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Abstract

Individuals aged 65 years and older currently make up a larger share of the population than ever before, and this group is predicted to continue growing both in absolute terms and relative to the rest of the population. This chapter begins by introducing the facts, figures, and forecasts surrounding the aging of populations across different countries at varying levels of development. In light of these trends, we examine challenges facing graying societies through the lenses of health, economics, and policy development. The chapter concludes with a selection of adaptable strategies that countries might consider to mitigate the strain—and to harness the full potential—of aging populations worldwide.

Keywords: Demography, health economics, health policy, noncommunicable diseases (NCDs), population aging

Introduction

Worldwide, the percent and absolute number of elderly individuals are greater than ever before. With no historical example of such large and rapidly growing cohorts of older adults, the world is entering uncharted waters. Since 1950, the number of older people as a share of the global population increased very gradually, but projections indicate much sharper increases in the coming decades. The UN Population Division projects an increase in the number of individuals aged 60+ from about 901 million today (approximately 12% of the world population) to 2.1 billion by 2050 (21.5%). The number of "oldest old" individuals, defined as those aged 80+, is projected to more than triple from 125 million today (2% of the world population) to 434 million by 2050 (4.5%) (United Nations, 2015). (The distinction between these groups is important, as the needs and capacities of the oldest old tend to differ significantly from those in their 60s and 70s.)

Population aging—the dominant demographic trend of this century—represents aremarkable historical achievement. However, as longevity increases, so does the burden of noncommunicable diseases (NCDs). Together they will usher in societal and policy challenges related to healthcare spending, labor force participation, and social security. In addition, scientists must understand the relationship between chronological age and the quality of those later years of life to respond appropriately to population aging.

Amid these challenges and debates, innovative and proactive responses are needed to mitigate the burden posed by graying societies. This chapter begins by exploring the key facts, figures, and forecasts that characterize global population aging, before examining perceived challenges. Finally, it suggests potential solutions to these challenges. These solutions will require a multi-sectoral approach involving appropriate healthcare resource allocation, policy development, and infrastructure and behavioral adaptations.

Facts, Figures, and Forecasts

Population aging occurs after a dynamic series of demographic changes unfold. These processes, collectively known as the *demographic transition,* often correspond with the transformation of a country from an agrarian society characterized by high fertility and high mortality to an industrial society with low fertility and low mortality. Four key stages comprise this transition: 1) countries begin the transition with equally high birth and mortality rates; 2) population size increases as mortality rates decline, fertility rates remain high, and survival rates improve; 3) the population boom peaks followed by a decrease in the crude birth rate, which outpaces the decrease in the crude death rate; and 4) countries reestablish some semblance of equilibrium in fertility and mortality, albeit at markedly lower levels.

Uneven transitions

Although population aging is occurring globally, its pace and proportion vary across development groups. Figure 1 illustrates this phenomenon. The pyramids, representative of the

United Nations global development categories, depict population composition by age and sex with the blue bars on the left representing the male population and the red bars on the right representing the female population. Over time, the share of the youngest generations contracts across all levels of development—denoted by the shrinking pyramid bases. Since 1950, the youth cohorts (aged 0–14 years) in less developed countries have undergone the most pronounced contraction, decreasing by more than 10 percentage points (from 37% to 26%). In contrast, the least developed countries have consistently maintained the largest shares of youth denoted by the widest pyramid bases in the set. Today, the current share of youth in the least developed countries is more than double that of more developed countries. Projections for 2050 show that the population age structures of more and less developed countries will no longer have the distinctive pyramidal shape that once characterized them, while the working age cohorts of the least developed countries are likely to swell substantially.

In turn, the growth in the share of elderly individuals will continue to be most pronounced among more developed countries in the coming decades. By mid-century, the 60+ cohort will represent nearly one-third of the population of wealthy nations, while the corresponding figure for the poorest countries will be considerably lower at just 10%. An examination of specific countries underscores these trends. For example, Japan currently has the largest elderly population in the world, with one-third of its population aged 60 years and older. This share is projected to continue growing with the portion of those 60+ expected to reach about 43% by 2050. India is also notable due to the sheer size and rate of its older cohort growth: between 2015 and 2050, its elderly population as a proportion of its total population is expected to more than double (9% to 19%). In contrast, the elderly in Sub-Saharan Africa (SSA) made up just 5% of the total population in 2015 and are likely to increase by fewer than three percentage points by mid-century (United Nations, 2015). While the rate of growth among older cohorts varies greatly by region, the general trend signals a graying global population.

Declining fertility
A steady fertility decline is one factor driving up the current and projected shares of old and oldest old individuals. This shift causes a corresponding decrease in the proportion of youths, as depicted in Figure 2. Since 1950, the global fertility rate has halved, dropping from five children per woman to about 2.5 children today. The fertility decline in developing countries has largely fueled this drop, with the least and less developed regions exhibiting the steepest slopes in Figure 3. To observe this trend at the country level we can look to Bolivia: in 1950, the country had a reported fertility rate of 6.9 children per woman; today that figure has decreased by about 60%. Over the next four decades, Bolivia is projected to maintain a fertility rate around replacement level (2.1 children per woman). Iran's fertility rate fell even more precipitously, falling from 6.9 children per woman in 1950 to 1.7 today. Iran's current fertility level—which is well below replacement level—indicates a broader phenomenon whereby declining fertility rates have already or will soon stabilize below the replacement level threshold for a majority of countries worldwide (United Nations, 2015).

Increasing life expectancy

Life expectancy is the second key driver of population aging. Individuals live longer than ever before—increasingly surviving well into and beyond their 70s. Today, global life expectancy at birth is 71 years, which represents almost a quarter-century increase since 1950. By 2050, the UN Population Division projects global life expectancy to increase another six years, as Figure 4 illustrates.

This trend can also be observed at a regional or country level. In SSA, life expectancy has improved remarkably from around 36 years in 1950 to about 57 in 2015, and it is expected to increase to about 69 years by 2050. China has achieved similar gains, with life expectancy increasing from 43 years in 1950 to about 75 in 2015. By 2050, life expectancy in China is projected to reach 83 years (United Nations, 2015). This progress is largely attributed to medical and public health achievements that reduce mortality related to infectious diseases and, more recently, noncommunicable diseases.

However, considerable debate centers on the upper bounds of life expectancy. Some predict that increasingly health-conscious lifestyles coupled with advances in medical technology will enable longevity to continue increasing—perhaps reaching or even surpassing 100 years in wealthy nations by the turn of the century. Another proposition suggests that lifestyle improvements such as reduced alcohol and tobacco consumption, increased seat belt use, and regulated diets will not be enough to stop life expectancy from leveling off at around 85 years as longevity nears its biological limits (Olshansky et al., 2001).

Measuring life expectancy at age 60—not just at birth—allows for more accurate estimation of survival and mortality as populations age. Like life expectancy at birth, life expectancy at age 60 highlights the differences between genders, among income levels, and across world regions, while remaining specific to the older demographic. Recent data indicate life expectancy at 60 years to be highest among women in high-income countries (26.0 years) and lowest among men living in SSA (15.7 years) (Mathers et al., 2014).

The question of quality of life

Shifting focus from life expectancy at birth to life expectancy at 60 challenges the traditional definition of old age and our current understanding of age-specific health profiles. Steady increases in global life expectancy over the last three decades underscore the importance of considering how expansion of life influences quality of life (Mathers et al., 2014). One longstanding hypothesis known as the "compression of morbidity" posits that individuals are living healthier longer, delaying the onset of disease and compressing the period of ill health associated with old age to a shorter and later part of the life cycle (Fries, 1980). Yet, definitive evidence supporting this hypothesis remains elusive, and other scholars have since proposed that such compression has not occurred (Crimmins and Beltrán-Sánchez, 2011; Fries, 1980; Bloom et al., 2015).

Variations of and alternatives to this hypothesis abound. Manton, in 1982, proposed a middle-ground "dynamic equilibrium" scenario suggesting that as mortality declines among the elderly, the prevalence of disability would increase while the severity of disability would be mitigated (Manton, 1982). Others conclude, however, that a compression of disease and mobility loss has not occurred (Crimmins and Beltrán-Sánchez, 2011), while Gruenberg postulates that increased longevity will usher in an expansion of chronic-disease-related morbidity (Gruenberg, 1977).

Progression of large cohorts

The third dominant force contributing to global population aging involves the progression of large cohorts, such as the U.S. post-World War II baby boom generation, to older ages. Figure 1 illustrates the progression of these cohorts as they advance to the top of the population pyramids over time. This phenomenon is not unique to wealthy nations; poorer countries experience a similar trend as a result of large youth cohorts surviving from improved health outcomes. Taken together, decreased fertility, increased longevity, and the aging of large birth cohorts increase the proportion of elderly individuals as a share of the total global population.

Challenges

Longer lives do not necessarily mean healthier lives; rather, increased longevity comes with its own diverse and far-reaching challenges. While this examination is not exhaustive, herein we consider challenges related to the physical and economic burden of noncommunicable diseases (NCDs) that accompanies aging; the care needs of an aging demographic; and the lack of policies designed to address the financial, health, and housing situations of elderly populations.

Noncommunicable diseases: a growing burden

NCDs such as cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes now dominate the global disease landscape. Today, NCDs account for almost two-thirds of the 53 to 56 million annual deaths worldwide (Bloom, 2014). This statistic signals progression through the epidemiologic transition—the process of moving from an age of pestilence and famine to one of chronic illness—which many wealthy, industrialized countries have already completed. For developing countries midway through the transition, such as Bangladesh and Haiti, the double burden of communicable and chronic disease is a difficult reality. Low- and middle-income countries endure a sizable majority of the global mortality attributed to NCDs; of the approximately 28 million NCD-related deaths reported in developing countries annually, nearly half are premature in the sense that they occur before age 70 (World Health Organization, 2015c). In terms of DALYs[1], adults aged 60 years bear more than one-third of the worldwide NCD burden, and the corresponding figure for the oldest old is 7% (Institute for Health Metrics and Evaluation, 2014).

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[1] Disability-adjusted life years, a standard measure of healthy life

Risk factors, both modifiable and nonmodifiable, fuel the growing NCD burden. Genetic composition, gender, and age are among the nonmodifiable attributes that predispose individuals to risk for certain chronic diseases. However, to the benefit of population health, behavior changes can diminish the harm imposed by the most influential modifiable risk factors, such as overweight and obesity, physical inactivity, harmful use of alcohol, and tobacco consumption.

As nutrient-poor, energy-dense foods become more available and consumption of fruits and vegetables decreases, individuals are at a greater risk of gaining excess weight. Over the last three decades, overweight and obesity have grown increasingly prevalent among adults (from about 29% in 1980 to 38% in 2013) and children (from about 10% to 14% over the same period) (Ng et al., 2014). In turn, potentially harmful body-mass index (BMI) levels —defined as 25 kg/m^2 or greater—can increase the likelihood of developing hypertension, high cholesterol, cardiovascular disease, diabetes, and certain cancers.

The caloric energy imbalance induced by poor diet is compounded by an increase in sedentary behavior. Almost one-third of the global population fails to meet the minimum recommendations for a physically active lifestyle (Kohl et al., 2012). This trend is concurrent with the growth of service sector employment at the expense of agriculture and related industries that require physical activity. It is also worth noting that the structure and functionality of the physical environment can have sizable effects on the nature and intensity of physical activity.

Alcohol consumption, which is increasing globally, poses another NCD risk factor when consumed in harmful quantities. At present, the highest consumption levels are reported predominantly in Eastern European countries. Aggressive, episodic drinking behaviors prevalent in many populations heighten the risk of developing heart disease, cirrhosis of the liver, and cancer and of debilitating injury, sometimes as a result of violence. Binge drinking rates are notably high in the Ukraine and the Russian Federation and tend to rise with per capita income across countries. Globally, approximately 6% of mortality is linked to harmful alcohol consumption, with higher death rates attributed to men than to women (7.6% and 4.0%, respectively) (World Health Organization, 2015b).

Tobacco consumption ranks among the most pressing public health threats worldwide, jeopardizing the lives of those who consume smoke and smokeless tobacco products and those exposed to second-hand smoke. Tobacco use heightens the risk for several NCDs, including cardiovascular diseases, lung diseases, and cancer. Approximately six million tobacco-related deaths occur annually, with about 70% of this mortality attributed to adults aged 60 years and older (Institute for Health Metrics and Evaluation, 2014). The highest concentrations of tobacco consumers occur in low- and middle-income countries, and the highest rates of use are reported in Eastern Europe and East and Southeast Asia (Bloom, 2014 ; World Health Organization, 2015d).

Often, risk factors—including but not limited to those described above—increase the likelihood of developing multimorbidity (Banerjee, 2014; Bloom and Shannon, 2014). Living with multiple debilitating conditions also becomes more common with age. Among individuals 65 to 84 years, the prevalence of multimorbidity is 65%, and this figure increases by more than 15 percentage points among those 85 years and older (Banerjee, 2014). The burden of multimorbidity can increase the complexity and cost of treatment, whereby combining disparate regimens to combat multiple conditions can result in unforeseen and adverse interactions (Rechel et al., 2013). Furthermore, age-related memory loss and mobility limitations heighten the difficulty of managing health conditions, while insufficient disposable income and healthcare coverage can strain access to and compliance with costly courses of treatment.

The economic burden of NCDs

Quantifying the burden of NCDs is a significant challenge due to the complexity of expressing it in economic terms, the complicated and diverse nature of NCDs, and the lack of valid and relevant data. Three different approaches are commonly used for this task (Bloom et al., 2011). The first is the cost-of-illness method, a simple accounting approach that measures costs as the number of cases of illness times the per-case sum of medical care costs and lost income. The second approach involves macroeconomic modeling. It views national output as dependent on labor and capital inputs, which NCDs diminish in two ways: 1) labor supply decreases through death and disability and 2) capital decreases by the need to divert resources from investment in capital accumulation and technological progress to NCD treatment and care. The third approach is the value-of-a-statistical-life method, which is rooted in people's revealed or stated willingness to pay to reduce illness or death associated with NCDs.

All methods point to a substantial global economic burden of NCDs. A macroeconomic analysis prepared for the UN High Level Summit on NCDs concludes that cardiovascular disease (CVD), mental health conditions (MHC), chronic obstructive pulmonary disease (COPD), cancer, and diabetes will cost the world $47 trillion in lost output during the next two decades, equivalent to 75% of global GDP in 2010 (Bloom et al., 2011). These estimates also show that CVD and MHC impose the largest economic burden among the five major NCDs and that this burden skews toward wealthy industrial countries due to their relatively high incomes, high levels of health spending, and rapidly aging populations. The estimates also indicate that middle-income countries will experience the sharpest increase in NCD burden of any country group. In addition, more recent analyses show a much greater economic burden in China than in India, predominantly due to China's higher and steeper income trajectory and older population (Bloom and Eggleston, 2014). Taken together, these findings indicate the economic value of NCD prevention and screening; the World Health Organization estimates, for example, that the benefits of interventions aimed at preventing CVD are worth at least three times the costs (World Health Organization, 2011).

Palliative care: an under-utilized practice

The time between the onset of terminal NCDs and death can allow for responsible and inclusive end-of-life decision making, which often involves palliative care. The WHO defines palliative care as "an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual" (World Health Organization, 2015a). Not only can effective end-of-life care help alleviate a patient's painful symptoms, it can also ease the anxieties of the patient and caregivers. Since the 1980s, palliative care has garnered considerable attention and gained traction in high-income settings throughout North America, Europe, and Australia, but sizable unmet need persists worldwide. Estimates suggest that more than 20 million adults globally need end-of-life care and more than two-thirds of this figure comprise older adults (Connor and Sepulveda, 2014).

Financial resources, health system infrastructure, and healthcare worker education represent key barriers to the establishment of successful palliative care practices in developing countries. China and India, the two most populous countries in the world, face some of the steepest challenges in providing palliation to extraordinary numbers of impoverished people. This is due in part to the fact that medical facilities often promote advanced and costly medical technologies over less expensive, yet effective, palliative care options (Rajagopol and Twycross, 2010). For example, analgesics are substantially underused for pain management, particularly in less developed countries. Fear of addiction, inadequately trained health workers, and procurement challenges impede widespread distribution and use of affordable prescription pain medication throughout much of the developing world (Reville and Foxwell, 2014).

Policy implications and needs

The potential effects of global population aging are far-reaching. Population aging raises concerns about labor force participation, slowed economic growth, social protection expenditures, housing markets, and the overall health and economic security of older adults worldwide. Given the accelerating pace of the demographic changes underway, simply fine-tuning established institutions and policies is insufficient. No historical examples are available to inform policy decision making.

A marked decline in labor force participation due to population aging is a commonly predicted prospect (Lee and Mason, 2010). Globally, employment rates tend to increase steadily upon a cohort's entry into the labor force at around 15 to 20 years and remain strong through the prime working years, up to around age 55. However, employment declines consistently among older workers, albeit to varying degrees (Bloom et al., 2014). General employment trends indicate that the drop in labor force participation among older workers is more pronounced in developed countries than in developing or transitional economies, due to established pension

schemes and retirement protection in wealthy nations (International Labour Organization, 2014; Phillipes and Siu, 2012). As the proportion of retirement-age workers grows in coming decades, population aging could potentially impede savings rates and national economic growth, weaken existing pension and healthcare systems, and burden younger generations in the process (Bloom et al., 2015).

Another potentially problematic scenario is one in which population aging slows or perhaps even reverses the engines of national economic growth. Because older individuals do not work and save as intensively as their younger counterparts, diminished labor force participation at older ages could reduce overall workforce size and savings rates. Aggregate labor supply and savings—vital drivers of economic growth—could fluctuate depending on where the majority of a nation's people are in the life cycle. Other things being equal, a country with few working-age individuals relative to its dependent youth and elderly cohorts is likely to experience a slower growth trajectory than a country with a more advantageous (in this case youthful) age structure. East Asia currently faces this problem. The demographic dividend realized between 1965 and 1990 is estimated to account for up to one-third of the region's "economic miracle" (Bloom and Williamson, 1998; Bloom et al., 2000). However, the once-robust cohorts responsible for this coveted boost are now exiting the labor force and jeopardizing the vitality of the regional economy and its constituent national economies.

Economies may also experience the burden of increased social protection expenditures. This situation arises because of the imbalance between growing demands for public pension schemes and the relative or absolute shrinkage in numbers of workers contributing to the system; the longer duration of benefit receipt associated with increased longevity compounds the problem. This issue is likely to be most pertinent among wealthy countries where systems traditionally guarantee a base level of social protection regardless of current income or earnings history. In low- and middle-income countries, the challenges differ mainly due to the large shares of individuals working in the informal sector, the low levels of social security coverage, and the presence of expensive and reform-resistant civil service schemes. Some developing regions, such as SSA and Southeast Asia, face population aging prior to securing comprehensive social security coverage and sufficient resources to support major cohorts approaching or in retirement (Bloom and McKinnon, 2014).

Another challenge relates to housing policies. Accommodating the housing needs of the elderly involves recognizing the marked heterogeneity that exists in residential trends, particularly with regard to income and geography. Additionally, a need exists for a deep understanding of the sensitivities related to independence, economic security, sociability, and connectivity to supportive services. Taken together, these factors underscore the complexity of housing older adults.

For example, aging individuals in high-income countries exhibit distinct housing tendencies and preferences. One such preference is the opportunity to maintain independence in

a familiar environment as aging generations live longer, healthier lives. Since the mid-1800s, the overall number of intergenerational households in the United States has decreased substantially. While nearly 70% of individuals 65 years and older co-resided with their adult kin in the 1850s, this figure had dropped below 15% by the 1990s (Ruggles, 2007). Today, we observe similar trends in Western Europe and the three most developed East Asian countries—Japan, Korea, and Taiwan—where a sizable majority of individuals aged 65 and older live alone or as a couple (Stula, 2012; Ruggles and Heggeness, 2008). These changing housing trends among aging populations are due, in part, to shifts in key demographic indicators, including marital status in older age and fertility rates and timing (Tomassini et al., 2004).

"Aging in place" is one attractive option for many older adults. While a universal definition for this phenomenon remains elusive, the CDC defines this practice as "the ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level" (Center for Disease Control and Prevention, 2013; Baker et al., 2014). To achieve this goal, the planning and design of seniors' residences must be responsive and adaptable to their changing needs and capabilities in a way that satisfies the aforementioned criteria.

In contrast, aging adults in the developing world often depend on the family unit for financial, health, and housing resources in the absence of accumulated assets, formal pension plans, and healthcare schemes. While multigenerational housing remains the most common living arrangement throughout Latin America and the Caribbean, Asia, and Africa, the same factors that catalyzed the devolution of the joint household in developed countries starting a century ago are now affecting the developing world at a more aggressive pace (United Nations Department of Economic and Social Affairs, 2005; Bloom and Luca, Forthcoming).

In countries such as India and China, the traditional multigenerational family unit is evolving at the expense of providing older adults care within the familial setting (Brijnath, 2012; Bloom and Eggleston, 2014). As financial and health resources for elderly Chinese diminish at the household level, new approaches to providing elder care are needed. The urban private sector has been responsive in providing institutional care; however, home-based care continues to be preferred (Feng et al., 2012). Thus, the Chinese government faces the challenge of developing sustainable policies centered on both the regulation of institutional care and the promotion of family-based options.

Policy Responses

Assertions about the negative effects of population aging are disproportionately alarmist in nature. One should consider the countervailing behavioral changes and policy responses available for implementation before becoming resigned to pessimistic conclusions. This approach requires key stakeholders to conduct original analyses and implement novel interventions rather than solely relying on historical models to inform future strategies.

Moreover, with the most dramatic increase in aging yet to occur, policymakers should use this window of opportunity to prepare for the demographic changes underway. Initiating these actions in a proactive and timely manner could better equip countries to manage the social, economic, and political effects of population aging.

Behavioral changes

With regard to NCDs, although the growing prevalence of chronic illness is correlated with some nonmodifiable risk factors, it is more heavily influenced by modifiable risk factors, as discussed above. These lifestyle-related behaviors allow for disease mitigation or prevention through early intervention. A recent study concludes that over the course of a 15-year period, at least 21 million premature deaths could be prevented worldwide among individuals 70 years and older through lifestyle changes centered on reducing the following risk factors: tobacco use, harmful alcohol consumption, salt intake, elevated blood pressure and glucose levels, and obesity (Kontis et al., 2014). This level of intervention, known as primary prevention, can be beneficial throughout the life course and can be executed through highly cost-effective channels, including improved nutrition, increased physical activity, better immunization and cancer screening compliance, and increased health literacy (Bloom et al., 2011).

In terms of market effects, as the share of young labor force entrants shrinks and markets tighten, companies will need to consider onboarding and retaining older workers at higher rates. Indeed, an increasing number of professionals are working beyond the age of 50 while reporting high rates of satisfaction and engagement in the workplace (Brown et al., 2010). By incentivizing older workers to postpone retirement, companies could play an important role in prolonging the "work lifespan"—an advantageous prospect for increased savings rates, human and physical capital accumulation, and technological advancement. Human resource protocols must become more responsive and cater more to older workers. These adaptations could involve innovations such as introducing flexible schedules, offering opportunities for reskilling, and instituting worker wellness programs to cut healthcare costs and absenteeism and to promote worker loyalty (Bloom and Canning, 2012).

Important to note is that behavioral responses to population aging are not solely the responsibility of the elderly; economic and social trends occurring in parallel with population aging can also alleviate some of the pressure. For example, declining fertility rates introduce opportunities for strengthening the labor force, specifically in the realm of human capital cultivation. At the household level, decreased fertility rates imply that families are rearing fewer children and can designate more attention and resources to each child—particularly with regard to health and education. Also, with fewer children, mothers can reallocate time otherwise spent raising children to more economically productive activities. This prospect could increase the purchasing power of the family unit and bolster the overall size and productivity of the labor force.

Policy approaches

Inflexible and outmoded policies governing populations are a bigger challenge than population aging itself. As individuals survive to older ages with low morbidity, many will plan on maintaining or extending their contributions to society. Some seniors will attempt to fulfill this desire by prolonging their careers. Despite these intentions, potent incentives for retirement at the age of 60 to 65 are currently entrenched in many of the world's social security schemes. Additionally, in high-income countries where a minimum level of social security protection is typically guaranteed, maintaining comprehensive coverage rates at current benefit levels will likely be unsustainable. Meanwhile, in low- and middle-income countries, the possibility that advanced stages of population aging will precede the establishment of fully formed and functioning pension systems is daunting. Raising the retirement age—a policy response that ranks among the most mooted solutions—is an obvious workaround in high- and middle-income countries given the notable increases in life expectancy at 60 years. Several high-income countries such as Australia, France, Greece, Ireland, and the United Kingdom are gradually raising the statutory retirement age. However, the acceleration of such reforms is driven mainly by cost-cutting fiscal objectives associated with the post-2008 financial crisis rather than deliberate, labor-supply-enhancing responses to increased longevity.

As the labor supply declines and large cohorts of workers reach retirement, another option involves more flexible pension arrangements, such as partial pensions for seniors, which could help offset the financial strain on national social security systems. Moreover, the economic benefits of this policy approach could be magnified if executed in concurrence with raising the retirement age. A review of pension policy reform literature, which considers movement both toward and away from pay-as-you-go systems, concludes that no silver bullet approach to alleviating old-age dependency exists (Turner, 2006; Barr and Diamond, 2009). Given these findings, policy reform should be tailored to meet the distinctive needs of each aging country.

Immigration reform could serve as another instrument for offsetting the contraction of working-age populations. Individuals willing to emigrate are often self-selected for work ethic, ambition, and tolerance for risk, positioning them as an attractive subset of the job-applicant pool and making their contribution an effective antidote to population aging. Compared with many developing countries where liberalized immigration policy is met by strong opposition, the United States demonstrates how an influx of immigrants can serve not only to diversify the labor force but also to brace it from the impact of large aging cohorts settling into retirement.

Conclusion

Past and future demographic trends signal a sea change in the global demographic landscape. Wealthy, developed countries exhibit much more advanced stages of population aging than countries still progressing through or recently completing the demographic transition. While overarching trends such as declining fertility rates and increasing life expectancies are nearly

ubiquitous, the pace of these changes varies widely across countries. In turn, as greater shares of populations survive to older ages, issues of health, housing, and economic growth and sustainability surface.

Aging populations have the potential to place a crushing strain on social protection schemes, and unmanaged NCDs threaten to rob the global economy of trillions of dollars in lost output. Ominous predictions such as these are often the default outlook when analyzing population aging. Responding to demographic shifts is a formidable task, but governments and civil societies have an arsenal of both offensive and defensive strategies at their disposal to defuse such alarmist scenarios. The correct combination of strategies, including behavioral and policy responses, is largely context specific and requires careful analysis. Equipped with the facts and briefed on the solutions, governments, businesses, families, and individuals have the opportunity to prevent demography from becoming destiny.
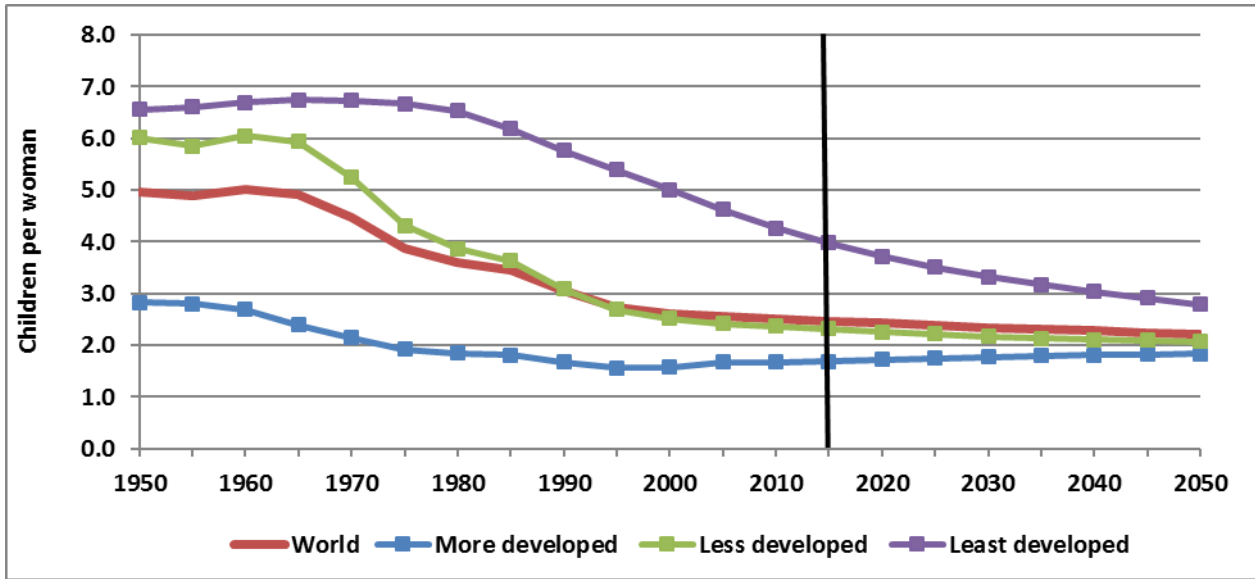
Figure 1: Global Demographic Trends
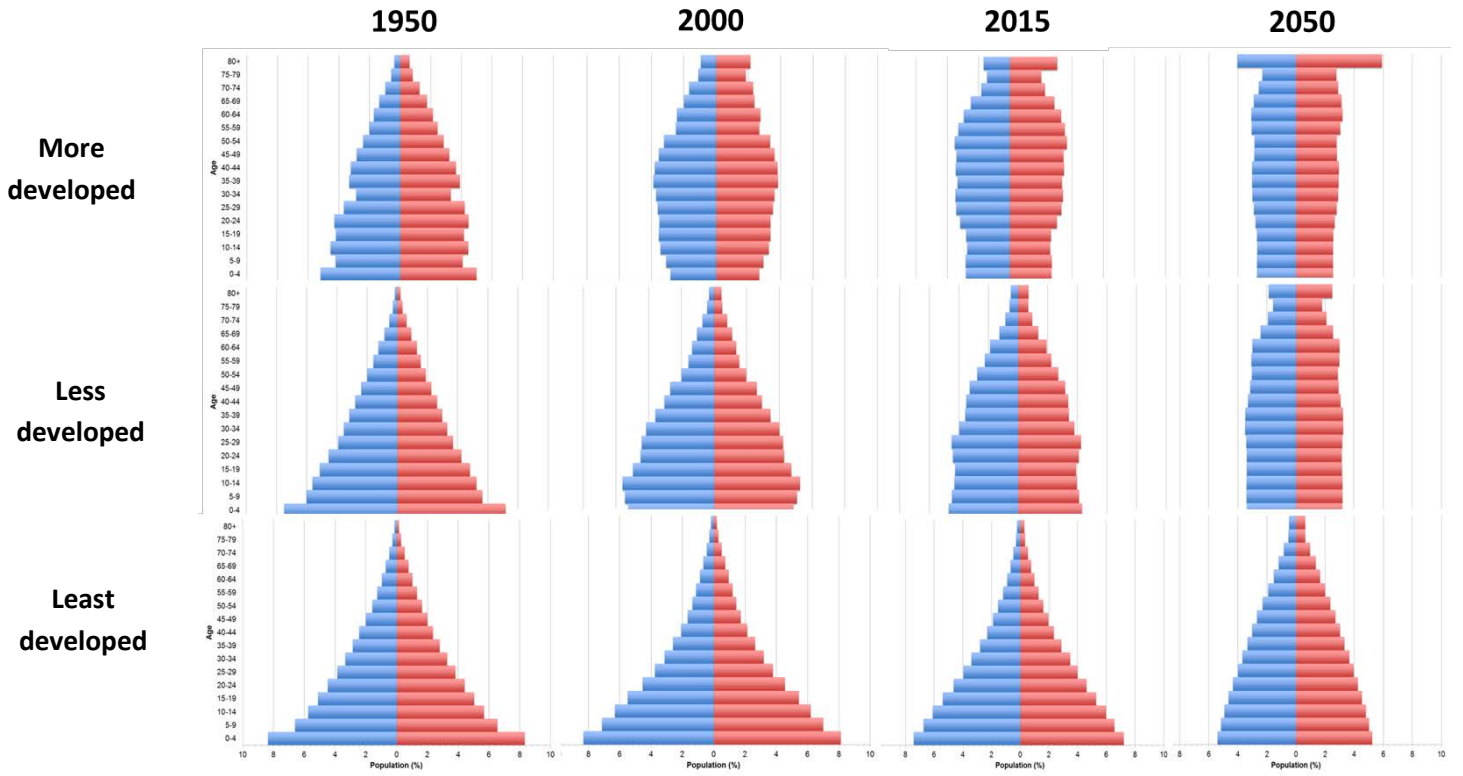
Source: United Nations (2015).
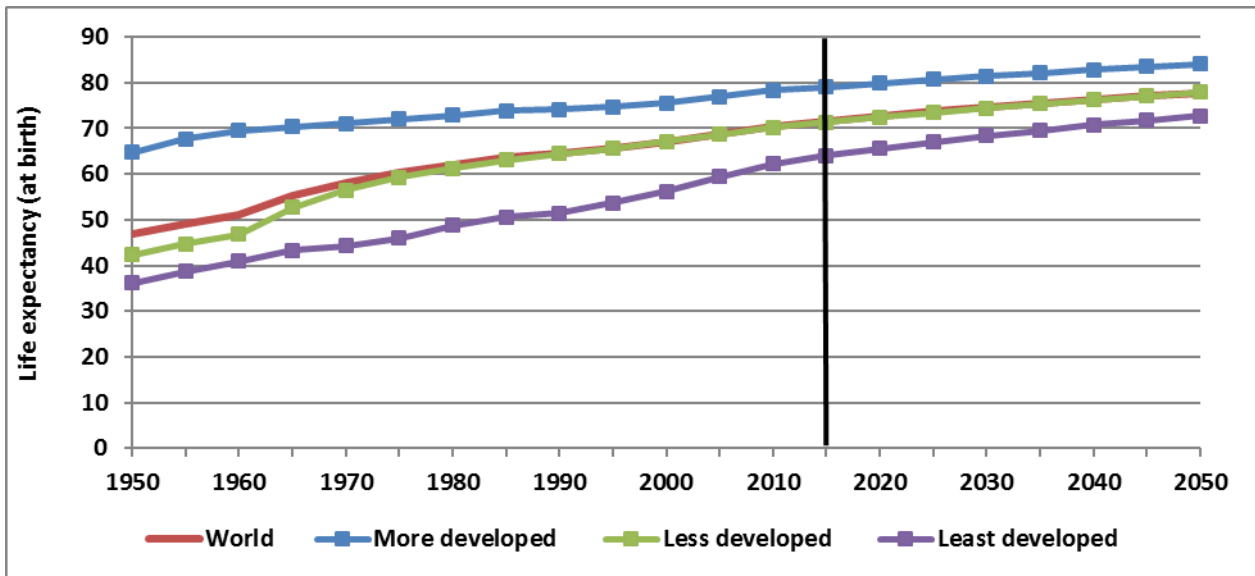
Figure 2: Population Share by Age Group
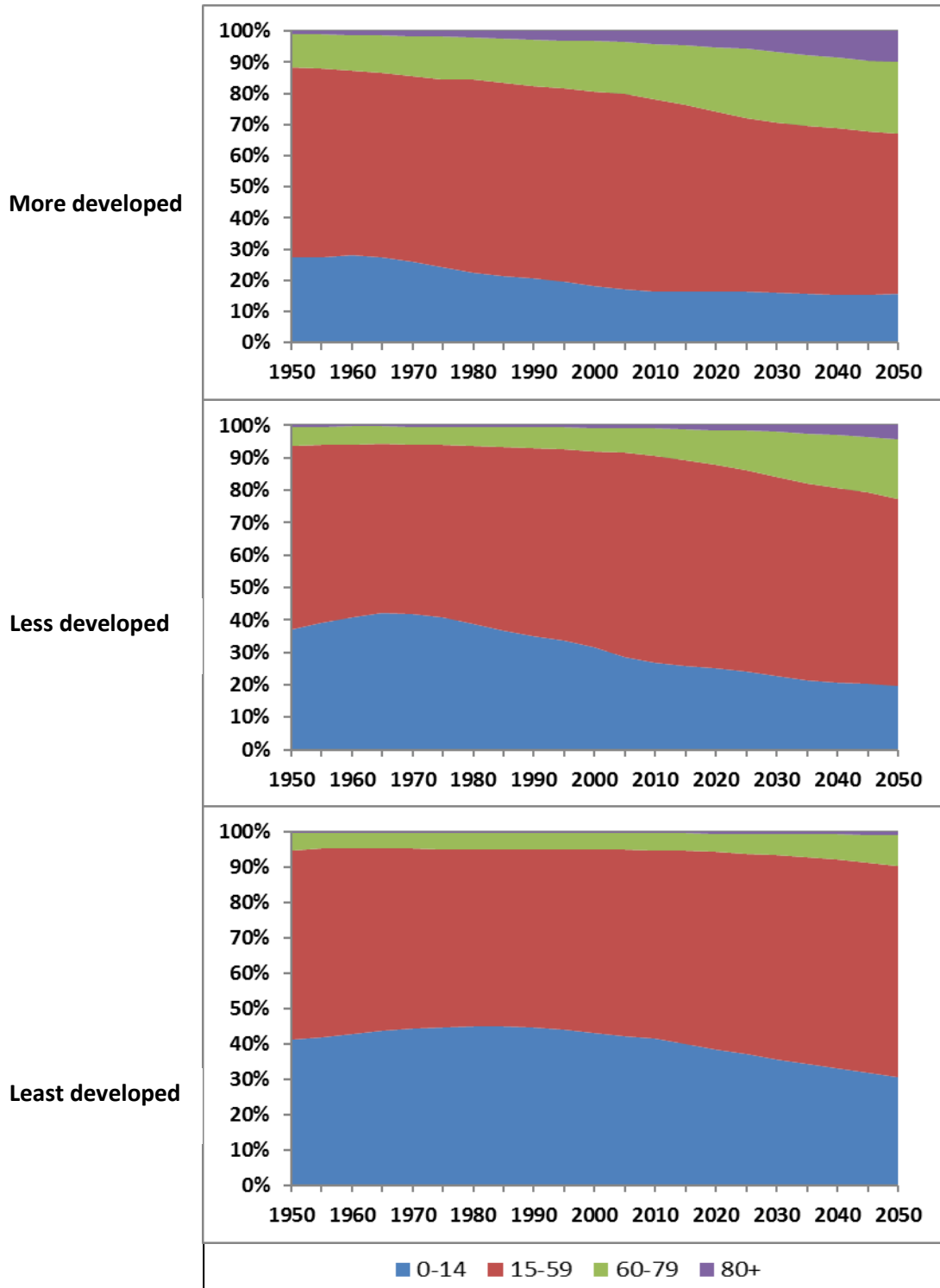
Source: United Nations (2015).

Figure 3: Global Fertility Rates

Source: United Nations (2015).

Figure 4: Global Life Expectancy

Source: United Nations (2015).

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