Shades of Gray: A Cross-Country Study of Health and Well-Being of the Older Populations in SAGE Countries, 2007–2010

International Population Reports

By Wan He, Mark N. Muenchrath, and Paul Kowal

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Contents

Text

Text Figures

Text Tables

Definition Boxes

Appendixes

Introduction

The world's population is aging, primarily as a function of declining fertility, coupled with increasing life expectancy. Aging is occurring not only in high-income countries but in middle- and low-income countries as well.[1] Moreover, the speed of aging in middle- and low-income countries will outpace that of the high-income countries (Kinsella and He, 2009). Although considerable attention has been paid to the aging of populations around the world, the vast majority of this attention and related research has focused on higher-income countries. Yet about 65 percent of the world's population 60 years and older lived in less developed countries in 2010, and this proportion is projected to be 80 percent by the year 2050 (U.S. Census Bureau, 2012).

The health status of the aging population is essential not only to those who comprise this age group, but also to the broader population because of the impacts on social and economic systems. As the older population grows not only in size, but more importantly in their proportion of the total population, the potential implications for society will be increasingly salient. Understanding differences in the health of older populations across and within countries is critical for planning health care services and social support systems, and for designing population health policies. However, relatively few lower-income countries have the age-specific health and disability data necessary to determine basic population health parameters. Even less understood is which morbidity trajectory their respective aging population is following—expansion of morbidity, where people are living longer with more disease and disability (Gruenberg, 1977; Schneider and Brody, 1983); compression of morbidity, with delays in the age at onset and progression of disease (Fries, 1980, 2003); or a dynamic equilibrium where disability increases but is not as severe (Manton, 1982; Manton, Gu, and Lamb, 2006).

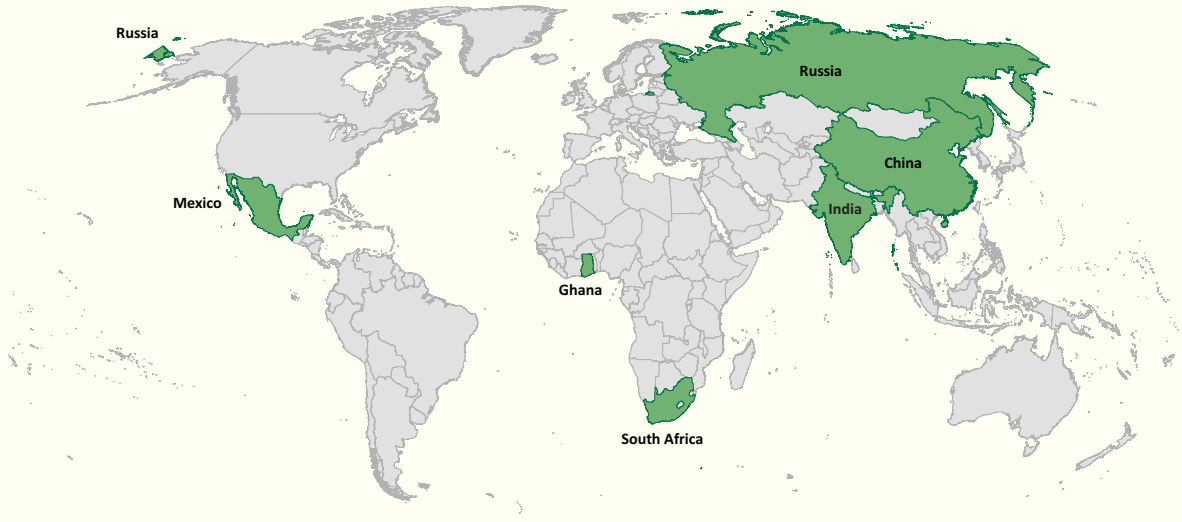
A major challenge in research on health differences across countries at older ages involves measurement of health outcomes (Banks and Smith, 2011; Crimmins, Garcia, and Kim, 2010; National Research Council, 2001). Self-reported health remains a cornerstone of health and epidemiological studies, but concerns about incomparability of self-reported health across studies and over time remains a problem for monitoring population health trends (Salomon, et al., 2009). In recent decades, a number of longitudinal or cross-national surveys, including the U.S. Health and Retirement Study (HRS), the Study on Health, Ageing, and Retirement in Europe (SHARE), and the World Health Survey (WHS), used the anchoring vignette methodologies to improve cross-country calibration of self-reported health. However, adjusting for these reporting biases across the various higher and lower income countries remains problematic. More recently, in response to this challenge, aging research studies have been adding objective health measures in an effort to improve estimates of the true levels of health.

As part of this greater effort, the World Health Organization's (WHO) Study on global AGEing and adult health (SAGE) is working to improve measurement strategies across countries, while recognizing the need for further exploration to understand what underpins cross-country health differences (Kowal, et al., 2010). SAGE was conducted in six countries—China, Ghana, India, Mexico, Russia, and South Africa—across four different world regions (Figure 1).[2] In addition to the consideration of geographic range and population size, these countries were representative of low- to upper-middle income countries and were at different stages of the demographic and epidemiological transitions (see Appendix C for more information on selection of SAGE countries).

[1] The World Bank classifies member economies into low income, lower-middle income, upper-middle income, and high income, according to gross national income per capita. For more information on the classifications as of the year 2010, see World Bank, 2011.

[2] The four world regions are based on United Nations classifications—Africa (Ghana, South Africa), Asia (China, India), Europe (Russia), and Latin America and the Caribbean (Mexico).

Figure 1.
SAGE Countries: China, Ghana, India, Mexico, Russia, and South Africa



Source: U.S. Census Bureau, 2012. Map created using international boundaries from U.S. Department of State.

This report uses SAGE Wave 1 data (2007–2010) and provides an overview of the "graying" populations in these six middle- and low-income countries.[3, 4] Analysis in this report focuses on comparisons across all six countries, or a subset of these countries, leaving in-depth, country-specific investigations to future reports. The report starts with *Aging in SAGE Countries*, which offers an overview of the aging process in these six countries, using the U.S. Census Bureau's International Data Base (IDB), population projections data from the United Nations, and health data from the WHO. The report then presents findings from the SAGE data in the following sections: *Demographic and Socioeconomic Characteristics*, *Health State and Chronic Conditions*, *Risk Factors and Preventive Health Behaviors*, *Disability*, *Life Satisfaction and Quality of Life*, *Depression*, and *Health Care Utilization*. The health variables are cross-examined by age (50–69, 70 and older), sex, and urban/rural residence. The *Summary and Discussion* section provides conclusions from the SAGE data and also raises questions for future research. SAGE survey related information is included in the final section *Sources of the Data and Accuracy of the Estimates*.

The analysis in this report is based on self-reported responses. Estimates provided in this report are weighted. All comparative statements in the text have undergone statistical testing and are significant at the 90 percent confidence level unless noted otherwise. Note that not all comparisons shown in the figures and tables have undergone statistical testing and the differences between these estimates may not be statistically significant. Caution is needed when comparing data presented in the figures, text tables, and appendix tables.

[3] The SAGE Wave 1 data were collected in China in 2008–2010, Ghana in 2007–2008, India in 2007–2008, Mexico in 2010, Russia in 2007–2010, and South Africa in 2007–2008.

[4] According to the World Bank (2011), during 2007–2010, China was classified as a lower-middle income country; Ghana as low income; India as low to lower-middle income; and Mexico, Russia, and South Africa as upper-middle income countries.

Aging in SAGE Countries

While the older population is often defined as people aged 60 and older or 65 and older, these age cut-offs may not be as relevant for less developed countries where life expectancy at birth as of 2010 was 12 years lower, on average, than in more developed countries. Furthermore, the majority of the older population—whether it is defined as 50-, 60-, or 70-plus years of age—reside in less developed countries (U.S. Census Bureau, 2012).

Growth of the 50-plus population. People 50 years and older represented 21 percent of the combined 2010 SAGE six-country total population and are projected to reach almost 40 percent in 2050, increasing from 598 million to 1.3 billion (U.S. Census Bureau, 2012). More specifically, for each of the SAGE countries except Russia, the proportion aged 50 and over of the total population is projected to about double from 2010 to 2050 (Table 1). Russia's population aged 50 and older is projected to experience slower growth than other SAGE countries, in part because it already represented a third (33 percent) of total population in 2010.

In all SAGE countries, those aged 50 and over in 2007–2010 were also part of the post-World War II baby boom that resulted from peacetime following a protracted period of war. Additional factors contributed to the baby boom. In India, rapidly falling infant mortality in the early 1950s coupled with a lagging fertility decline, produced a large birth cohort (Bloom, 2011). In China and Russia, government programs also played a role—China's land reform of 1950–1951 redistributed land to tenant farmers and the landless population, thereby creating demand for more family labor to farm the newly acquired land (Banister, 1987). Russia's child-allowance payments offered by the former Soviet Union government in the 1950s encouraged couples to have more children (Heer, 1977).

Table 1.
Population Aged 50 and Over for SAGE Countries: 2010–2050
(Numbers in thousands)

Country	2010		2020		2030		2040		2050	
	Number	Percentage of total population	Number	Percentage of total population	Number	Percentage of total population	Number	Percentage of total population	Number	Percentage of total population
China	329,714	24.8	459,245	33.2	548,582	39.4	622,395	45.8	636,408	48.8
Ghana	2,662	10.9	3,957	13.7	5,665	17.2	8,126	22.0	10,816	26.9
India	191,853	16.4	264,913	20.0	355,586	24.3	448,223	28.5	540,424	32.6
Mexico	19,508	17.3	27,969	22.4	37,837	28.0	46,978	32.8	54,809	37.1
Russia	46,579	33.4	48,524	36.7	50,141	40.4	54,024	46.4	49,932	45.7
South Africa	8,029	16.3	9,067	18.7	9,716	19.9	11,587	23.6	13,585	27.5

Source: U.S. Census Bureau, International Data Base, accessed on February 27, 2012.

Furthermore, 50 years old in some SAGE countries signifies qualification for old-age social insurance programs, unlike in many developed countries where the eligibility age is often 65 or older. For example, in China, the qualifying age for basic pension insurance is 60 years for men, 60 for professional women, 55 for nonprofessional salaried women, and 50 for other categories of women; in India, the eligibility age for the pension scheme is 58 years; and in Russia, it is 60 years for men and 55 for women (Social Security Administration, 2010b, 2011a).[1] Moreover, in China, early retirement has been used to deal with bankruptcies, resulting in involuntary exit from the labor force for some men and women in their forties (Giles, Wang, and Cai, 2011).

Median age. The median age of a country is an indicator of population aging and is projected to continue increasing in all six SAGE countries. Russia's median age (39 years as of 2010) is currently the highest among the six countries (U.S. Census Bureau, 2012). China follows with a median age of 35 years, and the remaining four countries are all less than 27 years. China is projected to pass Russia in 2050 with its median age projected to reach 49 years, with Russia following closely behind at 46 years. Ghana and South Africa are projected to remain the youngest at about 34 years.

Life expectancy and healthy life expectancy. Population health disparities across countries have been the subject of much debate, followed by scrutiny of the determinants behind these differences (Centers for Disease Control and Prevention, 2007; National Institute on Aging, 2007). Examination of life expectancies (LE) at birth and at the age of 60 illustrates differences in population health across the six SAGE countries. For the period 2010–2015, Mexico's LE at birth is estimated to be the highest at 77 years old, followed by China (74 years), Russia (68 years), India (65 years), Ghana (58 years), and South Africa (53 years) (United Nations, 2009). Life expectancy at the age of 60 for 2010–2015 is highest in Mexico (22 years), followed by China (20 years), Ghana, India, and Russia (17 years), and South Africa (16 years) (ibid.).

Healthy life expectancy (HALE) is the number of healthy years, free from disability, that a person can expect to live given the current trends in deaths and diseases (WHO, 2008a). According to the WHO 2007 estimates of HALE at birth for both sexes combined, Mexico again led these six SAGE countries, with China following closely, then Russia, India, Ghana, and South Africa (67, 66, 60, 56, 50, and 48 years, respectively). HALE at the age of 60 for these six countries had the same order—Mexico, China, Russia, India, Ghana, and South Africa (16, 15, 13, 12, 11, and 10 years, respectively). The impacts of HIV/AIDS in South

DEFINITION OF HALE

HALE, healthy life expectancy, is a population health indicator that combines mortality and health into a single health state utility score. The difference between life expectancy and HALE is the average number of years lived in ill health over a person's life. Two sets of time-series data are required to generate HALE measures: (1) age-specific mortality rates; and (2) age-specific measures of average health status (Berthelot, 2003). WHO's Model Life Tables were used for the mortality component (WHO, 2006), while death registration data, population-based epidemiological studies, disease registers, and notification systems were used to estimate the health status component (WHO, 2008a).

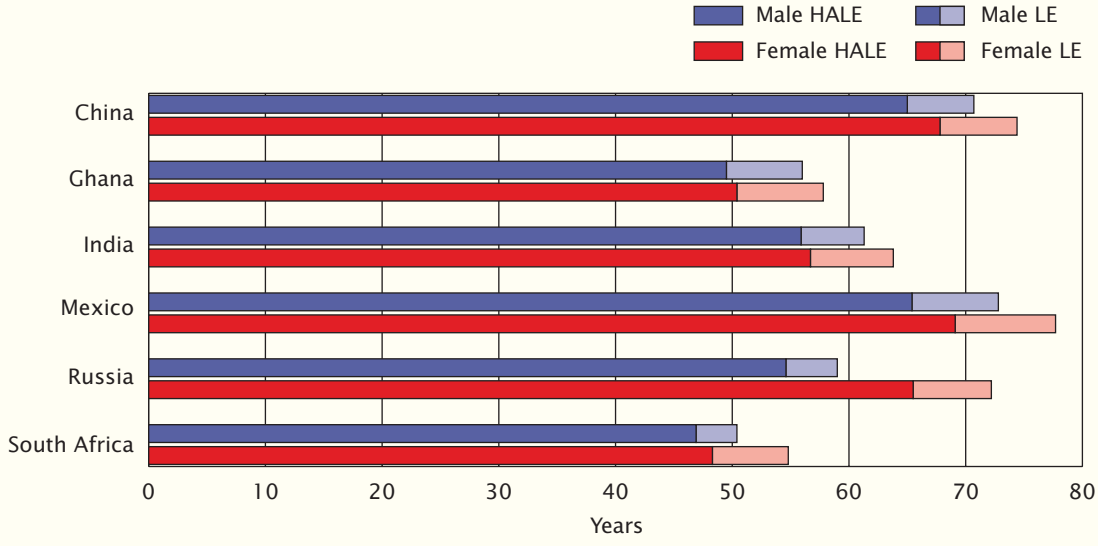
[1] The eligibility age for old-age social insurance for Ghana is 60; Mexico, 65; and South Africa, 60 (Social Security Administration, 2010a, 2011b).

Africa, widespread malaria in Ghana, and alcoholism in Russian men are apparent in their lower LE and HALE.

The differences in HALE and LE at birth by sex for the SAGE countries in 2007 are illustrated in Figure 2. Across countries, HALE at birth ranged from a low of 47 years for South African men, reflecting the impacts of HIV/AIDS, to a high of 69 years for Mexican women.

The within-country sex gap for HALE was largest in Russia, with women enjoying 11 additional years of good health than men. Figure 3 shows the HALE and LE at the age of 60 by sex. The differences in HALE at the age of 60 favored women over men by 1 year in Ghana, India, and South Africa, 2 years in Mexico and China, and 3 years in Russia. The highest HALE at the

Figure 2.
Healthy Life Expectancy (HALE) and Life Expectancy (LE) at Birth by Sex: 2007



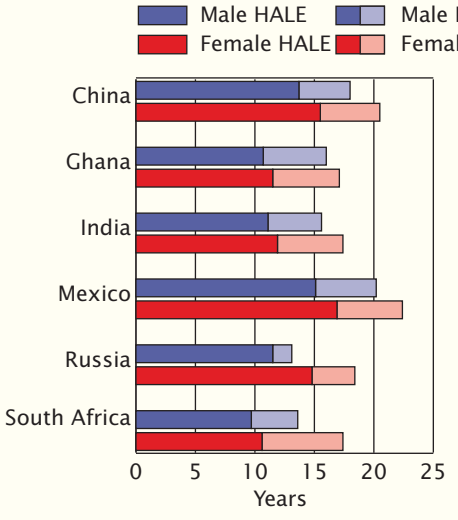
Note: Healthy Life Expectancy (HALE) is the number of healthy years, free from disability, that a person can expect to live given the current trends in deaths and diseases.

Sources: United Nations, 2009, *World Population Prospects: The 2008 Revision*; World Health Organization, 2008, *The Global Burden of Disease: 2004 Update.*

age of 60 was found among Mexican women (17 years) and was lowest among South African men (only 10 years).

The burden of disease. Population aging is likely to be accompanied by an increase in chronic disease burden. It is estimated that 44 percent of the total burden of disease in China in 2004 was from people aged 45 and older, and this figure is projected to increase to over 65 percent by the year 2030 (Chatterji, et al., 2008). The same figure for India in 2004 was 26 percent, expected to rise to 46 percent by 2030. The recently updated Global Burden of Disease estimates indicate that among SAGE countries, the highest age-standardized overall disease burden per capita was in Ghana followed by South Africa (WHO, 2008a). Mexico and Russia were next with similar levels of per capita burden, followed by India and China at lower levels.

Figure 3.
Healthy Life Expectancy (HALE) and Life Expectancy (LE) at Age 60 by Sex: 2007



Note: Healthy Life Expectancy (HALE) is the number of healthy years, free from disability, that a person can expect to live given the current trends in deaths and diseases.

Sources: United Nations, 2009, *World Population Prospects: The 2008 Revision*; World Health Organization, 2008, *The Global Burden of Disease: 2004 Update.*

Demographic and Socioeconomic Characteristics

The report now focuses on findings from SAGE. The analysis in this report defines the older population as those aged 50 and over and the oldest old as 70 and over. SAGE data showed that the demographic and socioeconomic characteristics of the older population differed widely across the six countries (Table 2).[1] While the age structure of each country was unique, there were some similarities across countries. About half of the older population was younger than 60 years old in China, Mexico, and South Africa, reflecting a relatively younger age structure than the other SAGE countries. Russia stood out with a skewed distribution by sex; older women made up 61 percent of the total 50-and-older population. India remained largely a rural society, with more than two-thirds residing in rural areas; in contrast, the majority of older Mexicans, Russians, and South Africans lived in urban areas.

[1] The estimates from the SAGE sample may differ from population census results or estimates based on other survey samples. For sampling frame, weighting, and sampling and nonsampling error, see the Sources of the Data and Accuracy of the Estimates section. The standard errors for estimates listed in Table 2 are available in Table B-1.

Table 2.
Selected Demographic and Socioeconomic Characteristics of Population Aged 50 and Over: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Characteristic	Country					
	China	Ghana	India	Mexico	Russia	South Africa
Age						
50 to 59	50.7	40.4	44.1	48.1	45.5	49.9
60 to 69	27.5	27.3	30.3	25.6	24.7	30.6
70 and older	21.9	32.3	25.6	26.4	29.8	19.5
Sex						
Male	49.9	49.7	50.5	46.8	38.9	44.1
Female	50.1	50.3	49.5	53.2	61.1	55.9
Residence						
Urban	44.3	40.6	31.2	78.8	73.2	64.9
Rural	55.7	59.4	68.8	21.2	26.8	35.1
Marital Status						
Never married	1.1	1.3	0.7	7.0	2.7	14.3
Married/cohabiting	85.6	60.6	74.9	73.0	58.2	55.9
Separated/divorced	1.6	12.2	0.5	4.5	9.9	5.9
Widowed	11.7	25.9	23.9	15.5	29.1	23.9
Educational Attainment						
No education	42.4	64.3	61.7	55.6	1.9	48.6
Primary completed	20.6	10.9	14.8	24.0	5.5	22.7
Secondary completed	20.1	4.0	9.9	9.9	20.1	14.5
High school completed	12.6	17.1	8.5	2.4	53.9	8.4
College completed	4.2	3.6	5.2	8.1	18.5	5.7
Work Status						
Currently working	50.3	70.1	57.0	60.8	40.5	34.8
Not working, disabled	3.4	9.9	14.8	6.8	–	14.4
Not working, retired	37.7	13.3	17.0	9.7	–	32.2
Not working, other reason	8.6	6.7	11.1	22.7	59.5	18.7
Employment or Retirement Benefits						
Pension	36.7	9.5	9.5	20.6	42.5	28.9
Medical	41.6	8.4	7.6	23.9	17.4	18.0
Food	38.2	27.7	5.9	3.7	5.4	11.4
Cash	14.9	10.7	13.3	6.0	38.2	29.8
No benefits	14.6	27.5	64.7	0.8	30.7	9.1
Other	0.6	2.2	5.0	70.0	1.0	2.4

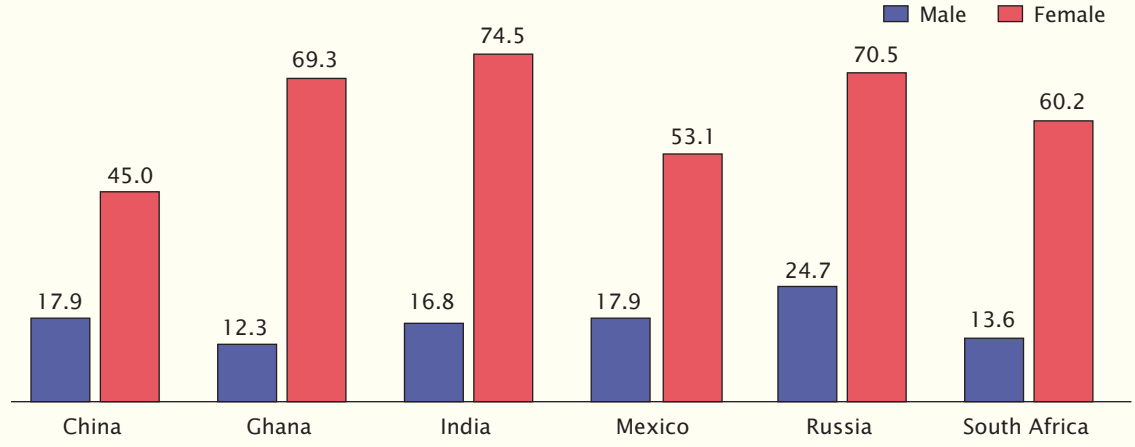
– Represents or rounds to 0.0.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Figure 4.

Widowhood for Population Aged 70 and Over by Sex: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/*)



Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

The older population in SAGE countries was mostly married with a sharp increase in widowhood for the oldest-old population. Older Russians had the largest difference in widowhood between age groups—50–69 years old, with 17.2 percent widowed; and 70 years and over, at 56.9 percent (Table A-1). Widowhood was concentrated among oldest-old women, with higher levels of widowhood than men in each of the countries (Figure 4). A relatively high proportion of Indian, Russian, and Ghanaian women aged 70 and over were widowed (74.5 percent, 70.5 percent, and 69.3 percent, respectively).[2] South African women aged 50 and older had an unusually high share of never married at 19.0 percent (Table A-1). Separation or divorce was more common among older women in Ghana (17.3 percent) and Russia (9.6 percent).

Educational attainment differed greatly by country, sex, and urban/rural residence. Older Ghanaians had the lowest educational level among the SAGE countries, with over 64 percent of the older population having no formal education (Table 2).[3] India was a close second with 61.7 percent lacking formal education. In comparison, primary education was nearly universal in Russia. Only 1.9 percent of older Russians had no formal education and nearly three out of four had a high school degree or higher. Consistently for all SAGE countries, those aged 70 and over, women, and those living in rural areas had an educational disadvantage, each with a higher percent without formal education and a lower percent with a college degree, compared to those aged 50 to 69, men, and those living in urban areas, respectively (Table A-1).[4]

The majority of those aged 70 and over in all six countries had already transitioned from the paid workforce to not working (Table A-1).[5] Ghana, however, still had a substantial share of their oldest-old population currently working, with about half employed. On the other hand, approximately two out of three oldest-old Chinese and South Africans had retired. Many Indians in this age group did not work due to a disability (25 percent).

The types of benefits older people receive from their current employment or the job they retired from varied greatly by SAGE country.[6] More than six out of ten Indians reported receiving no benefits from their current work or their last job before retirement, while almost all older Mexicans enjoyed some benefits. Russians reported the highest share receiving pensions and cash bonuses from their employment.[7] Many older Chinese received pensions, nearly 37 percent, yet even more reported receiving a combination of nonmonetary benefits, such as medical and food benefits.

[2] The percentages are not statistically different from each other.

[3] Educational attainment used International Standard Classification of Education (1997) for standardizing the levels of education across the countries (UNESCO, 2006). Each SAGE country's education groups/years were converted to a standard that is represented by the categories used in this report.

[4] The difference between South African men and women aged 50 and over without formal education is not statistically significant. The difference between urban and rural Russians aged 50 and over without formal education and those with college education are not statistically significant.

[5] The SAGE question on current work status was: "Have you worked for at least 2 days during the last 7 days?"

[6] The SAGE question on job benefits was: "In this main job, do/did you receive any of the following benefits in addition to your payment in cash or in kind?"

[7] The difference between Russians and Chinese receiving pensions is not statistically significant.

Health State and Chronic Conditions

Valid, reliable, and comparable health measures are essential components to inform health policy and programs. Health in SAGE is viewed as a multidimensional attribute of individuals. Health state used in this report encompasses eight health domains and the composite score reflects the overall health state of individuals.

Among the six SAGE countries, the mean health score for both sexes combined ranged from 53.1 for India to 68.1 for China (Table A-2). Consistent across all six countries, men had higher health scores than women and urban residents higher than rural residents. The health score was negatively associated with age. Figure 5 illustrates the relationship between mean health scores and age for the SAGE countries and shows lower health scores with increasing age. China had the highest health score across most of the ages, while India had the lowest at most ages.[1]

[1] The health scores for the 20-29 age group for India and Mexico, and for the 90-plus age group for China and South Africa, and for India and Russia are not statistically different from each other within the paired comparisons. Most of Mexico's health scores are not statistically different when the neighboring age groups are compared.

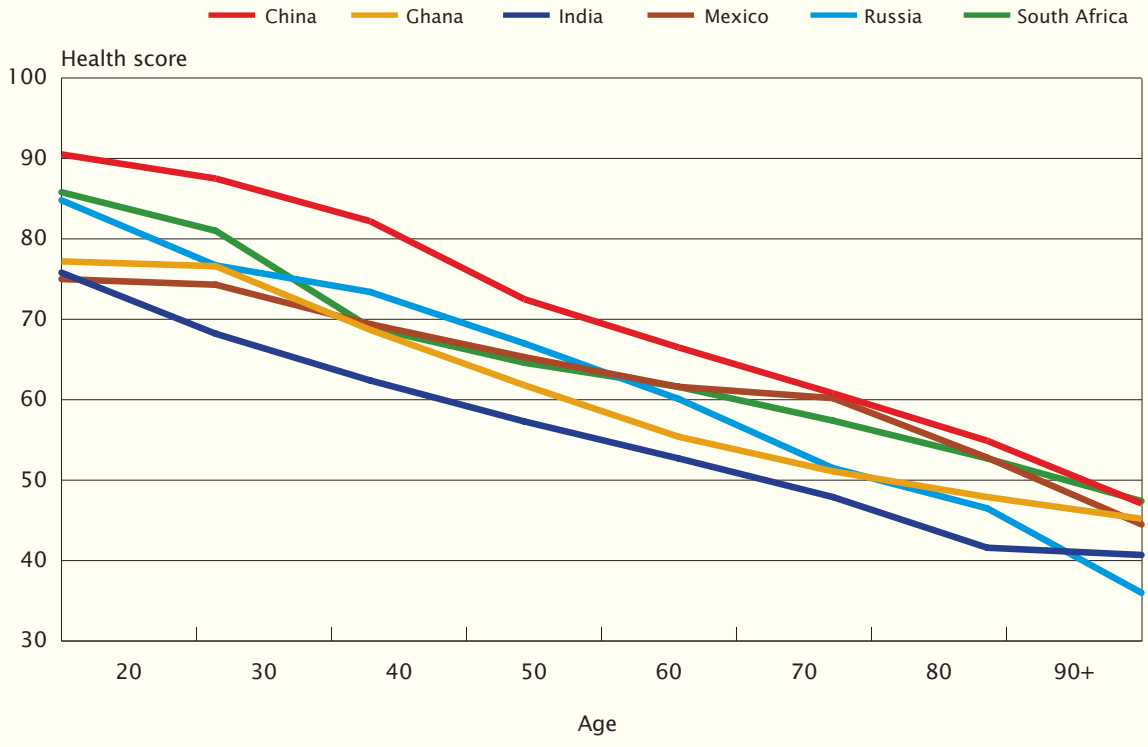
DEFINITION OF HEALTH STATE SCORE

Health state scores were calculated based on self-reported health in eight health domains covering affect/emotions, cognition, interpersonal activities and relationships, mobility, pain, self-care, sleep/energy, and vision (Salomon, et al., 2003). The SAGE composite health score was derived from 16 responses, two questions for each domain, using a Rasch partial credit model of Item Response Theory (Wilson, Allen, and Li, 2006). Chi-square fit statistics were calculated to determine how well each item contributed to a common global health measurement. The calibration for each of the health items was taken into account and the raw scores were transformed into a continuous cardinal scale, where a score of 0 represents the worst health and a maximum score of 100 represents the best health.

Figure 5.

Mean Health Scores for Population Aged 20 and Over by Age: 2007–2010

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/*)



Note: The composite health scores were calculated based on self-reported health in eight health domains and transformed into a continuous cardinal scale, where 0=worst health, 100=best health.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Chronic diseases, or noncommunicable diseases (NCDs), are diseases of long duration and generally slow progression, and are by far the leading cause of mortality in the world (WHO, 2011b). Increasingly, NCDs are linked to poverty and socioeconomic disparity and are no longer considered "diseases of affluence" (Narayan, Li, and Koplan, 2010). The WHO reported that the proportion of "premature" NCD deaths (under 60 years old) in lower-middle income countries (28 percent) was more than double the proportion in high-income countries (13 percent), and in low-income countries (41 percent) was three times the high-income countries' proportion (WHO, 2011c).

SAGE provides a wealth of information on chronic conditions. The respondent was asked if he or she was ever diagnosed with any of the following chronic conditions—arthritis, stroke, angina, diabetes, chronic lung disease, asthma, hypertension, and cataracts.[2, 3] Questions on oral health and injuries were also asked. The respondent was then asked which medications or other treatment had been taken and the symptoms experienced for selected conditions.

[2] Depression was also asked, but will be discussed separately in a later section.

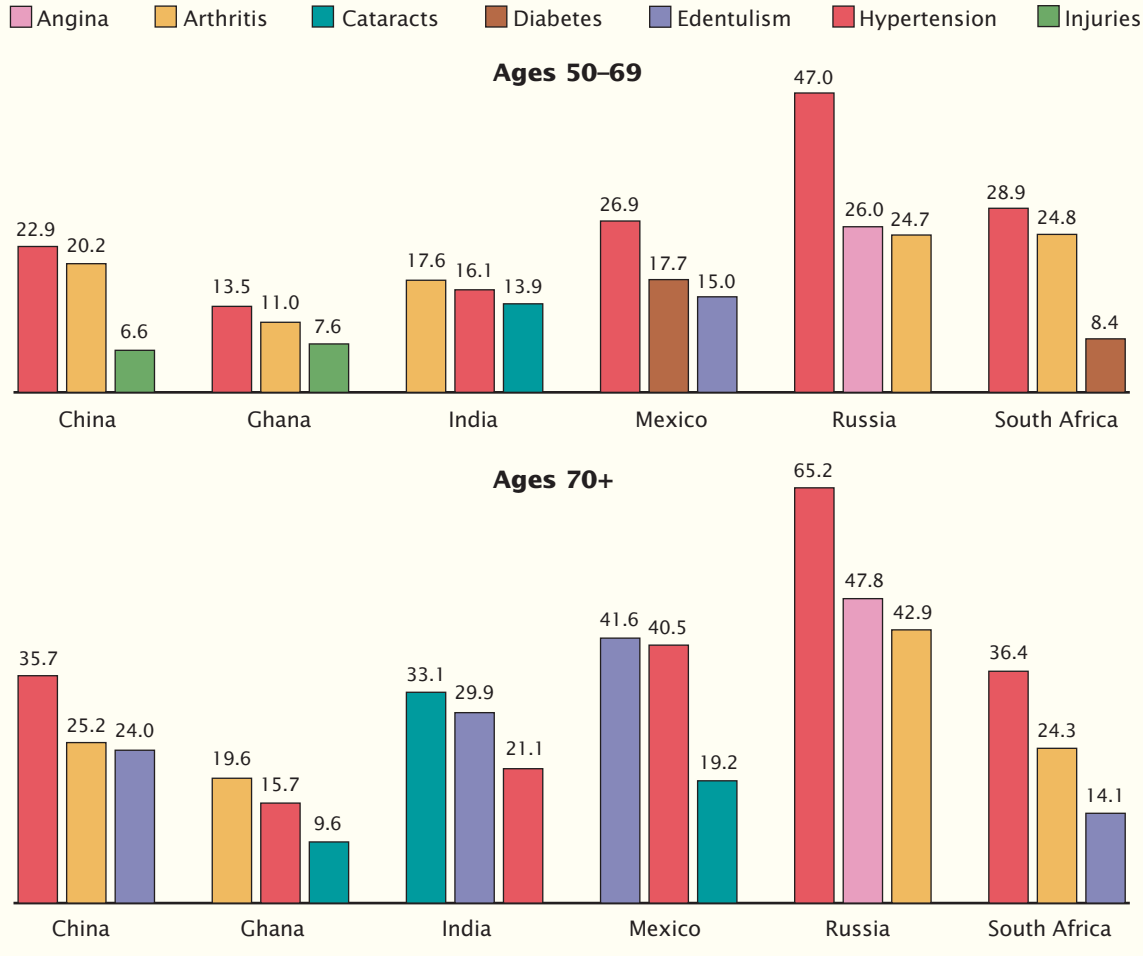
[3] Undiagnosed diseases are not included in this report.

Figure 6 identifies the top three self-reported chronic conditions among those aged 50–69 and 70 and over for each country. Hypertension was by far the most common health condition for both age groups.[4] It was the top chronic condition among 50- to 69-year-olds in all countries except India, where it was the second most common. Among people 70 years and older, hypertension was the leading chronic condition in China, Russia, and South Africa; second in Ghana and Mexico; and third in India. Hypertension was most prevalent in Russia, where almost half of the 50- to 69-year-olds and nearly two-thirds of the 70-and-older population reported being diagnosed with the condition. Arthritis was the second most common chronic condition among 50- to 69-year-olds and those 70 years and older in the SAGE countries.

[4] Although blood pressure is considered a population-level risk factor, hypertension as defined internationally for the purpose of this report is being considered a health condition and not a "risk factor."

Figure 6.
Top Three Chronic Conditions for Population Aged 50 and Over by Age: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/*)



Note: Edentulism indicates complete loss of all natural teeth.
Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Table 3.

Mean Health Scores for Population Aged 50 and Over by Selected Chronic Conditions: 2007–2010

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Chronic condition	Country					
	China	Ghana	India	Mexico	Russia	South Africa
Arthritis						
Without	69.7	57.2	54.5	62.9	63.3	64.7
With	62.0	49.8	47.1	57.7	52.8	52.9
Angina						
Without	68.8	56.4	53.4	62.6	63.7	62.3
With	59.8	49.7	48.4	57.2	52.8	53.5
Diabetes						
Without	68.3	56.3	53.2	62.7	60.7	62.5
With	65.1	53.0	51.7	61.1	52.1	54.5
Asthma						
Without	68.2	56.3	53.7	62.6	60.3	62.3
With	60.0	51.8	45.7	56.4	53.3	52.1
Hypertension						
Without	69.2	56.5	53.7	63.6	64.3	64.5
With	64.8	53.7	50.2	59.9	56.3	55.6

Note: World Health Organizations's health state score includes 16 responses from 8 health domains. 0=worst health, 100=best health. This table shows the mean health score for those with specific chronic conditions and those without those same conditions.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Women were more likely to have hypertension than men in all six countries (Table A-2). Urban residents were more likely to report being diagnosed with hypertension than rural residents in all SAGE countries except for Mexico, where a slightly higher percentage of older rural residents (32.2 percent) were diagnosed with hypertension than older urban residents (29.8 percent).

Chronic conditions were negatively related to the mean health score. Table 3 displays the mean health score cross-tabulated by selected chronic conditions. In all six countries, the health score for those with a particular chronic condition was lower than for those without the same condition. The largest drop in mean health score for each chronic condition occurred in the following countries: arthritis, South Africa (11.8 points); angina, Russia (10.9 points); diabetes, Russia (8.6 points); asthma, South Africa (10.2 points); and hypertension, South Africa (8.9 points). These results indicate that the most common chronic conditions had larger negative effects on the older population's overall health for Russians and South Africans than for other countries.

Risk Factors and Preventive Health Behaviors

Health behaviors are difficult to change, yet health risks are modifiable with positive effects from reduction or removal of the risk on health and health conditions even at older ages. The WHO stated in its 2008–2013 action plan that the highest burden NCDs (cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes) are preventable, and called for eliminating shared risk factors, mainly tobacco use, harmful alcohol consumption, unhealthy diets, and physical inactivity (WHO, 2009). This action plan, with supporting evidence and an economic case for action, was used during the 2011 United Nations High-Level Meeting on Noncommunicable Diseases (United Nations General Assembly, 2011).

The prevalence of current tobacco smoking is an important predictor of the future burden of tobacco-related diseases, disability, and mortality, but tobacco consumed in any manner can be avoided (Ezzati and Lopez, 2004; Preston, Glei, and Wilmoth, 2010; WHO, 2008a, 2010a). Self-reported tobacco use in SAGE countries was highest in India, where about half of older Indians (46.5 percent) were current daily smokers, compared to 8 percent of older Ghanaians, the lowest among the SAGE countries (Table A-3). In China and Russia, those aged 70 and older were more likely than those aged 50–69 to have never smoked. Urban older residents in China, Ghana, and India were less likely to use tobacco than their rural counterparts, while it was the opposite in Mexico. Men and women showed large differences in tobacco use. Across all six countries, men were much more likely than women to smoke, and the ratio was as high as 16 to 1 in China with the smallest sex difference in smoking in South Africa (men, 27.4 percent; women, 19.0 percent).

Among Ghanaian men, more had given up smoking (past smokers) than those currently still smoking, an indication of a lifestyle change toward healthier behavior (Figure 7). Also, about the same percentages of current smokers and past smokers were recorded for Mexican men, signalling that half of the ever smokers had stopped smoking. Indian men, on the other hand, had the highest proportion (66.7 percent) currently smoking and also the lowest proportion of men who had quit smoking (7.4 percent).

DEFINITION OF RISK FACTORS

SAGE used a standardized instrument for collection of behavioral risk factors based on the WHO STEPwise approach to Surveillance (WHO STEPS). This included self-reported tobacco use, alcohol consumption, diet, and physical activity.

Tobacco use covered types and frequency of tobacco use—smoking, snuffing, or chewing, each day over the week prior to the interview.

Alcohol consumption was categorized into two broad groups: nondrinkers and drinkers, with the latter subdivided according to the number of alcoholic drinks consumed during the week before the interview. Heavy drinkers were defined as consuming five or more standard drinks per day for men and four or more standard drinks per day for women.

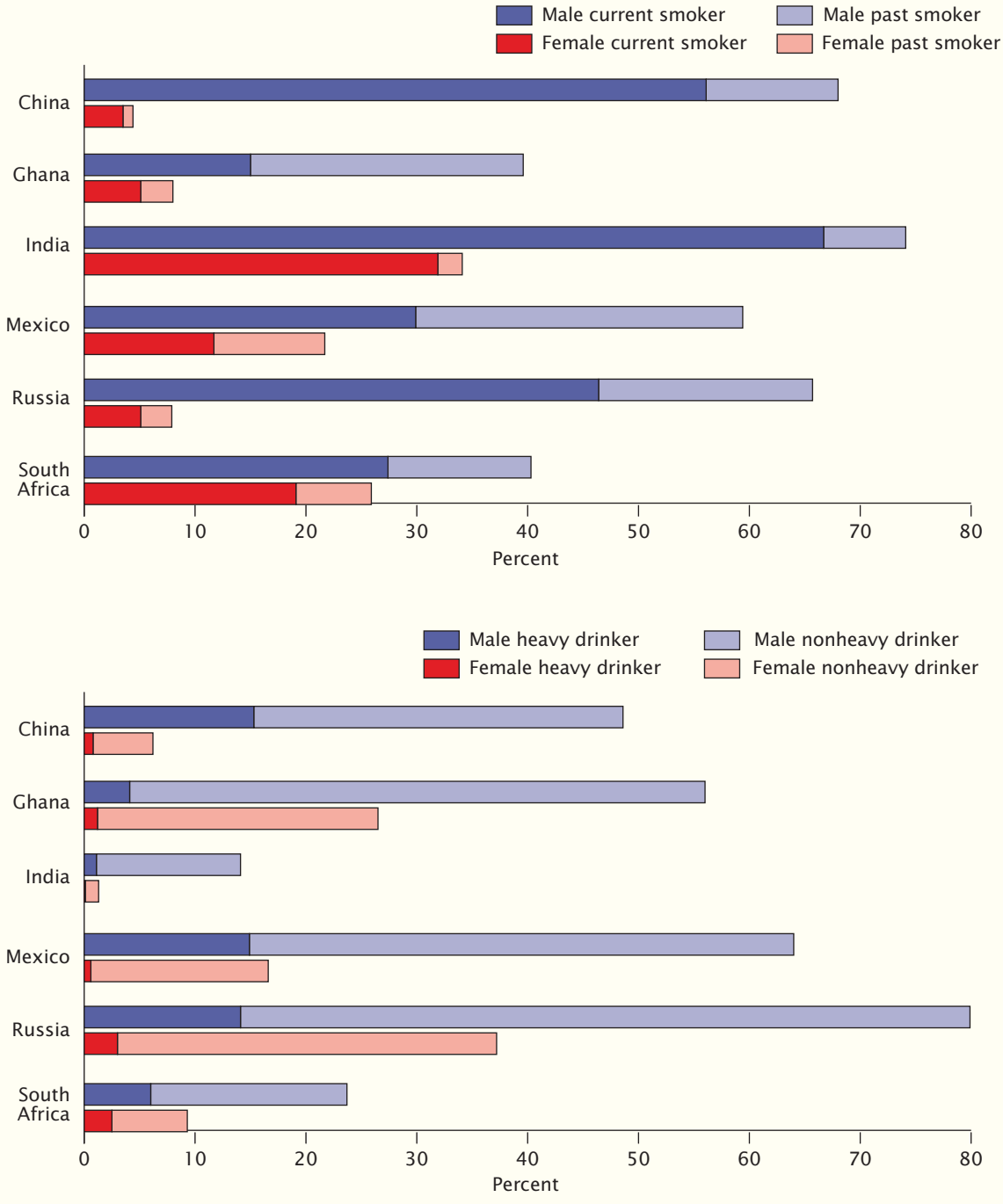
Diet—fruit and vegetable consumption: The WHO recommends an intake of 400–500 grams per day of fruits and vegetables (excluding potatoes and other starchy tubers) for the prevention of chronic diseases (WHO, 2003). This roughly equates to a cut-off of about five daily servings of fruits and vegetables, which was defined in this report as sufficient fruit and vegetable intake per day.

Physical activity: The Global Physical Activity Questionnaire (GPAQ) was used in SAGE to measure the intensity, duration, and frequency of physical activity in three domains: occupational, transport-related, and discretionary or leisure time (Bull, Maslin, and Armstrong, 2009). Total time spent engaged in physical activity during a typical week, number of days per week, and intensity of the physical activity were considered when classifying it as high, moderate, or low level.

Figure 7.

Behavioral Risk Factors for Population Aged 50 and Over by Sex: 2007–2010

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/*)



Note: Smoker is defined as tobacco user who may smoke, snuff, or chew tobacco products. Heavy drinking is defined as five or more standard drinks per day for men and four or more standard drinks per day for women.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Heavy alcohol consumption has been related to increased illnesses and diseases such as neuropsychiatric disorders or infectious diseases and is associated with unintentional and intentional injuries (Rehm, et al., 2009; WHO, 2002). Furthermore, heavy drinking damages the physical and psychological health of the drinker, as well as diminish the health and well-being of people around the drinker (WHO, 2011a). Older Russian men and women stood out with a higher proportion of drinkers compared to their counterparts in other countries. Among Russian men, 14.2 percent were heavy drinkers and 65.8 percent were nonheavy drinkers. Among older Mexican men, 15.0 percent were heavy drinkers and 49.1 percent nonheavy drinkers. Again, sex proved to be a highly relevant predictor of alcohol consumption, with men much more likely to drink than women in all SAGE countries. A mere 1.3 percent of Indian women were heavy and nonheavy drinkers combined, while the comparable share for Indian men was 14.1 percent. In Russia the share of older women who consumed alcohol (37.2 percent) was about half that of men.

Unhealthy diet (inadequate fruit/vegetable intake) and physical inactivity are the other two main behavioral risk factors, or conversely, adequate fruit/vegetable intake and moderate/high physical activity are effective preventive health behaviors (Steptoe and Wikman, 2010; WHO/FAO, 2005). SAGE defines adequate fruit and vegetable intake as five servings or more per day (WHO, 2003). Based on the total time spent in physical activity during a typical week, the number of days, as well as the intensity of the physical activity, SAGE classified physical activity into three levels: high, moderate, and low (WHO, 2011a).

A relatively large proportion (64.5 percent) of China's older population consumed adequate fruits and/or vegetables, higher than any other SAGE country; while its southern neighbor, India, had the lowest consumption level at 9.2 percent (Table A-3). In India, Russia, and South Africa, urban older residents were slightly more likely than rural older residents to consume adequate fruits and/or vegetables while the opposite was true for Mexicans (Figure 8).

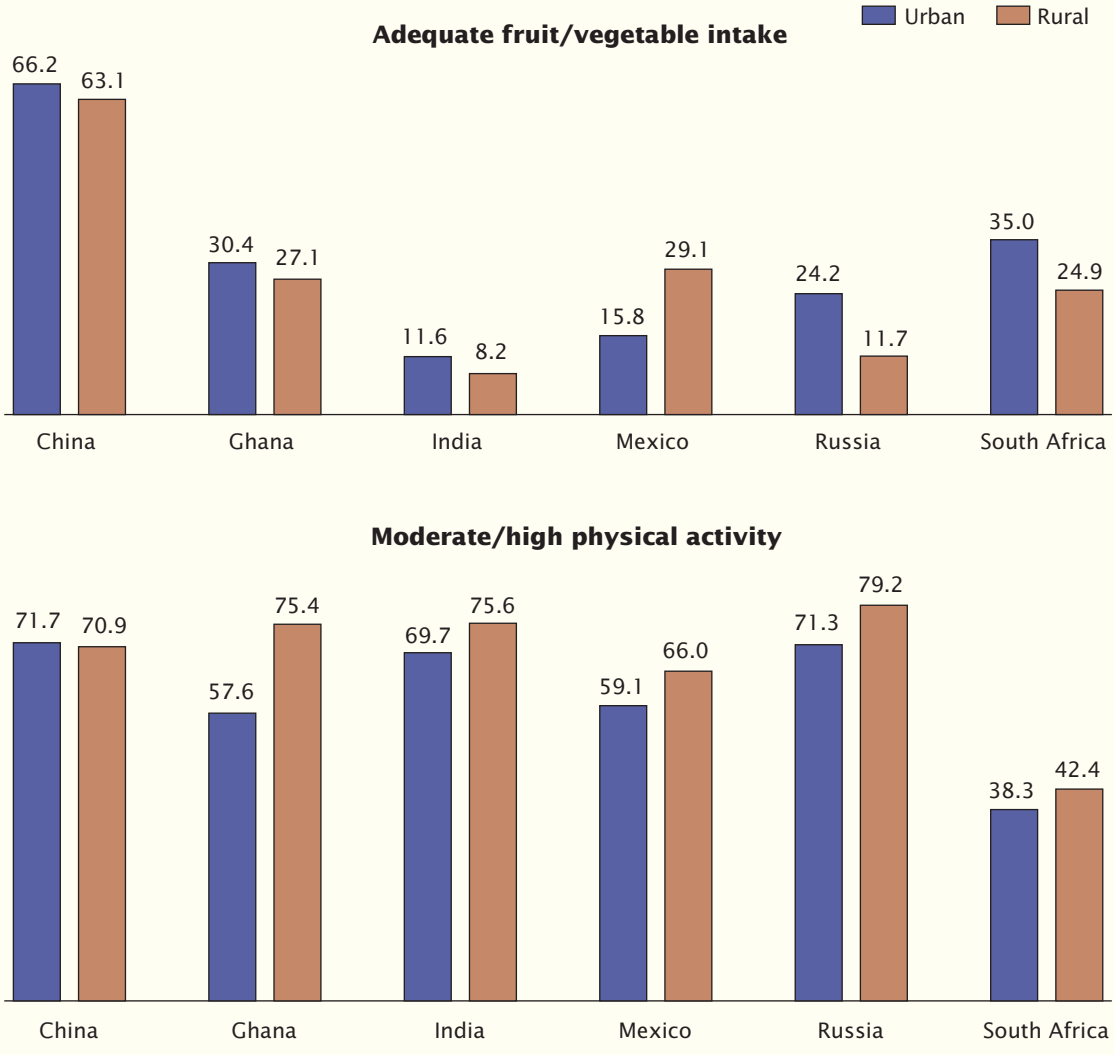
For physical activity, the majority of SAGE countries (except for South Africa) showed encouraging statistics for healthy behavior—most of their older population engaged in moderate or high levels of physical activity (Table A-3). Older population in South Africa reported the lowest levels of physical activity regardless of age or sex. Rural older people in Ghana and India were more likely than their urban counterparts to engage in moderate or high physical activity (Figure 8).[1]

[1] The differences in physical activities between urban and rural residents in China, Mexico, Russia, and South Africa are not statistically significant.

Figure 8.

Preventive Health Behaviors Among Population Aged 50 and Over by Urban/Rural Residence: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/*)



Note: Adequate fruit/vegetable intake is defined as five servings or more per day. Moderate or high level of physical activities is measured by intensity, duration, and frequency of physical activity.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Disability

Disability is a major issue for aging populations. The WHO defines disability as an umbrella term for impairments, activity limitations, and participation restrictions (WHO and World Bank, 2011). SAGE asked specific questions on difficulties related to mobility, activities of daily living (ADL), instrumental activities of daily living (IADL), and cognition. In all SAGE countries, except China, more than three-fourths of the population aged 50 and over had any type of disability, with as many as nine in ten Indians and Russians suffering from disabilities (Table A-4). Disability rates were higher among women than men in China, India, Russia, and South Africa, and higher among rural residents than urban residents in China, India, Mexico, and Russia. A further examination of various categories of disability for the 70-and-older age group reveals that difficulties in mobility and ADL prevailed among the oldest-old populations in all six SAGE countries (Table 4). The

Table 4.
Percentage With Disability for Population Aged 70 and Over by Sex, Residence, and Type: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Sex		Residence	
		Male	Female	Urban	Rural
China					
Mobility	40.4	36.8	43.6	31.5	47.7
ADL	26.8	22.7	30.6	15.0	36.6
IADL	9.7	8.6	10.7	6.1	12.6
Ghana					
Mobility	63.4	58.5	68.7	64.8	62.6
ADL	65.5	55.8	75.8	66.6	64.7
IADL	35.2	26.4	44.7	37.0	34.0
India					
Mobility	72.5	65.1	79.4	62.7	77.0
ADL	68.3	58.6	77.1	59.7	72.1
IADL	45.0	40.0	49.6	34.0	50.0
Mexico					
Mobility	54.3	48.8	58.5	52.4	61.3
ADL	60.5	54.6	65.0	59.2	65.2
IADL	22.1	18.0	25.1	19.3	32.5
Russia					
Mobility	85.6	81.3	87.5	84.0	89.4
ADL	51.7	46.0	54.1	50.9	53.6
IADL	31.3	30.3	31.7	31.5	30.9
South Africa					
Mobility	50.7	51.0	50.4	51.7	49.2
ADL	54.7	53.5	55.5	57.7	50.0
IADL	29.8	32.5	28.0	29.7	29.8

Note: Activities of Daily Living (ADLs) are used to describe a set of daily self-care activities and usually assess the need for help with such personal care activities as eating, bathing, and dressing. Instrumental Activities of Daily Living (IADL) describe somewhat higher-level functioning considered necessary to live independently.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

oldest-old Russians had strikingly high rates of mobility difficulties, regardless of sex or urban/rural residence (81.3 percent for men, 87.5 percent for women, 84.0 percent for urban residents, and 89.4 percent for rural residents). India also had a large proportion of oldest old with mobility difficulties (79.4 percent for women and 77.0 percent for rural residents). On the other hand, consistent with other health conditions, China had the lowest proportion reporting difficulties with mobility, ADLs, or IADLs.

In recent decades, the concept of disability has shifted internationally from an individual, medical perspective to a social model, where disability is viewed as the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environmental and personal). To this end, the WHO developed a composite score to measure disability and health, WHO Disability Assessment Schedule (WHODAS), now in its second version. WHODAS is a well-tested instrument and

DEFINITION OF ADL AND IADL

Activities of Daily Living (ADLs) describe a set of daily self-care activities and usually assess the need for help with personal care activities such as eating, bathing, and dressing. An individual's ability to perform ADLs is typically considered normal functional status, with an inability to perform ADLs suggesting disability.

Instrumental Activities of Daily Living (IADL) describe somewhat higher-level functioning considered necessary to live independently. These typically assess the need for help with routine needs such as using transportation, housekeeping, and preparing food. In this report, a set of ADLs and IADLs that comprise the WHO Disability Assessment Schedule (WHODAS) approach was used to measure functioning and disability.

DEFINITION OF WHODAS

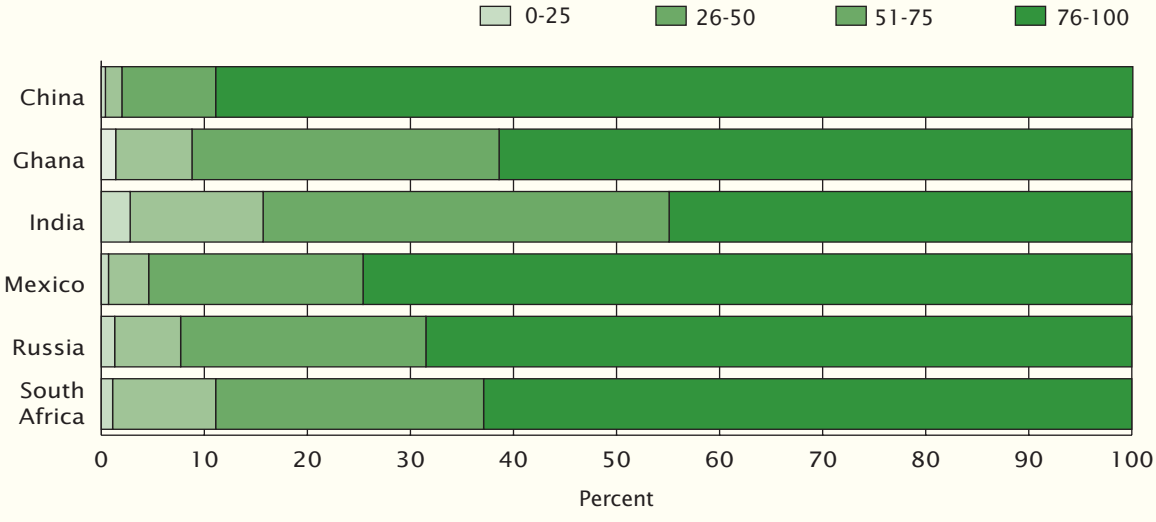
WHODAS, the WHO Disability Assessment Schedule, is a generic instrument to measure health, functioning, and disability across cultures. This report used the 12-item version of WHODAS 2.0 which evaluates six domains (2 items per domain) of day-to-day functioning in the last 30 days—understanding and communicating, getting around, self-care, getting along with people, life activities, and participation in society (Üstün, et al., 2010). Results from the 12 items were summed to get an overall WHODAS score, which was then transformed to a 0–100 scale. This report used an inverted score (WHODASi) with 0 indicating maximum disability/worst functioning ability and 100 indicating minimum disability/best functioning ability.

provides an assessment of the severity of the disability (Luciano, et al., 2010; Sousa, et al., 2010). For this report, to be consistent with other composite variables where a higher score represents better health, an inverted WHODAS was created and is referred to as WHODASi. A higher WHODASi score represents better functioning ability.

The percent distribution of WHODASi scores for the population aged 50 and over in SAGE countries is displayed in Figure 9. For illustration purposes in this report, the 0–100 scores were divided into four groups (with 0–25 representing maximum disability and 76–100 representing minimum disability). Consistent with the low percentages for ADL, IADL, and mobility difficulty, only 2.0 percent of the older Chinese were in the lower-than-50 group and the vast majority (89.0 percent) were in the highest group (76–100), possessing the best functioning ability. India's WHODASi distribution was markedly different from the other countries. Its proportion of the highest group—best functioning abilities (44.9 percent) was the lowest among the SAGE countries. Also, about one in six older Indians scored in the lower half of the scale (worst functioning abilities), compared with about one in ten in Ghana, Russia, and South Africa. The highest mean WHODASi score was 91.1 for China, and the lowest was 71.3 for India, while the other four countries had mean WHODASi scores of around 80 (Table A-4).

Figure 9.
Percent Distribution of WHODASi for Population Aged 50 and Over: 2007–2010

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/*)



Note: WHODASi is an inverted score for the World Health Organization Disability Assessment Schedule (WHODAS), where 0=maximum disability/worst functioning, 100=minimum disability/best functioning.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Cognitive impairment contributes to decrements in health and functioning and is strongly related to age. In all six SAGE countries, a higher percentage of the oldest-old population had difficulty concentrating or remembering than their younger counterparts (Table A-4). The differentials are especially salient among those who reported having severe difficulty remembering things—only 1.6 percent of Russians aged 50–69 as compared to 12.4 percent of those 70 years and older. Older Indians registered the highest percentages reporting severe memory difficulties, 11.0 percent of those 50- to 69-year-olds and 23.1 percent of those aged 70 and over.

SAGE also conducted three tests of cognition, and the test results were compiled into a composite cognition score. Consistent with the self-reported cognitive difficulty, older Indians had the lowest mean cognition score for the total 50-and-older population, 49.4, as well as for those 70 and older, 43.2 (Table A-4). On the other hand, older and oldest-old Mexicans scored the highest, 71.1 and 65.4, respectively. Disentangling the contributions of the various components of cognition to health, disability, and well-being is needed to assess where interventions would be most warranted.

DEFINITION OF COMPOSITE COGNITION VARIABLE

Three domains were selected to objectively measure cognition, with a focus on domains impacted in the early stages of dementia: assessment of attention and learning (using verbal recall of a word list), working memory (using digit span forward and backward), and verbal fluency (using the category fluency test). All three performance tests were scored according to standard practices for each test. Verbal recall was measured with a 10-word learning task which included immediate recall and delayed recall, and the results were calculated by correctly recalled words minus errors. Scoring for digit span forward and backward involved tabulations based on correct recitation of each number series for digits forward and backward. Verbal fluency was measured as the sum of all admissible words regarding the category of animals minus errors. Factor analysis was used to generate a single composite score.

Life Satisfaction and Quality of Life

Subjective well-being includes a person's overall appraisal of his or her life (global well-being) and affective state (hedonic well-being), and is an important aspect of older people's health (Stone, et al., 2010). For this report, subjective well-being is measured using the 8-item WHO Quality of Life (WHOQOL) instrument and evaluated by responses to questions on overall life satisfaction and specific aspects of life.

Using responses to single item questions, the majority of SAGE countries' older populations reported being satisfied with their overall life.[1, 2] At 79 percent, older Mexicans recorded the highest rate of life satisfaction, compared with only a little over half (57 percent) of older Ghanaians (Table A-5). In general, younger cohorts (aged 50–69) were more likely to be satisfied with their life than were the oldest old (aged 70 and over), especially in Russia, where the differential was 20 percentage points (67.3 percent for 50- to 69-year-olds and 46.8 percent for those aged 70 and older). However, the oldest-old South Africans reported a higher level of life satisfaction than their younger counterparts.

In China, Ghana, and South Africa, urban residents were more likely to be satisfied with their life than their rural counterparts (Figure 10). Urban Mexicans had the highest proportion of life satisfaction among the urban older population in all six countries; eight in ten reported satisfaction with life as a whole. At the other end of the scale, only about half of rural older Ghanaians and South Africans were satisfied with their life as a whole. Older Ghanaian and Indian men were more likely than their female counterparts to report life satisfaction (Table A-5).

Besides overall satisfaction, SAGE also asked whether an older person was satisfied with a wide range of life aspects—health, oneself, ability to perform activities of daily living, personal relationships, and conditions of living space. In general, older people were less satisfied with their health-related status (health or ability to perform day-to-day activities) than other aspects of life (Table A-5). Even though the majority of the older population in SAGE countries reported overall satisfaction with life, less than half felt they were in a better mood than their peers. A sharp contrast was found in Russia. Six in ten older Russians were satisfied with themselves, and half reported being happy in general.[3] However, only 14 percent of them felt that they were in a better mood than their peers and only 11 percent believed they were less anxious than their peers. A similar pattern was found among older Chinese. These differences in perception of other people's relative quality of life are worth exploring further in future research.

[1] The respondent was asked: "Taking all things together, how satisfied are you with your life as a whole these days?"

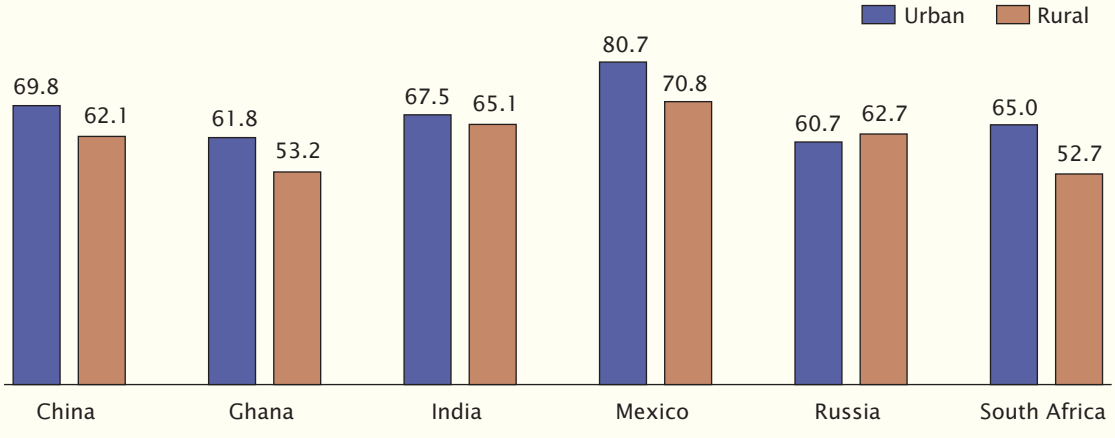
[2] "Satisfied" in this report includes those who answered "Very satisfied" or "Satisfied" to various life satisfaction questions.

[3] For happiness, the respondent was asked: "Taking all things together, how would you say you are these days? Are you...?"

Figure 10.

Percentage Satisfied With Life Among Population Aged 50 and Over by Urban/Rural Residence: 2007–2010

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/*)



Note: "Satisfied with life" includes "very satisfied" and "satisfied" with life.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

DEFINITION OF WHOQOL

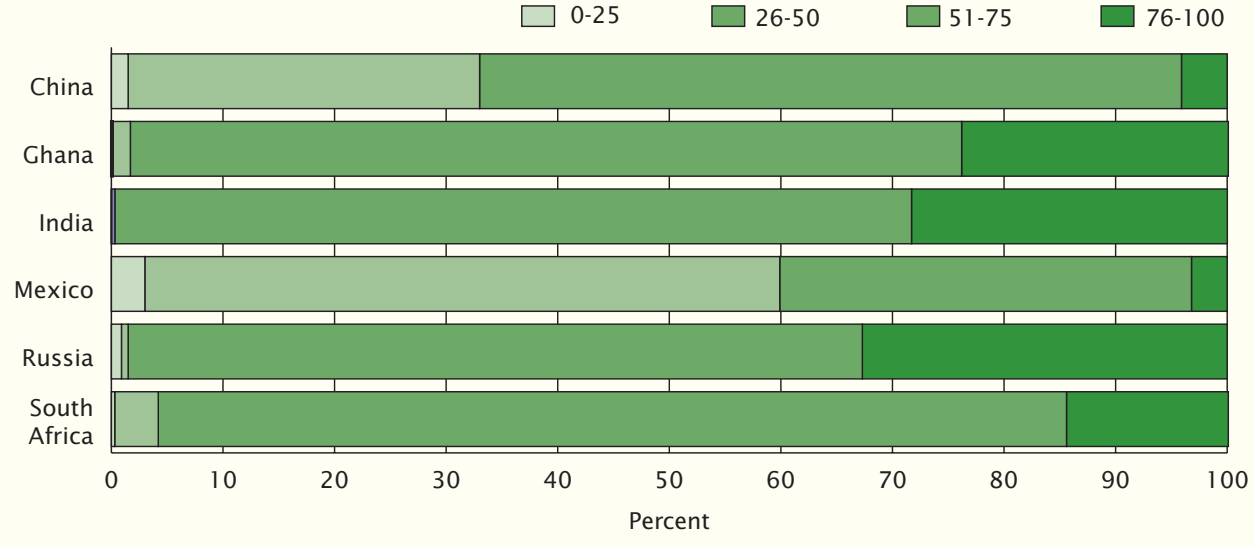
WHOQOL, the World Health Organization Quality of Life instruments, are a set of international, cross-culturally comparable tools used to assess quality of life and provides a measure of the evaluative component of well-being (Skevington, et al., 2004). The 8-item WHOQOL instrument used in this report used two questions in each of four broad domains: physical, psychological, social, and environmental (Schmidt, Mühlan, and Power, 2005). Results from the 8 items were summed to get an overall WHOQOL score, which was then transformed to a 0–100 scale, with higher scores indicating a better quality of life. SAGE used the Day Reconstruction Method to measure the experienced component (happiness).

Satisfaction with life, health, and other aspects of life are interrelated and culture specific. A composite variable WHOQOL encompasses multiple aspects of quality of life and assesses an individual's perceptions of satisfaction in the context of their culture and value systems, as well as their personal goals, standards, and concerns. Figure 11 displays the distribution of WHOQOL scores for each country by four groups (0–25, 26–50, 51–75, and 76–100; with higher scores indicating better quality of life). The distributions indicate a relatively good quality of life reported by older people in all SAGE countries, with a high concentration of scores above 50 (also see Table A-5). Interestingly, older Mexicans reported the highest life satisfaction, yet had the lowest mean WHOQOL score (48.9) among the SAGE countries. On the other hand, in countries with relatively high proportions of chronic conditions or any disability (discussed in previous sections) such as Russia and India, high-mean WHOQOL scores were recorded (similar scores for India, 71.6 and for Russia, 71.4). This indicates that assessments of quality of life vary greatly by culture or other environmental factors. It also suggests older people's view on how satisfied they are with their life may not be solely determined by, or dependent on, single item measures of their quality of life (Ng, et al., 2010) and is not directly linked to health conditions or disability. Future research should further explore the relationship between self-reported life satisfaction and composite variables that are designed to take into consideration the multiple facets of life. Happiness measures were included in SAGE, but are not reported here and could help to unravel some of the interrelationships between quality of life, happiness, and health.

Figure 11.

Percent Distribution of WHOQOL for Population Aged 50 and Over: 2007–2010

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/*)



Note: WHOQOL is the World Health Organization Quaility of Life instrument, where 0=worst, 100=best.
Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Depression

Depression is an important public-health problem and one of the leading causes of disease burden worldwide, due both to its relatively high lifetime prevalence and the significant disability that it causes (Moussavi, et al., 2007; WHO, 2007). Depression in SAGE was measured through self-reported diagnosed depression and through a set of symptomatic questions used to diagnose depression.

The rate of depression (combining self-reported diagnosed depression and symptom-reporting) among SAGE countries' 50-and-older population ranges from 1.1 percent in China to 13.6 percent in India (Table A-2).[1] Depression rates by age yielded mixed results—oldest-old Ghanaians and Indians registered higher proportions of depression than their younger counterparts, but the opposite was found for Mexicans and South Africans. Older women were more likely than older men to be diagnosed with depression in all SAGE countries except South Africa. Symptom reporting of depression may help to determine whether the gender differential in depression was a true difference in levels of the condition or whether women tend to seek medical diagnosis and intervention more often than men.

Depression, comorbid with other chronic conditions, has been shown to have produced the greatest decrement in health compared with the presence of physical chronic conditions alone and increase the risk of higher health care costs (Katon, et al., 2010; WHO, 2007). Results from SAGE indicated that, in general, older people with chronic conditions were more likely to be depressed than those without chronic conditions (Table 5). Older Ghanaians with arthritis were six times more likely than those without the condition to be depressed (25.6 percent versus 4.3 percent).

In addition to the question of whether the individual had ever been diagnosed with depression, SAGE

[1] The rate of depression among the Mexican 50-and-older population is not statistically different from that of India.

DEFINITION OF DEPRESSION

Depression in SAGE was assessed in two different ways. First, respondents were asked if they had been diagnosed with depression. In addition, a set of symptomatic questions were also asked, which were derived from the World Mental Health Survey version of the Composite International Diagnostic Interview for the diagnosis of depression (Kessler and Üstün, 2004). The responses to the individual items were used in a diagnostic algorithm to generate the diagnosis of "Depressive Episode" as per the criteria specified in the International Classification of Diseases (WHO, 1993).

Table 5.
Percentage Depressed by Chronic Condition Status for Population Aged 50 and Over: 2007–2010

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Chronic condition	China	Ghana	India	Mexico	Russia	South Africa
Arthritis						
Without	0.8	4.3	12.8	10.8	2.6	2.6
With	2.3	25.6	17.4	9.7	6.0	4.2
Angina						
Without	1.0	7.3	13.1	10.8	2.5	2.6
With	2.7	3.9	22.2	9.8	5.9	11.1
Diabetes						
Without	1.1	7.1	13.6	11.3	3.4	2.8
With	1.1	9.5	13.5	8.0	5.5	5.2
Asthma						
Without	1.0	7.0	12.6	10.7	3.5	2.7
With	5.0	13.2	25.9	11.2	7.9	9.1
Hypertension						
Without	1.0	6.6	13.5	11.5	2.3	2.0
With	1.4	10.6	14.2	8.9	4.8	5.4

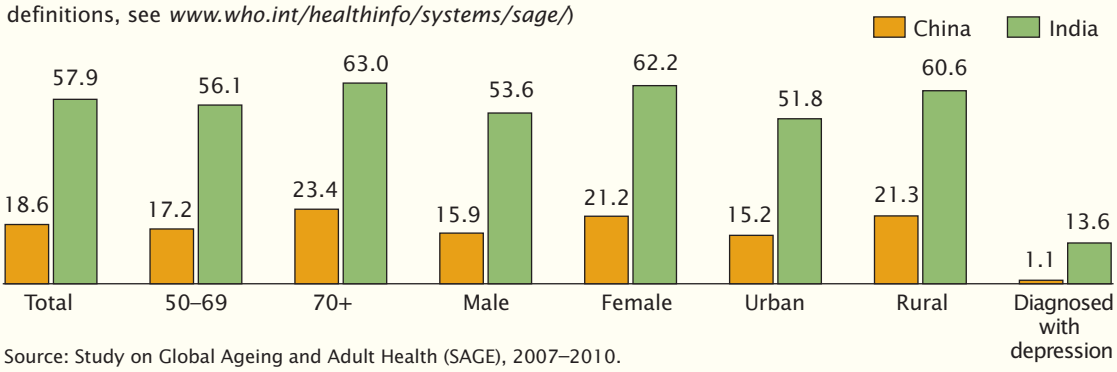
Note: This table shows the percentage depressed for those with specific chronic conditions and those without those same conditions.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Figure 12.

Percentage Feeling Depressed in Last 30 Days for Population Aged 50 and Over for China and India: 2007–2010

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/*)



Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

also asked whether the respondent felt sad, low, or depressed in the 30 days prior to the survey. In contrast to the self-reported diagnosed depression, "feeling depressed" was reported by a much greater number of respondents (see Table A-6). About half of older Ghanaians, Indians, and South Africans reported feeling depressed in the previous 30 days. The considerable difference between the percentage with self-reported depression and the percentage reporting feeling depressed points to the need for timely identification and treatment of this condition.

In terms of disease burden, the two countries at opposite ends of the spectrum were the two neighboring Asian countries, China and India (Figure 12). Older Indians were about three times more likely to report feeling depressed than older Chinese regardless of age, sex, and urban/rural residence. In addition, a negligible proportion (1.1 percent) of the older Chinese reported being diagnosed with depression, compared with 13.6 percent of older Indians. The sharp contrast between these two Asian countries raises questions for future research on whether these dissimilarities in psychological distress reflect true differences in health conditions or perhaps also cultural differences, and whether they illustrate issues of access to and quality of mental health care.

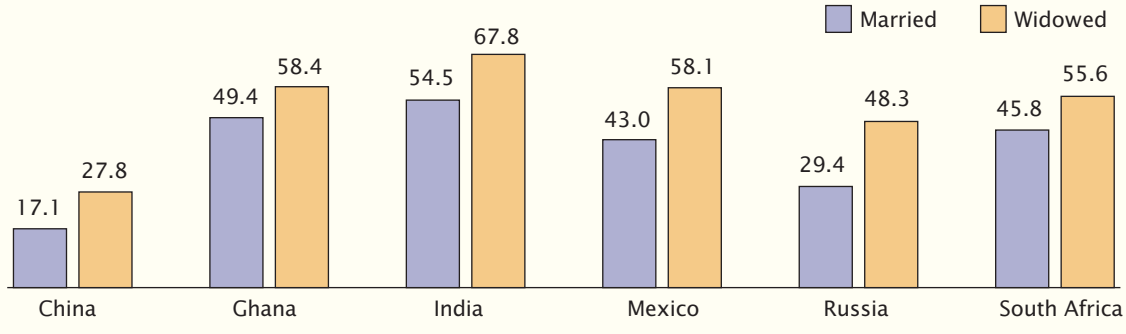
The protective effect of marriage for a person's subjective well-being has been widely documented (Hughes and Waite, 2009; Lee, et al., 2001; Umberson, Wortman, and Kessler, 1992; Zhang and Hayward, 2006). Widowhood is likely to lead to depression and higher prevalence of cardiovascular disease or other health conditions. The marriage protection from feeling depressed is evident in SAGE results (Figure 13).[2] In all six countries, widows/widowers were more likely to feel depressed. Being married had the largest positive effect on older Russians, as the share of feeling depressed among those married was 20 percentage points lower than those who were widowed. Among older Indians, a notably high proportion felt depressed, even among those that were married (54.5 percent).

[2] Because of the extremely low percentage of divorced or never married in SAGE samples, marriage protection in this report compares currently married with widowed.

Figure 13.

Percentage Feeling Depressed in Last 30 Days for Married and Widowed Populations Aged 50 and Over: 2007–2010

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/*)



Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Health Care Utilization

The increasing burden of noncommunicable diseases presents many people with complex symptoms and multiple illnesses, which challenges service delivery to respond to the growing demand for health care (Tollman, et al., 2008; WHO, 2008b). SAGE data provide information on older people's access to health care—whether they had received outpatient care and/or inpatient care, from what type of providers, and who was more likely to seek health care. Although this information does not address how responsive SAGE countries' health care systems are to the needs of the older population, it does provide empirical knowledge of health care received by the older population in SAGE countries.

In all SAGE countries except Mexico, the majority of the older population saw a doctor in the 12 months prior to the survey (Table A-7). Older Indians had the highest share receiving outpatient care (87.6 percent), compared with only 40.5 percent of older Mexicans. In Ghana and Russia, the oldest-old population was more likely to see a doctor than the younger old. For China, Ghana, India, and South Africa, women were more likely than men to see a doctor. For China, a higher percentage of rural residents than urban residents received outpatient care, while the situation was reversed in Ghana and India.

The majority of older patients in all SAGE countries except India received their outpatient care from public providers, such as a public clinic or health care facility, or a public hospital (Table A-7).[1] More than eight out of ten older Russians went to see a public provider for their illnesses. For older Indian patients, in contrast, private providers such as a private clinic or health care facility, or a private hospital provided most of their outpatient care (61.8 percent). Home visits were rare; about one in ten older Ghanaian and Russian patients received a home visit for their medical care. Ghana was the only country where charity organizations or churches also provided medical care to older patients (7.0 percent).

As expected, a much smaller proportion of the older population received inpatient care (i.e., was hospitalized at some time during the 12 months prior to the survey), ranging from 2.8 percent in Mexico to 17.3 percent in Russia.[2] In China, Ghana, Mexico, and Russia, the likelihood of hospitalization increased with age.

The likelihood that an older person will utilize health care may be determined by multiple factors, including demographic characteristics (age, sex, residence, and marital status), socioeconomic characteristics (education and wealth), and the person's health condition (presence of disability and chronic conditions). The impact of these factors on the likelihood of an older person receiving health care (represented by a positive response to receiving outpatient care) is estimated through a logistic regression. An odds ratio greater than "1" indicates that people were more likely to see a doctor than the reference group, and an odds ratio less than "1" indicates the opposite. The odds ratios for each factor are shown in Table 6.

DEFINITION OF COMPOSITE WEALTH VARIABLE

Wealth quintiles were derived from the household ownership of durable goods (chairs, tables, cars, television, telephone, washing machine, or access to electricity), dwelling characteristics (type of floors, walls, and cooking stove), and access to services such as improved water, sanitation, and cooking fuel. A total of 21 household assets were included with asset lists varying somewhat by country.

The resulting wealth quintiles provide an alternative measure of income and assets with set incremental levels of assets that are less likely to be biased by respondent inconsistencies. These set asset levels were statistically generated and are country specific. Using a Bayesian post-estimation (empirical Bayes) method, households were arranged in increasing order of assets. The raw continuous income estimates were adjusted into quintiles using the asset order.

[1] Providers for outpatient care in the SAGE questionnaire included private doctor's office, private clinic or health care facility, private hospital, public clinic or health care facility, public hospital, charity or church-run clinic, charity or church-run hospital, home visit, or other.

[2] Providers for inpatient care in the SAGE questionnaire included public hospital, private hospital, charity or church-run hospital, old person's home or long-term care facility, or other.

Table 6.

Odds Ratios Predicting Likelihood to Receive Outpatient Care for Population Aged 50 and Over: 2007–2010

(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Variable	China	Ghana	India	Mexico	Russia	South Africa
Age (reference group: 50 to 59)						
60 to 69	0.99	*1.26	1.12	1.04	0.94	1.03
70 and older	1.09	**1.37	1.24	1.13	1.25	0.92
Sex (reference group: Male)	***1.18	***1.45	*1.30	1.42	1.19	1.26
Residence (reference group: Rural)	***0.57	0.95	1.34	0.89	1.39	0.92
Marital Status (reference group: Not married)						
Currently married	0.96	1.14	1.00	1.16	0.90	0.94
Education (reference group: Primary or less than primary)						
Secondary	0.94	1.53	1.14	1.72	***2.70	1.21
High school or above	1.05	**1.47	0.91	0.66	**2.29	0.75
Wealth Quintile (reference group: First/lowest quintile)						
Second quintile	***1.26	*1.44	1.39	0.53	0.70	0.99
Third quintile	***1.52	***1.98	1.38	2.01	0.85	1.09
Fourth quintile	***1.72	***1.83	1.04	1.28	1.03	1.31
Fifth quintile	**1.75	***2.16	1.26	1.17	1.46	1.22
ADL (reference group: No ADL limitation)	0.82	1.20	0.87	1.10	**1.70	**1.64
IADL (reference group: No IADL limitation)	1.14	**1.59	0.91	1.57	0.69	1.03
Mobility Limitations (reference group: No mobility limitation)	0.95	**1.41	*1.33	0.78	1.14	*1.38
Chronic Condition (reference group: No chronic condition)						
Arthritis	***1.51	0.90	*1.41	1.16	**1.94	*1.38
Angina	0.91	1.66	0.89	*0.28	**1.93	1.08
Diabetes	*1.25	**2.06	***2.46	0.86	*2.16	***2.35
Lung disease	*1.26	0.66	1.12	0.92	1.32	1.60
Hypertension	***1.45	***1.83	**1.75	1.24	*1.80	***2.42

* Significant at .05 level.

** Significant at .01 level.

*** Significant at .001 level.

Notes: Odds ratios of greater than "1" indicate that these people are more likely to receive health care compared to the reference group. Less than primary school includes no education.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Regression results show that consistent with the descriptive analysis, women are more likely than men to seek medical care. Wealth played an important role for older Chinese and Ghanaians: the higher the wealth quintile, the more likely the person was to seek care. Chronic conditions are strong determinants of an older person's probability of seeing a doctor. Diabetes and hypertension are by far the most powerful predictors. Except for Mexico, people with diabetes or hypertension proved to be significantly more likely than those without the respective condition to see a doctor. Arthritis is also a strong predictor. Angina and lung diseases increase the odds of seeking health care in some but not most of the SAGE countries.

Interestingly, when health and wealth variables are included in the model, some demographic and socioeconomic factors did not have the significant effect found in the descriptive analysis. Age, urban/rural residence, marital status, and education did not have a statistically significant impact for most SAGE countries.

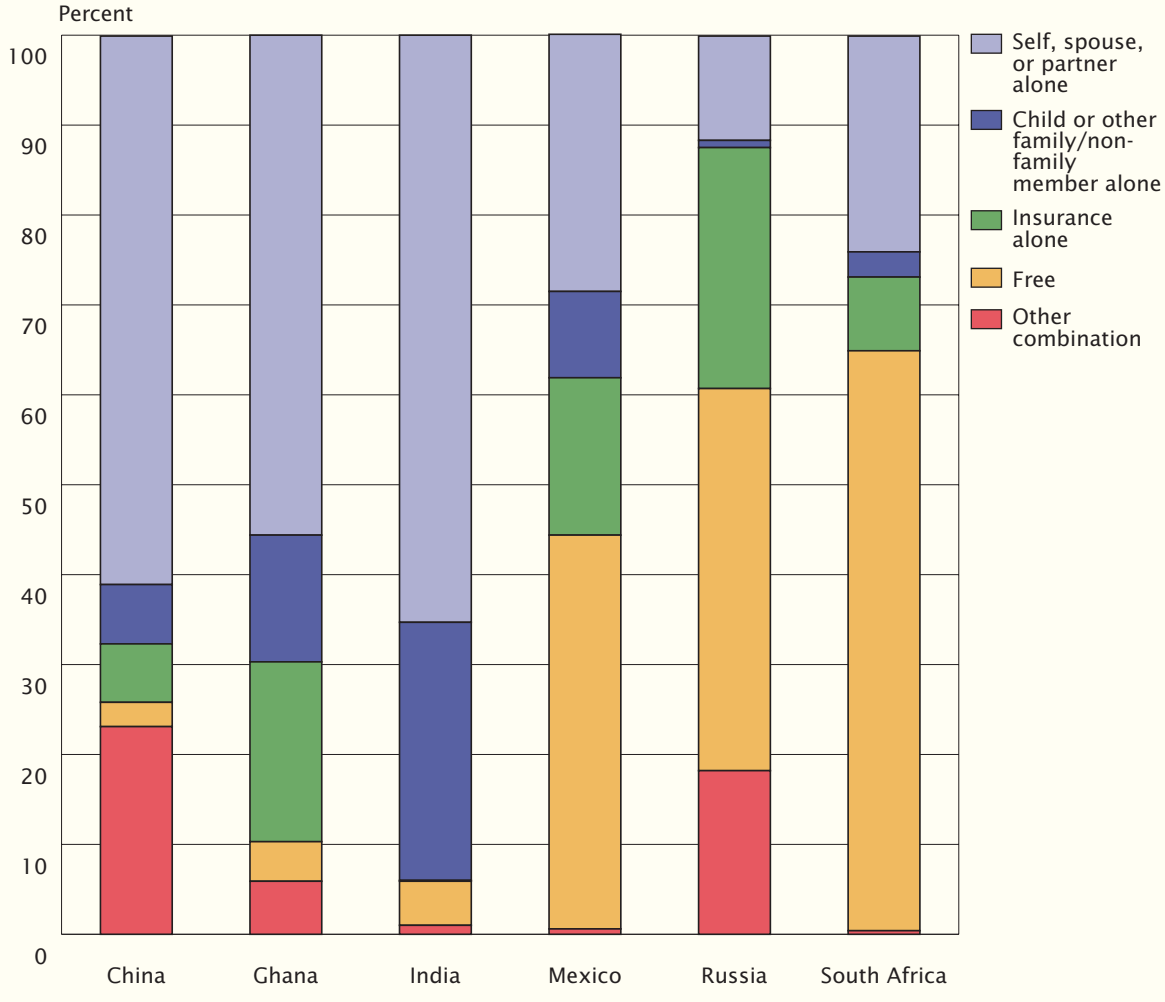
One of the major health care issues that older people face, especially those in low-income countries, is the mounting cost of medical services. The WHO reported that direct out-of-pocket payments represented more than 50 percent of total health expenditures in some low-income countries (WHO, 2010b). SAGE asked about sources for health care payment, including self, spouse/partner, son/daughter, other family member, nonfamily member, insurance, and free of charge.

Figure 14 displays the distribution of outpatient care cost by source of payment. The six SAGE countries demonstrated two remarkably different patterns of health care cost support. In Mexico, Russia, and South Africa, health care to a large extent was free, particularly for older South Africans, 64.5 percent of whom received their health care free of charge. In contrast, in China, Ghana, and India, the bulk of the cost of medical care was borne by the patients themselves or their spouse, child, or other family/nonfamily members. An exceptionally high 94.0 percent of older Indians paid for their outpatient care out-of-pocket. The same was true for inpatient care payments for older Indians (91.7 percent) (Table A-7). This, combined with a very high percentage (89.9 percent) receiving medical care, translates into an unusually high burden of health care costs for older Indians.

Figure 14.

Sources for Outpatient Care Payment for People Aged 50 and Over: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.who.int/healthinfo/systems/sage/*)



Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Summary and Discussion

This report has examined the health and health care utilization of the population aged 50 and older in the six countries—China, Ghana, India, Mexico, Russia, and South Africa—that participated in SAGE Wave 1. The six SAGE countries were home to 42 percent of the world's 1.4 billion people aged 50 and older in 2010, 40 percent of the 771 million aged 60 and older, and 38 percent of the 354 million people aged 70 and older (U.S. Census Bureau, 2012). By virtue of the sheer size of the older population in these six countries and their share of the world's total older population, their health status is certain to have a remarkable impact on the world's overall disease burden and health care.

Relatively few countries have age-specific health and disability data, especially for the older population residing in middle- and low-income countries. Even less commonly available are cross-cultural, cross-national comparable health data to monitor health levels and trends within and across countries (National Research Council, 2001). Yet governments are concerned about the aging of the population and health of their older population, as they relate to decrements in the productive capacities of national economies and to drivers of future demands on health systems (Bloom, et al., 2011; Economist Intelligence Unit, 2009). The SAGE results provide needed data for these middle- and low-income countries.

Equally important as data generation, SAGE has employed different research methods to address concerns about the reliability and comparability of self-reported health results, and provided data comparable with those collected from aging studies in high-income countries. The first step, a comparable health measure based on multiple life domains and using a common latent scale, was presented in this report. This report also noted the added value of accounting for systematic biases in survey data (Dowd and Todd, 2011; Grol-Prokopczyk, Freese, and Hauser, 2011). The data to address and adjust for these biases are available in the SAGE datasets (Ispány, et al., 2012).

Findings from this report show that, based on self-reporting, hypertension is a worryingly common chronic condition and a strong predictor for older people in SAGE countries to receive health care. Arthritis was the second most common condition for 50- to 69-year-olds in five countries, and for those aged 70 and older in four countries, contributing to declines in mobility. Disability levels among the oldest old, whether measured by difficulties with ADLs or with mobility, exceeded 50 percent in all countries except China. Consistent across the six countries, older women had higher levels of hypertension and depression than older men, and in most SAGE countries, they had higher levels of disability than men. On the other hand, older men had higher health risks, being much more likely to smoke and drink alcohol than older women. Rates of self-reported diagnosed depression were low, but all countries recorded a much higher percentage of "feeling depressed" when measured by a single question, pointing to the need for attention to mental and physical health in older age.

In general, older people in SAGE countries reported high levels of life satisfaction, but considered themselves to be less happy than their peers, suggesting a dissonance between evaluative and experienced well-being. The science of well-being is now being mainstreamed in health and social policy (Beddington, et al., 2008; Stiglitz, Sen, and Fitoussi, 2009; United Nations, 2012). However, more research is needed to understand the interrelationships between health and happiness over time, across different population groups including older adults, and how it impacts health care utilization. In SAGE, age was positively associated with utilization of health care—the oldest-old population in all six countries were more likely to seek both outpatient and inpatient care than the younger old age group. The majority of older people in SAGE countries (except for India) reported receiving their outpatient care from public providers. This finding provides critical information about health care accessibility in these countries and considerations for improving or reforming the health care system.

Beyond the individual benefits from reduction of health risk factors, the promotion of "aging well" and improved well-being may reduce lifetime health care expenditure (Seshamani and Gray, 2004). Preventing or postponing health conditions through reductions in smoking and harmful drinking, plus improvements in diet and physical activity, are important to promote health and well-being even at older ages (Rechel, et al., 2009). However, based on the results from SAGE, different approaches for population-based risk reduction will likely be needed for men and women. Estimates of national well-being (Kahneman, et al., 2004), as well as closer tracking of risk factors, will allow the assessment of how policies affect people's lives and perhaps influence allocation of resources.

The results from this report point to differences across SAGE countries as well as to variations within countries. Many questions remain. For example, China and India, two neighboring Asian countries, were consistently at opposite ends of the spectrum—China

had the highest mean health score among the six countries and India the lowest; less than one in twenty-five Chinese women were currently smoking, while almost one-third of Indian women were current tobacco users; nearly three-fourths of the oldest Chinese registered with the category of the least disability, compared with only one-fourth of the oldest Indians; a mere 1 percent of the older Chinese reported being diagnosed with depression compared with nearly 14 percent of older Indians. These health differences raise a number of questions: Are these different health levels true differences between the two populations? Could the results also be a reflection of their cultural differences, that is, a difference in how the two populations respond to the same question? Was there an impact from the social differences in terms of social networks and community cohesion in these two countries? [1] Do the responses and outcomes reflect differences in health care systems and health care policies? Are there cohort effects?[2] Many of these intriguing questions can be further investigated with more in-depth analysis, using cross-sectional and longitudinal data from SAGE.

Another key observation from the analysis in this report relates to the similarities and differences between the outcomes based on responses to a single item and the results from WHO composite variables. The face validity of some composite measures was confirmed through cross-tabulations—the pattern of health state scores in relation to age, sex, and socioeconomic status, existence of chronic conditions, or disability prevalence using WHODASi. Other measures showed interesting contrast—the single life satisfaction question versus the 8-item WHOQOL, or reporting "feeling depressed" versus self-reported diagnosed depression. While single item questions can provide valuable information about an individual, the multidimensionality of health, well-being, and disability require more information than a single item can provide (Bowling, 2005; Kahneman and Deaton, 2010). Nonetheless, these similarities and differences will merit further exploration in the future waves of SAGE.

This report provided a summary of the health status and access to health care by older populations in six middle- and low-income countries, thereby filling crucial gaps in health information and measurement techniques in response to aging populations. These results contribute to increasing and ongoing efforts to better understand the dynamics of aging through cross-national and multidisciplinary research. As the future pace of population aging will likely exceed the rapid speed that has taken place thus far, preparations for an aging population need to advance now in these six countries, as well as in most middle- and low-income countries, to avoid the costs and penalties from waiting to respond (Suzman, 2011). Future waves of SAGE data collection (Wave 2 of SAGE will be implemented in 2012 and Wave 3 is planned for 2014) will provide the longitudinal data needed to examine the trends and attempt to decipher some of the differences documented in this report and found in aging research in general.

[1] For an example of comparisons between China and India, see Bloom, et al., 2010. For a discussion on the tendency of the Chinese not to reveal negative feelings to people outside their family, see He, et al., 2007.

[2] The Chinese aged 50 and older in 2007–2010 were born in 1960 or earlier, and those aged 70 and older were born in 1940 or earlier. They have been through the great famine in the early 1960s and the Cultural Revolution from the mid-1960s to mid-1970s. Anecdotal observations reveal that with the economic reforms beginning in the 1980s, many older Chinese expressed satisfaction with their life in comparison to what they had been through before.

Sources of the Data and Accuracy of the Estimates

SAGE Data

The findings in this report are primarily based on the World Health Organization's (WHO) Study on Global Ageing and Adult Health (SAGE) Wave 1 data collected in 2007–2010. The population universe covered in this report includes the population living in China, Ghana, India, Mexico, Russia, and South Africa.

SAGE is designed as a multiwave panel study representative of the population aged 50 and older, with a smaller cohort of respondents aged 18–49 for comparative purposes. SAGE Wave 0 data (2002–2004) were collected as part of the WHO's World Health Surveys. For Wave 1 (2007–2010), Ghana, India, Mexico, and Russia used the Wave 0 sampling frame and reinterviewed at least 50 percent of the Wave 0 respondents. China used a new sampling frame based on a national health surveillance system, and South Africa did not collect follow-up interviews but used the same Wave 0 sampling frame.

All sampling plans used multistage clustered design samples drawn from an updated frame. Each household and individual is, therefore, assigned a known nonzero probability of being selected. Household and individual weights were post-stratified to weight up to the entire number of households and 18-and-older population in each nation.

SAGE is supported by the WHO and the U.S. National Institute on Aging (NIA) through an Interagency Agreement. In addition, financial or in-kind support has come from governments of some collaborating countries to their respective national studies (China and South Africa). The United States Agency for International Development funds were secured by the SAGE India team to increase the sample of women aged 15–49 and to add questions about maternal and child health in India. Core funding for SAGE Waves 2 and 3 have been secured through the same NIA mechanisms.

Other Data

In addition to SAGE, the U.S. Census Bureau's International Data Base (IDB release June 2011) and U.N. Population Division's population estimates and projections data (U.N. World Population Prospect 2008 report) were also used in this report for trend analysis of population size and growth. WHO's global burden of disease data (2004 update) were used for information on burden of disease and healthy life expectancy.

Sampling and Nonsampling Error

Sampling error occurs when the characteristics of a sample are measured instead of those of the entire population (as from a census). Note that sample-based estimates will vary depending on the particular sample selected from the population, but all attempt to approximate the actual figures. The SAGE estimates are based on this sample and approximate the actual estimates that would have been obtained by interviewing the entire population using the same methodology. The estimates from the 2007–2010 SAGE sample may also differ from estimates based on other survey samples of the population. Measures of the magnitude of sampling error reflect the variation in the estimates over all possible samples that could have been selected from the population using the same sampling, data collection, and processing methods. Estimates of the magnitude of sampling errors are provided in the form of standard error for selected SAGE demographic and socioeconomic estimates included in this report (see Table B-1). The U.S. Census Bureau recommends that data users incorporate this information into their analyses, as sampling error in survey estimates could impact the conclusions drawn from the results. All comparative statements in this report have undergone statistical testing, and comparisons are significant at the 90 percent confidence level unless noted otherwise. This means the 90 percent confidence interval for the difference between the estimates being compared does not include zero.

In addition to sampling error, nonsampling errors may be introduced during any phase of data collection or processing. For example, operations such as editing, reviewing, or keying data from questionnaires may introduce error into the estimates. The primary source of nonsampling error and the processes instituted to control error in SAGE and related studies are described in further detail on the SAGE Web site and can be obtained from the WHO.

Furthermore, nonsampling error specific to the oldest-old population also stems from age misreporting. This is due to a variety of factors, including a gross ignorance of the true age, lack of birth records which makes it difficult to confirm or disconfirm a reported age, reliance by some oldest people on the knowledge of others for their own age, digital preference (such as those ending in "0" or "5"), and deliberate misreporting out of the desire to share in the esteem generally accorded extreme old age (Hobbs, 2004; Howden and Meyer, 2011; Krach and Velkoff, 1999).

Additional SAGE Survey Information

Additional SAGE survey related information is provided in Appendix C, which includes the following sections: *Selection of SAGE Countries*; *SAGE Sample Size, Response Rate, and Weighting*; *Validation of SAGE Data on Age, Sex, and Urban/Rural Residence Using Data From IDB, UN, and CIA*; *Sampling and Representativeness of the SAGE Data Compared to LASI and Other Surveys*; and *Issues of Vignettes and Data Comparability*. The WHO SAGE Web site provides more detailed information related to the surveys and the data. For inquiries and data access, contact WHO at <www.who.int/healthinfo/systems/sage/en/index.html>.

Data Confidentiality

Title 13, U.S. Code, Section 9, prohibits the Census Bureau from publishing results from which the identity of an individual survey respondent could be determined. For more information on how the Census Bureau protects the confidentiality of data, see the U.S. Census Bureau Data Protection and Privacy Policy, available at <www.census.gov/privacy/data_protection/>. To protect the confidentiality of data, the WHO limits access to SAGE for research purposes.

For access to data, complete the SAGE User Agreement available at <www.who.int/healthinfo/systems/sage/en/index1.html>.

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Or visit <www.census.gov> for further information.

World Health Organization
Switchboard, +41 22 791 2111 (international rates apply)
Visit <www.who.int/healthinfo/systems/sage> or write <sagesurvey@who.int> for more information.

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Appendix A.

Table A-1.
Selected Demographic and Socioeconomic Characteristics for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
CHINA							
Marital Status							
Never married	1.1	1.1	1.0	1.6	0.6	1.1	1.1
Currently married	85.4	91.0	65.3	90.0	80.8	86.3	84.7
Cohabiting	0.2	0.2	0.5	0.2	0.3	0.1	0.3
Separated/divorced	1.6	1.7	1.1	1.6	1.5	2.1	1.1
Widowed	11.7	6.0	32.2	6.5	16.9	10.3	12.8
Educational Attainment							
No formal education or less than primary school	42.4	35.9	65.7	31.8	53.0	21.7	58.9
Primary school completed	20.6	22.3	14.6	24.0	17.3	19.5	21.6
Secondary school completed	20.1	23.6	8.0	23.7	16.6	26.9	14.8
High school completed	12.6	14.3	6.6	14.7	10.5	22.5	4.7
College/university completed	4.2	4.0	5.1	5.9	2.6	9.5	0.1
Work Status							
Currently working	50.3	57.0	24.9	57.1	42.9	21.9	74.9
Not working, disabled	3.4	2.7	6.1	3.2	3.6	1.3	5.3
Not working, retired	37.7	31.1	62.4	31.6	44.3	67.5	11.8
Not working, other reason	8.6	9.1	6.6	8.1	9.2	9.4	7.9
Employment or Retirement Benefits							
Pension	36.7	34.7	44.2	35.9	37.6	72.5	5.7
Medical	41.6	41.2	43.1	43.0	40.1	71.4	15.8
Food	38.2	38.9	35.5	38.0	38.4	18.3	55.3
Cash	14.9	15.6	12.6	16.6	13.1	27.3	4.2
No benefits	14.6	14.9	13.1	13.4	15.7	5.7	22.2
Other	0.6	0.7	0.6	0.7	0.6	0.8	0.5
GHANA							
Marital Status							
Never married	1.3	1.4	1.1	1.2	1.4	1.6	1.2
Currently married	59.8	65.9	47.1	84.0	35.9	57.3	61.5
Cohabiting	0.8	0.9	0.4	1.1	0.5	0.9	0.7
Separated/divorced	12.2	13.1	10.4	7.1	17.3	14.0	11.0
Widowed	25.9	18.7	40.9	6.6	44.9	26.2	25.6
Educational Attainment							
No formal education or less than primary school	64.3	56.2	81.1	53.6	76.2	52.8	72.3
Primary school completed	10.9	13.2	6.3	12.3	9.4	11.9	10.3
Secondary school completed	4.0	5.1	1.8	5.8	2.1	6.2	2.5
High school completed	17.1	21.1	8.9	23.2	10.4	23.1	12.9
College/university completed	3.6	4.4	2.0	5.1	2.0	5.9	2.0
Work Status							
Currently working	70.1	80.2	49.2	73.5	66.4	61.4	76.1
Not working, disabled	9.9	7.7	14.4	7.4	12.7	9.9	9.8
Not working, retired	13.3	4.8	31.0	11.9	14.8	18.3	9.9
Not working, other reason	6.7	7.3	5.5	7.2	6.1	10.4	4.2
Employment or Retirement Benefits							
Pension	9.5	10.1	8.4	14.2	4.4	16.7	4.6
Medical	8.4	8.5	8.1	11.6	4.9	14.2	4.4
Food	27.7	27.5	28.0	28.6	26.6	20.9	32.3
Cash	10.7	11.2	9.4	12.2	9.0	13.1	9.0
No benefits	27.5	27.0	28.6	24.7	30.6	25.6	28.8
Other	2.2	2.5	1.5	1.9	2.5	3.1	1.5

Table A-1.

Selected Demographic and Socioeconomic Characteristics for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
INDIA							
Marital Status							
Never married	0.7	0.8	0.5	1.1	0.3	0.3	0.9
Currently married	74.9	82.8	51.8	91.0	58.4	75.4	74.6
Cohabiting	–	–	–	–	–	–	–
Separated/divorced	0.5	0.4	0.8	0.2	0.9	0.5	0.5
Widowed	23.9	16.0	46.9	7.7	40.4	23.7	24.0
Educational Attainment							
No formal education or less than primary school	61.7	58.1	71.9	43.2	80.5	45.7	68.9
Primary school completed	14.8	15.3	13.2	18.1	11.3	18.1	13.3
Secondary school completed	9.9	11.7	4.6	15.5	4.2	13.4	8.3
High school completed	8.5	8.9	7.3	14.4	2.5	12.4	6.7
College/university completed	5.2	5.9	3.0	8.8	1.5	10.3	2.8
Work Status							
Currently working	57.0	65.7	30.3	64.9	40.5	51.6	59.3
Not working, disabled	14.8	11.7	24.6	11.3	22.2	15.1	14.7
Not working, retired	17.0	11.6	33.8	17.1	16.9	21.2	15.2
Not working, other reason	11.1	11.1	11.3	6.7	20.4	12.1	10.7
Employment or Retirement Benefits							
Pension	9.5	8.6	12.4	12.7	2.9	17.6	6.0
Medical	7.6	7.7	7.3	10.2	2.1	13.7	4.9
Food	5.9	6.1	5.5	5.7	6.5	6.7	5.6
Cash	13.3	13.5	12.5	15.4	8.8	14.3	12.8
No benefits	64.7	64.5	65.1	63.2	67.8	54.7	69.0
Other	5.0	4.8	5.7	5.2	4.7	5.9	4.6
MEXICO							
Marital Status							
Never married	7.0	6.7	8.0	2.8	10.7	7.5	5.4
Currently married	70.3	78.0	47.3	85.2	57.2	68.1	78.1
Cohabiting	2.7	3.2	1.5	3.8	1.9	2.5	3.5
Separated/divorced	4.5	4.3	5.2	2.4	6.3	5.2	1.8
Widowed	15.5	7.9	38.0	5.8	24.0	16.7	11.2
Educational Attainment							
No formal education or less than primary school	55.6	51.1	68.9	48.9	61.4	46.3	89.4
Primary school completed	24.0	25.7	19.1	29.8	19.0	28.3	8.3
Secondary school completed	9.9	12.0	3.6	8.6	11.0	12.3	1.1
High school completed	2.4	2.1	3.3	2.3	2.5	2.9	0.3
College/university completed	8.1	9.1	5.1	10.4	6.1	10.1	0.8
Work Status							
Currently working	60.8	72.2	20.7	67.8	46.9	59.9	64.6
Not working, disabled	6.8	4.3	15.8	7.6	5.2	6.7	7.3
Not working, retired	9.7	4.3	28.8	9.8	9.6	10.4	7.1
Not working, other reason	22.7	19.2	34.8	14.7	38.4	23.1	21.0
Employment or Retirement Benefits							
Pension	20.6	19.0	26.3	25.3	11.3	24.6	5.0
Medical	23.9	26.6	14.3	25.8	20.1	28.5	5.4
Food	3.7	4.2	1.9	2.0	7.1	4.2	1.7
Cash	6.0	7.1	2.1	7.4	3.1	7.3	0.8
No benefits	0.8	0.3	2.5	0.3	1.7	1.0	–
Other	70.0	70.6	68.2	67.3	75.5	64.3	92.9

Table A-1.

Selected Demographic and Socioeconomic Characteristics for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
RUSSIA							
Marital Status							
Never married	2.7	3.0	2.0	1.4	3.6	2.8	2.5
Currently married	54.2	62.1	35.5	72.2	42.7	55.4	50.9
Cohabiting	4.1	4.5	2.9	5.7	3.0	4.2	3.6
Separated/divorced	9.9	13.1	2.6	10.5	9.6	8.8	12.9
Widowed	29.1	17.2	56.9	10.2	41.1	28.7	30.1
Educational Attainment							
No formal education or less than primary school	1.9	0.3	5.8	0.5	2.8	1.8	2.3
Primary school completed	5.5	1.1	16.0	5.1	5.8	4.9	7.1
Secondary school completed	20.1	13.7	35.0	17.5	21.7	17.7	26.7
High school completed	53.9	62.9	32.9	58.1	51.3	55.2	50.5
College/university completed	18.5	22.0	10.3	18.7	18.4	20.4	13.5
Work Status							
Currently working	40.5	55.4	5.1	48.2	35.4	40.0	41.8
Not working, disabled	–	–	–	–	–	–	–
Not working, retired	–	–	–	–	–	–	–
Not working, other reason	59.5	44.6	94.9	51.8	64.6	60.0	58.2
Employment or Retirement Benefits							
Pension	42.5	35.5	59.7	36.0	46.8	44.7	36.5
Medical	17.4	17.2	18.0	14.8	19.1	18.1	15.7
Food	5.4	4.4	8.0	4.9	5.8	5.7	4.7
Cash	38.2	37.1	40.6	34.3	40.6	39.8	33.6
No benefits	30.7	35.0	20.4	38.0	26.1	27.4	40.1
Other	1.0	1.3	0.4	1.4	0.8	1.1	0.8
SOUTH AFRICA							
Marital Status							
Never married	14.3	15.9	7.5	8.4	19.0	15.0	13.0
Currently married	50.4	51.4	46.1	72.6	32.7	52.1	47.3
Cohabiting	5.5	6.6	1.1	7.5	3.9	5.2	6.1
Separated/divorced	5.9	6.5	3.4	3.8	7.6	6.1	5.7
Widowed	23.9	19.5	41.8	7.7	36.8	21.7	27.9
Educational Attainment							
No formal education or less than primary school	48.6	46.8	55.9	46.5	50.0	38.6	66.9
Primary school completed	22.7	23.5	19.5	22.4	22.9	26.3	16.2
Secondary school completed	14.5	14.3	15.3	13.1	15.4	16.4	11.0
High school completed	8.4	9.0	6.0	9.1	8.0	11.3	3.2
College/university completed	5.7	6.3	3.3	9.0	3.6	7.4	2.7
Work Status							
Currently working	34.8	39.9	12.2	43.5	27.1	35.5	33.2
Not working, disabled	14.4	16.0	7.1	15.2	13.7	14.9	13.3
Not working, retired	32.2	23.7	69.4	22.9	40.3	31.3	34.1
Not working, other reason	18.7	20.3	11.3	18.4	18.9	18.3	19.4
Employment or Retirement Benefits							
Pension	28.9	28.5	30.6	37.7	21.1	34.5	16.4
Medical	18.0	17.7	19.3	25.1	11.7	21.2	10.9
Food	11.4	11.9	9.2	12.0	10.9	11.1	12.1
Cash	29.8	31.4	23.1	36.4	24.1	34.2	20.2
No benefits	9.1	9.5	7.2	6.8	11.1	8.2	11.1
Other	2.4	2.4	2.2	3.0	1.9	2.4	2.4

– Represents or rounds to 0.0.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Table A-2.

General Health and Chronic Conditions for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
CHINA							
Mean Health State Score	68.1	70.4	59.6	70.3	65.9	71.9	65.0
Chronic Conditions							
Arthritis	21.3	20.2	25.2	17.2	25.3	23.2	19.7
Stroke	2.8	2.2	5.3	3.3	2.3	3.3	2.4
Angina	7.4	6.0	12.3	5.6	9.2	8.9	6.1
Diabetes	6.1	5.6	8.1	5.4	6.8	9.7	3.2
Lung disease	7.5	6.1	12.7	8.9	6.2	8.3	7.0
Asthma	1.9	1.5	3.3	2.0	1.8	2.4	1.5
Depression	1.1	1.1	1.2	0.8	1.4	1.0	1.2
Hypertension	25.7	22.9	35.7	23.2	28.1	31.8	20.7
Cataracts	7.0	4.2	17.2	4.8	9.2	11.0	3.8
Missing all teeth/edentulism	9.0	4.9	24.0	8.1	9.8	6.5	11.0
Injuries	6.8	6.6	7.3	6.6	6.9	4.3	8.8
GHANA							
Mean Health State Score	56.1	59.2	49.9	58.6	53.5	58.4	54.6
Chronic Conditions							
Arthritis	13.8	11.0	19.6	11.5	16.3	14.1	13.7
Stroke	2.8	2.2	4.0	2.7	2.9	4.3	1.7
Angina	3.6	2.8	5.2	3.0	4.3	3.8	3.4
Diabetes	3.8	3.9	3.5	3.2	4.4	6.1	2.2
Lung disease	0.5	0.5	0.7	0.6	0.5	0.8	0.3
Asthma	3.3	2.7	4.5	3.3	3.4	3.5	3.2
Depression	7.2	5.9	9.9	5.6	9.0	7.1	7.3
Hypertension	14.2	13.5	15.7	11.3	17.4	23.1	8.0
Cataracts	5.3	3.3	9.6	5.1	5.6	6.3	4.7
Missing all teeth/edentulism	3.0	2.0	4.9	2.6	3.4	4.0	2.2
Injuries	7.3	7.6	6.6	6.7	8.0	6.5	7.9
INDIA							
Mean Health State Score	53.1	55.4	46.5	56.7	49.5	56.1	51.8
Chronic Conditions							
Arthritis	18.4	17.6	20.8	15.5	21.4	18.1	18.6
Stroke	2.0	1.8	2.6	2.3	1.7	2.6	1.8
Angina	5.7	5.0	7.7	7.1	4.3	8.3	4.6
Diabetes	7.1	7.0	7.3	8.4	5.7	11.7	4.9
Lung disease	4.6	3.9	6.7	6.5	2.7	4.7	4.6
Asthma	7.5	6.7	9.8	9.2	5.7	8.4	7.1
Depression	13.6	12.8	16.0	11.9	15.4	12.9	14.0
Hypertension	17.4	16.1	21.1	14.3	20.5	24.9	14.0
Cataracts	18.8	13.9	33.1	17.1	20.6	18.4	19.1
Missing all teeth/edentulism	16.3	11.7	29.9	14.6	18.1	19.0	15.1
Injuries	11.0	11.0	10.9	9.4	12.6	9.7	11.5

Table A-2.

General Health and Chronic Conditions for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
MEXICO							
Mean Health State Score	62.4	64.0	57.9	64.7	60.5	63.6	58.4
Chronic Conditions							
Arthritis	9.0	6.2	17.2	4.8	12.6	9.5	7.0
Stroke	4.3	3.1	7.8	4.5	4.1	4.8	2.7
Angina	2.7	2.2	4.2	1.7	3.6	3.2	1.0
Diabetes	17.6	17.7	17.5	16.7	18.4	19.3	11.4
Lung disease	3.6	2.9	5.6	3.0	4.1	4.0	2.2
Asthma	1.8	1.4	3.0	1.0	2.5	1.9	1.6
Depression	10.7	12.2	6.4	3.6	17.0	12.3	5.3
Hypertension	30.3	26.9	40.5	25.0	35.0	29.8	32.2
Cataracts	10.0	7.0	19.2	8.8	11.1	10.5	8.4
Missing all teeth/edentulism	21.7	15.0	41.6	16.9	25.8	20.4	26.2
Injuries	6.0	5.6	7.0	7.1	5.0	6.1	5.4
RUSSIA							
Mean Health State Score	60.1	64.5	49.7	63.6	57.8	60.4	59.1
Chronic Conditions							
Arthritis	30.1	24.7	42.9	24.9	33.5	29.9	30.8
Stroke	4.8	3.2	8.6	5.0	4.6	5.3	3.5
Angina	32.5	26.0	47.8	31.0	33.5	31.3	35.9
Diabetes	7.1	6.4	8.7	5.4	8.2	7.5	6.1
Lung disease	14.6	14.1	15.7	16.5	13.4	15.4	12.5
Asthma	2.7	2.5	3.0	2.1	3.1	2.4	3.3
Depression	3.6	3.2	4.4	1.6	4.9	4.2	1.8
Hypertension	52.4	47.0	65.2	41.1	59.6	51.9	53.8
Cataracts	12.7	7.8	24.7	9.6	14.7	14.0	9.3
Missing all teeth/edentulism	18.0	9.3	38.3	15.4	19.6	18.2	17.3
Injuries	5.6	6.1	4.2	5.0	5.9	6.5	3.0
SOUTH AFRICA							
Mean Health State Score	62.0	63.5	55.9	64.5	60.0	62.6	61.0
Chronic Conditions							
Arthritis	24.7	24.8	24.3	18.8	29.3	26.3	21.7
Stroke	4.0	3.7	5.2	4.2	3.9	3.9	4.2
Angina	5.2	5.4	4.6	3.9	6.3	5.7	4.3
Diabetes	9.2	8.4	12.4	6.9	11.0	11.1	5.6
Lung disease	2.9	2.9	2.8	2.3	3.3	2.9	2.9
Asthma	4.9	5.2	3.7	5.2	4.7	5.2	4.2
Depression	3.0	3.2	2.1	2.9	3.1	2.5	3.9
Hypertension	30.3	28.9	36.4	25.0	34.5	32.4	26.5
Cataracts	4.4	3.0	10.2	4.7	4.2	5.6	2.2
Missing all teeth/edentulism	8.5	7.1	14.1	8.1	8.7	11.1	3.5
Injuries	3.1	2.9	4.1	4.2	2.3	3.1	3.2

Note: WHO's health state score includes 16 responses from 8 health domains. 0=worst health, 100=best health. Depression in SAGE was assessed by a combination of self-reported diagnosed depression and responses to symptom questions.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Table A-3.

Behavioral Risk Factors for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
CHINA							
Risk Factors							
Smoking:							
Current daily smoker	27.1	28.8	20.7	51.6	2.9	21.2	31.8
Smoker, not daily	2.5	2.4	3.0	4.5	0.6	2.1	2.9
Not current smoker	6.4	5.5	9.9	11.9	0.9	7.1	5.8
Never smoker	64.0	63.3	66.5	32.0	95.5	69.5	59.5
Alcohol:							
Frequent heavy drinker[1]	6.4	6.9	4.4	12.9	0.6	1.9	9.8
Infrequent heavy drinker[2]	1.3	1.5	0.5	2.4	0.2	1.4	1.1
Nonheavy drinker	18.5	19.5	14.5	33.3	5.4	16.7	19.9
Lifetime abstainer	73.9	72.1	80.6	51.3	93.8	79.9	69.2
Preventive Health Behaviors							
Daily fruit and vegetable intake:							
Adequate[3]	64.5	67.4	54.1	64.4	64.6	66.2	63.1
Physical activity:							
Low	28.7	24.4	44.1	27.0	30.5	28.3	29.1
Moderate[4]	27.7	27.6	28.2	25.9	29.4	37.2	20.1
High[4]	43.6	48.0	27.7	47.1	40.1	34.4	50.9
GHANA							
Risk Factors							
Smoking:							
Current daily smoker	7.6	7.1	8.7	11.3	3.7	4.1	10.2
Smoker, not daily	2.6	2.9	2.0	3.7	1.4	2.2	2.9
Not current smoker	14.2	13.6	15.5	24.6	2.9	15.6	13.3
Never smoker	75.5	76.3	73.8	60.4	92.0	78.2	73.7
Alcohol:							
Frequent heavy drinker[1]	1.5	1.9	0.7	2.5	0.4	1.2	1.7
Infrequent heavy drinker[2]	1.2	1.4	0.9	1.7	0.7	1.3	1.2
Nonheavy drinker	39.5	42.9	32.4	51.9	25.3	33.4	43.5
Lifetime abstainer	57.8	53.9	65.9	44.0	73.6	64.1	53.6
Preventive Health Behaviors							
Daily fruit and vegetable intake:							
Adequate[3]	28.4	29.3	26.7	28.9	28.0	30.4	27.1
Physical activity:							
Low	31.8	27.6	40.8	24.9	38.8	42.4	24.6
Moderate[4]	12.6	12.3	13.3	13.5	11.8	16.0	10.3
High[4]	55.5	60.1	45.9	61.7	49.4	41.5	65.0

See footnotes at end of table.

Table A-3.

Behavioral Risk Factors for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
INDIA							
Risk Factors							
Smoking:							
Current daily smoker	46.5	46.9	45.3	62.4	30.3	37.4	50.6
Smoker, not daily	2.9	2.9	3.0	4.3	1.6	2.9	3.0
Not current smoker	4.8	4.1	6.7	7.4	2.2	4.6	4.9
Never smoker	45.8	46.1	44.9	26.0	66.0	55.1	41.5
Alcohol:							
Frequent heavy drinker[1]	0.2	0.3	–	0.4	–	0.1	0.2
Infrequent heavy drinker[2]	0.4	0.4	0.3	0.7	0.1	–	0.6
Nonheavy drinker	6.6	7.2	4.8	13.0	1.2	4.1	7.8
Lifetime abstainer	92.8	92.1	94.9	85.9	98.7	95.8	91.4
Preventive Health Behaviors							
Daily fruit and vegetable intake:							
Adequate[3]	9.2	10.2	6.5	12.1	6.3	11.6	8.2
Physical activity:							
Low	26.3	20.0	44.3	24.7	27.9	30.3	24.4
Moderate[4]	23.9	22.6	27.9	22.6	25.4	28.9	21.7
High[4]	49.8	57.4	27.7	52.7	46.8	40.7	53.9
MEXICO							
Risk Factors							
Smoking:							
Current daily smoker	13.3	14.3	10.2	18.8	8.5	15.2	6.3
Smoker, not daily	6.9	7.7	4.6	11.1	3.2	7.8	3.7
Not current smoker	19.1	18.9	19.8	29.5	10.0	17.7	24.0
Never smoker	60.7	59.1	65.5	40.6	78.3	59.2	65.9
Alcohol:							
Frequent heavy drinker[1]	0.1	0.1	0.2	0.3	–	0.1	0.2
Infrequent heavy drinker[2]	6.2	7.6	2.1	14.7	0.6	6.4	5.7
Nonheavy drinker	29.3	34.8	12.9	49.1	16.0	30.2	26.0
Lifetime abstainer	64.3	57.5	84.9	36.0	83.4	63.3	68.1
Preventive Health Behaviors							
Daily fruit and vegetable intake:							
Adequate[3]	18.6	19.6	15.9	24.4	13.5	15.8	29.1
Physical activity:							
Low	39.4	32.8	57.9	33.2	44.9	40.9	34.0
Moderate[4]	22.2	22.4	21.6	19.0	25.0	22.1	22.5
High[4]	38.4	44.8	20.5	47.8	30.1	37.0	43.5

See footnotes at end of table.

Table A-3.

Behavioral Risk Factors for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
RUSSIA							
Risk Factors							
Smoking:							
Current daily smoker	19.9	26.1	5.4	44.0	4.7	18.4	24.2
Smoker, not daily	1.2	1.2	1.3	2.4	0.5	1.6	0.2
Not current smoker	9.2	8.4	11.2	19.3	2.8	9.7	8.0
Never smoker	69.6	64.3	82.0	34.3	92.0	70.3	67.7
Alcohol:							
Frequent heavy drinker[1]	1.4	1.8	0.2	3.1	0.1	0.9	2.8
Infrequent heavy drinker[2]	6.4	7.4	3.5	11.1	2.9	7.2	4.1
Nonheavy drinker	47.8	55.3	25.9	65.8	34.2	46.8	50.5
Lifetime abstainer	44.5	35.5	70.4	20.1	62.7	45.1	42.6
Preventive Health Behaviors							
Daily fruit and vegetable intake:							
Adequate[3]	20.9	21.8	18.7	20.8	20.9	24.2	11.7
Physical activity:							
Low	26.6	18.3	45.9	23.5	28.6	28.7	20.8
Moderate[4]	16.1	14.9	18.7	13.9	17.5	17.3	12.8
High[4]	57.4	66.7	35.3	62.7	54.0	54.1	66.4
SOUTH AFRICA							
Risk Factors							
Smoking:							
Current daily smoker	19.4	19.9	17.3	22.9	16.6	19.2	19.7
Smoker, not daily	3.4	3.8	1.5	4.5	2.4	3.5	3.2
Not current smoker	9.5	9.0	11.6	12.9	6.8	10.4	7.9
Never smoker	67.7	67.3	69.7	59.7	74.1	66.9	69.2
Alcohol:							
Frequent heavy drinker[1]	1.0	1.1	0.6	1.3	0.8	1.0	1.0
Infrequent heavy drinker[2]	3.0	3.4	1.2	4.7	1.7	3.3	2.3
Nonheavy drinker	11.5	12.4	7.8	17.7	6.8	11.5	11.6
Lifetime abstainer	84.5	83.1	90.3	76.3	90.7	84.2	85.0
Preventive Health Behaviors							
Daily fruit and vegetable intake:							
Adequate[3]	31.4	31.2	32.5	35.2	28.5	35.0	24.9
Physical activity:							
Low	60.3	57.7	70.7	56.8	63.0	61.7	57.6
Moderate[4]	13.5	13.3	14.4	15.4	12.1	13.9	12.9
High[4]	26.2	28.9	14.9	27.8	24.9	24.4	29.5

– Represents or rounds to 0.0.

[1] Heavy drinking is defined as five or more standard drinks per day for men and four or more standard drinks per day for women. Frequent heavy drinking is 3 or more days of heavy drinking consumed in the past 7 days.

[2] Infrequent heavy drinking is 1 or 2 days of heavy drinking consumed in the past 7 days.

[3] Adequate fruit/vegetable intake is defined as five servings per day.

[4] Moderate or high level of physical activity is measured by intensity, duration, and frequency of physical activity.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Table A-4.

Disability for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
CHINA							
Any Disability	68.1	63.3	85.4	63.7	72.5	58.4	75.8
Difficulty Moving Around							
None	79.0	84.3	59.6	81.8	76.1	85.3	73.9
Mild to moderate	19.6	14.9	36.5	16.5	22.6	13.9	24.1
Severe	1.5	0.8	3.9	1.7	1.3	0.9	1.9
Difficulty With Self-Care							
None	91.8	95.0	80.3	92.7	91.0	93.4	90.5
Mild to moderate	7.4	4.6	17.5	6.6	8.2	5.9	8.6
Severe	0.8	0.4	2.2	0.8	0.8	0.7	0.9
Bodily Aches or Pains							
None	51.7	54.4	41.4	57.2	46.1	61.1	44.1
Mild to moderate	45.3	43.1	53.6	40.5	50.2	37.3	51.8
Severe	3.0	2.5	5.0	2.3	3.7	1.7	4.1
Cognition							
Difficulty concentrating or remembering:							
None	52.2	57.8	32.0	56.9	47.5	62.8	43.7
Mild to moderate	44.7	40.3	60.6	40.4	48.9	36.0	51.7
Severe	3.1	1.9	7.4	2.7	3.5	1.2	4.6
Mean cognition score	57.5	59.8	49.8	58.5	56.6	60.4	55.2
WHODASi Score[1]							
0–25	0.4	0.1	1.3	0.3	0.4	0.2	0.5
26–50	1.6	0.7	4.9	1.5	1.6	0.8	2.2
51–75	9.1	6.0	20.0	6.8	11.3	5.7	11.8
76–100	89.0	93.3	73.7	91.4	86.6	93.3	85.5
Mean WHODASi score	91.1	93.3	83.4	92.3	89.9	93.8	89.0
GHANA							
Any Disability	77.9	73.0	88.1	77.8	78.0	76.6	78.8
Difficulty Moving Around							
None	52.6	60.4	36.6	56.4	48.5	52.9	52.5
Mild to moderate	40.1	35.0	50.5	38.2	42.2	38.9	40.9
Severe	7.3	4.5	12.9	5.4	9.3	8.3	6.6
Difficulty With Self-Care							
None	75.0	80.3	64.1	77.3	72.5	76.4	74.1
Mild to moderate	22.5	18.0	31.7	20.9	24.3	20.8	23.7
Severe	2.5	1.6	4.1	1.8	3.1	2.8	2.2
Bodily Aches or Pains							
None	20.0	24.4	11.0	25.0	14.5	24.8	16.6
Mild to moderate	65.0	63.3	68.5	62.5	67.8	61.6	67.4
Severe	15.0	12.3	20.6	12.5	17.7	13.6	15.9
Cognition							
Difficulty concentrating or remembering:							
None	38.3	44.4	25.7	45.4	30.5	45.0	33.6
Mild to moderate	54.9	50.6	63.7	50.0	60.3	49.0	59.0
Severe	6.8	5.0	10.6	4.6	9.2	6.0	7.3
Mean cognition score	58.2	60.4	53.7	60.1	56.2	58.8	57.8
WHODASi Score[1]							
0–25	1.4	0.8	2.6	0.9	1.9	1.6	1.2
26–50	7.4	3.5	15.5	6.0	8.8	7.7	7.1
51–75	29.8	25.2	39.5	26.8	32.8	28.1	31.0
76–100	61.4	70.5	42.3	66.3	56.6	62.6	60.6
Mean WHODASi score	79.4	83.8	70.2	81.5	77.4	80.0	79.0

See footnote at end of table.

Table A-4.

Disability for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
INDIA							
Any Disability	93.4	92.1	97.3	90.4	96.5	89.9	95.0
Difficulty Moving Around							
None	44.0	49.7	27.5	52.9	34.9	49.5	41.5
Mild to moderate	39.1	37.4	44.1	34.1	44.3	35.3	40.9
Severe	16.8	12.8	28.5	13.0	20.8	15.2	17.6
Difficulty With Self-Care							
None	77.2	81.8	63.7	81.5	72.8	79.0	76.3
Mild to moderate	19.2	15.9	29.0	16.2	22.3	18.6	19.5
Severe	3.6	2.3	7.3	2.3	4.9	2.4	4.1
Bodily Aches or Pains							
None	25.6	29.0	15.8	32.8	18.4	31.3	23.1
Mild to moderate	53.7	52.6	56.8	52.1	55.4	50.4	55.2
Severe	20.7	18.3	27.3	15.2	26.3	18.3	21.7
Cognition							
Difficulty concentrating or remembering:							
None	32.5	37.0	19.3	40.7	24.1	40.4	28.9
Mild to moderate	53.4	52.0	57.6	50.3	56.6	48.1	55.8
Severe	14.1	11.0	23.1	9.0	19.3	11.5	15.3
Mean cognition score	49.4	50.9	43.2	52.5	46.1	52.1	48.3
WHODASi Score[1]							
0–25	2.8	1.4	6.9	1.6	4.0	1.0	3.6
26–50	12.9	9.8	22.0	9.7	16.3	10.6	14.0
51–75	39.4	37.6	44.7	33.8	45.1	39.1	39.5
76–100	44.9	51.2	26.4	54.9	34.7	49.2	42.9
Mean WHODASi score	71.3	74.6	61.7	75.6	66.9	74.3	69.9
MEXICO							
Any Disability	79.1	78.9	79.7	74.8	82.9	77.0	86.7
Difficulty Moving Around							
None	61.5	66.8	45.7	68.2	55.7	65.2	48.2
Mild to moderate	32.7	30.1	40.5	27.1	37.6	28.9	46.5
Severe	5.8	3.1	13.8	4.7	6.7	5.9	5.3
Difficulty With Self-Care							
None	80.3	84.2	68.7	82.8	78.2	83.0	70.5
Mild to moderate	15.9	14.1	21.3	13.6	18.0	13.4	25.2
Severe	3.7	1.7	10.0	3.6	3.8	3.6	4.3
Bodily Aches or Pains							
None	45.9	47.0	42.4	51.1	41.3	48.3	37.0
Mild to moderate	45.4	44.3	48.5	39.4	50.6	45.5	44.8
Severe	8.8	8.7	9.1	9.5	8.1	6.2	18.2
Cognition							
Difficulty concentrating or remembering:							
None	51.0	52.9	45.4	52.8	49.5	55.0	36.6
Mild to moderate	47.0	45.7	50.9	45.7	48.2	43.4	60.0
Severe	2.0	1.3	3.8	1.5	2.3	1.6	3.4
Mean cognition score	71.1	73.1	65.4	71.7	70.6	72.0	67.8
WHODASi Score[1]							
0–25	0.7	0.2	2.0	0.6	0.8	0.6	1.1
26–50	3.9	2.0	9.4	3.4	4.4	3.8	4.6
51–75	20.8	18.6	26.9	21.8	19.9	16.6	36.2
76–100	74.6	79.2	61.7	74.3	74.8	79.0	58.2
Mean WHODASi score	84.8	86.8	79.0	85.9	83.7	86.3	79.2

See footnote at end of table.

Table A-4.

Disability for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
RUSSIA							
Any Disability	91.3	88.4	98.1	88.1	93.3	90.0	94.9
Difficulty Moving Around							
None	48.1	62.4	14.4	56.1	43.0	48.1	48.0
Mild to moderate	42.0	32.2	65.0	37.7	44.8	41.3	43.8
Severe	9.9	5.4	20.6	6.3	12.3	10.5	8.2
Difficulty With Self-Care							
None	72.9	85.3	43.6	78.8	69.2	72.0	75.6
Mild to moderate	22.8	13.6	44.8	18.5	25.6	23.7	20.5
Severe	4.2	1.1	11.5	2.7	5.2	4.3	3.9
Bodily Aches or Pains							
None	38.0	46.1	19.1	43.5	34.5	39.8	33.2
Mild to moderate	52.1	47.5	63.0	50.1	53.4	50.0	58.0
Severe	9.8	6.4	17.9	6.4	12.0	10.2	8.9
Cognition							
Difficulty concentrating or remembering:							
None	49.7	60.0	25.3	53.2	47.4	49.6	50.0
Mild to moderate	45.5	38.4	62.3	43.6	46.8	45.5	45.7
Severe	4.8	1.6	12.4	3.2	5.8	4.9	4.4
Mean cognition score	63.1	66.3	54.2	63.7	62.6	63.1	63.0
WHODASi Score[1]							
0–25	1.3	0.1	4.1	1.1	1.4	1.1	1.8
26–50	6.4	1.6	17.7	4.2	7.8	6.3	6.7
51–75	23.8	16.5	40.9	17.3	27.9	24.0	23.1
76–100	68.5	81.8	37.3	77.4	62.9	68.6	68.4
Mean WHODASi score	80.8	86.6	67.2	84.5	78.5	81.0	80.5
SOUTH AFRICA							
Any Disability	75.9	73.4	86.0	69.4	80.9	75.5	76.6
Difficulty Moving Around							
None	66.2	70.3	49.3	70.7	62.6	68.7	61.6
Mild to moderate	27.7	24.7	40.1	24.6	30.2	25.7	31.3
Severe	6.1	5.0	10.5	4.7	7.2	5.5	7.1
Difficulty With Self-Care							
None	83.5	85.5	75.2	84.4	82.7	87.0	77.0
Mild to moderate	14.7	13.4	20.1	13.8	15.4	11.6	20.5
Severe	1.8	1.1	4.7	1.7	1.9	1.4	2.5
Bodily Aches or Pains							
None	36.1	37.9	28.7	40.5	32.7	36.3	35.8
Mild to moderate	51.4	50.6	54.7	50.5	52.1	51.3	51.7
Severe	12.5	11.5	16.6	9.0	15.2	12.4	12.5
Cognition							
Difficulty concentrating or remembering:							
None	44.4	47.3	32.4	48.4	41.2	46.0	41.5
Mild to moderate	47.3	45.4	55.1	46.0	48.4	47.4	47.2
Severe	8.3	7.3	12.5	5.7	10.4	6.7	11.3
Mean cognition score	55.9	57.3	50.0	57.2	54.9	57.0	53.9
WHODASi Score[1]							
0–25	1.1	0.7	2.9	0.8	1.4	0.7	1.9
26–50	10.0	7.5	20.3	8.7	11.0	8.5	12.7
51–75	26.0	24.5	32.2	22.9	28.4	26.4	25.2
76–100	62.9	67.3	44.6	67.5	59.2	64.4	60.2
Mean WHODASi score	79.7	82.1	70.1	82.4	77.6	80.7	77.9

[1] WHODASi is an inverted score for WHODAS (World Health Organization Disability Assessment Schedule). 0=worst health, 100=best health.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Table A–5.

Life Satisfaction for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
CHINA							
Satisfied With							
Life as a whole	65.5	66.4	62.4	66.9	64.2	69.8	62.1
Health	57.1	59.0	50.2	60.8	53.5	61.0	54.1
Self	69.9	71.4	64.6	71.9	67.9	74.5	66.3
Performing daily activities	69.8	72.3	60.7	71.8	67.9	75.7	65.1
Personal relationships	74.9	76.4	69.3	75.0	74.8	77.0	73.2
Living conditions	63.3	63.2	63.3	62.9	63.6	61.4	64.8
Happiness							
Happy	59.4	60.1	56.7	60.3	58.5	64.9	55.0
Compared to Peers							
Better mood	16.9	17.0	16.6	19.0	14.9	19.1	15.2
More free time	15.6	14.9	17.9	16.5	14.6	14.4	16.5
Less anxious	16.1	15.9	16.8	18.0	14.3	18.2	14.4
More healthy	17.7	17.6	18.0	20.6	14.7	16.7	18.4
WHOQOL Score[1]							
0–25	1.5	1.1	3.2	1.5	1.6	0.9	2.1
26–50	31.5	30.2	36.3	29.2	33.9	25.9	36.0
51–75	62.9	64.9	55.6	65.0	60.8	68.7	58.2
76–100	4.1	3.8	4.9	4.3	3.8	4.5	3.7
Mean WHOQOL score	54.4	54.8	52.7	55.1	53.7	56.0	53.0
GHANA							
Satisfied With							
Life as a whole	56.7	60.5	48.9	59.7	53.5	61.8	53.2
Health	57.2	63.0	45.2	63.2	50.6	60.5	54.9
Self	67.7	72.5	58.0	72.5	62.5	71.5	65.2
Performing daily activities	58.3	65.5	43.3	64.2	51.8	62.4	55.4
Personal relationships	75.6	79.9	66.7	78.8	72.1	77.7	74.1
Living conditions	59.7	60.5	57.9	61.1	58.0	63.3	57.1
Happiness							
Happy	63.1	65.9	57.5	66.6	59.3	64.9	61.9
Compared to Peers							
Better mood	41.7	43.3	38.3	44.1	38.9	43.7	40.2
More free time	31.1	26.0	41.5	28.2	34.2	34.8	28.5
Less anxious	26.4	24.5	30.3	24.9	28.0	30.4	23.6
More healthy	35.6	37.5	31.7	39.2	31.7	39.0	33.3
WHOQOL Score[1]							
0–25	0.1	0.1	0.1	–	0.1	0.1	0.1
26–50	1.6	0.7	3.4	1.3	1.9	0.9	2.0
51–75	74.5	71.9	79.9	74.8	74.2	70.7	77.1
76–100	23.9	27.3	16.7	23.9	23.8	28.4	20.8
Mean WHOQOL score	72.3	73.5	69.7	71.9	72.6	73.0	71.8

See footnote at end of table.

Table A–5.

Life Satisfaction for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
INDIA							
Satisfied With							
Life as a whole	65.8	68.4	58.5	68.7	62.9	67.5	65.1
Health	55.8	60.0	43.4	61.5	49.9	61.5	53.2
Self	68.8	71.9	59.8	73.2	64.3	73.4	66.7
Performing daily activities	56.9	62.2	41.6	63.1	50.6	61.7	54.8
Personal relationships	75.9	78.6	68.0	77.4	74.3	78.3	74.8
Living conditions	81.6	81.8	80.8	81.8	81.3	85.4	79.8
Happiness							
Happy	54.5	56.0	50.1	54.0	55.1	61.6	51.3
Compared to Peers							
Better mood	40.4	40.3	40.7	43.2	37.6	43.6	39.0
More free time	34.4	29.4	48.8	29.1	39.7	35.3	33.9
Less anxious	28.1	26.9	31.8	29.5	26.8	27.9	28.3
More healthy	26.7	27.7	24.0	28.1	25.3	32.5	24.1
WHOQOL Score[1]							
0–25	0.1	0.1	0.1	–	0.1	0.1	–
26–50	0.3	0.1	0.8	0.1	0.4	0.2	0.3
51–75	71.4	68.7	79.1	65.4	77.4	64.4	74.5
76–100	28.3	31.1	20.0	34.4	22.0	35.2	25.1
Mean WHOQOL score	71.6	72.3	69.4	72.6	70.5	72.8	71.0
MEXICO							
Satisfied With							
Life as a whole	78.6	77.1	83.0	83.5	74.3	80.7	70.8
Health	68.7	68.1	70.5	76.2	62.2	68.8	68.3
Self	74.4	73.0	78.6	79.7	69.8	75.1	72.0
Performing daily activities	69.9	69.5	70.9	71.6	68.3	70.9	66.1
Personal relationships	82.9	84.5	77.9	89.0	77.4	82.3	84.8
Living conditions	80.5	79.6	83.3	87.2	74.7	79.2	85.2
Happiness							
Happy	53.5	53.7	53.0	61.3	46.7	54.4	50.4
Compared to Peers							
Better mood	28.7	28.8	28.6	33.5	24.5	31.5	18.7
More free time	22.7	20.0	30.8	23.0	22.5	22.2	24.6
Less anxious	27.8	28.9	24.7	34.5	22.0	29.4	22.1
More healthy	26.7	28.2	22.3	32.6	21.5	27.1	25.2
WHOQOL Score[1]							
0–25	3.0	2.3	4.9	2.2	3.7	3.0	3.1
26–50	56.9	56.5	58.1	52.8	60.5	55.9	60.7
51–75	36.9	39.7	29.1	41.3	33.0	37.5	34.5
76–100	3.2	1.5	7.9	3.6	2.8	3.6	1.8
Mean WHOQOL score	48.9	48.0	51.5	50.9	47.2	49.3	47.4

See footnote at end of table.

Table A–5.

Life Satisfaction for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
RUSSIA							
Satisfied With							
Life as a whole	61.2	67.3	46.8	65.7	58.4	60.7	62.7
Health	43.2	49.9	27.2	50.8	38.3	45.6	36.5
Self	65.1	70.4	52.6	74.7	59.0	66.7	60.8
Performing daily activities	61.9	73.0	35.9	71.5	55.8	65.3	52.8
Personal relationships	80.6	83.5	73.8	87.1	76.5	82.6	75.3
Living conditions	69.5	69.7	69.2	74.6	66.3	69.5	69.5
Happiness							
Happy	50.2	56.1	36.4	56.6	46.2	50.3	50.2
Compared to Peers							
Better mood	14.3	14.6	13.7	14.7	14.1	14.0	15.4
More free time	22.5	17.1	35.4	22.3	22.6	23.5	19.9
Less anxious	11.2	9.4	15.5	12.5	10.4	11.3	11.0
More healthy	11.6	13.9	6.2	14.9	9.5	12.3	9.8
WHOQOL Score[1]							
0–25	0.9	0.9	0.8	1.2	0.7	1.2	–
26–50	0.6	0.3	1.4	0.3	0.8	0.8	0.3
51–75	65.8	60.3	78.5	58.4	70.5	66.3	64.4
76–100	32.7	38.4	19.4	40.1	28.0	31.8	35.3
Mean WHOQOL score	71.4	72.4	68.9	72.3	70.8	71.0	72.3
SOUTH AFRICA							
Satisfied With							
Life as a whole	60.7	59.3	66.5	62.1	59.6	65.0	52.7
Health	62.4	62.5	61.9	66.2	59.4	64.6	58.2
Self	77.0	77.3	75.6	80.8	74.0	78.4	74.3
Performing daily activities	68.8	70.6	61.3	70.8	67.2	71.5	63.7
Personal relationships	80.6	81.4	77.6	82.4	79.3	83.0	76.2
Living conditions	58.1	57.1	62.3	59.4	57.1	64.2	46.6
Happiness							
Happy	58.3	57.0	63.7	59.3	57.5	61.6	52.2
Compared to Peers							
Better mood	37.3	37.8	35.5	41.4	34.1	39.6	33.0
More free time	31.5	29.7	39.2	27.3	34.8	32.5	29.7
Less anxious	33.2	32.5	36.2	35.9	31.1	34.8	30.2
More healthy	32.1	32.8	29.3	33.4	31.1	34.5	27.7
WHOQOL Score[1]							
0–25	0.3	0.3	0.3	0.4	0.2	0.4	0.1
26–50	3.9	3.8	4.3	4.0	3.8	3.9	3.7
51–75	81.4	81.0	83.0	80.2	82.3	79.9	84.1
76–100	14.5	15.0	12.4	15.4	13.8	15.8	12.1
Mean WHOQOL score	67.8	67.9	67.5	68.5	67.3	68.4	66.7

– Represents or rounds to 0.0.

[1] WHOQOL, World Health Organization Quality of Life assessment instrument, measures physical health, psychological health, social relationships, and environment. 0=worst health, 100=best health.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Table A-6.

Subjective Well-Being for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
CHINA							
In Last 30 Days							
Feeling sad, low, or depressed	18.6	17.2	23.4	15.9	21.2	15.2	21.3
Feeling anxious/worried	18.5	17.4	22.8	15.8	21.2	15.1	21.3
Has difficulty with relationship	9.2	5.9	21.2	8.4	9.9	7.9	10.2
Has health-related emotional problems	23.5	19.7	37.5	20.1	27.0	13.8	31.3
In Last 12 Months							
Loss of interest	6.1	6.0	6.3	4.9	7.3	4.4	7.5
Loss of energy	12.8	12.7	13.4	11.5	14.1	7.4	17.2
Loss of appetite	1.3	1.2	1.7	1.0	1.7	1.1	1.6
Difficulty sleeping	1.7	1.6	2.0	1.3	2.0	1.7	1.7
Feelings of hopelessness	1.5	1.5	1.6	1.2	1.9	1.1	1.9
Thought of death	0.8	0.8	0.9	0.6	1.1	0.4	1.2
Attempted suicide	0.3	0.3	0.5	0.3	0.4	0.2	0.5
GHANA							
In Last 30 Days							
Feeling sad, low, or depressed	52.0	49.2	57.8	48.3	56.0	46.9	55.6
Feeling anxious/worried	58.6	55.8	64.3	56.0	61.5	52.5	62.8
Has difficulty with relationship	41.6	35.2	55.0	36.9	46.9	39.1	43.4
Has health-related emotional problems	53.9	45.9	70.4	48.7	59.6	48.5	57.7
In Last 12 Months							
Loss of interest	14.7	13.4	17.3	11.4	18.3	14.8	14.6
Loss of energy	14.6	13.2	17.5	11.7	17.8	15.8	13.8
Loss of appetite	9.1	8.0	11.5	6.6	12.0	9.7	8.7
Difficulty sleeping	9.0	7.7	11.6	6.7	11.5	9.2	8.9
Feelings of hopelessness	8.0	6.8	10.6	6.3	10.0	8.0	8.0
Thought of death	4.5	3.6	6.3	3.3	5.9	4.6	4.4
Attempted suicide	0.8	0.6	1.3	0.7	0.9	1.0	0.7
INDIA							
In Last 30 Days							
Feeling sad, low, or depressed	57.9	56.1	63.0	53.6	62.2	51.8	60.6
Feeling anxious/worried	65.6	64.3	69.1	60.5	70.7	59.3	68.4
Has difficulty with relationship	48.5	44.7	59.6	41.4	55.8	45.1	50.1
Has health-related emotional problems	68.3	63.8	81.4	61.0	75.8	64.0	70.3
In Last 12 Months							
Loss of interest	27.8	26.8	30.8	25.4	30.3	21.9	30.5
Loss of energy	34.9	33.5	39.3	32.7	37.3	29.9	37.2
Loss of appetite	17.0	16.1	19.6	15.6	18.5	13.4	18.8
Difficulty sleeping	17.6	16.4	21.3	13.3	22.1	16.5	18.2
Feelings of hopelessness	12.8	12.1	14.8	10.7	15.0	13.4	12.5
Thought of death	8.5	8.1	9.8	5.7	11.4	8.2	8.7
Attempted suicide	1.5	1.1	2.8	0.9	2.2	0.8	1.9

Table A-6.

Subjective Well-Being for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
MEXICO							
In Last 30 Days							
Feeling sad, low, or depressed	46.0	42.3	57.1	34.8	55.8	45.5	47.9
Feeling anxious/worried	53.4	52.7	55.6	50.0	56.4	53.5	53.3
Has difficulty with relationship	23.4	19.8	34.0	25.7	21.3	18.9	39.5
Has health-related emotional problems	48.0	47.1	50.7	43.7	51.8	45.3	58.0
In Last 12 Months							
Loss of interest	19.0	19.7	17.0	7.5	29.0	22.0	7.9
Loss of energy	30.3	33.1	22.3	23.4	36.4	31.0	27.9
Loss of appetite	15.2	17.0	10.2	3.5	24.8	17.4	7.2
Difficulty sleeping	8.5	9.0	7.3	3.5	12.7	8.9	7.1
Feelings of hopelessness	14.1	16.0	8.7	3.9	22.5	16.2	6.2
Thought of death	10.3	12.5	4.0	2.7	16.5	12.0	4.0
Attempted suicide	6.2	8.2	0.3	0.2	11.1	7.5	1.0
RUSSIA							
In Last 30 Days							
Feeling sad, low, or depressed	35.7	28.5	52.6	26.7	41.4	36.0	35.0
Feeling anxious/worried	44.0	36.8	60.7	32.7	51.1	43.3	45.9
Has difficulty with relationship	26.9	19.1	45.3	23.1	29.3	26.6	27.7
Has health-related emotional problems	83.0	78.3	94.2	76.6	87.0	82.1	85.6
In Last 12 Months							
Loss of interest	17.6	17.2	18.7	11.4	21.6	19.6	12.2
Loss of energy	31.0	29.6	34.3	23.0	36.1	32.3	27.3
Loss of appetite	5.2	4.4	7.0	2.1	7.4	6.2	2.6
Difficulty sleeping	7.7	7.0	9.5	3.1	11.0	7.7	7.9
Feelings of hopelessness	5.0	4.3	6.8	1.5	7.5	6.1	2.4
Thought of death	3.7	3.4	4.5	1.3	5.5	4.7	1.5
Attempted suicide	0.4	0.5	0.3	0.1	0.6	0.5	0.3
SOUTH AFRICA							
In Last 30 Days							
Feeling sad, low, or depressed	49.9	50.3	48.3	47.0	52.2	49.6	50.5
Feeling anxious/worried	52.2	53.1	48.7	49.0	54.7	51.9	52.8
Has difficulty with relationship	31.0	27.5	45.5	27.7	33.7	29.2	34.4
Has health-related emotional problems	50.9	46.9	66.7	45.5	55.2	51.2	50.5
In Last 12 Months							
Loss of interest	9.9	10.3	8.2	8.1	11.2	9.5	10.6
Loss of energy	9.0	9.3	7.8	7.4	10.3	7.9	11.2
Loss of appetite	3.6	3.9	2.5	3.5	3.7	2.8	5.1
Difficulty sleeping	4.2	4.4	3.4	3.7	4.6	3.4	5.7
Feelings of hopelessness	3.8	3.9	3.3	3.5	4.1	3.3	4.7
Thought of death	2.1	2.3	1.4	1.7	2.5	2.2	2.0
Attempted suicide	1.0	1.2	0.1	1.1	0.9	1.2	0.6

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Table A-7.

Health Care Utilization in Last 12 Months for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
CHINA							
Received Care[1]	67.4	66.8	69.4	65.5	69.2	63.7	70.2
Received Outpatient Care[2]	60.3	60.2	60.8	58.0	62.5	56.2	63.5
Outpatient Care Provider							
Public	67.1	66.4	69.8	66.2	67.9	78.7	59.4
Private	27.2	28.1	24.1	27.7	26.7	12.4	37.2
Charity or church	0.1	0.1	0.1	0.1	0.1	0.2	–
Home visit	0.1	0.1	0.2	0.1	0.2	0.2	–
Other	5.5	5.4	5.8	5.8	5.1	8.5	3.4
Who Paid for Outpatient Care							
Self, spouse, or partner alone	61.0	64.7	48.9	62.2	60.0	47.4	70.2
Child or other family/nonfamily member alone	6.6	4.5	13.9	4.6	8.4	3.1	9.0
Insurance alone	6.5	6.0	8.3	7.4	5.8	15.2	0.7
Free alone	2.7	2.3	4.3	3.1	2.4	3.1	2.5
Other combination	23.1	22.6	24.7	22.8	23.4	31.2	17.7
Received Inpatient Care[3]	15.0	13.6	19.5	15.5	14.5	14.7	15.1
Inpatient Care Provider							
Public hospital	95.6	95.1	96.8	96.2	95.0	95.5	95.6
Private hospital	4.4	4.9	3.0	3.8	5.0	4.3	4.4
Charity or church hospital	–	–	–	–	–	–	–
Old person's home or long-term care facility	0.1	–	0.2	–	0.1	0.2	–
Other	–	–	–	–	–	–	–
Who Paid for Inpatient Care							
Self, spouse, or partner	27.6	30.9	19.7	28.1	27.0	23.2	30.9
Child or other family/nonfamily member	16.6	15.2	19.8	14.6	18.5	5.3	25.0
Insurance	4.2	2.8	7.3	4.9	3.4	9.2	0.4
Free	0.6	0.2	1.4	0.7	0.4	0.8	0.4
Other combination	51.1	50.9	51.7	51.6	50.6	61.5	43.4
GHANA							
Received Care[1]	68.3	65.6	73.8	65.3	71.6	72.1	65.7
Received Outpatient Care[2]	65.3	62.7	70.4	62.1	68.7	69.0	62.7
Outpatient Care Provider							
Public	51.7	51.0	52.8	49.4	53.8	55.7	48.5
Private	17.8	17.1	19.1	18.9	16.8	21.6	14.9
Charity or church	7.0	6.4	8.0	6.2	7.7	6.3	7.5
Home visit	9.1	8.9	9.3	8.9	9.2	5.4	11.9
Other	14.5	16.5	10.9	16.7	12.5	11.1	17.1
Who Paid for Outpatient Care							
Self, spouse, or partner alone	55.6	62.1	43.5	62.3	49.0	50.4	59.5
Child or other family/nonfamily member alone	14.1	10.1	21.5	7.9	20.1	16.1	12.6
Insurance alone	20.0	17.7	24.3	18.9	21.1	20.1	19.9
Free alone	4.4	4.9	3.6	5.5	3.4	5.9	3.3
Other combination	5.9	5.2	7.2	5.4	6.4	7.5	4.6
Received Inpatient Care[3]	8.7	7.8	10.4	9.2	8.1	10.8	7.1

See footnotes at end of table.

Table A-7.

Health Care Utilization in Last 12 Months for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
GHANA—Con.							
Inpatient Care Provider							
Public hospital	59.3	65.5	50.0	52.2	67.8	59.0	59.6
Private hospital	26.1	24.6	28.5	29.5	22.2	26.7	25.5
Charity or church hospital	14.3	10.0	20.8	18.3	9.5	14.3	14.3
Old person's home or long-term care facility	0.2	–	0.6	–	0.5	–	0.5
Other	–	–	–	–	–	–	–
Who Paid for Inpatient Care							
Self, spouse, or partner	36.6	42.5	27.7	44.0	28.0	34.9	38.3
Child or other family/nonfamily member	30.8	26.5	37.1	22.9	39.9	27.7	33.9
Insurance	20.9	16.2	27.7	24.1	17.2	22.6	19.0
Free	3.7	5.4	1.3	4.8	2.5	4.6	2.8
Other combination	8.1	9.4	6.2	4.3	12.5	10.2	6.0
INDIA							
Received Care[1]	89.9	89.4	91.2	88.6	91.1	92.5	88.7
Received Outpatient Care[2]	87.6	87.0	89.3	86.0	89.2	90.5	86.3
Outpatient Care Provider							
Public	22.1	22.5	20.9	22.4	21.8	21.1	22.6
Private	61.8	62.4	60.0	61.5	62.0	67.7	58.9
Charity or church	0.3	0.4	0.2	0.3	0.3	0.3	0.3
Home visit	4.6	3.5	7.7	3.2	5.9	3.1	5.3
Other	11.2	11.3	11.2	12.6	10.0	7.8	12.9
Who Paid for Outpatient Care							
Self, spouse, or partner alone	65.3	72.7	44.6	80.3	51.2	62.4	66.7
Child or other family/nonfamily member alone	28.7	21.3	49.4	14.2	42.4	29.7	28.3
Insurance alone	0.1	0.1	–	0.1	0.1	0.3	–
Free alone	4.9	4.7	5.5	4.1	5.7	6.1	4.4
Other combination	1.0	1.1	0.4	1.2	0.7	1.5	0.7
Received Inpatient Care[3]	11.1	10.5	12.7	11.7	10.5	12.0	10.7
Inpatient Care Provider							
Public hospital	38.3	39.5	35.6	41.1	35.3	37.7	38.7
Private hospital	59.4	59.4	59.6	55.1	64.2	61.5	58.3
Charity or church hospital	2.2	1.1	4.8	3.8	0.5	0.8	3.0
Old person's home or long-term care facility	–	–	–	–	–	–	–
Other	–	–	–	–	–	–	–
Who Paid for Inpatient Care							
Self, spouse, or partner	55.0	60.3	42.5	64.8	44.3	56.2	54.4
Child or other family/nonfamily member	36.7	30.8	50.9	24.7	50.0	31.3	39.5
Insurance	0.1	–	0.3	0.2	–	0.3	–
Free	4.9	4.9	4.8	5.9	3.8	5.5	4.6
Other combination	3.3	4.0	1.4	4.4	2.0	6.7	1.5

See footnotes at end of table.

Table A-7.

Health Care Utilization in Last 12 Months for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
MEXICO							
Received Care[1]	41.8	40.9	44.7	37.5	45.2	41.3	43.9
Received Outpatient Care[2]	40.5	40.1	41.8	36.0	44.1	40.0	42.6
Outpatient Care Provider							
Public	58.3	59.4	55.3	60.6	56.9	57.4	61.8
Private	36.6	35.1	41.1	32.5	39.3	38.3	30.5
Charity or church	–	–	0.1	–	–	–	–
Home visit	–	–	0.1	–	0.1	–	–
Other	5.0	5.5	3.4	6.9	3.8	4.3	7.6
Who Paid for Outpatient Care							
Self, spouse, or partner alone	28.6	32.1	17.8	24.3	31.3	29.6	24.6
Child or other family/nonfamily member alone	9.6	6.4	19.1	7.7	10.7	10.2	7.2
Insurance alone	17.5	16.9	19.3	27.1	11.3	17.3	18.2
Free alone	43.8	44.0	43.1	40.8	45.7	42.2	49.5
Other combination	0.6	0.5	0.6	0.1	0.9	0.6	0.4
Received Inpatient Care[3]	2.8	1.8	5.7	3.0	2.6	2.5	3.7
Inpatient Care Provider							
Public hospital	62.2	65.7	58.7	67.3	57.8	67.0	50.1
Private hospital	36.1	34.3	37.8	29.0	42.2	33.0	43.8
Charity or church hospital	–	–	–	–	–	–	–
Old person's home or long-term care facility	–	–	–	–	–	–	–
Other	1.7	–	3.4	3.7	–	–	6.0
Who Paid for Inpatient Care							
Self, spouse, or partner	24.1	34.9	13.4	26.2	22.3	23.3	26.3
Child or other family/nonfamily member	25.8	5.6	45.9	21.8	29.2	22.2	34.8
Insurance	23.9	33.8	14.0	20.0	27.2	29.2	10.4
Free	24.5	23.7	25.3	31.2	18.7	23.4	27.3
Other combination	1.8	2.1	1.4	0.7	2.6	1.9	1.3
RUSSIA							
Received Care[1]	72.0	68.6	79.8	68.7	73.9	73.6	67.7
Received Outpatient Care[2]	67.4	64.1	75.0	62.9	70.0	68.7	63.9
Outpatient Care Provider							
Public	84.7	88.9	76.4	88.5	82.7	86.6	79.2
Private	2.7	3.5	1.1	1.9	3.1	3.2	1.1
Charity or church	–	–	–	–	–	–	0.1
Home visit	12.0	7.1	21.7	8.7	13.8	9.7	18.5
Other	0.6	0.5	0.8	0.8	0.5	0.4	1.1
Who Paid for Outpatient Care							
Self, spouse, or partner alone	11.6	14.9	5.2	12.9	10.9	13.5	6.2
Child or other family/nonfamily member alone	0.8	0.8	1.0	0.6	0.9	1.0	0.2
Insurance alone	26.8	27.1	26.3	27.7	26.4	22.5	39.3
Free alone	42.5	38.6	50.2	43.3	42.1	43.0	41.1
Other combination	18.2	18.6	17.4	15.4	19.7	20.0	13.2
Received Inpatient Care[3]	17.3	15.5	21.4	17.6	17.1	18.2	14.8

See footnotes at end of table.

Table A-7.

Health Care Utilization in Last 12 Months for Population Aged 50 and Over by Age, Sex, and Urban/Rural Residence: 2007–2010—Con.

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Country and characteristic	Total	Age		Sex		Residence	
		50 to 69	70 and older	Male	Female	Urban	Rural
RUSSIA—Con.							
Inpatient Care Provider							
Public hospital	99.1	98.8	99.7	99.9	98.7	98.9	99.8
Private hospital	0.7	1.0	0.3	0.1	1.1	0.9	0.2
Charity or church hospital	0.1	0.2	–	–	0.2	0.2	–
Old person's home or long-term care facility	–	–	–	–	–	–	–
Other	–	–	–	–	–	–	–
Who Paid for Inpatient Care							
Self, spouse, or partner	6.1	6.4	5.7	5.1	6.8	5.8	7.3
Child or other family/nonfamily member	2.7	1.8	4.2	1.1	3.6	3.3	0.5
Insurance	33.0	38.1	24.4	37.2	30.5	33.7	30.8
Free	35.4	32.1	41.1	34.9	35.8	33.5	41.7
Other combination	22.7	21.6	24.6	21.8	23.3	23.7	19.7
SOUTH AFRICA							
Received Care[1]	65.0	63.6	70.3	59.7	69.1	64.7	65.5
Received Outpatient Care[2]	61.9	60.8	66.2	55.9	66.6	61.2	63.3
Outpatient Care Provider							
Public	71.8	70.5	76.4	67.6	74.6	68.2	78.9
Private	26.2	27.1	23.2	29.8	23.9	31.1	16.6
Charity or church	0.1	0.1	–	–	0.1	0.1	–
Home visit	0.5	0.6	0.1	0.5	0.4	0.2	0.9
Other	1.4	1.8	0.3	2.0	1.0	0.4	3.6
Who Paid for Outpatient Care							
Self, spouse, or partner alone	24.0	25.0	20.5	27.3	21.8	23.1	25.8
Child or other family/nonfamily member alone	2.8	2.7	3.2	2.2	3.3	3.3	1.8
Insurance alone	8.2	9.1	5.0	10.2	7.0	11.5	1.9
Free alone	64.5	62.6	71.3	59.3	67.9	61.5	70.4
Other combination	0.4	0.5	–	1.0	–	0.6	0.1
Received Inpatient Care[3]	9.0	8.5	11.1	8.5	9.4	10.3	6.3
Inpatient Care Provider							
Public hospital	69.5	68.1	73.6	62.1	74.9	66.4	80.1
Private hospital	29.4	30.4	26.4	37.9	23.1	33.6	14.8
Charity or church hospital	–	–	–	–	–	–	–
Old person's home or long-term care facility	1.1	1.5	–	–	2.0	–	5.1
Other	–	–	–	–	–	–	–
Who Paid for Inpatient Care							
Self, spouse, or partner	11.8	10.3	15.7	8.7	14.0	10.5	16.4
Child or other family/nonfamily member	5.5	4.2	9.0	3.9	6.7	2.8	15.2
Insurance	28.3	32.4	17.2	34.1	24.0	30.3	21.0
Free	54.4	53.1	58.1	53.3	55.3	56.3	47.4
Other combination	–	–	–	–	–	–	–

– Represents or rounds to 0.0.

[1] Received care includes either outpatient care or inpatient care, or both.

[2] Received outpatient care is based on responses to "the last health care facility visited."

[3] Received inpatient care is based on responses to "the last overnight hospital stay only."

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Appendix B.

Table B-1.

Standard Error for Selected Demographic and Socioeconomic Characteristics of Population Aged 50 and Over: 2007–2010

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error and definitions, see *www.who.int/healthinfo/systems/sage/en/index.html*)

Characteristic	Country					
	China	Ghana	India	Mexico	Russia	South Africa
Age						
50 to 59	1.2	1.0	1.1	4.2	2.3	1.5
60 to 69	0.5	0.7	0.9	2.7	1.3	1.2
70 and older	1.0	1.0	1.0	2.4	1.9	0.9
Sex						
Male	0.6	1.0	0.7	3.3	1.5	1.6
Female	0.6	1.0	0.7	3.3	1.5	1.6
Residence						
Urban	0.6	2.3	3.7	3.5	5.6	3.3
Rural	0.6	2.3	3.7	3.5	5.6	3.3
Marital Status						
Never married	0.2	0.2	0.1	1.7	0.5	1.2
Married/cohabiting	0.7	1.0	0.8	3.2	3.0	1.3
Separated/divorced	0.2	0.7	0.1	0.9	1.9	0.6
Widowed	0.6	0.8	0.8	1.8	1.8	1.2
Educational Attainment						
No education	1.2	1.5	1.5	3.2	0.4	2.4
Primary completed	0.8	0.6	0.9	2.9	0.8	1.4
Secondary completed	0.6	0.5	0.7	1.8	2.4	1.1
High school completed	0.6	1.0	0.7	0.7	2.5	1.3
College completed	0.6	0.4	0.7	1.9	2.3	0.9
Work Status						
Currently working	1.1	1.2	1.6	3.5	2.5	2.2
Not working, disabled	0.2	0.7	1.0	1.1	–	1.5
Not working, retired	0.8	0.8	1.0	1.6	–	1.5
Not working, other reason	0.6	0.5	1.1	3.1	2.5	1.2
Employment or Retirement Benefits						
Pension	1.2	0.8	1.0	3.9	3.5	2.2
Medical	1.4	0.9	1.0	3.9	2.6	1.9
Food	1.2	1.9	0.8	1.6	1.0	1.6
Cash	1.3	1.3	1.1	1.9	3.9	2.0
No benefits	0.8	1.7	1.9	0.5	2.8	1.1
Other	0.1	0.4	1.2	4.2	0.3	0.4

– Represents or rounds to 0.0.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Appendix C.
SAGE SURVEYS

SAGE, Study on Global Ageing and Adult Health, is conducted in six participating countries—China, Ghana, India, Mexico, Russia, and South Africa. It is run by the World Health Organization's (WHO) Multi-Country Studies unit in the Information, Evidence, and Research Cluster as part of the unit's Longitudinal Study Programme.

Selection of SAGE Countries

SAGE countries were selected to cover a broad geographic range of low- to upper-middle-income countries; some with improving economic situations (Table C-1); large populations that are aging at different rates; countries at different stages of the demographic and epidemiological transitions; and government agencies and study teams with whom WHO had long standing working relationships.

SAGE Sample Size, Response Rate, and Weighting

SAGE is designed as a multiwave panel study representative of the population 50 years and older, and a smaller cohort of respondents aged 18–49 for comparison purposes. This report uses data from SAGE Wave 1 implemented between 2007 and 2010. The targeted sample per country included 6,000 households consisting of 1,000 "younger" households and 5,000 "older" households. All household members in older households were invited to participate. See Table C-2 for sample size and response rate for each SAGE country.[1]

[1] Note the response rate for Mexico is below 60 percent.

Each participating country used the Wave 0 sampling frame for Wave 1 (except China, which used a new sampling frame based on a national health surveillance system). All sampling plans used multistage-clustered design samples drawn from an updated frame. Each household and individual was therefore assigned a known nonzero probability of being selected.

Country-specific sampling and weighting methods for SAGE Wave 1 are as follows:

- China implemented a stratified, multistage cluster sampling design. The sample was stratified by provinces, eight in total, and is nationally representative. One county (four townships) from the rural regions and one district/city (four community blocks) from the urban regions were selected with probability proportional to size from each province and constituted the primary sampling units (PSUs). Household weights were post-stratified according to the 2008 household projections by China's Center for Disease Control (CDC) and individual weights were post-stratified according to the 2008 population projections provided by China's CDC, both weighted up to the respective totals of the eight provinces. A second set of household and individual weights were post-stratified to weight up to the entire households and 18-years-and-older population in the nation (excluding Hong Kong and Macau).
- Ghana used a stratified, multistage cluster sampling design. The sample was stratified by administrative region and type of locality (urban/rural)

Table C-1.
World Bank List of Economies—SAGE Countries: 2007–2011

Country	2007–2010 classification	2011 classification	2007 GNI per capita (PPP international dollars)	2010 GNI per capita (PPP international dollars)	Percentage of total burden of disease from noncommunicable conditions (Group II)
China	Lower-middle	Upper-middle	5,370	7,640	69
Ghana	Low	Lower-middle	1,330	1,660	40
India	Low to Lower-middle	Lower-middle	2,740	3,550	50
Mexico	Upper-middle	Upper-middle	12,580	14,290	72
Russia	Upper-middle	Upper-middle	14,400	19,190	64
South Africa	Upper-middle	Upper-middle	9,560	10,360	33

Note: PPP is purchasing power parity.

Sources: World Bank, 2011, *GNI Per Capita Ranking, Atlas Method and PPP Based*, available at <http://data.worldbank.org/data-catalog/GNI-per-capita-Atlas-and-PPP-table>, accessed on March 2, 2012. World Health Organization, 2008, *The Global Burden of Disease: 2004 Update*, available at <www.who.int/evidence/bod>, accessed on September 21, 2011.

Table C-2.

SAGE Sample Size and Response Rate by Age: 2007–2010

Country	Unweighted sample size	Percent distribution of sample		Response rate[1]	Cooperation rate[2]
		Unweighted	Weighted		
CHINA					
Total 50 and older	**13,367**	**100.0**	**100.0**	**93**	**98**
50 to 59	5,807	43.4	50.7	(NA)	(NA)
60 to 69	3,968	29.7	27.5	(NA)	(NA)
70 to 79	2,802	21.0	17.4	(NA)	(NA)
80 and older	790	5.9	4.5	(NA)	(NA)
18 to 49	1,642	(NA)	(NA)	(NA)	(NA)
GHANA					
Total 50 and older	**4,724**	**100.0**	**100.0**	**80**	**92**
50 to 59	1,883	39.9	40.4	(NA)	(NA)
60 to 69	1,305	27.6	27.3	(NA)	(NA)
70 to 79	1,071	22.7	22.8	(NA)	(NA)
80 and older	465	9.8	9.6	(NA)	(NA)
18 to 49	839	(NA)	(NA)	(NA)	(NA)
INDIA					
Total 50 and older	**7,150**	**100.0**	**100.0**	**68**	**92**
50 to 59	3,179	44.5	44.1	(NA)	(NA)
60 to 69	2,456	34.4	30.3	(NA)	(NA)
70 to 79	1,148	16.1	19.9	(NA)	(NA)
80 and older	367	5.1	5.7	(NA)	(NA)
18 to 49	5,048	(NA)	(NA)	(NA)	(NA)
MEXICO					
Total 50 and older	**2,315**	**100.0**	**100.0**	**51**	**51**
50 to 59	434	18.8	48.1	(NA)	(NA)
60 to 69	937	40.5	25.6	(NA)	(NA)
70 to 79	619	26.7	17.8	(NA)	(NA)
80 and older	325	14.0	8.6	(NA)	(NA)
18 to 49	429	(NA)	(NA)	(NA)	(NA)
RUSSIA					
Total 50 and older	**3,938**	**100.0**	**100.0**	**83**	**88**
50 to 59	1,473	37.4	45.5	(NA)	(NA)
60 to 69	1,071	27.2	24.7	(NA)	(NA)
70 to 79	1,018	25.9	21.5	(NA)	(NA)
80 and older	376	9.6	8.3		(NA)
18 to 49	417	(NA)	(NA)	(NA)	(NA)
SOUTH AFRICA					
Total 50 and older	**3,840**	**100.0**	**100.0**	**77**	**100**
50 to 59	1,695	44.1	49.9	(NA)	(NA)
60 to 69	1,232	32.1	30.6	(NA)	(NA)
70 to 79	662	17.2	14.0	(NA)	(NA)
80 and older	251	6.5	5.5	(NA)	(NA)
18 to 49	385	(NA)	(NA)	(NA)	(NA)

(NA) Not available.

[1] Response rate is percentage of respondents who completed the interviews among all eligible persons, including those who were not successfully contacted.

[2] Cooperation rate is percentage of respondents who completed the interviews among all eligible persons contacted.

Note: Response rate and cooperation rate are for individuals only, not for households.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

resulting in 18 strata and is nationally representative. The 2000 Population and Housing Census was used as the sampling frame. A sample of 251 enumeration areas (EAs) was selected as the PSUs, with 24 households randomly selected from each EA. Household weights were post-stratified according to the 2010 household projections, and individual weights were post-stratified according to the 2009 projected population estimates.

- India used a multistage, stratified clustered sample design. The sample was drawn from 19 of the 28 states and 7 union territories and represented 96 percent of the population. The 19 states were divided into six groups based on four indicators—infant mortality rate, female literacy rate, percentage of safe deliveries, and per capita income. One state was randomly selected from each of the six groups. The sample was stratified by state and locality (urban/rural) resulting in 12 strata and is nationally representative. Household weights were post-stratified according to the 2006 household projections, and individual weights were post-stratified according to the 2006 projected population estimates. A second set of household and individual weights were post-stratified to weight up to the entire households and 18-and-older population respectively in the country.
- Mexico used a stratified, multistage cluster sampling design. Strata were defined by locality (metropolitan, urban, rural). All World Health Survey (WHS)/SAGE Wave 0 individuals aged 50 or over in the selected rural or urban PSUs and a random sample of 90 percent of individuals aged 50 or over in metropolitan PSUs who had been interviewed for the WHS/SAGE Wave 0 were included in the SAGE Wave 1 "primary" sample. A supplementary, random sample from urban and rural households was included to compensate for the over-representation of metropolitan strata. Both household and individual weights were post-stratified by locality according to the 2009 population census projections.
- Russia used a stratified, multistage cluster sample design. The sample was stratified by the federal districts and is nationally representative. All seven federal districts were included and constituted the strata. PSUs comprised 267 atenum (polling districts) that were selected with probability proportional to the 18-and-older population size. Household weights were post-stratified by federal district and locality according to the 2001 population census, and individual weights were post-stratified according to the 2011 mean predictive population estimates.
- South Africa used a stratified, multistage cluster sample design. The 50 strata selected were defined by provinces, locality (urban/rural), and race. Enumeration areas (EA) constituted the primary sampling units and were selected with probability proportional to size: the measure of size being the number of individuals aged 50 or over in the EA. Household weights were post-stratified according to the South African Community Survey 2007 and individual weights were post-stratified according to the 2009 medium mid-year population estimates.

A household questionnaire was used to obtain information about the household members, dwelling, and economic well-being (questionnaire available at <www.who.int/healthinfo/systems/sage/en/index1.html>). Besides data on self-reported health status, risk factors, and chronic diseases in the individual questionnaire, SAGE collected objectively-measured health data from health examinations, performance tests, and blood collection via finger-prick. Data on health care utilization, health expenditure, social networks, quality of life and well-being, and caregiving were collected. A proxy interview was used for individuals who were not able to complete the interview because of health issues.

Validation of SAGE Data on Age, Sex, and Urban/Rural Residence Using Data From IDB, UN, and CIA

An exercise was conducted by the Census Bureau to validate the distributions of age, sex, and urban/rural residence in SAGE data using data from the Census Bureau's IDB, United Nations' (UN) population data, and Central Intelligence Agency's (CIA) data on urban/rural residence (Table C-3). Overall, SAGE distributions match the IDB, UN, and CIA data.

Table C-3.

Comparison of SAGE Data on Age, Sex, and Urban/Rural Residence for Population Aged 50 and Over With Data From IDB, UN, and CIA: 2007–2010

(In percent)

Country	SAGE (2007–2010)		IDB (2010)	UN (2010)	CIA (2010) (All ages)
	Unweighted	Weighted			
CHINA					
Age					
50 to 69	73.1	78.1	77.2	78.3	(NA)
70 and older	26.9	21.9	22.8	21.7	(NA)
Sex					
Female	53.1	50.1	50.0	49.9	(NA)
Urban/Rural					
Urban	48.8	44.3	(NA)	(NA)	47.0
GHANA					
Age					
50 to 69	67.5	67.7	80.0	80.4	(NA)
70 and older	32.5	32.3	20.0	19.6	(NA)
Sex					
Female	50.3	50.3	53.0	50.8	(NA)
Urban/Rural					
Urban	40.7	40.6	(NA)	(NA)	51.0
INDIA					
Age					
50 to 69	78.8	74.4	80.8	81.4	(NA)
70 and older	21.2	25.6	19.2	18.6	(NA)
Sex					
Female	49.6	49.5	50.4	50.4	(NA)
Urban/Rural					
Urban	25.5	31.2	(NA)	(NA)	30.0
MEXICO					
Age					
50 to 69	59.2	73.6	75.9	76.0	(NA)
70 and older	40.8	26.4	24.1	24.0	(NA)
Sex					
Female	60.5	53.2	54.2	52.7	(NA)
Urban/Rural					
Urban	72.8	78.8	(NA)	(NA)	78.0
RUSSIA					
Age					
50 to 69	64.6	70.2	69.9	70.0	(NA)
70 and older	35.4	29.8	30.1	30.0	(NA)
Sex					
Female	64.6	61.1	61.7	61.2	(NA)
Urban/Rural					
Urban	75.8	73.2	(NA)	(NA)	73.0
SOUTH AFRICA					
Age					
50 to 69	76.2	80.5	79.2	82.9	(NA)
70 and older	23.8	19.5	20.8	17.1	(NA)
Sex					
Female	57.4	55.9	57.1	56.5	(NA)
Urban/Rural					
Urban	66.7	64.9	(NA)	(NA)	62.0

(NA) Not available.

Sources: Study on Global Ageing and Adult Health (SAGE), 2007–2010. U.S. Census Bureau, International Data Base, <www.census.gov/population/international/data/idb/informationGateway.php>, accessed on February 7, 2012. United Nations, Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2010 Revision*, <http://esa.un.org/unpd/wpp/index.htm>, accessed on February 7, 2012. U.S. Central Intelligence Agency, *World Factbook*, <www.cia.gov/library/publications/the-world-factbook/index.html>, accessed on January 31, 2012.

Sampling and Representativeness of the SAGE Data Compared to Longitudinal Aging Study in India (LASI) and Other Surveys

The following two tables provide comparisons between SAGE and other survey data on sampling and representativeness of indicators other than the basic demographic variables of age, sex, and urban/rural residence.

India respondent profiles are from the LASI, India National Sample Survey (India NSS), the India Human Development Survey (IHDS), the WHS, and SAGE. Table C-4 is an excerpt from Table 4 of Arokiasamy, et al., 2011.[2]

Sex ratio and household size from SAGE and China's National Sample Survey (China NSS) on Population Changes are presented in Table C-5. The survey design determines the differences. In SAGE—China, the main survey population is aged 50 and older. Because sex ratios usually decline with age due to differences in longevity between men and women, sex ratios in SAGE are expected to be lower than those for the country as a whole.

The more restrictive definition of "household" in SAGE resulted in a smaller household size. In China Statistical Yearbooks, a "household" is defined as members who live together at the same address, mainly including family members (children, siblings, or parents) but also other relatives, friends, and other members. One person living alone is also one household. But in SAGE, in addition to living together, household members are defined as those who share meals (eat out of the same pot) and usually stay at this address for at least 4 months a year.

Issues of Vignettes and Data Comparability

SAGE used a number of methods to improve the reliability, validity, and comparability of its self-reported health measures, including the use of anchoring vignettes. The anchoring vignette technique uses the same questions and response categories as used for self-assessment of health. The vignettes are used to fix the level of ability on a given health domain to better distinguish between differences in self-ratings due to actual health differences and those due to

[2] Arokiasamy, Perianayagam, David Bloom, Jinkook Lee, Kevin Feeney, and Marija Ozolins. 2011. "Longitudinal Aging Study in India: Vision, Design, Implementation, and Preliminary Findings," Table 4, PGDA Working Paper No. 82, available at <www.hsph.harvard.edu/pgda/working.htm>.

Table C-4.
India Respondent Profiles From LASI, India NSS, IHDS, WHS, and SAGE

Characteristic	LASI	India NSS	IHDS	WHS	SAGE
Survey year	2010	2004	2004–05	2003	2007–08
Total number of individuals	1,683	383,338	215,754	10,750	12,198
Number of individuals aged 45 and older	1,451	81,146	45,074	3,706	7,841
Marital status among respondents 45 years and older (percent):					
Married	78.0	75.8	78.2	80.7	81.5
Never married	1.8	1.1	0.7	1.3	0.6
Divorced	1.2	0.6	0.5	0.7	0.6
Widowed	19.1	22.5	20.6	17.3	17.3
Education among respondents 45 years and older (percent):					
No education	48.2	58.6	53.2	63.4	47.6
Less than 5 years	8.1	8.6	10.7	11.2	13.2
5 to 9 years	22.0	19.5	21.0	15.0	19.8
10 years or more	21.7	13.4	15.1	10.5	19.4

Note: LASI is Longitudinal Aging Study in India, India NSS is India National Sample Survey, IHDS is India Human Development Survey, and WHS is World Health Survey.

Source: Arokiasamy, Perianayagam, David Bloom, Jinkook Lee, Kevin Feeney, and Marija Ozolins, 2011, "Longitudinal Aging Study in India: Vision, Design, Implementation, and Preliminary Findings," Table 4, PGDA Working Paper No. 82, available at <www.hsph.harvard.edu/pgda/working.htm>.

varying norms or expectations for health (Hopkins and King, 2010; Salomon, Tandon, and Murray, 2004).[3]

SAGE also used analytical methods that adjust self-reported health based on vignette response patterns, the Binormal Hierarchical Ordered Probit (BIHOPIT) and Compound Hierarchical Ordered Probit (CHOPIT) models. Both are generalizations of the ordered probit models and allow the model cut-points to vary by the same covariates that the ordinal health response variables do. This more analytically intensive approach enables modelling to account for different health expectations—quantifying systematic reporting biases and amplifying the underlying patterns seen in the unadjusted results. The health scores compile results from questions in eight health domains. For this report, the health score was generated using Item Response Theory (IRT) partial credit Rasch models. IRT results are population independent, allowing for examination of results on a common scale. This level of comparability was the goal for presenting results in this report. The health scores presented in this report are comparable across the countries.

Techniques such as the anchoring vignettes and use of objective health measures are used to adjust for systematic reporting biases and improve comparability further. These results are available in other published literature, including the SAGE Web site <www.who.int/healthinfo/systems/sage>. Additional information provided by the vignette ratings, specifically how this technique helps to describe the effects of different covariates on the level of the underlying latent variable and the cut-points on the latent variable scale, will be presented in peer-reviewed publications.

[3] Hopkins, Daniel J. and Gary King. 2010. Improving Anchoring Vignettes: Designing Surveys to Correct Interpersonal Incomparability. *Public Opinion Quarterly* 1-26. doi: 10; Salomon, Joshua A., Ajay Tandon, and Christopher J. L. Murray. 2004. Comparability of Self-Rated Health: Cross Sectional Multi-Country Survey Using Anchoring Vignettes. For the World Health Survey Pilot Study Collaborating Group. *British Medical Journal* 328: 258–261.

Table C-5.
Comparison of Sex Ratio and Household Size Between SAGE and China NSS

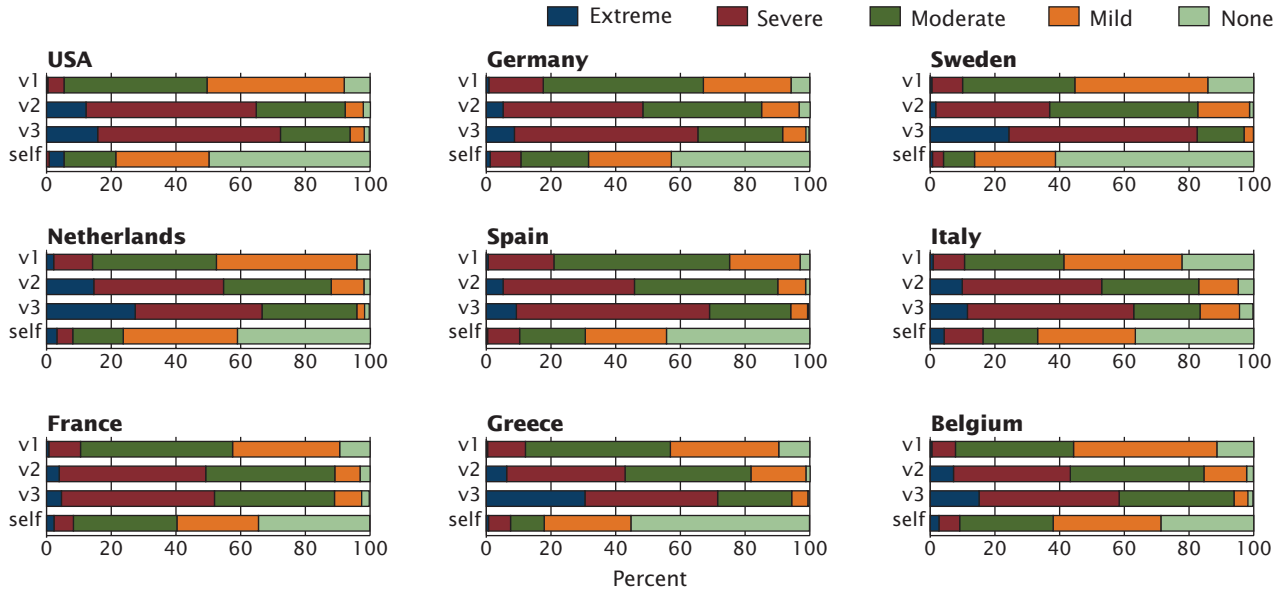
Index	Data Sources	
	SAGE—China	2009 China NSS
Sex ratio:		
All household members	94.7	103.3
Individual respondents	86.9	103.3
Household size	2.6	3.2

Notes: Sex ratio is the number of males per 100 females. China NSS is China National Sample Survey on Population Changes.

Sources: Study on Global Ageing and Adult Health (SAGE), 2007–2010; China National Bureau of Statistics, 2010, *China Statistical Yearbook 2010*, Table 3-7, Beijing: China Statistics Press.

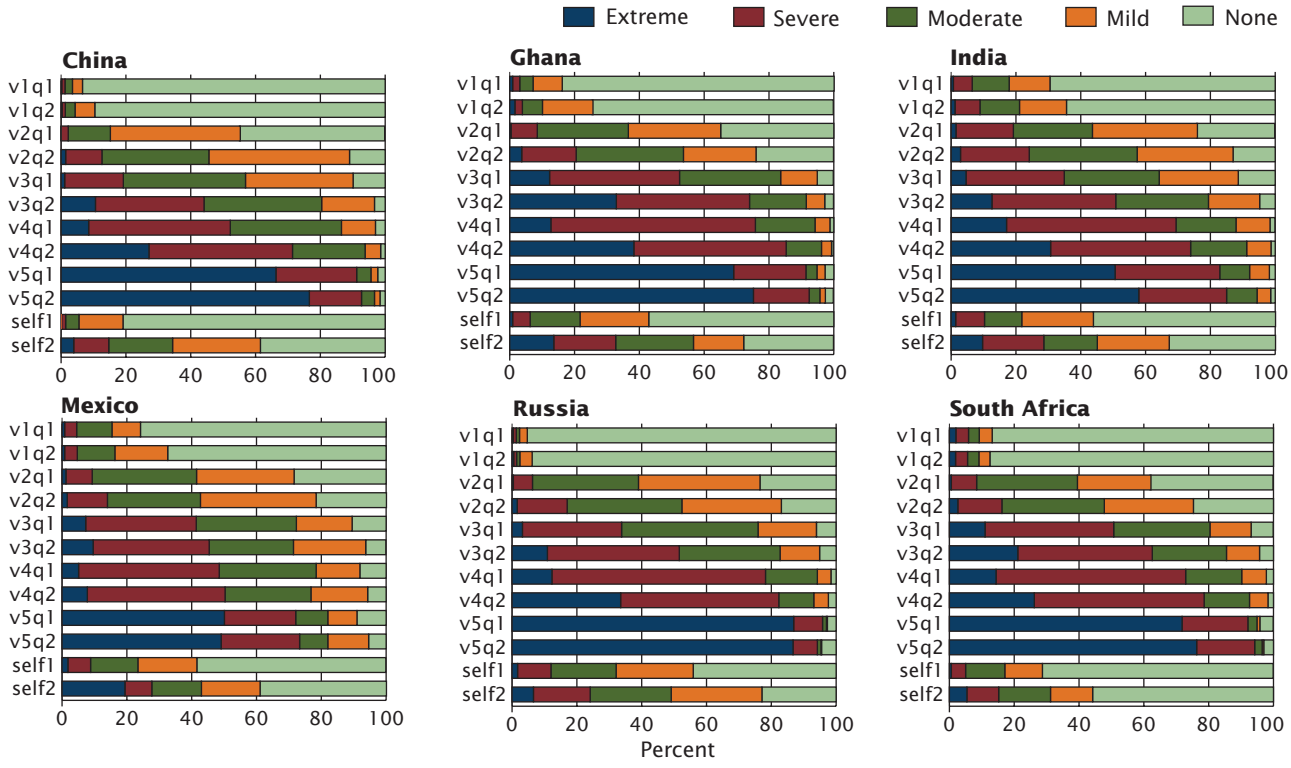
The two figures below are an illustration of systematic reporting biases in health, using data from the Health and Retirement Study (HRS), the Study on Health, Ageing and Retirement in Europe (SHARE), and SAGE, for one health domain, mobility. HRS and SHARE use three vignettes per domain, with only one question per vignette, whereas SAGE uses five vignettes per domain and two questions per vignette, similar to

Figure C-1.
Comparisons of Vignette Ratings for Mobility From HRS and SHARE



Note: "v" refers to vignette questions; "self" refers to the respondent's own assessment of his/her health.
Sources: Health and Retirement Study (HRS); and Study on Health, Ageing, and Retirement in Europe (SHARE).

Figure C-2.
Comparisons of Vignette Ratings for Mobility for SAGE Countries



Note: "v" refers to vignette questions; "q" refers to questions in each domain of health; "self" refers to the respondent's own assessment of his/her health.

Source: Study on Global Ageing and Adult Health (SAGE), 2007–2010.

Table C-6.

Question Wording, Response Categories, and Type of Administration on Mobility Difficulty in HRS 2007, SHARE 2006, and SAGE 2007–2010

Study, year	Question wording	Response categories	Type of administration
HRS 2007	Overall, in the last 30 days, how much of a problem did you have with moving around?	None, mild, moderate, severe, extreme	Self-administered
SHARE 2006	Same question as above	Same as above	Self-administered
SAGE 2007–2010	Same question ***Plus:*** Overall in the last 30 days, how much difficulty did you have in vigorous activities?	Same as above	Interviewer-administered

Sources: Health and Retirement Study (HRS), 2007; Study on Health, Ageing and Retirement in Europe (SHARE), 2006; and Study on Global Ageing and Adult Health (SAGE), 2007–2010.

the patterns for questions about the respondent's own health. In Figure C-1, v1 to v2, or v3, refer to the vignettes, moving from high to low levels of mobility (for example, a marathon runner in v1 to bed-bound person in v2 or v3). Table C-6 lists question wording, response categories, and type of administration on mobility difficulty comparing HRS 2007, SHARE 2006, and SAGE 2007–2010.

Self-reported health (self) responses are roughly similar in the United States from HRS, Sweden and Greece from SHARE, and Ghana, India, and Mexico from SAGE—with roughly 60 percent of respondents having no difficulties with moving around. However, the responses to vignettes suggest that the respondents are clearly using the ordinal scale quite differently in these countries. The latent scale of mobility used by respondents from these countries is quite different—comparing v2 in HRS and SHARE versus v3 in SAGE (Figure C-2), for example—with Sweden, India, and Mexico less than 40 percent with extreme or severe difficulties, Greece, Ghana, and Mexico with more than 40 percent, and the United States with over 60 percent reporting extreme or severe difficulties to the vignette.

Analyses of the measured tests data from SAGE reveal that a composite score on the performance measures, derived using factor analysis, is moderately correlated with the self-report ($r = 0.5$). For the mobility domain, self-reported or vignette-adjusted mobility showed very weak correlation with timed walk at normal pace ($r = -0.12$) and with grip strength ($r = 0.22$). The differences do not seem to be driven by reporting biases alone, with chronic conditions and social networks driving some of the differences. Cross-study analyses would be welcome to further explore the underlying differences and drivers of health across countries.