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Preparing for an Aging Africa: Data-Driven Priorities for Economic Research and Policy

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September 25, 2023

Abstract

The over-60 population in Sub-Saharan Africa is expected to grow rapidly in the coming decades, tripling between 2020 and 2050. Despite this explosive projected growth, few countries in the region have implemented policies designed to support older populations. Further, little research in economics has specifically examined aging in Sub-Saharan Africa, though many opportunities exist for economists to generate research evidence to inform the design of effective policies in this area. This paper combines insights from a cross-disciplinary review with original data analysis to characterize the challenges and opportunities facing older Sub-Saharan Africans in domains such as health and financial security. Informed by these findings, the paper identifies directions for future economic research and discusses policy recommendations, including the need to reform health care systems and expand pension and other public support programs to prepare for an aging Africa.

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1 Introduction

The over-60 population¹ in Sub-Saharan Africa is projected to increase rapidly in the coming decades, tripling from 50 million in 2020 to 150 million by 2050, then quadrupling again to over 600 million by 2100 (Figure 1).² This represents the highest expected growth across all world regions; notably, growth in the older population across Sub-Saharan African countries is expected to outpace that in many populous, aging Low and Middle Income Countries (LMICs) such as India or China. Although less than 5% of the Sub-Saharan African population is currently above age 60, this is expected to grow to nearly 20% by the year 2100.³ Despite these projections, health care and public support systems are currently unprepared to meet the demands associated with rapid growth in the older population, and the need for research and policy innovation in anticipation of such growth is vital.

Further, the process of demographic aging in Sub-Saharan Africa may proceed differently than in other contexts, necessitating an Africa-specific economic research agenda and policy response. Poverty, the persistence of infectious disease, conflict-related instability, high youth unemployment, and vulnerability to the effects of climate change may all present challenges to effective policymaking going forward. On the other hand, Sub-Saharan Africa may be uniquely poised to take advantage of continued economic growth and the demographic dividend associated with an expanding working-age population. Additionally, substantial heterogeneity exists across countries in the region, which presents both greater opportunity to learn from policy experimentation, but also precludes the likelihood that one-size-fits-most policy solutions will be effective.

Policymakers across the globe are increasingly calling for additional research on issues related to aging (NIA, 2020; NIA et al., 2019). Much of the policy discourse and research evidence generated so far centers on High Income Country (HIC) contexts, with a small but growing body of literature exploring topics related to aging in Low and Middle Income Country (LMIC) contexts. However, very little research in economics to date has focused on aging in Sub-Saharan Africa. Further, policymaking in the region has traditionally focused

¹This article focuses primarily on individuals over age 60 rather than age 65. Age 60 represents the typical retirement age in many LMICs, including many of the Sub-Saharan African countries included in this article, as well as others such as India and China. As much as possible, statistics provided and patterns discussed throughout refer to those over age 60, using alternate age groups (over-65, over-75, etc.) where data availability or reporting require.

²For comparison, the over-60 population in Sub-Saharan Africa approximately doubled in the thirty year period from 1990 to 2020, increasing from around 25 million to 50 million. See Figure 1 and Appendix Table A1.

³Similarly, the over-60 population globally (excluding Sub-Saharan African countries) is expected to grow from 15% to 35% between 2020 and 2100. Calculations based on the World Population Prospects 2022.

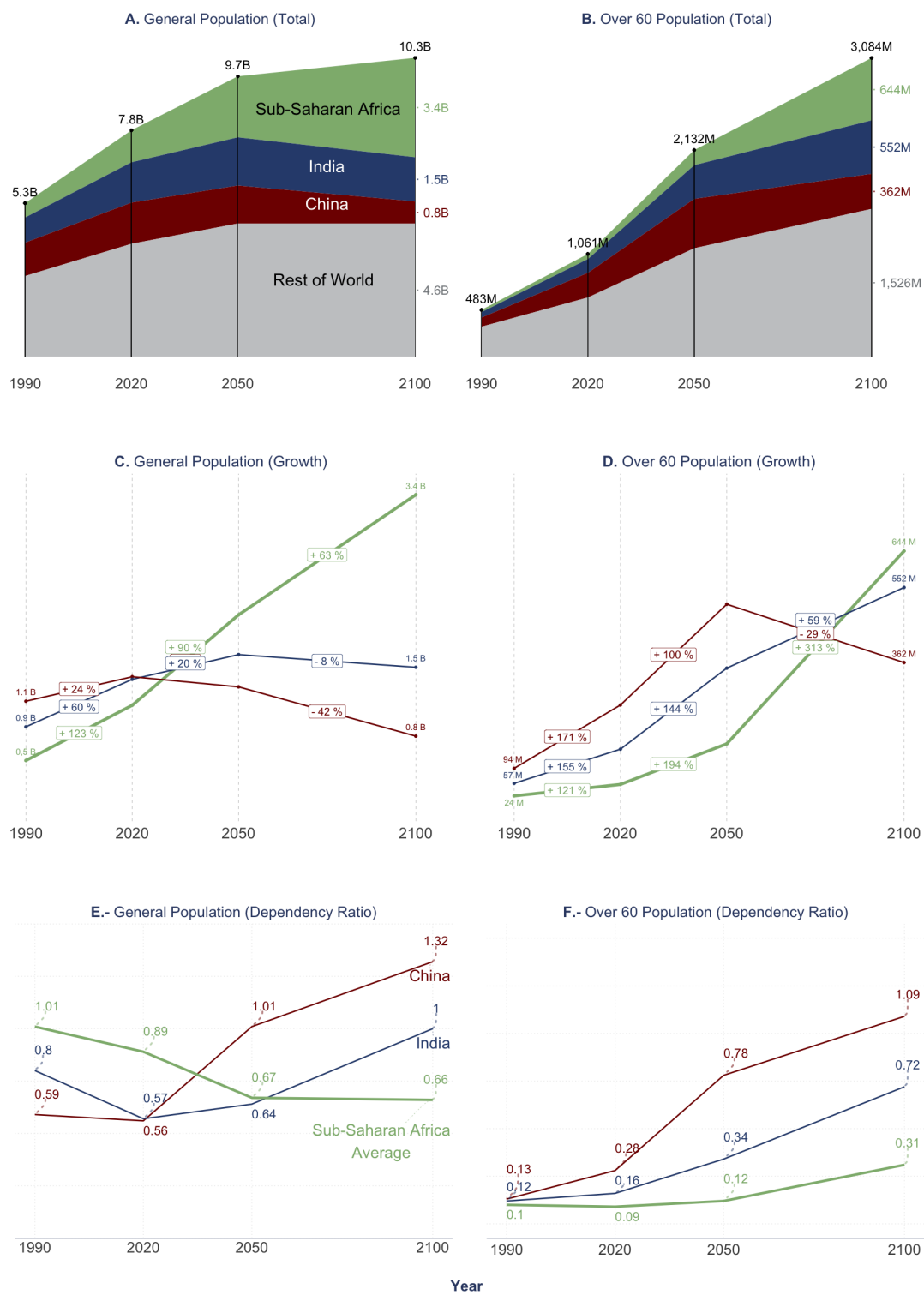


Figure 1: Projected Population Growth and Dependency Ratios

Notes: Data are from the World Population Prospects 2022, Medium Fertility Variant. Population figures are rounded to the nearest thousand. Panels E and F depict dependency ratios using the old-age cutoff of 60 (Panel E depicts the ratio of the population aged 0-14 or 60+ to the population aged 15-59; Panel F depicts the ratio of the population aged 60+ to the population aged 15-59). Versions of Panels E and F using an old-age cutoff of 65 are presented in the Online Appendix.

more on meeting the needs of children, youth, and young women (Aboderin, 2012b; Ali and Maharaj, 2013; Menken and Cohen, 2006; McIntyre, 2005), and less on meeting the needs of older individuals. Clear opportunity exists for economists to make high-impact contributions in this area by conducting rigorous research to inform the design of policies and programs that will enable Sub-Saharan African countries to prepare for this demographic shift. The main goal of this article is to lay out key facts – both from existing research and original data analysis – to inform a prospective research agenda on the set of important but poorly understood issues related to aging in Sub-Saharan Africa.

Current policy environment

Preparing for this demographic shift will require Sub-Saharan African countries to develop and implement health care and public support programs targeted at meeting the needs of an expanding older population. Figure 2 takes stock of the existing policy environment, presenting key metrics characterizing current health care and public support systems in Sub-Saharan Africa (vertical green lines) in comparison to other low and middle income countries (dotted black lines) and high income countries (solid black lines), and highlighting select countries which are particularly well-suited for the analysis, as described below (horizontal bars). As this figure makes clear, Sub-Saharan Africa currently lags behind on many of these metrics, with substantial heterogeneity across countries in the region. At the same time, large-scale national programs such as old-age pensions or health insurance are not only challenging to introduce, also tend to be persistent, and difficult to change or reconfigure later on. While great potential exists for Sub-Saharan African countries to draw on lessons from other contexts, research as part of a Sub-Saharan Africa-specific agenda will be critical to inform the design of effective programs and policies from the start.

Despite some progress in recent decades, health care systems remain substantially less robust (WHO, 2022)⁴ and individuals suffer worse health outcomes⁵ in Sub-Saharan Africa compared to other LMICs and to HICs (Figure 2, Panels A and B). Deficiencies in health care infrastructure may disproportionately impact older individuals, who tend to be concentrated in rural areas (where hospitals and clinics may be more remote, less well-equipped, and

⁴Measuring progress towards Sustainable Development Goal 3 (“Ensure healthy lives and promote well-being for all at all ages”) using the Service Coverage Index (SCI), 13% of Sub-Saharan African countries were designated as having high service coverage, 26% as having low service coverage, with the remaining 63% somewhere in between as of 2019 (WHO, 2022).

⁵Overall or at-birth life expectancy continues to lag behind that in other regions, and old-age life expectancy in SSA is also lower than in other world regions. As of 2019, 60 year olds in SSA could expect to live 18 more years on average, compared to 20 years in other LMICs and 24 years in HICs (Figure 2, Panel B).

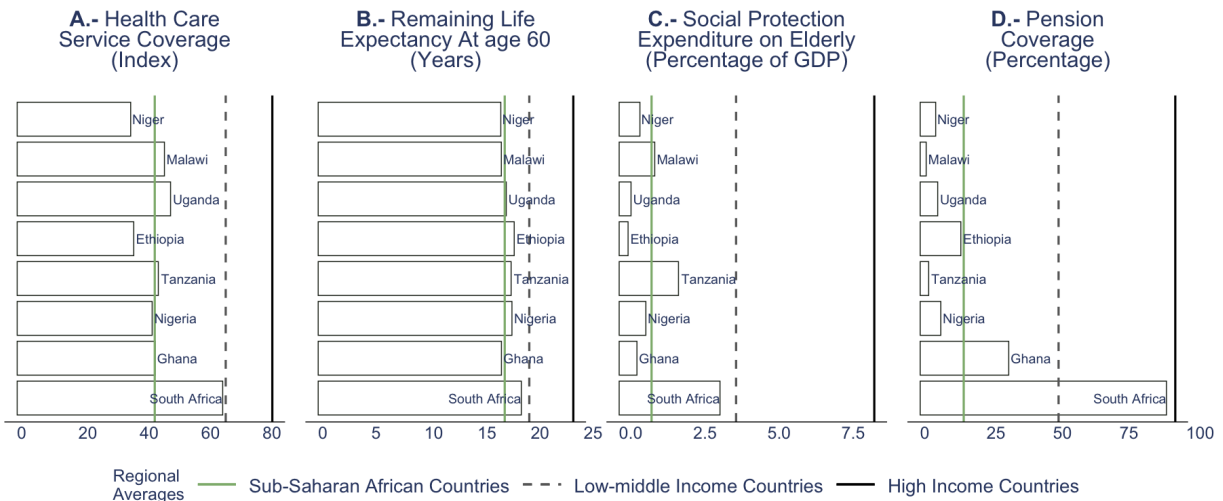


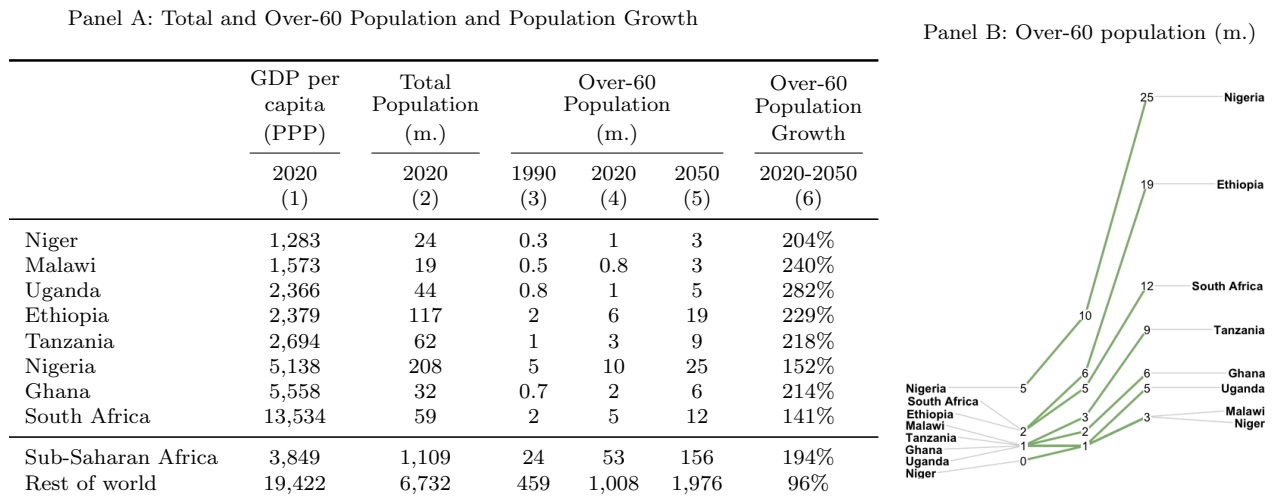
Figure 2: Key Metrics across Selected Sub-Saharan African Countries

Notes: (1) Vertical lines show average outcomes among high income (blue), low and middle income (red) and Sub-Saharan African countries (yellow), weighted by country population. Low & middle income country (population-weighted) averages exclude Sub-Saharan African countries. (2) Income groups are defined as per the World Bank, and regional classifications as per the United Nations Development Program. (3) Countries are listed in ascending order according to GDP per capita (PPP). (4) Panel A: Universal health care service coverage index measures access to essential health care services (Sustainable Development Goal 3.8.1). Ranging from 0 to 100, the index combines measures of health care access in four healthcare areas: (i) reproductive, maternal, and newborn child health, (b) infectious diseases, (c) non-communicable diseases, and (d) service capacity and access. Data are from the World Health Organization. (5) Panel B: Remaining life expectancy at age 60 data are from the World Health Organization. (6) Panel C: Social protection expenditure on older persons excluding health care expenditure (as % of GDP) data are from the International Labor Organization World Social Protection Data Dashboard. (7) Panel D: Pension coverage data are from the International Labor Organization World Social Protection Data Dashboard. These data are available for 68% of HICs, 86% of LMICs, and 91% of countries in SSA. Regional and income-group averages based on author calculations differ somewhat from published findings (for example, [He et al. \(2020\)](#) and [ILO \(2018\)](#) state that old-age pension coverage averages 22.7% in SSA, while author calculations estimate this figure to be 16.4%), likely due to some combination of different population weighting, regional classifications, and coverage of data.

understaffed) and who already face financial and non-financial barriers to accessing health care. These include stigma for those with dementia associated with beliefs about witchcraft, a pervasive social phenomenon throughout Sub-Saharan Africa ([Gershman, 2022](#); [Le Rossignol et al., 2022](#)). As a result, many older individuals live for extended periods of time with undetected and untreated health conditions; women in particular tend to suffer worse health outcomes than men in old age. Further, health care systems may be unprepared for the region’s anticipated “double-burden” of disease, where non-communicable diseases become more prevalent as the population ages and urbanizes, even as communicable diseases — including widespread infectious tropical diseases — remain common ([Agyepong et al., 2017](#); [Ng et al., 2010](#); [BeLue et al., 2009](#)). Though many health care systems in the region have ample experience treating infectious diseases, they may be less well-equipped to detect and treat the non-communicable diseases which disproportionately impact older individuals, and so will represent a greater share of the burden of disease going forward ([Alli and Maharaj, 2013](#); [de Graft Aikins et al., 2010](#)).

Similarly, public support programs may be insufficient to meet older individuals’ financial and non-financial needs ([ILO, 2021](#)). Public expenditure on social protection for older persons in Sub-Saharan Africa averages around one percent of GDP, a small fraction of that

Figure 3: Demographic Patterns in Selected Sub-Saharan African Countries



Notes: GDP per capita (adjusting for purchasing power parity (PPP) and measured in international current international dollars) data are from the World Bank. Population data and growth calculations are based on the World Population Prospects, 2022, Medium Fertility Variant. Numbers in figure on the right represent the over-60 population (in millions). Online Appendix Table A1 presents the information in Panel A, including figures from 1990 and projections extending to 2100.

in other LMICs (four percent) and in HICs (eight percent) (Figure 2, Panel C). Additionally, less than a quarter of the population in Sub-Saharan Africa is covered by an old-age pension, compared to approximately half in other LMICs and near universal coverage in HICs (Panel D). In the absence of public social protection programs, family-based care systems have traditionally been responsible for providing financial and non-financial support for older individuals (Aboderin, 2012a; Alli and Maharaj, 2013). However, these family-based care systems could come under increasing strain due to widespread rural-urban migration, declining fertility, higher levels of female labor force participation, and (in some cases) a “missing” generation (Aboderin, 2012b; Alli and Maharaj, 2013; Schatz and Seeley, 2015) caused by factors such as migration or disease. Women in particular are substantially more likely to be unmarried and to live alone in old age, potentially putting them at greater risk for adverse health outcomes, financial insecurity, social isolation, and depression.

Looking ahead

Although health care systems and public support programs are currently unprepared to meet the needs of a rapidly growing older population, great opportunity exists for the design and implementation of effective policies and programs towards that end. As in other countries, old-age dependency ratios in Sub-Saharan Africa are expected to increase substantially by the end of the century, though they will remain relatively low for the foreseeable future (Figure 1, Panel F). Further, substantial growth in the working-age population will lead to *declining* overall dependency ratios contrary to what large, populous LMICs such as

India and China can expect (Figure 1, Panel E).⁶ As a result, while the experience of aging in countries such as India and China could otherwise serve as useful points of comparison, lessons from these countries may not readily apply. Instead, countries in Sub-Saharan Africa could benefit from a demographic dividend which – together with the potential for continued economic growth – may generate and free up additional resources to enable innovative policymaking for aging populations. Further, while India and China are perhaps further along in the process of demographic aging, public support programs such as old-age pensions and health insurance in these contexts may be inadequate and provide relatively low coverage (ILO, 2023b; WHO, 2023), so that old-age policies from these contexts may not serve as useful models. Similarly, insights from the large literature on the economics of aging in rich countries may not be relevant in the Sub-Saharan African context due to differences in income levels, institutional capacity, and health care infrastructure.

Taken together, aging in Sub-Saharan Africa may represent an especially dynamic area for economics research. Demographic aging in Sub-Saharan Africa may unfold quite differently than in HICs or other LMICs, and lessons from other countries may not be readily portable to this context. Instead, economists and other scholars will need to pursue an Africa-specific research agenda to generate context-relevant insights. We hope to advance the creation of this forward-looking agenda in this article.

A key priority will be the development of data collection efforts to generate high-quality, longitudinal datasets that researchers can use to investigate aging-related topics in Sub-Saharan Africa. Similar to the Longitudinal Aging Study in India (LASI), the China Health and Retirement Longitudinal Study (CHARLS), or the Mexican Health and Aging Study (MHAS), data collection initiatives that are harmonized with the Health and Retirement Survey (HRS) will be especially valuable. While high-quality data focused on older populations in the region does exist and has contributed substantially to research on these topics (for example, The WHO Study on Global AGEing and Adult Health (SAGE),⁷ the SAGE-INDEPTH collaboration,⁸ and the Health and Aging in Africa: A Longitudinal Study of an

⁶The region’s average overall dependency ratio (for these purposes, the ratio of the population below age 15 or above age 60 to those 15-59) is projected to decline from 0.89 in 2020 to 0.67 in 2050 to 0.66 in 2100. In contrast, the average old-age dependency ratio (ratio of the population above age 60 to those 15-59) will increase from 0.09 (2020) to 0.12 (2050) to 0.31 (2100). (Note that using the more conventional age-group cutoff of 65, overall dependency ratios will decline from 0.83 (2020) to 0.60 (2050) to 0.53 (2100) and old-age dependency ratios will increase from 0.06 (2020) to 0.08 (2050) to 0.21 (2100)). See Online Appendix Figure A1.

⁷SAGE includes data from Ghana and South Africa, among many other non-Sub-Saharan African countries.

⁸SAGE-INDEPTH (International Network for the continuous Demographic Evaluation of Populations and Their Health in developing countries) includes data from Ghana, Kenya, Tanzania, and South Africa, among many other non-Sub-Saharan Africa countries.

INDEPTH Community in South Africa, or HAALSI), at the time of writing no Sub-Saharan Africa countries are currently represented in the set of International Family of Studies harmonized with the HRS.

Developing an agenda for economic research and policy

This paper combines lessons from a review of the existing evidence across disciplines together with insights from descriptive data analysis to develop an agenda for economic research and policy related to aging in Sub-Saharan Africa. In the evidence review, we consider research from Sub-Saharan African countries (drawing on insights from other countries and regions where useful) published in economics, demography, sociology, gerontology, public health, or related fields. We used the landscape of existing evidence to identify two broad domains: a) health and health care and b) financial and non-financial support – covering six priority areas of interest: i) disease, disability, and mortality; ii) health care systems and access; iii) Alzheimer’s disease and related dementias (AD/ADRD); iv) psychological health and well-being; v) employment, pensions, and financial security; and vi) living arrangements and caregiving.

Descriptive data analysis characterizing older individuals’ circumstances complements and builds on this review of the evidence. The analysis draws on data from 38 waves of household surveys across eight Sub-Saharan African countries, namely, Ghana, Nigeria, Niger, Ethiopia, Uganda, Tanzania, Malawi, and South Africa. These countries were chosen because they represent some of Sub-Saharan Africa’s most populous nations and largest economies, in combination provide diversity in terms of regional coverage and levels of development (see Figure 3A, columns (1) and (2)), and importantly each have available nationally-representative datasets that include comparable measures of outcomes of interest. The analysis illustrates trends over the life course and into old age for core life outcomes and highlights meaningful differences in these trends across genders and countries.

Economics research is increasingly exploring topics related to aging in LMICs, much of which has relevance for Sub-Saharan African countries. In recent work, for example, [Banerjee et al. \(2023a\)](#) document a largely under-researched “epidemic of poor mental health” among the elderly across LMICs, with a particular focus on India. Other work explores the impact of old-age policies in LMICs, including several from the Sub-Saharan African context. Evidence from old-age pension programs in Mexico, Peru, Paraguay, China, and India shows that such programs can lead to a range of positive impacts including increases

in consumption, improved subjective well-being, lower rates of depression, and in some contexts, improvements in health-seeking behaviors, self-reported health, and longevity (Galiani et al., 2016; Bando et al., 2020, 2022; Huang and Zhang, 2021; Kaushal, 2014).⁹ While some research explores the impact of pension programs in the Sub-Saharan African context on program recipients and non-recipients (for example, Alzua et al. (2019), Jock et al. (2023), Duflo (2003), Rossi and Godard (2022), and Jensen (2004), as discussed more below), much more research is needed. Further, the current paper complements existing work by exploring a broader range of relevant topics and issues together rather than focusing on one issue in greater depth. To the best of our knowledge, the current paper represents among the first comprehensive attempts to identify directions for economics research related to aging in Sub-Saharan Africa.

This paper proceeds as follows. Section 2 describes the data and methods for the descriptive data analysis. Section 3 discusses findings from literature and data analysis within the health and health care domain, and Section 4 within in the domain of financial and non-financial support. Section 5 synthesizes key findings to identify an agenda for research and policy, and the final section concludes.

2 Data

This paper derives insights from analysis using data from Ghana, Nigeria, Niger, Ethiopia, Uganda, Tanzania, Malawi, and South Africa. The goals of this descriptive analysis are three-fold: first, to examine trends in employment, health, living arrangements, and psychological well-being over the life course; second, to characterize the situation of older individuals in the region, highlighting any differences in these trends by gender or across countries; and third, to apply insights from this analysis to create an agenda for economic research and directions for policy. Throughout this process, we also take stock of existing datasets and outline priorities for future data collection.

To facilitate this analysis, we considered datasets derived from household surveys covering nationally-representative samples of individuals across all ages and that also include comparable measures of key outcomes of interest. These features allow for aggregation across countries and for comparison between countries. Within the datasets that meet these crite-

⁹Bando et al. (2022) find evidence of improvements in self-reported health among pension recipients in Paraguay and Huang and Zhang (2021) find improvements in health status and reductions in mortality, while Bando et al. (2020) find no impact on health care utilization or physical health outcomes among recipients in Peru. Kaushal (2014) finds increases in medical spending and education, but does not directly measure health or mental health outcomes.

ria, priority was given to those from countries which in combination represent a substantial portion of Sub-Saharan Africa’s older population, and that provide broad coverage across Sub-Saharan Africa’s diverse subregions and levels of economic development.

To that end, we compiled 38 waves of household surveys collected across the eight countries listed above. While this does not represent an exhaustive list of countries with nationally-representative household survey data containing potentially-relevant information at the individual level, this set of eight countries provides several advantages. Together, these eight countries provide broad geographic coverage across Sub-Saharan Africa’s subregions, and also include the region’s two most populous countries (Nigeria and Ethiopia) and largest economies (Nigeria and South Africa). Further these countries account for nearly 55% of the region’s total over-60 population, and are expected to account for substantial growth in the over-60 population in the coming decades (Figure 3).¹⁰ Datasets include the World Bank’s Living Standards Measurement Survey (LSMS) from Nigeria, Ethiopia, Uganda, and Tanzania, the Ghana Socioeconomic Panel Survey (GSPS) from Ghana, the Harmonized Survey on Households Living Standards (EHCVM)¹¹ (along with related precursors) from Niger, and the National Income Dynamics Survey (NIDS) from South Africa. Aggregating across survey waves provides a sample of over a million observations. Around 500,000 of these observations correspond to individuals who are at least age 20 and so are included in the analysis, with nearly 75,000 of these observations corresponding to those who are at least age 60. More details on each of these datasets can be found in the online appendix.

These datasets feature comparable health, employment, living arrangements, functional limitations, and psychological well-being measures for household members across age groups. In original analysis, this allows us to characterize trends in these outcomes over the life course and to explore how these trends differ by gender and across countries for the first time. To speak to the health and health care domain, measures include incidence of recent injury or illness, whether normal activities were impacted by recent injury or illness, prevalence of suffering from one of several functional limitations, and psychological well-being. Urban status, employment status and hours of employment, marital status, and living alone provide measures related to the financial and non-financial support domain. In some cases, relevant measures are available in a specific survey or wave but were collected in such a way as to not be comparable with other contexts; we note these cases and exclude the non-comparable

¹⁰While these datasets represent a diverse set of countries spanning Western, Eastern, and Southern Africa, there is a notable absence of countries from Central Africa.

¹¹In the original French, the *Enquête Harmonisée sur les Conditions de Vie des Ménages*.

measures.¹² In other instances, the relevant measures were not collected, leaving gaps in the analysis. For example, measures of depression and psychological distress are only available from Ghana and South Africa, despite this being an important component of overall well-being, and one where older individuals may be especially vulnerable (Banerjee et al., 2023a).¹³

For each of these measures, we present trends in these outcomes over the life course, using averages within 5-year age groups for those above age 20, and aggregating either across countries and genders, or within country, separately for males and females.¹⁴ The main results are presented in Figure 4 (aggregating across countries) and Figure 5 (at the country level). Figures 6 (aggregate) and Figure 7 (country level) depict trends over the life course in different dimensions of functional limitations which together comprise an overall measure. The country-level figures also disaggregate patterns by gender, helping to identify important differences. The data reflect some of the foundational patterns frequently discussed in the literature and throughout this article, for example, that older individuals tend to be concentrated in rural areas, and that the population of those over-60 tends to be disproportionately female.¹⁵ Other patterns and findings depicted in these figures are discussed throughout Sections 3 and 4.

¹²For example, measures of employment are available in the GSPS but exclude farm and agricultural employment; these sources of employment are included in the other datasets and represent an important source of employment for those over 60. Measures of illness and injury are available in South Africa, but these measures are collected in such a way as to not be comparable.

¹³Depression is collected in the fourth wave of the Nigerian LSMS, but only for the household head, a non-representative sample of the population. Though several surveys also collect self-reported life satisfaction, we do not include these in the analysis, instead focusing on measures of depression and psychological distress collected using standard scales.

¹⁴The analysis uses country- and wave-specific survey weights (which maintain representativeness at the national level in a particular year), further adjusted to account for year-specific country-level population within each 5-year age group. More details on the construction and distribution of these weights are available in the online appendix.)

¹⁵In the eight-country sample, 35% of those between age 20 and 60 live in urban areas, while just over 30% of those over age 60 live in urban areas. Patterns related to gender vary more across countries; while the gender composition is relatively balanced in countries such as Ethiopia, Nigeria, and Niger, nearly 60% of those over 60 are female in Ghana and South Africa.

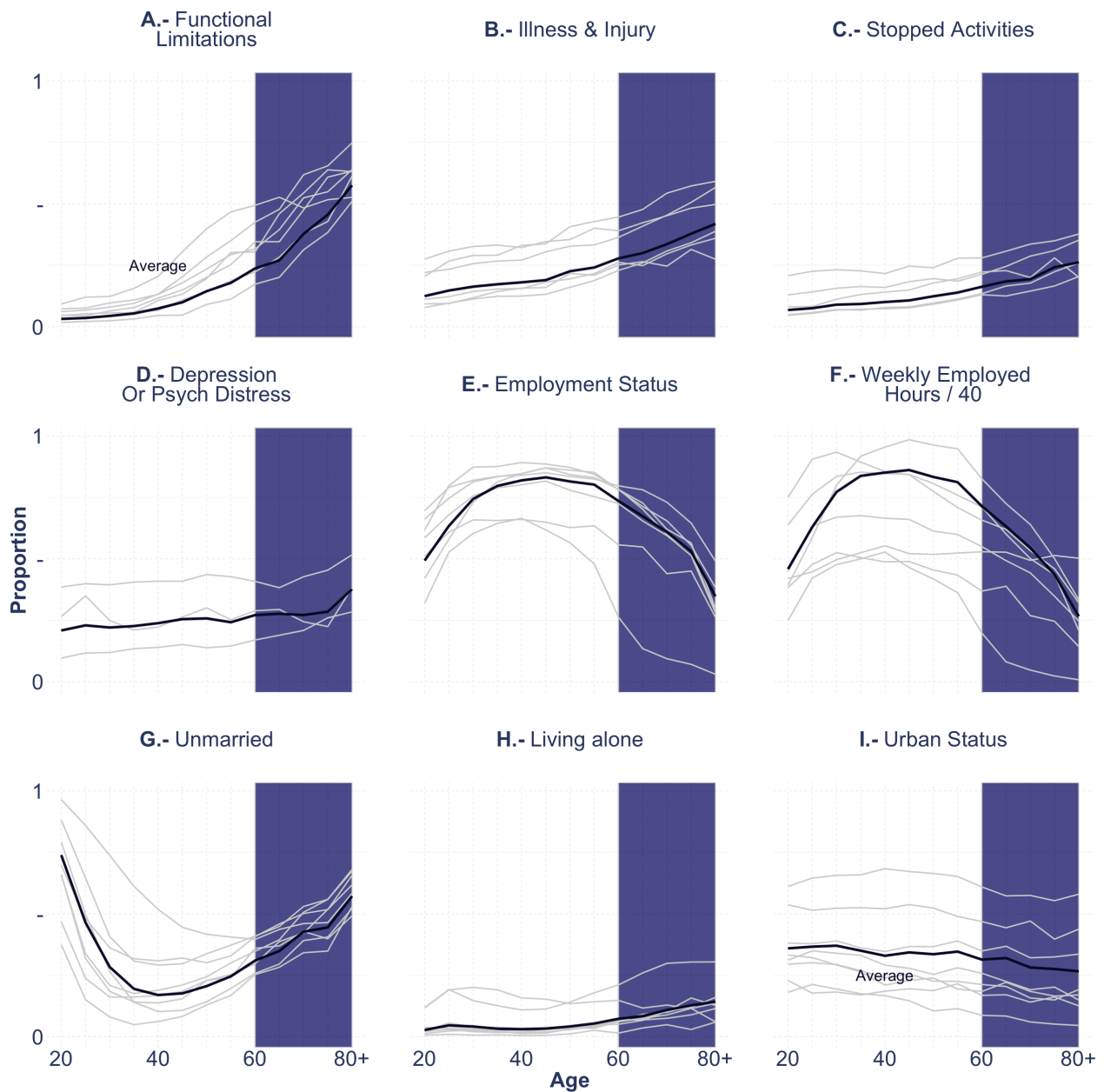


Figure 4: Employment, Health, & Living Arrangements over the Life Course: Aggregate

Notes: (1) Panels depict average values within 5-year age bins, pooling across countries and multiple waves of data. Averages are computed using country- and wave-specific survey weights, further adjusted for country- and year-specific population within each 5-year age group. (2) Panel A: Functional limitations includes whether the individual reports difficulty with any one of (A) seeing, (B) hearing, (C) remembering, (D) walking or climbing, (E) with self care, or with (F) communicating. (3) Panels B and C: Recall period for any illness and injury is 4 weeks for LSMS Nigeria, LSMS Ethiopia (waves 3 and 4), LSMS Uganda, and EHCVM Niger; 2 weeks for LSMS Malawi; 2 months for LSMS Ethiopia (wave 2). Only collected in certain waves in Nigeria LSMS. (4) Panel D: GSPS (Ghana) uses the Kessler Psychological Distress Scale (K10) to measure psychological distress (including symptoms of depression and anxiety). NIDS uses the Center for Epidemiologic Studies Depression Scale (CESD-10) scale to measure depression. (5) Panels E and F: Employment includes salaried/wage work, agriculture, casual labor, and self-employment. Recall period for work activities and hours worked is over last 7 days. As exceptions: NIDS South Africa asks whether currently employed (but then also collects hours worked over the past 7 days), the first wave of the precursor to EHCVM in Niger asks about employment over the last 30 days, and all waves of the EHCVM in Niger ask about work hours in a typical year. Employment hours are presented as share of a “full-time week”, constructed by dividing reported hours by 40. (6) See the online appendix for more details on which outcomes are available for each country and wave.

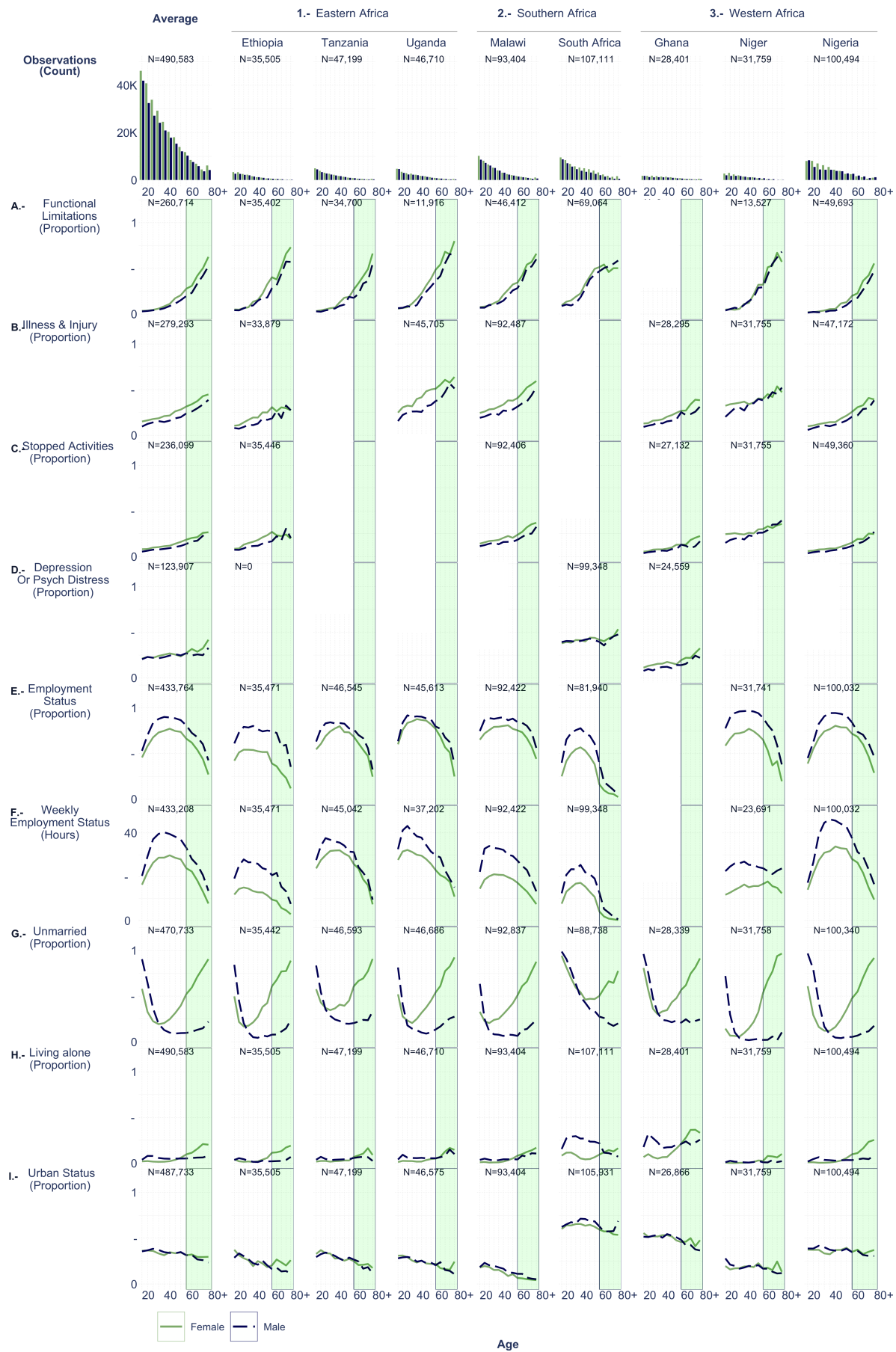


Figure 5: Employment, Health, & Living Arrangements over the Life Course: Country Level

Notes: (1) Panels depict average values within 5-year age bins, separately for males and females, and pooling across multiple waves of data. Averages are computed using country- and wave-specific survey weights, further adjusted for year-specific population within each 5-year age group. Number of non-missing observations listed at the top of each panel. Missing panels in countries where comparable data is not available. (2) Panel A: Functional limitations includes whether the individual reports difficulty with any one of (A) seeing, (B) hearing, (D) remembering, (E) walking or climbing, (F) with self care, or with (G) communicating. (3) Panels B and C: Recall period for any illness and injury is 4 weeks for LSMS Nigeria, LSMS Ethiopia (waves 3 and 4), LSMS Uganda, and EHCVM Niger; 2 weeks for LSMS Malawi; 2 months for LSMS Ethiopia (wave 2). Only collected in certain waves in Nigeria LSMS. (4) Panel D: GSPS (Ghana) uses the Kessler Psychological Distress Scale (K10) to measure psychological distress (including symptoms of depression and anxiety). NIDS uses the Center for Epidemiologic Studies Depression Scale (CESD-10) scale to measure depression. (4) Panels E and F: Employment includes salaried/wage work, agriculture, casual labor, and self-employment. Recall period for work activities and hours worked is over last 7 days. As exceptions: NIDS South Africa asks whether currently employed (but then also collects hours worked over the past 7 days), the first wave of the precursor to EHCVM in Niger asks about employment over the last 30 days, and all waves of the EHCVM in Niger ask about work hours in a typical year. (6) See the online appendix for more details on which outcomes are available for each country and wave.

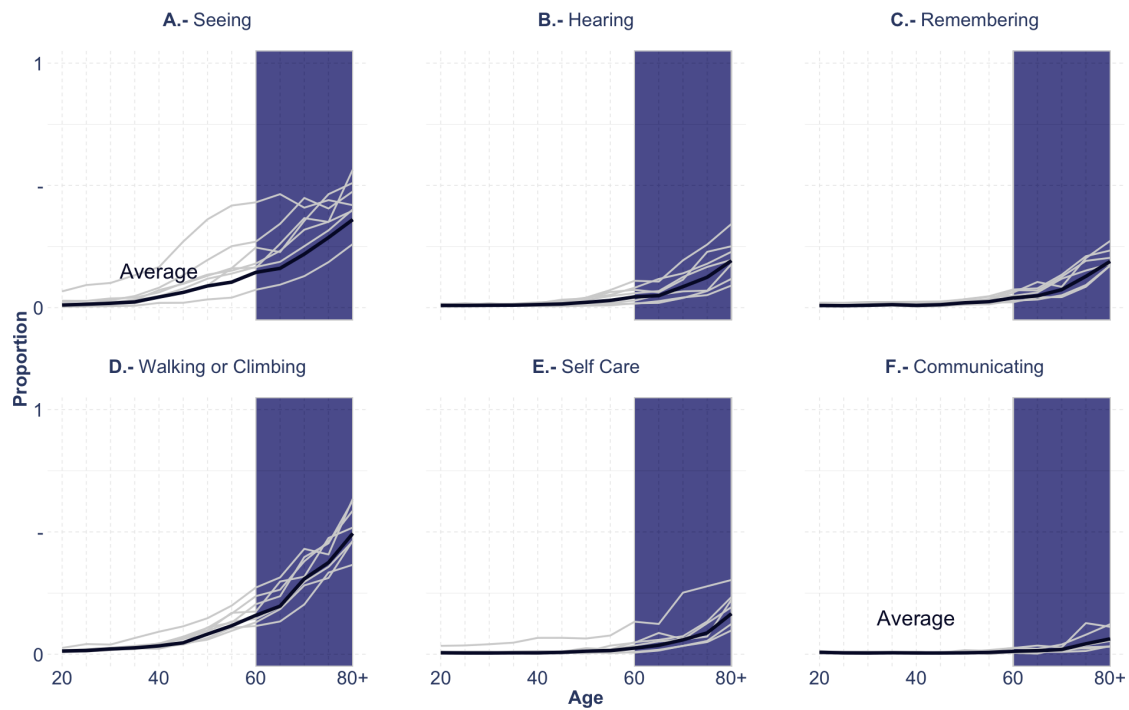


Figure 6: Functional Limitations over the Life Course

Notes: Panels depict average values within 5-year age bins, pooling across countries and multiple waves of data. Averages are computed using country- and wave-specific survey weights, further adjusted for country- and year-specific population within each 5-year age group. Panels display whether individuals report difficulty with (A) seeing, (B) hearing, (C) remembering, (D) walking or climbing, (E) self care, or (F) communicating. Relevant data are available for select waves of the LSMS (Nigeria, Tanzania, Uganda, Malawi, Ethiopia), the EHCVM (Niger), and the NIDS (South Africa). See the online appendix for more details on which outcomes are available for each country and wave.

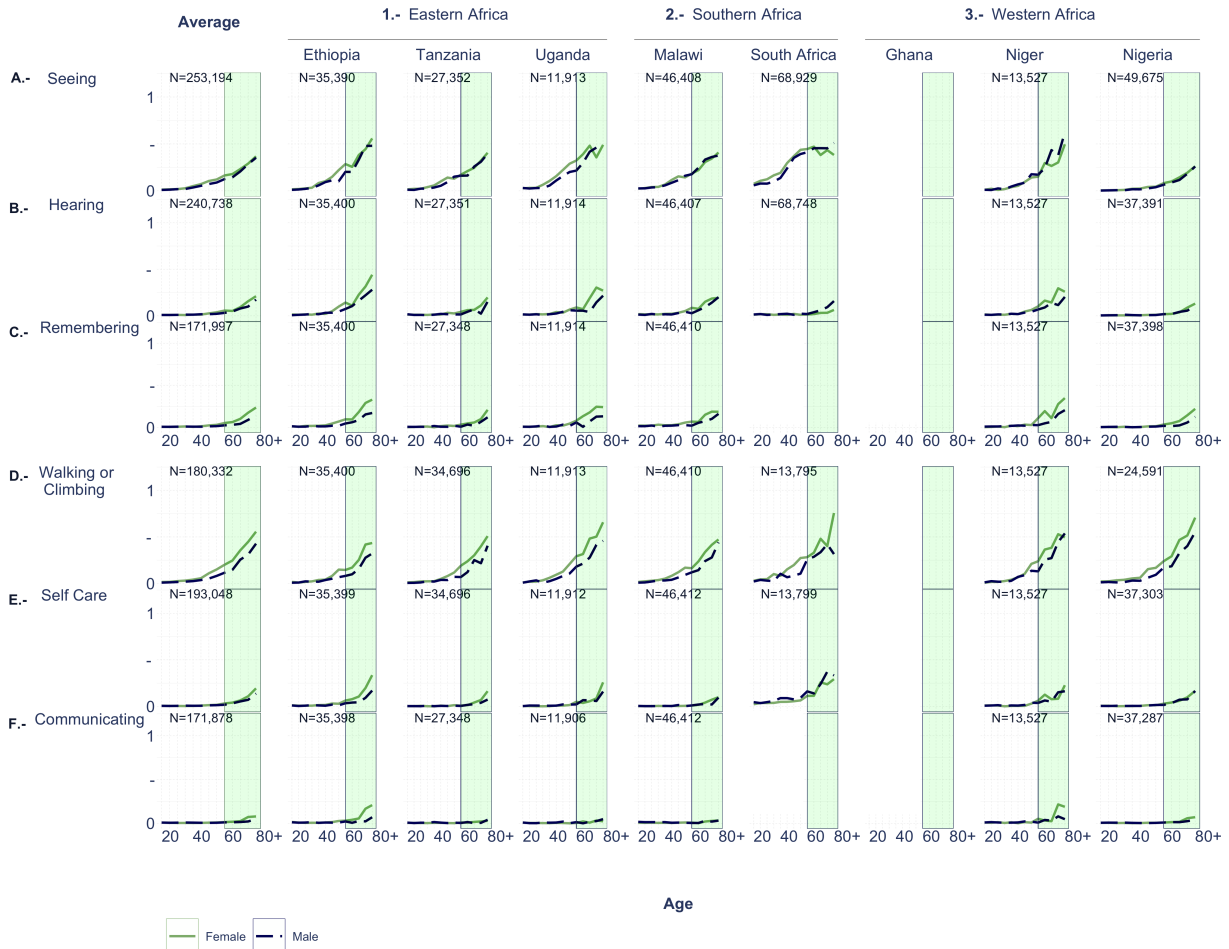


Figure 7: Functional Limitations over the Life Course: Country-Level

Notes: Panels depict average values within 5-year age bins, separately for males and females, and pooling across multiple waves of data. Averages are computed using country- and wave-specific survey weights, further adjusted for year-specific population within each 5-year age group. Number of non-missing observations listed at the top of each panel. Panels display whether individuals report difficulty with (A) seeing, (B) hearing, (C) remembering, (D) walking or climbing, (E) self care, or (F) communicating. See the online appendix for more details.

3 Health and health care

Priority area I: Disease, disability, and mortality

Sub-Saharan Africa has seen steady progress in recent decades in terms of health gains and extended life spans. Between 2000 and 2019, overall life expectancy increased by 12 years, and healthy life expectancy increased by 10 years across the region.¹⁶ Some of these gains are the result of massive expansion of treatment for HIV/AIDS in the early 2000's, which has partially contained that pandemic (Agyepong et al., 2017; Piot et al., 2015). Nevertheless, life expectancy remains consistently lower, and age-specific mortality from chronic diseases remains consistently higher than in other regions (He et al., 2020; Owolabi et al., 2015; de Graft Aikins et al., 2010; Cappuccio and Miller, 2016; Moran et al., 2013; Yuyun et al., 2020).

¹⁶Data from the World Health Organization Global Health Observatory Indicators.

Also unlike other regions, older Sub-Saharan Africans continue to face relatively high rates of disability and mortality from communicable diseases. While deaths due to cardiovascular diseases dominate in high-income countries, respiratory infections, tuberculosis, enteric infections, and other infectious diseases account for over half of deaths between ages 70-90 (BMJ, 2022). In terms of disability, 25% of disability-adjusted life years (DALYs) among the over-60 population in Sub-Saharan Africa can be attributed to communicable, nutritional, and birth-related diseases, a figure that is just 8% in other regions (He et al., 2020).

Nevertheless, patterns are shifting over time towards a greater burden of non-communicable diseases such as hypertension, diabetes, and cancer (Yuyun et al., 2020; He et al., 2020; Casim and Aboderin, 2017; Owolabi et al., 2015). Between 1990 and 2019, the proportion of deaths between 70-90 in SSA due to enteric infections, respiratory infections, tuberculosis, nutritional deficiencies, and chronic respiratory diseases declined while deaths due to neoplasms, cardiovascular disease, neurological disorders, or diabetes and kidney disease increased (BMJ, 2022). Diabetes represents the third leading cause of years lived with disability (YLDs) among those above 70 in SSA (BMJ, 2022), and the number of adults living with diabetes is expected to nearly double between 2010 and 2030 (Mbanya et al., 2010). Similarly, new cases of cancer are expected to triple by 2050, with older individuals accounting for a substantial share of these new cases (Pilleron et al., 2019). The shift towards an increasing burden of non-communicable diseases is expected to continue as the continent urbanizes, lifestyles and diets change, and individuals are exposed to new environmental stressors (BeLue et al., 2009).

Many older Sub-Saharan Africans suffer from multiple chronic conditions that impact quality of life and physical functioning (Aboderin, 2010; Payne et al., 2017), and that may predispose them to cardiovascular disease or Alzheimer’s disease and related dementias (AD/ADRD). For example, blindness and vision loss, hearing loss, and lower back pain represent the most common causes of disability among older Sub-Saharan Africans. Combined, these sensory and musculoskeletal conditions account for 27% of years lived with disability (YLDs) among those over 70 (BMJ, 2022).¹⁷

Analysis using household data from the eight-country sample as presented in Figure 6 (aggregating across countries, weighting by year-specific country population in 5-year age groups) and Figure 7 (at the country level) distills these patterns. Across these eight coun-

¹⁷Specifically, blindness and vision loss: 9.8%, hearing loss: 9.5%, and lower back pain: 7.7%.

tries, roughly 22% of individuals over age 60 report suffering from difficulty seeing or hearing (Panels A and B). Nearly a quarter report experiencing difficulty walking or climbing up stairs (Panel D). Overall, between a quarter (Nigeria) and over half (Uganda) of those above age 60 report living with one of six possible functional limitations.¹⁸ Further, Figures 6 and 7 (unsurprisingly) make clear that each of these functional limitations becomes more likely as individuals age.

Acute conditions also adversely impact normal functioning and activities among older individuals. The data in Figure 4 (aggregate) and Figure 5 (at the country level) indicate that the fraction of older individuals reporting a recent¹⁹ illness or injury increases steadily for those over 60. 31% of those above age 60 report experiencing an illness or injury in the recent past, conditions which require stopping work or other usual activities in over half of such cases (Panels B and C).

Considerable variation exists in the incidence of disabilities across females and males, and in gender-based differences across countries. In Kenya, the age at which 25% of females are expected to report living with at least one severe activity limitation is age 67, while for males, this occurs at age 79. In Ethiopia, the corresponding ages are 72 (for females) and 80 (for males), and in Ghana, 76 (for females) and 73 (for males) (Weber and Scherbov, 2020). Differential mortality at younger ages, as well as reporting differences, could explain some of these gaps. Women and lower-income individuals tend to report suffering worse health outcomes in old age (Aboderin, 2010; Biritwum et al., 2013; Fonta et al., 2017; Gureje et al., 2006, 2011; He et al., 2020; Ojagbemi et al., 2017), and policies will thus need to be designed to meet the needs of women and these poorer individuals.

Priority area II: Health care systems and access

Despite recent progress in health care service coverage (WHO, 2022), health care systems in many Sub-Saharan African countries appear unprepared to meet the needs of a rapidly growing older population living with non-communicable and chronic diseases. Several key indicators presented in Figure 8 characterize health care spending and infrastructure in Sub-Saharan African countries in comparison with other LMICs and HICs. Government expenditure on health (as a share of GDP) remains lower across Sub-Saharan African countries

¹⁸These include reported difficulty hearing, seeing, remembering, walking or climbing, with self-care, or communicating.

¹⁹In Nigeria, Uganda, and Ethiopia, the recall period includes the last 4 weeks/30 days. (As an exception, the recall period includes the last 2 months for the first of three waves in Ethiopia.) In Malawi, the recall period includes the last 2 weeks.

compared to other LMICs (with middle-income South Africa a notable exception), and far lower than that in high income countries (Panel A). Consequently, out of pocket expenditures are higher in SSA and other LMICs compared to HICs (Panel B).²⁰ The Lancet Commission on the future of health in Sub-Saharan Africa points to reducing out of pocket expenditure as a key regional priority (Agyepong et al., 2017), and while universal health care is gaining increased attention, additional research is required to determine the most effective models for implementing these programs.

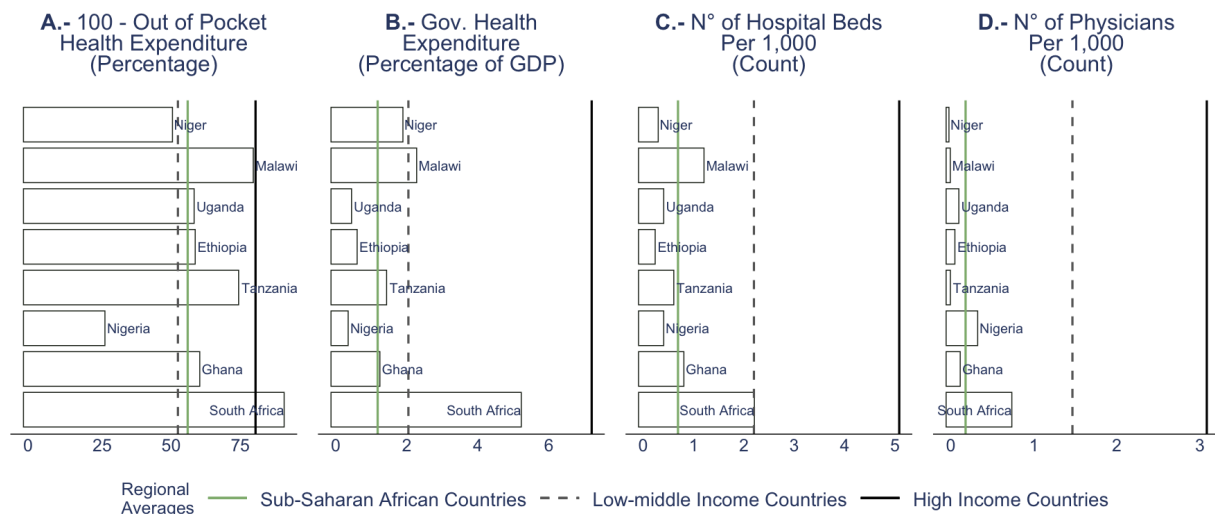


Figure 8: Health Care Systems and Access

Notes: (1) Vertical lines show average outcomes among high income (blue), low and middle income (red) and Sub-Saharan African countries (yellow), weighted by country population. Low & middle income country (population-weighted) averages exclude Sub-Saharan African countries. (2) Income groups are defined as per the World Bank, and regional classifications as per the United Nations Development Program. (3) Countries are ordered in ascending order considering their GDP per capita (USD). (4) Panel A: Out of pocket health expenditures represents the share of total health care expenditures that households pay directly out of pocket. The figure presents 100 - Out of pocket expenditure, such that higher values signal that households finance a lower share of their total health care expenditures out of pocket. Data are from the World Bank Health Organization Global Health Expenditure database. (5) Panel B: Government health expenditure is as a percent of GDP. Data are from the World Bank Health Organization Global Health Expenditure database. (6) Panel C: Number of hospital beds data are from the World Health Organization, supplemented by country data. (7) Panel D: Number of physicians data are from the World Health Organization's Global Health Workforce Statistics, the Organization for Economic Cooperation and Development, supplemented by country data.

Further, existing health care infrastructure remains weaker, and trained medical personnel less abundant in SSA compared to other LMICs and HICs (Panels C and D of Figure 8), with severe disparities in quality common across urban and rural areas (Scheil-Adlung, 2015). Health care facilities may be less well-equipped and health care staff may lack the training necessary to treat the non-communicable diseases which will be increasingly relevant for an aging population. Indeed, around 80% of regional health budgets are dedicated to treating infectious diseases, rather than the non-communicable conditions that disproportionately impact older individuals (Alli and Maharaj, 2013; de Graft Aikins et al., 2010). Similarly, appropriate medications are much less available for non-communicable, chronic conditions

²⁰For example, households in Nigeria finance as much as 70% of their health care expenses out of pocket. WHO (2022) highlights Nigeria as one of only a handful of countries in the region that attains relatively low health care coverage and financial risk protection metrics compared to other middle income countries.

than for infectious diseases and acute conditions throughout the region (Agyepong et al., 2017), and many of the conditions that impact older individuals (such as hypertension) in Sub-Saharan Africa frequently go undetected and untreated (Addo et al., 2007; Cappuccio and Miller, 2016; de Graft Aikins et al., 2010; Joubert and Bradshaw, 2006; Owolabi et al., 2015).

Physical and financial barriers to health care access may especially impact older individuals (Aboderin, 2010, 2012a). These older individuals may have a harder time traveling to health care centers, and these health care centers may be more remote or of lower quality in rural areas (Scheil-Adlung, 2015) where older individuals tend to be over-represented (Alli and Maharaj, 2013). Indeed, evidence from Nigeria, Kenya, and Uganda indicates that older individuals are more likely to report that they lack access to health care facilities, are less likely to seek health care than other age groups, and are more likely to delay seeking health care due to household resource constraints (Gureje et al., 2006; Wairiuko et al., 2017; Xu et al., 2006; Waweru et al., 2003). In addition to these barriers to healthcare, social norms and stigma (for example, beliefs attributing certain conditions to witchcraft) could discourage older individuals from seeking conventional treatment, and to instead rely on traditional treatment approaches and herbal remedies which remain widely used in Sub-Saharan Africa (Alli and Maharaj, 2013; WHO, 2019).

Health insurance coverage in Sub-Saharan Africa generally remains low, including for older individuals. In their analysis of Demographic and Health Surveys across 36 countries, Barasa et al. (2021) find that on average only 8% of the region's population benefits from health insurance coverage, with at least 20% of the population covered in only four countries. Ghana and Senegal represent notable exceptions (Parmar et al., 2014). Given the introduction of Ghana's National Health Insurance Scheme in 2003 (with premiums waived for those over age 70), health insurance coverage in Ghana has risen substantially in recent decades. Within the GSPS sample, those over 60 who report ever having access to health insurance rose from 64% to 86% between 2009-10 and 2017-2018. Similarly, 48% of older individuals in Senegal are enrolled in Senegal's Plan Sesame, a social health protection program designed to extend free health care to older individuals (Parmar et al., 2014). These two country cases could potentially serve as valuable learning test beds and policy models for other countries in the region, and it will be important to conduct detailed empirical research on their implementation and impacts.

Further, enrollment and usage of health insurance and social health protection programs

correlates with socioeconomic advantage, suggesting that policy efforts will be needed to extend coverage to less economically advantaged groups, who are perhaps also more in need (Parmar et al., 2014; Ibitoye et al., 2014). Indeed, evidence from Ghana shows that enrollment in Ghana’s National Health Insurance Scheme (among non-older individuals for whom premiums apply) is highly price sensitive, with evidence that those from more socioeconomically disadvantaged groups respond more to an offer for subsidized premiums (Asuming, 2013). As discussed in Banerjee et al. (2023b), credit constraints, risk, lack of information, and lack of trust represent barriers to health insurance enrollment and usage among the general population, factors which may similarly impact health insurance enrollment and usage among older individuals. Additional research is also needed to inform policy around improving health care systems themselves, and addressing the financial and non-financial barriers that prevent older individuals from seeking and receiving adequate health coverage and care.

Priority area III: Alzheimer’s disease and related dementias

The prevalence of Alzheimer’s disease and related dementias (AD/ADRD) is expected to increase substantially in Sub-Saharan Africa in the coming decades as the population ages. Alzheimer’s Disease International estimates the prevalence of AD/ADRD in SSA among those over 60 at 6.4%, and projects that the number of individuals living with AD/ADRD will increase from 2.1 to 7.6 million between 2015 and 2050 (Guerchet et al., 2017). However, data estimating the prevalence of AD/ADRD in Sub-Saharan Africa remains quite sparse, with wide variation in country-level prevalence estimates.²¹ Additional high-quality individual-level data are needed to contribute to and refine prevalence estimates as a critical starting point for research exploring risk factors and protective factors, and for developing effective policy measures accordingly.

The influential Lancet Commission on dementia prevention, intervention, and care identified twelve distinct potentially-modifiable risk factors associated with AD/ADRD based on research from other contexts (Livingston et al., 2020). A group of studies explores some of these protective and/or risk factors in the Sub-Saharan African context, but this set of studies is limited and much more research is needed to complete our understanding of AD/ADRD in the region. As in other contexts, these studies find that social isolation, lack of social networks, and lack of social engagement each correlate with (i.e., represent “risk

²¹For instance, in reviews, Akinyemi et al. (2022) and Olayinka et al. (2014) cite studies estimating prevalence ranging from less than 2 or 3% to as high as 20 or 22% of the older population.

factors” for) AD/ADRD (Gureje et al., 2011; Ojagbemi et al., 2017; Toure et al., 2012), while occupational complexity and pre-dementia cognition are inversely related to the risk of developing AD/ADRD (Ojagbemi et al., 2016). A limited set of studies explores the link between certain modifiable lifestyle factors including diet, physical activity, and consumption of alcohol and tobacco with AD/ADRD (Akinyemi et al., 2022), with far more research also needed in this area.

Existing studies highlight that AD/ADRD places a substantial burden on caregivers. Caregivers of older individuals with impaired memory report a greater burden associated with such care, and reduce their work hours more to provide care compared to caregivers of older individuals with other health conditions (Uwakwe et al., 2009). Caregivers and persons living with AD/ADRD often face social stigma (Akinyemi et al., 2022; Guerchet et al., 2017), which can lead to further isolation or even exclusion from health care and other forms of support (Jacobs et al., 2022). While this is well-documented in other contexts (Werner, 2014), AD/ADRD stigma may be exacerbated in certain Sub-Saharan African contexts due to lack of awareness about the disease or to misinterpreting symptoms of the disease as evidence of witchcraft or demonic possession (Adebisi and Salawu, 2023; Spittel et al., 2021; Mushi et al., 2014). In addition to isolation or exclusion from health care and other services, witchcraft and related beliefs could put older individuals at a greater risk of becoming victims of abuse or violence (Miguel, 2005; Aboderin and Epping-Jordan, 2017).

While this small body of work makes valuable progress, much more research is needed to better understand risk and protective factors associated with AD/ADRD in the Sub-Saharan African context. For example, we lack data characterizing exposure to many of these risk factors over the life course, and so lack an understanding of which risk factors may be most meaningful or relevant in the Sub-Saharan African context. Further, much of the evidence comes from one country (Nigeria), so research from other countries on this diverse continent will be especially valuable (Olayinka et al., 2014; Lekoubou et al., 2014).

Very little research from the region speaks to policy solutions that might effectively support those living with AD/ADRD and their caregivers. Few specialists are equipped to diagnose and provide care tend for those living with AD/ADRD, many of whom tend to be concentrated in urban areas (Guerchet et al., 2017). The current burden of care rests primarily on family caregivers, with need for a more sustainable, integrated approach to care shared among (non-specialist) primary care physicians, community health workers, and family members (Guerchet et al., 2017). Finally, as with the other health conditions

discussed above, dementia tends to be higher among rural residents, women, and the poor (Gureje et al., 2011) (although the exact reasons why are debated), so again, policies will need to be designed to address these vulnerable populations' specific needs.

Priority area IV: Psychological well-being

Psychological well-being and depression among older populations represent a core priority area for research and policy. Banerjee et al. (2023a) document higher rates of depression among older individuals in low and middle income countries compared to wealthier countries like the USA, and shows that the prevalence of depression increases notably as older individuals age. This is especially true in Sub-Saharan Africa, where older individuals report lower levels of life satisfaction than other world regions (He et al., 2020), perhaps due to experiencing the world's lowest living standards, and where depression is the third leading cause of years lived with disability among those over 70 (BMJ, 2022).²² Findings from our data analysis illustrate these patterns. In Ghana, while only 13% of those between 20 and 60 exhibit symptoms that would classify them as experiencing moderate or severe psychological distress, 20% of those above age 60, and 28% of those above age 80 exhibit symptoms indicative of moderate or severe psychological distress. In South Africa, 40% of those between 20 and 60, 42% of those above 60, and well over half of those above 80 appear depressed (Figure 4, Panel D).²³

Mental health represents one area of overall health care provision that is particularly under-resourced in this region. Government expenditure per capita on mental health in Africa is an order of magnitude lower, and the presence of mental health workers is dramatically sparser compared to other world regions (aside from South East Asia) (WHO, 2021).²⁴ Innovative solutions such as task-shifting (from medical professionals to community members, caregiver training, etc.) could help bolster capacity to detect, treat, and manage mental health issues, though efforts will need to be made to combat misperceptions and stigma around mental health disorders and treatments (Kakuma et al., 2011; Galvin and Byansi, 2020).

Available evidence helps to shed light on correlates of depression and other adverse mental

²²Depressive disorders account for 5.8% of years lived with disability (YLDs) among those over 70 in the region (BMJ, 2022).

²³In the GSPS (Ghana), psychological distress (including symptoms of depression and anxiety) is measured using the 10-item Kessler Psychological Distress Scale, while in the NIDS (South Africa), depression is measured using the 10-item Center for Epidemiological Studies Depression (CESD).

²⁴Government expenditure per capita on mental health in Africa (including North Africa) was less than \$0.50 in 2020, compared to over \$50 in high income countries. African countries average 1.6 mental health workers per 100,000 population, compared to a global average of 13 and HIC average of 62 (WHO, 2021).

health outcomes in the region. In Nigeria, depression is higher among women, urban residents, and those widowed, separated, or divorced (Gureje et al., 2007). Similarly, females, rural residents, those of lower socioeconomic status, the less educated, and the unemployed report lower life satisfaction (Biritwum et al., 2013; Debpuur et al., 2010; Xavier Gómez-Olivé et al., 2010). A lifetime of unskilled employment correlates with depression among older men, while infrequent family contact correlates with depression among older women (Ojagbemi et al., 2018). Remaining married, maintaining contact with family members, and receiving financial support are all associated with higher well-being (Avisah et al., 2022; Kyobutungi et al., 2010; Mwanyangala et al., 2010), although further research is needed to establish the leading causal pathways given obvious forms of endogeneity for all of these documented correlations. Finally, chronic non-communicable diseases correlate strongly with depression and self-reported quality of life, pointing towards the detrimental impact of co-morbidities and the need to prioritize mental health along with physical health (Wang et al., 2019).

Research from the region also highlights the important role of social support on health and well-being among older individuals. Social capital, support networks, and living in multi-generational households are all associated with improved health and well-being in later life, and those with more frequent contact with family members exhibit lower rates of depression and greater life satisfaction (Avisah et al., 2022). For older women, living with children (not just grandchildren for whom they may provide care) is associated with better mental and physical health (Kendall and Anglewicz, 2018). Social networks tend to decline with age everywhere, and women (who are far more likely to outlive their spouses but not remarry) may be especially vulnerable to the detrimental impacts of social isolation in old age (Harling et al., 2020).

These findings point towards the need to prioritize policies designed to facilitate connection and social support into old age, which is likely to be a challenge given rapid economic and social change in many African societies which may threaten sources of social connection such as traditional family-based care systems.

4 Financial and non-financial support

Priority area V: Employment, pensions, and financial security

An especially critical area for economics research and policy relates to employment, pensions, and financial security. Nearly 90% of employment in Sub-Saharan Africa is in the

informal sector ([United Nations, 2022](#)), a sector which provides individuals with few formal opportunities to save for retirement, and which may place individuals at greater risk for health conditions in old age. Furthermore, and in contrast to other regions, many older individuals in Sub-Saharan Africa remain employed (70% of those aged 60-64 and nearly 50% of those aged 65+), primarily in agriculture ([He et al., 2020](#); [Samuels et al., 2018](#)). For some, continued employment into old age could indicate good health and longevity. For others, it could be necessary to work into old age for financial reasons, regardless of and potentially to the detriment of health, nutrition, and related outcomes.

Confirming this pattern, across the main eight-country sample, while employment peaks in middle age and declines in old age, a non-trivial fraction of those above 60 report working in some way (in wage or salaried employment, in their own or a household business, or in agricultural activities), and report working a non-trivial amount (Figure 4, Panels E and F). 64% of those above age 60 report working at all, and on average, work 24 hours per week. Similarly, a perhaps surprisingly high 45% of those above age 75 continue working, averaging 14.5 hours per week, rates that are far higher than those found in wealthy countries ([ILO, 2023a](#)). Employment patterns differ somewhat across countries in the sample, as highlighted in Figure 5 (Panels E and F). Again, South Africa is a notable exception, where employment and hours of employment decline sharply as individuals become eligible for old-age pensions, in a way that more closely resembles high income countries.

Particularly for those employed in the informal sector, a lifetime of exposure to risky working conditions, pollution, or harsh outdoor weather conditions may result in greater risk of adverse health conditions that individuals carry into old age. Further, a lifetime of working in informal employment (where wages are generally low, employment contracts rare, and few opportunities for old-age saving exist) leaves many individuals without savings and financially insecure in old age. Indeed, despite high rates of continued employment, older individuals tend to be particularly vulnerable to poverty and deprivation ([Sabates-Wheeler et al., 2020](#); [Kakwani and Subbarao, 2007](#)) and over-represented in less-affluent rural areas ([Maharaj, 2012](#)). The problem of elderly poverty was precisely what large-scale social pension systems were designed to solve in rich countries, including the U.S. ([Engelhardt and Gruber, 2006](#); [Meyer and Wu, 2018](#)): before the expansion of Social Security, for instance, the elderly had the highest poverty rate of any age group, mirroring the current reality in much of Sub-Saharan Africa.

Even as many older individuals lack the financial resources to sustain themselves, few

African countries offer adequate pensions and public support programs to fill the gaps. Less than a quarter of all older individuals in Sub-Saharan Africa receive some form of pension (He et al., 2020), and even when they do receive something, many of them prove to be inadequate (Darmstadt et al., 2005). As discussed earlier, governments dedicate very little to social protection expenditure on the elderly, allocating just over one percent of GDP on average, compared to four percent in non-Sub-Saharan African LMICs (Figure 2, Panel D).

Existing economics research suggests that old-age pensions provide both financial and non-financial benefits to recipients and non-recipients alike. Alzua et al. (2019) find improvements in mental health and food security among old-age pension recipients in Nigeria. Recipients of South Africa’s old age pension are more likely to seek health care (Lloyd-Sherlock and Agrawal, 2014), while men eligible for additional years of old age pension (due to exogenous changes in age-eligibility criteria) exhibit improved cognitive functioning (Jock et al., 2023). Also in South Africa, (female) children in households with a pension recipient exhibit improvements in anthropometric outcomes (Duflo, 2003), and children work fewer hours and school attendance improves in anticipation of a household member becoming eligible for old-age pensions (Edmonds, 2006). Further, evidence from Namibia suggests that the introduction of old-age pensions impacts fertility trends at a societal level (Rossi and Godard, 2022). These findings suggest that the benefits of pensions may extend beyond basic financial security for older individuals, and so may be a potentially effective anti-poverty tool for supporting aging individuals and their families, providing a further rationale for expanding such programs.

Designing effective old-age pension programs, programs targeted at encouraging retirement savings, and related social support programs represents a core priority area for policy innovation. In our view, further research to inform the design of such policies will be critical. This is particularly true in contexts where lack of access to technology or low literacy could pose challenges to effective implementation, where determining and enforcing eligibility is in itself difficult (Güven and Leite, 2016), or where such programs could to some extent simply crowd out private transfers, lessening the intended impacts of the program (Jensen, 2004). Further, lack of trust in institutions could impact willingness to save for retirement, and those employed in the informal sector may have limited access to formal savings technologies.

Priority area VI: Living arrangements and caregiving

In the absence of robust public support systems, many older individuals in Sub-Saharan Africa rely on family and other informal sources for financial and non-financial support (Aboderin and Epping-Jordan, 2017; Menken and Cohen, 2006). While family-based caregiving is essential in the absence of other alternatives, caregiving responsibilities may place an unsustainable financial and non-financial burden on some families (Aboderin, 2017; Aboderin and Epping-Jordan, 2017), and these arrangements may not always provide adequate care (Aboderin and Epping-Jordan, 2017; Aboderin, 2019). For example, over two thirds of elderly in Nigeria receive care from children or children-in-laws (disproportionately females), and nearly 40% of such caregivers report reducing their work hours to provide care (Uwakwe et al., 2009).

In addition to receiving support from others, older individuals often represent a valuable source of financial and non-financial support for younger family members. Many older individuals both provide and receive financial support from family, or care for young children and so enable younger adults to work and earn more (Aboderin, 2004; Sabates-Wheeler et al., 2020).²⁵ While often mutually beneficial or even necessary arrangements (for example, due to the impacts of HIV/AIDS on the young adult generation), caring for grandchildren may in turn represent a substantial financial and physical burden for older individuals (Aboderin, 2012a; Muga and Onyango-Ouma, 2009; Nyambedha et al., 2003; Zimmer, 2009), particularly for women and for those living in rural areas or highly impoverished urban settlements (Samuels et al., 2018; HelpAge International, 2003).

At the same time, growing rural-urban migration, industrialization, and shifting social norms (Aboderin, 2012a; Apt, 2000; Maharaj, 2012) as well as general material hardship, financial stress, and the burden associated with caregiving (Menken and Cohen, 2006; Nortey et al., 2017) are all increasingly threatening these traditional family-based care systems. The explosive projected rise in the sheer numbers of elderly in Sub-Saharan Africa will place further pressure on existing arrangements. This may be especially true as fertility rates decline (so that the number of children who would naturally serve in caregiving roles falls) and as younger generations migrate to urban areas. Much more research is needed to understand how these rapid economic, demographic, and social changes will positively

²⁵Multi-generation and skipped-generation households are common: 60% of those above 60 live in multigenerational households, and anywhere from 2.4% (in South Africa) to between 10% (Kenya, Uganda) and 12% (Ghana) live in households with at least one child and no working-age adults (Aboderin and Hoffman, 2015; He et al., 2020).

or negatively impact the availability and quality of care for an expanding aging population, and so inform the design of public policies and programs.

Finally, the likelihood of living alone and becoming or remaining unmarried increases sharply with age, a pattern that is especially pronounced among women in the eight-country sample. While only 12% of men above 60 are unmarried, 64% of women aged above 60 are unmarried, a figure that rises to over 90% for women above age 80 (Figure 4, Panel G). This striking disparity likely emerges due to the fact that women are more likely to outlive their spouses (particularly in contexts where polygamy is common), but less likely to remarry. Consequently, women are more than twice as likely to live alone compared to the corresponding figure for men: 13% of women above 60 (20% of those above 80), but only 6% of men above 60 (8% of those above 80) live alone (Panel H). These findings point to meaningful disparities in the experience of aging across genders for researchers and policymakers to consider, and may be important contributors to differential prevalence of depression and negative consequences associated with social isolation.

5 Synthesizing findings to identify priorities for research and policy

Insights from the existing literature and from the original analyses presented here point to several directions for research and priorities for policy. In practice, the priority areas discussed above and summarized here necessarily interact and relate closely, and considering these interrelated dimensions of aging jointly will be important for effective policy design.

Somewhat unique to Sub-Saharan Africa is that rates of infectious disease are expected to remain high, even as the non-communicable disease burden is expected to increase with a rapidly growing older population. For example, a sharp increase in the prevalence of Alzheimer's disease and related dementias is projected for the coming decades. However, estimates of prevalence across countries remain sparse, we lack insight into protective and risk factors at the individual and environmental levels, and factors such as lack of awareness, stigma, or the challenges associated with caregiving may all complicate management of Alzheimer's disease and related dementias. Health systems will need to adapt new screening measures and treatment protocols, facilities and supply chains will need to be retooled, and medical professionals will need to be trained to diagnose, manage, and treat the non-communicable diseases and other health conditions which will become increasingly relevant

as the older population grows.

Further, formal social support programs designed to support older individuals remain uncommon across the region, leaving older individuals to rely on family-based care systems for financial and non-financial support. These family-based care systems may be inadequate (for example, family members may not have the requisite training and expertise to effectively manage older family members' health conditions) and may place unsustainable demands on family members (for example, family members may have to curtail employment). Further, urbanization, migration, falling fertility, and shifting social norms may all threaten and further strain these traditional family-based care systems. On the other hand, the social connections sustained via informal caregiving may help to combat isolation, depression, and loneliness, and so familial and community support may be essential for maintaining psychological well-being in old age. Governments will need to develop and expand public support systems such as pensions, health insurance programs, and long-term care solutions that do not rely solely on direct family caregiving, but still facilitate or incorporate familial and community involvement.

Cutting across the priority areas discussed above are socioeconomic and inequalities, which play an important role in shaping circumstances among older individuals in Sub-Saharan Africa. Older individuals in the region tend to be disproportionately exposed to poverty and deprivation (He et al., 2020; Kakwani and Subbarao, 2007), and lower-income or lower-education older individuals exhibit higher all-cause mortality (Ojagbemi et al., 2017), greater incidence of disability (He et al., 2018), lower self-reported health (Fonta et al., 2017), and lower quality of life (He et al., 2018; Debpuur et al., 2010; Xavier Gómez-Olivé et al., 2010; Biritwum et al., 2013). Older women and unmarried individuals experience greater incidence of disability and functional limitations, report lower self-reported health and quality of life, and are more likely to suffer from depression (Aboderin, 2010; He et al., 2018; Biritwum et al., 2013; Kyobutungi et al., 2010; Mwanyangala et al., 2010; Gureje et al., 2007; Ali and Maharaj, 2013). As with other relationships noted above, the nature of the causal links underlying these correlations remains unclear. Nevertheless, aging-related policies will need to be designed and implemented to address the needs of the most vulnerable among the older population.

Research collaborations have recently started to turn their attention to the challenges and opportunities facing older individuals in Sub-Saharan Africa, and we anticipate these collaborations will grow and become even more valuable in the coming decades. The most

effective research collaborations will likely draw on scholarly input across fields (i.e., in economics, demography, sociology, gerontology, public health, and others) and in partnerships across researchers affiliated with African and non-African institutions.

An essential priority for the research community will be to expand data collection efforts and improve measurement of outcomes relevant for aging populations. The research community should pursue harmonization with other international aging-focused data collection efforts such as the HRS International Family of Studies to facilitate global comparisons, while at the same time developing context-appropriate measures to characterize health care access, health outcomes, and financial security in old age. This includes adapting screening tools, survey modules, and other instruments to be contextually and culturally appropriate, and to accommodate low-literacy contexts which are common in Sub-Saharan Africa.²⁶ Since mobility, independence, and functional abilities may look different in the Sub-Saharan African context compared to high-income country contexts, researchers may need to develop context-specific measures of Instrumental Activities of Daily Living, Activities of Daily Living (IADL, ADLs) and similar measures. Economists in particular can contribute to developing measures of financial security that take into account context-relevant methods of saving and diversifying risk in old age. Finally, researchers should aim to expand geographic coverage across this massive region to capture its notable cultural, economic, and social diversity.

Especially important will be the development of longitudinal studies to explore how factors such as employment, migration, or environmental exposures throughout the life course influence outcomes in old age. More generally, a key priority will be research exploring how increases in education, human capital, and overall living standards in the region – for example through expanded access to education ([Wantchekon et al., 2015](#); [Lucas and Mbiti, 2012](#); [Keats, 2018](#)), health interventions such as childhood deworming ([Miguel and Kremer, 2004](#)), or other interventions that boost living standards, such as cash transfers ([Bastagli et al., 2019](#)) – will impact outcomes in old age.

Research that tests and evaluates the efficacy of existing policies and programs for older individuals, other household members, and the broader community will be essential to inform a context-relevant policy agenda for an aging Africa. Economists and other scholars can take advantage of the wealth of different policies implemented in individual countries to assess impact in one context and develop insights to apply elsewhere in the region. For example, substantial opportunity exists to explore the impact of successful policies extending finan-

²⁶For example, [Olayinka et al. \(2014\)](#) highlight the need for culturally-appropriate tools to screen for dementia in low-literacy areas.

cial support to older individuals (for example, South Africa’s old age pension program) or improving access to health care (for example, Ghana’s National Health Insurance Scheme or Senegal’s Plan Sesame) then to apply those lessons towards policymaking in other contexts. This process – developing and building out an Africa-specific research and policy agenda – will require close dialogue and collaboration between researchers and policymakers.

6 Conclusion

Rapid population aging in Sub-Saharan Africa poses unique challenges and opportunities for the region. Fertility decline and shifting social structures associated with urbanization and development may threaten informal care systems on which older individuals predominantly rely at present. Hardships driven by climate change, population displacement, youth unemployment, political instability, and even armed conflict may further complicate conditions for older individuals in Sub-Saharan Africa in ways yet unforeseen.

On the other hand, continued positive economic growth and substantial growth in the working-age population will reduce the dependency ratio for most African countries. These population dynamics may provide distinct advantages, by increasing the resources available to households, providing additional funding for public programs, or otherwise alleviating some of the challenges facing older populations. In contrast to other regions with contracting working-age populations – such as will be the experience in Europe and East Asia, for example – the coming decades could be one where Sub-Saharan Africa reaps the benefits of a demographic dividend.

All these factors will present new directions for aging-focused research in Sub-Saharan Africa in the coming decades. Insights from research involving rigorous and innovative data collection strategies, country-level and longitudinal studies, and partnerships between policymakers, non-governmental organizations, and researchers will be essential to help better understand the needs of a rapidly aging population and to design effective policies and programs accordingly. At present, the evidence base is lacking and expanding it is a major scholarly and public policy priority in our view, especially given Sub-Saharan Africa’s increasingly important role in the world’s population and the global economy.

References

- Aboderin, I. (2004). Intergenerational family support and old age economic security in Ghana. *Living Longer: ageing, development and social protection*, 210:229. Publisher: United Nations Research Institute for Social Development New York.
- Aboderin, I. (2010). Understanding and advancing the health of older populations in sub-Saharan Africa: policy perspectives and evidence needs. *Public Health Reviews*, 32(2):357–376. Publisher: Springer.
- Aboderin, I. (2012a). Ageing Africa: opportunities for development. *Global Population Ageing: Peril or Promise?*, 161(242):69. Publisher: Citeseer.
- Aboderin, I. (2012b). Global poverty, inequalities and ageing in Sub-Saharan Africa: a focus for policy and scholarship. *Journal of Population Ageing*, 5(2):87–90. Publisher: Springer.
- Aboderin, I. (2017). *Intergenerational support and old age in Africa*. Routledge.
- Aboderin, I. (2019). Toward a fit-for-purpose policy architecture on long-term care in Sub-Saharan Africa: Impasse and a research agenda to overcome it. *Journal of Long-Term Care*, 2019:119–126.
- Aboderin, I. and Epping-Jordan, J. (2017). *Towards long-term care systems in sub-Saharan Africa*. World Health Organization.
- Aboderin, I. and Hoffman, J. (2015). Families, Intergenerational Bonds, and Aging in Sub-Saharan Africa. *Canadian Journal on Aging / La Revue canadienne du vieillissement*, 34(3):282–289.
- Addo, J., Smeeth, L., and Leon, D. A. (2007). Hypertension in sub-saharan Africa: a systematic review. *Hypertension*, 50(6):1012–1018. Publisher: Am Heart Assoc.
- Adebisi, A. T. and Salawu, M. A. (2023). Misconception of dementia-related disorders in Sub-Saharan Africa. *Frontiers in Neurology*, 14:1148076. Publisher: Frontiers.
- Agyepong, I. A., Sewankambo, N., Binagwaho, A., Coll-Seck, A. M., Corrah, T., Ezeh, A., Fekadu, A., Kilonzo, N., Lamptey, P., Masiye, F., and others (2017). The path to longer and healthier lives for all Africans by 2030: the Lancet Commission on the future of health in sub-Saharan Africa. *The Lancet*, 390(10114):2803–2859. Publisher: Elsevier.
- Akinyemi, R. O., Yaria, J., Ojagbemi, A., Guerchet, M., Okubadejo, N., Njamnshi, A. K., Sarfo, F. S., Akpalu, A., Ogbole, G., Ayantayo, T., and others (2022). Dementia in Africa: Current evidence, knowledge gaps, and future directions. *Alzheimer's & Dementia*, 18(4):790–809. Publisher: Wiley Online Library.
- Alli, F. and Maharaj, P. (2013). The health situation of older people in Africa. In *Aging and health in Africa*, pages 53–89. Springer.
- Alzua, M. L., Cantet, N., Dammert, A., and Olajide, D. (2019). Welfare Effects of a Non-Contributory Old Age Pension: Experimental Evidence for Ekiti State, Nigeria. *Partnership for Economic Policy Working Paper*, (2019-15).
- Apt, N. A. (2000). *Rapid urbanization and living arrangements of older persons in Africa*. Citeseer.
- Asuming, P. O. (2013). Getting the Poor to Enroll in Health Insurance, and its effects on their health: Evidence from a Field Experiment in Ghana. *Job Market Paper–Columbia University*.
- Aviisah, M. A., Haisma, H. H., and Vogt, T. C. (2022). Intergenerational Family Support and the Health and Well-Being of Older Adults in Sub-Saharan Africa: A systematic review. *The Routledge Handbook of African Demography*, pages 704–727. Publisher: Routledge.
- Bando, R., Galiani, S., and Gertler, P. (2020). The effects of noncontributory pensions on material and subjective well-being. *Economic Development and Cultural Change*, 68(4):1233–1255. Publisher: The University of Chicago Press Chicago, IL.
- Bando, R., Galiani, S., and Gertler, P. (2022). Another brick on the wall: On the effects of non-contributory pensions on material and subjective well being. *Journal of Economic Behavior & Organization*, 195:16–26. Publisher: Elsevier.
- Banerjee, A., Duflo, E., Grela, E., McKelway, M., Schilbach, F., Sharma, G., and Vaidyanathan, G. (2023a). Depression and Loneliness among the Elderly in Low-and

- Middle-Income Countries. *Journal of Economic Perspectives*, 37(2):179–202. Publisher: American Economic Association 2014 Broadway, Suite 305, Nashville, TN 37203-2418.
- Banerjee, A., Hanna, R., Olken, B. A., and Sverdlin-Lisker, D. (2023b). Social protection in the developing world. *Mimeo*.
- Barasa, E., Kazungu, J., Nguhiu, P., and Ravishankar, N. (2021). Examining the level and inequality in health insurance coverage in 36 sub-Saharan African countries. *BMJ global health*, 6(4):e004712. Publisher: BMJ Specialist Journals.
- Bastagli, F., Hagen-Zanker, J., Harman, L., Barca, V., Sturge, G., and Schmidt, T. (2019). The impact of cash transfers: a review of the evidence from low-and middle-income countries. *Journal of Social Policy*, 48(3):569–594. Publisher: Cambridge University Press.
- BeLue, R., Okoror, T. A., Iwelunmor, J., Taylor, K. D., Degboe, A. N., Agyemang, C., and Ogedegbe, G. (2009). An overview of cardiovascular risk factor burden in sub-Saharan African countries: a socio-cultural perspective. *Globalization and health*, 5(1):1–12. Publisher: BioMed Central.
- Biritwum, R., Mensah, G., Yawson, A., and Minicuci, N. (2013). Study on global AGEing and adult health (SAGE), Wave 1: the Ghana national report. *Geneva: World Health Organization*.
- BMJ (2022). Global, regional, and national burden of diseases and injuries for adults 70 years and older: systematic analysis for the Global Burden of Disease 2019 Study. *bmj*, 376. Publisher: British Medical Journal Publishing Group.
- Cappuccio, F. P. and Miller, M. A. (2016). Cardiovascular disease and hypertension in sub-Saharan Africa: burden, risk and interventions. *Internal and emergency medicine*, 11(3):299–305. Publisher: Springer.
- Cassim, B. and Aboderin, I. (2017). Population ageing. *Oxford Textbook of Geriatric Medicine*, 64(91.2):35. Publisher: Oxford University Press.
- Central Statistical Agency of Ethiopia (2013). Socioeconomic Survey 2013-2014. ETH_2013_ESS_v03.M. World Bank Microdata Library. <https://doi.org/10.48529/mccp-y123> [Accessed: (March 2023)].
- Central Statistical Agency of Ethiopia (2015). Socioeconomic Survey 2015-2016. ETH_2015_ESS_v03.M. World Bank Microdata Library. <https://doi.org/10.48529/ampf-7988> [Accessed: (March 2023)].
- Central Statistics Agency of Ethiopia (2018). Socioeconomic Survey 2018-2019. ETH_2018_ESS_v03.M. World Bank Microdata Library. <https://doi.org/10.48529/k739-c548> [Accessed: (March 2023)].
- Darmstadt, G. L., Bhutta, Z. A., Cousens, S., Adam, T., Walker, N., and Bernis, L. d. (2005). Evidence-based, cost-effective interventions: how many newborn babies can we save? *The Lancet*, 365(9463):977–988. Publisher: Elsevier.
- de Graft Aikins, A., Unwin, N., Agyemang, C., Allotey, P., Campbell, C., and Arhinful, D. (2010). Tackling Africa’s chronic disease burden: from the local to the global. *Globalization and health*, 6(1):1–7. Publisher: BioMed Central.
- Debuur, C., Welaga, P., Wak, G., and Hodgson, A. (2010). Self-reported health and functional limitations among older people in the Kassena-Nankana District, Ghana. *Global health action*, 3(1):2151. Publisher: Taylor & Francis.
- Duflo, E. (2003). Grandmothers and granddaughters: old-age pensions and intrahousehold allocation in South Africa. *The World Bank Economic Review*, 17(1):1–25. Publisher: Oxford University Press.
- Edmonds, E. V. (2006). Child labor and schooling responses to anticipated income in South Africa. *Journal of development Economics*, 81(2):386–414. Publisher: Elsevier.
- Engelhardt, G. V. and Gruber, J. (2006). Social Security and the Evolution of Poverty. In *Public Policy and the Income Distribution*. Russell Sage Foundation.
- Fonta, C. L., Nonvignon, J., Aikins, M., Nwosu, E., and Aryeetey, G. C. (2017). Predictors of self-reported health among the elderly in Ghana: a cross sectional study. *BMC geriatrics*, 17(1):1–15. Publisher: Springer.
- Galiani, S., Gertler, P., and Bando, R. (2016). Non-contributory pensions. *Labour economics*,

- 38:47–58. Publisher: Elsevier.
- Galvin, M. and Byansi, W. (2020). A systematic review of task shifting for mental health in sub-Saharan Africa. *International Journal of Mental Health*, 49(4):336–360. Publisher: Taylor & Francis.
- Gershman, B. (2022). Witchcraft beliefs around the world: An exploratory analysis. *Plos one*, 17(11):e0276872. Publisher: Public Library of Science San Francisco, CA USA.
- Guerchet, M. M., Mayston, R., Lloyd-Sherlock, P., Prince, M. J., Aboderin, I., Akinyemi, R., Paddick, S.-M., Wimo, A., Amoakoh-Coleman, M., Uwakwe, R., and others (2017). Dementia in Sub-Saharan Africa: challenges and opportunities. Publisher: Alzheimer’s Disease International.
- Gureje, O., Kola, L., and Afolabi, E. (2007). Epidemiology of major depressive disorder in elderly Nigerians in the Ibadan Study of Ageing: a community-based survey. *The Lancet*, 370(9591):957–964. Publisher: Elsevier.
- Gureje, O., Ogunniyi, A., Kola, L., and Abiona, T. (2011). Incidence of and risk factors for dementia in the Ibadan study of aging. *Journal of the American Geriatrics Society*, 59(5):869–874. Publisher: Wiley Online Library.
- Gureje, O., Ogunniyi, A., Kola, L., and Afolabi, E. (2006). Functional disability in elderly Nigerians: Results from the Ibadan Study of Aging. *Journal of the American Geriatrics Society*, 54(11):1784–1789. Publisher: Wiley Online Library.
- Guvan, M. U. and Leite, P. G. (2016). *Benefits and costs of social pensions in Sub-Saharan Africa*. World Bank.
- Harling, G., Morris, K. A., Manderson, L., Perkins, J. M., and Berkman, L. F. (2020). Age and gender differences in social network composition and social support among older rural south Africans: findings from the HAALSI study. *The Journals of Gerontology: Series B*, 75(1):148–159. Publisher: Oxford University Press US.
- He, W., Aboderin, I., and Adjaye-Gbewonyo, D. (2020). Africa aging: 2020.
- He, W., Kowal, P., and Naidoo, N. (2018). Trends in Health and Well-Being of the Older Populations in SAGE Countries: 2014–2015. Technical report, P95/18-01, International Population Reports. Washington, DC: US Census
- HelpAge International (2003). Forgotten families: Older people as carers of orphans and vulnerable children.
- Huang, W. and Zhang, C. (2021). The power of social pensions: Evidence from China’s new rural pension scheme. *American Economic Journal: Applied Economics*, 13(2):179–205. Publisher: American Economic Association 2014 Broadway, Suite 305, Nashville, TN 37203-2425.
- Ibitoye, O., Sanuade, O., Adebowale, A., and Ayeni, O. (2014). The determinants of health care utilization among the elderly in a rural community in Northern Nigeria. *Journal of Humanities and Social Sciences*, 19:354–359.
- ILO (2018). Social protection for older persons: Policy trends and statistics 2017-19.
- ILO (2021). World Social Protection Report 2020–22: Social protection at the crossroads—in pursuit of a better future.
- ILO (2023a). ILOSTAT Explorer. International Labour Organization. [Accessed: (September 2023)].
- ILO (2023b). World Social Protection Data Dashboard. <https://www.social-protection.org/gimi/WSPDB.action?id=32> [Accessed: (March 2023)].
- Institut National de la Statistique (INS) (2018). Enquête Harmonisée sur le Conditions de Vie des Ménages 2018-2019. NER_2018_EHCVM_v02_M. World Bank Microdata Library. <https://doi.org/10.48529/ggam-ax39> [Accessed: (August 2023)].
- Jacobs, R., Schneider, M., Farina, N., du Toit, P., and Evans-Lacko, S. (2022). Stigma and its implications for dementia in South Africa: a multi-stakeholder exploratory study. *Ageing & Society*, pages 1–31. Publisher: Cambridge University Press.
- Jensen, R. T. (2004). Do private transfers ‘displace’ the benefits of public transfers? Evidence from South Africa. *Journal of Public Economics*, 88(1-2):89–112. Publisher: Elsevier.
- Jock, J., Kobayashi, L., Chakraborty, R., Chen, X., Wing, C., Berkman, L., Canning, D.,

- Kabudula, C. W., Tollman, S., and Rosenberg, M. (2023). Effects of Pension Eligibility Expansion on Men’s Cognitive Function: Findings from Rural South Africa. *Journal of Aging & Social Policy*, pages 1–20. Publisher: Taylor & Francis.
- Joubert, J. and Bradshaw, D. (2006). Population ageing and health challenges. *View a breakdown of smaller files at <http://www.mrc.ac.za/chronic/cdl1995-2005.htm>*, 204. Publisher: Citeseer.
- Kakuma, R., Minas, H., Van Ginneken, N., Dal Poz, M. R., Desiraju, K., Morris, J. E., Saxena, S., and Scheffler, R. M. (2011). Human resources for mental health care: current situation and strategies for action. *The Lancet*, 378(9803):1654–1663. Publisher: Elsevier.
- Kakwani, N. and Subbarao, K. (2007). Poverty among the elderly in Sub-Saharan Africa and the role of social pensions. *The journal of development studies*, 43(6):987–1008. Publisher: Taylor & Francis.
- Kaushal, N. (2014). How public pension affects elderly labor supply and well-being: Evidence from India. *World Development*, 56:214–225. Publisher: Elsevier.
- Keats, A. (2018). Women’s schooling, fertility, and child health outcomes: Evidence from Uganda’s free primary education program. *Journal of Development Economics*, 135:142–159. Publisher: Elsevier.
- Kendall, J. and Anglewicz, P. (2018). Living arrangements and health at older ages in rural Malawi. *Ageing & Society*, 38(5):1018–1040. Publisher: Cambridge University Press.
- Kyobutungi, C., Egondi, T., and Ezech, A. (2010). The health and well-being of older people in Nairobi’s slums. *Global health action*, 3(1):2138. Publisher: Taylor & Francis.
- Le Rossignol, E., Lowes, S., and Nunn, N. (2022). Traditional supernatural beliefs and prosocial behavior. Technical report, National Bureau of Economic Research.
- Lekoubou, A., Echouffo-Tcheugui, J. B., and Kengne, A. P. (2014). Epidemiology of neurodegenerative diseases in Sub-Saharan Africa: a systematic review. *BMC public health*, 14(1):1–32. Publisher: Springer.
- Livingston, G., Huntley, J., Sommerlad, A., Ames, D., Ballard, C., Banerjee, S., Brayne, C., Burns, A., Cohen-Mansfield, J., Cooper, C., Costafreda, S. G., Dias, A., Fox, N., Gitlin, L. N., Howard, R., Kales, H. C., Kivimäki, M., Larson, E. B., Ogunniyi, A., Orgeta, V., Ritchie, K., Rockwood, K., Sampson, E. L., Samus, Q., Schneider, L. S., Selbæk, G., Teri, L., and Mukadam, N. (2020). Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. *Lancet (London, England)*, 396(10248):413–446.
- Lloyd-Sherlock, P. and Agrawal, S. (2014). Pensions and the health of older people in South Africa: is there an effect? *The journal of development studies*, 50(11):1570–1586. Publisher: Taylor & Francis.
- Lucas, A. M. and Mbiti, I. M. (2012). Access, sorting, and achievement: The short-run effects of free primary education in Kenya. *American Economic Journal: Applied Economics*, 4(4):226–253. Publisher: American Economic Association.
- Maharaj, P. (2012). *Ageing and health in Africa*, volume 4. Springer Science & Business Media.
- Mbanya, J. C. N., Motala, A. A., Sobngwi, E., Assah, F. K., and Enoru, S. T. (2010). Diabetes in sub-saharan africa. *The lancet*, 375(9733):2254–2266. Publisher: Elsevier.
- McIntyre, D. (2005). Health policy and older people in Africa. In *Living longer: Ageing, development and social protection*. United Nations Research Institute for Social Development, Geneva.
- Menken, J. and Cohen, B. (2006). *Ageing in sub-Saharan Africa: recommendations for furthering research*.
- Meyer, B. D. and Wu, D. (2018). The poverty reduction of social security and means-tested transfers. *ILR Review*, 71(5):1106–1153. Publisher: SAGE Publications Sage CA: Los Angeles, CA.
- Miguel, E. (2005). Poverty and witch killing. *The Review of Economic Studies*, 72(4):1153–1172. Publisher: Wiley-Blackwell.
- Miguel, E. and Kremer, M. (2004). Worms: identifying impacts on education and health in the presence of treatment externalities. *Econometrica*, 72(1):159–217.

- Moran, A., Forouzanfar, M., Sampson, U., Chugh, S., Feigin, V., and Mensah, G. (2013). The epidemiology of cardiovascular diseases in sub-Saharan Africa: the global burden of diseases, injuries and risk factors 2010 study. *Progress in cardiovascular diseases*, 56(3):234–239. Publisher: Elsevier.
- Muga, G. O. and Onyango-Ouma, W. (2009). Changing household composition and food security among the elderly caretakers in rural western Kenya. *Journal of Cross-Cultural Gerontology*, 24(3):259–272. Publisher: Springer.
- Mushi, D., Rongai, A., Paddick, S.-M., Dotchin, C., Mtuya, C., and Walker, R. (2014). Social representation and practices related to dementia in Hai District of Tanzania. *BMC Public Health*, 14:1–7. Publisher: Springer.
- Mwanyangala, M., Mayombana, C., Urassa, H., Charles, J., Mahutanga, C., Abdullah, S., and Nathan, R. (2010). Health status and quality of life among older adults in rural Tanzania. *Global health action*, 3(1):2142. Publisher: Taylor & Francis.
- National Bureau of Statistics (2008). National Panel Survey 2008-2009, Wave 1. TZA_2008_NPS-R1_v03_M. World Bank Microdata Library. <https://doi.org/10.48529/hz8s-3489> [Accessed: (March 2023)].
- National Bureau of Statistics (2010). National Panel Survey 2010-2011, Wave 2. TZA_2010_NPS-R2_v03_M. World Bank Microdata Library. <https://doi.org/10.48529/jm20-c742> [Accessed: (March 2023)].
- National Bureau of Statistics (2012). National Panel Survey 2012-2013, Wave 3. TZA_2012_NPS-R3_v01_M. World Bank Microdata Library. <https://doi.org/10.48529/7vqv-5f71> [Accessed: (March 2023)].
- National Bureau of Statistics (2014). National Panel Survey 2014-2015, Wave 4. TZA_2014_NPS-R4_v03_M. World Bank Microdata Library. <https://doi.org/10.48529/y3qj-d018> [Accessed: (March 2023)].
- National Bureau of Statistics (2020). National Panel Survey 2020-21, Wave 5. TZA_2020_NPS-R5_v02_M. World Bank Microdata Library. [Accessed: (March 2023)].
- National Statistical Office (NSO) (2004). Second Integrated Household Survey 2004-2005. MWI_2004_IHS-II_v01_M. World Bank Microdata Library. <https://doi.org/10.48529/2ked-2t88> [Accessed: (March 2023)].
- National Statistical Office (NSO) (2010). Third Integrated Household Survey 2010-2011. MWI_2010_IHS-III_v01_M. World Bank Microdata Library. <https://doi.org/10.48529/w1jq-qh85> [Accessed: (March 2023)].
- National Statistical Office (NSO) (2016). Fourth Integrated Household Survey 2016-2017. MWI_2016_IHS-IV_v04_M. World Bank Microdata Library. <https://doi.org/10.48529/g2p9-9r19> [Accessed: (March 2023)].
- National Statistical Office (NSO) (2019). Fifth Integrated Household Survey 2019-2020. MWI_2019_IHS-V_v05_M. World Bank Microdata Library. <https://doi.org/10.48529/yqn3-zv74> [Accessed: (March 2023)].
- Ng, N., Kowal, P., Kahn, K., Naidoo, N., Abdullah, S., Bawah, A., Binka, F., Chuc, N. T., Debpuur, C., Egondi, T., and others (2010). Health inequalities among older men and women in Africa and Asia: evidence from eight Health and Demographic Surveillance System sites in the INDEPTH WHO-SAGE Study. *Global Health Action*, 3(1):5420. Publisher: Taylor & Francis.
- NIA (2020). The National Institute on Aging: Strategic Directions for Research, 2020–2025. *NIA Strategic Directions 2020*. Publisher: National Institutes of Health.
- NIA, NACA, and BSR (2019). 2019 BSR Review Committee Report. Technical report, National Institute on Aging (NIA), National Advisory Council on Aging (NACA), Review of the Division of Behavioral and Social Research (BSR).
- Nigeria National Bureau of Statistics (2010). General Household Survey, Panel 2010-2011. NGA_2010_GHSP-W1_v03_M. World Bank Microdata Library. <https://doi.org/10.48529/y9e2-b753> [Accessed: (March 2023)].
- Nigeria National Bureau of Statistics (2012). General Household Survey, Panel 2012-2013. NGA_2012_GHSP-W2_v02_M. World Bank Microdata Library. <https://doi.org/10.48529/y9e2-b753> [Accessed: (March 2023)].

- [48529/kxpy-aa72](#) [Accessed: (March 2023)].
- Nigeria National Bureau of Statistics (2015). General Household Survey, Panel 2015-2016. NGA_2015_GHSP-W3_v02_M. World Bank Microdata Library. <https://doi.org/10.48529/7xmj-q133> [Accessed: (March 2023)].
- Nigeria National Bureau of Statistics (2018). General Household Survey, Panel 2018-2019. NGA_2018_GHSP-W4_v03_M. World Bank Microdata Library. <https://doi.org/10.48529/8gbe-z155> [Accessed: (March 2023)].
- Nortey, S. T., Aryeetey, G. C., Aikins, M., Amendah, D., and Nonvignon, J. (2017). Economic burden of family caregiving for elderly population in southern Ghana: the case of a peri-urban district. *International journal for equity in health*, 16(1):1–9. Publisher: Springer.
- Nyambedha, E. O., Wandibba, S., and Aagaard-Hansen, J. (2003). “Retirement lost”—the new role of the elderly as caretakers for orphans in western Kenya. *Journal of cross-cultural gerontology*, 18(1):33–52. Publisher: Springer.
- Ojagbemi, A., Bello, T., and Gureje, O. (2016). Cognitive reserve, incident dementia, and associated mortality in the Ibadan study of ageing. *Journal of the American Geriatrics Society*, 64(3):590–595. Publisher: Wiley Online Library.
- Ojagbemi, A., Bello, T., and Gureje, O. (2018). Gender differential in social and economic predictors of incident major depressive disorder in the Ibadan Study of Ageing. *Social psychiatry and psychiatric epidemiology*, 53(4):351–361. Publisher: Springer.
- Ojagbemi, A., Bello, T., Luo, Z., and Gureje, O. (2017). Living conditions, low socioeconomic position, and mortality in the Ibadan study of aging. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 72(4):646–655. Publisher: Oxford University Press US.
- Olayinka, O. O., Mbuyi, N. N., and others (2014). Epidemiology of dementia among the elderly in sub-Saharan Africa. *International Journal of Alzheimer’s disease*, 2014. Publisher: Hindawi.
- Owolabi, M. O., Arulogun, O., Melikam, S., Adeoye, A. M., Akarolo-Anthony, S., Akinyemi, R., Arnett, D., Tiwari, H., Gebregziabher, M., Jenkins, C., and others (2015). The burden of stroke in Africa: a glance at the present and a glimpse into the future. *Cardiovascular journal of Africa*, 26(2 H3Africa Suppl):S27. Publisher: Clinics Cardive Publishing (Pty) Ltd.
- Parmar, D., Williams, G., Dkhimi, F., Ndiaye, A., Asante, F. A., Arhinful, D. K., and Mladovsky, P. (2014). Enrolment of older people in social health protection programs in West Africa—does social exclusion play a part? *Social science & medicine*, 119:36–44. Publisher: Elsevier.
- Payne, C. F., Gómez-Olivé, F. X., Kahn, K., and Berkman, L. (2017). Physical function in an aging population in rural South Africa: Findings from HAALSI and cross-national comparisons with HRS sister studies. *The Journals of Gerontology: Series B*, 72(4):665–679. Publisher: Oxford University Press.
- Pilleron, S., Soerjomataram, I., Charvat, H., Chokunonga, E., Somdyala, N. I., Wabinga, H., Korir, A., Bray, F., Jemal, A., and Maxwell Parkin, D. (2019). Cancer incidence in older adults in selected regions of sub-Saharan Africa, 2008–2012. *International journal of cancer*, 144(8):1824–1833. Publisher: Wiley Online Library.
- Piot, P., Karim, S. S. A., Hecht, R., Legido-Quigley, H., Buse, K., Stover, J., Resch, S., Ryckman, T., Møgedal, S., Dybul, M., and others (2015). Defeating AIDS—advancing global health. *The Lancet*, 386(9989):171–218. Publisher: Elsevier.
- Robert Osei and Isaac Osei-Akoto and Ernest Aryeetey and Fred Dzanku and Christopher Udry and Economic Growth Center (2022). ISSER-Northwestern-Yale Long Term Ghana Socioeconomic Panel Survey (GSPS). Version 1. UNF:6:JLtXxepgNXfzyX0ThGLDiw==. Harvard Dataverse. <https://doi.org/10.7910/DVN/E5QPOF> [Accessed: (March 2023)].
- Rossi, P. and Godard, M. (2022). The old-age security motive for fertility: evidence from the extension of social pensions in Namibia. *American Economic Journal: Economic Policy*, 14(4):488–518.

- Sabates-Wheeler, R., Wylde, E., Aboderin, I., and Ulrichs, M. (2020). The implications of demographic change and ageing for social protection in sub-Saharan Africa: Insights from Rwanda. *Journal of Development Effectiveness*, 12(4):341–360. Publisher: Taylor & Francis.
- Samuels, F., Samman, E., Hunt, A., Rost, L., and Plank, G. (2018). Between work and care: older women’s economic empowerment. Publisher: Overseas Development Institute.
- Schatz, E. and Seeley, J. (2015). Gender, ageing and carework in East and Southern Africa: A review. *Global public health*, 10(10):1185–1200. Publisher: Taylor & Francis.
- Scheil-Adlung, X. (2015). Global evidence on inequities in rural health protection: new data on rural deficits in health coverage for 174 countries. Technical report, International Labour Organization.
- Southern Africa Labour and Development Research Unit (2016a). National Income Dynamics Study 2014-2015, Wave 4 [dataset]. Version 2.0.0. Pretoria: Department of Planning, Monitoring, and Evaluation, SA Presidency [funding agency]. Cape Town: Southern Africa Labour and Development Research Unit [implementer], 2016. Cape Town: DataFirst [distributor], 2016. <https://doi.org/10.25828/f4ws-8a78> [Accessed: (March 2023)].
- Southern Africa Labour and Development Research Unit (2016b). National Income Dynamics Study Wave 2, 2010-2011 [dataset]. Version 4.0.0. Pretoria: SA Presidency [funding agency]. Cape Town: Southern Africa Labour and Development Research Unit [implementer], 2016. Cape Town: DataFirst [distributor], 2016. <https://doi.org/10.25828/j1h1-5m16> [Accessed: (March 2023)].
- Southern Africa Labour and Development Research Unit (2016c). National Income Dynamics Study Wave 3, 2012 [dataset]. Version 3.0.0. Pretoria: SA Presidency [funding agency]. Cape Town: Southern Africa Labour and Development Research Unit [implementer], 2016. Cape Town: DataFirst [distributor], 2016. <https://doi.org/10.25828/7pgq-q106> [Accessed: (March 2023)].
- Southern Africa Labour and Development Research Unit (2018a). National Income Dynamics Study 2017, Wave 5 [dataset]. Version 1.0.0. Pretoria: Department of Planning, Monitoring, and Evaluation [funding agency]. Cape Town: Southern Africa Labour and Development Research Unit [implementer], 2018. Cape Town: DataFirst [distributor], 2018. <https://doi.org/10.25828/fw3h-v708> [Accessed: (March 2023)].
- Southern Africa Labour and Development Research Unit (2018b). National Income Dynamics Study (NIDS) Wave 1, 2008 [dataset]. Version 7.0.0. Pretoria: SA Presidency [funding agency]. Cape Town: Southern Africa Labour and Development Research Unit [implementer], 2018. Cape Town: DataFirst [distributor], 2018. <https://doi.org/10.25828/e7w9-m033> [Accessed: (March 2023)].
- Spittel, S., Kraus, E., and Maier, A. (2021). Dementia Awareness Challenges in Sub-Saharan Africa: A Cross-Sectional Survey Conducted Among School Students in Ghana. *American Journal of Alzheimer’s Disease & Other Dementias*®, 36:15333175211055315. Publisher: SAGE Publications Sage CA: Los Angeles, CA.
- Survey and Census Division (2015). National Survey on Household Living Conditions and Agriculture 2014, Wave 2 Panel Data. NER_2014.ECVMA-II_v02.M. World Bank Microdata Library. <https://doi.org/10.48529/3xnb-sd96> [Accessed: (August 2023)].
- Survey and Census Division, National Institute of Statistics (2012). National Survey on Household Living Conditions and Agriculture 2011. NER_2011.ECVMA_v01.M. World Bank Microdata Library. <https://doi.org/10.48529/bp16-s524> [Accessed: (August 2023)].
- Toure, K., Coume, M., Ndiaye, M., Zunzunegui, M., Bacher, Y., Diop, A., and Ndiaye, M. (2012). Risk factors for dementia in a senegalese elderly population aged 65 years and over. *Dementia and Geriatric Cognitive Disorders Extra*, 2(1):160–168. Publisher: Karger Publishers.
- Uganda Bureau of Statistics (2009). National Panel Survey 2005-2009. UGA_2005-2009_UNPS_v02.M. World Bank Microdata Library. <https://doi.org/10.48529/pnd4-7d68> [Accessed: (March 2023)].

- Uganda Bureau of Statistics (2010). National Panel Survey 2010-2011. UGA_2010_UNPS_v02.M. World Bank Microdata Library. <https://doi.org/10.48529/23fp-3797> [Accessed: (March 2023)].
- Uganda Bureau of Statistics (2011). National Panel Survey 2011-2012. UGA_2011_UNPS_v01.M. World Bank Microdata Library. <https://doi.org/10.48529/5cpp-r373> [Accessed: (March 2023)].
- Uganda Bureau of Statistics (2013). National Panel Survey 2013-2014. UGA_2013_UNPS_v02.M. World Bank Microdata Library. <https://doi.org/10.48529/c1c4-h654> [Accessed: (March 2023)].
- Uganda Bureau of Statistics (2015). National Panel Survey 2015-2016. UGA_2015_UNPS_v02.M. World Bank Microdata Library. <https://doi.org/10.48529/hm2z-2k12> [Accessed: (March 2023)].
- Uganda Bureau of Statistics (2018). National Panel Survey 2018-2019. UGA_2018_UNPS_v02.M. World Bank Microdata Library. <https://doi.org/10.48529/ttyg-m774> [Accessed: (March 2023)].
- Uganda Bureau of Statistics (2019). National Panel Survey 2019-2020. UGA_2019_UNPS_v03.M. World Bank Microdata Library. <https://doi.org/10.48529/nqzx-f196> [Accessed: (March 2023)].
- UN (2022). World Population Prospects 2022 Data. United Nations Department of Economic and Social Affairs Population Division. <https://population.un.org/wpp/Download/Standard/MostUsed/> [Accessed: (March 2023)].
- United Nations (2022). SDG Indicators Database. [Accessed: (September 2023)].
- Uwakwe, R., Ibeh, C. C., Modebe, A. I., Bo, E., Ezeama, N., Njelita, I., Ferri, C. P., and Prince, M. J. (2009). The Epidemiology of Dependence in Older People in Nigeria: Prevalence, Determinants, Informal Care, and Health Service Utilization. A 10/66 Dementia Research Group Cross-Sectional Survey. *Journal of the American Geriatrics Society*, 57(9):1620–1627. Publisher: Wiley Online Library.
- Wairiuko, J., Cheboi, S., Ochieng, G., and Oyore, J. (2017). Access to healthcare services in informal settlement: perspective of the elderly in Kibera slum Nairobi-Kenya. *Annals of Medical and Health Sciences Research*, 7(1):5–9.
- Wang, C., Pu, R., Li, Z., Ji, L., Li, X., Ghose, B., Huang, R., and Tang, S. (2019). Subjective health and quality of life among elderly people living with chronic multimorbidity and difficulty in activities of daily living in rural South Africa. *Clinical interventions in aging*, 14:1285. Publisher: Dove Press.
- Wantchekon, L., Klačnja, M., and Novta, N. (2015). Education and human capital externalities: evidence from colonial Benin. *The Quarterly Journal of Economics*, 130(2):703–757. Publisher: MIT Press.
- Waweru, L., Kabiru, E., Mbithi, J., and Some, E. (2003). Health status and health seeking behaviour of the elderly persons in Dagoretti division, Nairobi. *East African medical journal*, 80(2):63–67.
- Weber, D. and Scherbov, S. (2020). Prospects of activity limitations among older adults in 23 low and middle income countries. *Scientific Reports*, 10(1):1–8. Publisher: Springer.
- Werner, P. (2014). Stigma and Alzheimer’s disease: A systematic review of evidence, theory, and methods. *The Stigma of Disease and Disability: Understanding Causes and Overcoming Injustices*. Publisher: American Psychological Association.
- WHO (2019). *WHO global report on traditional and complementary medicine 2019*. WHO.
- WHO (2021). Mental Health Atlas 2020.
- WHO (2022). Tracking Universal Health Coverage in the WHO African Region, 2022. Publisher: World Health Organization. Regional Office for Africa.
- WHO (2023). The Global Health Observatory. <https://www.who.int/data/gho> [Accessed: (March 2023)].
- World Bank (2023). World Development Indicators. <https://data.worldbank.org/indicator> [Accessed: (July 2023)].
- Xavier Gómez-Olivé, F., Thorogood, M., Clark, B. D., Kahn, K., and Tollman, S. M. (2010).

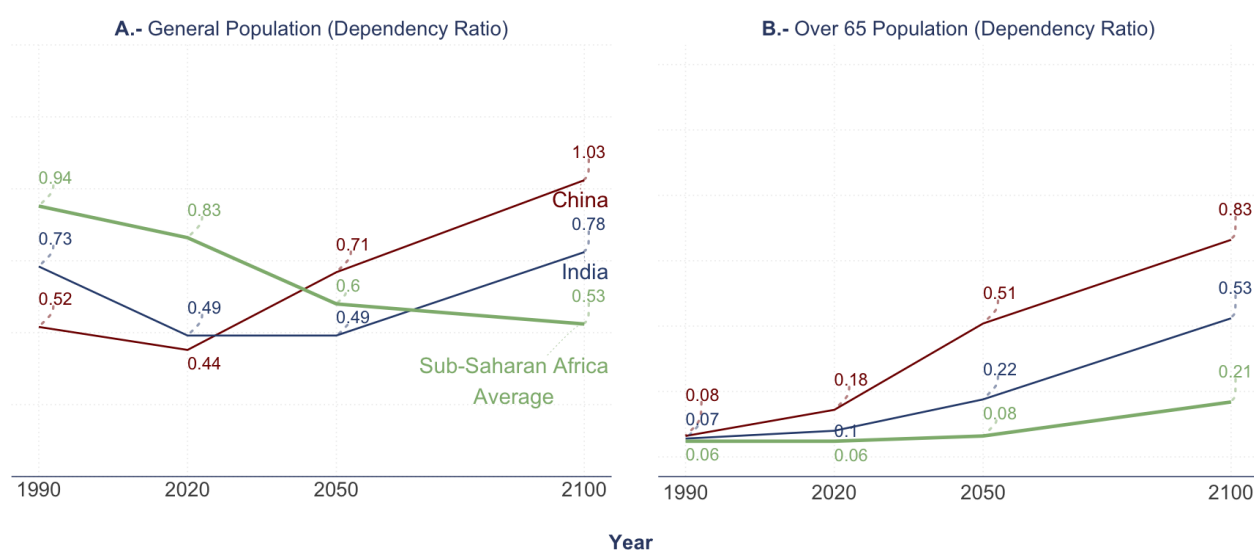
- Assessing health and well-being among older people in rural South Africa. *Global Health Action*, 3(1):2126. Publisher: Taylor & Francis.
- Xu, K., Evans, D. B., Kadama, P., Nabyonga, J., Ogwal, P. O., Nabukhonzo, P., and Aguilar, A. M. (2006). Understanding the impact of eliminating user fees: utilization and catastrophic health expenditures in Uganda. *Social science & medicine*, 62(4):866–876. Publisher: Elsevier.
- Yuyun, M. F., Sliwa, K., Kengne, A. P., Mocumbi, A. O., and Bukhman, G. (2020). Cardiovascular diseases in Sub-Saharan Africa compared to high-income countries: an epidemiological perspective. *Global heart*, 15(1). Publisher: World Heart Federation.
- Zimmer, Z. (2009). Household composition among elders in sub-Saharan Africa in the context of HIV/AIDS. *Journal of Marriage and Family*, 71(4):1086–1099. Publisher: Wiley Online Library.

Online Appendix A: Supplementary Tables and Figures

Online Appendix Table A1: Total and Over-60 Population and Population Growth in Selected Countries: 1990-2100

	GDP per capita (PPP)	Total Population (m.)	Over-60 Population (m.)				Over-60 Population Share				Over-60 Population Growth		
			2020	2020	1990	2020	2050	2100	1990	2020	2050	2100	1990-2020
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Malawi	622	19	1	1	3	12	5%	4%	7%	21%	49%	240%	369%
Uganda	847	44	1	1	5	26	4%	3%	5%	20%	62%	282%	447%
Ethiopia	919	117	2	6	19	78	4%	5%	9%	24%	171%	229%	318%
Tanzania	1,104	62	1	3	9	49	5%	5%	7%	20%	145%	218%	425%
Nigeria	2,075	208	5	10	25	97	5%	5%	7%	18%	103%	152%	286%
Ghana	2,177	32	1	2	6	16	4%	6%	11%	21%	168%	214%	174%
South Africa	5,742	59	2	5	12	20	6%	9%	17%	26%	118%	141%	61%
Sub-Saharan Africa	1,489	1,109	24	53	156	644	5%	5%	7%	19%	121%	194%	313%
Rest of world	12,446	6,732	459	1,008	1,976	2,439	10%	15%	26%	35%	119%	96%	23%

Notes: This figure presents the information presented in Figure 3, including population data from 1990 and projections extending to 2100. GDP per capita (adjusting for purchasing power parity (PPP) and measured in international current international dollars) data are from the World Bank. Population data and growth calculations are based on the World Population Prospects, 2022, Medium Fertility Variant.



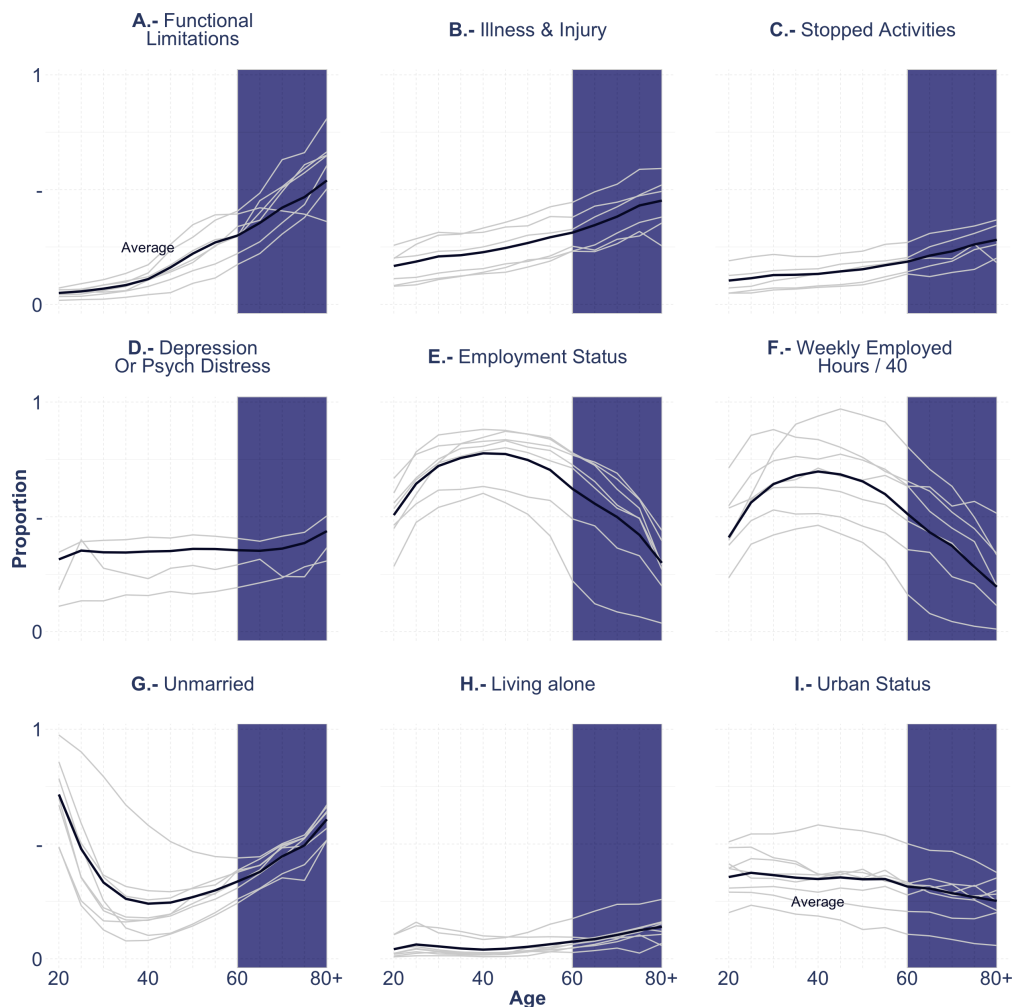
Online Appendix Figure A1: Dependency Ratios (over-65)

Notes: Figure replicates Panels E and F of Figure 1 in the main text, presenting dependency ratios using an old-age cutoff of 65 instead of 60. Data are from the World Population Prospects 2022, Medium Fertility Variant.



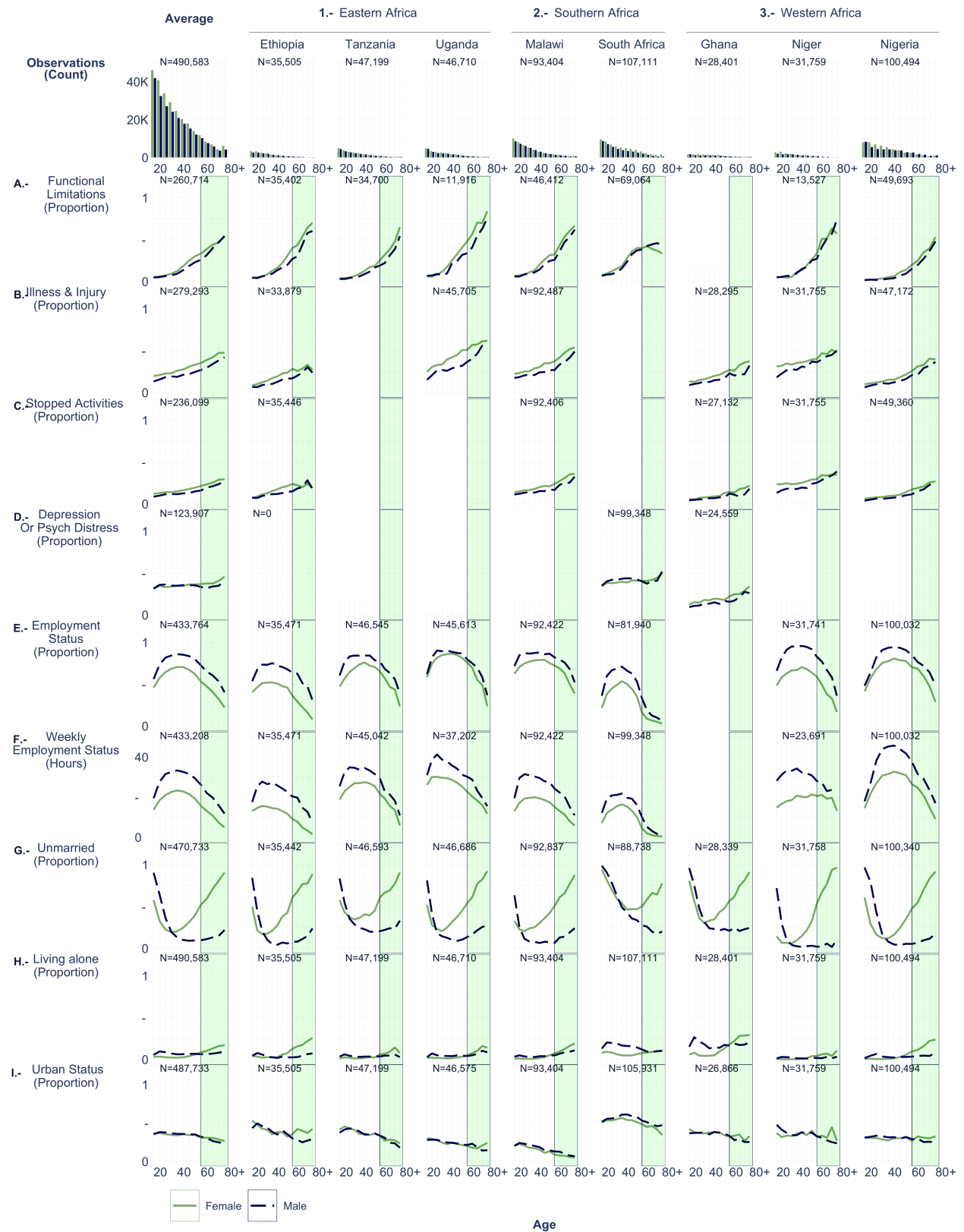
Online Appendix Figure A2: Countries in the Descriptive Analysis Sample

Notes: Data are from the World Population Prospects 2022, Medium Fertility Variant. Percent of total Sub-Saharan African population as of 2020 in parentheses.



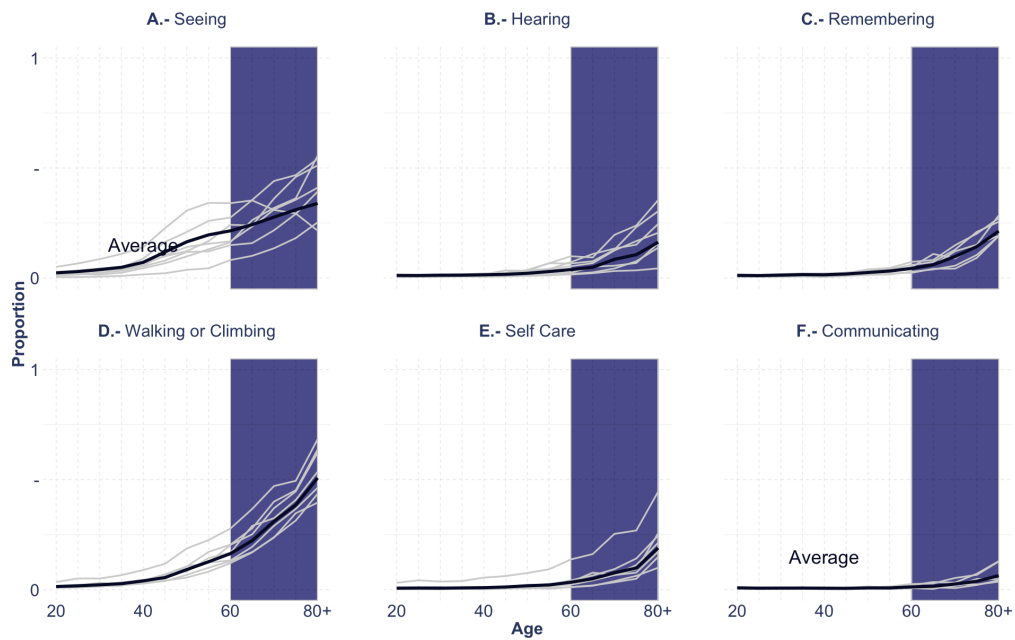
Online Appendix Figure A3: Employment, Health, & Living Arrangements over the Life Course: Aggregate, no weights

Notes: (1) Panels depict (unweighted) average values within 5-year age bins, pooling across countries and multiple waves of data. (2) Panel A: Functional limitations includes whether the individual reports difficulty with any one of (A) seeing, (B) hearing, (C) remembering, (D) walking or climbing, (E) with self care, or with (F) communicating. (3) Panels B and D: Recall period for any illness and injury is 4 weeks for LSMS Nigeria, LSMS Ethiopia (waves 3 and 4), LSMS Uganda, and EHCVM Niger; 2 weeks for LSMS Malawi; 2 months for LSMS Ethiopia (wave 2). Only collected in certain waves in Nigeria LSMS. (4) Panel D: GSPS (Ghana) uses the Kessler Psychological Distress Scale (K10) to measure psychological distress (including symptoms of depression and anxiety). LSMS uses the Center for Epidemiologic Studies Depression Scale (CESD-10) scale to measure depression. (5) Panels E and F: Employment includes salaried/wage work, agriculture, casual labor, and self-employment. Recall period for work activities and hours worked is over last 7 days. As an exception, NIDS South Africa asks whether currently employed (but then also collects hours worked over the past 7 days). (6) See the online appendix for more details on which outcomes are available for each country and wave.



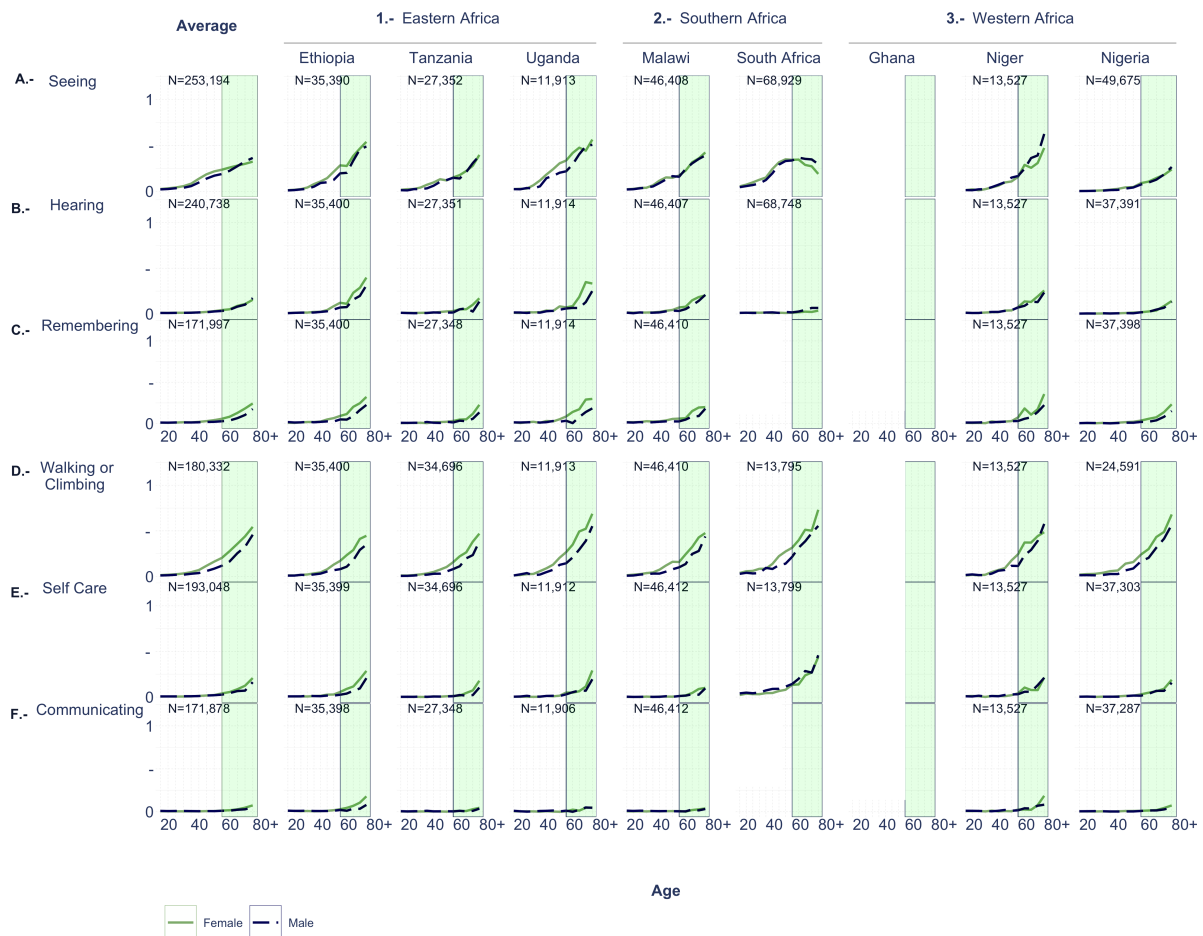
Online Appendix Figure A4: Employment, Health, & Living Arrangements over the Life Course: Country-level, no weights

Notes: (1) Panels depict (unweighted) average values within 5-year age bins, separately for males and females, and pooling across multiple waves of data. Number of non-missing observations listed at the top of each panel. Missing panels in countries where comparable data is not available. (2) Panel A: Functional limitations includes whether the individual reports difficulty with any one of (A) seeing, (B) hearing, (C) remembering, (D) walking or climbing, (E) with self care, or with (F) communicating. (3) Panels B and C: Recall period for any illness and injury is 4 weeks for LSMS Nigeria, LSMS Ethiopia (waves 3 and 4), LSMS Uganda, and EHCVM Niger; 2 weeks for LSMS Malawi; 2 months for LSMS Ethiopia (wave 2). Only collected in certain waves in Nigeria LSMS. (4) Panel D: GSPS (Ghana) uses the Kessler Psychological Distress Scale (K10) to measure psychological distress (including symptoms of depression and anxiety). LSMS uses the Center for Epidemiologic Studies Depression Scale (CESD-10) scale to measure depression. (5) Panels E and F: Employment includes salaried/wage work, agriculture, casual labor, and self-employment. Recall period for work activities and hours worked is over last 7 days. As an exception, NIDS South Africa asks whether currently employed (but then also collects hours worked over the past 7 days). (6) See the online appendix for more details on which outcomes are available for each country and wave.



Online Appendix Figure A5: Functional Limitations over the Life Course: Aggregate, no weights

Notes: Panels depict (unweighted) average values within 5-year age bins, pooling across countries and multiple waves of data. Panels display whether individuals report difficulty with (A) seeing, (B) hearing, (C) remembering, (D) walking or climbing, (E) with self care, or with (F) communicating. Relevant data are available for select waves of the LSMS (Nigeria, Tanzania, Uganda, Malawi, Ethiopia), the EHCVM (Niger), and the NIDS (South Africa). See the online appendix for more details.



Online Appendix Figure A6: Functional Limitations over the Life Course: Country-level, no weights

Notes: Panels depict (unweighted) average values within 5-year age bins, separately for males and females, and pooling across multiple waves of data. Number of non-missing observations listed at the top of each panel. Panels display whether individuals report difficulty with (A) seeing, (B) hearing, (C) remembering, (D) walking or climbing, (E) with self care, or with (F) communicating. See the online appendix for more details.

Online Appendix B: Data and Measurement

This paper derives its primary outcomes from household surveys collected across the countries of interest. These datasets include the Living Standards Measurement Survey (LSMS; Ethiopia, Malawi, Nigeria, Tanzania, Uganda), the Ghana Socioeconomic Panel Survey (GSPS), the Harmonized Survey on Households Living Standards (EHCVM; Niger) (along with related precursor ECVMA), and the National Income Dynamics Survey (NIDS; South Africa). Aggregating across survey waves provides a sample of over a million individuals, which is reduced to around half when restricted to individuals at least age 20. A brief description of the data sources used per country can be consulted in Online Appendix Table B1. Historical, current, and projected populations are taken from the World Population Prospects 2022, using the Medium Fertility Variant for population projections (UN, 2022).

Additionally, insights regarding the current policy environment of the region, in terms of various key indicators, are derived from various sources, such as the World Bank’s World Development Indicators, the United Nations Department of Economic and Social Affairs Population Division (UNDP), the Global Health Observatory at the World Health Organization (WHO), the World Bank’s Development Indicators, the WHO’s Global Health Workforce Statistics, Organization for Economic Cooperation and Development (OECD), the Universal Health Coverage (UHC) multi-stakeholder data platform, and the International Labour Organization (ILO). Further details of the key indicators extracted from these data sources are available in Online Appendix Table B2.

Primary Outcomes

We focus on six families of primary outcomes: (1) urban status, (2) employment, (3) living arrangements, (4) health, (5) psychological health, and (6) functional limitations. These six families together capture our two key domains of focus: health and health care (including illness and injury, psychological health, and functional limitations), and financial and non-financial support (including urban status, employment, and living arrangements). Below we describe our intended construction of each outcome, which is followed by a description of each individual country’s dataset, noting key differences in variable construction.

Description of primary outcomes

1. **Urban Status:** measured as an indicator for whether the household is in an urban area (versus a rural area).
2. **Employment:** captured using two outcomes:
 - (a) **Employment Status:** measured as an indicator for working in any of three categories: (1) working in household agriculture, (2) working at a household business, or (3) working outside the household in the recall period of the respective country/survey wave. While most countries/waves use a 7-day recall period, the recall period does in some cases vary across countries/waves, as noted in the country-wise exceptions below. Many surveys ask about unpaid apprenticeships, but we exclude this measure from our primary measure of employment status.
 - (b) **Weekly Work Hours:** measured as the total hours worked in the member’s primary and secondary job over the recall period, and in some cases reported as a proportion of hours work out of a usual forty hour week. If the recall period for work hours is longer than 7 days, we calculate total hours over the given recall period, and then convert it to a weekly figure using the available data on “months per year,” “weeks per month,” “days per weeks” and “hours per day.” Thus in some cases, weekly work hours capture average weekly work hours over a longer recall period.

3. **Living Arrangements:** captured using two outcomes:
 - (a) **Living alone:** measured as an indicator for living in a single-person household, based on the household roster.
 - (b) **Unmarried:** measured as an indicator for not being married at the time of survey (this can include widowed and separated/divorced; for married individuals, also available is data on whether the marriage is monogamous or polygamous).

4. **Health:** captured using two outcomes:
 - (a) **Illness/Injury:** measured as an indicator for suffering any illness or injury during the given recall period. The recall period ranges from 2 weeks to 2 months across the various countries/waves, as specified below.
 - (b) **Stopped Activities:** measured as an indicator for having stopped usual activities due to an illness or injury during the given recall period.
 - (c) **Health Insurance Coverage:** Data on health insurance coverage is available in several countries and waves. However, since coverage rates are generally low (Ghana being a notable exception), we exclude this as a primary outcome in our analysis.

5. **Psychological health:** measured as experiencing symptoms consistent with depression (in the NIDS; South Africa and LSMS; Nigeria) or with moderate or severe psychological distress (in the GSPS; Ghana). In the NIDS and LSMS Nigeria, depression was measured using the Center for Epidemiological Studies Depression scale (CESD), with scores of 10 or higher (on a scale from 1 to 30) considered as depressed. In Nigeria, the measure is only available for the household head or a senior member, and only available in the third wave, so we exclude this measure. In the GSPS, psychological distress was measured using the Kessler Psychological Distress Scale (K10), with scores of 25 or higher (on a scale from 10 to 50) considered as consistent with moderate or severe distress. Note that measures of subjective well-being (self-reported life satisfaction) are available for select countries and waves, but we do not include these in the analysis, instead focusing on measures of psychological health collected using standard scales (the CESD for depression, and K10 for psychological distress).

6. **Functional Limitations:** measured as indicators for whether the respondent has any difficulty (a) seeing, (b) hearing, (c) walking or climbing stairs, (d) remembering or concentrating, (e) with self-care, or (f) communicating. In our standard measure, conditions for having a functional limitation include: (a) for difficulty seeing: having trouble with vision, even if wearing glasses, (b) for difficulty hearing: trouble hearing, even if wearing a hearing aid, (e) for difficulty with self-care: washing, toileting, feeding or dressing, and (f) for difficulty communicating: understanding or being understood. Unless mentioned otherwise, we use this standard measure in all datasets.

Online Appendix Table B1: Data Sources of Primary Outcomes

Country/ Data source	Waves/Year	Primary outcomes: Families						Recall period	
		Urban status	Employment	Living arrangements	Health	Psychological health	Functional limitations, disabilities	Employment	Illness /injury
Niger/EHCVM & ECVMA	1/2011							W1: 30 days	W1: 4 weeks
	2/2014	Y	Y†	Y	Y	N	Y*	W2: 7 days	W2: 4 weeks
	3/2018							W3: 7 days	W3: 30 days
Malawi/LSMS	2/2004								
	3/2010	Y	Y	Y	Y	N	Y*	7 days	2 weeks
	4/2016								
	5/2019								
Uganda/LSMS	1/2009								
	2/2010								
	3/2011	Y	Y	Y	Y	N	Y*	7 days	30 days
	4/2013								
	5/2015								
	6/2018								
Ethiopia/LSMS	2/2013	Y	Y	Y	Y	N	Y	7 days	W2: 2 months
	3/2015								W3: 4 weeks
	4/2018								W4: 4 weeks
Tanzania/LSMS	1/2008								
	2/2010	Y	Y	Y	N	N	N	7 days	N/A
	3/2012								
	4/2014								
	5/2020								
Nigeria/LSMS	1/2010	Y	Y	Y	Y	Y*	Y†	7 days	4 weeks
	2/2012								
	3/2015								
	4/2018								
Ghana/GSPS	1/2009-10	Y	N	Y	Y	Y	N	N/A	N/A
	2/2013-14								
	3/2017-18								
South Africa/NIDS	1/2008								
	2/2010-11	N	Y	Y	N	Y	Y†	30 days	NA
	3/2012								
	4/2014-15								
	5/2017								

* indicates partial availability; † indicates the question was asked differently than other datasets; Y is short for Yes; N is short for No.

Country-level data and notable exceptions

Niger

We use three waves of data from the Harmonized Survey on Households Living Standards (EHCVM)²⁷ and the closely-related the National Survey on Household Living Conditions and Agriculture (ECVMA)²⁸ surveys in Niger: wave 1 (ECVMA) in 2011, wave 2 (ECVMA) in 2014, and wave 3 (EHCVM) in 2018. The following key outcomes are available across the waves:

- Urban status
- Employment - 30 day recall period for wave 1, 7 day recall period for waves 2 and 3
 - Employment status: part-time/occasional employment is measured separately in wave 1, but measured along with salaried employment in waves 2 and 3. To be consistent across waves, we include part-time/occasional employment as part of salaried employment in wave 1. Employment in agriculture and in the household business includes both paid and unpaid work in waves 1 and 2, but only include paid work in wave 3.
 - Weekly work hours: measured as average weekly hours over the last 12 months, measured using months worked per year, days worked per week and hours worked per day in wave 1, months per year, weeks per month, days per week and hours per week in wave 2, and months per year, days per month and hours per day in wave 3. We include hours worked in secondary occupations in our calculation of weekly hours.
- Living arrangements:
 - Living alone
 - Unmarried
- Health:
 - Illness/injury - 4 week recall period in waves 1 and 2, 30 day recall period in wave 3
 - Functional Limitations: This data is only available in wave 3.

Malawi

We use four waves of data from the Living Standards Measurement Study in Malawi: wave 2 in 2004, wave 3 in 2010, wave 4 in 2016, and wave 5 in 2019. We exclude the first wave since the data are not available publicly. The following key outcomes are available across the waves:

- Urban status
- Employment - 7 day recall period
 - Employment status: For working outside the household, we include both casual part-time work and wage or salaried work since they were asked separately. For working at a household business, we include both running and helping in the business, since they were asked separately. Across all waves, employment outside the household excludes unpaid work; employment in agriculture or in household business does not specify paid versus unpaid work.
 - Weekly work hours
- Living arrangements:
 - Living alone

²⁷In the original French, the Enquête Harmonisée sur les Conditions de Vie des Ménages.

²⁸In the original French, the Enquête Nationale sur les Conditions de Vie des Ménages et Agriculture

- Unmarried
- Health:
 - Illness/injury - 2 week recall period
 - Functional Limitations: This data is only available in waves 3 and 5.
- Psychological health: The Malawi LSMS includes a measure of subjective well-being (self-reported life satisfaction); however, we do not include this as a main outcome.

Uganda

We use seven waves of data from the Living Standards Measurement Study in Uganda: wave 1 in 2009, wave 2 in 2010, wave 3 in 2011, wave 4 in 2013, wave 5 in 2015, wave 6 in 2018 and wave 7 in 2019. The following key outcomes are available across the waves:

- Urban status
- Employment - 7 day recall period
 - Employment status: Across all waves, employment outside the household excludes unpaid work; employment in household business includes both paid and unpaid work, and employment in agriculture does not specify paid versus unpaid work.
 - Weekly work hours
- Living arrangements:
 - Living alone
 - Unmarried
- Health:
 - Illness/injury - 30 day recall period
 - Functional Limitations: This data is only available in waves 1 and 2.

Ethiopia

We use three waves of data from the Living Standards Measurement Study in Ethiopia: wave 2 in 2013, wave 3 in 2015, and wave 4 in 2018. We exclude the first wave since it only covers rural areas. The following key outcomes are available across the waves:

- Urban status
- Employment - 7 day recall period
 - Employment status: Across all waves, employment outside the household excludes unpaid work; employment in agriculture or in household business does not specify paid versus unpaid work.
 - Weekly work hours
- Living arrangements:
 - Living alone
 - Unmarried
- Health:
 - Illness/injury - 2 month recall period for wave 2, 4 weeks for waves 3 and 4
 - Functional Limitations

Tanzania

We use five waves of data from the Living Standards Measurement Study in Tanzania: wave 1 in 2008, wave 2 in 2010, wave 3 in 2012, wave 4 in 2014, and wave 5 in 2020. The following key outcomes are available across the waves:

- Urban status
- Employment - 7 day recall period
 - Employment status: In wave 1, working in agriculture and the household business are defined as working non-zero hours in that category, since direct measures were not available. Direct measures are available in other waves. Across waves 1-3 and wave 5, employment outside the household excludes unpaid work; employment in agriculture or in household business does not specify paid versus unpaid work. Wave 4 includes both about paid and unpaid work for measuring employment status outside the household.
 - Weekly work hours
- Living arrangements:
 - Living alone
 - Unmarried
- Health:
 - Functional Limitations: This data is only available in waves 2, 4, and 5, and only partially available in wave 1. Wave 1 only measures difficulty walking or climbing stairs, and difficulty with self-care. Difficulty walking or climbing stairs was assessed based whether the household member can: (i) do vigorous activities, (ii) walk uphill, (iii) walk over 100 m, (iv) walk more than 1 kilometer, and (v) bend over or stop.
- Psychological health: The Tanzania LSMS includes a measure of subjective well-being (self-reported life satisfaction); however, we do not include this as a main outcome.

Nigeria

We use four waves of data from the Living Standards Measurement Study in Nigeria: wave 1 in 2010, wave 2 in 2012, wave 3 in 2015, and wave 4 in 2018. Each wave consisted of a post-planting and post-harvest visit; for our purposes, we consider this as eight “waves.” The following key outcomes are available across the waves, and measured as described above, unless otherwise noted:

- Urban status
- Employment - 7 day recall period
 - Employment status: in wave 4, working outside the household includes only paid work, while in waves 1-3 the question does not specify paid (versus unpaid) work.
 - Weekly work hours
- Living arrangements
 - Living alone
 - Unmarried
- Health:
 - Illness/injury - 4 week recall period
 - Functional Limitations: In wave 3, difficulty walking or climbing was assessed based whether the household member can: (i) walk uphill, (ii) walk over 100 m, and (iii) bend over or stop. Other waves use the standard measure for functional limitations.
- Psychological health: measured using CES-D, only for the household head or a senior member of the household. We do not use this measure in our analysis.

Ghana

We use three waves of data from the Ghana Socioeconomic Panel Survey (GSPS): wave 1 in 2009-10, wave 2 in 2013-14, and wave 3 in 2017-18.²⁹ The following key outcomes are available across the waves:

- Urban status
- Employment: excluded from these surveys since agricultural employment was collected at the household level, and so participation in this important component of agriculture could not be assigned to a specific individual.
- Living arrangements:
 - Living alone
 - Unmarried
- Health:
 - Illness/injury - 2 week recall period
- Psychological health: psychological distress was measured using the Kessler Psychological Distress Scale (K10), with scores of 25 or higher (on a scale from 10 to 50) considered as consistent with moderate or severe distress. This measure was only collected for the household head, their spouse (if applicable) and one other randomly-chosen individual above age 12 (two others if the household head does not have a spouse).

South Africa

We use five waves of data from the National Income Dynamics Study in South Africa: wave 1 in 2008, wave 2 in 2010-11, wave 3 in 2012, wave 4 in 2014-15, and wave 5 in 2017. The following key outcomes are available across the waves:

- Employment - 7 day recall period
 - Employment status: measured as an indicator for working non-zero hours in a primary or secondary occupation, or having engaged in self-employment, casual work, agriculture or with other people in their business activities in the past 30 days. These indicators do not capture paid versus unpaid work, although this information is available in other questions in the employment module.
 - Weekly work hours: measured as total hours worked in each of the above categories in the past 30 days.
- Living arrangements:
 - Living alone
 - Unmarried
- Health:
 - Functional Limitations: This data is only available in waves 2-5. Waves 3-5 only capture difficulty seeing and hearing. Wave 2 includes difficulty walking or climbing stairs and difficulty with self-care (along with seeing and hearing). Note that in the NIDS data, difficulty seeing is defined as using spectacles, difficulty hearing is defined as using a hearing aid, difficulty walking or climbing stairs is defined based on difficulty climbing a flight of stairs or walking 200-300 meters, and finally, difficulty with self-care is defined as difficulty dressing, bathing, eating, using the toilet, or cooking for oneself.
- Psychological health: depression is measured using the Center for Epidemiological Studies Depression scale (CESD), with scores of 10 or higher (on a scale from 1 to 30) considered as being depressed.

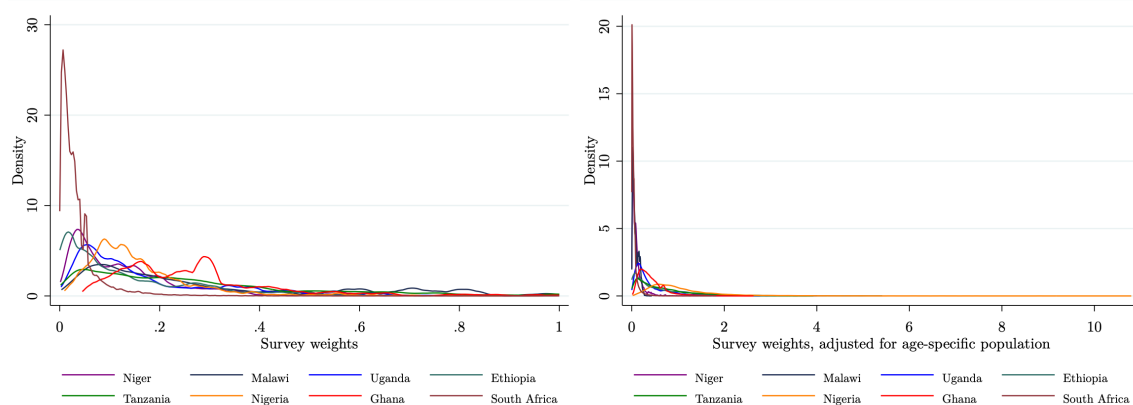
²⁹Sincere thanks to the GSPS team for providing additional support and clarification on this dataset.

Weights

Appropriate country- and wave-specific survey weights that maintain representativeness at the national level are included in each of the datasets (as described in the respective documentation). In the (few) cases where weights are missing, we impute weights using the wave- and country-specific mean. This applies to 0.6% of the relevant (age 20 and above) observations from Uganda (LSMS), 8% of observations from Ghana (GSPS), 0.4% of observations from Nigeria (LSMS), and 13% of observations from South Africa (NIDS).

For the analyses presented here, these country- and wave-specific survey weights are re-scaled to range from 0 to 1 (for consistency across surveys and waves), then further adjusted to account for the country-specific and age group-specific population in the relevant (wave-specific) year. Specifically, the (re-scaled) survey weights are multiplied by the ratio of the estimated population in each country/year/age-group to the number of individuals in each country/year/age-group in the sample.

Densities of the (re-scaled) survey weights and population-adjusted weights (used for the analyses) are presented below.



Online Appendix Figure B1: Density of Weights

Key Indicators

In addition to the primary outcomes detailed in the preceding section, our study undertook a comprehensive revision of key indicators to delineate the characteristics of our focal region (for a quick summary, refer to Table B2). This approach aimed to capture the diverse policy landscapes not only across different global regions but also within the individual nations of Sub-Saharan Africa. Furthermore, our analysis incorporates the income group and regional classifications established by the World Bank and United Nations Development Programme (UNDP). These classifications, including lower-middle-income, and high-income countries,³⁰ are integral to our study as they facilitate wealth and income comparisons to understand the economic context within our region of interest. The set of indicators we have chosen to emphasize includes:

1. Gross domestic product (World Bank Development): A fundamental economic metric that underscores the region's overall economic output and serves as a key indicator to capture economic activity. This measure often falls short in providing a suitable measure of people's general material well-being, and more particularly the material well-being of the elder.
2. Life expectancy at age 60 (World Health Organization): Defined as the average number of years that a person of 60 years old could expect to live, if they were to pass through

³⁰Lower and middle-income economies are defined as those countries with a gross national income (GNI) per capita between \$1,136 and \$13,845; high-income economies are those with a GNI per capita of \$13,846 or more.

life exposed to the age-sex specific death rates prevailing at the time of 60 years old, for a specific year, in a given country, territory, or geographic area. This metric aims to capture the quality of life for older populations and offer insights into the mortality pattern that prevails across all age groups above 60 years.

3. Pension coverage (ILO Social Protection Platform): According to ILO, pensions are the most widespread form of social protection in the world, thus monitoring countries progress towards universal coverage is priority. The main objective of pension systems is to prevent poverty and provide income security to older women and men.
4. Social protection expenditure on older persons (ILO Social Protection Platform): Social security pensions serve as fundamental instruments in guaranteeing income security for individuals as they age. This measure gauges the financial commitment to social protection programs specifically tailored for elderly individuals, safeguarding their economic well-being.
5. Domestic government health expenditure (World Health Organization Global Health Expenditure): Calculated based on the average domestic general government health expenditures per person in USD. This captures general government health expenditure relative to the population size, facilitating comparison across countries and regions.
6. Private health expenditure (World Health Organization Global Health Expenditure): In addition to the aforementioned indicator, this measure delves into the financial intricacies of healthcare systems. Specifically, it gauges the average health expenditure borne by individuals through out-of-pocket payments per capita in USD, reflecting the average amount each person personally pays when accessing healthcare services. A higher out-of-pocket payment burden is often linked to potentially catastrophic and impoverishing household expenses.
7. Physicians per 1,000 (World Bank, drawing on the World Health Organization's Global Health Workforce Statistics, OECD): Computed as the density of physicians, generalist and specialist medical practitioners, available to serve the population. In general, according to the World Health Report (2006) it is estimated that at least 2.5 medical staff (physicians, nurses and midwives) per 1,000 people are needed to provide adequate coverage with primary care interventions.
8. Hospital beds per 1,000 (World Health Organization): Measured as the number of hospital beds available per every 1,000 inhabitants in a population, providing an indicator that highlights the capacity of healthcare facilities, essential for effective healthcare service delivery and crisis response. Though there is no global norm for the density of hospital beds in relation to total population, higher number of hospital beds are associated with better capability to respond to crisis.
9. Sustainable Development Goal (SDG) Universal Health Care (UHC) service coverage index (World Health Organization, Health Coverage 2021 Global Monitoring Report, UHC data portal): Composite index that quantifies progress towards SDG Goal 3.8.1 (Coverage of essential health services) by assessing the degree to which diverse medical services are both accessible and readily available to the general population. (Note that the World Health Organization recommends interpreting this index alongside a financial access index (which quantifies progress towards SDG 3.8.2 Catastrophic health spending). We instead present private health expenditure (as a percent of total health expenditure) as a measure of financial access.)

Online Appendix Table B2: Data Sources of Key Indicators

Indicator	Data Source
Income groups	World Bank
Regional classification	UNDP
Life expectancy at age 60	World Health Organization
Pension coverage	ILO Social Protection Platform
Social protection expenditure on older persons (as % of GDP)	ILO Social Protection Platform
Domestic government health expenditure (as % of GDP)	World Bank*
Private health expenditure (as % of total health expenditure)	World Bank*
Physicians per 1000 (year)	World Bank*
Hospital beds (per 1000)	World Health Organization
SDG UHC Service Coverage Index	World Health Organization
GDP per capita	World Bank Development Indicators

* Draws on data from the World Health Organization Global Health Expenditure database, OECD, and/or country statistics.