With Dementia by Region: 2020 to 2050
(Numbers in millions)

Region	2020	2025	2030	2035	2040	2045	2050
World	58.7	69.2	82.1	97.5	114.8	133.3	152.2
Africa	5.3	6.3	7.7	9.4	11.6	14.2	17.2
Americas	11.4	13.6	16.3	19.7	23.5	27.6	31.6
Asia	29.2	35.3	42.7	51.4	60.9	71.2	81.8
Europe	12.7	14.0	15.3	17.0	18.8	20.4	21.6

Source: Guerchet et al., "Numbers of People With Dementia Worldwide. An Update to the Estimates in the World Alzheimer Report 2015," Alzheimer's Disease International, November 2020, <www.alzint.org/resource/numbers-of-people-with-dementia-worldwide/>.

Figure 4-11.
Population Aged 65 and Older With a Disability in Jordan by Type and Age: 2017
(In percent)



Note: ADL is activity of daily living.
Source: Jordan Department of Statistics, 2017.

of dementia, which in turn causes considerable cognitive and physical impairments and disability (Prince et al., 2015). As of the year 2020, 29 million of the 59 million people around the world living with dementia resided in Asia (Guerchet et al., 2020), with both these numbers expected to double within the next 20 years (Table 4-5). People living in lower income contexts across Asia may have fewer economic and human professional resources to care for older populations (Prince, 2015).

Figure 4-11 illustrates disability rates in Jordan by age; a pattern of increasing sensory, cognitive, physical, and social (communication) disabilities moving from 65–74, 75–79, and 80 years and older. Physical impairment (ambulatory) is the most prevalent disability followed by vision and hearing impairment. This pattern is consistent with other countries across Asia and globally. There is an ongoing reduction in the age-standardized prevalence of blindness and visual impairment

globally, but vision-related disability is growing as a result of the increased numbers of older adults. This has contributed to the increased number of people with visual impairments, from 159.9 million in 1990 to 216.6 million cases in 2015 (Bourne et al., 2017). An estimated 15 percent of the world's adult population has some degree of hearing loss—with approximately 25 percent of those people aged 65 and older (WHO, 2013).

Disability or functional decline, including limitations in activities of daily living (ADLs) or instrumental activities of daily living (IADLs), is a common measure of the loss of independence at older ages (den Ouden, 2013). Increasing levels of ADL limitations often result in higher levels of social and health care utilization and expenditure. Almost half of the older Bangladeshis reported an ADL-related disability (42.1 percent), while 22 percent of the Burmese population aged 60 and older reported an ADL limitation (Table 4-4).

A study of adults aged 50 and older in 23 LMIC countries reported that although the prevalence rate of people living with severe activity limitations is expected to change very little over time, the absolute number of people with activity limitations will still increase with the increase in number of older adults (Weber, 2020). IADLs include more complex activities related to the ability to live independently in the community—such as shopping and managing transportation. Limitations in IADLs often point to the assistance individuals may need now or in the future to maintain their health and well-being. Current evidence reveals a considerable need for assistance for older people in Asia to maintain their independence, particularly for women. Women aged 60 and older in Thailand (30.4 percent) and Vietnam (13.6 percent) had higher levels of IADL limitations than their Thai (17.8 percent) and Vietnamese (10.5 percent) male counterparts (Table 4-4).

Living alone may lead to social isolation and is associated with multimorbidity among older Asians.

Levels of independence are also driven by social factors that impact the demand for health and social care. These include social isolation, which is a crucial determinant of the social and financial position of older adults, and the ability to access social support arrangements (Santini, 2020). In particular, the combination of longer life expectancy of females than males and that older women are more likely than their husbands to be widowed, as discussed in Chapter 2, could lead to gender disparity in social isolation where older women may be at a disadvantage.

Living alone was found to be associated with multimorbidity for older Vietnamese, especially women and those at advanced ages, which points to the need for attention to the mental health of older parents left behind in less economically developed regions (Le and Giang, 2016; Yamada and Teerawichitchainan, 2015). While disabled older adults who live alone tend to require more paid care services compared to those who live with family, it is social isolation or loneliness that often is the better predictor of negative health outcomes than solitary living arrangements (Lim, 2011).

Loneliness has been found to be associated with many adverse health outcomes, such as chronic illnesses, including anxiety and depression, declines in cognition, and worsening immune functioning (Santini, 2020). A meta-analysis published in 2015 showed an increased likelihood of premature mortality for self-reported loneliness, social isolation, and living alone (averaging 26 percent, 29 percent, and 32 percent, respectively) (Holt-Lunstad et al., 2015).

While living alone does not equate to loneliness, there is emerging evidence that living with company is a better alternative (Lim, 2011). A study on living arrangements and intergenerational support found evidence that coresidence with a child of the culturally preferred gender significantly improves the emotional health of older parents (Teerawichitchainan, Pothisiri, and Giang, 2015).

Adult children who live with their parents might serve as a potential pool of caregivers for older people needing assistance.

As the traditional filial piety culture dictates, older Asians often reside with their adult children (Shorey and Chan, 2021). Modern day state laws, such as the 2013 "Protection of the Rights and Interests of the Elderly People" in China, stipulated that it is children's responsibility to take care of parents and required adult children to care of older parents (Wilson, 2013). Living with adult children does not automatically guarantee that children will take

Table 4-6.
Living Arrangements for Older Adults in Selected Asian Countries
(In percent)

Country and age	Live alone/ one person only	Live with spouse/ partner only	Live with at least one child/ grandchild	Live with other family or nonfamily members only
Bangladesh (60+)	6.2	13.4	79.6	0.8
Burma (60+)	4.9	8.2	81.3	5.7
Malaysia (65+)	9.0	14.3	76.7	Z
South Korea (65+)	21.1	37.8	25.2	15.9
Thailand (60+)	10.7	20.9	55.7	12.7
Vietnam (60+)	9.1	17.3	71.7	2.0

Z Represents or rounds to zero.
Note: "Live with at least one child/grandchild" regardless of presence of spouse/partner.
Source: Bangladesh: Department of Population Sciences, University of Dhaka and United Nations Population Fund (UNFPA), 2019; Study on Older Population in Bangladeshl; Myanmar Aging Survey, 2012; Jordan Population and Family Health Survey 2017-18; Malaysian Ageing and Retirement Survey, 2019; Statistics Korea, 2020 Population and Household Census; Thailand: Survey of Older Persons in Thailand, 2017; Vietnam: Survey on Older Persons and Health Insurance in Vietnam, 2019.

care of them but does imply a potential pool of caretakers and sources for socialization for the older parents.

Against this background, Table 4-6 shows the stark contrast in living arrangements of older people in six Asian countries. The vast majority (around 70 to 80 percent) of older people lived with at least one adult child or grandchild in Bangladesh, Burma, Malaysia, and Vietnam, with over half of older adults in Thailand doing so. South Korea shows an opposite pattern of living arrangements for older people; only 25.2 percent of Koreans aged 65 and older coreside with their adult children or grandchildren, while 21.1 percent live alone and 37.8 percent live with a spouse or partner only.

Figure 4-12 breaks down to more detailed categories of living arrangements of older people in South Korea (65 years and older) and Vietnam (60 years and older) by urban/rural residence. In both countries, older rural residents are more likely to live alone than older urban residents. The prevalence of living alone in South Korea was 20.1 percent for older urban residents and 24.0 percent for rural residents, similar to older Americans aged 65–74.[3] Nearly 40 percent of older South Koreans lived with their spouse or partner only, 37.0 percent for rural residents and 39.8 percent for urban residents. This compares to Vietnam where the majority of older Vietnamese lived with at least one of their children, with the percentage as high as 78.4 percent for urban residents. It is also worth noting that among older Vietnamese who lived alone, some had children living nearby (Figure 4-12).

HEALTH CARE SYSTEMS

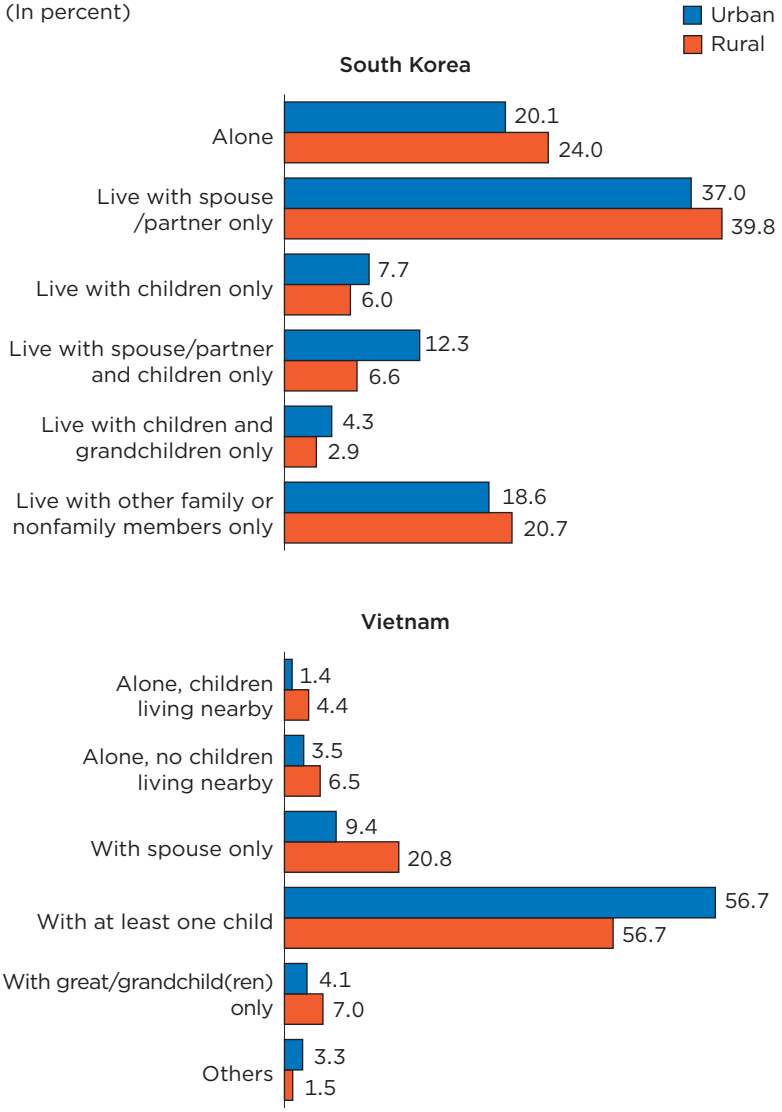
Health systems readiness differs widely across Asia.

Health and social care sectors within countries play a valuable role in improving population health and well-being, protecting people from the financial consequences of illness, reducing health and income inequalities, and supporting productivity of populations (Charlesworth et al., 2021). Yet, while important, medical care has contributed a comparatively small component of a population's health. Recent estimates attribute about 10 to 20 percent of health outcomes to medical care, 30 percent to genetics, 40 to 50 percent to behavior and commercial determinants, and 20 percent to social and physical environments, and called for better understanding of the social determinants of health (Hayes and Delk, 2018; Braveman, 2014). Efforts to document levels of health, prevent chronic conditions, and encourage healthy aging could result in health and demographic dividends in aging Asia.

Health systems across Asia are at different stages of readiness to respond to the shifts in population needs due to both increasing life expectancy and the increasing prevalence of NCDs (Yiengprugsawan, 2016). For example, Japan's health system has contributed to its world leading health indicators owing to its single-payer system and uniform benefit package. However, the high and growing number of older adults in Japan has created pressures on financing and quality of care (Bloom, 2019). Meanwhile, a country like Malaysia has a two-tiered system that provides

[3] Based on the 2019 Current Population Survey, 1-year estimates, rates of living alone in the United States among those aged 65–74 was 19.4 percent for men and 25.8 percent for women; among those aged 75 and older, 23.9 percent for men and 44.3 percent for women. Refer to tables available at <www.census.gov/data/tables/time-series/demo/families/adults.html>.

Figure 4-12.
Living Arrangements for Older Populations in South Korea and Vietnam by Urban/Rural Residence
(In percent)



Source: Survey on the Actual Conditions of Older Persons in Korea, 2020; Survey on Older Persons and Health Insurance in Vietnam, 2019.

universal access to care, but with fragmented delivery and inequitable access to private care (Yip, 2019). Sri Lanka has a publicly financed and delivered health care system that has delivered good health outcomes but also a rapidly expanding for-profit private sector that is now part of a new government program to fill service gaps (Karunapema and Abeykoon, 2016; Kumar, 2019).

Care systems will need to adapt to the new health realities of increasing NCDs described earlier in this chapter—equally though, as COVID-19 has reminded us, infectious diseases (and injuries) remain. The new foundations for health systems are access to quality care and financial risk protection to achieve universal health coverage (UHC). Particularly for countries with limited resources, health systems will require strengthening primary health care services, which in turn, may determine whether a country achieves UHC (Palagyi, 2019).

Overall gains have been achieved in health care access and quality in the past 3 decades but gaps among Asian countries exist.

UHC is part of the United Nations Sustainable Development Goals, which means that all people have access to the health services they need, when and where they need them, without financial hardship (UN, 2020). Ensuring access to health care is one of the key objectives of any health system and contributes to improving health outcomes and averting premature mortality. This requires a balance of policies to address both demand- and supply-side factors contributing to barriers in accessing needed care.

Financial barriers to UHC are often cited, with a range of other factors, such as geographic accessibility, availability, and acceptability, affecting whether individuals can access formal care (Jacobs et al., 2011). Recent policy initiatives by health ministries across Asia have aimed at improving equitable access through financing, governance, and human resources—including through expanding insurance coverage and partnerships with private sector providers (Zaidi, 2017).

Evidence has shown that access alone may not be sufficient to improve health and prevent deaths; improving access must be paired with improvements in the quality of care. Most health systems across Asia were established to address acute infectious disease episodes and many are now unequipped to provide the longer-term care required to manage chronic

Table 4-7.
Health Systems Quality Index for Selected Asian Countries: 2018

Country	1990	2000	2016
Bangladesh	17.8	27.5	47.6
Burma	19.9	23.1	41.6
Jordan	59.1	65.0	76.5
Thailand	44.4	54.7	69.5

Source: Bangladesh: The Lancet, Volume 391, June 2, 2018; Jordan, Burma, Thailand: Institute for Health Metrics and Evaluation, Global Burden of Disease.

conditions. Acknowledging the legacy functions of health systems and slow nature of change, concrete guidance on the components that address quality are provided through a framework from the Lancet Commission on High Quality Health Systems (Kruk, 2018). Policies that capitalize on recent lessons learned from the COVID-19 pandemic aim to improve access and care quality through efforts focused on person-centeredness, equity, resilience, and efficiency of services (Harper, 2021).

Program metrics that assesses levels of health care access and quality can help countries improve health service delivery. One such measure, the Healthcare Access and Quality (HAQ) Index, provides estimates for countries using a summary score ranging between 0 and 100. In Asia, overall gains were seen in access and quality between 1990 and 2016 (Global Burden of Disease, 2016), but a gap existed between the lowest HAQ Index scores in 2016 in Southeast Asia (Laos at 36.6 of 100) and highest (Sri Lanka at 70.6 of 100). Lower income countries—such as Bangladesh and Burma—had improvements in their systems, albeit from a much lower starting point than upper-middle income countries like Jordan and Thailand (Table 4-7). The pace and magnitude of improvement in these scores could be used as a trigger to review health policies.

Lower income countries face more challenges financing health systems and care.

Financing to sustain stronger systems will be required to provide improved access to quality affordable care—yet current levels of government and external development assistance funding support are merely addressing current needs. World Bank data show that the global current health expenditure per capita increased between 2009 and 2018, from US$876 to US$1,110 (World Bank, 2021); however, current health expenditure when viewed as a percentage of GDP changed very little over this time period, from 9.2 percent in 2009 and 9.9 percent in 2018. The average current health expenditure per capita in East Asia and Pacific increased from US$137 to US$388, and in South Asia from US$36 to US$67. Moreover, not all countries are increasing spending on health. In Bangladesh, for example, government health care expenditures in proportion to total public spending dropped from 6.2 percent to 4.0 percent from 2010 to 2018 (Fahim et al., 2018).

A substantial portion of recent increases in health expenditures is for government and compulsory health insurance schemes—with greater increases seen in upper-middle-income and high-income Asia-Pacific countries between 2010 and 2017 than low-income and lower-middle-income countries (Organisation for Economic Co-operation and Development, 2020). Government schemes and compulsory health insurance were the main health care financing schemes in 15 out of 24 Asia-Pacific countries. For example, in 2017 in Brunei, Japan, and Thailand, support for more than 75 percent of all health expenditure was from government schemes and compulsory health insurance. In comparison, those sources accounted for less than 25 percent of health expenditures in Bangladesh, Burma, and Cambodia. The differences in expenditure have significant impacts on health equity. Some recent policy initiatives in countries, such as Afghanistan, Bangladesh, India, and Pakistan, to improve equity through expanding health access and financial protection to poor and disadvantaged communities have had mixed results, and require systematic thinking and strong political support (Zaidi 2017; Atun, 2012).

South Korea, a high-income country, has a financially stable National Health Insurance (NHI) scheme (Shin, 2018). Yet, a number of factors are contributing to an estimated 3.2 percent increase per annum in the contribution rate by 2022, which raises concerns about government policy challenges to address how to continue to finance the NHI.

Malaysia has a public health care system that has experienced gradual improvement in recent decades, with wide geographical

coverage and comprehensive care at minimal fees, leading the government to declare the achievement of UHC (Tey, Cheok, and Rasiah, 2016). However, the country does not offer a national medical insurance program and individuals must purchase private medical and life insurance. Differences in quality of care between the public and private health sectors led to private care being predominantly purchased and used by the rich (Tey, Cheok, and Rasiah, 2016). In Thailand, all older adults have been covered under the UHC scheme since 2002 (Sumriddetchkajorn et al., 2019). It provides relatively comprehensive coverage; it includes the full spectrum of essential, quality health services, from health promotion to prevention, treatment, rehabilitation, and palliative care across the life course (WHO, 2021).

Many lower income Asian countries cannot meet basic health needs through domestic financing sources alone. The amount of external development assistance for health (DAH) increased substantially in the early 2000s (Hecht, 2006). Between 2010 and 2017, DAH to Southeast Asia, East Asia, and Oceania decreased by 0.5 percent (Institute for Health Metrics and Evaluation, 2019). Similarly, financial support for delivering NCD-related services in Asia has not changed substantially over the last 2 decades. The share of DAH support for NCD care has remained at 1–2 percent of the total global DAH budget envelope since 2000 (Allen, 2017). As of 2019, it remains at 1.8 percent of the total global DAH budget (Institute for Health Metrics and Evaluation, 2019).

In the past decade, NCDs have consistently remained one of the smallest focal areas of global health funding, never surpassing 2.1 percent of all development assistance for health and only reaching that level in 2019 (Bollyky, Tohme, and Kiernan, 2021). Given existing levels of funding for NCDs, the costs of health care are pushed to individuals, with access to services financed through out-of-pocket payments that continue to increase in real terms in many countries. The global average in out-of-pocket expenditure per capita has increased from US$159 in 2009 to US$201 in 2018 (World Bank, 2021). In East Asia and the Pacific (excluding high-income countries), this has increased from US$59 to US$139, and in South Asia from US$24 to US$42. Increasing out-of-pocket health expenditures work against initiatives to increase insurance coverage and risk pooling, and will add to the substantial inequities in access to services and care that persists within and between countries. In Vietnam, a study found that health insurance was not a predictor of health service access among older people, but receiving monetary support from children was the main driver contributing to health visits in rural areas, pointing to the need for government efforts to improve comprehensive health insurance mechanisms for older people (Nguyen and Giang, 2021). In India, high health spending with absence of insurance exposes older adults to great financial risk, especially those in lower socioeconomic strata (Sahoo, 2021).

The increasing numbers of older adults in Asian countries is creating increased pressure on health service delivery arrangements for ongoing chronic conditions that may require long-term health and social care. An analysis of a selection of countries with differences in the pace of aging and diversity of health system care arrangements (Hong Kong, Indonesia, Malaysia, and Singapore) provided support for the need to move away from disease-centric, hospital-based services in higher and lower income countries alike (He and Tang, 2021). Health care systems that respond to population aging will need to be structured to address multimorbidity and "geriatric syndromes," as well as social care that aims to maintain independence.

REFERENCES

Adams, Mary L., Joseph Grandpre, David L. Katz, Douglas Shenson, "The Impact of Key Modifiable Risk Factors on Leading Chronic Conditions," *Preventive Medicine*, Volume 120, 2019, pp. 113–118, <www.doi.org/10.1016/j.ypmed.2019.01.006>.

Afshar, Sara, Paul J. Roderick, Paul Kowal, Borislav D. Dimitrov, and Allan G. Hill, "Multimorbidity and the Inequalities of Global Ageing: A Cross-Sectional Study of 28 Countries Using the World Health Surveys," *BMC Public Health*, Volume 15, Article 776, 2015.

Allen, L. N., "Financing National Non-communicable Disease Responses," National Institutes of Health, 2017, <www.ncbi.nlm.nih.gov/pmc/articles/PMC5496084/>.

Atun, Rifat, "Health Systems, Systems Thinking and Innovation," *Health Policy and Planning*, Volume 27(4), 2012, pp. iv4–iv8, <www.doi.org/10.1093/heapol/czs088>.

Bhatti, Adnan Bashir, Muhammad Usman, and Venkataramana Kandi, "Current Scenario of HIV/AIDS, Treatment Options, and Major Challenges With Compliance to Antiretroviral Therapy," *Cureus*, Volume 8(3): e515, March 2016, <www.doi.org/10.7759/cureus.515>.

Bista, Bihungum, Raja Ram Dhungana, Binaya Chalise, and Achyut Raj Pandey, "Prevalence and Determinants of Noncommunicable Diseases Risk Factors Among Reproductive Aged Women of Nepal: Results From Nepal Demographic Health Survey 2016," *PloS One*, Volume 15(3), 2020, <www.doi.org/10.1371/journal.pone.0218840>.

Bloom, David, E., S. Simiao Chen, Mark E. McGovern, Klaus Prettner, Vanessa Candeias, Arnaud Bernaert, and Stéphanie S. Cristin, "The Economics of Non-Communicable Diseases in Indonesia," *World Economic Forum*, Geneva, Switzerland, 2015.

Bloom, Gerald, "Service Delivery Transformation for UHC in Asia and the Pacific," *Health Systems Reform*, Volume 5, 2019, <www.doi.org/10.1080/23288604.2018.1541498>.

Bollyky, Thomas J., Serena Tohme, and Samantha Kiernan, "Noncommunicable Diseases Kill Slowly in Normal Times and Quickly in COVID-19 Times," *Council on Foreign Relations*, September 10, 2021, <www.cfr.org/article/noncommunicable-diseases-kill-slowly-normal-times-and-quickly-covid-19-times>.

Börnhorst, Claudia, Paola Russo, Toomas Veidebaum, Michael Tornaritis, Dénes Molnár, Lauren Lissner, Staffan Mårild, Stefaan De Henauw, Luis A Moreno, Anna Floegel, Wolfgang Ahrens, and Maike Wolters, "The Role of Lifestyle and Non-Modifiable Risk Factors in the Development of Metabolic Disturbances From Childhood to Adolescence," *International Journal of Obesity*, Volume 44, 2020, pp. 2236–45.

Bourne, Rupert R. A., Seth R. Flaxman, Tasanee Braithwaite, Maria V. Cicinelli, Aditi Das, Jost B. Jonas, Jill Keeffe, John H. Kempen, Janet Leasher, Hans Limburg, Kovin Naidoo, Konrad Pesudovs, Serge Resnikoff, Alex Silvester, Gretchen A. Stevens, Nina Tahhan, Tien Y. Wong, Hugh R. Taylor, and Vision Loss Expert Group, "Magnitude, Temporal Trends, and Projections of the Global Prevalence of Blindness and Distance and Near Vision Impairment: a Systematic Review and Meta-Analysis," *Lancet Glob Health*, Volume 5(9), 2017, pp. E888–97, <www.doi.org/10.1016/S2214-109X(17)30293-0>.

Brañas, Fátima, Matilde Sánchez-Conde, Federica Carli, Marianna Menozzi, Alessandro Raimondi, Jovana Milic, Jacopo Franconi, Gianluca Cuomo, Cristina Mussini, Santiago Moreno, and Giovanni Guaraldi, "Sex Differences in People Aging With HIV," *Journal of Acquired Immune Deficiency Syndrome*, Volume 83, Number 3, March 1, 2020, <www.doi.org/ 10.1097/QAI.0000000000002259>.

Braveman, Paula, and Laura Gottlieb, "The Social Determinants of Health: It's Time to Consider the Causes of the Causes," *Public Health Reports*, 2014, <www.doi.org/10.1177/00333549141291S206>.

The Brookings Institution, "Coronavirus [COVID-19]," 2021, <www.brookings.edu/topic/coronavirus-covid19/>.

Charlesworth, Anita, Michael Anderson, Cam Donaldson, Paul Johnson, Martin Knapp, Alistair McGuire, Martin McKee, Elias Mossialos, Peter Smith, Andrew Street, and Michael Woods, "What Is the Right Level of Spending Needed for Health and Care in the UK?" *Lancet*, Volume 397, Issue 10288, 2019, pp. 2012–2022, <www.doi.org/10.1016/S0140-6736(21)00230-0>.

Clark, Andrew, Mark Jit, Charlotte Warren-Gash, Bruce Guthrie, Harry H. X. Wang, Stewart W. Mercer, Colin Sanderson, Martin McKee, Christopher Troeger, Kanyin L Ong, Francesco Checchi, Pablo Perel, Sarah Joseph, Hamish P Gibbs, Amitava Banerjee, and Rosalind M. Eggo, "Global, Regional and National Estimates of the Population at Increased Risk of Severe COVID-19 Due to Underlying Health Conditions in 2020: a Modelling Study," *Lancet Glob Health*, Volume 8, 2019, pp. e1003–17, <www.doi.org/10.1016/S2214-109X(20)30264-3>.

Clarke, Caroline, "Non-communicable Diseases Kill 8.5 Million People in Asia Each Year. We Need a Plan to Fight Them," *World Economic Forum*, 2017.

de Mestral, Carlos, Pedro Marques-Vidal, Jean-Michel Gaspoz, Jean-Marc Theler, and Idris Guessous, "Independent Association Between Socioeconomic Indicators and Macro- and Micro-Nutrient Intake in Switzerland," *PLOS One*, Volume 12(4), e0174578, 2017, <www.doi.org/10.1371/journal.pone.0174578>.

den Ouden, Marjole E. M., Marieke J. Schuurmans, Sigrid Mueller-Schotte, Judith S. Brand, Yvonne T. van der Schouw, "Domains Contributing to Disability in Activities of Daily Living," *Journal of the American Medical Directors Association*, Volume 14(1), 2013, pp. 18–24, <www.doi.org/10.1016/j.jamda.2012.08.014>.

European Centre for Disease Prevention and Control, "Increase in Fata Cases of COVID-19 Among Long-Term Care Facility Residents in the EU/EEA and the UK," Stockholm, 2020, <www.ecdc.europa.eu/sites/default/files/documents/Increase-fatal-cases-of-COVID-19-among-long-term-care-facility-residents.pdf>.

Fahim, Shah Mohammad, Tofayel Ahmed Bhuayan, Zakiul Hassan, Abu Hena Abid Zafr, Farhana Begum, Mizanur Rahman, Shahinul Alam, "Financing Health Care in Bangladesh: Policy Responses and Challenges Towards Achieving Universal Health Coverage," *International Journal of Health Planning and Management*, Volume 34(1), 2018, pp. e11–e20, <www.doi.org/10.1002/hpm.2666>.

Focà, Emanuele, Paola Magro, Giovanni Guaraldi, Agostino Riva, Anna Maria Cattelan, Giuseppe Vittorio De Socio, Cecilia Costa, Stefania Piconi, Benedetto Maurizio Celesia, Silvia Nozza, Giancarlo Orofino, Antonella Castagna, Giovanni Di Perri, Francesco Castelli, and Andrea Calcagno, "GEPPO (Geriatric Patients Living with HIV/AIDS: a Prospective Multidimensional Cohort) Study Group. Elderly HIV-Positive Women: A Gender-Based Analysis From the Multicenter Italian Cohort," *PLoS One*, Volume 14:e0222225, 2019, <www.researchgate.net/publication/336619465_Elderly_HIV-positive_women_A_gender-based_analysis_from_the_Multicenter_Italian_GEPPO_Cohort>.

Global Burden of Disease 2016 Dementia Collaborators, "Global, Regional, and National Burden of Alzheimer's Disease and Other Dementias, 1990–2016: A Systematic Analysis for the Global Burden of Disease Study 2016," *Lancet Neurol*, Volume 18(1), 2019, pp. 88–106, <www.doi.org/10.1016/S1474-4422(18)30403-4>.

Global Burden of Disease 2016 Healthcare Access and Quality Collaborators, "Measuring Performance on the Healthcare Access and Quality Index for 195 Countries and Territories and Selected Subnational Locations: A Systematic Analysis from the Global Burden of Disease Study 2016," *Lancet*, Volume 391, 2018, pp. 2236–71.

Guerchet, Maëlenn, Martin Prince, Anders Wimo, Gemma-Claire Ali, Yu-Tzu Wu, and Matthew Prina, "Numbers of People With Dementia Worldwide. An update to the Estimates in the World Alzheimer Report 2015," *Alzheimer's Disease International*, November 2020, <www.alzint.org/resource/numbers-of-people-with-dementia-worldwide/>.

Hamid, Tengku Aizan, "Ageing Population in Malaysia: The Way Forward," Kick-off Conference of the Twelfth Malaysia Plan, July 1–4, 2019.

Harper, Todd, Tedros Adhanom Ghebreyesus, Henrietta Fore, Dag-Inge Ulstein, "Building Back Better: Investing in Healthy Populations and Resilient Health Systems for NCDs and Mental Health to Be Better Prepared for Future Crises," *Health Finance*, February 2021, <https://foresightglobalhealth.com/investing-in-healthy-populations-and-resilient-health-systems-for-ncds-and-mental-health-to-be-better-prepared-for-future-crises/>.

Hayes, Tara O'Neill and Rosie Delk, "Understanding the Social Determinants of Health," *American Action Forum*, 2018, <www.americanactionforum.org/research/understanding-the-social-determinants-of-health/>.

He, Alex Jingwei and Vivien F. Y. Tang, "Integration of Health Services for the Elderly in Asia: A Scoping Review of Hong Kong, Singapore, Malaysia, Indonesia," *Health Policy*, Volume 125(3), 2021, pp. 351–62, <www.doi.org/10.1016/j.healthpol.2020.12.020>.

He, Wan, Mark N. Muenchrath, and Paul Kowal, "Shades of Gray: A Cross-Country Study of Health and Well-Being of the Older Populations in SAGE Countries, 2007-2010," P95/12-01, *International Population Reports*, U.S. Census Bureau, Washington, DC, U.S. Government Publishing Office, 2012.

Hecht, Robert, Raj Shah, Dean T. Jamison, Joel G. Breman, Anthony R. Measham, George Alleyne, Mariam Claeson, David B. Evans, Prabhat Jha, Anne Mills, and Philip Musgrove, *Disease Control Priorities in Developing Countries*, 2nd edition, World Bank, Washington, DC; Oxford University Press, New York, 2006, Chapter 13, "Recent Trends and Innovations in Development Assistance for Health."

HelpAge International, "COVID-19 and Older People in Asia Pacific: 2020 in Review," United Nations Population Fund, 2020, <www.helpage.org/silo/files/covid19-and-older-people-in-asia-pacific-2020-in-review.pdf>.

Hoffman, Steven J., Jessica Mammone, Susan Rogers Van Katwyk, Lathika Sritharan, Maxwell Tran, Safa Al-Khateeb, Andrej Grjibovski, Elliot Gunn, Sara Kamali-Anaraki, Ben Li, Mathura Mahendren, Yasmeen Mansoor, Navneet Natt, Ejike Nwokoro, Harkanwal Randhawa, Melodie Yunju Song, Kelsey Vercammen, Carolyne Wang, Julia Woo, Mathieu J. P. Poirier, "Cigarette Consumption Estimates for 71 Countries From 1970 to 2015: Systematic Collection of Comparable Data to Facilitate Quasi-Experimental Evaluations of National and Global Tobacco Control," *BMJ*, 2019, pp. 365–2231, <https://doi-org.ezproxy.newcastle.edu.au/10.1136/bmj.l2231>.

Holt, Nicolette R., Johannes T. Neumann, John J. McNeil, and Allen C. Cheng, "Implications of COVID-19 for an Ageing Population," *The Medical Journal of Australia*, Volume 213 (8), 2020, pp. 342–4, <www.doi.org/10.5694/mja2.50785>.

Holt-Lunstad, Julianne, Timothy B. Smith, Mark Baker, Tyler Harris, and David Stephenson, "Loneliness and Social Isolation as Risk Factors for Mortality: A Meta-Analytic Review," *Perspectives on Psychological Science*, Volume 10 (2), 2015, pp. 227–37, <https://pubmed.ncbi.nlm.nih.gov/25910392/>.

Im, Ikjae, "Chewing and Speaking Difficulties, Quality of Life and Depression in Elderly Koreans: A Survey of the Korea National Health and Nutrition Examination From 2016–2018," *Journal of Speech-Language & Hearing Disorders*, Volume 29(4), 2020, pp. 121–130.

Institute for Health Metrics and Evaluation, "Flows of Global Health Financing," 2019, <https://vizhub.healthdata.org/fgh/>.

International Labour Organization, "Women and Men in the Informal Economy: A Statistical Picture," Third Edition, International Labour Office, Geneva, 2018, <www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_626831.pdf>.

Irving and Bloom, "COVID-19, Older Adults and Long-Term Care in Asia Pacific," 2020, <https://ageingasia.org/covid-19-older-adults-and-long-term-care-in-asia-pacific/>.

Jacobs, Bart, Por Ir, Maryam Bigdeli, Peter Leslie Annear, and Wim Van Damme, "Addressing Access Barriers to Health Services: An Analytical Framework for Selecting Appropriate Interventions in Low-income Asian Countries," Health Policy and Planning, Volume 27, Issue 4, 2012, pp. 288–300, <www.doi.org/10.1093/heapol/czr038>.

Joint United Nations Programme on HIV/AIDS (UNAIDS), "AIDSinfo," UNAIDS, Geneva, Switzerland, 2020, <https://aidsinfo.unaids.org/>.

_____, "Prevention Gap Report 2016: Asia and the Pacific," UNAIDS, Geneva, Switzerland, 2016, Page 126–133, <www.unaids.org/sites/default/files/media_asset/2016-prevention-gap-report_en.pdf>.

_____, "The Gap Report 2014: People Aged 50 Years and Older," UNAIDS, Geneva, Switzerland, 2014, <www.unaids.org/sites/default/files/media_asset/12_Peopleaged50yearsandolder.pdf>.

Karunapema, Palitha and A. T. P. L. Abeykoon, "Sri Lankan Country Case Study," In: Yiengprugsawan V., Healy J., Kendig H., eds. Health system responses to population ageing and noncommunicable diseases in Asia, *Comparative Country Studies*, Volume 2, Number 2, 2016, pp. 1–132.

Khil, Jin Mo, "Comparison of the Health and Nutritional Status of Korean Elderly Considering the Household Income Level, Using the 2018 Korea National Health and Nutrition Examination Survey," *Journal of Nutrition and Health*, Volume 54(1), 2021, pp. 39–53.

Kim, Bok-Hee, Ji-Suk Yang, Seung-Hee Kye, and Yoonna Lee, "The Effect of a Community-Based Nutrition Intervention Program on Dietary Behavior and Nutritional Status of Low-Income Elderly Women in Gwangju City," *The Korean Journal of Food And Nutrition*, Volume 27(3), 2014, pp. 495–506, <www.doi.org/10.9799/ksfan.2014.27.3.495>.

Kluge, Hans, P. Henri, "Older People Are at Highest Risk From COVID-19, But All Must Act to Prevent Community Spread," World Health Organization Europe, Copenhagen, 2020, <www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/statements/statement-older-people-are-at-highest-risk-from-covid-19,-but-all-must-act-to-prevent-community-spread>.

Kruk, Margaret E., Anna D. Gage, Naima T. Joseph, Goodarz Danaei, Sebastián García-Saisó, and Joshua A. Salomon, "Mortality Due to Low-Quality Health Systems in the Universal Health Coverage Era: A Systematic Analysis of Amenable Deaths in 137 Countries," *Lancet*, 2018, <www.doi.org/10.1016/S0140-6736(18)31668-4>.

Kumar, Ramya, "Public-Private Partnerships for Universal Health Coverage? The Future of 'Free Health in Sri Lanka,'" *Globalization and Health*, Volume 15, Article 75, 2019, <www.doi.org/10.1186/s12992-019-0522-6>.

Kurotani, Kayo, Shamima Akter, Ikuko Kashino, Atsushi Goto, Tetsuya Mizoue, Mitsuhiko Noda, Shizuka Sasazuki, Norie Sawada, Shoichiro Tsugane, and Japan Public Health Center based Prospective Study Group, "Quality of Diet and Mortality Among Japanese Men and Women: Japan Public Health Center Based Prospective Study," *BMJ*, 352:i1209, 2016, <www.doi.org/10.1136/bmj.i1209>.

Le, Duc Dung and Thanh Long Giang, "Gender Differences in Prevalence and Associated Factors of Multi-Morbidity Among Older Persons in Vietnam," *International Journal on Ageing in Developing Countries*, Volume 1(2), 2016, pp. 113–132, <www.inia.org.mt/wp-content/uploads/2017/01/1.2-5-Vietnam-113-to-132-Final.pdf>.

Lee Yeyeon, Narae Yang, Minjeong Shin, Kyung-Eun Lee, Chang Hee Yoo, and Kirang Kim, "The Effects of a Personalized Nutrition Intervention Program on Food Security, Health and Nutritional Status of Low-Income Older Adults in Seoul City," *Journal of Nutrition and Health*, Volume 53(4), 2020, pp. 416–430, <www.doi.org/10.4163/jnh.2020.53.4.416>.

Lim, Lena L., and Ee-Heok Kua, "Living Alone, Loneliness, and Psychological Well-Being of Older Persons in Singapore," *Current Gerontology and Geriatrics Research*, Article ID 673181, 2011, <www.hindawi.com/journals/cggr/2011/673181/>.

Low, Lian Leng, Yu Heng Kwan, Michelle Shi Min Ko, Cheng Teng Yeam, Vivian Shu Yi Lee, Wee Boon Tan, and Julian Thumboo, "Epidemiologic Characteristics of Multimorbidity and Sociodemographic Factors Associated With Multimorbidity in a Rapidly Aging Asian Country," *JAMA Network Open*, 2(11):e1915245, 2019, <https://doi.org/10.1001/jamanetworkopen.2019.15245>.

Marsh & McLennan Companies and Asia Pacific Risk Center, "Societal Aging's Threat to Healthcare Insurance—Impact of Rising Prevalence of Non-Communicable Diseases," 2017, <www.mmc.com/content/dam/mmc-web/Files/APRC/aprc-so-cietal-agings-threat-to-health-care-insurance.pdf>.

McQueenie, Ross, Hamish M. E. Foster, Bhautesh D. Jani, Srinivasa Vittal Katikireddi, Naveed Sattar, Jill P. Pell, Frederick K. Ho, Claire L. Niedzwiedz, Claire E. Hastie, Jana Anderson, Patrick B. Mark, Michael Sullivan, Catherine A. O'Donnell, Frances S. Mair, and Barbara I. Nicholl, "Multimorbidity, Polypharmacy, and COVID-19 Infection Within the UK Biobank Cohort," *PLoS One*, 16(5):e0251613, 2021, <www.doi.org/10.1371/journal.pone.0251613>.

Mehta, Neil K., Shivani A. Patel, Mohammed K. Ali, and K. M. Venkat Narayan, "Preventing Disability: The Influence of Modifiable Risk Factors on State and National Disability Prevalence," *Health Affairs*, Volume 36, (4), 2017, pp. 626–635, <www.healthaffairs.org/doi/10.1377/hlthaff.2016.1281>.

Ministry of Food and Drug Safety, South Korea, "Guidelines for Healthy Meals for the Elderly," Cheongju: Ministry of Food and Drug Safety; 2015.

_____, "Food Code," Ministry of Food and Drug Safety, Cheongju, South Korea, 2021.

Ministry of Health and Welfare, South Korea, "Survey on the Actual Conditions of Older Person in Korea, 2008, 2014, 2017," Sejong, Ministry of Health and Welfare, 2020.

Ministry of Health Malaysia, Malaysian Healthcare Performance Unit, "Malaysian Health at a Glance: 2018," Ministry of Health Malaysia: Putrajaya Ministry of Health Malaysia, Putrajaya, 2020, <www.moh.gov.my/moh/penerbitan/MYHAAG2018.pdf>.

Mohanty, Sanjay K., Justin Rodgers, Rajeev R. Singh, Radhe Shyam Mishra, Rockli Kim, Junaid Khan, Priyamadhaba Behera, S. V. Subramanian, "Morbidity Compression or Expansion? A Temporal Analysis of the Age at Onset of Non-Communicable Diseases in India," *Geroscience*, Volume 43(1), 2021, pp. 409–422, <www.doi.org/10.1007/s11357-020-00296-9>.

Mosha, Fausta, "Gender Differences in Human Immunodeficiency Virus (HIV) Disease Progression and Treatment Outcomes," *IntechOpen*, 2020, <www.doi.org/10.5772/intechopen.92898>.

Moss, A. R., P. Bacchetti, D. Osmond, W. Krampf, R. E. Chaisson, D. Stites, J. Wilber, J. P. Allain, J. Carlson, "Seropositivity for HIV and the Development of AIDS or AIDS Related Condition: Three Year Follow Up of the San Francisco General Hospital Cohort," *British Medical Journal (Clinical Research Edition)*, Volume 296, 1988, pp. 745–750.

National Institute on Aging, "Quitting Smoking for Older Adults," 2021, <www.nia.nih.gov/health/quitting-smoking-older-adults>.

Nature, "Universal Health Care Must Be a Priority—Even Amid COVID," *Nature*, Volume 593 (7859), 2021, pp. 313–314, <www.doi.org/10.1038/d41586-021-01313-3>.

Nguyen, Tuyet Anh and Long Thanh Giang, "Factors Associated With Regional Disparity in Utilization of Healthcare Services Among the Vietnamese Older People," *Journal of Population and Social Studies*, Volume 29, 2020, pp. 15–31, <https://so03.tci-thaijo.org/index.php/jpss/article/view/240847>.

Nieman, David, Robert D. Lee, "Nutritional Assessment" (7th ed.), Boston: McGraw-Hill Education, 2018.

Organisation for Economic Co-operation and Development/World Health Organization, "Health at a Glance: Asia/Pacific 2020: Measuring Progress Towards Universal Health Coverage," OECD Publishing, Paris, 2020.

Palagyi, Anna, Rebecca Dodd, Stephen Jan, Devaki Nambiar, Rohina Joshi, Maoyi Tian, Seye Abimbola, David Peiris, "Organisation of Primary Health Care in the Asia-Pacific Region: Developing a Prioritised Research Agenda," *BMJ Global Health*, 4:e001467, 2019.

Pew Research Center, "Older People Are More Likely to Live Alone in the U.S. Than Elsewhere in the World," 2020, <www.pewresearch.org/fact-tank/2020/03/10/older-people-are-more-likely-to-live-alone-in-the-u-s-than-elsewhere-in-the-world/>.

Prince, M. , Anders Wimo, Maëlenn Guerchet, Gemma-Claire Ali, Yu-Tzu Wu, and Matthew Prina, "World Alzheimer Report 2015, The Global Impact of Dementia, An Analysis of Prevalence, Incidence, Cost, and Trends," *Alzheimer's Disease International*, 2015, <www.alzint.org/u/WorldAlzheimerReport2015.pdf>.

Ritchie, Hannah and Max Roser, "Gender Ratio," Our World in Data, 2019, <https://ourworldindata.org/gender-ratio>.

Sahoo, Harihar, Dipti Govil, K. S. James, and Davi D. Prasad, "Health Issues, Health Care Utilization and Health Care Expenditure Among Elderly in India: Thematic Review of Literature," *Aging and Health Research*, 2021, <www.doi.org/10.1016/j.ahr.2021.100012>.

Saleh, Shadi, Lina Abdouni, Hani Dimassi, Dana Nabulsi, Ranime Harb, Zeinab Jammoul, Noha Hachach, and Nour El Arnaout, "Prevalence of Non-Communicable Diseases and Associated Medication Use Among Syrian Refugees in Lebanon: An Analysis of Country-Wide Data From the Sijilli Electronic Health Records Database," 2021, <www.doi.org/10.21203/rs.3.rs-58159/v1>.

Sanderson, Warren C., Sergei Scherbov, "Remeasuring Aging," *Science*, New York, Volume 329, 2010, pp. 1287–8, <www.doi.org/10.1126/science.1193647>.

Santini, Ziggi Ivan, Paul E. Jose, Erin York Cornwell, Ai Koyanagi, Line Nielsen, Carsten Hinrichsen, Charlotte Meilstrup, Katrine R. Madsen, Vibeke Koushede, "Social Disconnectedness, Perceived Isolation, and Symptoms of Depression and Anxiety Among Older Americans (NSHAP): A Longitudinal Mediation Analysis," *Lancet Public Health*, Volume 5(1), 2020, pp. e62–e70, <www.doi.org/10.1016/s2468-2667(19)30230-0>.

Shakersain, Behnaz, Giola Santoni, Gerd Faxén-Irving, Debora Rizzuto, Laura Fratiglioni, Weili Xu, "Nutritional Status and Survival Among Old Adults: an 11-Year Population-Based Longitudinal Study," *European Journal of Clinical Nutrition*, Volume 70, 2016, pp. 320–325, <www.doi.org/10.1038/ejcn.2015.109>.

Shin, Young-Seok, "Some Policy Issues in National Health Insurance Finance," *Research in Brief*, Volume 2018, No. 10, 2018, pp. 1–12, <http://repository.kihasa.re.kr/bitstream/201002/30928/1/ResearchinBrief.2018.N035.pdf>.

Shorey, Shefaly and Valerie Chan, "The Experiences and Needs of Asian Older Adults Who Are Socially Isolated and Lonely: A Qualitative Systematic Review," *Archives of Gerontology and Geriatrics*, Volume 92, 2021, <www.doi.org/10.1016/j.archger.2020.104254>.

Stallard, Eric, "Compression of Morbidity and Mortality: New Perspectives," *North American Actuarial Journal*, Volume 20(4), 2016, pp. 341–354, <www.doi.org/10.1080/10920277.2016.1227269>.

Sumriddetchkajorn, Kanitsorn, Kenji Shimazaki, Taichi Ono, Tesshu Kusaba, Kotaro Sato, and Naoyuki Kobayashi, "Universal Health Coverage and Primary Care, Thailand," *Bull World Health Organ*, Volume 97, 2019, pp. 415–22, <http://dx.doi.org/10.2471/BLT.18.223693>.

Syed, Mohamed A., Ahmed S. Alnuaimi, Abdul Jaleel Zainel, Hamda A. A/Qotba, "Prevalence of Non-Communicable Diseases by Age, Gender and Nationality in Publicly Funded Primary Care Settings in Qatar," *BHM Nutrition, Prevention, and Health*, Volume 2(1), 2018, <www.doi.org/10.1136/bmjnph-2018-000014>.

Taskin, Tanjila, Tuhin Biswas, and Anwar Islam, "Chronic Non-Communicable Diseases Among the Elderly in Bangladesh Old Age Homes," *The International Journal of Aging and Society*, December 2014.

Teerawichitchainan, Bussarawan, Wiraporn Pothisiri, and Thanh Long Giang, "How Do Living Arrangements and Intergenerational Support Matter for Psychological Health of Elderly Parents? Evidence From Myanmar, Vietnam, and Thailand," *Social Science & Medicine*, 2015, <www.doi.org/10.1016/j.socscimed.2015.05.019>.

Teh, Jane K. L., Nai Peng Tey, and Sor Tho Ng, "Ethnic and Gender Differentials in Non-Communicable Diseases and Self-Rated Health in Malaysia," *PLos One*, Volume 9(3):e01328, 2014, <www.doi.org/10.1371/journal.pone.0091328>.

Tey, Nai Peng, Cheong Kee Cheok, and Rajah Rasiah (eds.), *Revisiting Malaysia's Population-Development Nexus*, University of Malaya Press, Kuala Lumpur, 2016, Chapter 10, "The Universal Health Coverage in Malaysia: Issues and Challenges," <http://familyrepository.lppkn.gov.my/399/4/Universal_health_coverage_in_Malaysia_-_Full_Paper.pdf>.

United Nations, "The Sustainable Development Goals Report 2020," United Nations, 2020, <https://unstats.un.org/sdgs>.

United Nations Development Programme, "Disability Inclusive Development in UNDP," United Nations, 2018.

United Nations Economic and Social Commission for Asia and the Pacific, "Disability at a Glance 2019: Investing in Accessibility in Asia and the Pacific—Strategic Approaches to Achieving Disability-Inclusive Sustainable Development," Philippines, 2019, <www.unescap.org/sites/default/files/publications/SDD-DAG-2019.pdf>.

U.S. Census Bureau, "Healthy Life Expectancy at Age 60: 2000 to 2016," U.S. Census Bureau, Washington, DC, 2021a, <www.census.gov/library/visualizations/2021/comm/healthy-life-expectancy.html>.

_____, International Database, 2021b, <www.census.gov/programs-surveys/international-programs/about/idb.html>.

Vaupel, James W., "Biodemography of Ageing," *Nature*, Volume 7288(464), 2010, pp. 536–42. <www.nature.com/articles/nature08984>.

Weber, Daniela and Sergei Scherbov, "Prospects of Activity Limitations Among Older Adults in 23 Low and Middle Income Countries," *Scientific Reports*, Volume 10: 10442, 2020, <www.doi.org/10.1038/s41598-020-67166-4>.

Wilson, Karl, "Aging Asian Century?" Focus—China Daily Asia, Sydney, Australia, 2013, <www.chinadailyasia.com/focus/2013-07/12/content_15078001.html>.

World Bank, "Current Health Expenditure (% of GDP)," 2021, <https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS>, accessed August 2021.

World Health Organization, *Disability-Adjusted Life Years (DALYs)*, World Health Organization, Geneva, Switzerland, 2011a, <www.who.int/data/gho/indicator-metadata-registry/imr-details/158>.

_____, "Global Spending on Health 2020: Weathering the Storm," World Health Organization, Geneva, Switzerland, 2020, <www.who.int/publications/i/item/9789240017788>.

_____, "Millions of People in the World Have Hearing Loss That Can Be Treated or Prevented," World Health Organization, Geneva, Switzerland, 2013, <www.who.int/pbd/deafness/news/Millionslivewithhearingloss.pdf>.

_____, "Universal Health Coverage (UHC)," 2021, <www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(uhc)>.

_____, "WHO Methods for Life Expectancy and Healthy Life Expectancy," World Health Organization, Geneva, Switzerland, 2014, <https://www.who.int/data/gho/data/themes/topics/indicator-groups/indicator-group-details/GHO/life-expectancy-and-healthy-life-expectancy>.

_____, "World Report on Disability," World Health Organization, Geneva, Switzerland, 2011b, <www.who.int/publications/i/item/9789241564182>.

Yamada, Ken and Bussarawan Teerawichitchainan, "Living Arrangements and Psychological Well-Being of the Older Adults After the Economic Transition in Vietnam," *Journals of Gerontology: Social Sciences*, Volume 70 (6), 2015, pp. 957–968, <www.doi.org/10.1093/geronb/gbv059>.

Yau, Joanne W. Y., Sophie L. Rogers, Ryo Kawasaki, Ecosse L. Lamoureux, Jonathan W. Kowalski, Toke Bek, Shih-Jen Chen, Jacqueline M. Dekker, Astrid Fletcher, Jakob Grauslund, Steven Haffner, Richard F. Hamman, M. Kamran Ikram, Takamasa Kayama, Barbara E. K. Klein, Ronald Klein, Sannapaneni Krishnaiah, Korapat Mayurasakorn, Joseph P. O'Hare, Trevor J. Orchard, Massimo Porta, Mohan Rema, Monique S. Roy, Tarun Sharma, Jonathan Shaw, Hugh Taylor, James M. Tielsch, Rohit Varma, Jie Jin Wang, Ningli Wang, Sheila West, Liang Xu, Miho Yasuda, Xinzhi Zhang, Paul Mitchell, Tien Y. Wong, and Meta-Analysis for Eye Disease (META-EYE) Study Group, "Global Prevalence and Major Risk Factors of Diabetic Retinopathy," *Diabetes Care*, Volume 35(3), 2012, <www.doi.org/10.2337/dc11-1909>.

Yiengprugsawan, Vasoontara, Judith Healy, Hal Kendig (eds.) "Health System Responses to Population Ageing and Noncommunicable Diseases in Asia," *Comparative Country Studies*, Volume 2(2), 2016, pp. 1–132.

Yip, W., "Healthcare System Challenges in Asia," *Oxford Research Encyclopedia of Economics and Finance*, 2019, <https://doi.org/10.1093/acrefore/9780190625979.013.245>.

Zaidi, Shehla, Prasanna Saligram, Syed Ahmed, Egbert Sonderp, and Kabir Sheikh, "Expanding Access to Healthcare in South Asia," *BMJ*, Volume 357, 2017, <https://doi.org/10.1136/bmj.j1645>.

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Chapter 5.

Summary And Discussion

HIGHLIGHTS

This report has provided an overview of aging in Asia, including the demographic, socioeconomic, and health-related transitions involved in that process. Some of the major findings are below:

The Demography of an Aging Asia

- The number of older Asians will nearly triple over the next 4 decades, and the increase in proportions of those aged 65 and older will be even more dramatic.
- Population aging is driven by both falling fertility and mortality, which have been dramatic in many parts of Asia, particularly Eastern Asia.
- Old-age dependency is destined to rise throughout Asia—that is, the older population will increase much faster than the working-age population who contribute to old-age social security systems or otherwise might care for them.

Work, Income, and Retirement

- Participation in the labor force differs considerably by region, among countries within regions, between men and women, and across older age groups.
- The lowest labor force participation rates for women are in Western Asia and Southern Asia.
- As societies develop, the main source of income for older persons in Asia (aside from their own earnings) tends to shift from their children to other sources of support such as old-age social security systems.
- Although old-age social security pension systems exist throughout Asia, their coverage, benefits, and statutory ages vary widely based on each country's age structure, income level, and regulatory environment.
- Social security pensions in countries able to provide broader coverage of their older population tend to replace a lower portion of earnings.

Health and Health Care

- Older Asians are living longer and healthier, but not all extra years are lived in full health.
- An epidemiological transition has occurred in Asia, whereby the composition of morbidity and mortality has shifted from communicable diseases to non-communicable diseases.
- Certain diseases and pandemics, such as COVID-19, heighten health risks for older Asians and pose major challenges to health care systems.
- Some Asian countries are showing positive shifts in risk factor behaviors, but the increases in conditions like diabetes and dementia may lead to rising disability levels.
- Older parents in many Asian societies live with their adult children, which both prevents social isolation and facilitates possible care when they need assistance.
- The readiness, accessibility, and quality of health systems across Asia differ widely.

SUMMARY

This report has provided an overview of aging in Asia by focusing on three broad topical issues—the demographic causes, the evolving economics of old-age insurance and well-being, and the health and health care of the older population. Each of these themes involves transitions over the course of development—aging as a consequence of the demographic transition (from high to low mortality and fertility), shifting sources of economic support (from self and family to social security systems and other institutional support systems), and the epidemiological transition (where morbidity and mortality are increasingly related to non-communicable diseases).

A common theme across Chapters 2, 3, and 4 has been Asia's tremendous diversity, different both from other world regions and among countries within its subregions. There is no "typical" Asian pattern, aside from the fact that all societies are projected to age, some faster than others.

Although Asia's intraregional diversity provides helpful examples of the challenges of aging in other regions of the world, what makes its aging trends so important is Asia's sheer population size. Everything that happens in Asia, whether related to demographic trends, social security systems, health, or health care needs, will have outsize implications for the rest of the world.

The two most populous countries in the world—China and India—are both in Asia. Although the third most populous country is the United States, the fourth and fifth largest populations—Indonesia and Pakistan—are also in Asia.

Figure 5-1 shows the population structure by age and sex for China, India, and the United States as of 2020 and projected to 2060. In addition to remarkable differences in sheer numbers (in 2020 China and India each had more than four times the population of the United States), Figure 5-1 also illustrates differences in age-sex structure in 2020 and 2060. Aging in the two "population billionaires" simply cannot be ignored.

In addition to these population giants, this report has focused attention on several other Asian countries, some of which have not received much attention in the population aging literature—Bangladesh, Burma, Jordan, Malaysia, South Korea, Thailand, and Vietnam. By focusing on these countries, often through detailed case studies, this report filled gaps in data availability, expanded the research horizon of aging in Asia, and illuminated future needs for more comparative cross-country studies.

DISCUSSION

As aging becomes inevitable across all of Asia, some lower income countries will likely have populations that grow old before they are rich. Close attention to such cases from policymakers and the society at large is needed in order to strengthen existing modes of support. Even in higher income Asian countries, the sheer growing numbers of older adults will require stronger health and social protection systems to address chronic conditions and prevent the rise in common health risks (Commission on Social Determinants of Health, 2008).

Older Asians are living longer and healthier. At the same time, the disease burden from noncommunicable diseases (NCDs) continues to increase. Globally, the largest proportion of older persons reside in low- and middle-income countries and the largest proportion of NCD deaths are in lower income countries. The shifts towards chronic long-term conditions have significant implications for health and social system costs. The ambitions and priorities of public health systems may need to shift away from simply adding years of life to adding healthy years to those already being lived (Marmot, 2020; Welsh, 2021). Public health measures that reduce risk factors, health systems that improve care for persons living with one or more chronic conditions, and social systems that increase financial security may help to ensure added years are healthy years.

Population aging presents both challenges and opportunities that each society in Asia may respond to differently. Falling fertility creates a potential economic benefit given that societal support burden for youth will fall. Economic growth may be boosted when the population at working ages increases relative to their dependents at the youngest ages, a phenomenon known as the (first) demographic dividend (Bloom, Canning, and Malaney, 2000). However, that boost is not guaranteed and is, at best, temporary given that the decline in youth dependency will eventually be overshadowed by rising old-age dependency, a future that has alarmed many observers.

Yet economists have proposed possible scenarios whereby societies may continue to prosper in spite of the challenges of an aging population. A second demographic dividend could occur if workers decide to save more and accumulate additional assets in preparation for an extended period of retirement (Lee and Mason, 2006). More recently, a third (and separate) demographic dividend has been suggested—if older workers remain in the labor force longer, their retained skills could further benefit the economy (Ogawa et al., 2021). The extent to which governments and employers in Asian countries may encourage workers to save more and/or work longer through policy interventions remains to be seen.

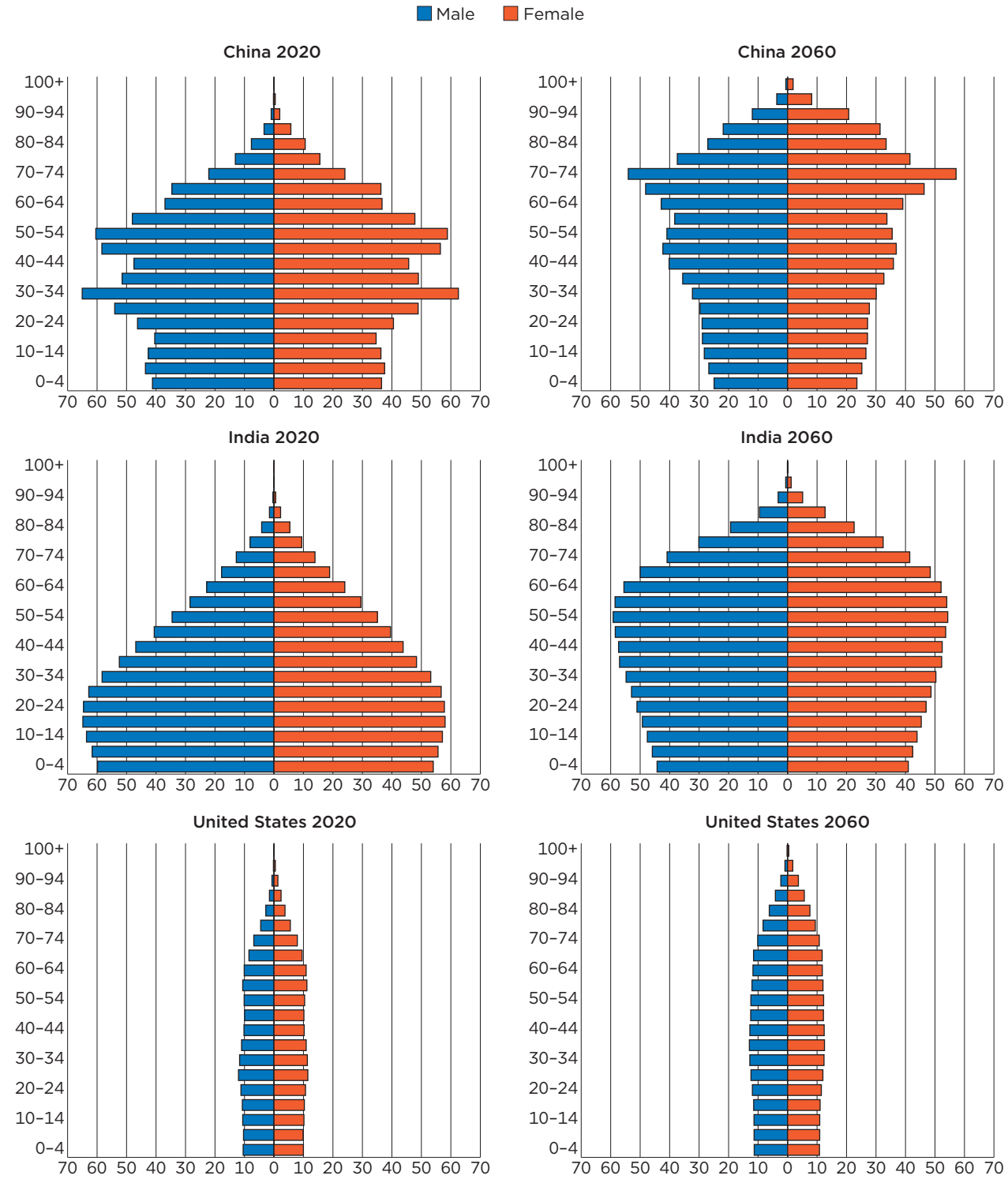
Related to this is a question about the viability of Asia's old-age social security systems. For countries where such systems provide broader coverage, it is critical that those systems remain viable as longevity rises and the proportion of retirees increases relative to the working age population. While current levels of benefits are generally modest in Asian countries, there is a window of opportunity for establishing sustainable support systems by leveraging the benefits of the current healthier and longer-lived adults across Asian countries.

Whichever solutions Asian countries choose to address these challenges, their diverse regional and national contexts will offer a mix of approaches and models that other countries throughout the world may consider going forward. The challenge in Asia and elsewhere is to ensure that people reach older ages in a state of good health and well-being (United Nations, 2015).

Figure 5-1.

Population by Age and Sex for China, India, and United States: 2020 and Projected 2060

(In millions)



Source: U.S. Census Bureau, International Database, 2021.

REFERENCES

Bloom, David E., David Canning, and Pia N. Malaney, "Population Dynamics and Economic Growth in Asia," *Population and Development Review*, Volume 26 (Supplement), 2021, pp. 257–90.

Commission on Social Determinants of Health, "Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health," *Final Report of the Commission on Social Determinants of Health*, World Health Organization, Geneva, 2008.

Lee, Ronald and Andrew Mason, "Back of Basics. What Is the Demographic Dividend?" *Finance and Development*, Volume 43, Number 3, 2006.

Marmot, M., Jessica Allen, Tammy Boyce, Peter Goldblatt, and Joana Morrison, "Health Equity in England: The Marmot Review 10 Years On," London, 2020, <www.health.org.uk/publications/reports/the-marmot-review-10-years-on>.

Ogawa, Naohiro, Norma Mansor, Sang-Hyop Lee, Michael R.M. Abrigo, Tahir Aris, "Population Aging and the Three Demographic Dividends in Asia," *Asian Development Review*, Volume 38 (1), 2021; 38 (1), pp. 32–67, <https://doi.org/10.1162/adev_a_00157>.

United Nations, "Sustainable Development Goals, Goal 3: Ensure Healthy Lives and Promote Well-Being for All at All Ages," 2015, <www.un.org/sustainabledevelopmenty/health>, accessed August 30, 2021.

Welsh, Claire E., Fiona E. Matthews, and Carol Jagger, "Trends in Life Expectancy and Healthy Life Years at Birth and Age 65 in the UK, 2008–2016, and Other Countries of the EU28: An Observational Cross-Sectional Study," *Lancet Regional Health*, Volume 2, 100023, 2021, <www.doi.org/10.1016/j.lanepe.2020.100023>.

Appendix A.

List of Subregions and Countries of Asia Used in This Report

CENTRAL ASIA

Kazakhstan

Kyrgyzstan

Tajikistan

Turkmenistan

Uzbekistan

EASTERN ASIA

China

Hong Kong

Japan

Korea, North

Korea, South

Macau

Mongolia

Taiwan

SOUTH-EASTERN ASIA

Brunei

Burma

Cambodia

Indonesia

Laos

Malaysia

Philippines

Singapore

Thailand

Timor-Leste

Vietnam

SOUTHERN ASIA

Afghanistan

Bangladesh

Bhutan

India

Iran

Maldives

Nepal

Pakistan

Sri Lanka

WESTERN ASIA

Armenia

Azerbaijan

Bahrain

Cyprus

Gaza Strip

Georgia

Iraq

Israel

Jordan

Kuwait

Lebanon

Oman

Qatar

Saudi Arabia

Syria

Turkey

United Arab Emirates

West Bank

Yemen

NOTE

In this report, Democratic People's Republic of Korea is referred to as North Korea, Republic of Korea is referred to as South Korea, Myanmar is referred to as Burma.

Country or place names used in this report and boundaries depicted in the maps reflect U.S. government policy wherever possible. More information is available from the U.S. Department of State ate <www.state.gov/independent-states-in-the-world/>, <www.state.gov/dependencies-and-areas-of-special-sovereignty/>, and <https://geonode.state.gov/layers/catalog:geonode:LSIB>.

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Appendix B.

Detailed Tables

Table B-1.

Total Population and Percentage Aged 65 and Older for Asian Countries: 2020 and Projected 2060

(Numbers in thousands)

Country	2020			2060		
	Total population	Number	Percent	Total population	Number	Percent
Afghanistan	36,595	1,005	2.7	71,938	5,160	7.2
Armenia	3,021	380	12.6	2,285	861	37.7
Azerbaijan	10,207	747	7.3	11,278	2,969	26.3
Bahrain	1,505	51	3.4	1,912	323	16.9
Bangladesh	162,533	11,153	6.9	196,570	43,611	22.2
Bhutan	849	54	6.4	1,062	263	24.8
Brunei	464	27	5.8	695	141	20.3
Burma	56,599	3,432	6.1	64,800	13,233	20.4
Cambodia	17,071	793	4.6	23,664	4,167	17.6
China	1,394,016	172,045	12.3	1,250,959	415,331	33.2
Cyprus	1,267	164	12.9	1,380	460	33.3
Gaza Strip	1,917	51	2.7	3,354	362	10.8
Georgia	4,931	832	16.9	4,688	1,413	30.1
Hong Kong	7,248	1,337	18.4	6,501	2,513	38.7
India	1,325,350	90,657	6.8	1,660,507	325,178	19.6
Indonesia	272,856	18,943	6.9	320,660	67,736	21.1
Iran	84,983	5,014	5.9	101,418	27,391	27.0
Iraq	38,829	1,296	3.3	69,817	8,859	12.7
Israel	8,660	1,021	11.8	13,695	2,727	19.9
Japan	125,136	35,726	28.5	99,082	38,475	38.8
Jordan	10,820	397	3.7	17,137	2,664	15.5
Kazakhstan	19,085	1,616	8.5	22,871	4,943	21.6
Korea, North	25,702	2,494	9.7	26,940	6,329	23.5
Korea, South	51,577	8,244	16.0	46,947	18,883	40.2
Kuwait	2,995	88	2.9	4,110	459	11.2
Kyrgyzstan	5,964	348	5.8	7,211	1,325	18.4
Laos	7,463	314	4.2	10,686	1,609	15.1
Lebanon	5,464	434	7.9	5,601	1,749	31.2
Macau	625	78	12.5	689	258	37.4
Malaysia	33,164	2,409	7.3	42,716	9,715	22.7
Maldives	391	19	4.9	459	126	27.5
Mongolia	3,169	152	4.8	3,716	841	22.6
Nepal	30,175	1,699	5.6	35,974	7,032	19.5
Oman	3,625	136	3.8	5,896	937	15.9
Pakistan	233,431	10,426	4.5	403,522	48,644	12.1
Philippines	109,168	5,316	4.9	171,435	22,512	13.1
Qatar	2,447	29	1.2	2,642	144	5.5
Saudi Arabia	34,224	1,241	3.6	49,870	8,232	16.5
Singapore	5,810	687	11.8	7,063	2,276	32.2
Sri Lanka	22,896	2,438	10.6	25,563	6,347	24.8
Syria	19,392	864	4.5	36,161	5,306	14.7
Taiwan	23,563	3,733	15.8	20,646	8,116	39.3
Tajikistan	8,860	326	3.7	12,769	2,068	16.2
Thailand	69,292	8,729	12.6	62,828	20,552	32.7
Timor-Leste	1,383	57	4.1	2,392	252	10.5
Turkey	82,009	6,872	8.4	89,098	23,673	26.6
Turkmenistan	5,523	307	5.6	6,758	1,500	22.2
United Arab Emirates	9,792	145	1.5	13,254	1,388	10.5
Uzbekistan	30,576	1,809	5.9	35,946	9,301	25.9
Vietnam	101,745	7,016	6.9	121,834	30,372	24.9
West Bank	2,899	106	3.7	4,566	650	14.2
Yemen	29,811	905	3.0	49,677	6,135	12.3

Source: U.S. Census Bureau, International Database, 2020.

Table B-2.

Total Fertility Rate, Mortality Rate Under Age 5, and Life Expectancy at Birth for Asian Countries by Sex: 2020

Country	Total fertility rate	Under age 5 mortality rate			Life expectancy at birth		
		Both sexes	Male	Female	Both sexes	Male	Female
Afghanistan	4.8	160.0	167.6	152.0	52.8	51.4	54.4
Armenia	1.6	14.5	16.0	12.8	75.6	72.3	79.2
Azerbaijan	1.9	27.4	28.9	25.9	73.6	70.5	76.9
Bahrain	1.7	12.8	14.9	10.7	79.5	77.2	81.8
Bangladesh	2.1	39.4	42.4	36.3	74.2	72.0	76.5
Bhutan	1.8	49.9	53.2	46.5	71.1	69.7	72.5
Brunei	1.8	12.7	15.5	9.7	77.9	75.5	80.4
Burma	2.1	43.1	46.4	39.5	69.3	67.7	71.1
Cambodia	2.4	69.5	78.9	59.8	65.9	63.4	68.6
China	1.6	13.7	14.2	13.1	76.1	74.0	78.4
Cyprus	1.5	10.0	12.1	7.8	79.3	76.4	82.3
Gaza Strip	3.6	18.9	20.1	17.5	74.9	73.1	76.7
Georgia	1.8	16.9	19.4	14.3	77.0	72.9	81.3
Hong Kong	1.2	3.6	3.7	3.4	83.2	80.5	86.1
India	2.3	55.3	52.2	59.0	69.7	68.4	71.2
Indonesia	2.1	24.6	27.4	21.7	72.6	70.4	74.8
Iran	1.9	17.8	18.9	16.6	74.9	73.5	76.3
Iraq	3.4	24.6	26.6	22.6	72.6	70.7	74.6
Israel	2.6	4.5	4.8	4.1	83.0	81.1	85.0
Japan	1.4	2.6	2.7	2.5	84.5	81.5	87.6
Jordan	3.0	16.9	18.1	15.6	75.5	74.0	77.1
Kazakhstan	2.2	22.6	25.5	19.8	72.0	66.8	76.8
Korea, North	1.9	28.1	31.3	24.7	71.5	67.7	75.6
Korea, South	1.1	3.6	3.8	3.3	82.6	79.4	85.9
Kuwait	2.3	9.5	9.9	9.1	78.7	77.2	80.2
Kyrgyzstan	2.5	30.3	34.9	25.5	71.8	67.7	76.2
Laos	2.6	68.5	75.5	61.2	65.7	63.5	67.9
Lebanon	1.7	8.1	8.7	7.5	78.3	76.9	79.8
Macau	1.2	5.5	5.6	5.4	84.6	81.7	87.7
Malaysia	1.8	8.3	8.8	7.8	75.6	74.0	77.4
Maldives	1.7	35.1	39.7	30.2	76.4	74.0	78.9
Mongolia	2.0	25.3	29.0	21.3	70.8	66.6	75.2
Nepal	2.0	32.6	34.6	30.5	71.8	71.1	72.6
Oman	2.8	20.1	21.2	18.9	76.4	74.4	78.4
Pakistan	3.6	72.3	77.0	67.5	69.1	67.1	71.2
Philippines	2.9	26.7	30.2	23.1	70.0	66.5	73.8
Qatar	1.9	9.8	11.4	8.1	79.3	77.2	81.5
Saudi Arabia	2.0	14.8	16.1	13.3	76.2	74.6	77.8
Singapore	1.1	2.0	2.1	1.9	86.0	83.3	88.9
Sri Lanka	2.0	10.3	11.3	9.2	77.5	74.0	81.1
Syria	2.9	19.2	21.1	17.2	73.7	72.3	75.3
Taiwan	1.1	4.9	5.2	4.5	80.7	77.7	84.0
Tajikistan	2.5	47.2	52.9	41.3	68.8	65.6	72.1
Thailand	1.5	9.0	10.0	8.0	77.2	74.1	80.4
Timor-Leste	4.4	44.7	48.1	41.1	69.3	67.6	71.1
Turkey	2.0	23.4	24.9	21.9	75.7	73.3	78.2
Turkmenistan	2.0	48.1	57.4	38.3	71.3	68.2	74.5
United Arab Emirates	1.7	5.8	6.4	5.1	79.2	77.9	80.6
Uzbekistan	1.7	24.2	28.6	19.6	74.8	71.7	78.0
Vietnam	2.1	19.9	20.1	19.7	75.0	72.4	77.9
West Bank	3.1	19.1	21.9	16.1	75.9	73.8	78.1
Yemen	3.2	64.8	70.5	58.8	66.9	64.6	69.2

Note: Total fertility rate is measured in children per woman. Under age 5 mortality rate is measured per 1,000 children.
Source: U.S. Census Bureau, International Database, 2020.

Table B-3.

Labor Force Participation for Population Aged 60–64 and 65 and Older for Asian Countries by Sex: 2020 or Latest Year Available

(In percent)

Country	60–64			65 and older			Year
	Both sexes	Male	Female	Both sexes	Male	Female	
Afghanistan	32.8	53.6	8.6	18.7	28.2	3.4	2020
Armenia	50.3	61.2	42.5	30.3	42.3	21.4	2019
Azerbaijan	30.0	33.5	26.8	6.3	9.7	3.9	2019
Bahrain	39.7	54.6	16.2	23.6	39.9	6.4	2015
Bangladesh	52.0	78.3	19.3	31.0	47.1	8.7	2017
Bhutan	52.9	74.8	33.7	34.2	44.5	23.1	2015
Brunei	26.0	31.1	21.2	12.0	14.0	10.1	2019
Cambodia	74.1	79.7	70.3	43.0	55.4	34.8	2017
Cyprus	53.6	65.4	42.2	9.0	13.9	4.7	2020
Georgia	47.4	61.0	36.2	19.5	28.3	14.3	2020
Hong Kong	47.4	60.1	35.1	12.1	18.0	6.8	2020
India	39.4	64.9	15.8	20.1	32.3	7.2	2019
Indonesia	64.4	77.7	51.3	44.3	58.3	32.2	2020
Iraq	27.4	47.8	9.7	10.2	19.4	1.9	2012
Iran	23.7	39.4	6.7	11.1	20.1	2.6	2019
Israel	64.2	73.5	55.6	22.2	30.5	15.4	2019
Japan	73.1	85.3	61.0	25.5	35.1	18.2	2020
Jordan	11.8	22.1	0.8	3.3	6.0	0.3	2019
Kazakhstan	36.9	56.2	22.7	4.3	5.7	3.5	2020
Korea, South	64.2	75.5	53.2	36.8	46.4	29.4	2020
Kyrgyzstan	42.4	63.7	24.3	11.6	17.0	8.1	2018
Laos	28.8	37.0	19.8	11.6	16.4	7.0	2017
Lebanon	40.7	67.7	16.4	14.4	26.0	4.1	2019
Malaysia	34.0	46.8	21.3	N	N	N	2019
Maldives	47.5	75.2	24.8	15.5	20.0	10.9	2019
Mongolia	22.5	30.2	17.4	10.4	14.3	7.8	2020
Myanmar	37.8	59.7	21.0	13.8	23.6	7.4	2019
Nepal	24.3	34.7	15.7	13.8	21.1	7.0	2017
Oman	36.5	56.4	5.4	6.5	12.3	0.7	2018
Pakistan	45.2	68.9	16.6	26.4	40.5	8.2	2018
Philippines	51.3	61.6	41.9	28.5	37.9	21.5	2020
Qatar	69.0	87.7	14.0	32.9	47.2	5.5	2019
Saudi Arabia	42.3	61.8	10.0	26.2	44.7	5.7	2020
Singapore	65.0	77.8	52.6	30.1	40.1	21.7	2020
Sri Lanka	45.8	68.0	26.6	22.1	36.4	11.0	2018
Taiwan	37.7	51.9	24.5	8.8	13.8	4.6	2020
Tajikistan	37.4	56.6	19.4	18.9	25.6	11.3	2016
Thailand	56.5	67.6	47.1	25.7	34.9	18.5	2020
Timor-Leste	81.0	88.1	74.4	65.8	71.4	59.7	2016
Turkey	27.4	41.7	13.5	10.0	16.8	4.6	2020
United Arab Emirates	61.3	82.9	19.5	34.9	52.9	7.9	2019
Vietnam	45.2	52.6	39.1	17.5	23.1	13.7	2020
Yemen	31.3	51.6	5.2	17.4	29.0	1.2	2014

N Not available.
Source: International Labour Organization, ILOSTAT.

Table B-4.

Pension Age, Contribution Rates, and Gross Domestic Product (GDP) Per Capita for Asian Countries: 2018

Country	Statutory pensionable age		Contribution rates			GDP per capita (PPP)
	Men	Women	Self	Employer	Sum	
Armenia	63	63	2.5	Z	2.5	9,647
Azerbaijan	63.5	60.5	3.0	22.0	25.0	17,398
Bahrain	60	55	6.0	9.0	15.0	47,527
Bangladesh	65	62	Z	Z	Z	3,869
Bhutan	56	56	5.0	5.0	10.0	9,372
Brunei	60	60	8.5	8.5	17.0	78,836
Burma	N	N	N	N	N	6,161
Cambodia	N	N	N	N	N	4,009
China	60	60	8.0	20.0	28.0	16,807
Georgia	65	60	2.0	2.0	4.0	10,683
Hong Kong	65	65	5.0	5.0	10.0	61,540
India	58	58	12.0	16.0	28.0	7,059
Indonesia	56	56	3.0	6.0	9.0	12,284
Iran	60	55	5.0	14.0	19.0	20,841
Israel	70	68	0.3	1.6	1.9	38,262
Japan	65	65	9.2	9.2	18.3	43,279
Jordan	60	55	6.5	11.0	17.5	9,153
Kazakhstan	63	58.5	10.0	3.5	13.5	26,435
Kuwait	53	53	7.5	10.0	17.5	71,943
Kyrgyzstan	63	58	10.0	15.3	25.3	3,726
Laos	60	55	2.5	2.5	5.0	7,023
Lebanon	60	60	Z	8.5	8.5	14,482
Malaysia	55	55	11.5	13.5	25.0	29,449
Nepal	58	58	10.0	10.0	20.0	2,697
Oman	60	55	7.0	10.5	17.5	41,675
Pakistan	60	55	1.0	5.0	6.0	5,527
Philippines	60	60	N	N	N	8,343
Qatar	60	60	5.0	10.0	15.0	128,374
Saudi Arabia	58	53	9.0	9.0	18.0	53,779
Singapore	55	55	20.0	17.0	37.0	93,905
South Korea	61	61	4.5	4.5	9.0	38,335
Sri Lanka	55	50	8.0	15.0	23.0	12,835
Syria	60	55	7.0	14.1	21.1	2,900
Taiwan	61	61	7.0	12.7	19.7	50,500
Tajikistan	63	58	1.0	25.0	26.0	3,195
Thailand	55	55	3.0	3.0	6.0	17,872
Turkmenistan	62	57	Z	20.0	20.0	17,993
Uzbekistan	60	55	10.0	25.0	35.0	6,865
Vietnam	60	55	8.0	14.0	22.0	6,776
Yemen	60	55	6.0	9.0	15.0	2,601

N Not available.
Z Represents or rounds to zero.
Note: PPP is purchasing power parity. GDP estimates are converted into international dollars using PPP rates.
Source: Social Security Administration and the International Social Security Association, 2019; Social Security Programs Throughout the World: Asia and the Pacific, 2018.

Table B-5.

Life Expectancy (LE) and Healthy Life Expectancy (HALE) at Birth and at Age 60 for Asian Countries: 2000, 2010, and 2019

(In years)

Country	Year	LE at birth			HALE at birth			LE at age 60		
		Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Afghanistan	2000	55.0	54.6	55.4	46.8	46.9	46.6	13.9	13.6	14.2
Afghanistan	2010	59.9	59.6	60.3	51.1	51.5	50.7	15.1	15.1	15.2
Afghanistan	2019	63.2	63.3	63.2	53.9	54.7	53.2	15.2	15.4	15.1
Armenia	2000	71.9	68.6	74.9	63.5	61.2	65.6	18.8	17.1	20.2
Armenia	2010	73.1	69.4	76.6	64.8	62.4	67.2	18.8	16.8	20.5
Armenia	2019	76.0	72.5	79.2	67.1	64.9	69.1	20.4	18.2	22.1
Azerbaijan	2000	65.5	62.6	68.5	58.5	56.6	60.4	16.6	15.1	17.9
Azerbaijan	2010	69.0	66.3	71.8	61.7	60.1	63.4	16.4	15.0	17.6
Azerbaijan	2019	71.4	68.8	74.1	63.6	62.1	65.2	17.1	15.6	18.3
Bahrain	2000	70.5	69.5	71.8	61.9	62.0	61.6	15.0	14.5	15.6
Bahrain	2010	74.5	73.8	75.3	65.0	65.3	64.3	17.8	17.4	18.3
Bahrain	2019	75.8	75.0	77.0	65.9	66.0	65.5	19.0	18.7	19.4
Bangladesh	2000	65.6	64.1	67.4	57.0	56.6	57.6	17.8	17.1	18.7
Bangladesh	2010	70.3	68.6	72.2	61.2	60.8	61.7	19.0	18.1	20.1
Bangladesh	2019	74.3	73.0	75.6	64.3	64.2	64.4	20.9	20.3	21.5
Bhutan	2000	65.7	64.9	66.6	57.1	57.2	56.9	17.9	17.7	18.2
Bhutan	2010	71.0	69.9	72.3	61.7	61.5	61.8	18.9	18.4	19.5
Bhutan	2019	73.1	72.0	74.4	63.4	63.2	63.5	19.4	18.9	19.9
Brunei	2000	72.2	70.9	73.7	63.9	63.1	64.8	16.8	16.2	17.4
Brunei	2010	74.6	73.3	75.8	65.8	65.1	66.5	19.0	18.4	19.6
Brunei	2019	74.3	73.4	75.4	65.6	65.2	66.1	19.2	19.0	19.4
Burma	2000	60.0	57.3	62.7	52.9	51.2	54.7	15.4	13.8	16.9
Burma	2010	64.8	61.6	67.9	57.2	55.2	59.1	17.0	15.1	18.6
Burma	2019	69.1	65.9	72.2	60.9	58.8	62.8	18.1	16.2	19.6
Cambodia	2000	58.7	56.0	61.2	51.4	49.8	52.9	15.8	14.4	17.1
Cambodia	2010	67.2	64.2	70.0	59.0	57.2	60.7	17.2	15.5	18.6
Cambodia	2019	70.1	67.2	72.7	61.5	59.8	63.0	17.7	15.9	19.1
China	2000	71.6	69.3	74.2	63.7	62.7	64.9	18.4	16.9	20.1
China	2010	74.9	72.3	77.9	66.7	65.3	68.2	19.6	17.9	21.5
China	2019	77.4	74.7	80.5	68.5	67.2	70.0	21.1	19.2	23.1
Cyprus	2000	78.7	76.5	81.0	69.1	68.3	70.0	21.9	20.4	23.2
Cyprus	2010	81.0	78.9	83.1	70.8	70.0	71.5	23.5	22.2	24.8
Cyprus	2019	83.1	81.1	85.1	72.4	71.8	73.0	24.9	23.3	26.4
Georgia	2000	69.4	65.6	73.1	61.9	59.2	64.6	17.0	15.2	18.4
Georgia	2010	71.9	67.4	76.3	63.7	60.5	66.9	18.2	15.9	20.1
Georgia	2019	73.3	68.8	77.8	64.7	61.4	67.9	18.8	16.0	21.0
India	2000	62.1	61.3	62.9	52.9	53.2	52.7	16.1	15.4	16.8
India	2010	67.2	65.7	68.9	57.3	57.0	57.6	18.0	16.9	19.0
India	2019	70.8	69.5	72.2	60.3	60.3	60.4	18.8	18.1	19.5
Indonesia	2000	67.2	65.8	68.6	59.0	58.5	59.6	17.6	16.8	18.2
Indonesia	2010	69.3	67.5	71.0	61.2	60.4	62.0	17.5	16.4	18.4
Indonesia	2019	71.3	69.4	73.3	62.8	61.9	63.8	17.9	16.7	19.1
Iran	2000	72.6	70.7	74.6	62.6	62.1	63.1	19.7	19.0	20.5
Iran	2010	75.9	73.9	78.0	65.0	64.5	65.6	21.4	20.6	22.3
Iran	2019	77.3	75.7	79.1	66.3	66.0	66.5	21.8	21.2	22.5
Iraq	2000	68.8	66.4	71.3	59.5	58.5	60.6	18.3	17.0	19.6
Iraq	2010	70.2	67.8	72.8	60.9	59.8	62.0	18.8	17.5	20.0
Iraq	2019	72.4	69.9	75.0	62.7	61.6	63.7	19.2	17.6	20.7
Israel	2000	78.6	76.4	80.7	69.2	68.4	69.9	21.9	20.6	23.1
Israel	2010	81.6	79.6	83.3	71.4	70.9	71.8	24.2	22.8	25.3
Israel	2019	82.6	80.8	84.4	72.4	72.0	72.7	24.9	23.6	26.0
Japan	2000	81.1	77.7	84.4	71.6	69.5	73.5	24.1	21.3	26.6
Japan	2010	82.7	79.5	85.8	73.0	71.1	74.7	25.3	22.6	27.7
Japan	2019	84.3	81.5	86.9	74.1	72.6	75.5	26.3	23.9	28.6

Footnotes provided at end of table.

Table B-5.

Life Expectancy (LE) and Healthy Life Expectancy (HALE) at Birth and at Age 60 for Asian Countries: 2000, 2010, and 2019—Con.

(In years)

HALE at 60			HALEb/LEb ratio			HALE60/LE60 ratio			Year	Country
Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female		
10.2	10.2	10.1	0.85	0.86	0.84	0.73	0.75	0.71	2000	Afghanistan
10.9	11.1	10.7	0.85	0.86	0.84	0.72	0.74	0.70	2010	Afghanistan
10.8	11.2	10.6	0.85	0.86	0.84	0.71	0.73	0.70	2019	Afghanistan
14.5	13.3	15.5	0.88	0.89	0.88	0.77	0.78	0.77	2000	Armenia
14.6	13.2	15.7	0.89	0.90	0.88	0.78	0.79	0.77	2010	Armenia
15.7	14.2	16.9	0.88	0.90	0.87	0.77	0.78	0.76	2019	Armenia
13.1	12.1	13.9	0.89	0.90	0.88	0.79	0.80	0.78	2000	Azerbaijan
12.9	12.0	13.7	0.89	0.91	0.88	0.79	0.80	0.78	2010	Azerbaijan
13.4	12.4	14.2	0.89	0.90	0.88	0.78	0.79	0.78	2019	Azerbaijan
11.1	10.9	11.4	0.88	0.89	0.86	0.74	0.75	0.73	2000	Bahrain
13.1	12.9	13.2	0.87	0.88	0.85	0.74	0.74	0.72	2010	Bahrain
13.8	13.8	13.9	0.87	0.88	0.85	0.73	0.74	0.72	2019	Bahrain
13.3	13.0	13.6	0.87	0.88	0.85	0.75	0.76	0.73	2000	Bangladesh
14.2	13.8	14.7	0.87	0.89	0.85	0.75	0.76	0.73	2010	Bangladesh
15.5	15.4	15.7	0.87	0.88	0.85	0.74	0.76	0.73	2019	Bangladesh
13.5	13.6	13.4	0.87	0.88	0.85	0.75	0.77	0.74	2000	Bhutan
14.2	14.1	14.4	0.87	0.88	0.85	0.75	0.77	0.74	2010	Bhutan
14.5	14.3	14.7	0.87	0.88	0.85	0.75	0.76	0.74	2019	Bhutan
12.6	12.2	13.1	0.89	0.89	0.88	0.75	0.75	0.75	2000	Brunei
14.3	13.8	14.7	0.88	0.89	0.88	0.75	0.75	0.75	2010	Brunei
14.5	14.3	14.7	0.88	0.89	0.88	0.76	0.75	0.76	2019	Brunei
11.7	10.6	12.6	0.88	0.89	0.87	0.76	0.77	0.75	2000	Burma
12.8	11.6	13.8	0.88	0.90	0.87	0.75	0.77	0.74	2010	Burma
13.6	12.4	14.6	0.88	0.89	0.87	0.75	0.77	0.74	2019	Burma
11.8	10.9	12.5	0.88	0.89	0.86	0.75	0.76	0.73	2000	Cambodia
12.8	11.7	13.7	0.88	0.89	0.87	0.74	0.75	0.74	2010	Cambodia
13.2	12.0	14.1	0.88	0.89	0.87	0.75	0.75	0.74	2019	Cambodia
14.0	13.3	14.9	0.89	0.90	0.87	0.76	0.79	0.74	2000	China
14.9	14.0	15.9	0.89	0.90	0.88	0.76	0.78	0.74	2010	China
15.9	15.0	16.9	0.89	0.90	0.87	0.75	0.78	0.73	2019	China
16.8	15.9	17.6	0.88	0.89	0.86	0.77	0.78	0.76	2000	Cyprus
17.9	17.1	18.7	0.87	0.89	0.86	0.76	0.77	0.75	2010	Cyprus
19.0	18.1	19.9	0.87	0.89	0.86	0.76	0.78	0.75	2019	Cyprus
13.4	12.1	14.4	0.89	0.90	0.88	0.79	0.80	0.78	2000	Georgia
14.1	12.5	15.5	0.89	0.90	0.88	0.77	0.79	0.77	2010	Georgia
14.4	12.4	16.1	0.88	0.89	0.87	0.77	0.78	0.77	2019	Georgia
11.3	11.1	11.6	0.85	0.87	0.84	0.70	0.72	0.69	2000	India
12.6	12.1	13.0	0.85	0.87	0.84	0.70	0.72	0.68	2010	India
13.2	13.0	13.5	0.85	0.87	0.84	0.70	0.72	0.69	2019	India
13.0	12.7	13.2	0.88	0.89	0.87	0.74	0.76	0.73	2000	Indonesia
13.0	12.5	13.5	0.88	0.89	0.87	0.74	0.76	0.73	2010	Indonesia
13.4	12.7	14.0	0.88	0.89	0.87	0.75	0.76	0.73	2019	Indonesia
14.3	14.1	14.5	0.86	0.88	0.85	0.73	0.74	0.71	2000	Iran
15.4	15.2	15.6	0.86	0.87	0.84	0.72	0.74	0.70	2010	Iran
15.7	15.6	15.8	0.86	0.87	0.84	0.72	0.74	0.70	2019	Iran
13.5	12.8	14.1	0.86	0.88	0.85	0.74	0.75	0.72	2000	Iraq
13.9	13.2	14.5	0.87	0.88	0.85	0.74	0.75	0.73	2010	Iraq
14.2	13.3	15.0	0.87	0.88	0.85	0.74	0.76	0.72	2019	Iraq
17.1	16.4	17.7	0.88	0.90	0.87	0.78	0.80	0.77	2000	Israel
18.6	17.9	19.2	0.88	0.89	0.86	0.77	0.79	0.76	2010	Israel
19.3	18.7	19.9	0.88	0.89	0.86	0.78	0.79	0.77	2019	Israel
18.7	16.7	20.5	0.88	0.89	0.87	0.78	0.78	0.77	2000	Japan
19.7	17.8	21.3	0.88	0.89	0.87	0.78	0.79	0.77	2010	Japan
20.4	18.8	21.8	0.88	0.89	0.87	0.78	0.79	0.76	2019	Japan

Footnotes provided at end of table.

Table B-5.

Life Expectancy (LE) and Healthy Life Expectancy (HALE) at Birth and at Age 60 for Asian Countries: 2000, 2010, and 2019—Con.

(In years)

Country	Year	LE at birth			HALE at birth			LE at age 60		
		Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Jordan	2000	72.6	73.1	72.5	63.6	65.0	62.3	18.6	19.5	17.9
Jordan	2010	76.6	75.6	77.6	66.7	67.1	66.2	21.0	20.5	21.4
Jordan	2019	77.9	77.0	78.8	67.6	68.1	67.2	21.8	21.6	22.1
Kazakhstan	2000	63.1	57.6	69.2	56.1	52.0	60.5	15.3	12.3	17.8
Kazakhstan	2010	68.4	63.6	73.4	60.4	57.0	64.0	17.2	14.6	19.2
Kazakhstan	2019	74.0	70.0	77.6	65.0	62.4	67.4	19.5	16.8	21.4
Korea, North	2000	64.0	60.8	66.8	57.8	56.0	59.4	15.5	13.5	16.8
Korea, North	2010	70.2	66.9	73.1	63.0	61.3	64.5	18.0	15.8	19.5
Korea, North	2019	72.6	69.3	75.7	65.0	63.3	66.6	19.1	16.8	20.8
Korea, South	2000	76.2	72.5	79.8	67.4	64.9	69.7	20.7	18.1	22.7
Korea, South	2010	80.6	77.1	83.8	70.9	68.7	72.9	23.7	21.1	25.9
Korea, South	2019	83.3	80.3	86.1	73.1	71.3	74.7	25.8	23.4	27.9
Kuwait	2000	77.9	76.4	80.1	67.7	67.4	68.0	22.2	21.2	23.5
Kuwait	2010	79.8	78.8	81.4	69.2	69.2	69.2	23.2	22.7	24.0
Kuwait	2019	81.0	79.3	83.9	70.1	69.5	71.1	24.0	22.8	25.9
Kyrgyzstan	2000	66.0	61.9	70.2	58.7	55.8	61.7	16.7	14.9	18.3
Kyrgyzstan	2010	69.2	65.2	73.3	61.6	58.9	64.5	17.6	15.5	19.3
Kyrgyzstan	2019	74.2	70.7	77.3	65.8	63.6	67.7	20.0	17.8	21.7
Laos	2000	58.4	56.3	60.6	51.8	50.5	53.1	15.3	14.0	16.5
Laos	2010	64.9	62.4	67.4	57.4	56.0	58.9	16.9	15.5	18.1
Laos	2019	68.5	66.2	70.9	60.5	59.2	61.9	17.6	16.3	18.9
Lebanon	2000	74.6	73.0	76.1	64.7	64.4	64.9	19.8	18.9	20.7
Lebanon	2010	75.5	73.3	78.1	65.4	64.6	66.3	19.9	18.3	21.7
Lebanon	2019	76.4	74.0	79.2	66.0	65.1	67.0	20.5	18.8	22.4
Malaysia	2000	72.8	70.6	75.3	64.0	62.6	65.5	18.1	17.0	19.2
Malaysia	2010	74.3	72.2	76.5	65.4	64.3	66.6	19.2	18.3	20.1
Malaysia	2019	74.7	72.6	77.1	65.7	64.5	66.9	19.5	18.5	20.6
Maldives	2000	71.0	70.4	71.5	62.4	62.4	62.3	18.0	18.1	17.8
Maldives	2010	77.0	76.0	78.2	68.0	67.8	68.1	20.3	19.7	21.0
Maldives	2019	79.6	78.6	80.8	70.0	69.7	70.0	22.1	21.4	23.1
Mongolia	2000	60.5	57.3	64.1	53.8	51.5	56.4	13.4	12.0	14.9
Mongolia	2010	65.1	61.1	69.5	57.8	54.8	61.1	15.1	13.3	16.9
Mongolia	2019	68.1	63.8	72.8	60.3	57.1	63.8	16.4	14.2	18.5
Nepal	2000	65.3	63.9	66.6	56.3	55.8	56.7	17.6	16.7	18.3
Nepal	2010	69.2	67.5	70.9	59.9	59.4	60.5	18.1	17.2	19.0
Nepal	2019	70.9	68.9	72.7	61.3	60.6	62.1	18.0	16.8	19.2
Oman	2000	69.1	67.3	71.5	60.9	60.1	61.9	15.6	14.7	16.6
Oman	2010	70.4	69.0	72.5	62.0	61.5	62.7	15.9	15.2	16.8
Oman	2019	73.9	73.0	75.3	64.7	64.5	64.5	17.8	17.2	18.5
Pakistan	2000	60.1	59.3	61.0	52.3	52.6	52.1	15.7	15.2	16.4
Pakistan	2010	62.6	61.5	63.9	54.5	54.4	54.5	16.4	15.8	17.1
Pakistan	2019	65.6	64.6	66.7	56.9	56.9	56.8	17.3	16.8	17.8
Philippines	2000	69.0	65.5	72.9	60.6	58.2	63.1	17.6	15.5	19.7
Philippines	2010	70.0	66.6	73.5	61.6	59.5	63.8	18.0	16.0	19.9
Philippines	2019	70.4	67.4	73.6	62.0	60.1	63.9	17.8	15.8	19.6
Qatar	2000	71.3	71.1	71.7	62.4	62.8	61.4	15.9	16.4	15.2
Qatar	2010	74.1	75.0	73.9	64.7	65.8	63.1	17.3	18.7	16.1
Qatar	2019	77.2	78.0	76.6	67.1	68.1	65.1	19.5	20.6	18.4
Saudi Arabia	2000	70.5	69.6	71.6	61.2	61.2	61.0	17.5	16.9	18.2
Saudi Arabia	2010	71.8	70.4	73.7	62.2	61.9	62.6	18.3	17.4	19.3
Saudi Arabia	2019	74.3	73.1	76.1	64.0	63.8	64.4	19.9	19.3	20.8
Singapore	2000	78.4	76.2	80.7	69.5	68.2	70.8	21.5	19.7	23.1
Singapore	2010	81.7	79.4	84.0	72.3	71.1	73.6	24.1	22.2	25.8
Singapore	2019	83.2	81.0	85.5	73.6	72.4	74.7	25.5	23.8	27.2

Footnotes provided at end of table.

Table B-5.

Life Expectancy (LE) and Healthy Life Expectancy (HALE) at Birth and at Age 60 for Asian Countries: 2000, 2010, and 2019—Con.

(In years)

HALE at 60			HALEb/LEb ratio			HALE60/LE60 ratio			Year	Country
Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female		
13.9	14.9	13.1	0.88	0.89	0.86	0.75	0.76	0.73	2000	Jordan
15.6	15.7	15.6	0.87	0.89	0.85	0.74	0.77	0.73	2010	Jordan
16.2	16.3	16.2	0.87	0.88	0.85	0.74	0.75	0.73	2019	Jordan
11.8	9.7	13.5	0.89	0.90	0.87	0.77	0.79	0.76	2000	Kazakhstan
13.1	11.3	14.5	0.88	0.90	0.87	0.76	0.77	0.76	2010	Kazakhstan
14.8	13.0	16.2	0.88	0.89	0.87	0.76	0.77	0.76	2019	Kazakhstan
12.3	11.1	13.0	0.90	0.92	0.89	0.79	0.82	0.77	2000	Korea, North
14.1	12.9	14.9	0.90	0.92	0.88	0.78	0.82	0.76	2010	Korea, North
14.9	13.6	15.8	0.90	0.91	0.88	0.78	0.81	0.76	2019	Korea, North
15.9	14.2	17.3	0.88	0.90	0.87	0.77	0.78	0.76	2000	Korea, South
18.2	16.4	19.7	0.88	0.89	0.87	0.77	0.78	0.76	2010	Korea, South
19.8	18.2	21.2	0.88	0.89	0.87	0.77	0.78	0.76	2019	Korea, South
16.5	16.0	17.1	0.87	0.88	0.85	0.74	0.75	0.73	2000	Kuwait
17.2	17.0	17.6	0.87	0.88	0.85	0.74	0.75	0.73	2010	Kuwait
17.8	17.1	18.9	0.87	0.88	0.85	0.74	0.75	0.73	2019	Kuwait
13.1	11.8	14.1	0.89	0.90	0.88	0.78	0.79	0.77	2000	Kyrgyzstan
13.8	12.4	15.1	0.89	0.90	0.88	0.78	0.80	0.78	2010	Kyrgyzstan
15.7	14.2	16.8	0.89	0.90	0.88	0.79	0.80	0.77	2019	Kyrgyzstan
11.6	10.8	12.3	0.89	0.90	0.88	0.76	0.77	0.75	2000	Laos
12.8	11.9	13.5	0.88	0.90	0.87	0.76	0.77	0.75	2010	Laos
13.3	12.5	14.0	0.88	0.89	0.87	0.76	0.77	0.74	2019	Laos
14.9	14.4	15.3	0.87	0.88	0.85	0.75	0.76	0.74	2000	Lebanon
14.8	13.8	15.8	0.87	0.88	0.85	0.74	0.75	0.73	2010	Lebanon
15.0	13.9	16.2	0.86	0.88	0.85	0.73	0.74	0.72	2019	Lebanon
13.5	12.8	14.2	0.88	0.89	0.87	0.75	0.75	0.74	2000	Malaysia
14.4	13.9	15.0	0.88	0.89	0.87	0.75	0.76	0.75	2010	Malaysia
14.6	14.0	15.3	0.88	0.89	0.87	0.75	0.76	0.74	2019	Malaysia
13.7	13.9	13.4	0.88	0.89	0.87	0.76	0.77	0.75	2000	Maldives
15.5	15.3	15.8	0.88	0.89	0.87	0.76	0.78	0.75	2010	Maldives
16.8	16.4	17.2	0.88	0.89	0.87	0.76	0.77	0.74	2019	Maldives
10.3	9.3	11.4	0.89	0.90	0.88	0.77	0.78	0.77	2000	Mongolia
11.6	10.3	12.9	0.89	0.90	0.88	0.77	0.77	0.76	2010	Mongolia
12.6	11.0	14.2	0.89	0.89	0.88	0.77	0.77	0.77	2019	Mongolia
12.8	12.4	13.1	0.86	0.87	0.85	0.73	0.74	0.72	2000	Nepal
13.3	12.9	13.7	0.87	0.88	0.85	0.73	0.75	0.72	2010	Nepal
13.3	12.7	13.8	0.86	0.88	0.85	0.74	0.76	0.72	2019	Nepal
11.7	11.2	12.3	0.88	0.89	0.87	0.75	0.76	0.74	2000	Oman
11.9	11.5	12.4	0.88	0.89	0.86	0.75	0.76	0.74	2010	Oman
13.2	12.9	13.5	0.88	0.88	0.86	0.74	0.75	0.73	2019	Oman
11.5	11.4	11.7	0.87	0.89	0.85	0.73	0.75	0.71	2000	Pakistan
12.0	11.9	12.1	0.87	0.88	0.85	0.73	0.75	0.71	2010	Pakistan
12.6	12.5	12.6	0.87	0.88	0.85	0.73	0.74	0.71	2019	Pakistan
13.3	11.8	14.6	0.88	0.89	0.87	0.76	0.76	0.74	2000	Philippines
13.6	12.2	14.9	0.88	0.89	0.87	0.76	0.76	0.75	2010	Philippines
13.4	12.1	14.6	0.88	0.89	0.87	0.75	0.77	0.74	2019	Philippines
11.6	12.1	10.8	0.88	0.88	0.86	0.73	0.74	0.71	2000	Qatar
12.5	13.6	11.5	0.87	0.88	0.85	0.72	0.73	0.71	2010	Qatar
14.2	15.1	13.1	0.87	0.87	0.85	0.73	0.73	0.71	2019	Qatar
12.4	12.3	12.6	0.87	0.88	0.85	0.71	0.73	0.69	2000	Saudi Arabia
13.0	12.6	13.4	0.87	0.88	0.85	0.71	0.72	0.69	2010	Saudi Arabia
14.0	13.8	14.4	0.86	0.87	0.85	0.70	0.72	0.69	2019	Saudi Arabia
16.6	15.4	17.7	0.89	0.90	0.88	0.77	0.78	0.77	2000	Singapore
18.8	17.5	19.9	0.88	0.90	0.88	0.78	0.79	0.77	2010	Singapore
20.0	18.8	21.0	0.88	0.89	0.87	0.78	0.79	0.77	2019	Singapore

Footnotes provided at end of table.

Table B-5.

Life Expectancy (LE) and Healthy Life Expectancy (HALE) at Birth and at Age 60 for Asian Countries: 2000, 2010, and 2019—Con.

(In years)

Country	Year	LE at birth			HALE at birth			LE at age 60		
		Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Sri Lanka	2000	71.9	67.9	76.3	63.0	60.1	66.2	19.6	18.1	21.2
Sri Lanka	2010	73.3	69.4	77.3	64.2	61.5	67.0	20.0	18.1	21.8
Sri Lanka	2019	76.9	73.8	79.8	67.0	65.1	69.0	20.8	18.6	22.6
Syria	2000	72.7	71.2	74.3	62.8	62.9	62.8	18.7	18.2	19.3
Syria	2010	64.4	60.9	68.4	65.1	65.2	65.1	16.2	15.5	17.0
Syria	2019	71.5	70.4	72.7	62.9	62.5	63.3	17.6	17.4	18.0
Tajikistan	2000	65.6	63.5	67.8	58.3	57.0	59.8	17.2	16.4	18.0
Tajikistan	2010	68.0	66.0	70.2	60.9	59.7	62.2	15.6	14.7	16.6
Tajikistan	2019	69.5	67.6	71.5	62.0	60.9	63.2	16.1	15.1	17.2
Thailand	2000	71.3	67.5	75.2	62.6	59.9	65.5	20.8	19.3	22.1
Thailand	2010	76.3	73.2	79.3	67.1	65.0	69.2	22.8	21.7	23.8
Thailand	2019	77.7	74.4	81.0	68.3	65.9	70.6	23.6	22.1	24.8
Timor-Leste	2000	62.7	61.9	63.4	53.1	52.4	53.7	17.9	17.7	18.0
Timor-Leste	2010	68.1	66.8	69.4	59.3	58.4	60.2	18.3	17.7	18.8
Timor-Leste	2019	69.6	67.9	71.4	60.9	59.8	62.0	17.9	16.9	18.9
Turkey	2000	74.4	71.9	76.8	65.0	64.1	65.8	21.5	20.1	22.7
Turkey	2010	76.9	74.6	79.1	66.9	66.3	67.6	21.2	19.8	22.6
Turkey	2019	78.6	76.4	80.7	68.4	67.8	69.0	22.0	20.6	23.2
Turkmenistan	2000	63.3	59.3	67.4	56.6	53.8	59.6	16.3	14.4	17.8
Turkmenistan	2010	67.3	63.6	71.1	60.1	57.6	62.7	17.2	15.3	18.8
Turkmenistan	2019	69.7	66.5	73.0	62.1	59.9	64.3	18.7	17.1	20.1
UAE	2000	73.2	72.2	75.1	63.9	63.7	63.8	18.7	18.0	19.8
UAE	2010	74.9	73.9	77.4	65.1	64.9	65.3	19.5	18.8	21.2
UAE	2019	76.1	75.1	78.4	66.0	65.8	66.2	19.9	19.2	21.7
Uzbekistan	2000	65.3	62.4	68.2	58.1	56.3	59.9	16.0	14.8	17.1
Uzbekistan	2010	70.2	67.5	72.9	62.3	60.8	63.9	17.3	15.7	18.7
Uzbekistan	2019	73.0	70.8	75.2	64.7	63.5	65.8	18.6	17.3	19.8
Vietnam	2000	71.4	67.3	75.6	63.3	60.6	66.0	18.9	16.4	21.0
Vietnam	2010	72.7	68.4	77.1	64.5	61.6	67.5	19.2	16.5	21.5
Vietnam	2019	73.7	69.6	78.1	65.3	62.4	68.3	19.6	16.9	22.0
Yemen	2000	62.7	60.9	64.7	54.5	54.1	54.9	16.8	15.7	17.9
Yemen	2010	67.7	65.9	69.6	58.6	58.4	58.9	17.8	16.8	18.7
Yemen	2019	66.6	64.4	68.9	57.5	56.9	58.2	17.8	16.8	18.7

Footnotes provided on next page.

Table B-5.

Life Expectancy (LE) and Healthy Life Expectancy (HALE) at Birth and at Age 60 for Asian Countries: 2000, 2010, and 2019—Con.

(In years)

HALE at 60			HALEb/LEb ratio			HALE60/LE60 ratio			Year	Country
Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female		
14.7	13.5	15.8	0.88	0.89	0.87	0.75	0.75	0.75	2000	Sri Lanka
14.9	13.5	16.2	0.88	0.89	0.87	0.75	0.75	0.74	2010	Sri Lanka
15.3	13.8	16.6	0.87	0.88	0.86	0.74	0.74	0.73	2019	Sri Lanka
13.4	13.5	13.4	0.86	0.88	0.85	0.72	0.74	0.69	2000	Syria
14.6	14.6	14.6	1.01	1.07	0.95	0.90	0.94	0.86	2010	Syria
13.9	13.8	14.2	0.88	0.89	0.87	0.79	0.79	0.79	2019	Syria
13.6	13.1	14.1	0.89	0.90	0.88	0.79	0.80	0.78	2000	Tajikistan
12.4	11.8	13.1	0.90	0.90	0.89	0.79	0.80	0.79	2010	Tajikistan
12.7	12.1	13.4	0.89	0.90	0.88	0.79	0.80	0.78	2019	Tajikistan
15.6	14.7	16.5	0.88	0.89	0.87	0.75	0.76	0.75	2000	Thailand
17.4	16.7	18.0	0.88	0.89	0.87	0.76	0.77	0.76	2010	Thailand
18.0	17.0	18.8	0.88	0.89	0.87	0.76	0.77	0.76	2019	Thailand
12.5	12.4	12.6	0.85	0.85	0.85	0.70	0.70	0.70	2000	Timor-Leste
13.5	13.1	13.8	0.87	0.87	0.87	0.74	0.74	0.73	2010	Timor-Leste
13.2	12.5	13.8	0.88	0.88	0.87	0.74	0.74	0.73	2019	Timor-Leste
16.3	15.6	17.0	0.87	0.89	0.86	0.76	0.78	0.75	2000	Turkey
15.9	15.1	16.7	0.87	0.89	0.85	0.75	0.76	0.74	2010	Turkey
16.6	15.8	17.3	0.87	0.89	0.86	0.75	0.77	0.75	2019	Turkey
12.9	11.6	13.9	0.89	0.91	0.88	0.79	0.81	0.78	2000	Turkmenistan
13.6	12.3	14.7	0.89	0.91	0.88	0.79	0.80	0.78	2010	Turkmenistan
14.7	13.6	15.6	0.89	0.90	0.88	0.79	0.80	0.78	2019	Turkmenistan
13.6	13.3	14.0	0.87	0.88	0.85	0.73	0.74	0.71	2000	UAE
14.1	13.9	14.7	0.87	0.88	0.84	0.72	0.74	0.69	2010	UAE
14.5	14.1	15.3	0.87	0.88	0.84	0.73	0.73	0.71	2019	UAE
12.6	11.8	13.3	0.89	0.90	0.88	0.79	0.80	0.78	2000	Uzbekistan
13.5	12.4	14.5	0.89	0.90	0.88	0.78	0.79	0.78	2010	Uzbekistan
14.5	13.7	15.3	0.89	0.90	0.88	0.78	0.79	0.77	2019	Uzbekistan
14.3	12.7	15.6	0.89	0.90	0.87	0.76	0.77	0.74	2000	Vietnam
14.5	12.8	16.0	0.89	0.90	0.88	0.76	0.78	0.74	2010	Vietnam
14.8	12.9	16.4	0.89	0.90	0.87	0.76	0.76	0.75	2019	Vietnam
12.6	12.1	13.2	0.87	0.89	0.85	0.75	0.77	0.74	2000	Yemen
13.3	12.9	13.8	0.87	0.89	0.85	0.75	0.77	0.74	2010	Yemen
13.3	12.8	13.7	0.86	0.88	0.84	0.75	0.76	0.73	2019	Yemen

Note: UAE is United Arab Emirates.
Source: World Health Organization, Global Health Observatory.

Table B-6.

Burden of Selected Noncommunicable Diseases in Population Aged 55 and Older by Sex and Type: 2019

(In percent)

Country	Sex	Cardiovascular diseases		Depressive disorders		Diabetes mellitus		Chronic respiratory diseases		Total cancer	
		Deaths	DALYs	Deaths	DALYs	Deaths	DALYs	Deaths	DALYs	Deaths	DALYs
Afghanistan	Male	47.0	38.9	N	0.8	2.1	3.8	5.8	5.0	12.4	10.8
Afghanistan	Female	48.8	39.3	N	1.0	5.2	6.7	5.6	5.3	12.1	10.9
Afghanistan	Both sexes	48.0	39.1	N	0.9	3.8	5.4	5.7	5.1	12.2	10.9
Armenia	Male	48.8	37.7	N	0.7	3.7	5.4	5.7	4.7	23.4	21.5
Armenia	Female	54.5	35.3	N	1.9	5.6	8.1	4.7	3.6	17.0	15.7
Armenia	Both sexes	51.7	36.5	N	1.3	4.7	6.7	5.2	4.1	20.2	18.6
Azerbaijan	Male	63.1	50.7	N	0.5	2.6	4.2	3.4	3.2	17.4	16.5
Azerbaijan	Female	68.7	48.9	N	1.5	3.7	6.0	2.8	2.6	12.3	11.7
Azerbaijan	Both sexes	65.8	49.8	N	1.0	3.1	5.1	3.1	2.9	14.9	14.2
Bahrain	Male	32.4	22.0	N	1.9	20.0	22.4	4.6	3.6	20.2	13.3
Bahrain	Female	33.9	22.1	N	2.4	21.2	21.7	4.6	3.9	17.5	13.0
Bahrain	Both sexes	33.1	22.0	N	2.1	20.5	22.1	4.6	3.7	19.0	13.2
Bangladesh	Male	45.4	34.6	N	1.6	4.1	4.7	12.1	10.3	13.7	11.2
Bangladesh	Female	48.1	32.7	N	2.5	5.4	5.2	9.4	8.3	11.4	9.1
Bangladesh	Both sexes	46.6	33.8	N	2.0	4.7	4.9	11.0	9.4	12.7	10.3
Bhutan	Male	36.1	28.2	N	1.4	4.3	5.3	15.9	12.9	12.4	10.4
Bhutan	Female	33.5	24.4	N	2.0	5.0	5.7	20.4	15.6	11.0	9.3
Bhutan	Both sexes	34.9	26.4	N	1.7	4.6	5.5	18.0	14.2	11.8	9.9
Brunei	Male	31.1	24.4	N	0.3	10.7	14.4	6.9	5.9	27.6	21.9
Brunei	Female	29.7	20.7	N	0.7	10.5	12.9	6.2	4.9	28.8	23.4
Brunei	Both sexes	30.4	22.6	N	0.5	10.6	13.7	6.5	5.4	28.2	22.6
Cambodia	Male	33.4	27.8	N	0.6	3.4	4.8	7.6	6.6	16.2	14.0
Cambodia	Female	37.8	28.6	N	1.0	4.8	6.3	4.8	4.1	12.9	11.4
Cambodia	Both sexes	35.7	28.2	N	0.8	4.1	5.6	6.1	5.3	14.5	12.7
China	Male	44.2	34.1	N	0.9	1.5	2.7	11.8	8.9	28.0	24.5
China	Female	49.1	32.6	N	2.0	2.1	3.4	11.3	8.4	20.0	15.9
China	Both sexes	46.4	33.4	N	1.4	1.7	3.0	11.6	8.7	24.5	20.7
Cyprus	Male	35.4	25.8	N	0.8	5.8	7.6	7.5	6.4	29.4	23.3
Cyprus	Female	39.1	22.2	N	1.6	6.4	7.4	5.8	5.1	22.3	18.0
Cyprus	Both sexes	37.2	24.1	N	1.2	6.1	7.5	6.7	5.8	25.9	20.7
Georgia	Male	61.0	47.4	N	0.8	2.8	4.8	3.0	2.9	19.1	18.8
Georgia	Female	68.2	46.3	N	1.9	3.1	5.8	2.2	2.3	12.9	13.2
Georgia	Both sexes	64.7	46.9	N	1.3	2.9	5.3	2.6	2.6	15.9	16.1
India	Male	34.8	27.6	N	1.1	3.7	5.1	17.5	14.2	10.7	8.8
India	Female	31.9	23.3	N	1.6	3.8	5.0	16.9	13.1	10.4	8.5
India	Both sexes	33.4	25.5	N	1.3	3.8	5.1	17.2	13.7	10.5	8.7
Indonesia	Male	42.5	35.7	N	0.5	6.0	6.9	9.0	7.8	14.1	11.9
Indonesia	Female	47.1	35.7	N	0.8	7.0	7.7	5.3	4.6	12.7	10.9
Indonesia	Both sexes	44.7	35.7	N	0.6	6.5	7.3	7.2	6.3	13.5	11.5
Iran	Male	50.1	35.8	N	1.3	3.7	6.2	5.5	4.9	19.2	15.3
Iran	Female	54.9	33.9	N	2.4	5.4	7.9	4.5	4.0	14.9	11.7
Iran	Both sexes	52.3	34.9	N	1.8	4.5	7.0	5.1	4.5	17.3	13.6
Iraq	Male	58.3	46.2	N	0.7	6.1	8.1	2.6	2.3	15.0	12.7
Iraq	Female	61.1	42.4	N	1.5	7.5	9.6	1.9	2.0	12.9	11.2
Iraq	Both sexes	59.5	44.5	N	1.1	6.7	8.8	2.3	2.2	14.1	12.0
Israel	Male	26.9	18.8	N	1.6	5.6	6.8	4.8	4.7	32.1	25.4
Israel	Female	28.0	15.5	N	2.6	6.1	6.7	4.2	4.0	27.4	20.8
Israel	Both sexes	27.4	17.1	N	2.1	5.9	6.7	4.5	4.4	29.6	23.0
Japan	Male	24.0	18.1	N	0.6	0.6	2.9	5.3	5.2	36.2	28.5
Japan	Female	30.0	18.3	N	1.2	0.7	2.5	2.9	2.9	26.1	18.6
Japan	Both sexes	27.0	18.2	N	0.9	0.6	2.7	4.1	4.1	31.2	23.7
Jordan	Male	46.4	34.2	N	1.2	7.9	10.0	4.2	4.0	19.6	14.9
Jordan	Female	48.5	31.8	N	2.5	9.3	10.0	2.6	2.6	16.8	12.9
Jordan	Both sexes	47.3	33.1	N	1.8	8.6	10.0	3.4	3.3	18.3	14.0

Footnotes provided at end of table.

Table B-6.

Burden of Selected Noncommunicable Diseases in Population Aged 55 and Older by Sex and Type: 2019—Con.

(In percent)

Country	Sex	Cardiovascular diseases		Depressive disorders		Diabetes mellitus		Chronic respiratory diseases		Total cancer	
		Deaths	DALYs	Deaths	DALYs	Deaths	DALYs	Deaths	DALYs	Deaths	DALYs
Kazakhstan	Male	50.7	40.6	N	0.7	1.6	3.0	10.5	8.6	17.8	16.2
Kazakhstan	Female	60.4	40.4	N	1.8	2.9	5.8	7.0	5.6	14.0	12.9
Kazakhstan	Both sexes	55.7	40.5	N	1.2	2.2	4.4	8.7	7.1	15.8	14.5
Korea, North	Male	45.0	38.2	N	0.6	1.4	2.6	16.2	13.2	20.0	18.4
Korea, North	Female	50.2	38.1	N	1.3	2.2	3.5	16.0	13.1	13.3	12.0
Korea, North	Both sexes	47.9	38.1	N	0.9	1.8	3.1	16.1	13.1	16.3	15.0
Korea, South	Male	21.4	15.1	N	0.7	4.0	5.7	6.1	5.5	38.6	28.5
Korea, South	Female	30.8	17.0	N	1.5	4.6	5.8	4.7	3.4	26.0	17.7
Korea, South	Both sexes	26.0	16.0	N	1.1	4.3	5.7	5.4	4.5	32.5	23.4
Kuwait	Male	47.7	34.8	N	1.5	4.3	9.3	3.1	2.6	17.0	12.2
Kuwait	Female	41.1	22.2	N	3.0	5.7	10.0	2.7	2.3	19.0	12.5
Kuwait	Both sexes	45.7	30.6	N	2.0	4.7	9.5	3.0	2.5	17.6	12.3
Kyrgyzstan	Male	62.5	48.9	N	0.8	0.9	2.0	6.3	5.3	13.4	12.6
Kyrgyzstan	Female	67.8	45.5	N	2.2	1.2	3.0	5.1	4.3	11.6	10.8
Kyrgyzstan	Both sexes	65.1	47.3	N	1.5	1.1	2.5	5.7	4.8	12.5	11.7
Laos	Male	40.9	34.4	N	0.6	3.5	5.1	10.5	9.0	13.4	11.7
Laos	Female	44.4	33.7	N	0.8	6.1	7.8	6.6	5.9	12.5	11.3
Laos	Both sexes	42.5	34.0	N	0.7	4.7	6.4	8.7	7.6	13.0	11.5
Lebanon	Male	53.1	41.3	N	1.0	3.1	6.2	4.3	4.5	22.0	18.7
Lebanon	Female	51.8	34.0	N	2.0	2.4	5.9	3.4	4.0	21.5	17.9
Lebanon	Both sexes	52.5	37.9	N	1.5	2.8	6.0	3.9	4.2	21.8	18.3
Malaysia	Male	37.5	31.4	N	1.0	1.9	4.1	5.8	5.2	17.1	14.2
Malaysia	Female	36.6	27.2	N	1.4	2.9	5.5	3.9	3.5	18.1	14.9
Malaysia	Both sexes	37.1	29.5	N	1.2	2.3	4.8	5.0	4.5	17.6	14.5
Maldives	Male	45.7	33.5	N	1.1	4.2	6.3	9.6	7.7	14.5	11.2
Maldives	Female	38.2	24.4	N	1.8	4.4	6.3	12.3	10.4	15.5	11.7
Maldives	Both sexes	42.5	29.4	N	1.4	4.3	6.3	10.7	8.9	15.0	11.4
Mongolia	Male	49.9	42.1	N	0.7	0.5	1.1	2.6	2.3	29.9	26.7
Mongolia	Female	50.6	37.7	N	2.0	0.5	1.4	2.4	2.1	28.7	24.3
Mongolia	Both sexes	50.2	40.1	N	1.3	0.5	1.2	2.5	2.2	29.3	25.6
Myanmar	Male	38.2	32.3	N	0.4	6.1	7.1	16.0	13.1	13.8	12.1
Myanmar	Female	45.1	32.2	N	0.7	6.8	8.3	11.7	10.1	13.5	11.9
Myanmar	Both sexes	41.6	32.3	N	0.5	6.5	7.6	13.9	11.6	13.6	12.0
Nepal	Male	32.7	26.7	N	1.4	2.0	3.6	25.4	20.2	11.9	10.2
Nepal	Female	25.3	18.8	N	2.4	2.5	3.4	31.1	23.6	11.2	9.7
Nepal	Both sexes	29.3	23.0	N	1.9	2.2	3.5	28.0	21.8	11.6	10.0
Oman	Male	53.8	40.5	N	1.2	7.8	9.7	3.1	2.8	12.0	9.8
Oman	Female	58.0	41.7	N	1.7	8.3	9.4	2.6	2.4	12.5	10.6
Oman	Both sexes	55.6	41.0	N	1.4	8.0	9.6	2.8	2.6	12.2	10.2
Pakistan	Male	37.9	31.3	N	1.0	4.8	6.0	14.3	11.7	15.5	13.5
Pakistan	Female	38.4	29.3	N	1.6	6.8	7.3	7.3	6.4	17.1	14.8
Pakistan	Both sexes	38.1	30.4	N	1.3	5.7	6.6	11.1	9.3	16.2	14.2
Palestine	Male	49.1	37.9	N	1.9	9.2	11.0	4.4	3.9	19.4	15.9
Palestine	Female	52.2	36.4	N	2.4	10.9	11.5	2.8	2.8	15.7	13.7
Palestine	Both sexes	50.6	37.2	N	2.1	10.1	11.2	3.6	3.4	17.5	14.8
Philippines	Male	39.0	32.6	N	0.6	4.7	5.5	8.6	8.2	13.4	11.4
Philippines	Female	41.1	29.8	N	1.2	6.2	7.2	4.7	4.2	13.8	11.9
Philippines	Both sexes	40.0	31.3	N	0.9	5.4	6.3	6.8	6.3	13.6	11.7
Qatar	Male	35.9	21.9	N	1.9	13.0	19.0	2.1	2.1	23.4	13.9
Qatar	Female	37.1	23.6	N	2.1	15.1	18.1	2.1	2.3	24.4	17.5
Qatar	Both sexes	36.3	22.4	N	2.0	13.6	18.7	2.1	2.2	23.7	14.9
Saudi Arabia	Male	48.1	36.9	N	1.2	3.2	6.0	4.1	3.7	10.7	8.3
Saudi Arabia	Female	48.7	34.1	N	2.0	3.2	5.9	4.6	4.0	12.2	9.6
Saudi Arabia	Both sexes	48.3	35.9	N	1.5	3.2	6.0	4.3	3.8	11.2	8.8

Footnotes provided at end of table.

Table B-6.

Burden of Selected Noncommunicable Diseases in Population Aged 55 and Older by Sex and Type: 2019—Con.

(In percent)

Country	Sex	Cardiovascular diseases		Depressive disorders		Diabetes mellitus		Chronic respiratory diseases		Total cancer	
		Deaths	DALYs	Deaths	DALYs	Deaths	DALYs	Deaths	DALYs	Deaths	DALYs
Singapore	Male	30.5	21.9	N	0.8	0.7	4.9	4.2	4.7	31.2	22.4
Singapore	Female	29.2	17.4	N	1.5	0.9	4.1	2.7	2.4	27.3	19.3
Singapore	Both sexes	29.9	19.8	N	1.1	0.8	4.5	3.5	3.6	29.3	21.0
Sri Lanka	Male	37.9	28.3	N	0.7	9.6	11.9	12.3	9.8	13.5	10.8
Sri Lanka	Female	38.5	25.2	N	1.1	12.6	14.7	11.1	7.6	14.0	10.7
Sri Lanka	Both sexes	38.2	26.8	N	0.9	11.1	13.3	11.7	8.7	13.8	10.8
Syria	Male	59.3	47.0	N	0.9	2.0	4.3	4.4	4.2	10.3	8.8
Syria	Female	60.2	42.7	N	1.7	3.0	5.5	3.9	3.8	9.2	7.8
Syria	Both sexes	59.7	45.1	N	1.3	2.5	4.9	4.2	4.0	9.8	8.4
Taiwan	Male	22.7	18.0	N	0.7	5.6	7.4	7.3	4.9	32.3	27.5
Taiwan	Female	24.4	16.2	N	1.8	7.8	8.6	4.4	3.1	26.9	19.8
Taiwan	Both sexes	23.5	17.2	N	1.2	6.6	8.0	6.1	4.1	29.9	24.0
Tajikistan	Male	64.8	52.3	N	0.6	4.1	5.9	4.8	4.2	12.0	10.8
Tajikistan	Female	65.7	48.4	N	1.5	4.8	7.0	4.4	3.8	11.3	10.3
Tajikistan	Both sexes	65.3	50.5	N	1.0	4.4	6.4	4.6	4.0	11.7	10.6
Thailand	Male	25.5	19.1	N	1.0	3.4	5.5	7.4	6.1	26.2	20.5
Thailand	Female	27.2	17.6	N	1.6	5.5	7.3	4.1	3.4	22.0	16.1
Thailand	Both sexes	26.3	18.4	N	1.3	4.4	6.3	5.8	4.8	24.2	18.3
Timor-Leste	Male	41.2	34.0	N	0.6	2.3	3.9	10.9	9.1	12.6	10.7
Timor-Leste	Female	45.6	35.0	N	0.9	4.4	5.7	7.2	6.3	12.4	10.7
Timor-Leste	Both sexes	43.2	34.4	N	0.7	3.3	4.7	9.2	7.8	12.5	10.7
Turkey	Male	39.2	28.4	N	0.9	3.8	5.7	9.7	8.8	27.1	23.2
Turkey	Female	46.2	28.9	N	2.0	5.9	7.5	6.6	6.4	16.9	13.4
Turkey	Both sexes	42.5	28.6	N	1.4	4.8	6.6	8.2	7.7	22.2	18.6
Turkmenistan	Male	69.5	56.9	N	0.6	2.2	3.7	1.6	1.5	11.6	10.7
Turkmenistan	Female	71.7	51.5	N	1.8	2.9	5.1	1.6	1.5	9.7	9.1
Turkmenistan	Both sexes	70.6	54.3	N	1.2	2.6	4.4	1.6	1.5	10.7	9.9
UAE	Male	39.9	30.9	N	1.2	8.2	10.8	5.9	6.0	21.1	15.9
UAE	Female	36.5	24.9	N	1.8	8.8	11.3	4.4	5.0	24.7	17.7
UAE	Both sexes	39.1	29.5	N	1.3	8.3	10.9	5.6	5.8	21.9	16.4
Uzbekistan	Male	68.1	56.7	N	0.6	4.5	6.0	2.3	2.3	10.5	9.7
Uzbekistan	Female	69.5	51.8	N	1.5	5.4	7.1	2.2	2.3	10.4	9.7
Uzbekistan	Both sexes	68.8	54.3	N	1.0	4.9	6.5	2.3	2.3	10.4	9.7
Vietnam	Male	44.8	36.8	N	0.5	3.8	4.9	8.0	7.1	18.6	17.1
Vietnam	Female	42.7	29.2	N	1.2	7.2	8.1	5.8	4.9	15.8	14.3
Vietnam	Both sexes	43.8	33.3	N	0.8	5.4	6.4	7.0	6.1	17.3	15.8
Yemen	Male	56.5	46.4	N	0.9	1.4	2.8	6.4	5.8	12.0	10.4
Yemen	Female	61.7	46.1	N	1.7	2.5	4.0	5.6	5.0	9.4	8.3
Yemen	Both sexes	58.9	46.3	N	1.3	1.9	3.3	6.0	5.4	10.8	9.4

N Not available.
Note: DALY is defined as disability adjusted life year. Myanmar is Burma. UAE is United Arab Emirates.
Source: Institute for Health Metrics and Evaluation, Global Burden of Disease.