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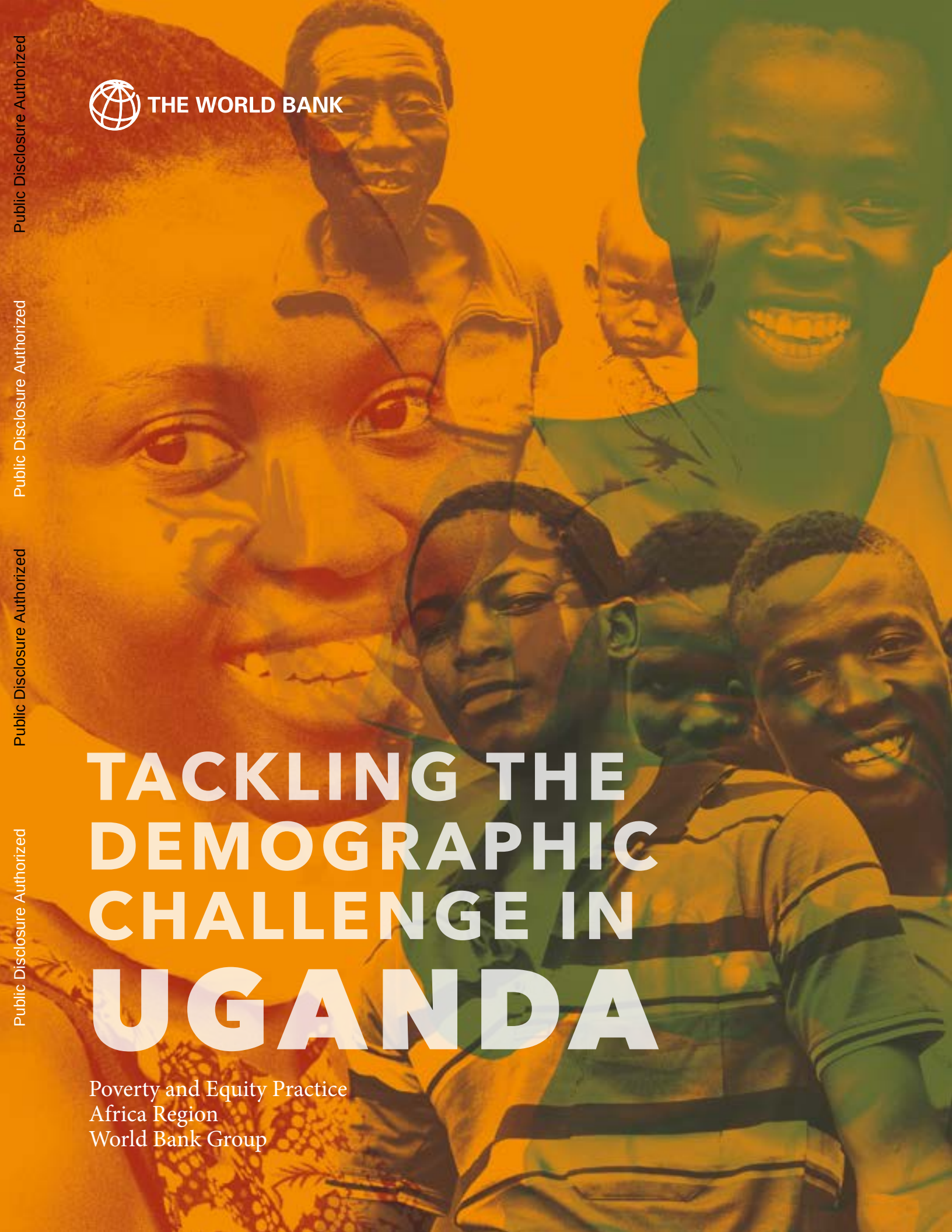

TACKLING THE DEMOGRAPHIC CHALLENGE IN UGANDA

Poverty and Equity Practice
Africa Region
World Bank Group

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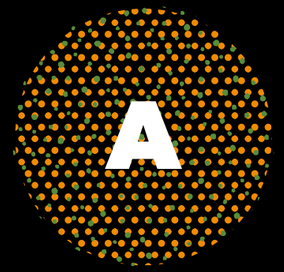

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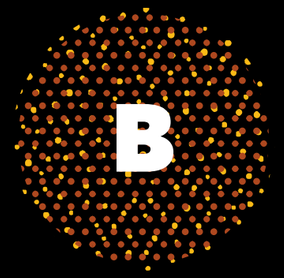

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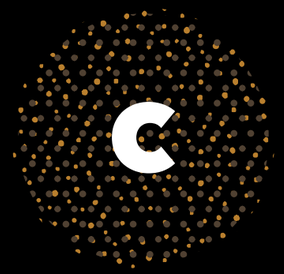

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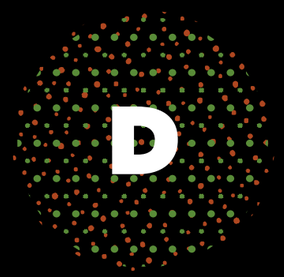

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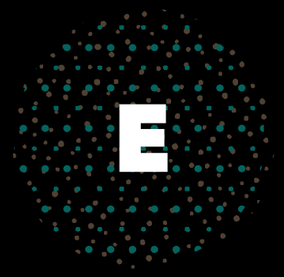

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EXECUTIVE SUMMARY

Uganda is entering a key stage of its development path given the expected demographic trends over the next 40 years. The population of Uganda, currently estimated at 46 million, will at least double between 2020-2060. Under the most likely scenario, the total population of Uganda will reach 104 million people by the year 2060. Around 70 percent of that population will be of working age, and about half of the population will reside in urban centers (a two-fold increase in the proportion of urban population observed today). Considering that the country already encounters multiple challenges in the delivery of basic services, specifically in education, health, electricity and water and sanitation, and in managing public investment projects, serving the projected population and improving the current access levels will not be an easy task.

The fiscal effort under a 'Business as Usual' scenario will be considerable, with large potential savings in an outlook based on reduced fertility.[1] Under a 'Business as Usual' scenario (which maintains current access levels)[2] , the total cost of providing education services will increase from US$834 million in 2020 to about US$1,001 million in 2060. Similarly, the expenditure needed to provide basic health services to the growing population will more than double from US$683 to US$1,546 million between 2020 and 2060. Finally, the annual expenditure on infrastructure (investment in electricity and water and sanitation) will increase from US$1,302 million to US$2,223 million during the same period. When the low-variant fertility scenario is considered, which implies a lower population growth over the next 40 years, there are considerable cumulative savings in terms of the fiscal effort. More specifically, these savings amount to US$5.5 billion, US$3.0 billion, and US$2.3 billion respectively in education, health, and infrastructure investments, showing that there is a fiscal payoff associated with efforts to reduce fertility.

Not surprisingly, the effort required under an 'Improved Equilibrium' scenario is substantial, which in turn results in larger savings when population growth is curbed by lower fertility. For Uganda to reach the goals the government has set for itself (which are aligned with the SDGs), the *status quo* or 'Business as Usual' is inadequate and will not ensure that the young population accumulates the human capital required to reach its full productive potential. As expected, achieving these goals will require a sizeable fiscal effort. More specifically, to provide universal access to primary and secondary education and improve the quality of these services according to the ESSP targets (sustained from 2025 onwards), will cost around US$979 million in 2020, increasing to around US$2,224 million in 2060. At the same time, the cost of providing universal health coverage (starting in 2020) goes up from US$1,366 million to US$3,092 between 2020 and 2060 (a two-fold increase compared to the 'Business as Usual' scenario in both years). In terms of infrastructure investment, by 2060 the annual cost of guaranteeing energy, water and sanitation access for all, under the medium population variant, amounts to US$14,784 million, in comparison to US$4,890 million in 2020 (a 650 percent increase relative to the 'Business as Usual' scenario for 2060). The cost of the 'Improved Equilibrium' is reduced significantly when the low-fertility scenario is considered, and the cumulative savings reach US$9.5 billion in education, US$6 billion in health, and US$5 billion in infrastructure investment.

Beyond the fiscal effort in public service provision, the projected population trends will require a profound transformation of Uganda's labor market. This will be necessary to accommodate the expected 1.1 to 1.2 million new entrants per year (on average) into the labor force over the next 40 years. While an effort to curb fertility will lessen the burden moderately (by about 400,000 people in 2060) the flow of people into the labor market will still represent a considerable challenge. More importantly, the task not only comprises the creation of more jobs but also higher-quality jobs. That is why, over the next few decades, Uganda requires policies to accelerate its economic transformation, which is the basis for the creation of formal wage jobs in productive sectors of the economy.

The projections also indicate that Uganda is still more than a decade away from attaining low middle-income status and that the country will still be grappling with a considerable number of poor in 40 years. While the poverty incidence rate under the international poverty line is expected to decline steadily between 2020-2060, the number of poor is projected to increase due to the pace at which the population is expanding. Under the most likely population scenario, the poverty incidence rate under the U$1.90 a day is set to reach 30 percent by 2060, resulting in a total of 31 million poor Ugandans. A similar pattern is expected for the vulnerable population: while the share of vulnerable people as a proportion of the total population will decline, the number of vulnerable people will increase by 2060, with important implications for the future of social protection programs.

Several important overarching policy recommendations are derived from the analysis of the implications of the projected population trends in Uganda over the period 2020-2060 presented in this report, as follows:

IMPROVING THE EFFICIENCY OF PUBLIC EXPENDITURE AND ENHANCING THE EFFECTIVENESS OF PUBLIC INVESTMENT PROJECTS

To tackle the demographic challenge, an emphasis on the efficient utilization of public resources is required. This can be implemented not only in terms of how the budget is allocated across sectors and the importance of social spending (particularly in education and health) for Uganda's development, but also in terms of how efficiently the money is spent within each of the sectors. In recent years, Uganda has shifted towards infrastructure spending at the expense of investing in social sectors such as education and health, resulting in a decade long decline in real per capita allocations. However, only by investing in human capital will the country ensure that future cohorts of Uganda's population attain their full productive potential, increasing productivity and boosting economic growth. In terms of the efficiency of spending, enhancing the functioning of the national government's financing of local government service delivery could be attained by restoring the adequacy and equity of allocations of funds for service delivery, and by creating the right incentives for local government to leverage institutional and service delivery performance (World Bank, 2020b).

1. All costs are expressed in 2020 US$.

2. Based on the medium-fertility scenario from the UN World Population Prospects, considered the most likely scenario.

In terms of public investment projects, the infrastructure investment needed to tackle the demographic challenge requires improving Public Investment Management (PIM). Poor PIM has been a major issue for the GoU and has constrained its ability to govern and address inadequate infrastructure gaps across the board. Moving forward, there is a need to enhance the effective management at all stages of the public investment project cycle, from inception to the management and maintenance of the completed asset. Reforms to public finance management systems in Uganda have ensured that some parts of the PIM cycle meet several good practice standards. Nonetheless, there are still issues with prolonged procurement processes, deficiencies in the "quality at entry" of projects, implementation challenges (such as cost escalations, time-overruns, contract disputes, abandonment of projects, poor quality of some completed projects), and limited maintenance that can be addressed.

ASSESSING THE SERVICE DELIVERY MODELS AND INVOLVING THE PRIVATE SECTOR

An assessment of the sustainability of the service delivery model in each sector can contribute to ensure broader access and higher quality in the provision of education, health, energy and water and sanitation services. This includes examining the potential benefits of the participation of the private sector, as well as studying the financing model of each sector. It is very unlikely that the public sector alone will be able to bear the burden of the fiscal implications of tackling the demographic challenge in Uganda in the medium term. Thus, the GoU must develop a strong policy framework for sustainable Public Private Partnerships (PPPs) in all sectors, in order to close financing gaps and achieve higher levels of spending efficiency. PPPs will allow upfront private financing for capital investment and crowd-in additional sources where user charges can be levied. At the same time, moving towards results-based budgeting (and away from input-based budgeting) can contribute to raise the efficiency of all sectors. The GoU has started to pilot this approach in some areas (such as education and health), and it will be important to monitor what benefits and what challenges are surfacing, to assess the possibility of scaling it up. Finally, it will be important to assess the level of integration and coordination of the different levels of service provision in each sector, to identify were reforms may be needed.

MANAGING URBANIZATION

Adequate urban planning and smart urban policies will be crucial for both providing services and creating job opportunities for the growing population of Uganda. Knowing that by 2060 half of the population will reside in urban centers, cities and their governments in Uganda can commit to *lead urban development and not follow it*. Thus, it is important to ensure that cities, and in particular secondary cities, have: i) a functioning land administration system with formal, readily transferrable land rights; ii) the capacity to plan and regulate infrastructure and private investments and; iii) predictable financial resources from the local government transfer system to manage the operation and maintenance of infrastructure assets.

The last condition is particularly important for cities outside Kampala, given that they are highly dependent on transfers from the central government and have little revenue coming from other sources, which limits their ability to plan and invest over the medium term.

Promoting urban development will be important to generate labor demand. Local economic development strategies for urban centers can help attract the private sector and promote job opportunities for the growing population. It is also important that secondary cities with high potential for job creation in agro-processing, other manufacturing, and tourism be able to receive special attention. In addition, youth employment policies and programs offered at the moment are heavily tilted towards self-employment and solving supply-side constraints, such as "skills gaps." Instead, they can increasingly equip young workers for entry into urban waged jobs and help target the opportunities offered through regional developments and industrial policies (Merotto, 2019).

Improving land administration and land rights is a key component of urban development. Ugandan cities can aim to improve (i) the land administration system with formal, readily transferrable land rights, and (ii) the capacity and remit to plan, regulate, and coordinate infrastructure and private investments. Not even 20 percent of Uganda's private land is registered and titled, and much of the remaining non-private land is constrained by the complex customary land regulations. Addressing these issues is essential to the successful implementation of the recommendations above.

ENHANCING THE AGENCY OF GIRLS AND WOMEN

Educating girls, empowering women, enhancing access to reproductive health services and employing women are four crucial actions in order for Uganda to harness the potential benefits of the demographic transition. Building on the Global Agenda Council on the Demographic Dividend, the World Bank's Africa Human Capital Plan emphasizes that enhancing the agency of girls and women is essential for countries to accelerate their human capital development and take advantage of the demographic transition. It underscores the 4Es framework: i) educating girls, ii) empowering women, iii) enhancing access and use to reproductive health services and iv) employing women. These efforts are of course interconnected as, for example, empowering women is important to ensure their access and use of modern contraceptive methods and employment opportunities. However, it is clear that educating girls is fundamental, with clear and large demonstrated positive spillovers on the other three pillars.

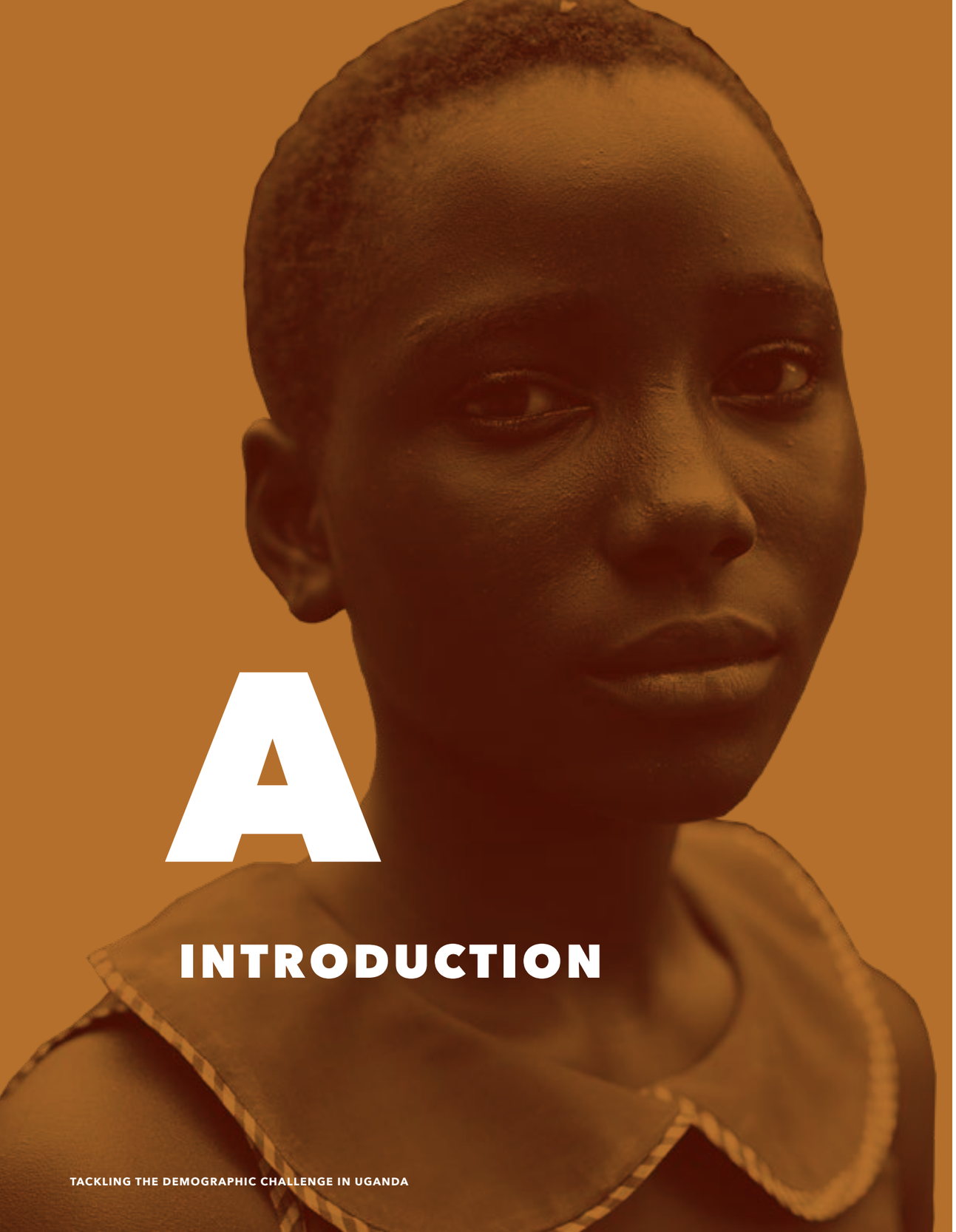
Improving the educational attainment of girls is essential for Uganda's future. Enhancing the educational opportunities for adolescent girls is crucial, as it boosts their productive and economic prospects in the future, maximizing their income when they enter the labor force. In addition, higher educational attainment among young women delays childbearing, lowers the chances of early marriage and empowers them as adult women, which in turn lowers fertility over time. In addition, improvements in women's level of education not only affects fertility rate but also improves child health outcomes. More educated mothers are more likely to use prenatal and child health services improving child health outcomes, which has positive consequences for human capital. Ensuring the completion of at least the first cycle of secondary education is particularly important, which requires raising the quality of education at the primary level and promoting girls' transition into secondary education.

Alternative programs and ensuring certain basic infrastructure conditions can also contribute to higher levels of education for girls. Other measures, such as incentivizing girls to remain in school or go back to school if they dropped out, can also enhance their educational attainment. Additionally, programs that provide life skills can boost the effectiveness of the traditional curriculums in building knowledge, through gains in self-esteem and confidence. Building schools closer to where girls live, or as an alternative, providing adequate modes of transportation to schools, and ensuring separate water, sanitation and hygiene facilities for girls is also important, as is the need to reduce the risk of violence and sexual harassment at school (World Bank, 2017).

Empowerment implies that all individuals have the same right and freedom to make decisions regarding all aspects of their lives. Opportunities should not depend on gender or other differentiating aspects, and each woman should have a saying in her education and employment, as well as when and who to marry. Empowerment is closely linked to cultural and social norms, and interventions aimed at changing them can be planned not only for girls and women, but also for boys and men, which still play a central role in the household decision making process. There are encouraging results from a Rwandan program that engaged men in groups to discuss gender and power relations, with positive results in terms of shared decision making for couples (Doyle at al. 2018), that could be piloted in Uganda. While these changes may take longer to materialize, they are key to complement the efforts in other areas.

Increasing the agency of women in Uganda also requires expanding the reproductive health/family planning programs available at the moment, accompanied by information campaigns. Interventions on this front can focus both raising the demand for family planning, by improving women's information on the effectiveness of modern methods of contraception and the risk of pregnancy when using no method, but also on the supply side, through the strengthening and expansion of existing sexual and reproductive health services. Particular attention to vulnerable adolescent girls and women, such as those belonging to households in the lower end of the income distribution and those residing in rural areas, can have long-run payoffs. In addition, the provision of counseling and tailored information can contribute to *maintaining* a high usage rate of modern contraception methods, as inconsistent use is a major issue throughout Uganda.

Employment opportunities need to be expanded for women, and where possible, addressing gender gaps in productivity can further empower women. Promoting the employment of women, and young women in particular, has the potential to benefit Uganda both directly, through the productive contribution to the economy, and indirectly, by lowering fertility. At the same, participating in a productive activity and earning income helps to raise the bargaining power of a woman in her household, increasing her decision-making power. Going forward, the country not only needs to adopt measures to ensure that there are enough job opportunities for the future generations, as already discussed, but also that these are inclusive of women. Moreover, Ugandan women who are currently participating in the labor market are segregated to less productive sectors, and even the cases where that is not the case, they tend to have lower productivity compared to their male counterparts, explained either by their inability to access capital and productive inputs and, in some cases, hire sufficient labor. Policy interventions aimed at encouraging women to engage in activities that are more profitable (albeit typically male dominated), ensuring they have access to finance, and that they are equipped with the appropriate skills -both technical and non-cognitive-, can enhance women's agency.



A INTRODUCTION

Uganda is currently at a developmental crossroad. Despite impressive progress in the last two decades, there is still a long road to the ambitious agenda that the country has set for its future: the *Uganda 2040 Vision* foresees a middle-income country with the majority of its citizens living in urban areas, having smaller families, and earning income in non-agricultural sectors. In reality, the country's economic growth is still inadequate for Uganda's lower middle-income status ambitions, about 42 percent of the population live with less than U$1.90 a day, and households are unable to cope with negative shocks. In addition, structural transformation remains limited and the majority of the population still survives on subsistence agriculture or is engaged in small informal enterprises, with low productivity and few prospects for growth.

The way in which the country addresses the demographic challenge over the next 40 years will be crucial for its future. Demographic transitions provide unique opportunities but also pose considerable challenges for low income countries. Uganda is entering the early transition stage of its demographic transition. With the right set of policies and conditions in place, the country has the opportunity to capitalize on some of the possible benefits of this demographic transition.[3] However, in the absence of widespread access to basic services and infrastructure of quality, as well as productive economic opportunities, the country could embark in a demographic disaster rather than a demographic dividend, where social and political instability is coupled with intergenerational poverty traps.

According to the most up-to-date population projections, the number of Ugandans will at least double by the year 2060. The population of Uganda, currently estimated at 46 million, is projected to increase to around 100 million under the most likely scenario. Considering that the country already encounters several issues in terms of the efficient delivery of basic services (such as education, health, electricity and water and sanitation) and the effective management of public investment projects at all stages of the cycle in all sectors, this poses significant challenges in the medium-term. In addition, Uganda is characterized by one of the lowest revenue mobilization rates in East Africa and thus the fiscal space to expand public expenditure is very limited.

The demographic composition of the country is also projected to change over the medium term, with a considerable expansion of the working-age population. Between 2020 and 2060, the number of working-age Ugandans is expected to increase by about 50 million, which represents a 20-percentage point increase in the ratio of working-age individuals to the total population and translates into an average of 1.1 to 1.2 million entrants to the Ugandan labor market every year. Considering the current outlook of Uganda's labor market, where most workers are engaged in subsistence agriculture or self-employment activities characterized by low productivity, generating enough economic opportunities for the population bulge is perhaps one of the biggest challenges of the expected population trends.

Moreover, if Uganda wants to improve human development outcomes, it must expand the coverage and access to basic services for the general population, which will be difficult with the projected demographic trends. The benefits of a demographic transition are not guaranteed for every country, and they can only take place if there is widespread access of the population to high quality services in terms of education, health, electricity and water and sanitation.

3. Often referred to as the economic dividend: a period of sustained economic growth and improvement of the human development indicators. The textbook examples of countries that were able to reap the economic dividend are the East Asian countries such as Thailand, Vietnam and South Korea.

The current *status quo* in terms of coverage and access to some of the basic services is limiting the human capital accumulation of young Ugandans, constraining their income generating ability and curbing their productivity in the future. At the moment, a child born in Uganda today will be only 38 percent as productive when she grows up as she could be if she enjoyed complete education and full health, according to the HCI (Human Capital Index)—one of the lowest levels in the world.[4] Expanding access and improving the quality of basic services will be crucial if Uganda wants to move from the current lackluster equilibrium to a brighter development path. It will also be necessary to ensure that the growing population bulge will be engaged in productive economic activities that are adding value to economy.

Against this background, this report examines what it would take for Uganda to tackle the demographic challenge in the next four decades. Firstly, it assesses Uganda's current context in terms of its demographic transition, exploring some correlates of fertility—one of the most determinant factors of any country's demographic transition. Secondly, it presents population projections for the period 2020-2060, at the national level as well as disaggregated by specific age groups and for urban and rural areas, under two different fertility assumptions: the medium and low-variant scenarios as defined by the UN Population Division. The bulk of the analysis focuses on the implications of the population projections under the two population variants in terms of: i) service delivery in the education and health sectors, ii) infrastructure investment focusing on power, water supply and sanitation sub-sectors, and iii) select labor market and poverty indicators, under both a *'Business as Usual'* scenario and an *'Enhanced Equilibrium'* scenario. For the *'Business as Usual'* scenario, it quantifies the inputs and fiscal effort that will be needed over the period 2020-2060 to provide the projected population with basic education, health, electricity and water and sanitation services, under current levels of access and quality, and highlights the savings derived from an effort to reduce fertility (under the low-fertility variant). At the same time, the report explores how select labor market and poverty indicators evolve under the two fertility variants, highlighting labor demand as one main challenges going forward.

The report also explores the effort required to ensure that future generations of Ugandans enjoy higher levels of access to basic services, a necessary condition to fully benefit from a demographic transition. However, as discussed above, the *'Business as Usual'* scenario is insufficient to reap benefits from the demographic transition and to achieve the transformation that the country aspires to. Thus, the report also quantifies the inputs and fiscal efforts that will be needed for each sector under an *'Enhanced Equilibrium'* scenario. This scenario involves universal access for each sub-sector, in line with both the Sustainable Development Goals (SDGs) and national sectorial goals, and in the case of education sector, it also involves improving the quality of services provided.[5] The difference between considering the medium-fertility variant in comparison to the low-fertility variant is also explored here, pointing at the savings derived from further reducing fertility.

The main objective of the report is to inform policymakers and relevant stakeholders in Uganda as they formulate their plans for the medium term. The analysis quantifies the magnitude of the effort required for Uganda to serve the growing population in the coming years, as well as the considerable resources that will be needed to increase the level of access (and quality) of the services provided. It also presents detailed policy recommendations in each sub-sector for this to be feasible and sustainable. It is clear that an expansion of the services at scale will not be possible without significant reforms in each sector to improve the efficiency of the service delivery, as well as an overall shift in the management of public investment and an increased role of the private sector in Uganda.

The report is organized as follows. Chapter 2 characterizes Uganda's progress in terms of its demographic transition, describes its most recent demographic trends and shows some correlates of the country's fertility levels. The population projections under the medium and low-fertility variants for the period 2020-2060 are presented in Chapter 3, while Chapter 4 explores the implications in terms of service delivery of these projections under the *'Business as Usual'* and *'Enhanced Equilibrium'* scenarios. Based on these same projections, Chapter 5 presents the expected trends of select labor market and poverty indicators.

4. The HCI looks across health, education, nutrition and skills and is calculated based on five indicators: probability of survival to age 5; children's expected years of schooling; quality of learning; adult survival rate, and the proportion of children who are stunted.

5. The low quality of education has been a major concern in Uganda, and largely explains the low scores in the HCI mentioned above.

B

CHARACTERIZING UGANDA'S DEMOGRAPHIC TRANSITION

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B.1 DEMOGRAPHIC DIVIDEND: THE POTENTIAL OF DEMOGRAPHIC TRANSITIONS

In a demographic transition, a country evolves from a state of high mortality and high fertility into one with low mortality and low fertility, with a period of rapid population growth first triggered by declining mortality rates, followed by declining fertility rates. The transition is associated with changes in the demographic indicators, with one of the most salient changes being the decline of the total dependency ratio — the ratio of the dependent to the working-age population[6] (Bloom & Williamson, 1998; Bruni, Rigolini, & Troiano, 2016). The demographic transition can be divided into four stages: i) the pre-transition, ii) early transition, iii) late transition, and iv) post-transition. The pre-transition stage is characterized by high fertility, and high mortality with an elevated child dependency ratio. The early transition is defined by a lowering mortality rate, an increasing share of the working-age population, and a lower child dependency ratio. The late transition stage exhibits a lowering fertility rate and an additional lowering child dependency ratio. In the post-transition stage, with both low fertility rate low mortality rates, there is a rapid increase in the elderly population, a decreasing share of the working-age population, and a fertility rate that is below the replacement level.

More than 90 percent of global poverty is concentrated in pre- and early-demographic transition countries. These countries typically have a swelling working-age population that lags in key human development indicators and continues to register rapid population growth. In these countries, the transition to lower fertility creates a golden opportunity to raise living standards. Additionally, the changes in the population structure that come from a demographic transition are not inherently good or bad and present both *opportunities and challenges* for realizing economic growth in the forms of demographic dividends.

Usually, going through the different demographic transition stages parallels the model path of economic development, and socio-economic outcomes are expected to improve, generating a demographic dividend. When the country experiences rapid economic expansion and considerable gains in terms of human capital indicators, the demographic transition can be strongly linked to a *demographic dividend*. Given the continuous nature of demographic transitions, the demographic dividend is usually broken down into two parts called the *first* and *second* demographic dividends and parallel the late-transition stage (Schneidman et al., 2016). Policies and planning can make a critical difference in how demographic change affects progress toward development and economic growth (Global Monitoring Report, 2015/2016). As Canning et al. (2015) highlights, policies can be geared to realize and maximize the payoffs from each of the two dividends associated with a demographic transition.

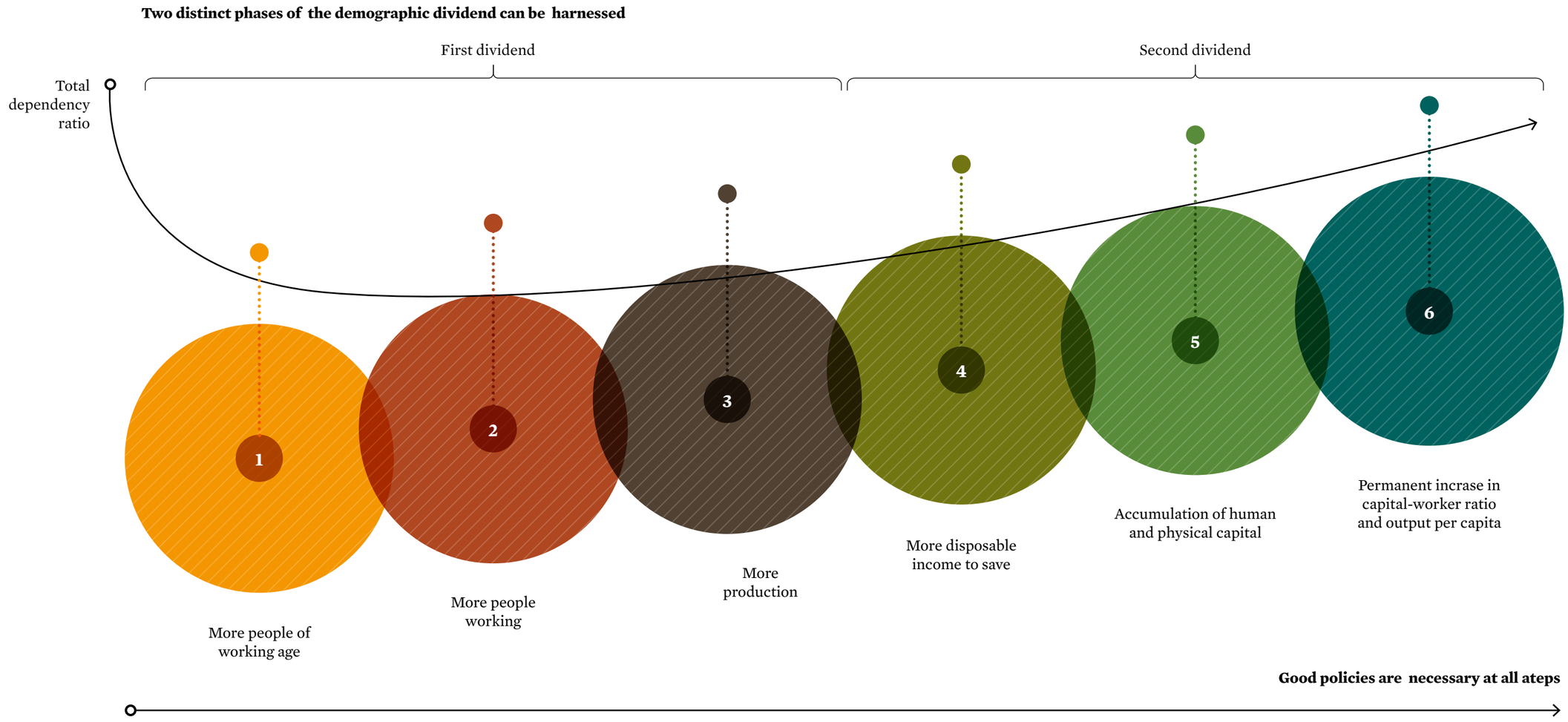
6. More specifically, it is defined as the ratio of those 0-14 and 65+ over those 15-65.

The first demographic dividend, characterized by the effect of increased labor supply on the economy, is brought on by a decreasing fertility rate and a lower child dependency ratio. Higher survival rates in a given cohort, followed by fewer children in the next, produces a population bulge that translates into a higher labor supply and a lower dependency ratio (Schneidman et al., 2016). The effect is magnified when lower fertility allows women to enter the labor force at a higher proportion. Those who enter working-age can produce for their households and themselves while having fewer children than previous cohorts (Figure 1). This allows society — both households and the government — to invest education and health resources in fewer children (Kalemli-Ozcan, Ryder, & Weil, 2000), increasing human capital for the members of this bulge cohort. As these groups move into productive jobs, the gains in terms of household and national income are materialized.

The second demographic dividend takes place as this cohort, which experienced significant human capital investments, moves through the economic life cycle, and saves. These individuals are more productive than previous generations and with higher earnings and more disposable income, savings go up considerably (Figure 1). If these savings are translated into productive investments in key sectors, there is a second boost to economic growth and national income, which in turn results in higher living standards for the entire population (Schneidman et al., 2016), as observed in some countries of East Asia (UNICEF, 2020). For this to occur, the bulged cohort has accumulated enough assets by old-age in ways that decrease costs for the incoming younger cohorts (Canning et al. 2015).

As mentioned, these gains or dividends are not automatic, and they will only materialize if certain necessary conditions are met for the country. To facilitate the payoff from the first economic dividend, there needs to be an overall increase in economic opportunities and jobs. The full economic benefits will only be achieved if there is strong labor demand as well as entrepreneurial opportunities. If this is not the case, large cohorts of youth entering working-age will face unemployment and underemployment. The discontent from this group can potentially contribute to social, political, and economic instability, while also leading to deteriorating social capital (Global Monitoring Report, 2015/2016). At the same time, sustained investments in education and health are necessary as the young population expands, ensuring not only widespread access but also the delivery of high-quality services that guarantee human capital accumulation. If investment per capita (or per student in the case of education) declines, the bulge cohort will not be able to access high-productivity jobs. Similarly, for the second dividend to take place, the country must have a mature financial sector in place, capable of absorbing savings, and redirecting those savings in a productive way. This should take place over a long time-horizon to avoid future generations bearing the economic burden.

FIGURE 1.
WHAT CHARACTERIZES A DEMOGRAPHIC DIVIDEND?
Source: Adapted from Schneidman et al. (2016)



B.2
WHERE DOES UGANDA STAND IN TERMS OF DEMOGRAPHIC TRANSITION?

With its decreasing mortality rate and an increasing share of working-age individuals, Uganda is entering the early transition stage of its demographic transition (Figure 2a). Since 2013, when Uganda Vision 2040 was launched, Uganda has moved from the pre-transition stage (high mortality, high fertility) to the early transition stage, with dropping child mortality rates and decreasing, but relatively high fertility rates—depicting a very young age structure—and is preparing to realize payoffs from the first demographic dividend. As in most of Sub-Saharan Africa, Uganda's mortality rates have fallen rapidly over the past 50 years, except for a rise during the 1990s related to an increase in AIDS-related deaths (Canning et al., 2015). Since 2000, the crude death rate in Uganda has more than halved, from approximately 18 to 7 annual deaths per 1,000 persons (see Figure 2b). This decrease is due to an increased focus on health services which have led to a decrease in child mortality, while also raising life expectancy. From 2000 to 2020, the child mortality rate for children under age 5 fell from 136 to 96 per 1,000 live births. Similarly, life expectancy increased from 44 to 63 years in the same period (UN World Population Prospects 2019).

However, Uganda's high fertility rates threaten payoffs from the first demographic dividend. Currently, fertility in Uganda remains high at 5 births per woman, the tenth highest TFR in the world (with all top ten countries in the Africa region). While this represents a decline since 2000, it remains one of the highest rates in East Africa (see Figure 2c). Tanzania's fertility rate follows closely at 4.9, with a less pronounced decline when compared to Uganda between 2000 and 2019. On the other hand, during the same period, Ethiopia and Kenya stand out as countries that have experienced a significant decline in the fertility rate from 6.8 to 4.3 for the former, and from 5.4 to 3.5 for the latter. In both cases, success is attributed to widespread access to family planning and modern methods of contraception. As pointed out by many before, Uganda will not be able to reap the demographic dividend without drastically reducing its fertility rate (Uganda National Planning Authority, 2014; UNICEF, 2020).

As a result of sustained levels of high fertility, Uganda's population has been growing much faster than in other parts of Africa, limiting income per capita growth. Between 2000 and 2018, Uganda had a consistently higher population growth rate than other countries in the Sub-Saharan Africa region (Figure 2e). In fact, it was the only country in the region above a 3 percent annual population growth threshold since the year 2000. If the current rate of approximately 3.7 percent, according to the 2019 UN World Population Prospects, is sustained over time, the population will double in less than 20 years. High fertility also results in a high dependency ratio, estimated at 92 in 2016 (UN World Population Prospects, 2019), implying that for every 100 economically active persons, there are 92 dependents. This dependency ratio is markedly high relative to both in the Sub-Saharan Africa and Eastern Africa regions in 2020, which had an average of 82.0 and 80.9 dependency ratios, respectively (UN World Population Prospects, 2019). Uganda remains the country with the second-highest dependency ratio in Eastern Africa, after Somalia.

The window for savings or having a lifecycle income surplus is very limited in Uganda. Estimates suggest a very short window of an income surplus of between 10 12 years that starts at age 42 and ends at age 56, in which a person is earning more income than they consume (see Figure 2d). Given that the life expectancy is estimated at 65 years of age, the window to accumulate wealth for Ugandans remains very small. Uganda fares poorly compared to countries like Ghana and South Africa with a lifecycle surplus of about 27 years that starts at age 33 and ends at age 60 years (National Population Council of Uganda, 2018). Therefore, the urgency to accelerate Uganda's demographic transition is even more pronounced.

FIGURE 2A.
DEMOGRAPHIC TRENDS /
PHASES OF DEMOGRAPHIC TRANSITION 2020
Source: World Bank

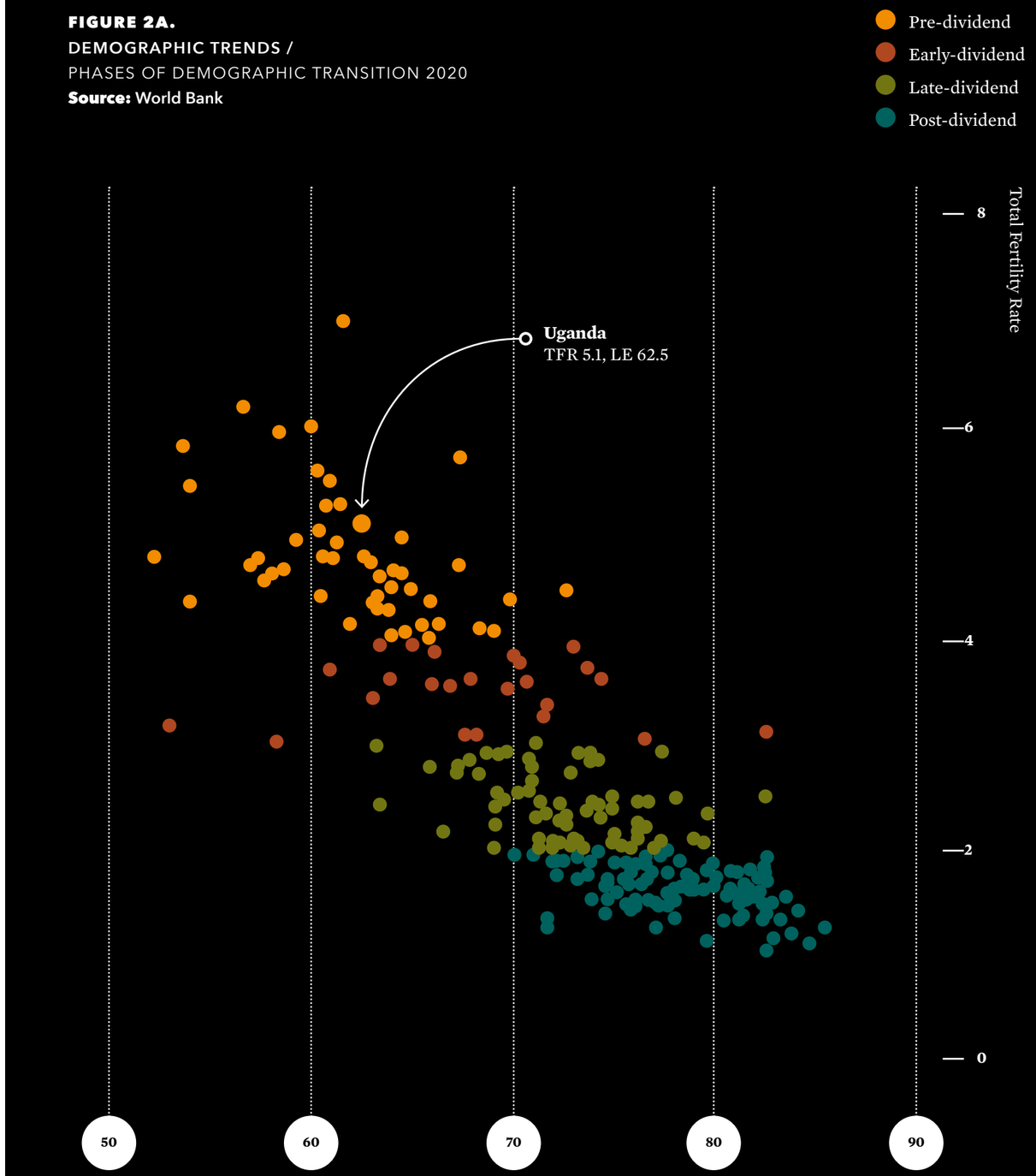


FIGURE 2B.
DEMOGRAPHIC TRENDS /
UGANDA'S DEMOGRAPHIC TRANSITION
Source: UN population Division, World Population Prospects 2019 Revision

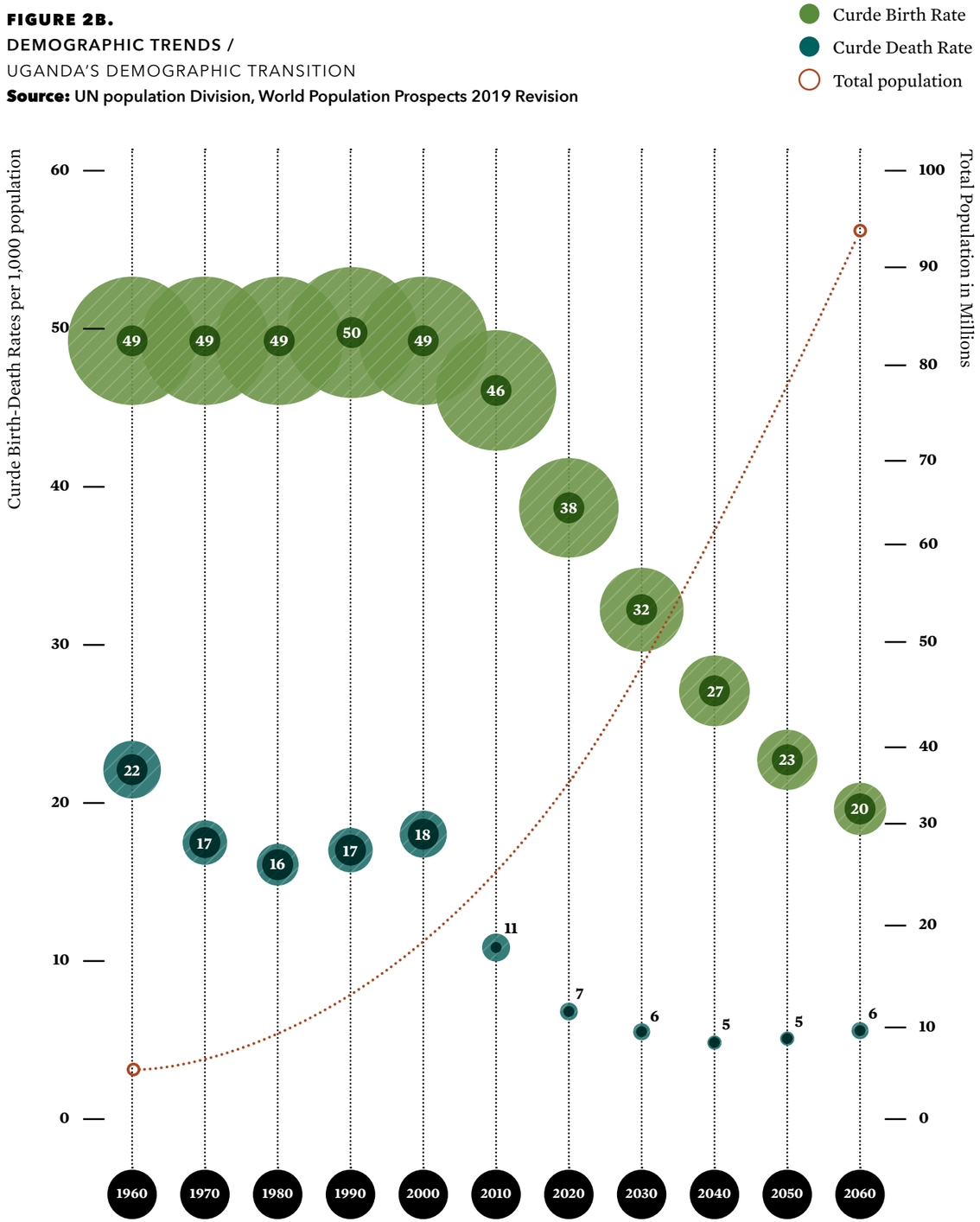


FIGURE 2C.
DEMOGRAPHIC TRENDS /
TOTAL FERTILITY RATE
Source: UN population Division, World Population Prospects 2019 Revision

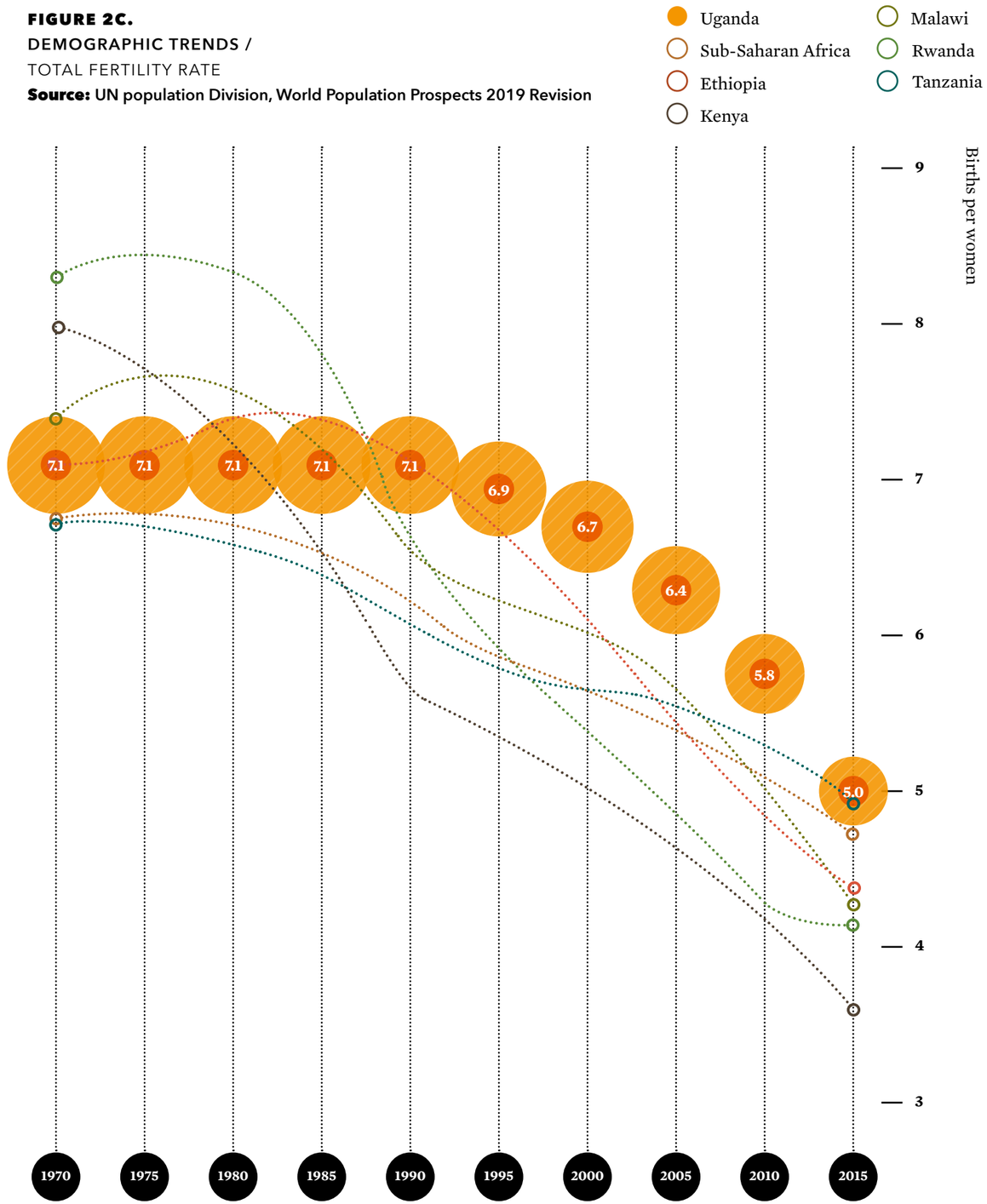


FIGURE 2D.
DEMOGRAPHIC TRENDS /
AGE PROFILE OF PER CAPITA LIFECYCLE DEFICIT:
UGANDA, 2017
Source: UNHS 2012/13 and 2016/17

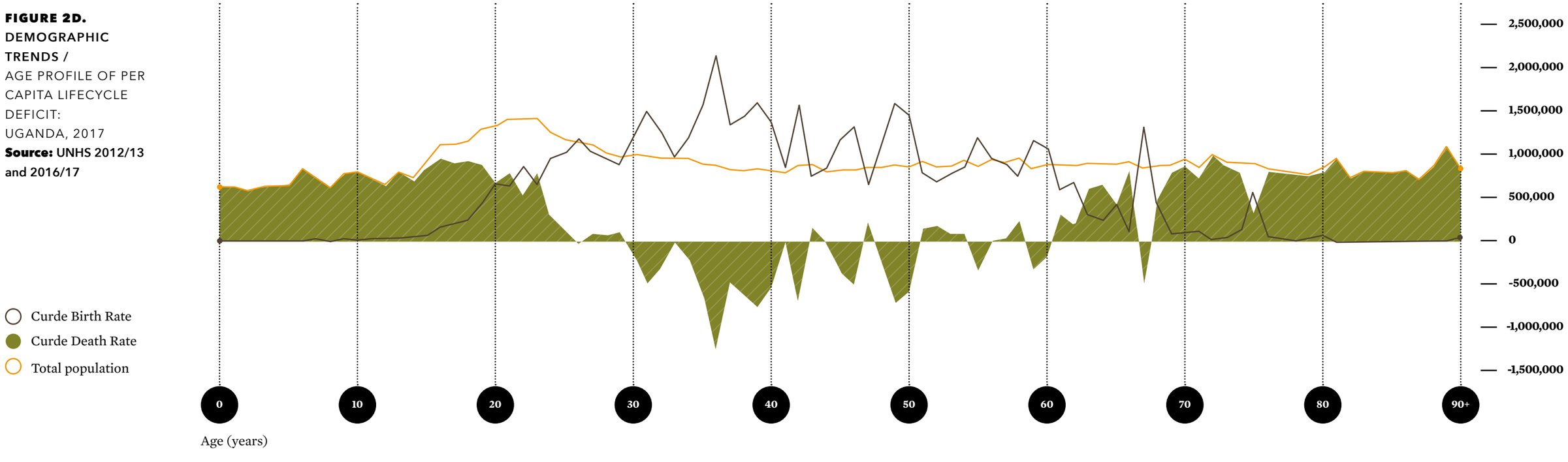
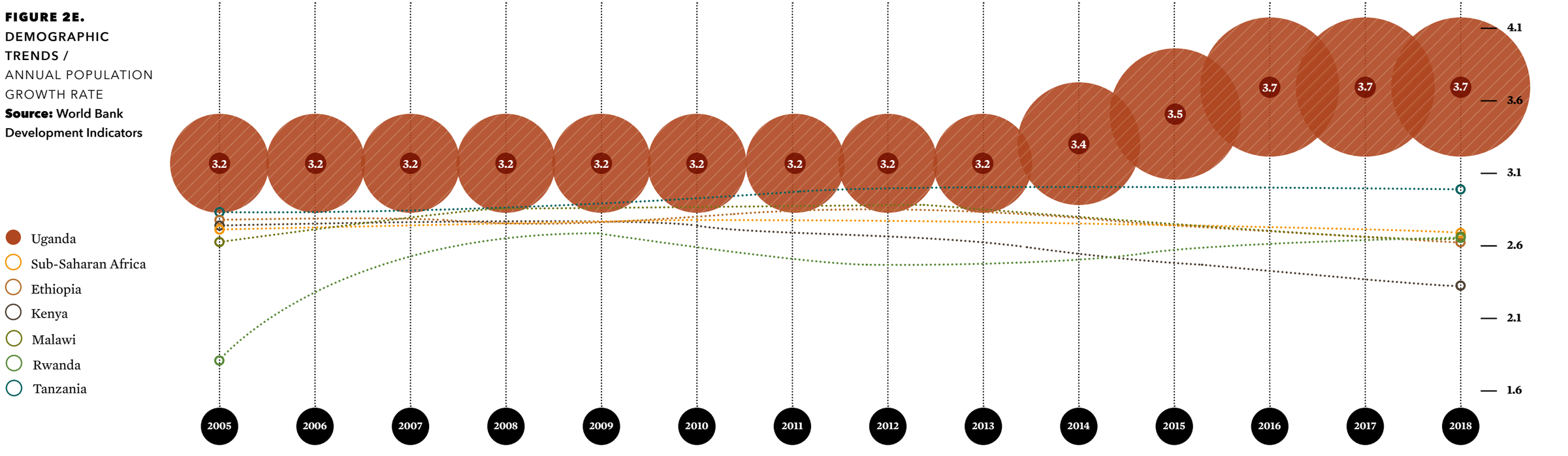


FIGURE 2E.
DEMOGRAPHIC TRENDS /
ANNUAL POPULATION GROWTH RATE
Source: World Bank Development Indicators



B.2.1 DETERMINANTS OF FERTILITY

Both proximal and distal determinants of fertility are highly relevant in Uganda, and both can be affected by policy. Given the crucial role fertility rates play in a country's demographic transition, it is important to understand the different factors that affect Uganda's fertility rate and how they have evolved in recent years. Proximal determinants of fertility are those factors that directly affect fertility, such as the use of contraception, age of first birth, and the intervals between births (Madhavan & Guengant, 2013). Distal determinants of fertility are background characteristics (mainly of the mother and her household) that influence fertility, even if they do not directly affect it (Bongaarts, J. 1978). These include child mortality rates, female education, and socio-economic status and cultural norms (such as early age at marriage). Not surprisingly, the distal and proximal determinants are intertwined. For example, the use of contraception is usually higher for women with higher levels of education and from wealthier backgrounds. Furthermore, the variation along each of these dimensions points to opportunities for policy interventions and programs that can contribute to further reduce fertility in Uganda.

PROXIMAL DETERMINANTS OF FERTILITY

The adoption of modern contraceptives in Uganda has been slow and lags significantly relative to other countries in the region. According to the UDHS 2016, about 35 percent of married women and 47 percent of sexually active unmarried women (ages 15-49 in both cases) use any modern form of contraception in Uganda (UDHS 2016). In the case of married women, this represents a considerable increase since 2000/01, when around only 18 percent reported use. However, unmarried, sexually active women, report the same rate of using modern contraceptive methods as ten years before (2006), at 47 percent (Figure 3a). Access to modern contraceptives, rather than knowledge of, seems to be the issue: while knowledge is largely universal, 28 percent of currently married women and 32 percent of sexually active unmarried women have an *unmet need* for family planning. Similarly, close to 60 percent of women in the reproductive age group reported at least one problem in accessing healthcare for themselves.

Moreover, only 5 percent of public and private healthcare providers in Uganda provide adolescent and youth-friendly sexual and reproductive services, which contributes to the high teenage pregnancy rate, an important determining factor of the overall high fertility.

The relatively wide gap between desired fertility and observed fertility highlights the limited access to family planning. On average, all Ugandan women between the ages of 15 and 49 still have one more child than what they report as their ideal family size. The total wanted fertility rate in Uganda declined slightly from 5.3 children in 2000/01 to 5.1 children in 2006, to 4.7 children in 2011, and then to 4.3 children in 2016. In the same period, the gap between wanted and actual fertility was stable at 1.5 to 1.6 in 2000/01, 2006, and 2011 before decreasing to 1.1 in 2016 (Figure 3b).[7] Rural areas show much greater observed and wanted fertility rates, 5.9 and 4.6 respectively, while urban areas exhibit a significantly lower desired and observed birth rates (4.0 observed and 3.4 wanted in urban), as well as a lower gap of only 0.6 births (UDHS 2016).

As expected, disparities in the use of modern contraception exist between different groups of women. For example, among currently married women, the use of modern contraception is higher for those in urban areas (41 percent) than for those in rural areas (33 percent). While this is partly explained by the gap in the availability of health services between rural and urban areas in Uganda, it also demonstrates how distal factors influence fertility. Among all women of different education levels, those who are married and those who are sexually active but unmarried tend to have a comparable need for family planning services (around half of women), the higher a woman's education level, the more likely her family planning needs are met with modern contraceptive methods. About 21 percent of all women with no education have their family planning needs met with modern methods whereas 34 percent of women with more than a secondary education do (Figure 3c). This suggests that education may play an important role in the ability of women to meet their family planning needs.

The median age of the mother at her first birth also affects fertility because it widens the window for childbearing years and the number of children a woman will ultimately have. Currently, it stands at 19.2 years in Uganda, one of the lowest in the world (UBOS and ICF, 2018). As of 2016, one quarter (25 percent) of Ugandan women age 15-19 had begun childbearing, just a small decline from 31 percent in 2000/01. While the age-specific fertility rate in Uganda peaks among women who are 20 to 24 years old at 260 births per 1,000 women (Figure 3d), it picks up even around age 15 to 19, with 132 births per 1,000 women within those ages.[8] In comparison, in 2016, the adolescent fertility rate per 1,000 women (for girls ages 15 to 19) was 123 births in Zambia, 119 births in Tanzania, 77 births in Kenya, 69 births in Ethiopia, and only 39 births in Rwanda. Among Uganda's peer countries, only Malawi was higher at 135 births per 1,000 women ages 15 to 19 (Figure 3e).[9] This is associated with the high rate of early marriage, as the average age at first marriage stood at about 20 years old in 2011 (World Bank, 2019). Similarly, in 2020, the age-specific fertility rate for females aged 15 to 24 in Uganda stood at approximately 119, well above the average for Sub-Saharan Africa was 104 (UN World Population Prospects 2019).

The birth interval between children also affects a woman's total fertility rate and as of 2016, the median interval was 31.9 months for Ugandan women. This median birth interval is just a small increase over the median interval of 29.2 months in 2000/01, demonstrating little change in the last sixteen years. Birth intervals increase with the mother's age – the median birth interval among women ages 40-49 (38.6 months) is 14.4 months longer than the interval among women ages 15-19 (24.2 months). There is also significant variation in birth intervals by the area of residence, with the median birth interval in urban areas being 5.1 months longer than that of rural areas (36.2 versus 31.1 months). This partly explains why the birth interval is such an important factor in a woman's total fertility rate.

Given that reducing fertility is a necessary condition to materialize the opportunities presented by a demographic transition, ensuring that women have access to modern contraception methods, while also finding ways to support their consistent use, can advance in making this a reality. A greater level of access to family planning methods can be attained by expanding reproductive health/family planning programs available at the moment, accompanied by information campaigns, following the example of countries in the region like Kenya and Ethiopia. Differences in terms of access and use underscore the need for targeted support for vulnerable women belonging to households in the lower end of the income distribution and residing in rural areas. In terms of consistent use, Uganda's contraceptive discontinuation rate[10] is very high, standing at about 45 percent for all methods.

7. This gap is analogous to the difference in mean ideal family size between married men and women, who were 15 to 49 years old, where married men report wanting 6 children while married women report desiring on average 5.1 children (DHS, 2016).

8. Age-specific fertility rates are calculated for the 3 years prior to the survey based on women's birth histories. The total fertility rate is the number of children a woman would have by the end of her childbearing years if she had children at the contemporaneous age-specific fertility rates.

9. World Development Indicators.

10. The contraceptive discontinuation rate is defined as the percentage of contraceptive use episodes discontinued within 12 months. This is usually measured for women 15 to 49 years old, with episodes of contraceptive use counted for each woman in the 5 years preceding the survey. Therefore, each woman can have more than one contraceptive use episode (DHS, 2016).

This highlights the importance of counseling and information needs for Ugandan women to maintain the use of these methods. Both the access to modern methods and support on how to effectively use these methods can primarily support adolescent girls, which will help to delay childbearing and increase the intervals between births.

FIGURE 3A.
ACCESS AND USE OF CONTRACEPTION, FERTILITY TRENDS /
PERCENTAGE OF SEXUALLY ACTIVE, AGE 15-49, WOMEN CURRENTLY USING A MODERN CONTRACEPTIVE METHOD
Source: World Bank

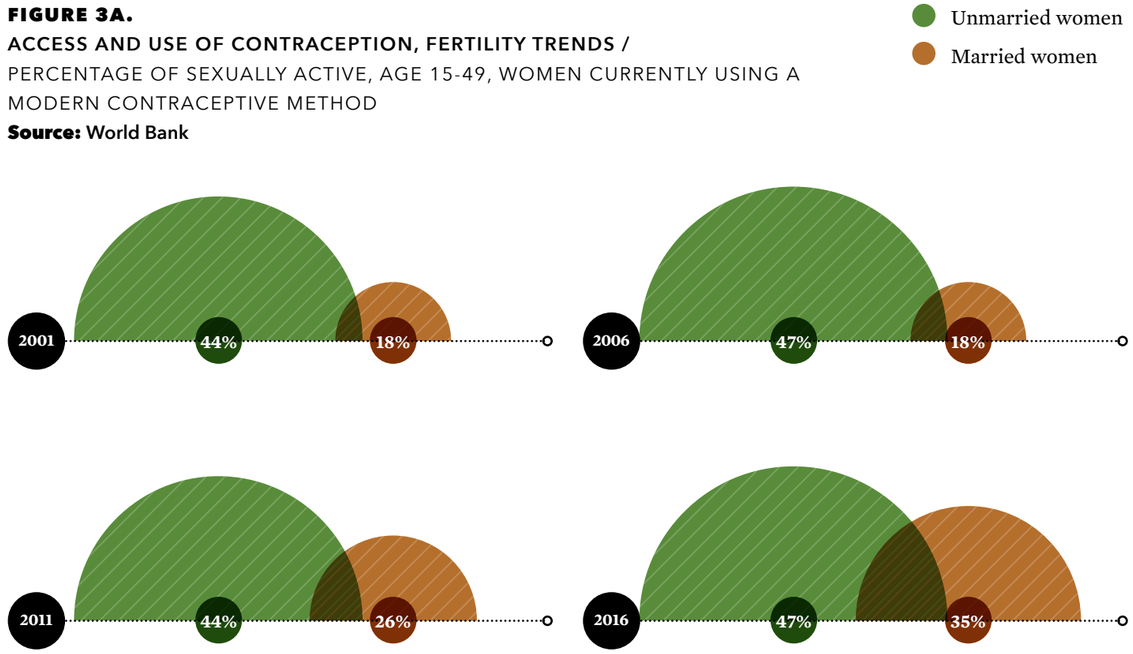


FIGURE 3B.
ACCESS AND USE OF CONTRACEPTION, FERTILITY TRENDS /
OBSERVED AND DESIRED FERTILITY OVER TIME FOR ALL WOMEN AGE 15-49
Source: World Bank

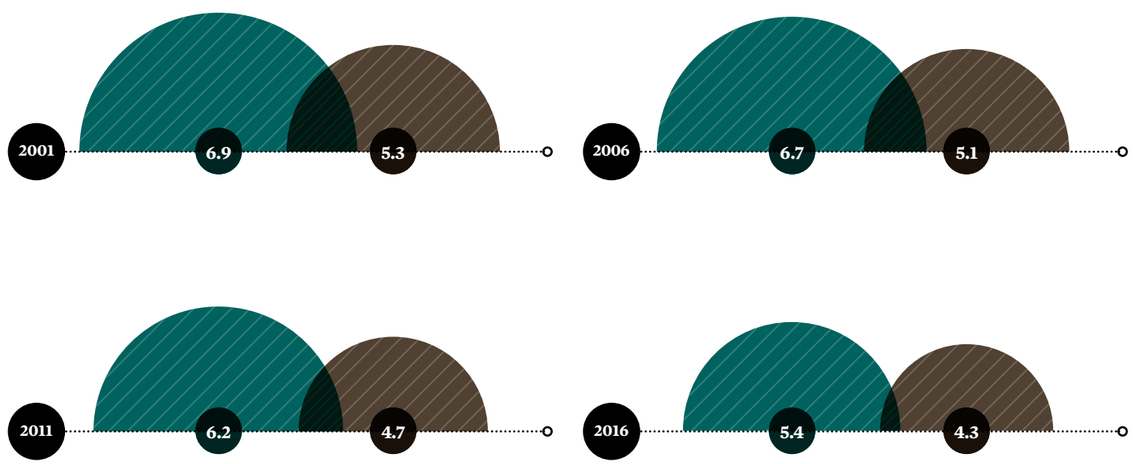


FIGURE 3C. ACCESS AND USE OF CONTRACEPTION, FERTILITY TRENDS / NEED AND USE OF MODERN CONTRACEPTION BY EDUCATION AMONG WOMEN AGE 15-49 **Source:** World Bank

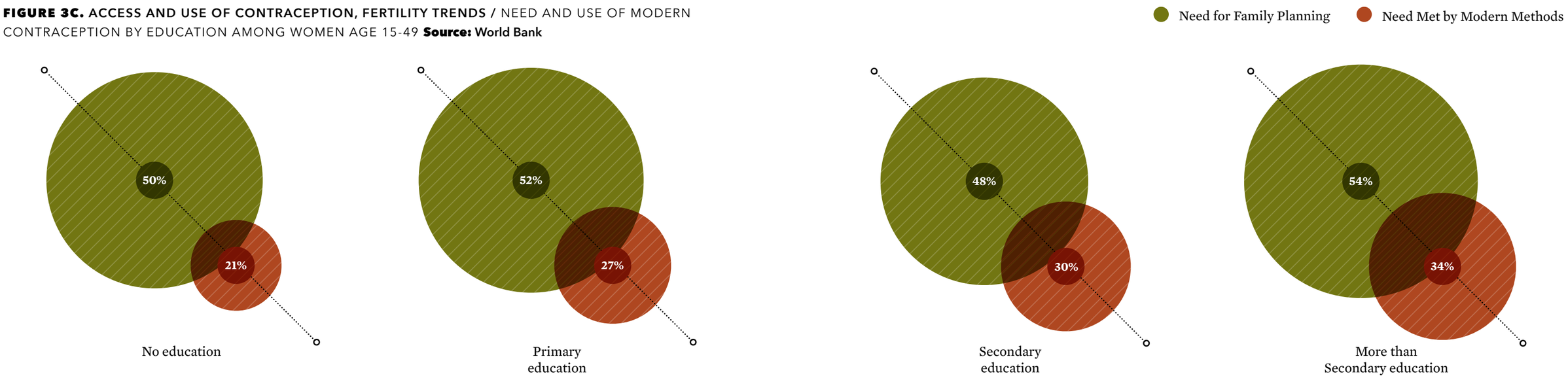


FIGURE 3D.
ACCESS AND USE OF CONTRACEPTION, FERTILITY TRENDS / URBAN AND RURAL AGE-SPECIFIC FERTILITY RATES OF WOMEN AGE 15-49
Source: UDHS 2016

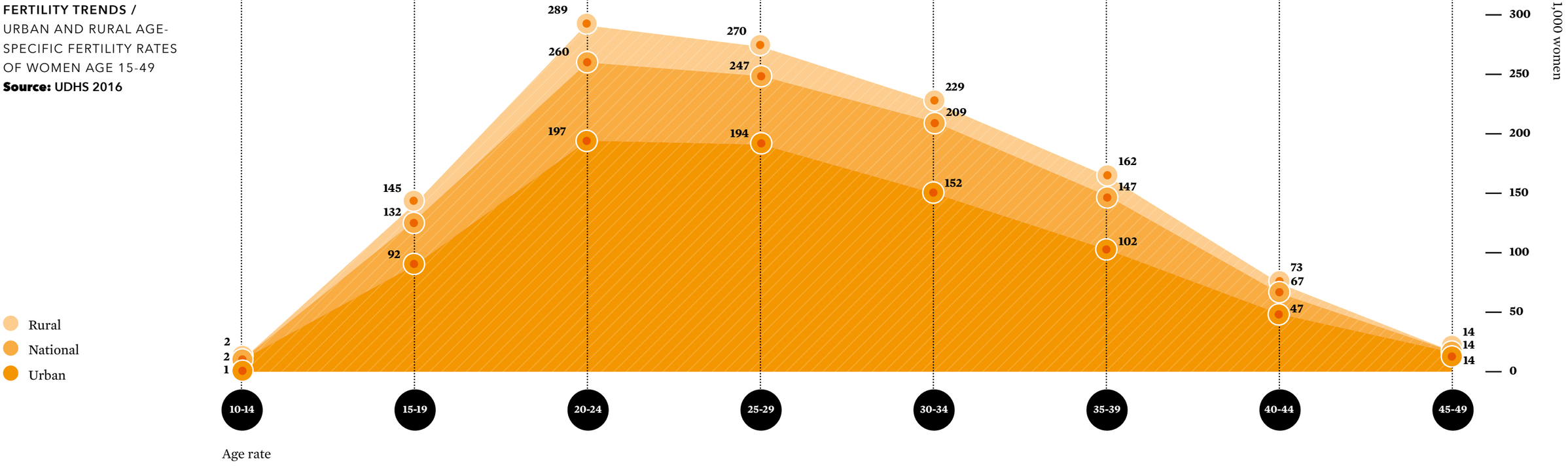
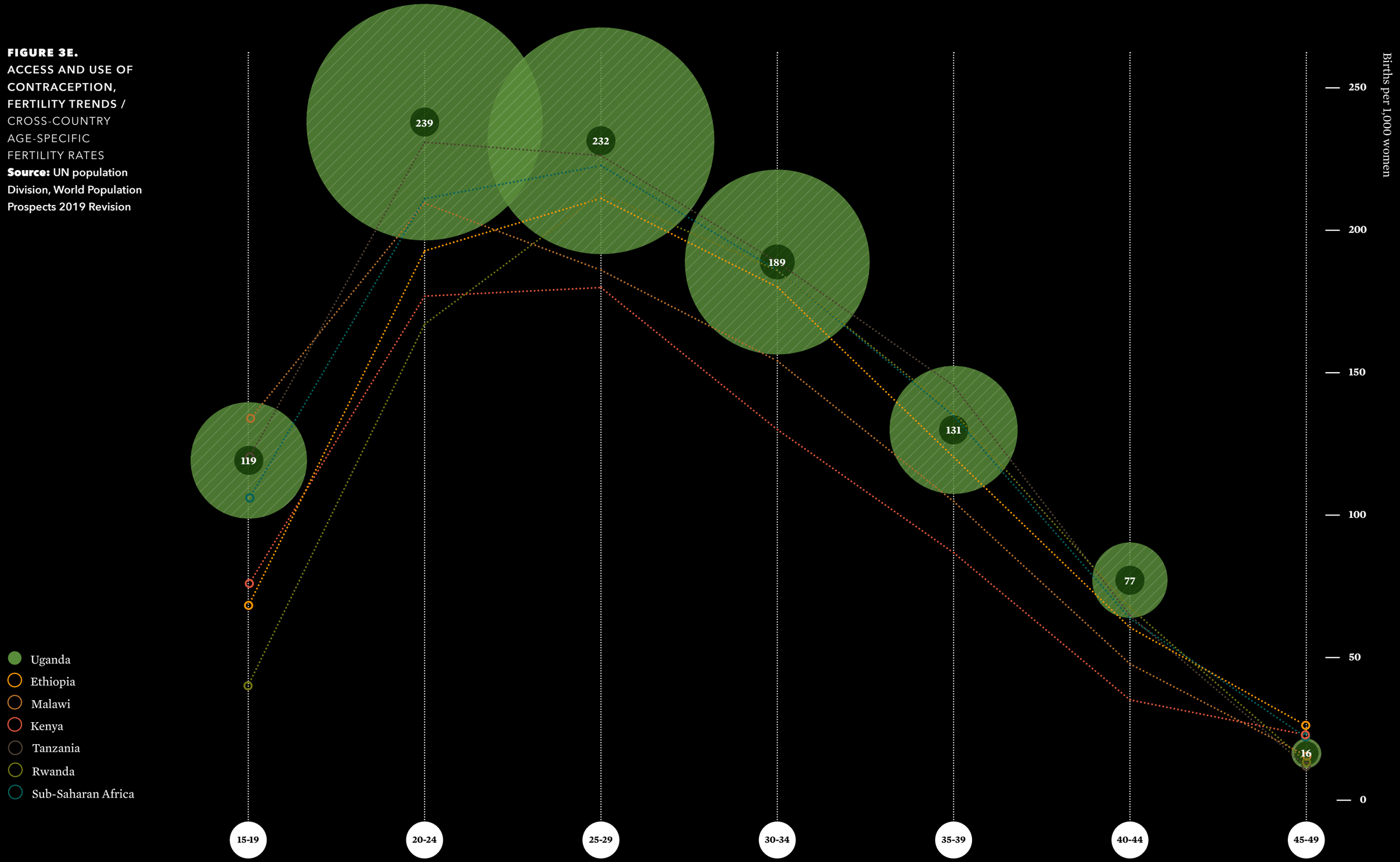


FIGURE 3E.
ACCESS AND USE OF CONTRACEPTION, FERTILITY TRENDS / CROSS-COUNTRY AGE-SPECIFIC FERTILITY RATES
Source: UN population Division, World Population Prospects 2019 Revision



DISTAL DETERMINANTS OF FERTILITY

While the under-five child mortality rate in Uganda has dropped, over six percent of Ugandan children still do not reach their fifth birthday. The under-five child mortality rate is a distal determinant of fertility as evidence suggests that families have more children when they expect that some proportion of their children may not survive into adulthood (Canning et al., 2015). As of 2018, infant mortality in Uganda was 34 deaths per 1,000 live births, a 61 percent decline from 88 deaths per 1,000 live births in 2000/01. In 2018, the under-five mortality was 46 deaths per 1,000 live births, an even more pronounced decline from 148 deaths per 1,000 live births in 2000/01. However, at these levels and despite the remarkable progress, 1 in 30 Ugandan children still dies before reaching his or her first birthday, and 1 in 21 does not survive until his or her fifth birthday (Figure 4a). Uganda can continue efforts to lower the mortality rates for children under the age of five, as this would allow couples to plan fewer births and properly invest in children who have a much greater likelihood of surviving, reducing the total fertility rate and positively contributing to a demographic dividend.

Higher levels of female education are consistently associated with lower fertility rates in Uganda. As of 2016, women with no education had the highest total fertility rate (6.4 births per woman), while women with higher education had the lowest fertility rate (3.6 births per woman) (Figure 4b). As mentioned above, this can be elucidated in the relationship between female education and many of the proximal determinants of fertility. More educated women, not only have lower family size preferences, but also on average have greater knowledge and access to modern contraceptive methods and use these to delay childbearing as the time-cost associated with raising children is high relative to less educated women (Canning et al., 2015; Global Monitoring Report 2015/2016). In 2016, among all sexually active Ugandan women with no education, only 42 percent had their family planning needs satisfied by modern methods, compared to 63 percent of Ugandan women who were highly educated (DHS 2016). Similarly, more years in school can delay the age at which a woman gets married and begins childbearing. Among women ages 25-49, the reported median age at first birth increases from 18.3 years among women with no education to 24.4 years among those with more than a secondary-level education (in 2016) (DHS 2016).

Socio-economic conditions at the household level are strongly correlated with differences in fertility rates. Fertility rates at the lowest wealth quintile are almost two times higher than those at the highest wealth quintile – 7.1 children versus 3.8 children (DHS 2016). This is related to the fact that modern family planning method needs are satisfied 39 percent of the time for women in the lowest quintile, while this need is met for more than half of the women in the highest wealth quintile (Figure 4c).

Similarly, the area of residence (rural versus urban, and region) is also correlated with differing levels of fertility. As expected, rural areas show greater observed and wanted fertility rates compared to urban areas, 5.9 and 4.6 versus 4.0 and 3.4 respectively, – a difference of almost two children (Figure 4d). Together with lower access to healthcare services and family planning as well as lower socioeconomic levels, persistently higher child marriage rates in rural areas contribute to higher fertility rates. Around 27 percent of women ages 15-19 in rural areas have begun childbearing, as compared with 19 percent of young women in urban areas. At the same time, the TFR ranges from a low of 3.5 children per woman in the Kampala region to a high of 7.9 children per woman in the Karamoja region (DHS 2016).

While improvements in child mortality, female education, and the income-generating ability of women are worthy goals in themselves, they are also critical in realizing the potential benefits of demographic transitions. Uganda can sustain the progress made in reducing child mortality by continuing to invest in programs that reduce morbidity and malnutrition, and by investing in high-quality health care services. As discussed, the improved survival of children allows households to attain their desired family size easier, contributing to a reduction in fertility. Similarly, enhancing the educational opportunities for adolescent girls is crucial, as this delays childbearing and promotes higher rates of modern contraceptive use. Particularly important is ensuring the completion of at least the first cycle of secondary education, which requires raising the quality of education at the primary level and promoting the transition into secondary education. Enhancing productive and economic opportunities for young women will also contribute to lower fertility, as this delays the age of marriage and childbearing, and empowers women in terms of their reproductive decisions. Likewise, as mentioned by Shneidman et al. (2016), a shift in social norms that are limiting gender equality in Uganda is a longer-term necessary change that relates to all of the above distal determinants.

FIGURE 4A. RELATIONSHIP BETWEEN FERTILITY AND DISTAL DETERMINANTS OF FERTILITY / CHILD MORTALITY RATES OVER TIME
Source: World Bank Development Indicators

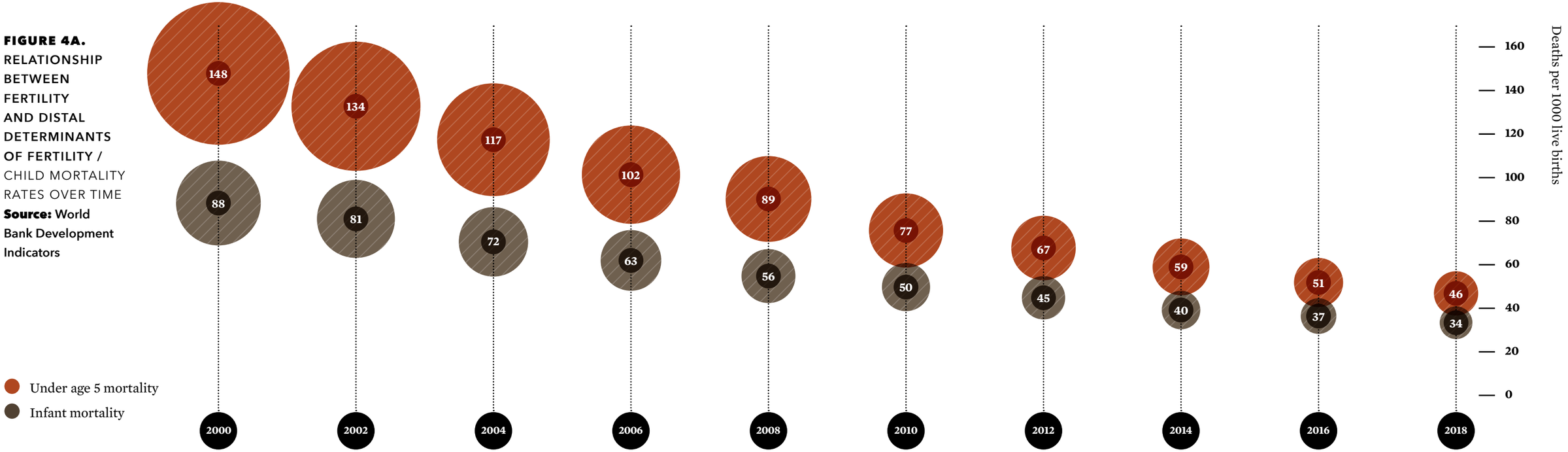


FIGURE 4B.
RELATIONSHIP BETWEEN FERTILITY AND DISTAL DETERMINANTS OF FERTILITY / OBSERVED AND DESIRED FERTILITY BY EDUCATION
Source: World Bank

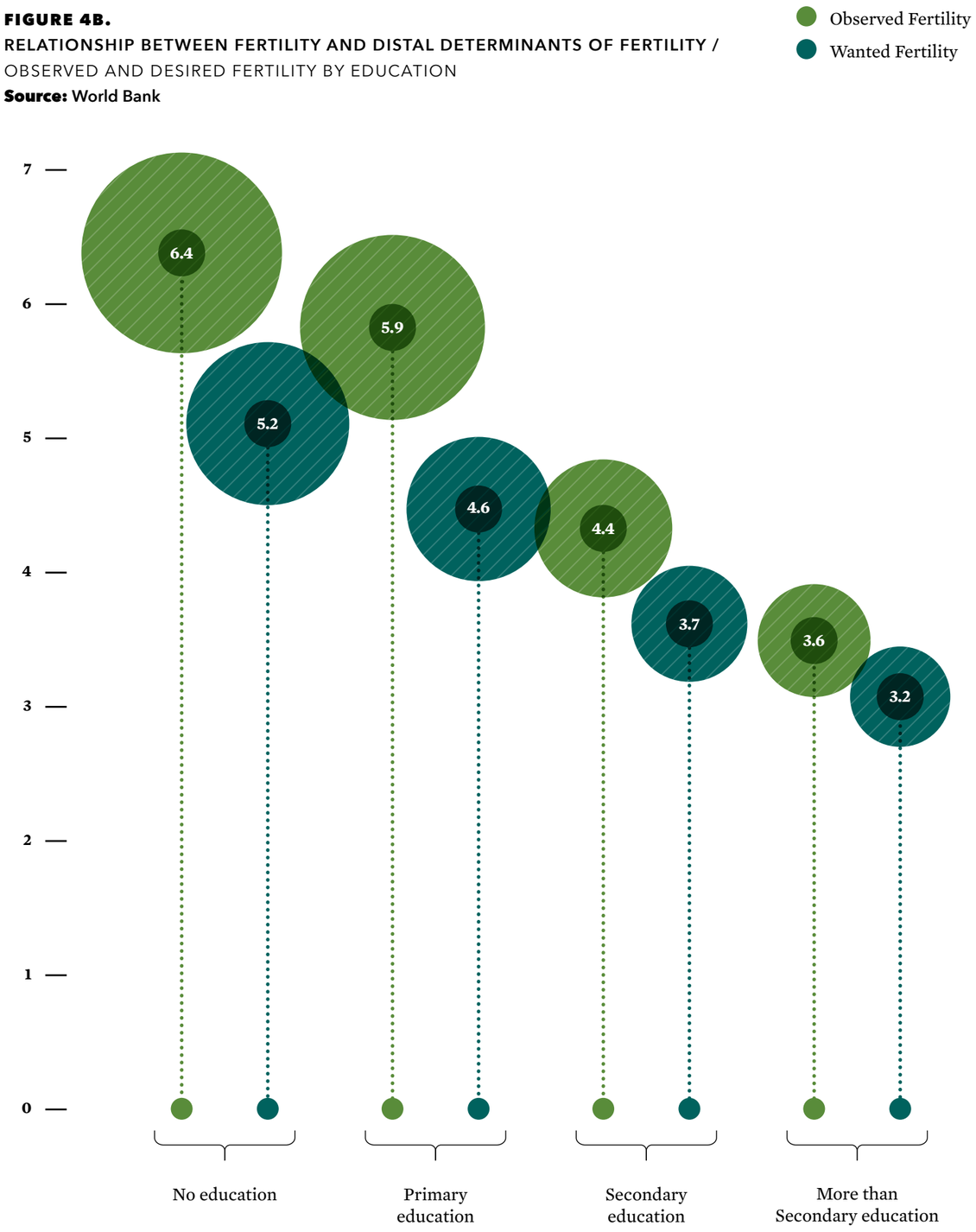


FIGURE 4C.
RELATIONSHIP BETWEEN FERTILITY AND DISTAL DETERMINANTS OF FERTILITY / CORRELATION BETWEEN DEMAND FOR FAMILY PLANNING AND WEALTH QUINTILE
Source: World Bank

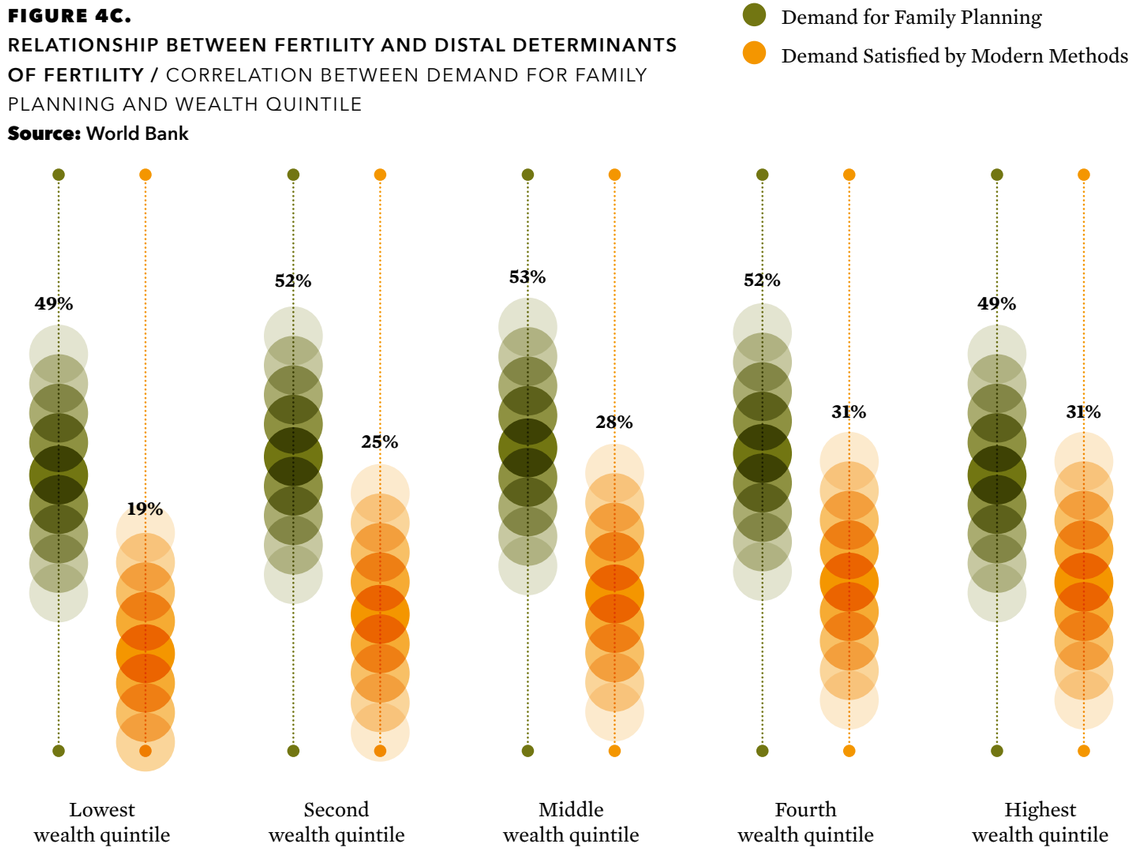
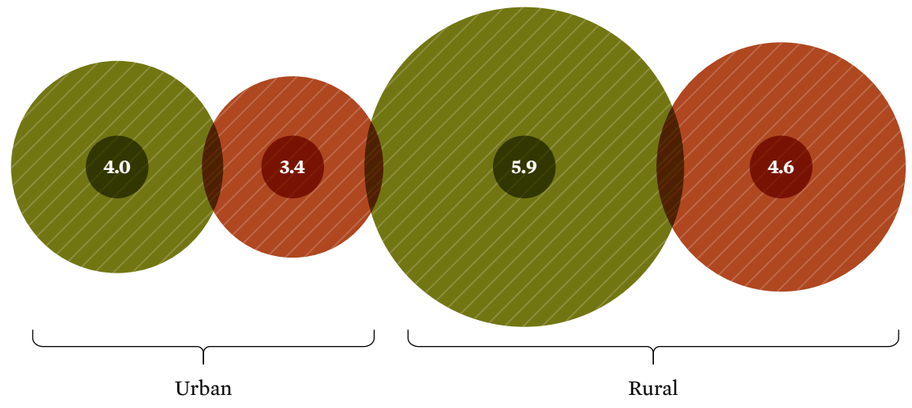
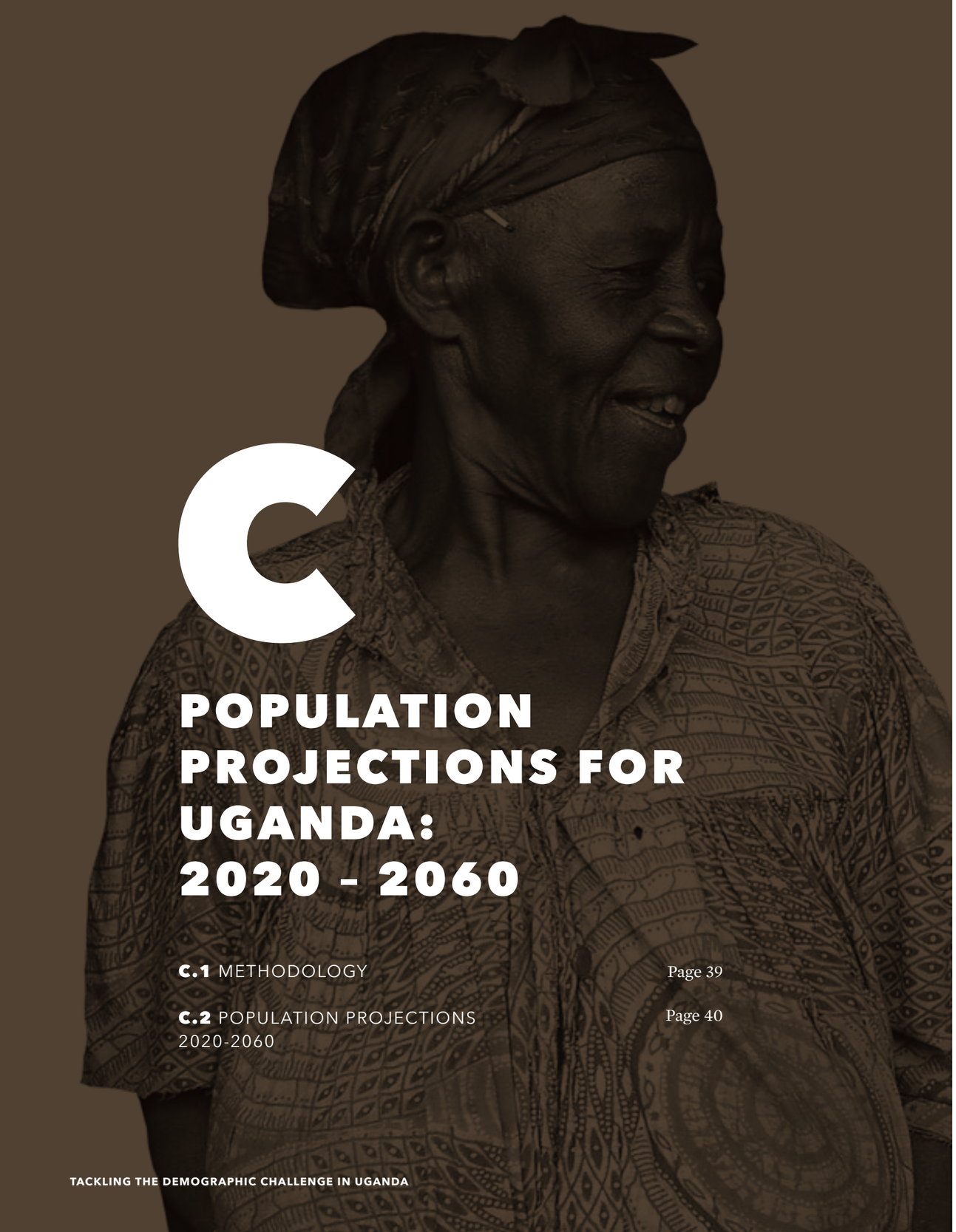


FIGURE 4D.
RELATIONSHIP BETWEEN FERTILITY AND DISTAL DETERMINANTS OF FERTILITY / OBSERVED AND DESIRED FERTILITY BY URBAN STATUS
Source: UDHS 2016





C

POPULATION PROJECTIONS FOR UGANDA: 2020 - 2060

C.1 METHODOLOGY Page 39

C.2 POPULATION PROJECTIONS 2020-2060 Page 40

C.1 METHODOLOGY

This study is based on the UN Population projections for the period 2020-2060. The population projections that are used to quantify the challenge in terms of service delivery and fiscal effort that Uganda faces over the next 40 years are based on the World Population Prospects 2019, produced by the UN Department of Economic and Social Affairs, Population Dynamics.[11] These projections are constructed using all available sources of data on population size and levels of fertility, mortality, and international migration for Uganda. They use parametric functions to model the demographic change (Wilmoth, 2015), and the parameters are modeled using a Bayesian Hierarchical model that draws information from other countries to estimate parameters distributed around the world average.[12] The projections cover different scenarios, with varying assumptions on fertility, mortality, and migration. The most widely recognized is the *medium-variant projection*, which corresponds to the median of several thousand distinct trajectories of each demographic component. The method considers the experience of each country, while also reflecting uncertainty about future changes based on the past experience of other countries under similar conditions (United Nations, World Population Prospects, 2019).[13]

We focus on the medium and low-variant scenarios of the population (and population density) projections. In addition to the medium-variant projection, which is the most likely scenario based on Uganda's historic trends as well as the experience of countries with similar demographic and socioeconomic traits, there are four additional fertility variants: low, high, constant-fertility and instant-replacement-fertility.[14] In all of them, mortality and migration assumptions remain constant while the fertility assumption varies. For this study, in addition to the medium-variant projection, we focus on the *low-variant projection*, which assumes that total fertility is projected to remain 0.5 births below the total fertility in the medium-variant. The low fertility scenario implies an additional effort in terms of fertility reduction that results in lower population growth rates (when compared to the medium-variant), but still a feasible endeavor if multi-sectoral policies (including the education, health, and social protection sectors, among others) are implemented (UNICEF, 2020), addressing the factors that influence fertility rates as discussed in Chapter 2.

Age-specific, as well as urban and rural population projections, were adapted or developed for the purposed of the study. Based on the age-specific (for every 1-year group from 0 to 100) projections of the medium-variant, we were able to generate the equivalent for the low-variant. Age-specific population projections are needed to estimate the demographic challenge in terms of service delivery and investment in the education and health sectors, analyzed in Chapter 4. Similarly, the total population projections for both variants were combined with the projections of the World Urbanization Prospects 2018, also produced by the UN Department of Economic and Social Affairs, Population Division, to compute total population projections for urban and rural areas for the period 2020-2060.[15] These are key when assessing the challenge of the demographic trajectory of the country in terms of infrastructure investments, as discussed in Chapter 4.

11. The information is publicly available at https://population.un.org/wpp/.

12. That is why in the case of Uganda, the projections differs from those of the Uganda Bureau of Statistics (UBOS) - https://www.ubos.org/explore-statistics/20/.

13. In other words, the projections consider the trajectory of access and use to family planning and reproductive health services observed in country in recent years as well as that of countries with similar conditions.

14. Constant and instant-replacement-fertility are very unlikely scenarios. Also, we discard focusing on the high fertility variant in order to simply the fiscal and physical requirement projections.

15. More specifically, the urbanization rate projected in the World Urbanization Prospects 2018 for the period 2020-2060 were used to derive total population projections for urban and rural areas in Uganda. This implies that the urbanization rate is constant across the medium and low-variants.

C.2
POPULATION PROJECTIONS 2020-2060

According to the projections, the population of Uganda will double by the year 2060. Under both of the scenarios considered (medium and low-variants), the population will increase two-fold over the next 40 years. While there are currently around 46 million Ugandans in the country, by 2060, this number is expected to increase to 104 million under the medium-variant, and to 90 million under the low-variant (Figure 5a). Considering that coverage and access to basic public services remain very low in Uganda, this portends critical challenges to the development path of the country in the medium-term. The projections assume that population growth rates will slow significantly over the next few years. More specifically, it is estimated to reach its peak in 2020, at around 3.6 percent, and then decline subsequently: reaching a rate in 2060 of 1.3 percent in the medium-variant and less than 1 percent under the low-variant (Figure 5b).

Population growth will result in higher levels of population density, and by 2060 about half of the population will reside in urban centers.

As of 2020, Uganda is estimated to have approximately 229 people per square kilometer (km). This will increase to between 456 to 518 people per square km by 2060 (Figure 6a) relative to 2020, a 126 and 97 percent increase under the medium and low-variant projections, respectively. Consistent with the increased population density, a larger number of people will live in urban centers. In 2020, about 34 million people are living in rural areas of the country, while urban centers hold approximately 11 million people, close to 25 percent of the population. According to the projections, by 2060 *close to half of Ugandans* will be residing in urban areas, and the urban population will surpass the rural population. Under the medium-variant estimates, there will be 53 million people in urban areas and 51 million people in rural areas by 2060 (Figure 6b). However, under the low-variant projection, there will be 46 million people in urban areas while 44 million people will be living in rural parts of the country (Figure 6c).

C. POPULATION PROJECTIONS FOR UGANDA: 2020 - 2060

FIGURE 5A.
TOTAL POPULATION TRAJECTORY /
TOTAL POPULATION
Source: UN population Division, World Population Prospects 2019 Revision

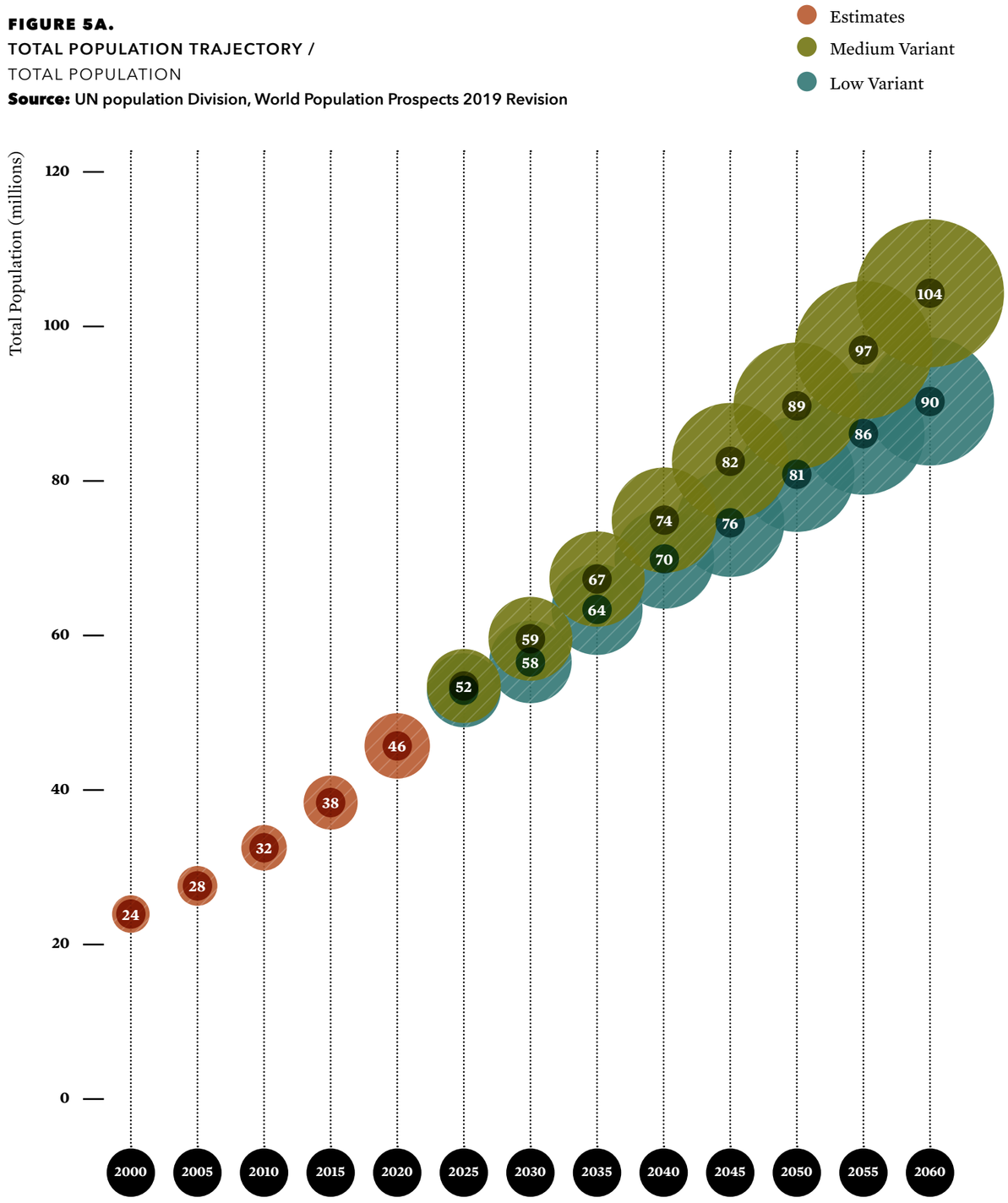


FIGURE 5B.
TOTAL POPULATION TRAJECTORY /
POPULATION GROWTH RATE
Source: UN population Division, World Population Prospects 2019 Revision

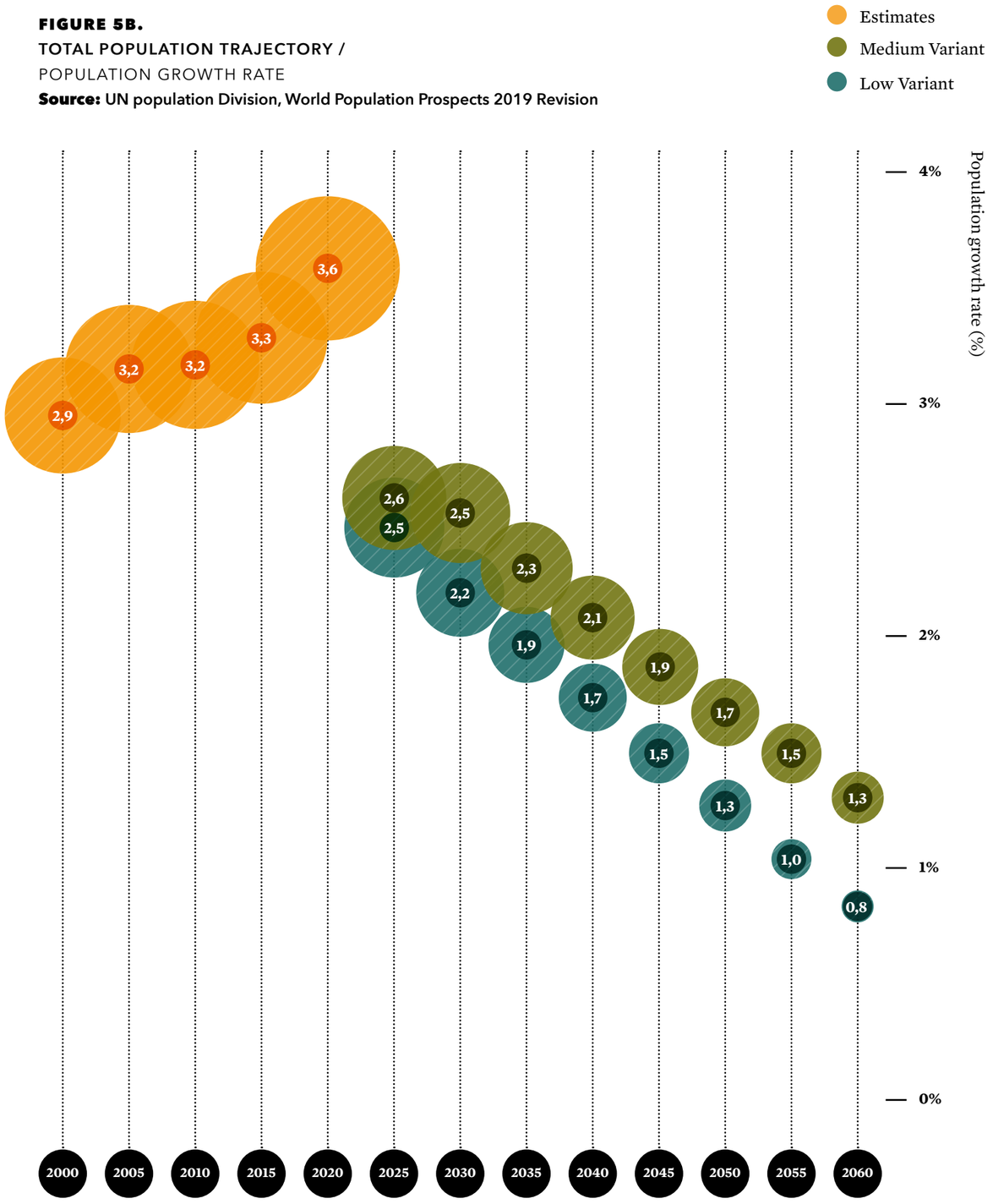


FIGURE 6A.
POPULATION DENSITY AND URBANIZATION /
POPULATION DENSITY
Source: UN population Division, World Population Prospects 2019 Revision

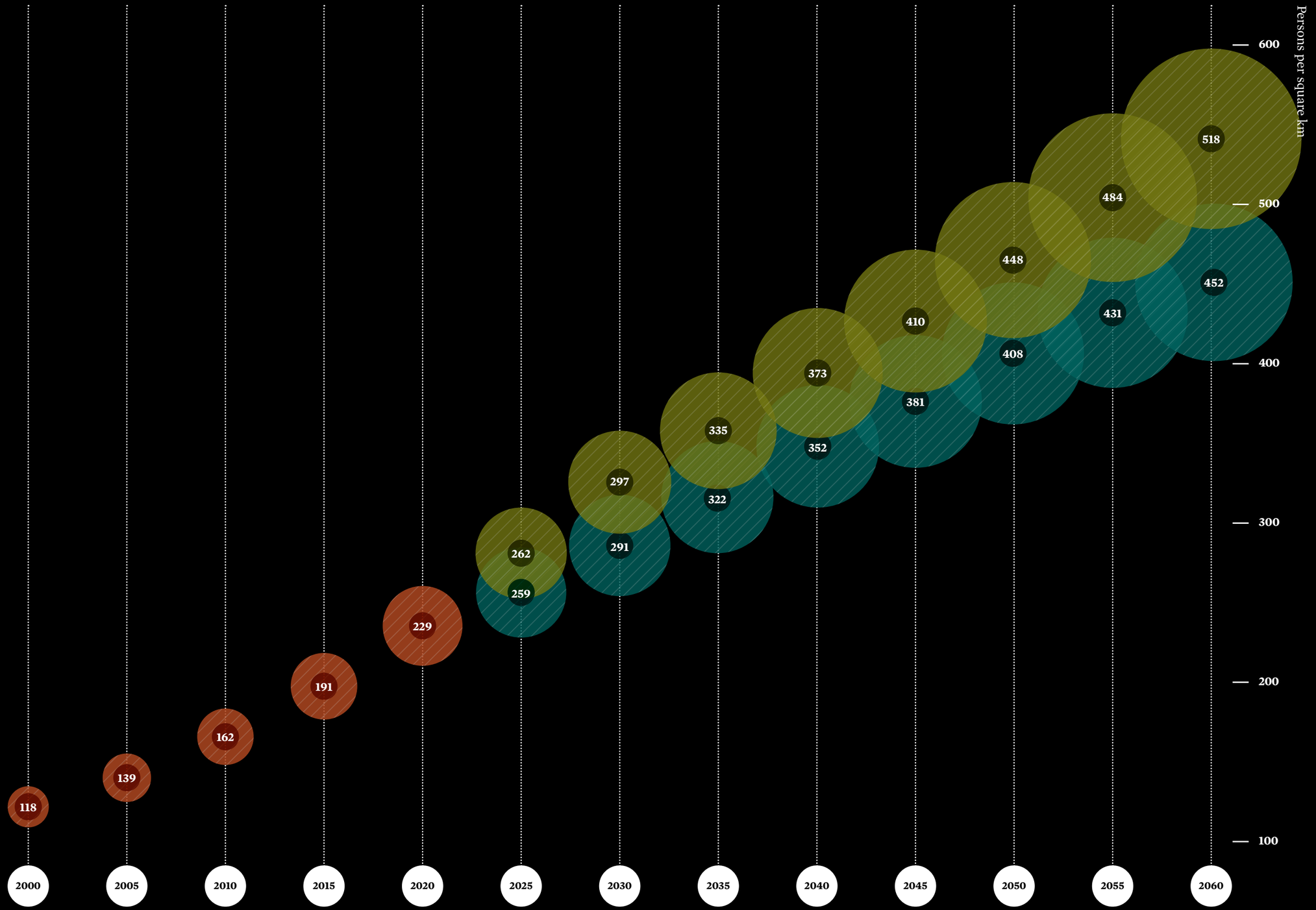


FIGURE 6B.
POPULATION DENSITY AND URBANIZATION /
MEDIUM-FERTILITY VARIANT POPULATION BY LOCATION
Source: UN population Division, World Population Prospects 2019 Revision

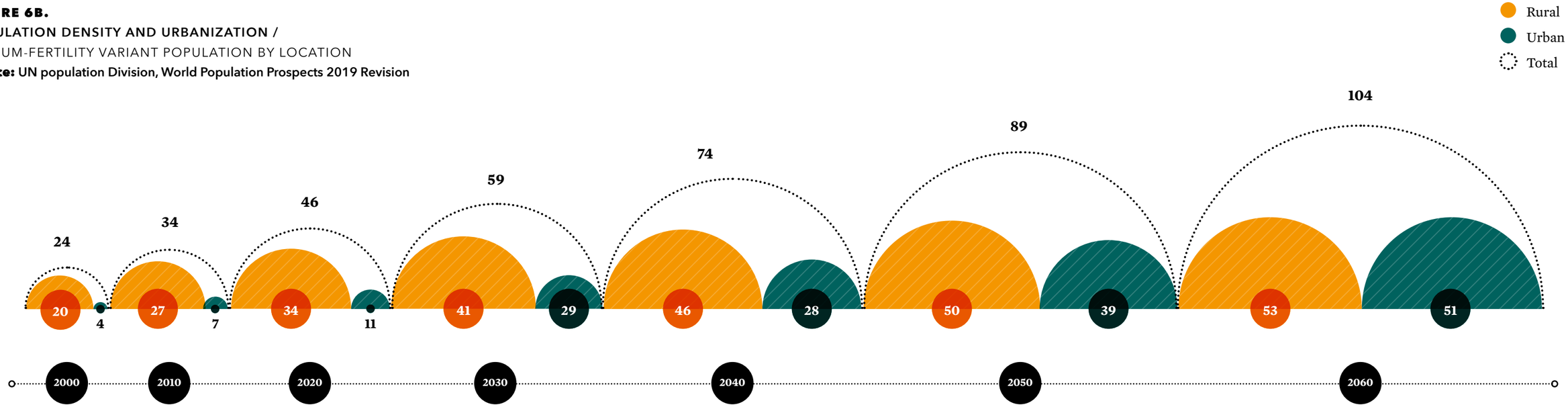
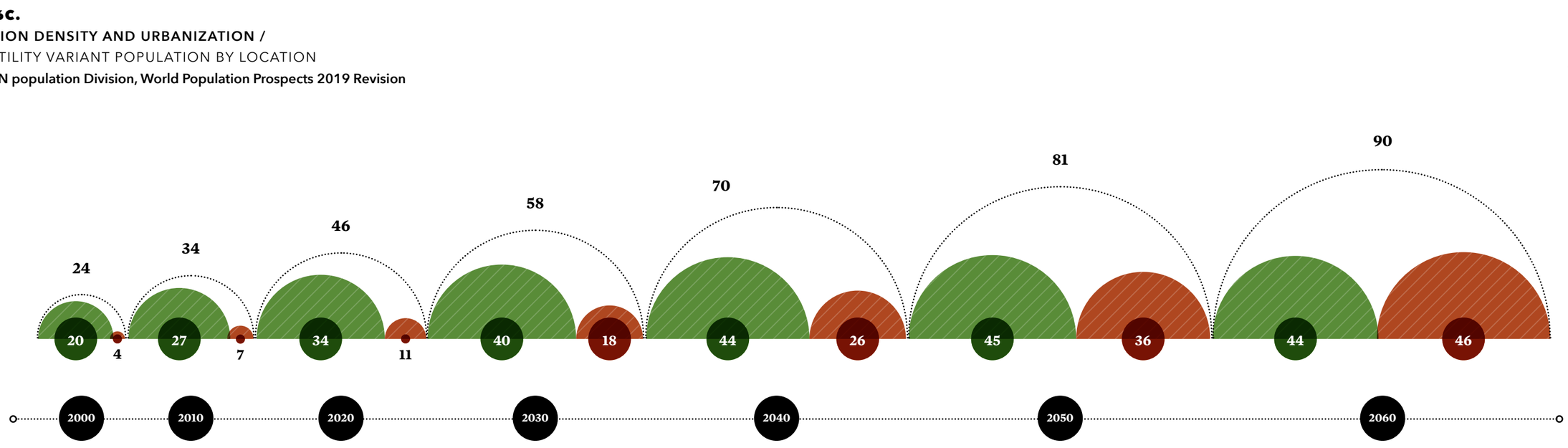


FIGURE 6C.
POPULATION DENSITY AND URBANIZATION /
LOW-FERTILITY VARIANT POPULATION BY LOCATION
Source: UN population Division, World Population Prospects 2019 Revision



The projections point to an increase in the working-age population, with important implications for the economic development of Uganda, as will be analyzed in Chapter 5. The age structure of the country will change dramatically over the next 40 years. The working-age population is set to increase from 24 million in 2020, to 69 and 63 million Ugandans by the year 2060 under the medium and low-variants (Figure 7a and b). At the same time, the youth population (ages 0 to 14 years) is projected to change from 21 million in 2020 to either (i) increase to approximately 29 million by 2060 under the medium-variant projection or (ii) remain at 21 million in 2060 under the low-variant projection. As is well known, a greater number of children are associated with a higher child dependency ratio, which is translated into fewer resources for households for both livelihood and productive purposes. As such, policies that strive to at least constrain the youth (0 to 14 years) population growth to the lower end of the population projections can assist Uganda in deriving a greater economic dividend in the coming years.

Not surprisingly, as life-expectancy rises, under both the medium and low-variants, the age 65+ population is projected to rise by 2060. While the working-age population is projected to increase by a factor of two from 2020 to 2060, the senior population is set to increase by a factor greater than six in that same period.

While the absolute numbers will remain low in 2060, at about 6 million seniors in both the medium and low variants, this could strain the health care system in Uganda as seniors often have higher health care needs.

At the same time, this underlines the importance of a financial system in a position to promote long-term savings, so that seniors can sustain themselves from the income saved and invested during their working-age years (Global Monitoring Report 2015/2016).

The proportion of youth and the elderly will influence the dependency ratio, which will drop considerably in the medium term. As a percentage of the overall population, the age 0 to 14 population will determine the level of support and investments the working-age population must make to provide care for these youth. Under the medium-variant scenario, the proportion of youth in the population falls from 46 to 28 percent from 2020 to 2060 (Figure 7c). However, under the low-variant scenario, this number falls much more significantly—from 46 to 23 percent of the population within the same time (Figure 6d). This seemingly small five percentage point difference between the two projections suggests how an additional effort in reducing fertility can yield benefits in terms of investments in the age 0-to-14 youth population. Additionally, by 2060, the dependency ratios will differ considerably under the two fertility scenarios: 49.9 under the medium-variant and 42.6 under the low-variant scenario (Figure 7e).[16] As discussed previously, a lower dependency ratio boosts household and national income as long the working-age population is engaged in economic activities that provide adequate levels of income.

16. The dependency ratio is calculated by taking the sum of persons in the 65+ and 0-14 age groups and dividing this sum by the number of persons in the age 15-64 working-age population.

FIGURE 7A.
POPULATION PROJECTIONS BY AGE /
MEDIUM-VARIANT POPULATION BY AGE
Source: UN population Division, World Population Prospects 2019 Revision

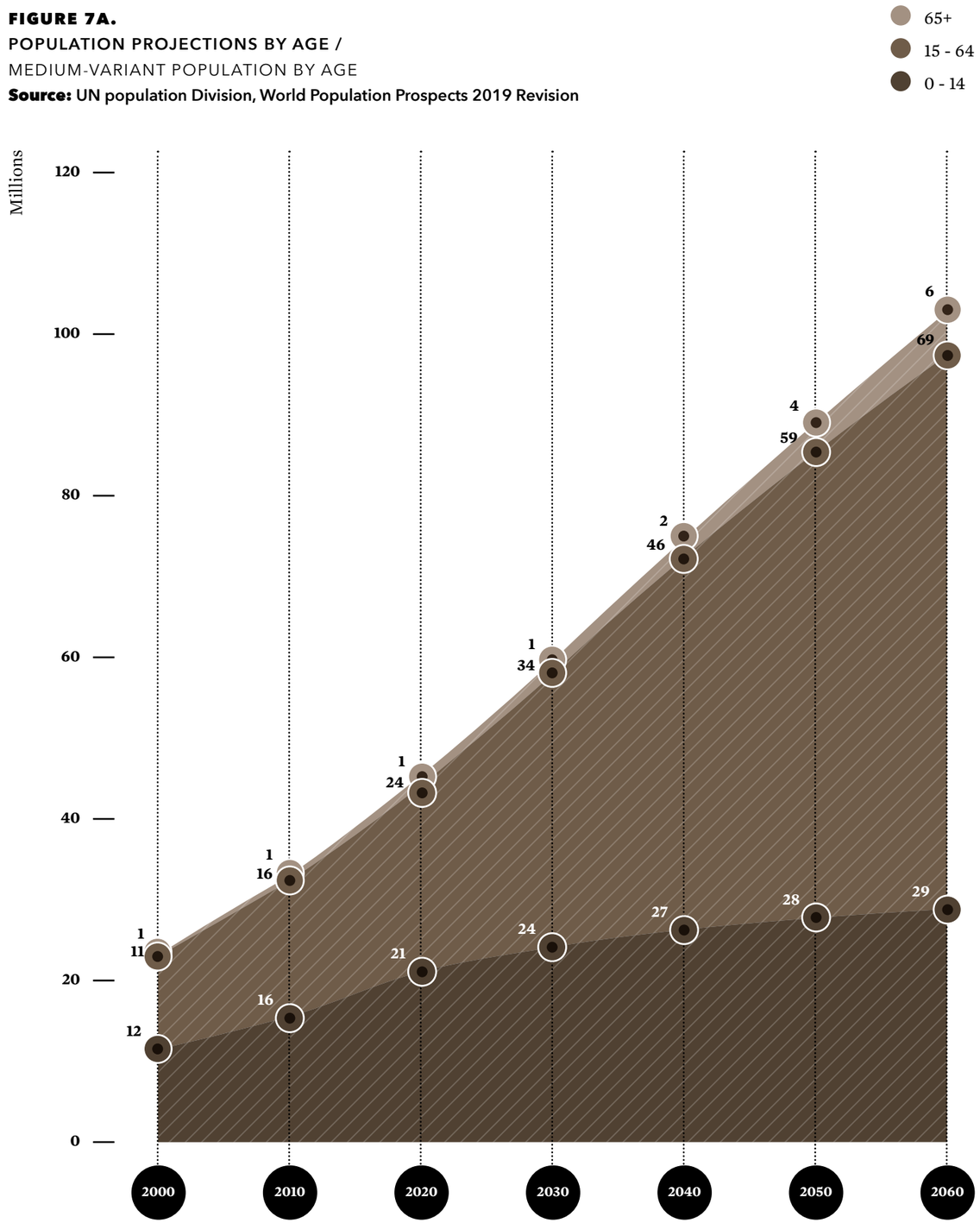
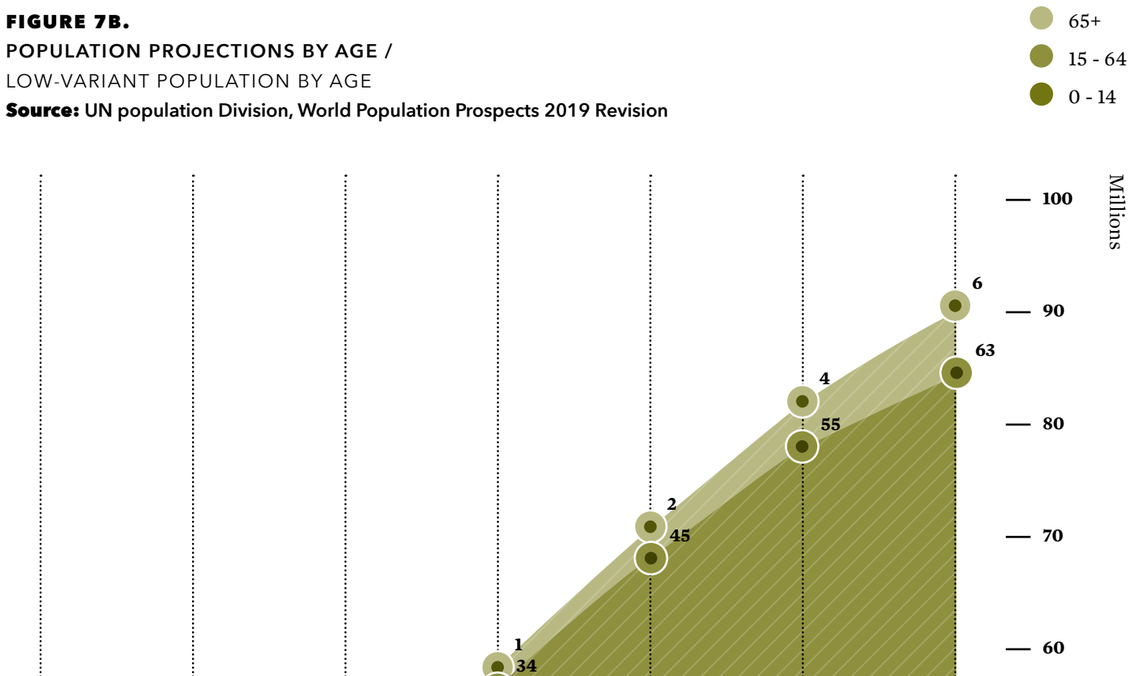


FIGURE 7B.
POPULATION PROJECTIONS BY AGE /
LOW-VARIANT POPULATION BY AGE
Source: UN population Division, World Population Prospects 2019 Revision



C. POPULATION PROJECTIONS FOR UGANDA: 2020 - 2060

FIGURE 7C.
POPULATION
PROJECTIONS BY AGE /
MEDIUM-VARIANT AGE
PROPORTION OF POPULATION
Source: UN population Division, World Population Prospects 2019 Revision

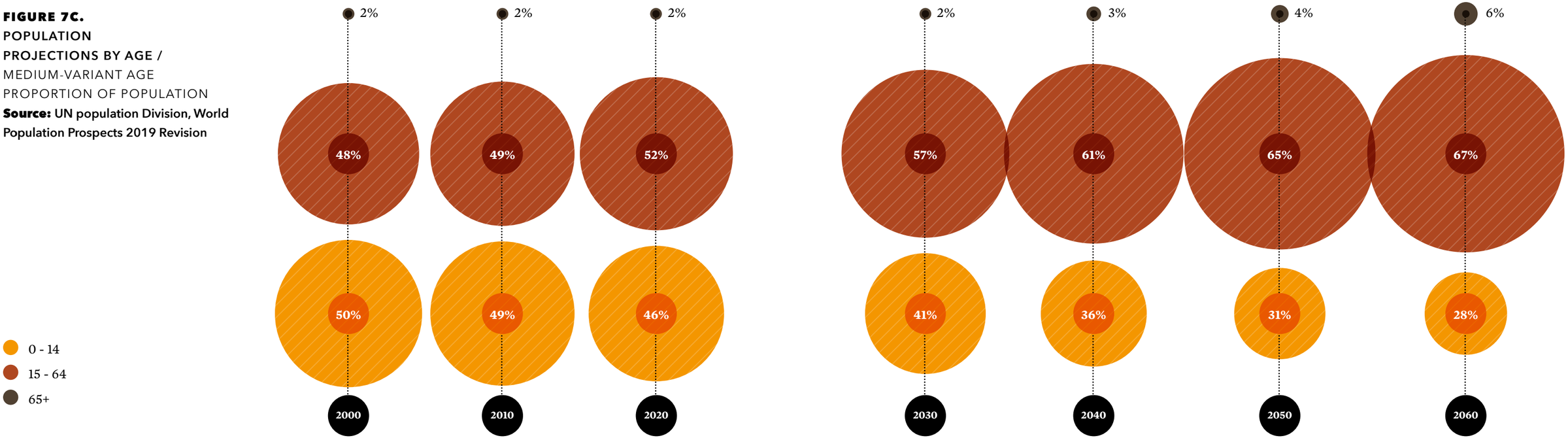


FIGURE 7D.
POPULATION PROJECTIONS
BY AGE / LOW-VARIANT AGE
PROPORTION OF POPULATION
Source: UN population Division, World Population Prospects 2019 Revision

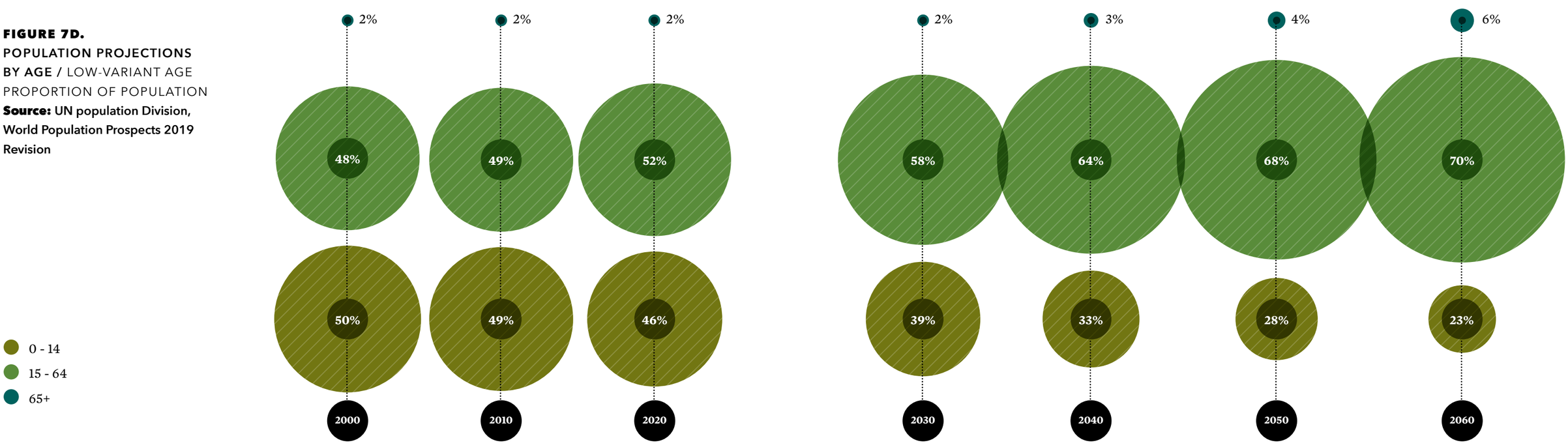
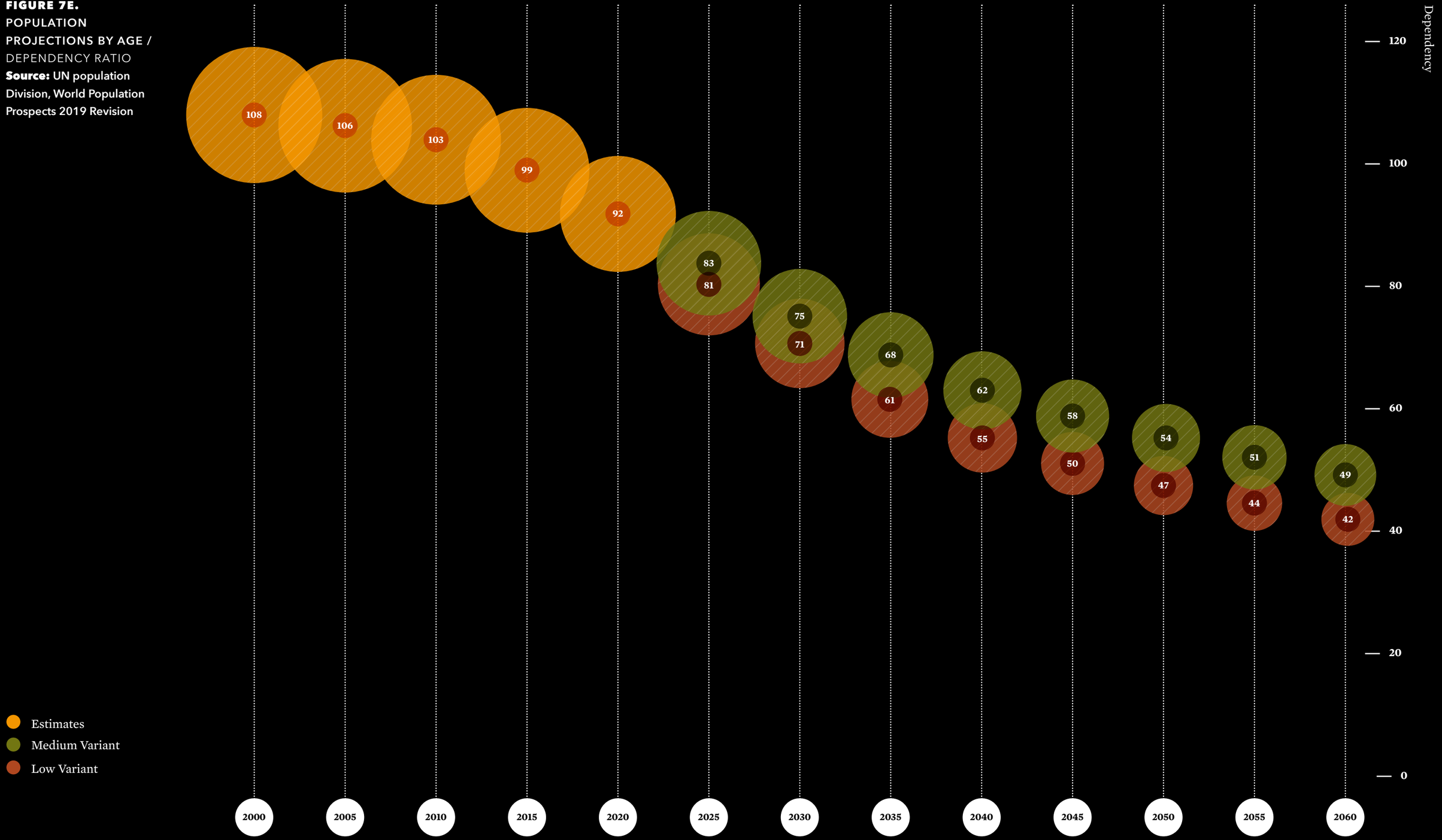


FIGURE 7E.
POPULATION PROJECTIONS BY AGE / DEPENDENCY RATIO
Source: UN population Division, World Population Prospects 2019 Revision



D

SERVICE DELIVERY IN LIGHT OF UGANDA'S POPULATION PROJECTIONS

D.1 EDUCATION SERVICES Page 57

D.2 HEALTH SERVICES Page 88

D.3 INVESTMENT IN INFRASTRUCTURE Page 109

D.1 EDUCATION SERVICES

As is common in East Africa, Uganda follows a 2-7-4-2 education system. The system encompasses two years of pre-primary education and seven years of primary education, at the end of which pupils take the Primary Leaving Examination (PLE). The PLE then determines the transition to the four-year cycle of lower secondary education. Those who complete lower secondary education transition to the two-years of either upper secondary education or technical and vocational education (TVET).

The delivery of primary education is decentralized, with the overall responsibility devolved to Local Governments (LGs). Thus, LGs are responsible for appointing, promoting, and transferring primary teachers and managing associated payrolls. Post-primary education is semi-decentralized with the central level being responsible for teacher management and the supervision function. The Ministry of Education and Sports (MoES) is fully responsible for policy, guidance, and oversight of local government service delivery.

The participation of non-state actors has allowed the expansion of access to education in a cost-effective way, compared to investing in expanded public provision. For example, pre-primary education is fully managed, funded and delivered by non-state actors. At the primary level, over 30 percent of the total enrolled pupils are in private schools. At the secondary level, up to 57 percent of total enrolled students are in private schools according to 2019 Government data (Uganda Bureau of Statistics, 2019). Therefore, a greater proportion of students are in private schools as education level increases.

Evidence from across Africa shows that each year of education produces a private rate of return on investment[17] of 12.5 percent, and a far higher return for females (14.5 percent), than males (11.3 percent) (Patrinos, 2018). The Universal Primary Education (UPE) reform of 1997, the Universal Secondary Education (USE) reform of 2007, and the curriculum reforms at primary and secondary are thus key policy moves aimed at enhancing the sustainable growth and poverty reduction for Uganda. The implementation of these reforms is aligned to the National Development Plan (NDP) along with Vision 2040.

Despite impressive early gains in achieving universal access to primary education, the specific sub-sectors' performance is mixed and plagued by equity-related issues. The Gross Enrollment Rate (GER) at the pre-primary level is still very low (16 percent) and almost exclusively constituted of middle and high-income families in urban areas. Survival rates are low, with only three out of ten pupils who start Primary One (P1) completing the seven-year primary cycle, explained by high repetition and drop-out rates at the lower primary level (Ministry of Education and Sports, 2019). GER at the secondary education level has stagnated for a decade, at below 30 percent. [18]In addition, low attainment of basic education constrains access to post-secondary education, where GER is estimated at 6.4 percent, compared to the sub-Saharan average of 9.4 percent.

17. 'The concept of the rate of return on investment in education is very similar to that for any other investment. It is a summary of the costs and benefits of the investment incurred at different points in time, and it is expressed in an annual (percentage) yield' (Patrinos, 2018).

18. This is much lower than some regional counterparts: Burundi and Tanzania at 57 percent; while the Democratic Republic of Congo registers 61 percent (World Bank, 2019).

Education quality and efficiency related issues continue to characterize the education sector. The 2018 National Assessment of Progress in Education (NAPE) results show that only half of the learners in primary schools demonstrated the expected numeracy and literacy competencies for grades 3 and 6 in 2018. Low learning outcomes continue in lower secondary education. For instance, according to NAPE (2014), there was a continued decline in the proportion of S2 students rated proficient in English in the period 2008 – 2013 (World Bank, 2019b).

Teacher absenteeism, weak pedagogical skills, low management skills of school administrators, as well as inequitable teacher deployment norms are some of the underlying issues (MoES, 2020).

This section examines the implications of population growth, under the low and medium-variant population projections, for the provision of education services. Simultaneously, it shows the implications of enhancing access and quality in service in-line with the GoU medium-term goals. The analysis focuses on the primary and secondary education sub-sectors between 2020-2060, as they account for the majority of the annual education budget. The graph below frames the magnitude of the challenge, showing the projections of the school-age population under the medium-variant. The primary and secondary school-age population will grow at a similar pace and peak in 2060, reaching 13 and 11 million respectively (Figure 18).

D.1.1 METHODOLOGICAL CONSIDERATIONS

INDICATORS CONSIDERED

The following adjustable parameters regarding the access and quality in the education sector were considered throughout the projection exercise: i) enrolment (GER) [access], ii) pupil to teacher ratio [proxy for quality], iii) pupil to textbook ratio [proxy for quality], iv) pupil to classroom ratio [proxy for quality], and iv) inspectors per school ratio [proxy for quality].

The above parameters have underlying quality assumptions that are in line with the 'minimum standard' requirements set by the MoES. These assumptions are the following:

- **A** That deployed teachers at the ratios stated for each scenario will have the requisite qualifications to instruct at the stated levels of education, deployed equitably across schools and districts with considerations of gender equity, and that teachers will be provided with Continuous Professional Development support;
- **B** That the supplied textbooks will be used optimally during the teaching-learning process including sufficient focus on children with disabilities;
- **C** That the constructed gender and disability friendly classrooms will be in line with agreed strategy and construction norms;
- **D** That all inspectors will be facilitated to quality assure teaching-learning processes in schools and regularly provide feedback to schools as expected.

19. Projections are based on a period 1960-2020

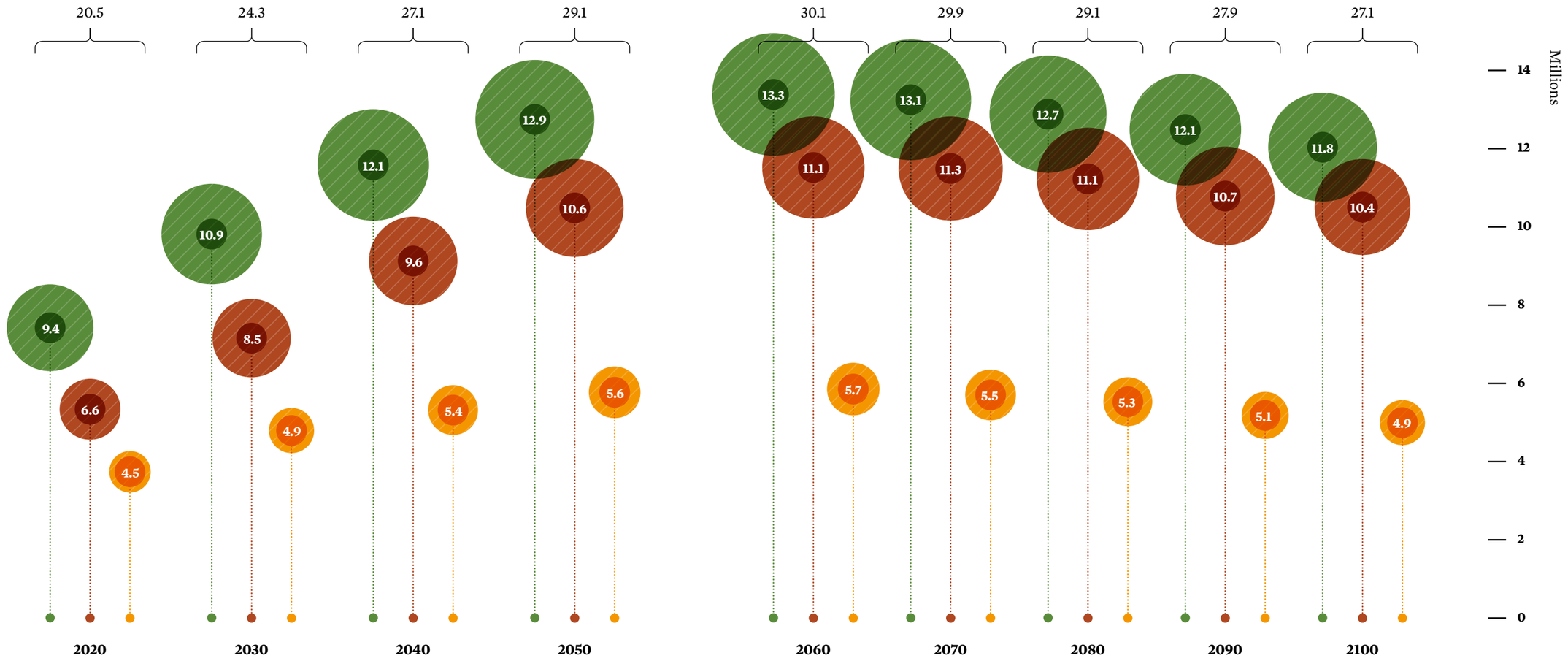
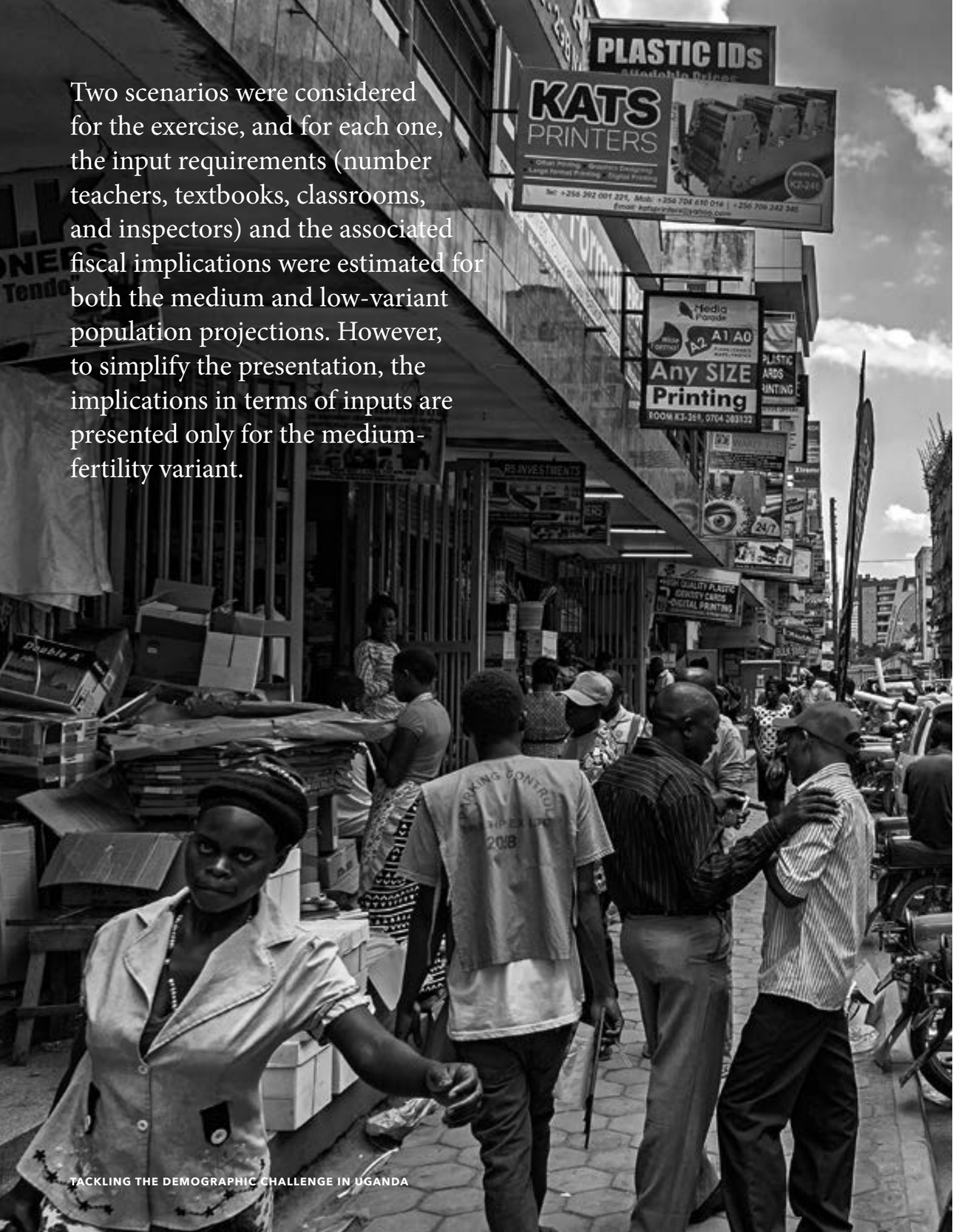


FIGURE 8. SCHOOL AGE POPULATION GROWTH PROJECTIONS[19] 2020-2100, MEDIUM-VARIANT / ANNUAL POPULATION GROWTH RATE
Source: Author's calculations based on UN population Division, World Population Prospects 2019 Revision



Two scenarios were considered for the exercise, and for each one, the input requirements (number teachers, textbooks, classrooms, and inspectors) and the associated fiscal implications were estimated for both the medium and low-variant population projections. However, to simplify the presentation, the implications in terms of inputs are presented only for the medium-fertility variant.

Scenario 1, called 'Business as Usual', or the baseline scenario, models the implications of population growth under the assumption that the current access and quality remain *constant over time.* In other words, the baseline scenario looks at how much it will cost the GoU to finance the system, *without* any improvements to the education sector between 2020 to 2060. Table 1 shows the key parameters used to model Scenario 1.

These indicators come from the most recent data collection exercise[20] (2019), conducted by the Uganda Bureau of Statistics (UBOS) and the Ministry of Education and Sports (MoES).

Scenario 2, called 'Expansion with Quality', models the implications for the system, given gradual improvements in key sector parameters related to access and quality. The model assumes that the first set of improvements will be realized by 2025 – this is when the Education Sector Strategic Plan (ESSP) for the 2020-2025 period targets are set to be achieved. The second set of improvements are modelled to be introduced gradually until 2040 and then sustained until 2060. Improvements are aimed at bringing universal primary and secondary education access as well as significant improvements in quality, which is in line with the realization of the SDG goals. Table 2 illustrates how the targets for Scenario 2 are introduced into the model over time.

The exercise uses the public and private share of enrolment based on the ESSP 2020-25 predictions. According to the ESSP, the public share of enrolment at the primary level will slightly decrease in the period 2020 to 2030. The share of public enrolment at the secondary level, however, will increase significantly from 43 in 2019 to 62 percent by 2030. This is due to the government's decision to withdraw from a PPP arrangement that provided financial support to the private sector in the form of per capita subsidies. As a result of this policy change, the absorption of enrolment by the public sector will increase significantly in the medium term.

The 'Expansion with quality' scenario is expected to improve 'Learning Adjusted Years of School' (LAYS), a key component of the Human Capital Index (HCI). While on average a child in Uganda completes 7 years of school by the age 18, this figure drops to only 4.5 years if quality of learning outcomes is factored in (2.5 years are considered 'lost' due to poor quality of education). It is expected that increased learning achievement will result from the expansion of access to secondary education (*schooling*), and from improvements in teaching quality (*learning*). [21]

For both scenarios, the fiscal implications are calculated using the four cost categories shown below (Figure 9), and are expressed in 2019/20 prices. The financial implications are calculated for the public sector only, thus presenting budgetary requirements for the Government of Uganda.

20. 'Report on the master list of education institutions in Uganda', Uganda Bureau of Statistics (2019).

21. 'Uganda should increase the LAYS to up to 7.5 years in the medium term to catch up with its neighbors (Kenya currently scores 7.8).

TABLE 4A. SCENARIO 1- 'BUSINESS AS ASUAL' / PARAMETERS TO BE MAINTAINED AT THE CURRENT LEVEL (2019) IN THE PERIOD 2025-2060

Source: Author's calculations

	Primary Education	Secondary Education
GER	132%	32%
Pupil to teacher ratio (public)	52	21
Pupil to textbook ratio	4	7
Pupil to clasroom ratio (public)	71	65
Schools per inspector ratio	80	90

TABLE 4B.

SCENARIO 2- 'EXPANSION WITH QUALITY' /ESSP TARGETS ACHIEVED IN 2025, 'UNIVERSAL' TARGETS ACHIEVED IN 2040 AND MAINTAINED UNTIL 2060

Source: Author's calculations

	2025	2030	2035	2040	2045	2050	2055	2060
	ESSP			'UNIVERSAL'				
	TARGETS			TARGETS				
				Primary Education				
GER	123%	115%	107%	100%	100%	100%	100%	100%
Pupil to teacher ratio	48.1	43.7	39.3	35	35	35	35	35
Pupil to textbook ratio	1.95	1.65	1.35	1	1	1	1	1
Pupil to clasroom ratio	65	57	48	40	40	40	40	40
Schools per inspector ratio	60	53	47	40	40	40	40	40
Public share of enrolment	66%	63%	63%	63%	63%	63%	63%	63%
				Secondary Education				
GER	45%	53%	62%	70%	70%	70%	70%	70%
Pupil to teacher ratio	18	16	14	12	12	12	12	12
Pupil to textbook ratio	5	4	3	2	2	2	2	2
Pupil to clasroom ratio	58	52	47	40	40	40	40	40
Schools per inspector ratio	60	53	47	40	40	40	40	40
Public share of enrolment	50%	62%	62%	62%	62%	62%	62%	62%

FIGURE 9.
COST CATEGORIES USED FOR CALCULATING FISCAL IMPLICATIONS

Source: Author's calculations

D.1.2 'BUSINESS AS USUAL': MAINTAINING CURRENT ACCESS LEVELS

INPUT REQUIREMENTS

Despite the fact that under the 'Business as usual' scenario no improvements in terms of access and quality are assumed[22], considerable input requirements are needed to prevent a decline in key access and quality indicators. With national enrollment more than doubling at the primary level (Figure 10a), the number of primary school teachers, hired by the government, will need to increase from 135,000 in 2019 to 211,000 in 2040, and to 230,000 from then on to 2060 (Figure 10b). This translates to over 3,600 new teachers per year added to the government payroll between now and 2040. [23]Similarly, with a four-fold increase in enrollment at the secondary level between 2015 and 2060 (Figure 10a) the number of lower and upper secondary teachers will need to more than double, from 36,000 to 75,000 between 2019 and 2060 (Figure 10b). [24]

In order to maintain the same pupil to classroom ratio, the Government of Uganda will need to step up its construction efforts and increase the number of primary classrooms by 50,000 until 2040 and another 14,000 by 2060. This translates to an average of over 1,600 classrooms per year between now and 2060. By comparison between 2002 and 2016, the government constructed on average 2,320[25] classrooms per year at the primary level. In the case of the secondary level, the construction burden for government is lower, given that the participation of the private sector is larger: 7,000 classrooms will need to be constructed between now and 2040 (Figure 10c). This translates to an average of 350 new classrooms per year. With no improvements in pupil to textbook ratio, the requirement for textbooks[26] will be on average 300,000 and 200,000 every year for primary and secondary school children respectively between now and 2040 (Figure 10d).

FISCAL IMPLICATIONS

Reflecting input requirements, the fiscal effort under the 'Business as usual' scenario will be considerable. In order to prevent a decline in key quality and access indicators as a result of population growth, substantial investments by the GoU will be required. Under the medium-variant, the combined primary and secondary budgets will increase from US$ 480 million (2019) to an annual average of US$ 853 million in the period of 2025-30, and to an annual average of almost US$1 billion in the period 2040-45 (Figure 11a) . While the main cost driver for both primary and secondary will be recurrent wages (Figure 11b and Figure 11c), infrastructure investments will also take up a considerable portion of the budget in the first 15/20 years, when the population pressures will peak. Lower overall costs for the secondary sub-sector are due to the current private sector share of enrollment.

In GDP terms, this scenario will represent 2 percent of GDP annually for the period of 2020-25 (Figure 11d). This represents a slight increase from 1.68 percent in 2019 for primary and secondary sub-sectors (1.73 percent for the entire education budget). While the cost (as % of GDP) of delivering education services to the growing population under the *status quo* declines over time, the current problems of the sector are not addressed, which means that future generations will not reach their full potential.

Considerable savings can be achieved if policies aimed at curbing rapid population growth are implemented. Under the low-variant population projections, the cumulative savings over the period 2025-2060 could account to US$ 5.5 billion. This translates to an average annual saving of nearly US$ 137 million for primary and secondary sub-sectors (Figure 11e).

22. Thus, the teacher-pupil ratio (for the public sector) is kept at the baseline level, as described in section 2.

23. By comparison, on average 1,213 of new teachers accessed the government payroll annually between 2002 and 2016 (Education Fact Sheet 2016, MoES).

24. Number of teachers required for the current staffing norms. This assumes that the non-public providers will continue to pay wages for teachers employed in non-government schools, who currently constitute 63 percent of the teachers in the country.

25. Education Fact Sheet 2016, MoES.

26. Fiscal implications for textbooks take into account a rate at which textbooks are recycled between cohorts.

27. A jump in the overall costs between 2019 and 2020-25 for the baseline scenario is explained by a steep growth in the school age population growth in the period 2020-25, as well as the following: more investments into teacher training being taken up by GoU (currently a large portion is funded by GPE); and increase in capitation grants through the Uganda Intergovernmental Fiscal Transfers Program.

FIGURE 10A.
PROJECTED EDUCATIONAL INPUTS UNDER THE BUSINESS AS USUAL SCENARIO /
NATIONAL ENROLLMENT
Source: Author's calculations

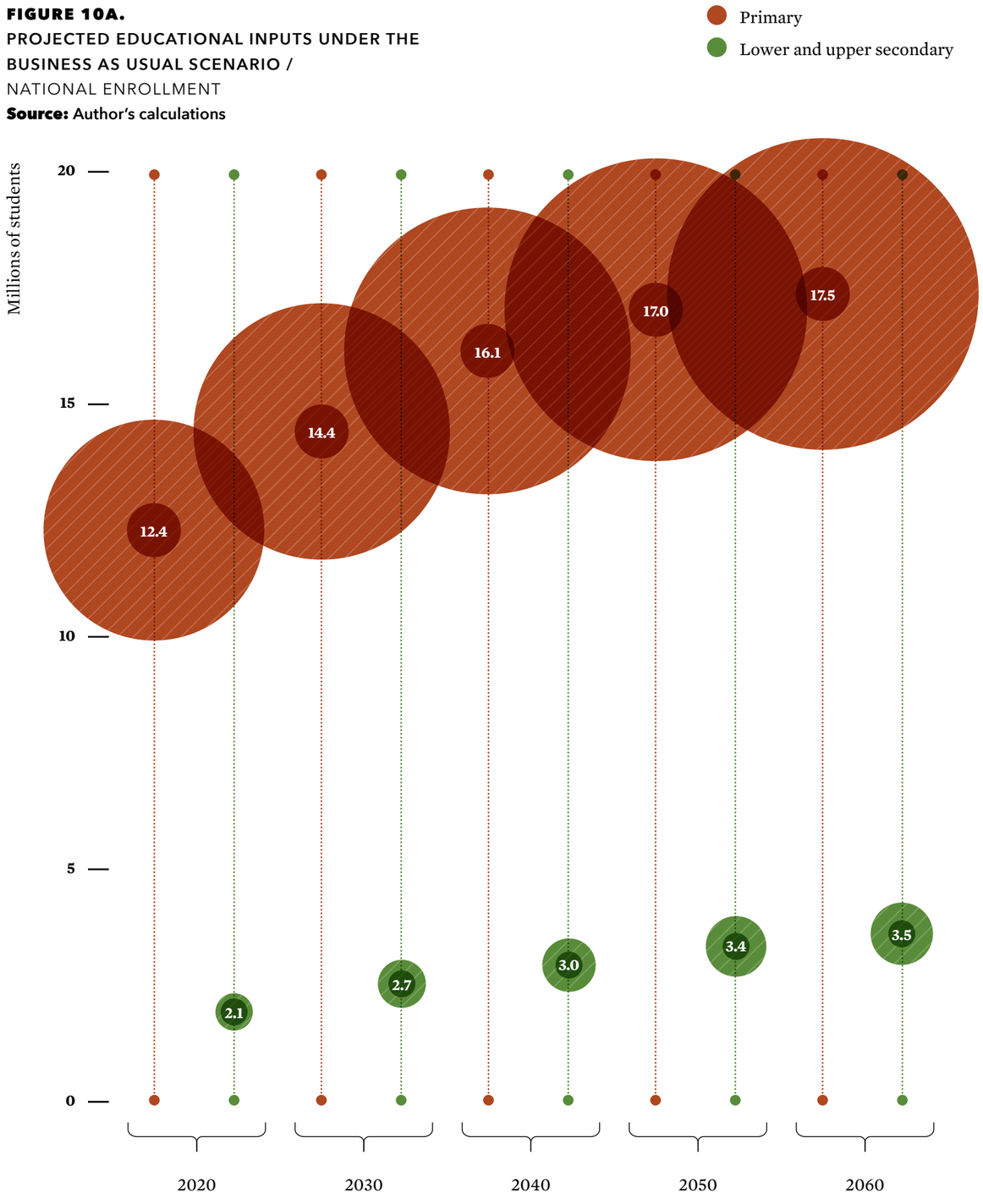


FIGURE 10B.
PROJECTED EDUCATIONAL INPUTS UNDER THE BUSINESS AS USUAL SCENARIO /
PUBLIC TEACHERS
Source: Author's calculations

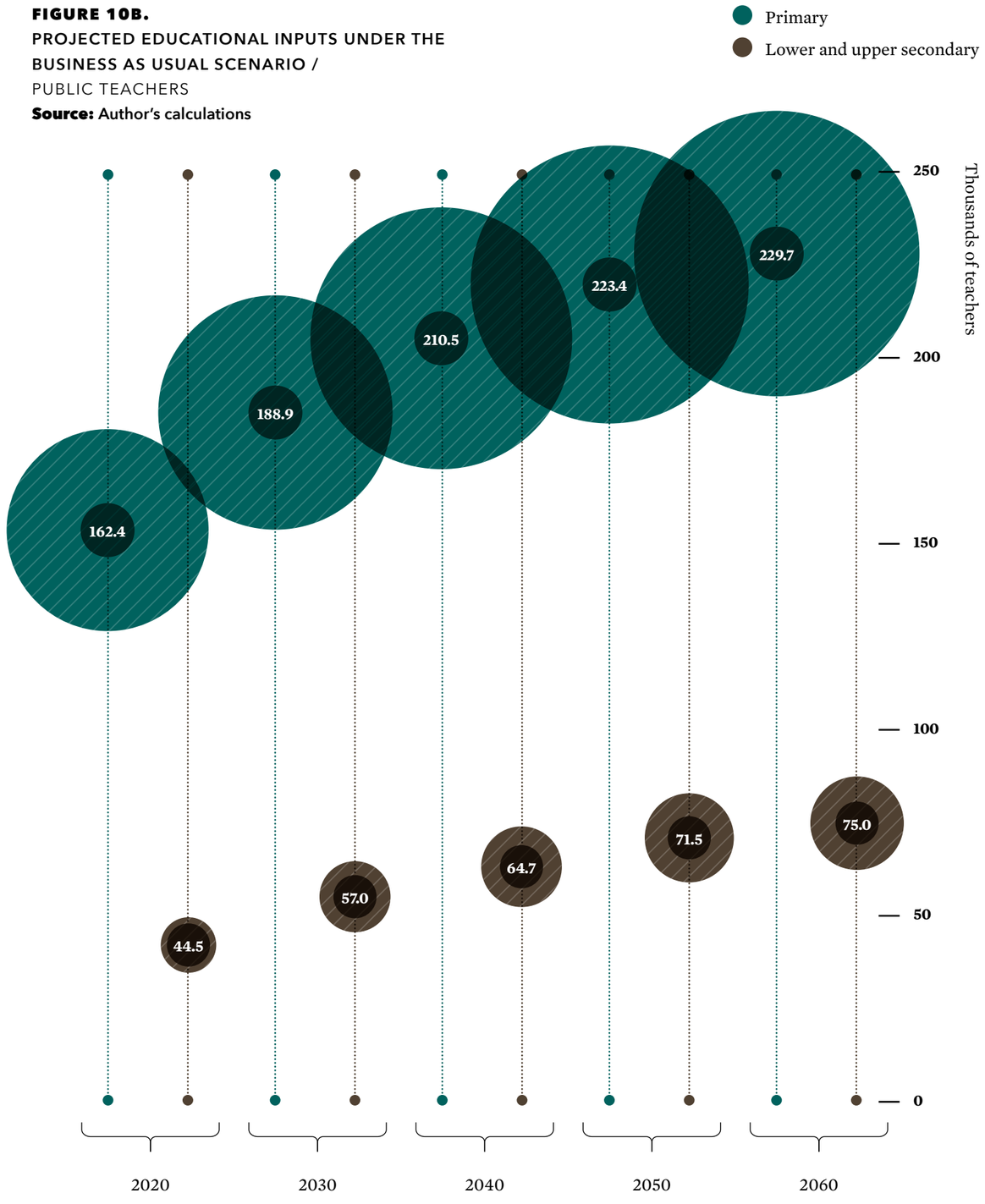


FIGURE 10C.
PROJECTED EDUCATIONAL INPUTS UNDER THE BUSINESS AS USUAL SCENARIO /
NUMBER OF PUBLIC CLASSROOMS
Source: Author's calculations

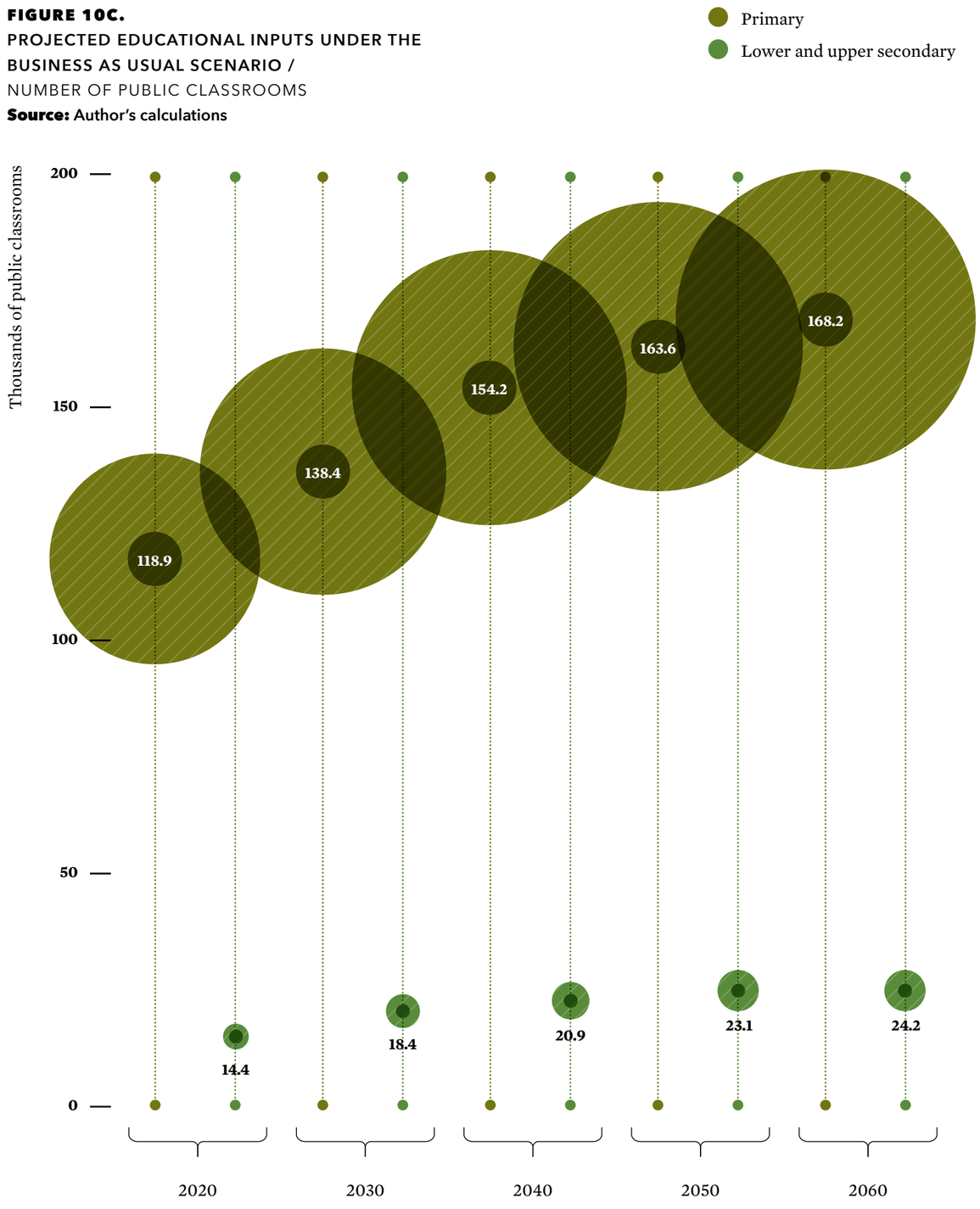


FIGURE 10D.
PROJECTED EDUCATIONAL INPUTS UNDER THE BUSINESS AS USUAL SCENARIO /
NUMBER OF TEXTBOOKS IN PUBLIC SCHOOLS
Source: Author's calculations

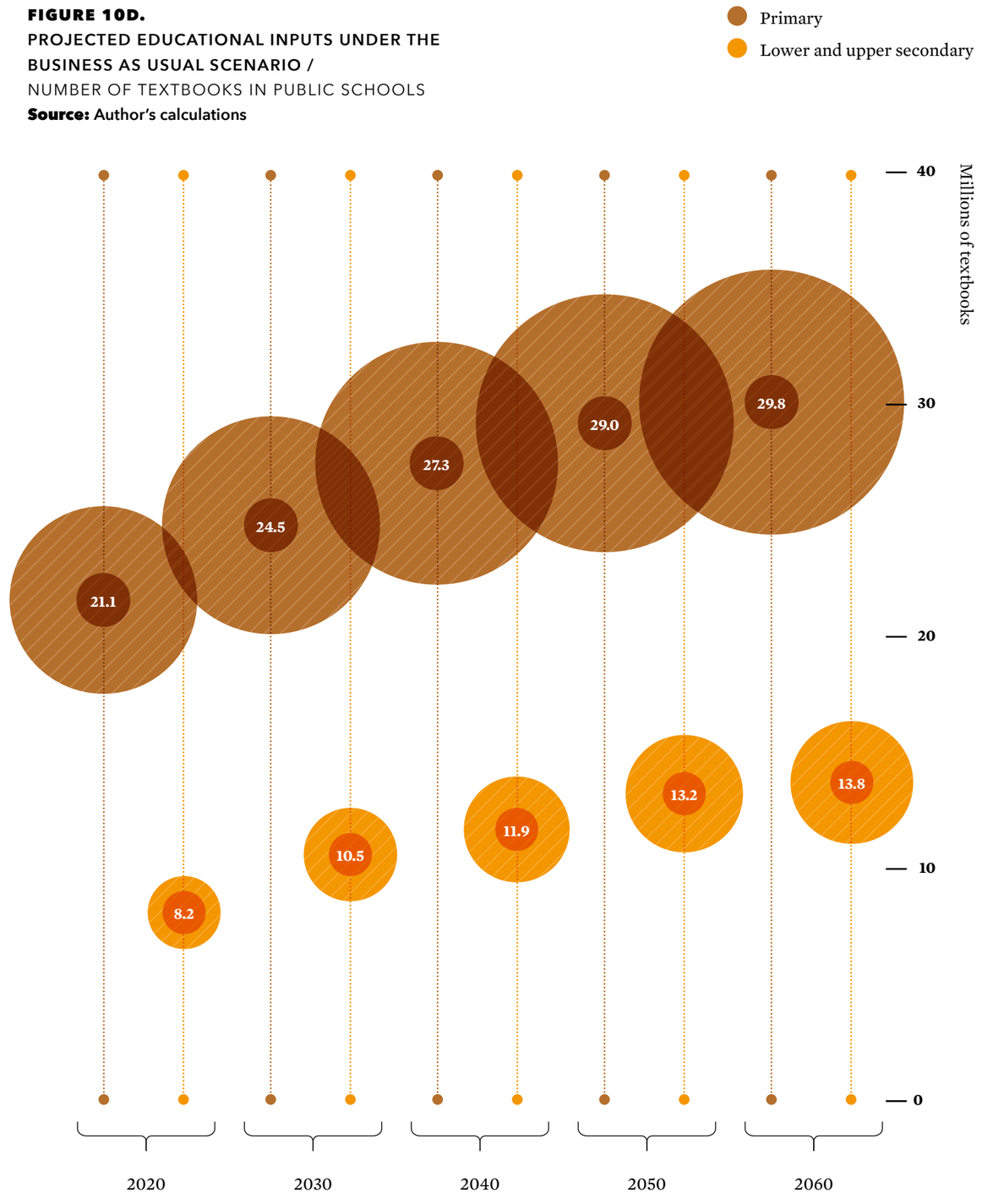


FIGURE 11A.
FISCAL IMPLICATIONS UNDER THE 'BUSINESS AS USUAL' SCENARIO (5-YEAR AVERAGE) /
AVERAGE ANNUAL TOTAL COST UNDER THE MEDIUM-FERTILITY VARIANT
Source: Author's calculations

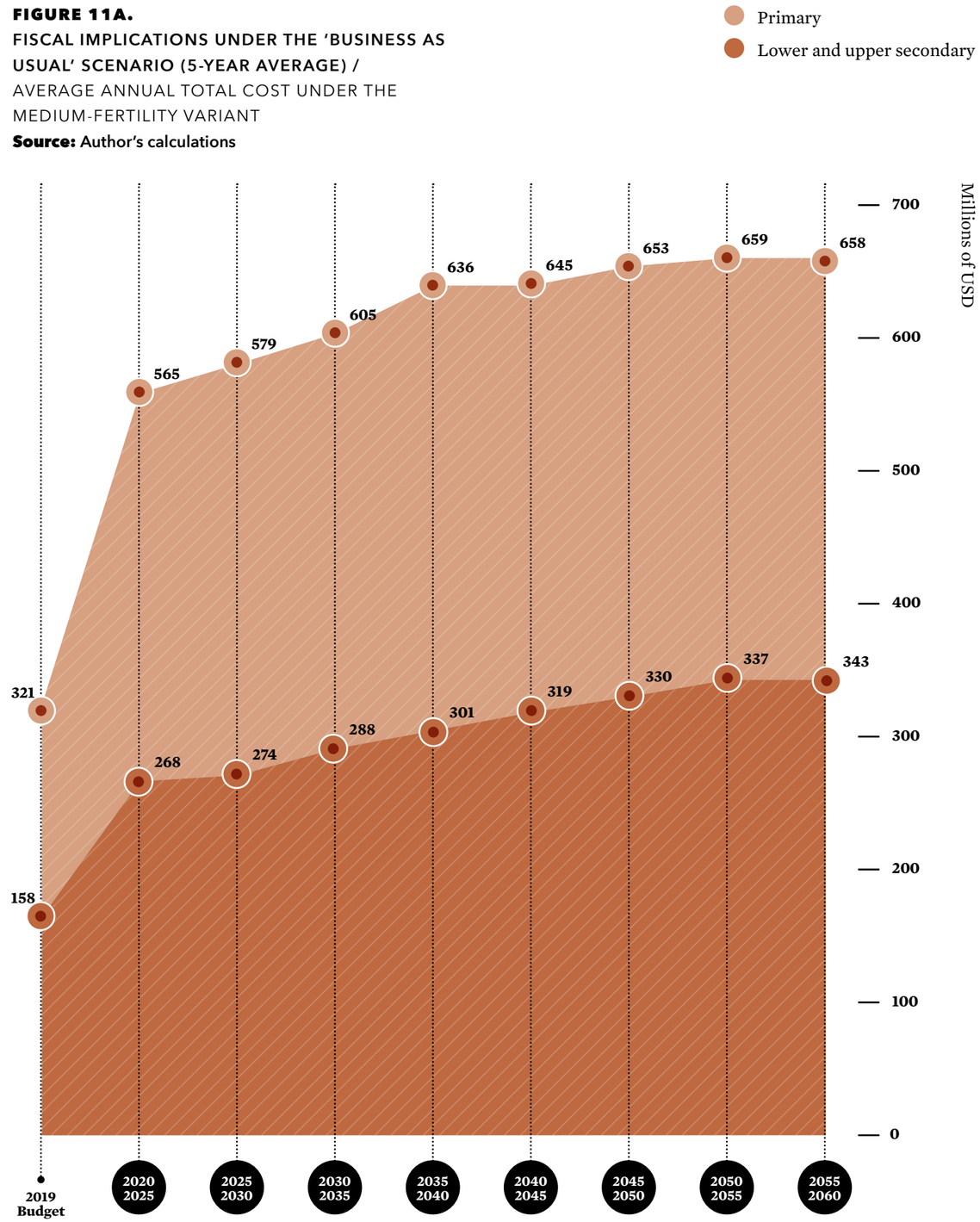


FIGURE 11B.
FISCAL IMPLICATIONS UNDER THE 'BUSINESS AS USUAL' SCENARIO (5-YEAR AVERAGE) /
AVERAGE ANNUAL COST FOR PRIMARY EDUCATION (MILLIONS OF USD)
Source: Author's calculations

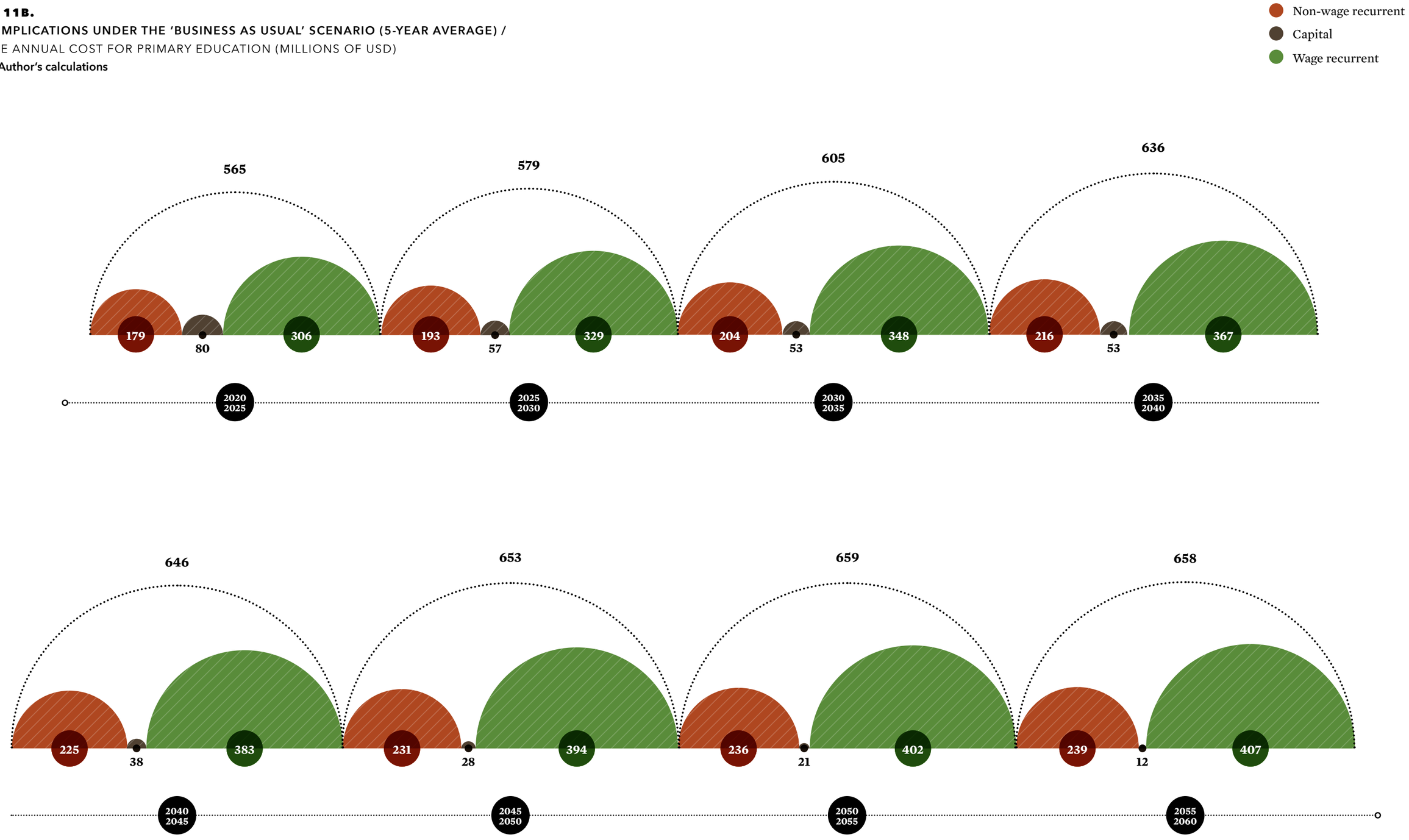


FIGURE 11C.
FISCAL IMPLICATIONS UNDER THE 'BUSINESS AS USUAL' SCENARIO (5-YEAR AVERAGE) /
AVERAGE ANNUAL COST FOR SECONDARY EDUCATION (MILLIONS OF USD)
Source: Author's calculations

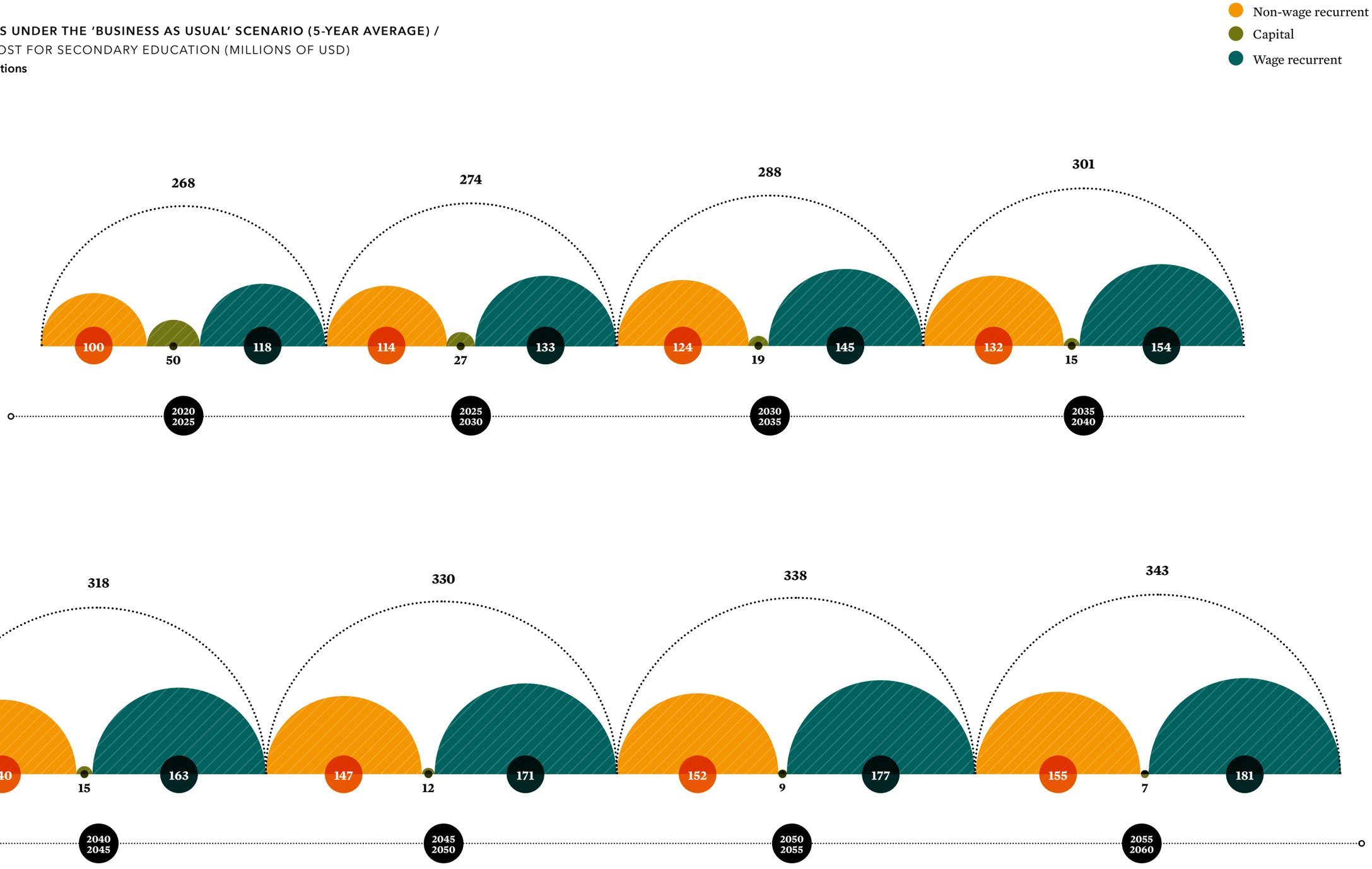


FIGURE 11D.
FISCAL IMPLICATIONS UNDER THE 'BUSINESS AS USUAL' SCENARIO (5-YEAR AVERAGE) /
COST OF 'BUSINESS AS USUAL' SCENARIO UNDER THE MEDIUM-FERTILITY VARIANT
Source: Author's calculations

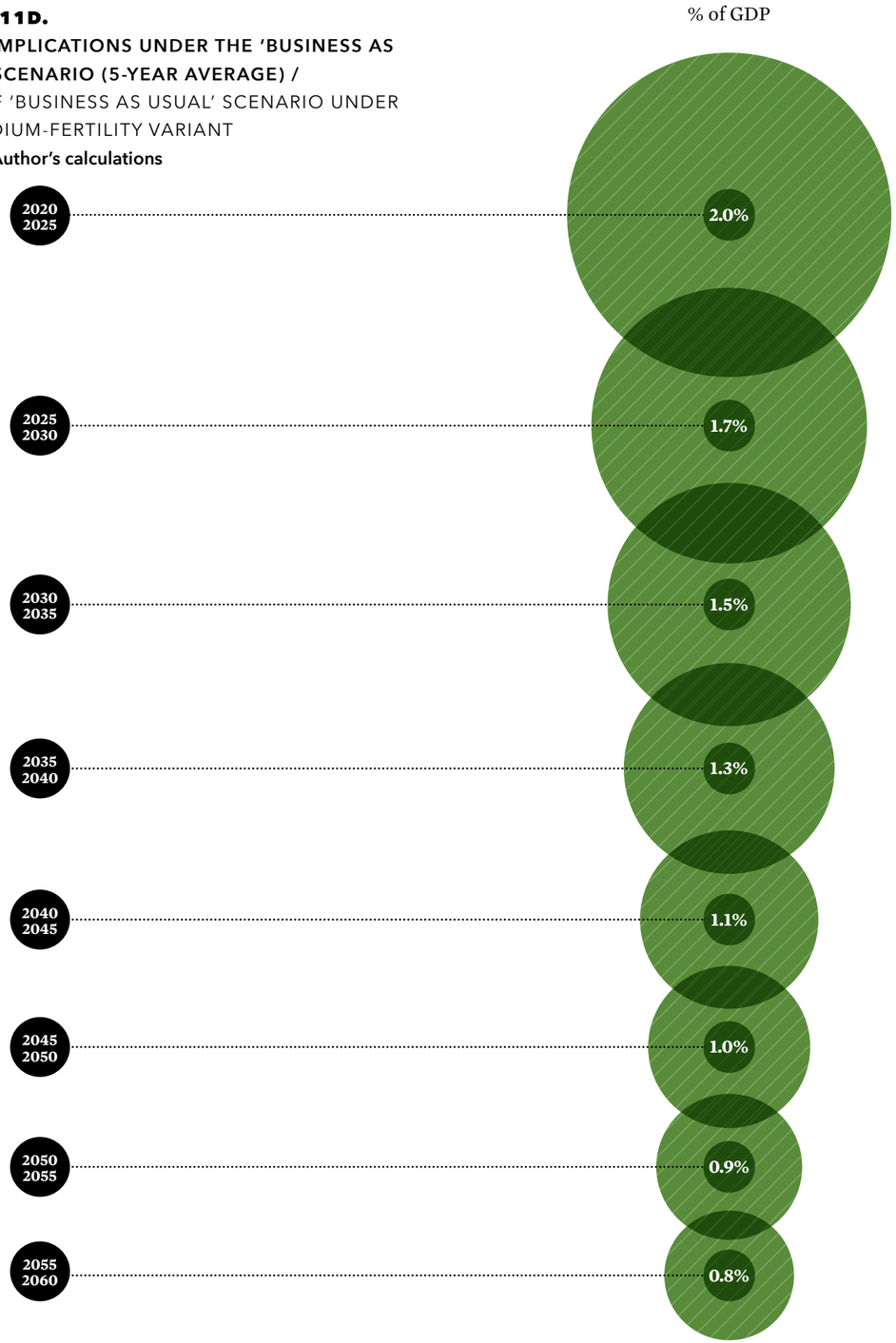
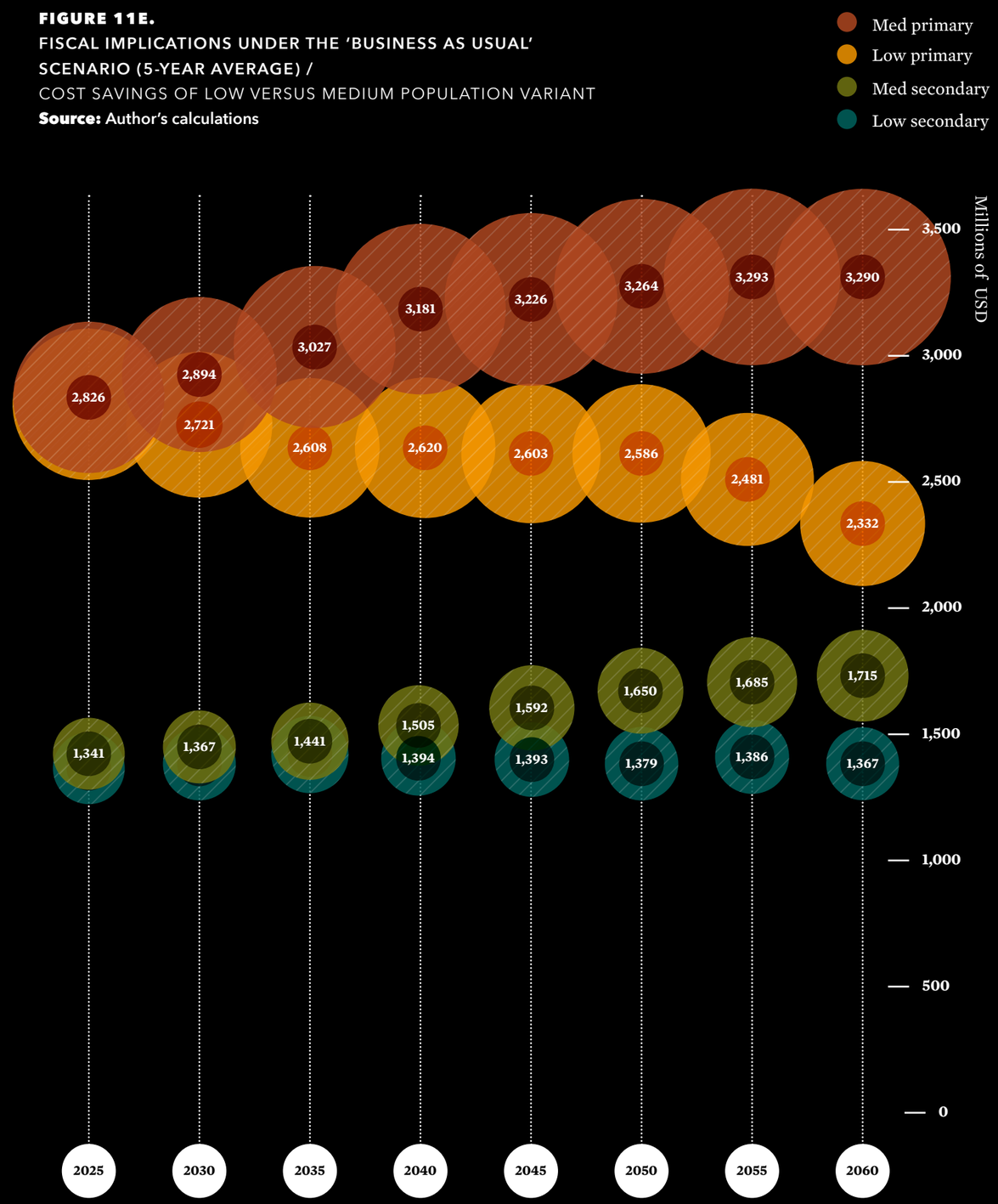


FIGURE 11E.
FISCAL IMPLICATIONS UNDER THE 'BUSINESS AS USUAL' SCENARIO (5-YEAR AVERAGE) /
COST SAVINGS OF LOW VERSUS MEDIUM POPULATION VARIANT
Source: Author's calculations



D.1.3 'IMPROVED EQUILIBRIUM': EXPANSION WITH QUALITY

INPUT REQUIREMENTS

As discussed above, the second scenario 'Expansion with quality' assumes a set of reforms, as proposed by the new ESSP, to improve both access and quality of education. In this scenario, primary enrollment numbers (Figure 12a) will not change significantly, as a result of implementing measures to bring down the number of over and under-aged pupils in the system. [28]This will represent considerable efficiency gains for the sector, as resources will be spent across a larger number of pupils, instead of 'reinvesting' in a smaller number of students or spent unproductively on a primary school drop-out. At the same time, enrollment in secondary education will increase four-fold between 2020 and 2060 (Figure 12a), and thus, the number of teachers for public schools will also need to increase fourfold between now and 2060 (Figure 12b).

To expand access and enhance quality, the government will need to put in place 192,000 classrooms for primary schools in order to meet the classroom to pupil ratio target of 40 by 2040. This translates to an average of 3,650 primary classrooms per year. Similarly, an additional 87,000 new secondary school classrooms will be required between 2020 and 2040 in order to reduce the pupil to classroom ratio (Figure 12c). At the same time, the government will need to supply nearly twice as many books for primary education in 2060 compared to 2020. Over 30 million additional secondary school textbooks will need to be procured between 2020 and 2060 –which translates to 875,000 books per year (Figure 12c).

FISCAL IMPLICATIONS

The fiscal effort needed to enhance access and improve the quality of the education service delivery is considerable. In the 'Expansion with Quality' scenario, the combined (primary and secondary levels) average annual budget will need to double from US$ 480 million in 2019 to US$979 million in the period 2020-25 (Figure 13a). In terms of the education budget, the expansion scenario will represent around 5 percent of GPD and 20 percent of the projected national budget in the 2020-2025 period. Thus, efforts to increase access and improve quality are fiscally feasible, and not too distant from what regional peers invest in education.[29]

The government can reduce the financial burden considerably if policies aimed at reducing population growth are implemented. If the low-variant population projections are used under the 'Expansion with Quality' assumptions, the cumulative savings over the period 2025-2060 will sum to over US$ 9.5 billion, US$ 4.6 billion at the primary and US$ 4.9 billion at the secondary level (Figure 13b). This translates to potential average annual savings of US$ 238 million (US$ 116 million for the primary sub-sector and US$ 123 million for secondary).

28. Such as strengthening the early childhood education and timely enrolment of pupils in primary school.

29. Education spending in Kenya accounted for 5.2 percent of GDP and 21.0 percent of government expenditure in 2017/18 (UNICEF, 2018)

FIGURE 12A. PROJECTED EDUCATIONAL INPUTS UNDER THE EXPANSION WITH QUALITY SCENARIO / NATIONAL ENROLLMENT
Source: Author's calculations

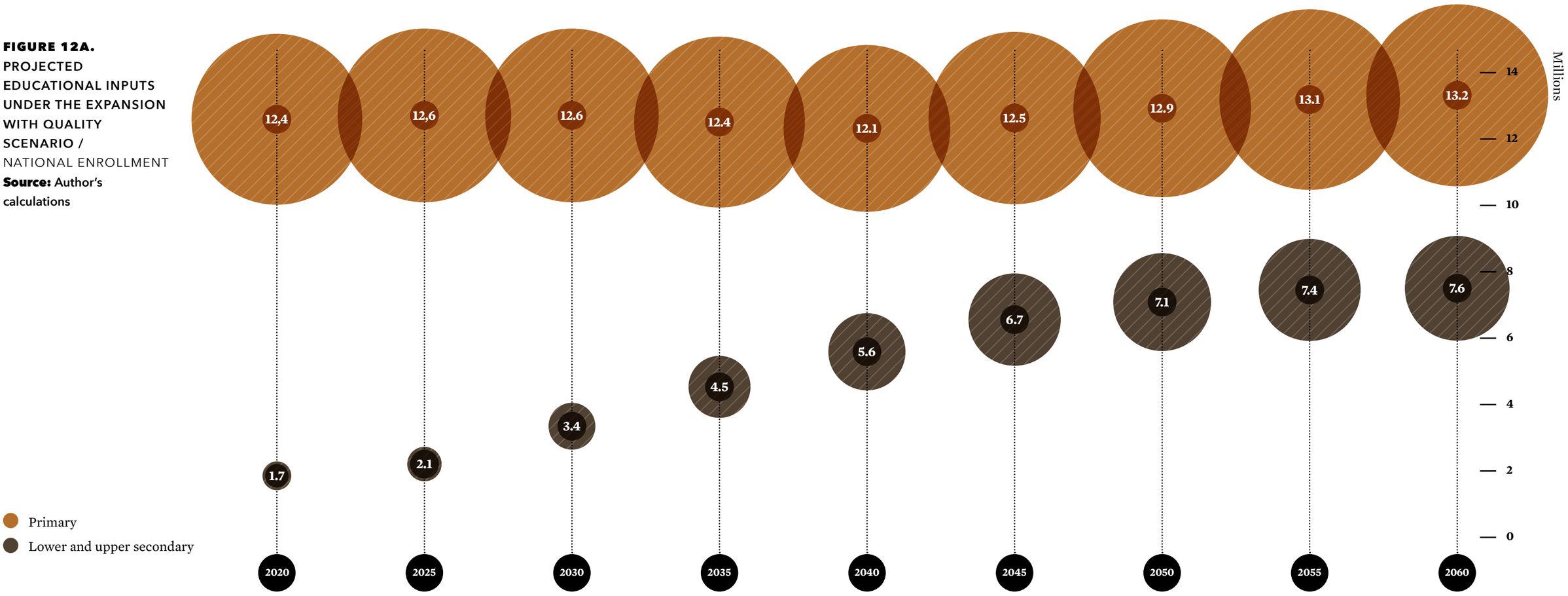


FIGURE 12B.
PROJECTED EDUCATIONAL INPUTS UNDER THE EXPANSION WITH QUALITY SCENARIO /
PUBLIC TEACHERS
Source: Author's calculations

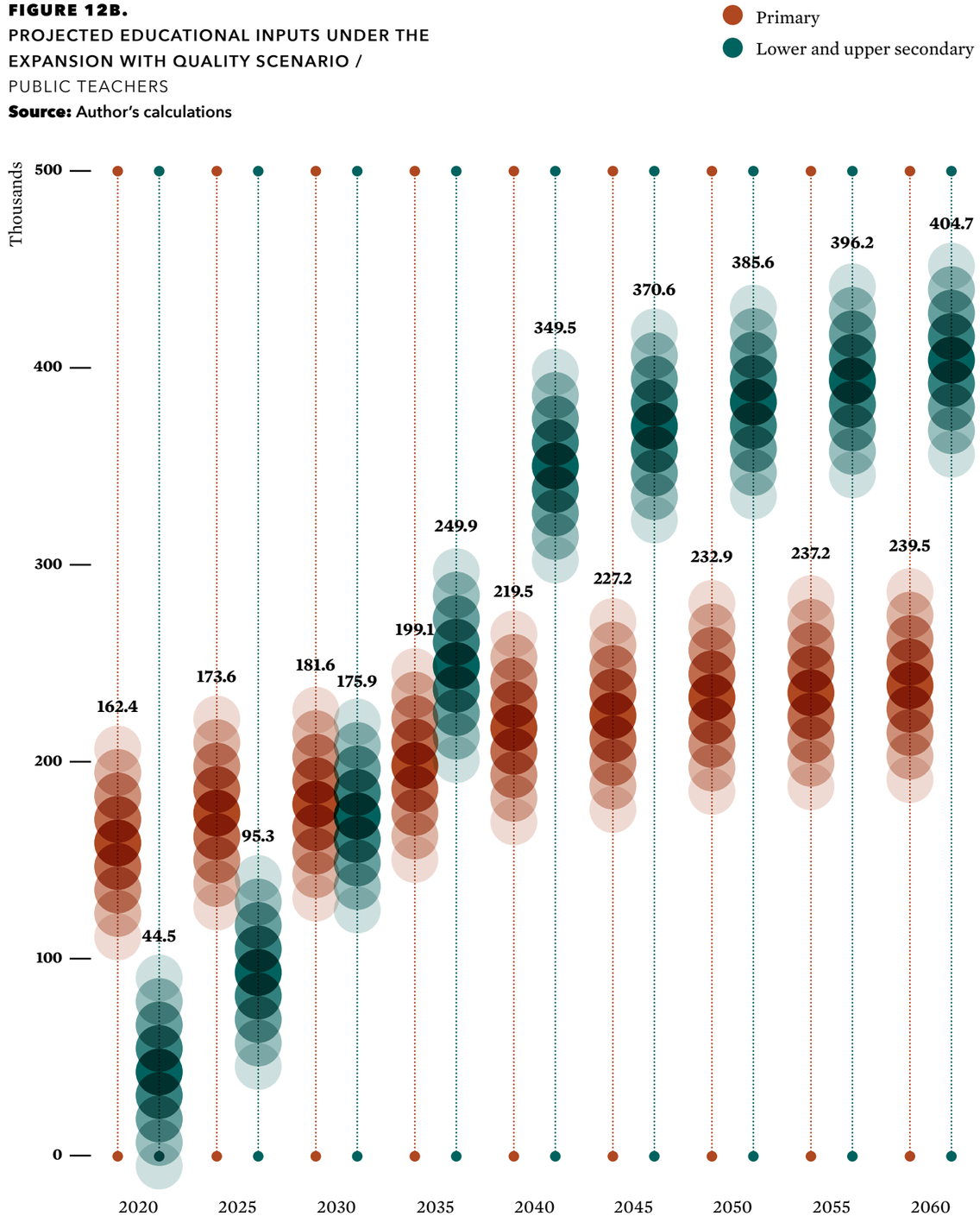


FIGURE 12C.
PROJECTED EDUCATIONAL INPUTS UNDER THE EXPANSION WITH QUALITY SCENARIO /
NUMBER OF PUBLIC CLASSROOMS
Source: Author's calculations

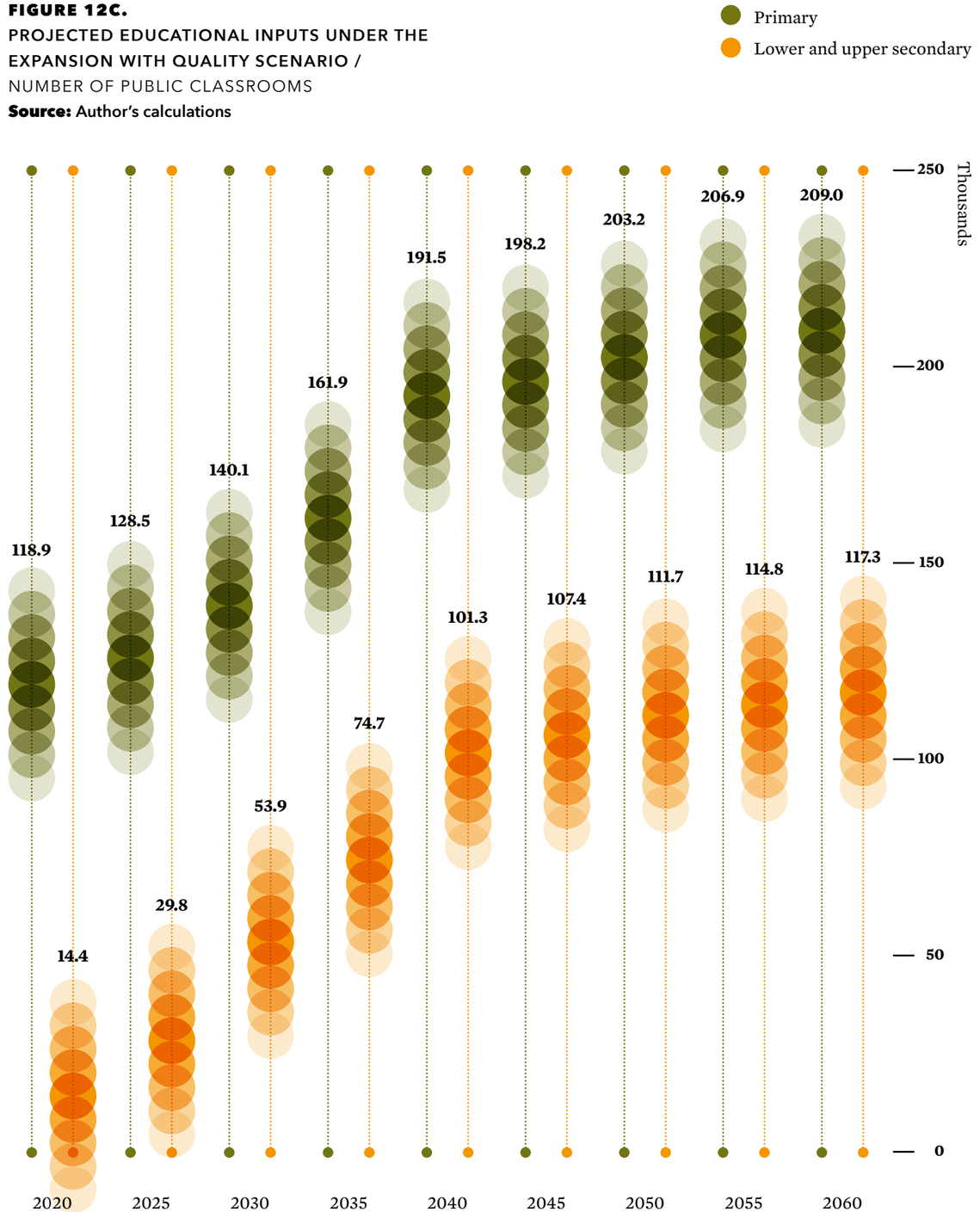


FIGURE 12D.
PROJECTED EDUCATIONAL INPUTS UNDER THE EXPANSION WITH QUALITY SCENARIO /
NUMBER OF TEXTBOOKS IN PUBLIC SCHOOLS
Source: Author's calculations

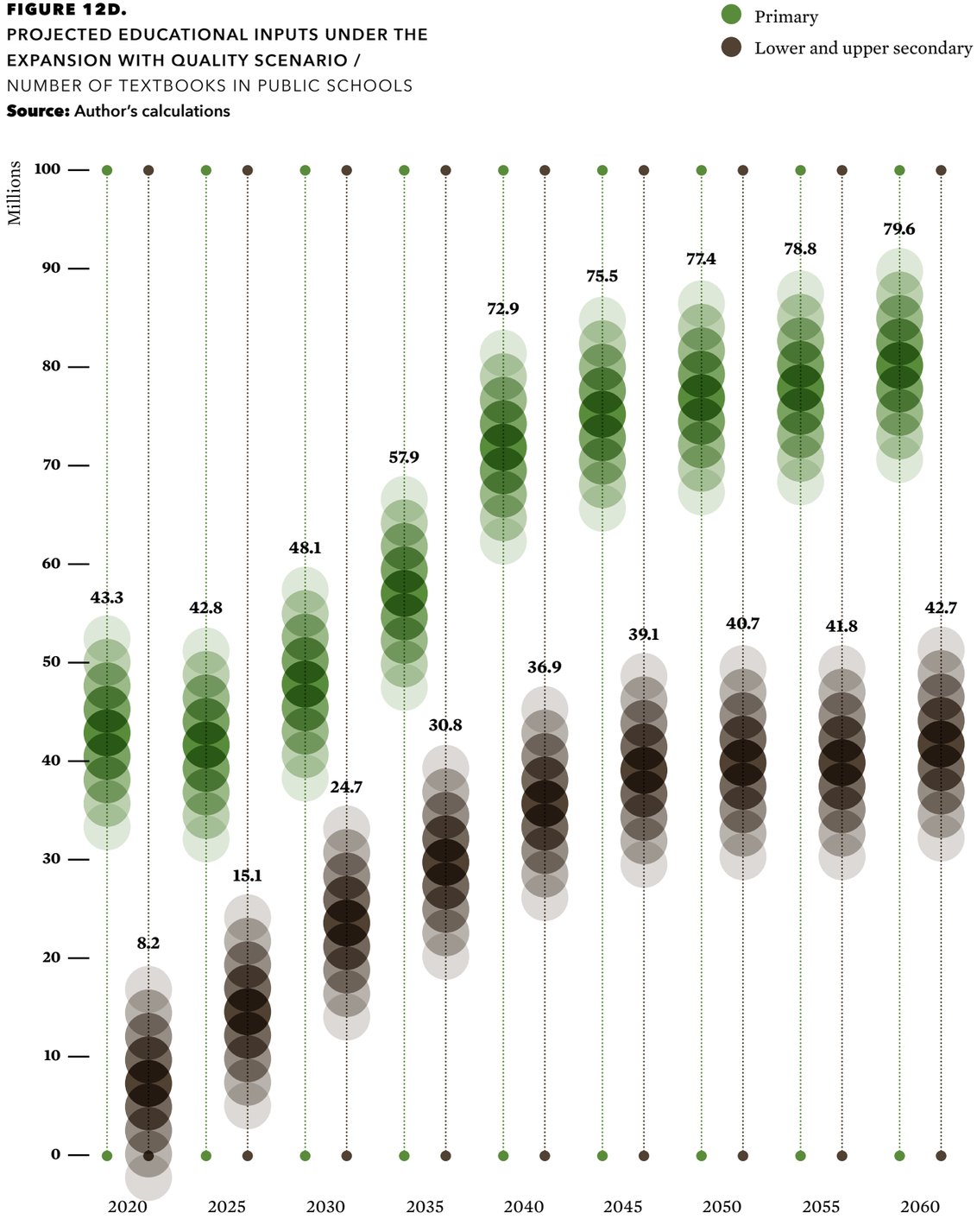


FIGURE 13A.
FISCAL IMPLICATIONS UNDER THE EXPANSION WITH QUALITY SCENARIO (5-YEAR AVERAGE) /
FISCAL IMPLICATIONS UNDER THE DIFFERENT SCENARIOS (MILLIONS OF USD)
Source: Author's calculations

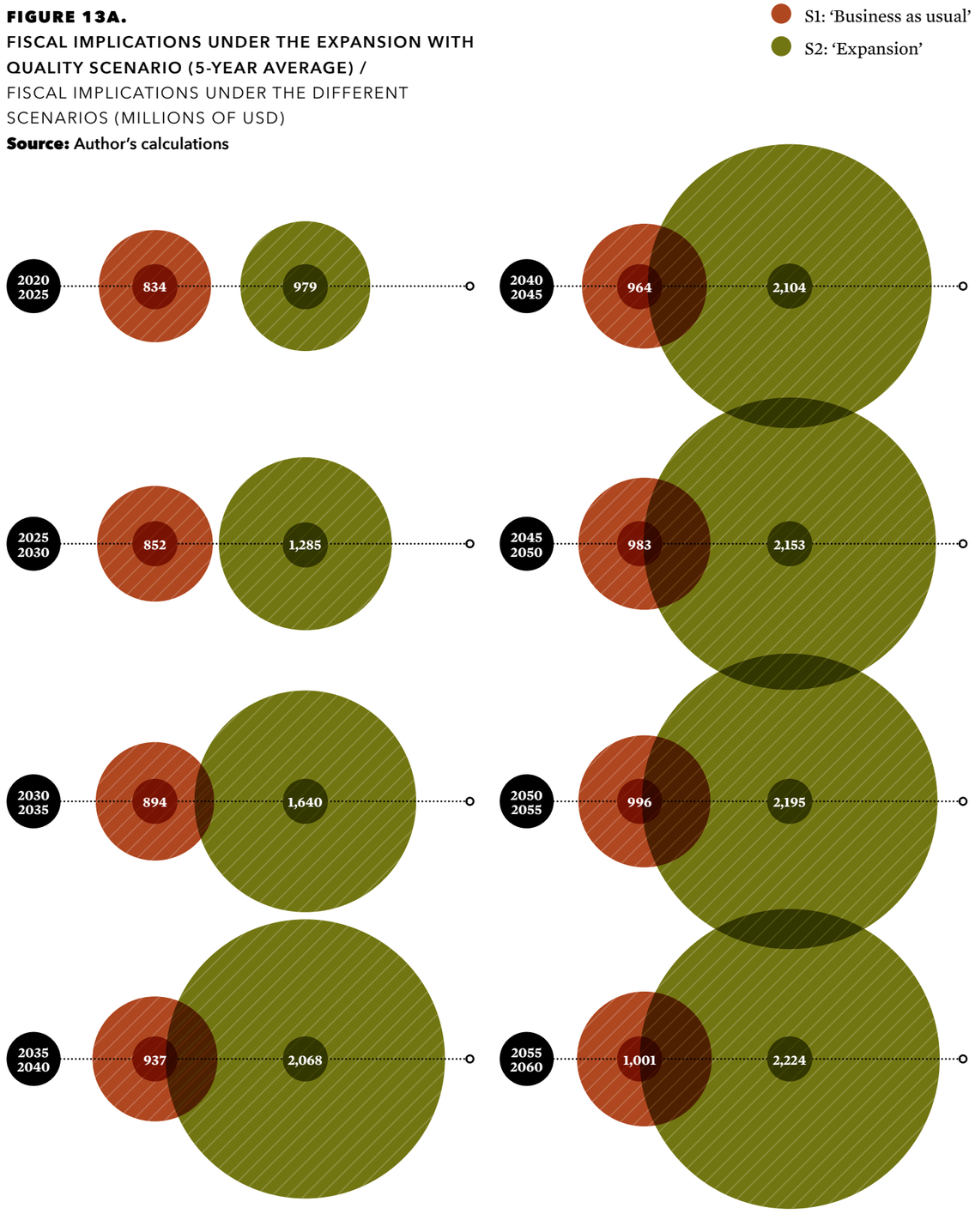
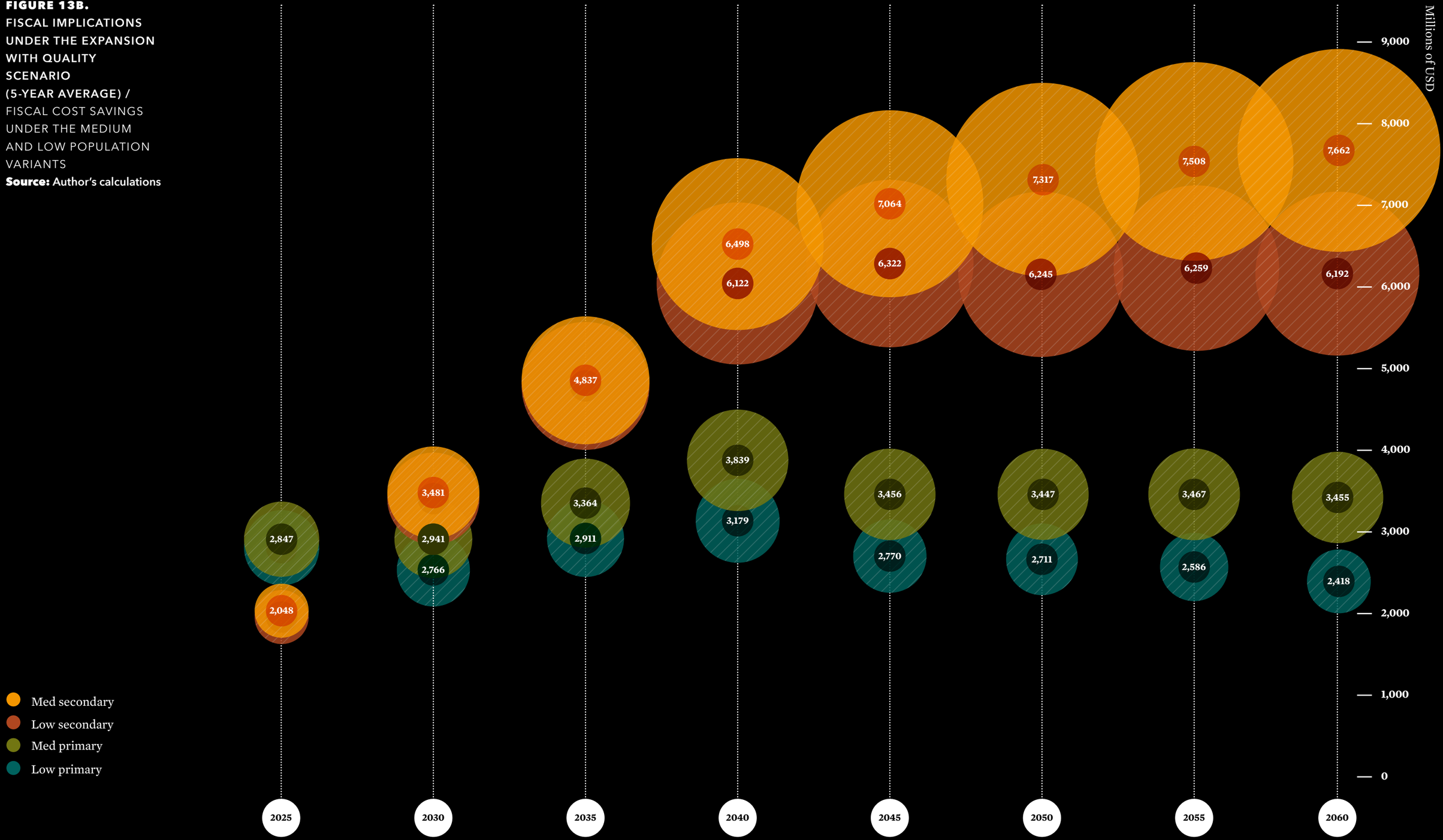


FIGURE 13B.
FISCAL IMPLICATIONS UNDER THE EXPANSION WITH QUALITY SCENARIO (5-YEAR AVERAGE) / FISCAL COST SAVINGS UNDER THE MEDIUM AND LOW POPULATION VARIANTS
Source: Author's calculations



D.1.3
PROVIDING EDUCATION FOR UGANDA'S GROWING POPULATION

Investing in education is crucial to fully capitalize on the benefits of going through a demographic transition. As the 'Business as Usual' scenario demonstrates, the GoU will have to invest heavily just to prevent the system from declining (without any improvements to the sector). However, this would imply that Uganda would continue to underinvest in the productive potential of its citizens.

More substantial and strategic investments in the sector are not only fiscally feasible but will also generate substantial efficiency gains in the long term. This section proposes three sets of policy recommendations that will allow the GoU to better capitalize on the investments made in the 'Expansion with Quality' scenario by partially offsetting the initial investment and ultimately generating considerable savings.

I. More effective and efficient utilization of existing resources. This will allow the sector to prioritize and re-focus on achievable goals.

- **A** **Introduce and ensure adherence to minimum standards of service delivery.** The priority should be placed on poor performing areas and/or schools to elevate their performance in line with national averages. Focusing on those who lag will reduce inequities and curb inefficiencies (e.g. repetition and drop-outs) within the system.

- **B** **Development and implementation of a cost-effective and demand-driven school construction strategy.** Expanding at such a rapid scale and pace requires more cost-effective and sustainable school infrastructure investments. This should include, amongst others: better utilization of existing infrastructure, reduction in construction costs where possible (e.g. teachers' housing only where it is necessary), larger schools to achieve economies of scale, and the creation of multi-purpose spaces (e.g. multi-purpose labs and libraries). In addition, revisiting the policy of double shifts to ensure effective classroom space utilization may be beneficial.

- **C** **Revision of teacher utilization and deployment policies and practices, especially under the new lower secondary education curriculum.** The official teaching load in Uganda in lower secondary education should be in line with the regional standard of 20 hours per week. This will enable school managers to redistribute work more efficiently. In addition, the allocation of teachers should be need-based, and more uniformly implemented.[30]

II. The introduction of strategic and systemic reforms and investments will allow the government to better allocate resources and achieve substantial savings.

- **A** **Restructuring the education system by separating lower and upper secondary cycles.** Under this proposal, lower secondary education would become part of compulsory universal basic education, while upper secondary education remains an un-compulsory, academically focused track (consistent with enrolment capacities in higher or technical and vocational education). In addition, it includes specialized learning profiles at the lower secondary level aligned with the new curriculum (e.g. humanitarian, scientific, vocational) to allow for better efficiency and transition tracks.

- **B** **Implementing robust school safety measures, including prevention of early marriage and pregnancies.** Violence against children (VAC), early marriage and pregnancies are major impediments to both expansion and quality of education. Reducing VAC, can generate substantial efficiency gains through decreasing drop-out and repetition rates, in addition to major social benefits.

- **C** **Revisiting the textbook procurement mechanisms and investing more in digital learning materials.** Uganda has some of the highest unit costs per textbook on the continent[31], leading to low pupil per textbook ratios. While the minimum textbook requirement will be reduced with the introduction of the new lower secondary curriculum (by reducing the number of compulsory subjects), dramatic reductions in unit costs across all sub-sectors are necessary to close the financing gap for basic textbook provision.

- **D** **Diversifying low-cost service delivery platforms through investment in remote learning approaches, including distance education and online learning at the secondary education level.** This could reduce operational costs in the medium and long run but comes with certain pre-conditions such as the development of student support systems. At the same time, content and pedagogical practices for teachers coupled with student tracking on progression for effective remote learning programs could be explored. Uganda can learn from its neighbours - Rwanda and Kenya, who have developed a range of diverse remote learning platforms, including TV, radio and online technologies to provide more diverse support to schools and teachers (World Bank, 2020).

- **E** **Shifting to performance-based budgeting in the long-term.** The introduction of performance-based budgeting is a strategic reform that will allow the government to reduce inefficiencies and maximize the returns on investments in education. Performance-based budgeting is currently being piloted under the Uganda Intergovernmental Fiscal Transfers Program. While the implementation challenges are inevitable, this is a very encouraging development, likely to generate substantial efficiency gains.

III. Finally, increasing education sector funding is an urgent priority necessary to address chronic underfunding and demographic pressure.

- **A** **Hopefully, the country will experience a gradual increase in the share of the public budget going to education.** Uganda's public education expenditure as a share of the total public expenditures has decreased from 15 percent in FY12/13 to 10 percent in FY19/20. This suggests that education has a lower national priority than seven years ago. The government needs to gradually increase its public expenditure on education as a share of the national budget to re-align it with the regional average and international norms, and as a requisite to ensure the human capital accumulation of the growing youth population.

- **B** **Introducing a sustainable PPP strategy to better leverage non-state resources.** More than half of national expenditure is currently paid by households and the private sector. The current USE PPP strategy, which has successfully leveraged non-state funding via a per-student subsidy and allowed for a large-scale expansion of the sector, was phased out in 2018. Thus far, no alternative has been proposed by the government, which puts hundreds of thousands of secondary students at risk of dropping out. Thus, the development of a policy framework for governing and regulating non-state actors is a priority.

30. Previous analyses show that the allocation of teachers to schools doesn't follow a clear pattern or to be aligned with actual needs. Poor deployment practices, therefore, result in further additional costs to the government (World Bank Group, 2019b).

31. This is due to a variety of factors including generally low competitiveness of the industry, issues related to the purchase of design rights by the government, as well as high distribution and storage costs.

D.2
HEALTH SERVICES

Delivery of primary health care services in Uganda is largely decentralized to local governments (LGs).[32] While the Ministry of Health (MoH) is responsible for policy formulation, setting standards, technical support, epidemic control and monitoring overall sector performance, the district local governments are responsible for service delivery. Moreover, the District Health Services Headquarters (District Health Office) provides the governance and management oversight for health service delivery at the district level. Health services are delivered at the following levels: Health Centers I (Village Health Team at household/communities/villages), II, III, and IV; and Hospitals (General, Regional Referral, National Referral and Specialized Hospitals). Different levels of health service delivery are accountable to different levels of administrative and political structures and serve standard catchment populations (Table 3).

The MoH is responsible for allocating the sector budget to the different levels of the health system. The Ministry of Finance provides each sector, including the MoH, with an overall resource envelope for each Financial Year (FY). The MoH then allocates the funds to different levels of the health system after consultations with key stakeholders in the health sector and based on the priorities outlined in the Health Sector Development Plan (2015/16-2019/20) and review of performance in the previous FY. After the national budget is approved by Parliament, the different levels of the health system deliver health services in line with the approved work-plans and budgets.

In Uganda, public spending on social services, such as education and health, is low, even in comparison to other low-income countries. The share of health expenditure from both domestic resources and on-budget external support (General Government Expenditure of Health – GGHE) is about 2 percent of GDP for 2019/20, among the lowest in Sub-Saharan countries. This translates to around U$8 per capita or 15.7 percent of the Total Health Expenditure, according to the National Health Expenditures account (Ministry of Health, 2016).[33] In the mid-2000s, transfers for the provision of health services began to decline in real per capita terms due to changing government priorities. By 2015/16, non-wage recurrent transfers in the health sector declined by 65 percent from their peak in the early 2000s. The financing gap that has been created by the diminishing government funding over the years has been met by development partners and households. By 2015/16, the health sector was being heavily financed by development partners contributing about 42 percent of the Total Health Expenditure followed by households at 41 percent, and the Government of Uganda at 15 percent. Consequently, while health outcomes have improved in Uganda over the past decade, many of the indicators remain far from national and global targets. In addition, the sector faces some important challenges including: (i) shortage in critical human resources, (ii) sub-optimal supply of quality medicines and health technologies, (iii) infrastructure shortfalls, (iv) low levels of funding for major inputs, (v) poor quality of health services, (vi) low allocative and technical efficiency, and (vii) poor coordination with other sectors (Ministry of Health, 2019).

32. In line with the Decentralization Policy (1992), the 1995 Constitution of the Republic of Uganda, and the Local Government Act of 1997.

33. For the fiscal years 2014/2015 and 2015/2016.

TABLE 4C.
ADMINISTRATIVE LEVELS, IMMEDIATE POLITICAL OVERSIGHT STRUCTURES AND ESTIMATED CATCHMENT POPULATION OF THE DIFFERENT LEVELS OF SERVICE DELIVERY
Source: Ministry of Health (2016); Service Delivery Standards; Ministry of Health (2010); Second Health Policy; Parliament of Uganda 1997; Local Government Act 1997.

Health system level	Administrative level	Political	Population served
Health Centre I (Village)	Village	Local Council 1	1,000
Health Centre II	Parish	Local Council 2	5,000
Health Centre III	Sub-county	Local Council 3	20,000
Health Centre IV	County	Local Council 4	100,000
General Hospital	District	Local Council 5	500,000
Regional Referral Hospital	Region	National Parliament	2,000,000
National Referral Hospital	National	National Parliament	43,000,000
Ministry of Health Headquarters	National	National Parliament	43,000,000

TACKLING THE DEMOGRAPHIC CHALLENGE IN UGANDA

D.2.1 METHODOLOGICAL CONSIDERATIONS

The analysis presented here focuses on public spending (General Government Expenditure on Health – GGHE) for the national minimum healthcare package. This encompasses capital, recurrent, and non-recurrent expenditures for delivery of essential health services including reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases – be it promotive, preventive, curative, rehabilitative or palliative.[34]

The cost estimates of serving the growing population under the different population projections over the next 40 years are based on the GGHE of the year FY 2019/20. The GGHE for this year amounted to US$ 703 million (6.4 percent of the national budget and 2 percent of GDP (Ministry of Finance Planning and Economic Development). This was converted into per capita expenditure, which is the basis to estimate the cost over the period 2020-2060 under the different population and access scenarios. Data for the projections of the physical resources or inputs, namely number of health facilities, hospital beds, health worker density and relevant standards, were obtained from various governments documents including the Annual Health Sector Performance Report for FY 2018/19 (Ministry of Health, 2018/2019) and the NPA POLICY BRIEF (2018/2019).

The implication of the population trends we explored for a 'Business as Usual' scenario and an 'Improved Equilibrium' scenario or *universal health coverage (UHC).* For each of them, the cost estimates are obtained under both the low and medium-variant population projections. Cost estimates are presented in 2019/20 prices and no considerations were made for the potential changes in the models of service delivery, epidemiological and social transitions. For the 'Business as Usual' scenario, the current UHC service coverage index is assumed to be 44 percent.[35] In the case of universal health coverage, the assumption is that Uganda reaches a UHC service coverage index of 90 percent, in line with the Sustainable Development Goals (SDGs).

The following assumptions were made in the analysis for the 'Business as Usual' and UHC scenarios. Foremost, for both scenarios, it was assumed that there were no changes in the model of service delivery, epidemiological and social transitions. Under the UHC scenario, in order to attain this level of access, the following requirements were considered: targets of 44.5 medical doctors, nurses and midwives per 10,000 people (WHO, 2016) and around 18 hospitals beds per 10,000 people (UN, 2020). In comparison, the requirements to attain the current level of access of 44 percent are about 15 medical staff per 10,000 people (NPA Policy Brief, 2018/19) and around 11 hospital beds per 10,000 people (Ministry of Health, 2019).

34. It must be noted that this study did not consider other key determinants of the cost of providing healthcare services to the population over the next 40 years such as changes in the disease patterns, the model of service delivery and the adoption of technologies.

35. The UHC service coverage index measures progress towards SDG 3.8.1 and its component tracer indicators, based on the most recently available data and agreed upon methods (1). The 14 UHC SCI tracer indicators, which span essential health service domains from reproductive and child health to noncommunicable diseases (NCDs) and service capacity. The 14 tracer indicators are: A) RMNCAH - Family planning, Antenatal care, 4+ visits (ANC), Child immunization (DTP3), Care seeking for suspected pneumonia, B) Infectious disease control - TB treatment, HIV treatment (ART), Insecticide-treated nets (ITN) and basic sanitation; C) Non-Communicable Diseases - Normal blood pressure, Mean fasting plasma glucose, and Tobacco nonsmoking; D) Service capacity and access - hospital bed density, health worker density, IHR core capacity index.

D.2.2
'BUSINESS AS USUAL': MAINTAINING CURRENT ACCESS LEVELS UNDER DIFFERENT FERTILITY SCENARIOS

REQUIREMENTS IN TERMS OF INPUTS

As expected, the physical inputs required to maintain the level of basic health services coverage at 44 percent for Uganda's growing population over the next 40 years will increase considerably. By 2060 Uganda will need 116 additional general hospitals under the medium-variant, and still 89 additional general hospitals under the low-variant – an increase of 71 percent and 50 percent respectively from the current 163 general hospitals country-wide (Figure 14a and b). The low fertilty variant translates into 27 and 8 fewer general hospitals required by 2060 and 2040 (when the country aspires to achieve the Vision 2040) respectively, which means that the country will need to build and equip one less general hospital every 2-3 years, and two less HCIVs annually compared to the medium-variant. Similarly, the country will need 7 fewer regional referral hospitals and 133 fewer HCIVs by 2060 under the low-variant scenario compared with the medium-variant scenario.

While the need to provide more hospital beds, doctors, nurses and midwives by 2060 is high under both the low and medium-variants, significantly fewer are required under the low-variant assumption. As indicated in Figure 14b, by 2060, Uganda will need 63,557 and 48,940 additional hospital beds respectively under the medium and low-variants. Achieving the lower population growth rate translates to 14,617 and 4,512 fewer hospital beds required by 2060 and 2040 respectively (about 365 hospital beds less per year between 2020 and 2060).[36] Similarly, Uganda will need 89,557 additional doctors, nurses and midwives under the medium-variant scenario by 2060, compared to 68,960 under the low-variant (Figure 14c).[37] Cumulatively, this means that, at the end of the 40 year period, around 20,597 fewer medical staff will be required under the reduced fertilty scenario, which will bring important savings in terms of salaries, as discussed below.

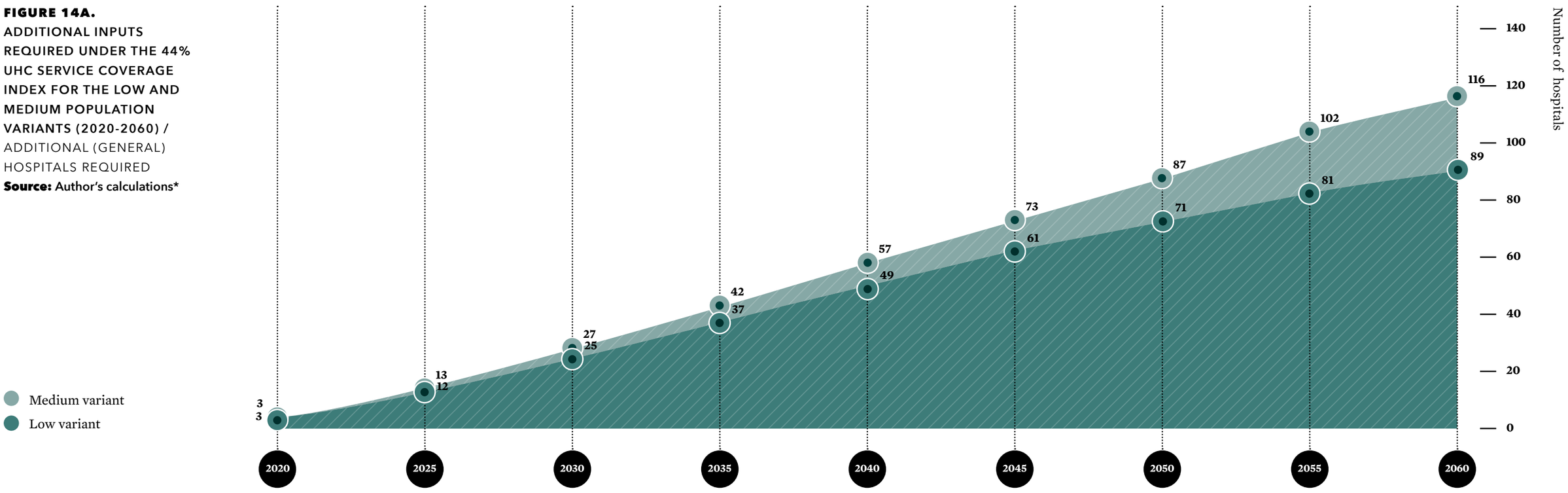
FISCAL IMPLICATIONS

Lower population growth rate (as projected by the low-variant scenario) translates to savings of 0.08 percent of GDP in 2040 (US$ 63 million) and 0.14 percent of GDP (US$ 204 million) in 2060 respectively. The projected GGHE as a percentage of GDP is expected to drop from 1.88 percent in 2020 to 1.39 percent by 2040 and 1.08 percent under the medium-variants, while it will reduce to 1.31 percent by 2040 and 0.94 percent by 2060 under the low population variant (Figure 15a and b). In total, achieving the low population variant scenario would result in more than UGX 11.5 trillion (U$3.03 billion) in cumulative savings for the Ugandan health budget over the period from 2020 to 2060. This means that having lower population growth translates to savings which could be used to expand service provision and/or increase quality of healthcare.

36. Considering linear trends, this translates to 1,662 additional hospital beds per year under the medium population variant and 1,425 additional 1,425 hospital beds per year under the low population variant.

37. Considering linear trends, the country will need an additional 2,342 core health workers annually by 2040 to achieve the current level of service coverage under the medium population variant as compared to an additional 2,008 core health workers per year under the low population variant.

FIGURE 14A.
ADDITIONAL INPUTS REQUIRED UNDER THE 44% UHC SERVICE COVERAGE INDEX FOR THE LOW AND MEDIUM POPULATION VARIANTS (2020-2060) / ADDITIONAL (GENERAL) HOSPITALS REQUIRED
Source: Author's calculations*



*Based on the approved FY 2019/20 Budget (Ministry of Finance, Planning and Economic Development) and the National Planning Authority reported UHC service coverage index as of 2019 (NPA Policy Brief, 2018/19).

FIGURE 14B.
ADDITIONAL INPUTS REQUIRED UNDER THE 44% UHC SERVICE COVERAGE INDEX FOR THE LOW AND MEDIUM POPULATION VARIANTS (2020-2060) / ADDITIONAL HOSPITAL BEDS REQUIRED
Source: Author's calculations*

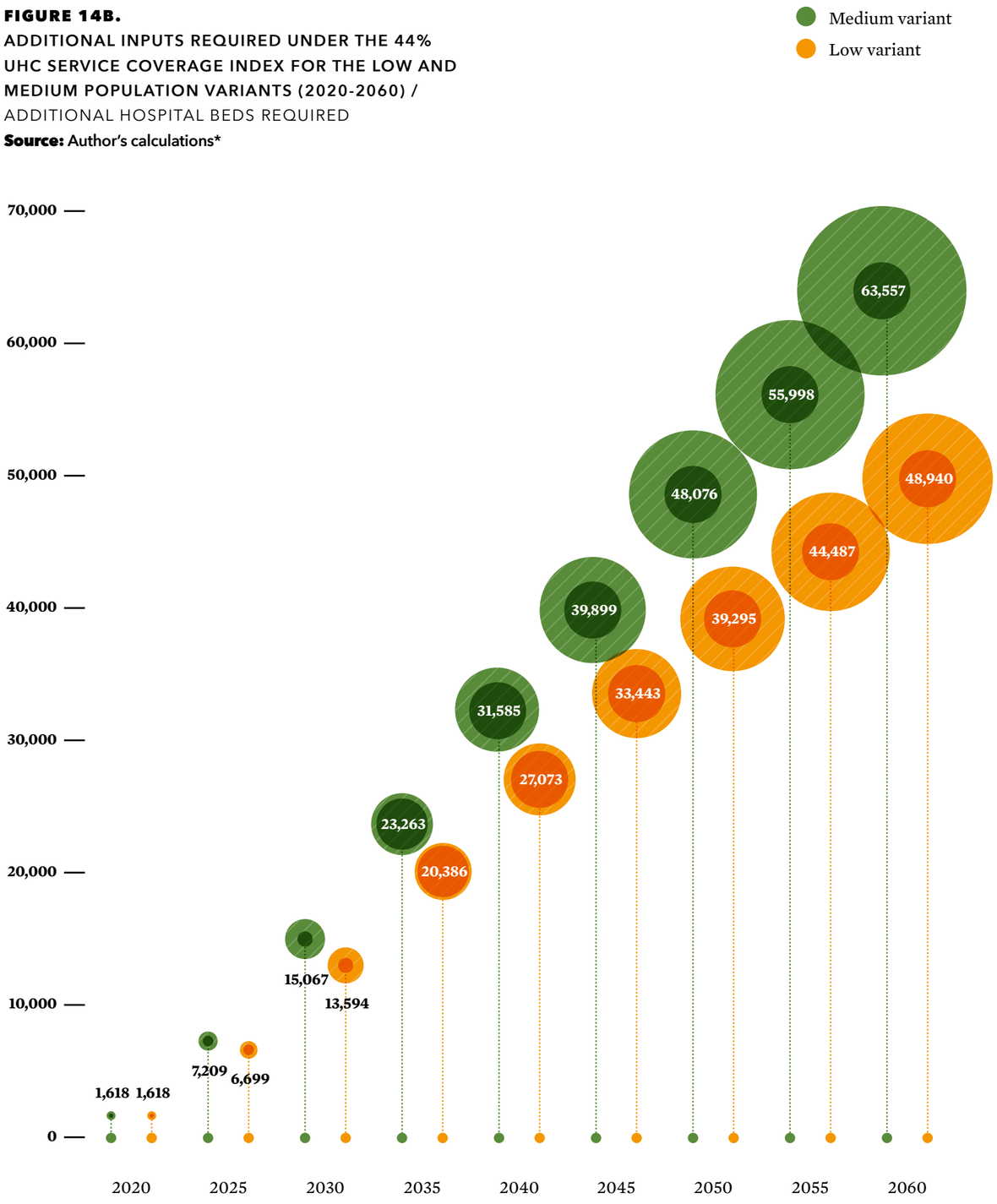
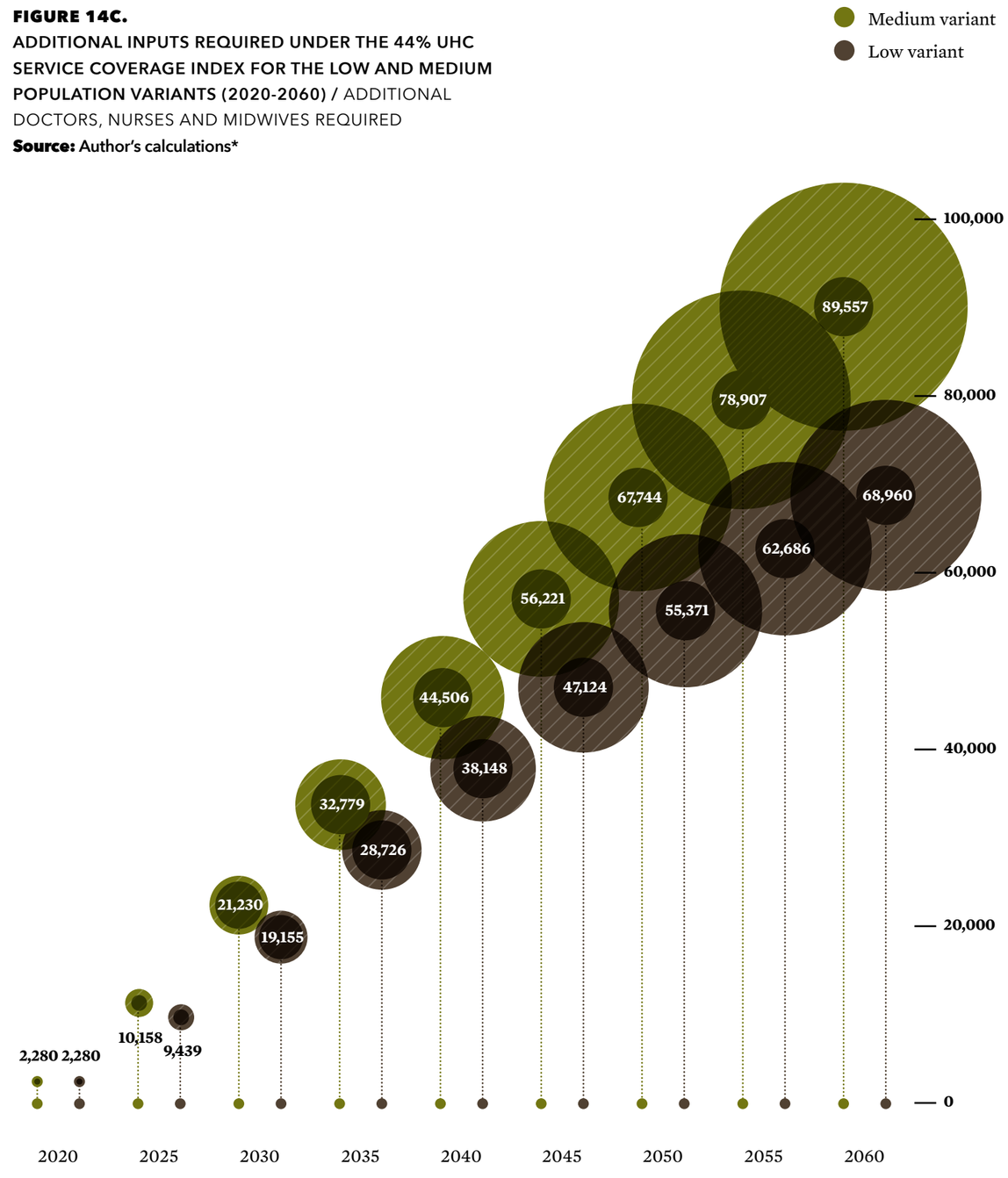


FIGURE 14C.
ADDITIONAL INPUTS REQUIRED UNDER THE 44% UHC SERVICE COVERAGE INDEX FOR THE LOW AND MEDIUM POPULATION VARIANTS (2020-2060) / ADDITIONAL DOCTORS, NURSES AND MIDWIVES REQUIRED
Source: Author's calculations*



*Based on the approved FY 2019/20 Budget (Ministry of Finance, Planning and Economic Development) and the National Planning Authority reported UHC service coverage index as of 2019 (NPA Policy Brief, 2018/19).

FIGURE 15A.
PROJECTED GGHE COSTS UNDER THE 44% UHC SERVICE COVERAGE INDEX FOR LOW AND MEDIUM / PROJECTED GGHE AS % OF GDP
Source: Author's calculations*

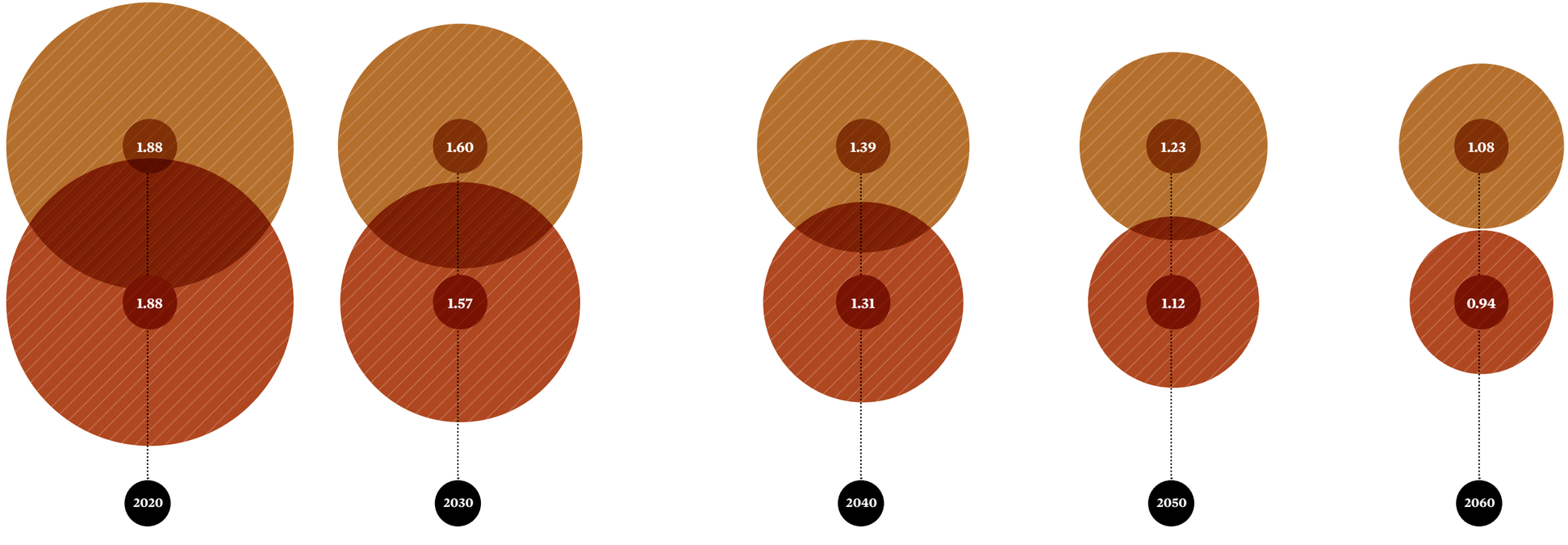
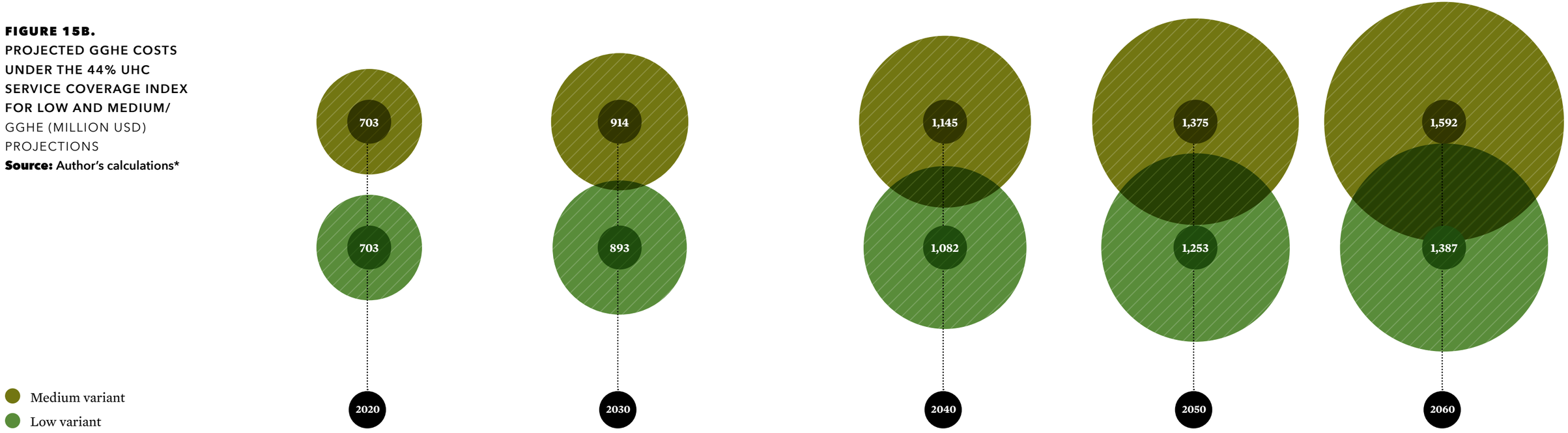


FIGURE 15B.
PROJECTED GGHE COSTS UNDER THE 44% UHC SERVICE COVERAGE INDEX FOR LOW AND MEDIUM/ GGHE (MILLION USD) PROJECTIONS
Source: Author's calculations*



*Bbased on the approved FY 2019/20 Budget (Ministry of Finance, Planning and Economic Development) and the National Planning Authority reported UHC service coverage index as of 2019 (NPA Policy Brief, 2018/19)

D.2.3
'ENHANCED EQUILIBRIUM': IMPROVING ACCESS LEVELS

INPUTS REQUIRED TO MAINTAIN CURRENT ACCESS LEVELS UNDER DIFFERENT FERTILITY SCENARIOS

As expected, the requirements to achieve universal health care coverage goals (i.e. UHC of 90 percent) in terms of inputs are substantial. Under the current access level (i.e. UHC index of 44 percent) there is little guarantee that the growing young population of Ugandans over the next 40 years will be able to attain their full productive potential as adults. Thus, a new scenario consistent with the goals of providing universal basic health care services is also analyzed: an UHC index of 90 percent. Under the most likely population scenario (medium-variant population projection) the country will need 173 additional general hospitals by 2060, which is 57 more than if the current levels of access were to be maintained (Figure 16a and b). Similarly, a total of 257,117 additional health care workers (167,560 more than if current access rates are mainted) and around 104,002 additional hospital beds (40,445 more when compared to UHC of 44) will be needed.

FISCAL IMPLICATIONS

Increasing the UHC service coverage index of 44 percent to 90 percent more than doubles the projected GGHE as a share of GDP. While the projected GGHE as a percentage of GDP is expected to drop from 3.75 percent in 2020 to 2.78 percent by 2040 and 2.17 percent under the universal service coverage assumption, this would imply significant additional resources compared to the *status quo* (Figure 17a). More specifically, under the medium population variant, Uganda will need to spend an additional 1.42 percent (US$ 1,145 million) and 1.09 percent (US$ 1,592 million) of GDP to achieve universal coverage by 2040 and 2060 respectively (Figure 17b). Now, when an effort to reduce fertility is considered (low-variant projection), we observe that the GGHE as a percentage of GDP drops to 2.63 in 2040 and 1.89 by 2060—a difference of 0.15 and 0.28 points of GDP compared to the medium-variant projection (Figure 17c).

D.2.4
RECOMMENDATIONS TO TACKLE THE DEMOGRAPHIC CHALLENGE FROM THE HEALTH SECTOR

Providing the growing population with basic health services will be essential to guarantee their productive potential over their lifecycle, and thus, will help Uganda take advantage of the demographic transition. In addition, the national policy of expanding access in line with the SDG aspirations needs to be supported by robust efforts to concurrently: a) increase the level and improve the organization of resources directed to the health sector, b) improve allocative and technical efficiencies in the health sector, and

c) address the family planning and reproductive health needs of the population, which will help to accelerate the reduction in the population growth rate, with positive outcomes on health indicators and significant savings over the next 40 years.

A **Increasing the resources to address the health needs of the growing population.** As has been shown, the required resources to serve the growing population and to achieve universal access to basic health services over the next 40 years are significant. Thus, it will be important to explore all possible financing sources:

- **Increasing government financing of health.** While it might be difficult to reach the Abuja Target of increasing the general government expenditure on health as a proportion of the general government expenditure to 15 percent, the GoU should explore the possibility of increasing the current level of 6.4 percent. Having an adequate core public funding of health can not only increase coverage, it also enhances the government's stewardship and oversight of interventions in the sector.

- **Increasing and organizing private financing for health.** Private financing of health care and especially out of pocket (OOP) financing currently accounts for about 37 percent of the total health expenditure in Uganda, yet OOP is associated with negative effects to the welfare of households. An effort to mobilize and manage these resources through mandatory and/or voluntary contributory schemes can help to increase resources in the health sector.

- **Deepening Public Private Partnership in Health (PPPH) would leverage private resources for the sector.** The government's formulation of the PPPH policy was a bold step in enhancing the private sector participation and contribution to the health sector. It would be beneficial to further strengthen the PPPH, especially in areas where the government investment is low. Access to capital and an adequate investment climate are important for the development of private health businesses (training, healthcare, research and innovation).

B **Enhancing efficiency in the health sector.** With inefficiencies accounting for the loss of between 20 to 40 percent of healthcare resources in the country (World Health Report, 2010), the importance of enhancing the efficiency of sector is clear. Some efficiency enhancing interventions that could be adopted and or scaled up are:

- **Deepening the implementation of results focused budgeting and purchasing approaches in the health sector.** The government's adoption of program-based budgeting will potentially enhance efficiency in resource allocation as it aligns spending with program objectives. Coupled with the nation-wide adoption of results-based financing (RBF) as a strategic purchasing mechanism involving both the public and private health facilities, it will enhance efficiency in the sector. Deliberate efforts to deepen reforms in these two areas are critical in achieving health sector policy objectives at lower costs.

- **Efficient deployment and use of resources.** Inefficiencies often arise from weaknesses in the deployment of resources (including human resources, infrastructure, equipment and medicine). Thus, it is important to regularly monitor the effectiveness of the deployed resources and implement corrective measures in real-time if necessary. Improving management, maintenance and repair of equipment and enhancing staff time at task are two critical efficiency saving areas that need to be pursued more vigorously.

The involvement of citizens, civil society and other stakeholders can also help to improve the transparency and accountability of healthcare resources.

- **Scaling up digitalization of business processes.** The digitalization of health service delivery, management of healthcare resources, training of personnel, procurement and engagement of stakeholders can also help to enhance efficiency. This will be particularly important for the higher-level facilities, for which business processes can be streamlined, automated and digitalized. The government has already started on this agenda and is encouraged to continue this path.

- **Strengthening health promotion and disease prevention through a multi-sectoral collaboration.** Since over 70% of the disease burden in Uganda is preventable and prevention measures are far cheaper than treatment on per capita terms, investing in this area can beneficial. Taking a multi-sectoral investment approach in prevention has been shown to produce better results due in part due to leveraging of resources and mutual accountability.

C **Satisfying the unmet need for family planning and reproductive health services.** As discussed in Chapter 2, the unmet needs for modern contraception among women as well as the fact that the desired fertility is considerably higher than the observed fertility highlights the importance of expanding and improving the family planning and reproductive health services in Uganda. This will not only bring positive effects on the health outcomes of women (and their children), but will help to curb population growth, lowering the pressure on healthcare resources.

FIGURE 16A.
ADDITIONAL INPUTS REQUIRED TO REACH THE 90% UHC SERVICE COVERAGE INDEX FOR THE MEDIUM POPULATION VARIANT (2020-2060) /
ADDITIONAL (GENERAL) HOSPITALS REQUIRED
Source: Author's calculations*

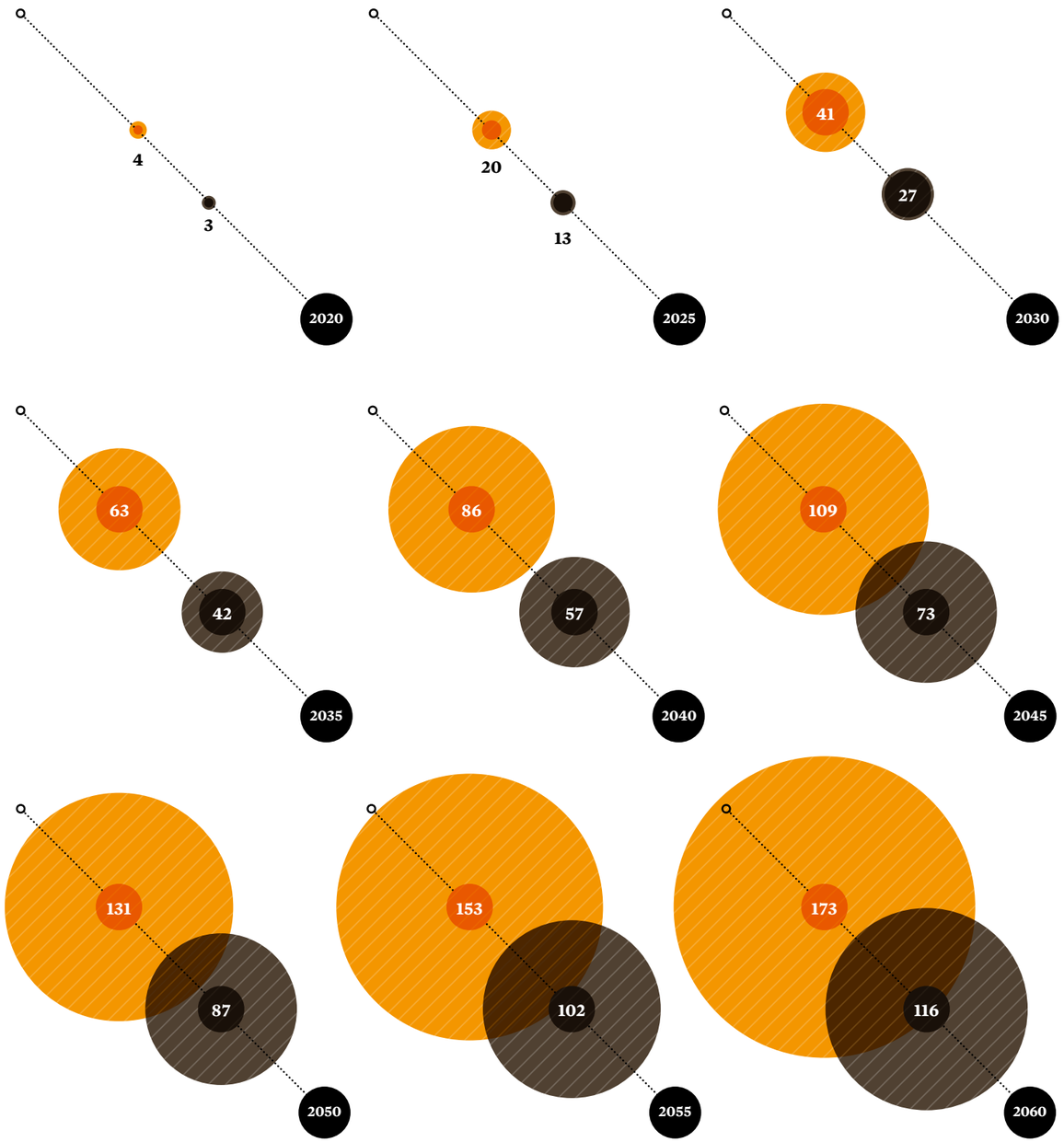
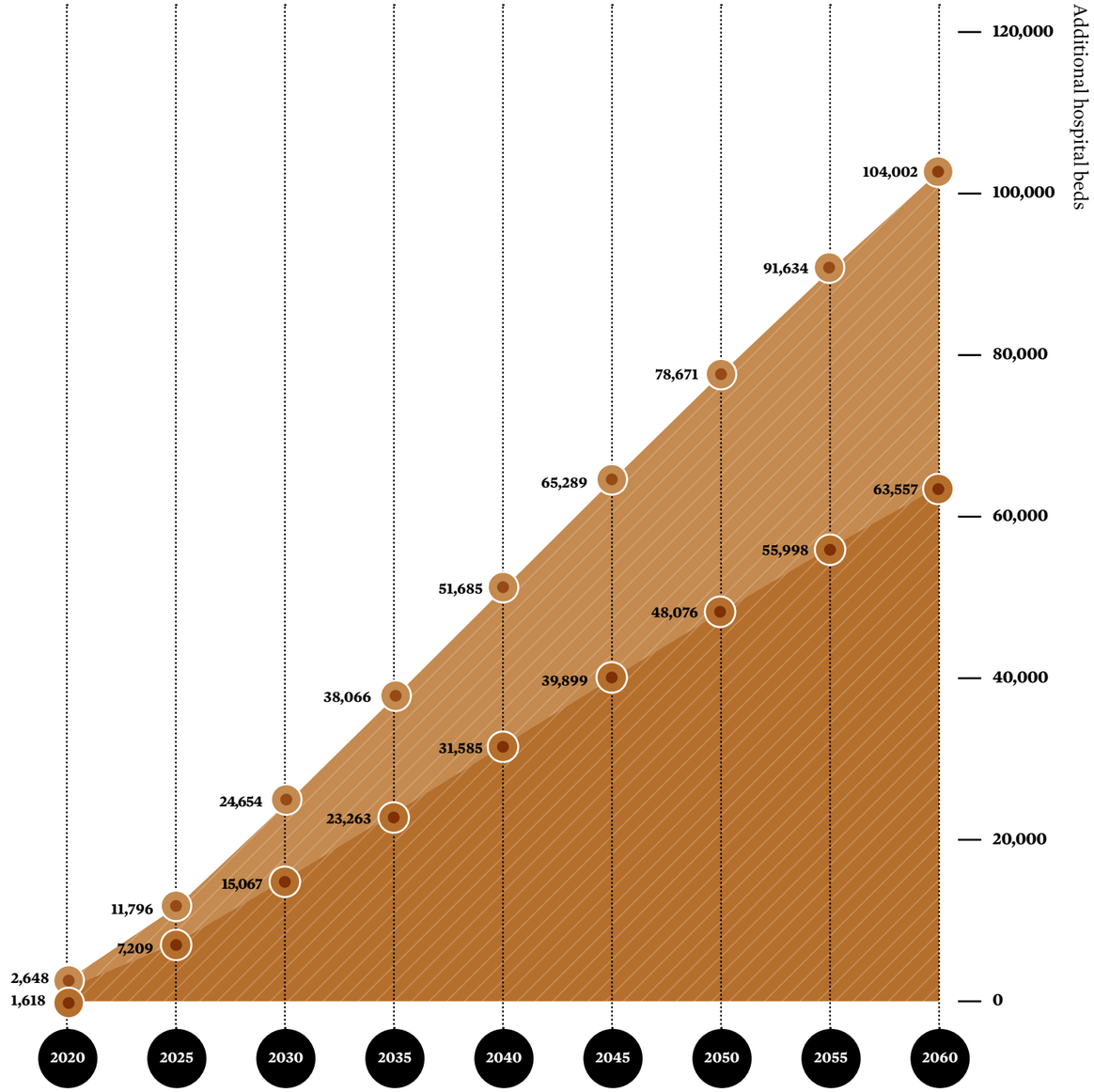
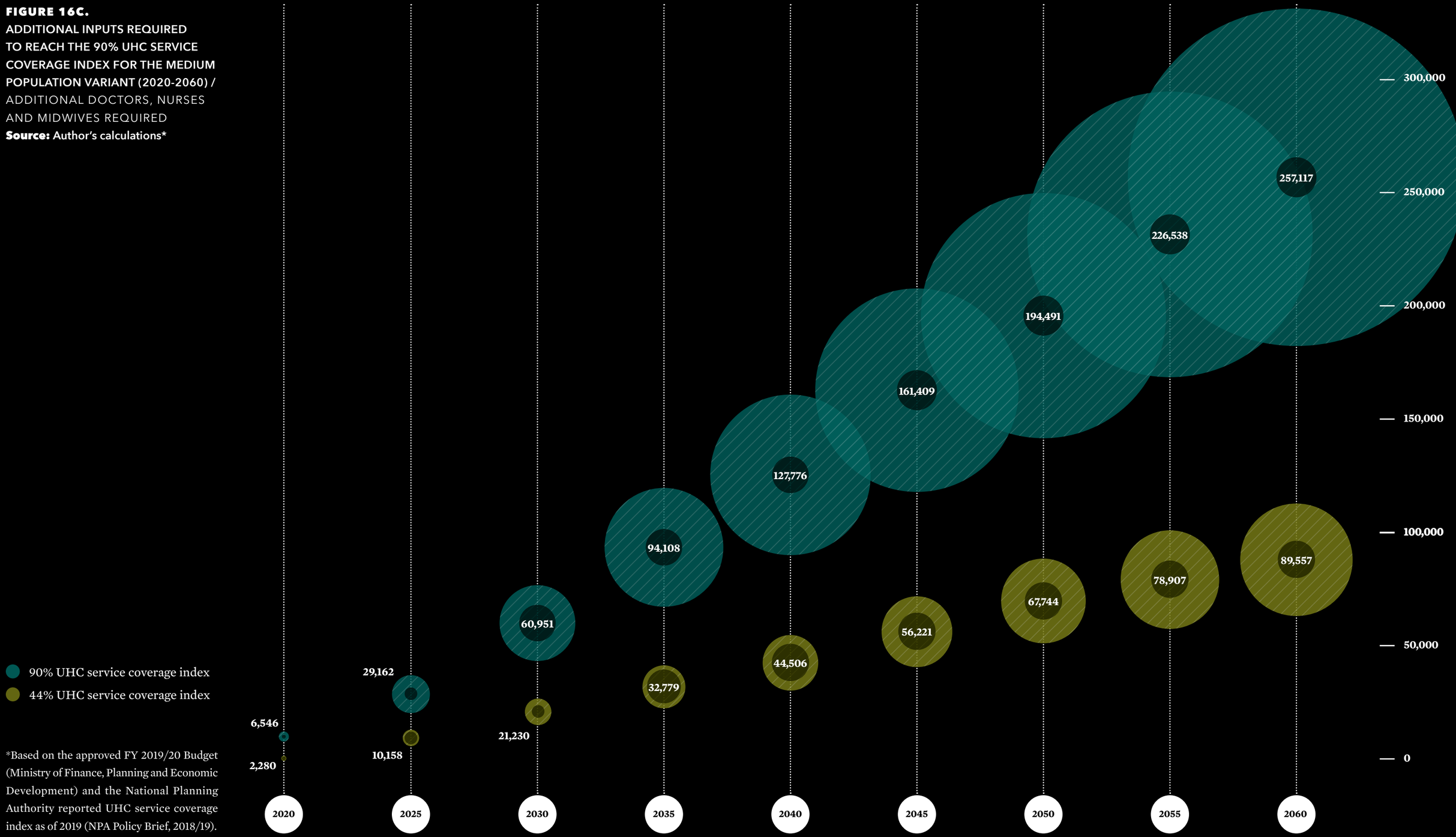


FIGURE 16B.
ADDITIONAL INPUTS REQUIRED TO REACH THE 90% UHC SERVICE COVERAGE INDEX FOR THE MEDIUM POPULATION VARIANT (2020-2060) /
ADDITIONAL HOSPITAL BEDS REQUIRED
Source: Author's calculations*



*Based on the approved FY 2019/20 Budget (Ministry of Finance, Planning and Economic Development) and the National Planning Authority reported UHC service coverage index as of 2019 (NPA Policy Brief, 2018/19).

FIGURE 16C.
ADDITIONAL INPUTS REQUIRED TO REACH THE 90% UHC SERVICE COVERAGE INDEX FOR THE MEDIUM POPULATION VARIANT (2020-2060) / ADDITIONAL DOCTORS, NURSES AND MIDWIVES REQUIRED
Source: Author's calculations*



*Based on the approved FY 2019/20 Budget (Ministry of Finance, Planning and Economic Development) and the National Planning Authority reported UHC service coverage index as of 2019 (NPA Policy Brief, 2018/19).

FIGURE 17A.
PROJECTED GGHE FOR 44% AND 90% SERVICE COVERAGE UNDER THE MEDIUM AND LOW POPULATION VARIANTS /
PROJECTED GGHE AS A % OF GDP UNDER THE MEDIUM POPULATION VARIANT
Source: Author's calculations*

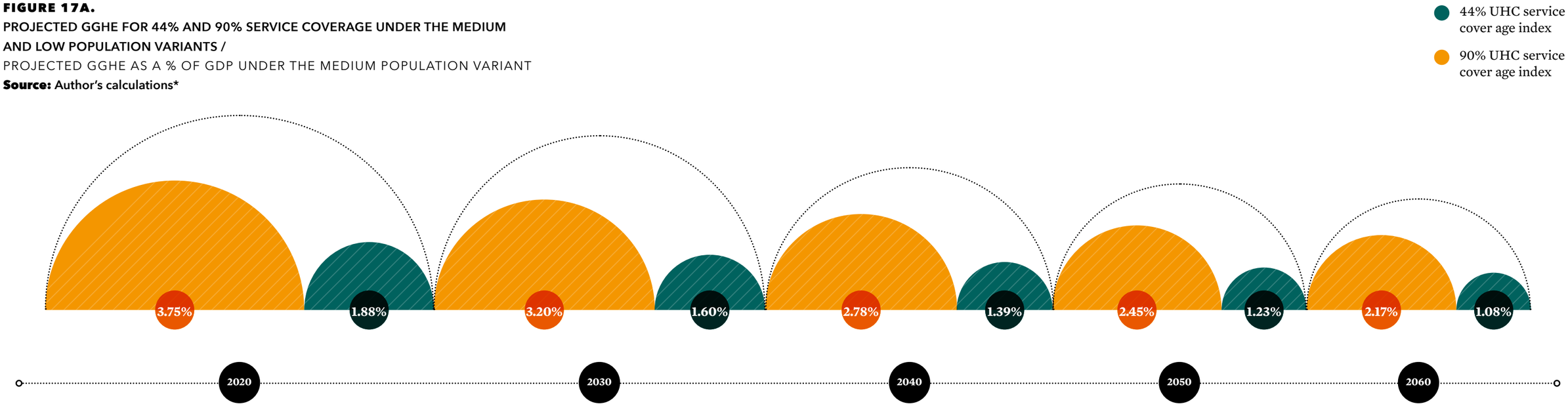
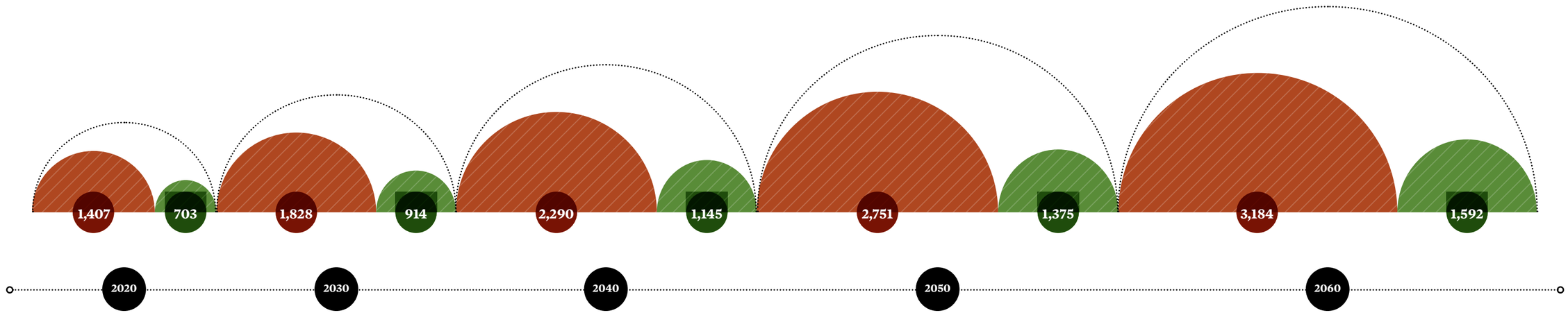


FIGURE 17B.
PROJECTED GGHE FOR 44% AND 90% SERVICE COVERAGE UNDER THE MEDIUM AND LOW POPULATION VARIANTS /
GGHE (MILLION USD) PROJECTIONS UNDER THE MEDIUM POPULATION VARIANT
Source: Author's calculations*



*Based on the approved FY 2019/20 Budget (Ministry of Finance, Planning and Economic Development) and the National Planning Authority reported UHC service coverage index as of 2019 (NPA Policy Brief, 2018/19).

FIGURE 17C.
PROJECTED GGHE FOR 44% AND 90% SERVICE COVERAGE UNDER THE MEDIUM AND LOW POPULATION VARIANTS /
PROJECTED GGHE AS A % OF GDP UNDER THE LOW POPULATION VARIANT
Source: Author's calculations*

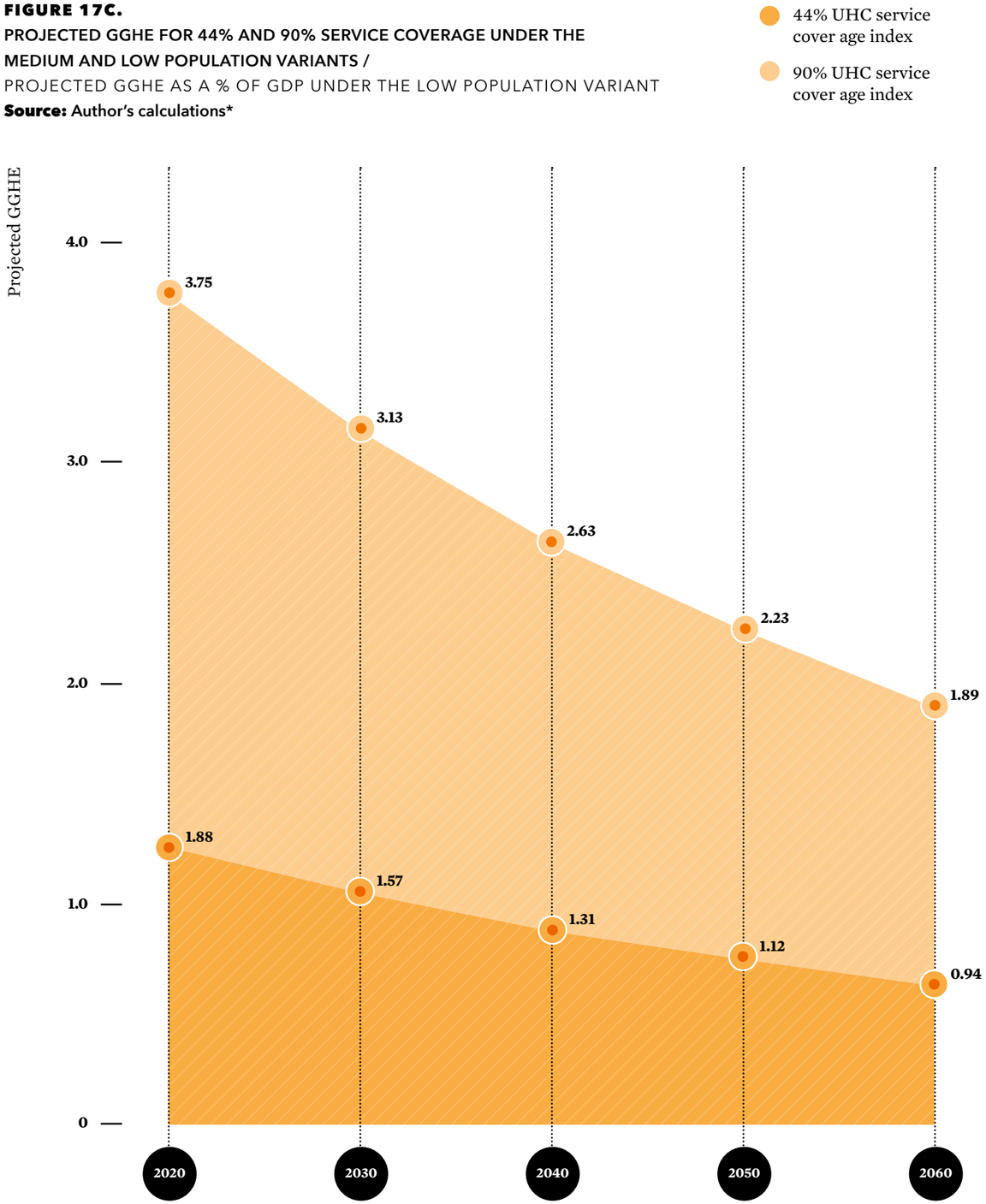
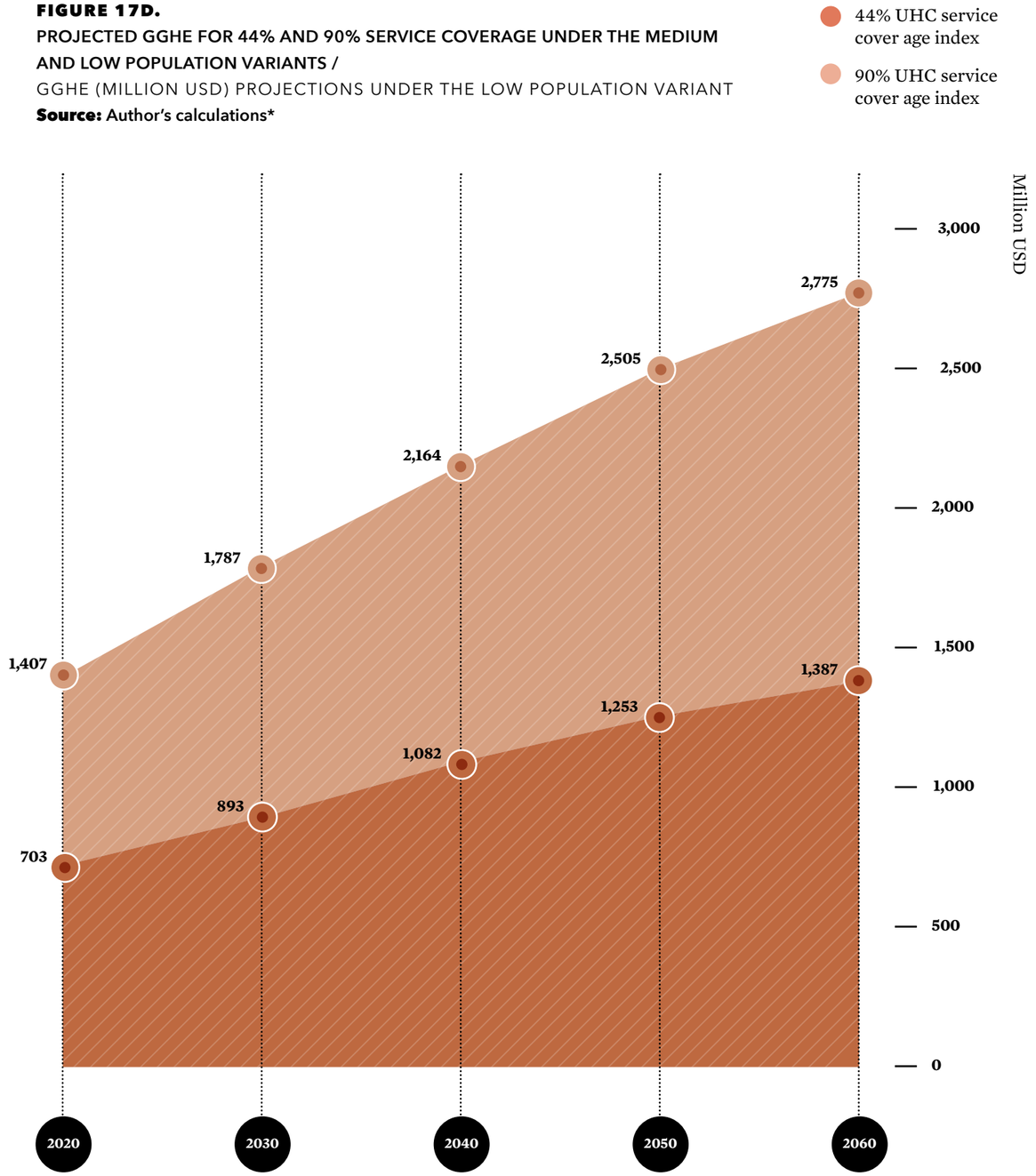


FIGURE 17D.
PROJECTED GGHE FOR 44% AND 90% SERVICE COVERAGE UNDER THE MEDIUM AND LOW POPULATION VARIANTS /
GGHE (MILLION USD) PROJECTIONS UNDER THE LOW POPULATION VARIANT
Source: Author's calculations*



*Based on the approved FY 2019/20 Budget (Ministry of Finance, Planning and Economic Development) and the National Planning Authority reported UHC service coverage index as of 2019 (NPA Policy Brief, 2018/19).

TACKLING THE DEMOGRAPHIC CHALLENGE IN UGANDA

D.3
INVESTMENT IN INFRASTRUCTURE

Despite recent investments, Uganda still has a considerable infrastructure deficit, requiring significant additional efforts, particularly in the power, water supply, and sanitation sub-sectors. A recent analysis estimated that an annual investment of US$ 1.6 billion or about 14 percent of GDP per year between 2006 and 2015 would be required to meet the economic and social targets traced in the Millennium Development Goals (MDGs) within the information and communication technologies (ICT), power, transport, water and sanitation, and irrigation sectors. The sectors with the highest investment requirements were the power and water supply and sanitation sectors, with an estimated annual capital investment of US$ 390 and US$ 293 million respectively (Table 4). Despite recent efforts by the GoU, the infrastructure deficit in these three sectors affects Ugandan households' access to basic services.

The energy sector in Uganda is well positioned to reap positive and significant returns from fiscal investment. Compared to other Sub-Sahara African countries, the energy sector in Uganda has a strong organizational structure and finances (Godinho and Eberhard 2019). It is governed by an independent regulator and, in addition, the generation, transmission, and distribution of energy are vertically unbundled and designed to incentivize competition through private sector participation (PPPs, concession agreements). Rural electrification is less competitive and managed by the Rural Electrification Board and higher access rates to rural customers have been hampered by a combination of tariff affordability and a strategy that remained too focused on grid expansion.

Access to clean water and sanitation varies throughout Uganda, with rural areas requiring a significant level of investment relative to urban centers. The Directorate of Water Development within the Ministry of Water and Environment is responsible for the construction of water and sanitation-related infrastructure. Piped water and sewage services are limited to urban areas and operated by the National Water and Sewerage Corporation (NWSC). NWSC operates in 256 towns and manages about 660 thousand water and 22 thousand sewer connections (NWSC, 2020). While NWSC is one of the best performing water utility companies in Sub-Saharan Africa, regulated by a dedicated department under the Directorate of Water Development, expanding access to the wider population, especially in rural areas, has been a challenge (Murungi and Blockland, 2016). Apart from NWSC, regional 'Umbrella' public utilities operate piped water systems, and water supply and sanitation responsibilities in small towns. Rural growth centers are entrusted to local government entities and, with exceptions, typically entail non-network technologies (Ministry of Water and Environment, 2020).

D.3.1 METHODOLOGICAL CONSIDERATIONS

The analysis in this section focuses on capital investments and fiscal impact for electricity access and distribution, and water supply and sanitation, required to serve Uganda's growing population over the next 40 years. The population projections are based on low and medium level fertility scenarios based on the United Nations World Population Prospects, as explained in Chapter 3. Cost estimates are prepared for a 'Business as Usual' scenario, that identifies capital cost investments needed for an increasing population if current access rates are to be maintained. Both the power and water supply sectors are highly capital intensive and rely on network distribution in more densely populated areas and non-network technologies in less populated areas.

In addition, the implications of attaining the Sustainable Development Goals (SDGs) under the two population variants are also explored. The SDGs aim to have universal access to electricity and safely managed water and sanitation by 2030 and are built on the earlier defined MDGs (see Table 5). In the case of electricity access, household surveys typically categorize the type of electricity source the household is using for lighting and whether this source is from the national grid or otherwise. Since part of the strategy to increase access to electricity especially in rural areas includes off-grid solutions in the form of solar energy, 'having access' is measured in this analysis as receiving electricity either from the national grid or from solar sources.

Measuring access to safely managed water and sanitation services is complicated by the absence of pertinent information in household surveys. Most household surveys lack information on bacterial safety of water sources and how excreta are managed and treated. In order to address this information deficit, this analysis will rely on the 'basic access' definition formulated under the SDGs that entail for access to 'improved' water supply sources, such that these protected water sources are within 30 minutes walking distance from the household, and for sanitation using an 'improved' latrine technology not shared with other households (Table 5). [38]

Given the significant gaps in access, realizing the SDGs will require a considerable effort as discussed below. Using the most recent household survey for Uganda (Uganda National Household Survey 2016/17), the access statistics are estimated (Table 6). About 66 percent of the urban population in Uganda is estimated to have access to electricity either through the grid or from solar energy, whereas among the rural residents only 30 percent have access to either. Likewise, 85 percent of urban and 57 percent of rural residents have access to either improved or piped water supply within a 30 minute walking distance, and only 31 percent of urban and 17 percent of rural residents have access to a private latrine that is of an improved standard.

38. "Improved" water solutions that by the nature of its construction protect the source from outside contamination. It includes a borehole or a protected well or spring, among others. "Improved" sanitation are pour latrines with piped sewer systems and septic tanks, ventilated or improved pit latrines, pit latrines with a slap, or composting toilets.

TABLE 4D.
PREVIOUSLY ESTIMATED ANNUAL INFRASTRUCTURE SPENDING NEEDS IN UGANDA, 2006–15 (2020 US$ MILLION)
Source: Ranganathan and Foster (2012)

Sector	Capital expenditure	Operations & maintenance	Total cost
ICT	161	20	181
Irrigation	260	1	261
Power	439	64	503
Transport	154	94	249
Water and Sanitation	330	63	393
Total	1,344	242	1,587

TABLE 4E.
SUSTAINABLE DEVELOPMENT GOALS
Source: Ritchie, Roser, Mispy, Ortiz-Ospina (2018)

	SDG INDICATOR 7.1.1 Access to electricity	SDG INDICATOR 6.1.1 Safe drinking water	SDG INDICATOR 6.2.1 Safe sanitation and hygiene
Definition	The proportion of population with access to electricity. It comprises electricity sold commercially, both on-grid and off-grid.	A safely managed drinking water service is defined as one located on premises, available when needed and free from contamination. 'At least basic' drinking water service is an improved source within 30 minutes' round trip to collect water.	Share of the total population using a safely managed sanitation service; that is, excreta safely disposed of in situ or treated off-site. 'At least basic' are improved sanitation facilities not shared with other households.
Goal	By 2030 ensure universal access to affordable, reliable and modern energy services.	By 2030 achieve universal and equitable access to safe and affordable drinking water for all.	By 2030 achieve universal access to adequate and equitable sanitation and hygiene for all and end open defecation.

TABLE 4F.
CURRENT ACCESS TO ELECTRICITY, WATER AND SANITATION IN UGANDA (2016/17)
Source: Uganda National Household Survey 2016/17

		Percent
Energy	People with access to electricity from national grid in urban areas	54.66
	People with access to electricity from solar in urban areas	11.82
	People with access to electricity from national grid in rural areas	7.26
	People with access to electricity from solar in rural areas	22.48
Sanitation & Water	People with access to piped water within 30 minutes of premise in urban areas	60.44
	People with access to improved water within 30 minutes of premise in urban areas	24.14
	People with access to piped water within 30 minutes of premise in rural areas	8.66
	People with access to improved water within 30 minutes of premise in rural areas	48.13
	People using basic improved and not shared sanitation services in urban areas	31.24
	People using basic improved and not shared sanitation services in rural areas	17.03

D.3.2
OBTAINING PER CAPITA COST ESTIMATES

This study provides approximate cost figures based on the most updated information and some relevant assumptions. Costing infrastructure per capita is an exercise that is invariably criticized as being overly simplistic since the cost of infrastructure is dependent on a variety of contextual local circumstances – such as population density, terrain, distance to and type of water source or power generation, etc. – that will not be captured by a single number. However, the intention here is to provide approximate cost figures to evaluate different fertility outcomes against each other. In order to meet the SDGs, it is assumed that future access would be rolled out as follows: the urban population would get access to electricity through the grid, to piped water at their premises, and to at least a latrine with a septic tank. These technical options that can be afforded because urban densities offer economies of scale and typically need to be installed to manage possible environmental externalities arising from population density. Rural residents, on the other hand, would access more cost-effective technical solutions – dictated by their lack of density – including solar energy, and 'improved' water and sanitation technologies referred above. Across the spectrum of infrastructure assets, it is assumed that assets have a longevity of 25 years and need to be replaced thereafter. This translates into a depreciation rate of 4 percent every year, or 20 percent every 5 years. The cost estimates do not include operation and management costs and are presented in 2019/20 US$.

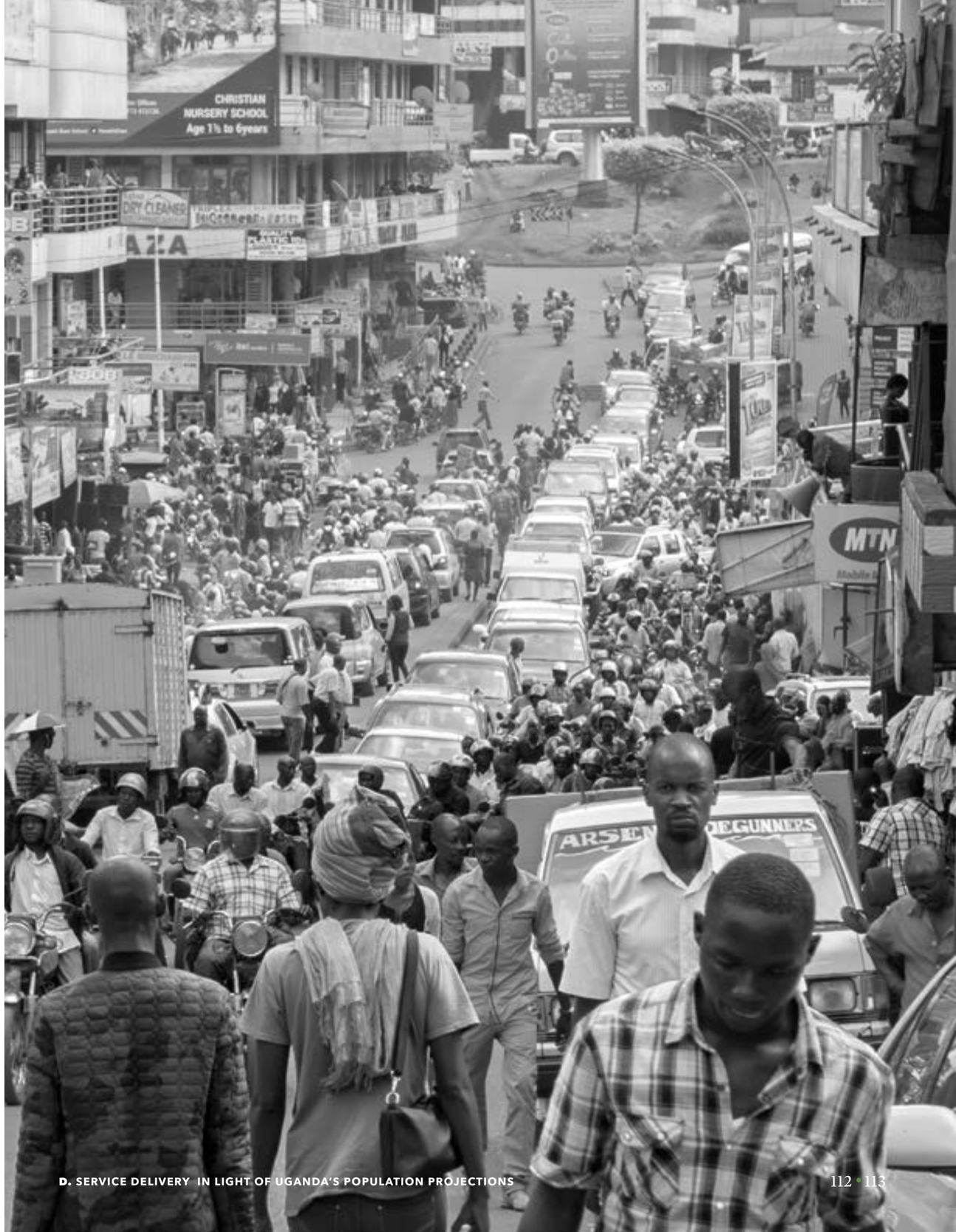
It is estimated that energy investments will be US$ 200 to US$ 801 per household, with higher investments necessary for households located off electrical grids. A recent costing analysis for energy[39] estimated that US$ 4,661 million of capital investments were needed to meet the 2030 SDGs in Uganda. Using the cost estimates of this analysis – by dividing the number of new households served over the cost for each access type – per household costs were computed for connecting households to the grid (US$ 801) and off-grid electricity (US$ 200). These were then converted to per capita cost by diving by the average household size (4.9) applied in their analysis. Capital expenditure for grid electricity did not entail electricity generation that is expected to be delivered through private sector investments.

Densely populated urban areas are associated with relatively higher investment costs for improved water supply and waste management systems than low-density rural areas. Cost estimates for water supply and sanitation are derived from a meta-analysis prepared by Hutton and Varughese (2016) for various water, sanitation, and hygiene interventions. These were gathered from peer-reviewed journals as well as project documents and vetted by practitioners in 40 countries. The study estimates are derived for 2016, cost estimates have been inflated by 15 percent to account for possible cost increases. The cost of extending piped water to the household premises in urban areas is thus estimated at real US$ 120 per capita and for 'improved' water technologies in rural habitats at real US$ 40 per capita.[40] A latrine with septic tank is estimated at real US$ 230 per capita for urban areas including full excreta management, and 'improved' sanitation options are assumed to cost real US$ 80 per capita on average, also including safe excreta disposal.[41]

39. PowerPoint presentation from 2020 shared by Raihan Elahi, World Bank. The analysis took into consideration population growth and assumed that 52 percent of the population would be served by grid electricity, while the remaining 48 percent would be accessing off-grid solutions.

40. Hutton and Varughese (2016) estimated USD 76.9 per capita for piped water for Uganda; however, the Ministry of Environment apply cost estimates between USD 75 and 120 in their projections, and the upper boundary is used in this analysis.

41. Based on Hutton and Varughese (2016), safe excreta management is added to the cost of household assets. Using their cost data, for urban septic tanks this implies a cost of $158.6 plus $44.6, and for rural pit latrines $42.9 plus $35.1.

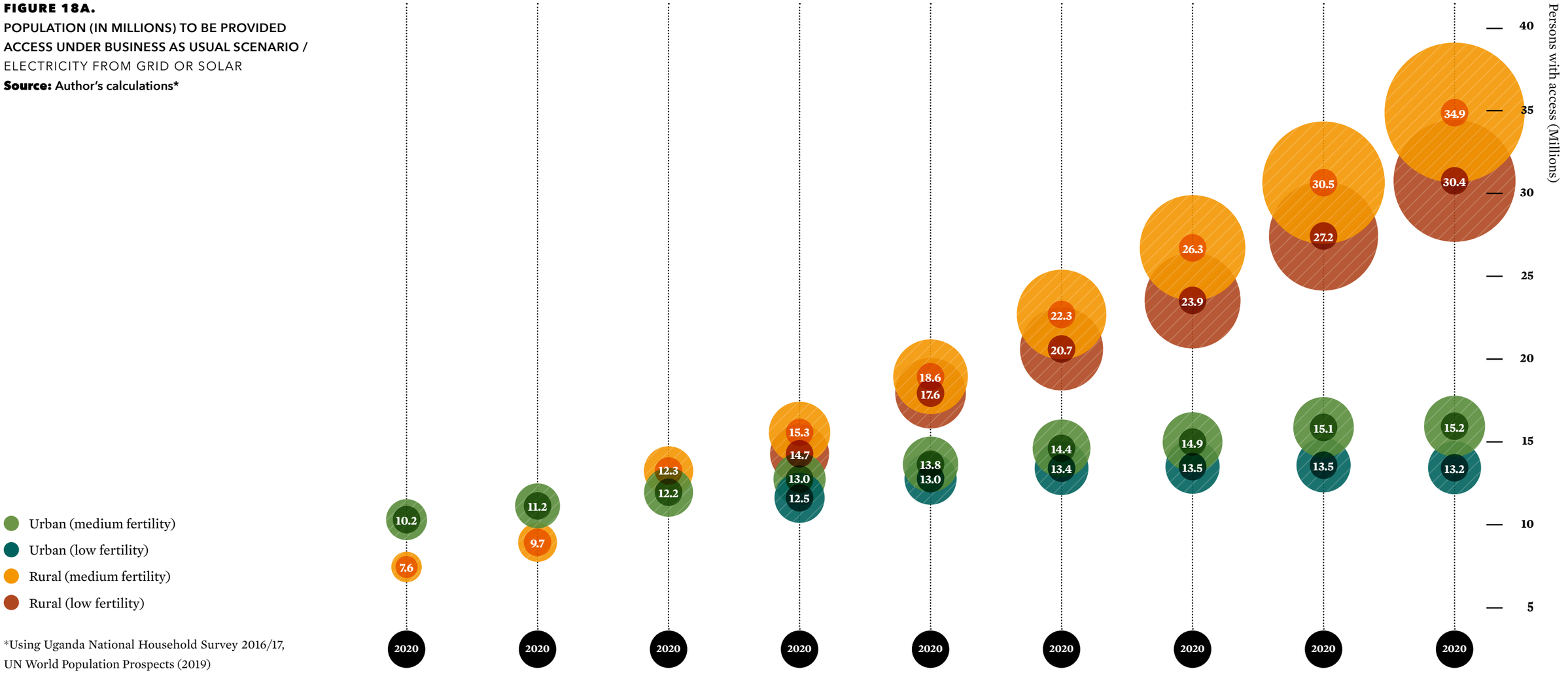


D.3.3
'BUSINESS AS USUAL' - COST OF MAINTAINING CURRENT ACCESS UNDER DIFFERENT FERTILITY SCENARIOS

With access rates kept constant, under the most likely population scenario, an additional 27.3 million people in urban areas will need to be connected to the grid, 34.8 million will need piped or improved water; and 12.8 million will need improved and private sanitation (Figure 18). As expected, the numbers are smaller under the low-fertility scenario projections for urban areas, an additional: 22.9 million will need to be connected to an electrical grid; 29.1 million will need piped or improved water; 10.7 million will need improved and private sanitation. The rural areas show a much more moderated need. Under the medium-fertility projection, an additional: 4.9 million will need to be connected to an electrical grid; 19.5 million will need piped or improved water; 2.8 million will need improved or private sanitation. These numbers are reduced considerably under the low-fertility scenario: 3.0 million, 5.7 million, and 1.7 million, respectively (Figure 18). For all services, there is a larger difference in urban areas between service access under the medium and low fertility paths (compared to rural areas) since part of the rural population is expected to migrate to urban areas and urban fertility is typically lower.

The cumulative savings for all three subsectors: energy, water, and sanitation under the low-variant scenario, compared to the medium-variant, reaches 15 percent. Costing new access and replacement of depreciated assets is shown below for each 5-year cycle (Figure 19). Cumulative spending on all three sectors until 2060 would amount to US$ 18.5 billion under the medium fertility scenario and US$ 16.2 billion under the low fertility scenario, which represents savings of around 15 percent. However, as a proportion of Uganda's GDP, total spending for all three sectors is moderate, averaging around 0.55 to 0.61 percent of GDP when the cost is annualized over the years as a percentage of the prospective GDP. This points to the rather conservative estimates offered in this analysis and the fact that only these three sectors are included in the overall infrastructure spending required for Uganda

FIGURE 18A.
POPULATION (IN MILLIONS) TO BE PROVIDED ACCESS UNDER BUSINESS AS USUAL SCENARIO / ELECTRICITY FROM GRID OR SOLAR
Source: Author's calculations*



*Using Uganda National Household Survey 2016/17, UN World Population Prospects (2019)

FIGURE 18B.
POPULATION (IN MILLIONS) TO BE PROVIDED ACCESS UNDER BUSINESS AS USUAL SCENARIO /
PIPED OR IMPROVED WATER WITHIN 30 MINUTES DISTANCE
Source: Author's calculations*

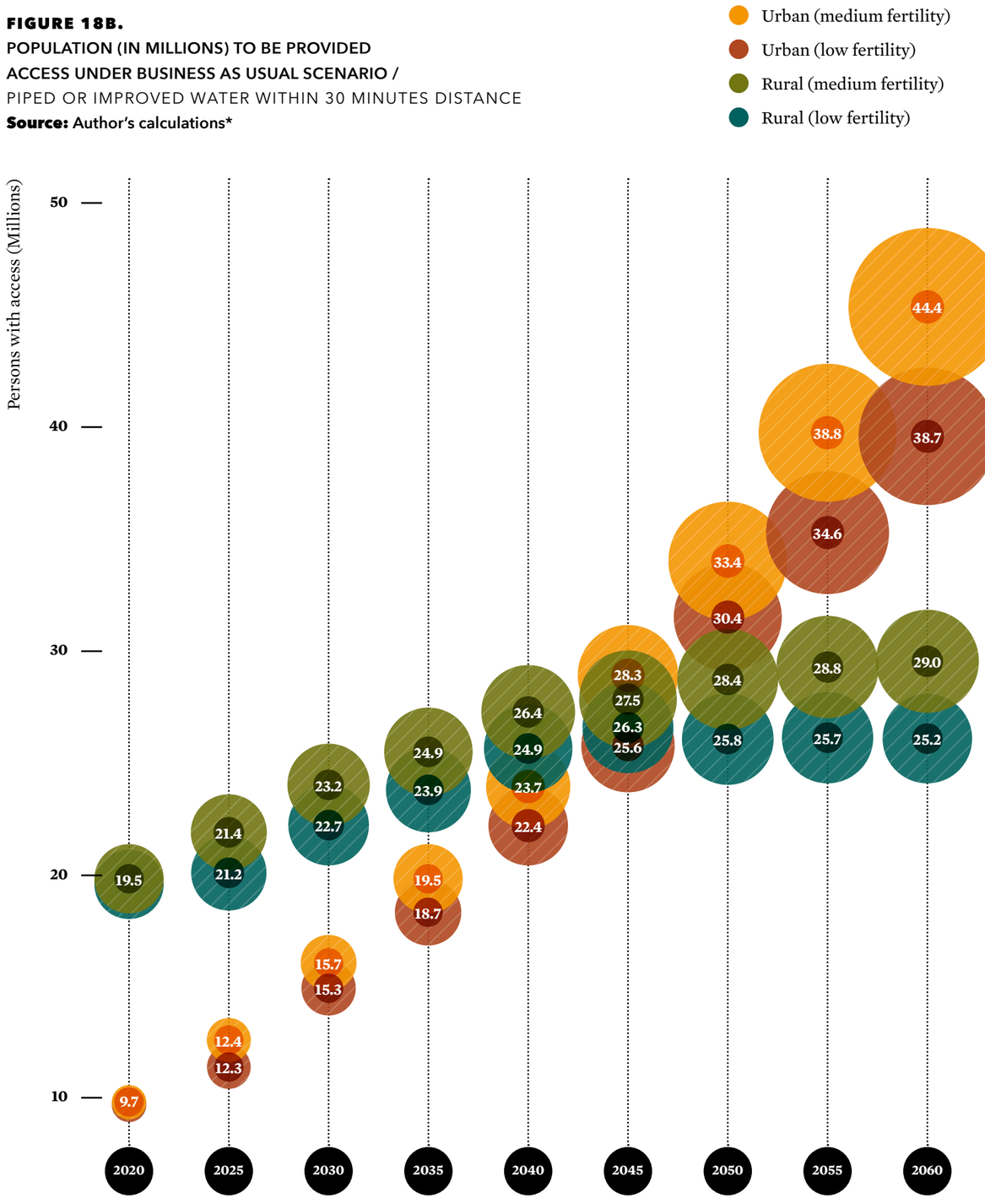
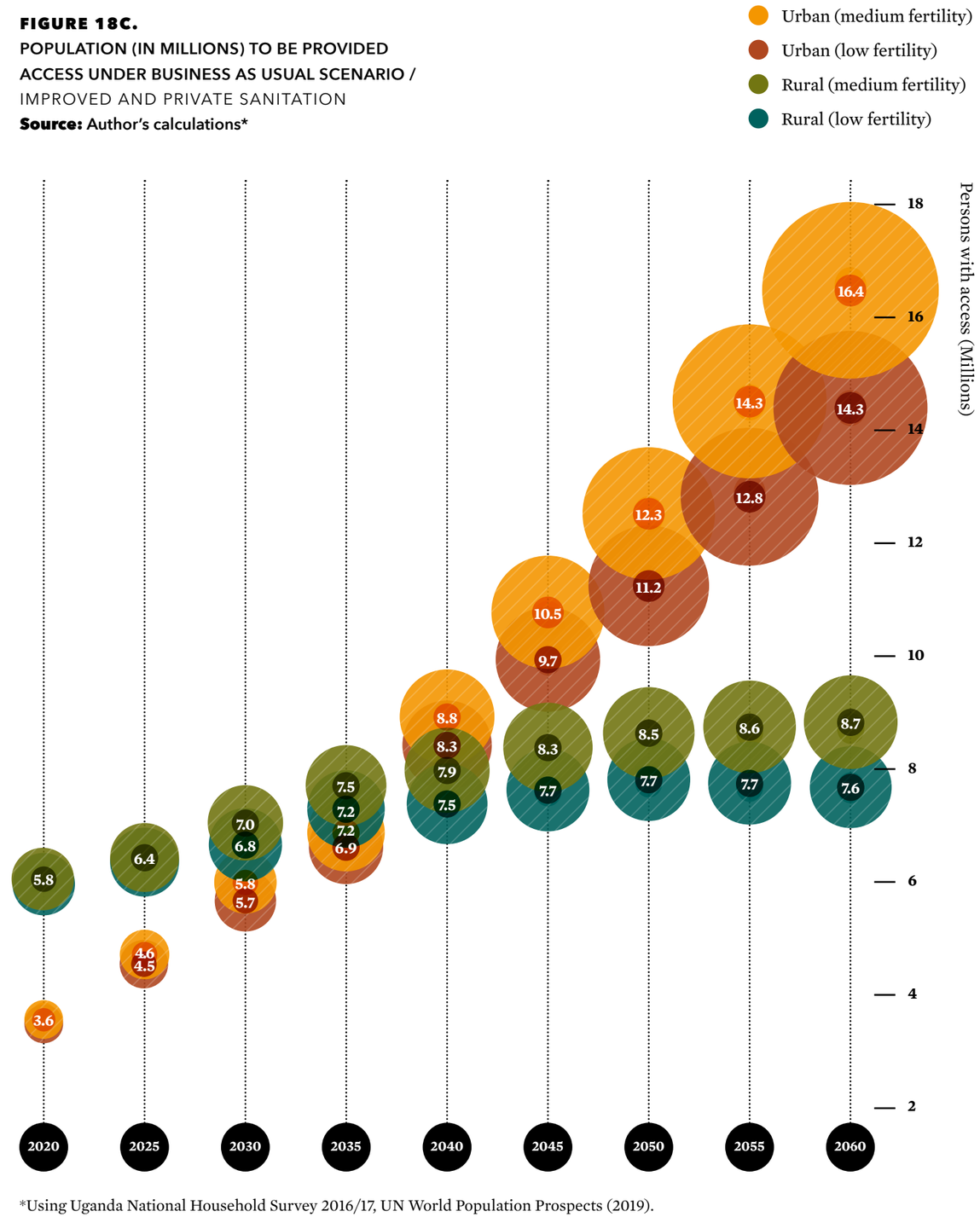
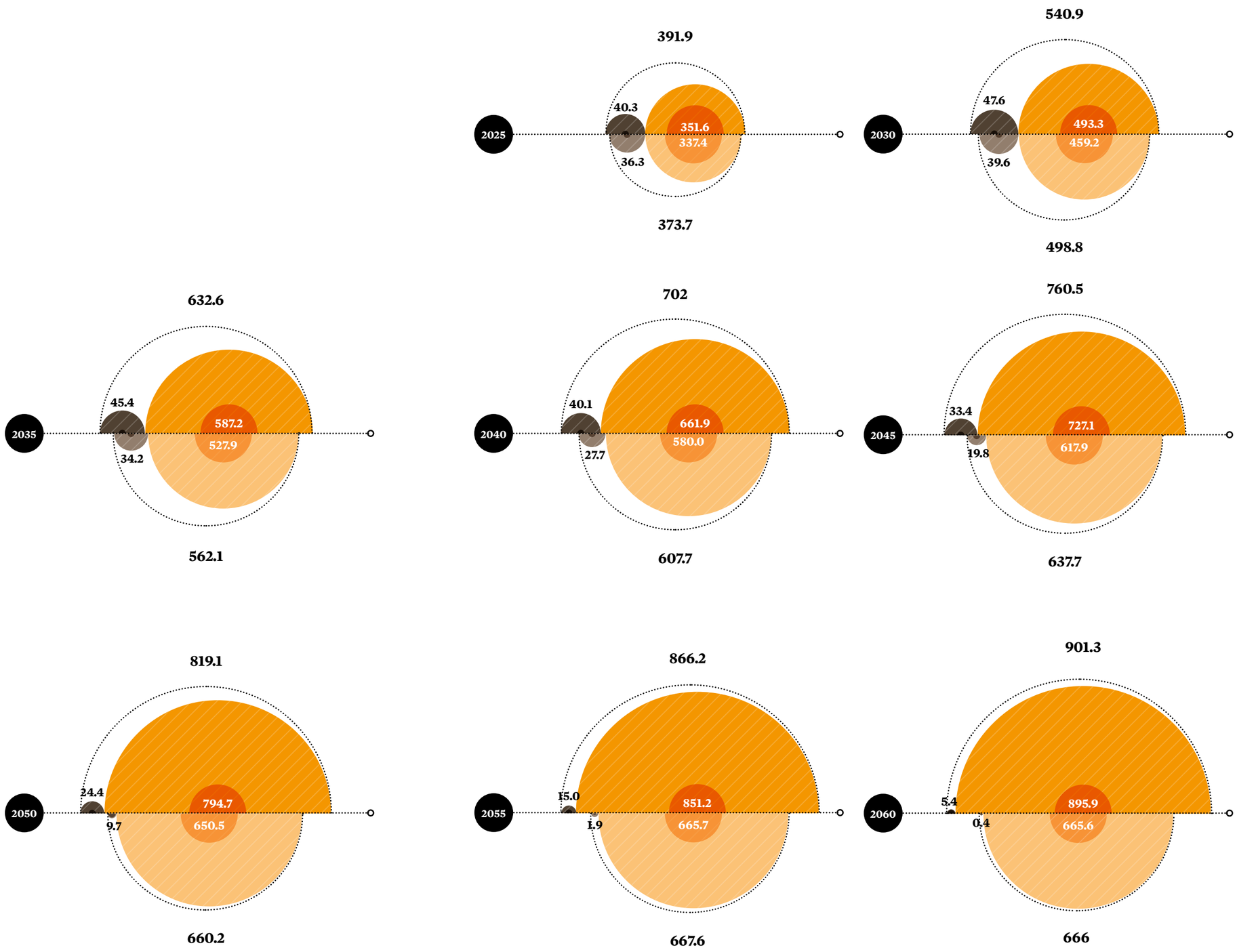


FIGURE 18C.
POPULATION (IN MILLIONS) TO BE PROVIDED ACCESS UNDER BUSINESS AS USUAL SCENARIO /
IMPROVED AND PRIVATE SANITATION
Source: Author's calculations*



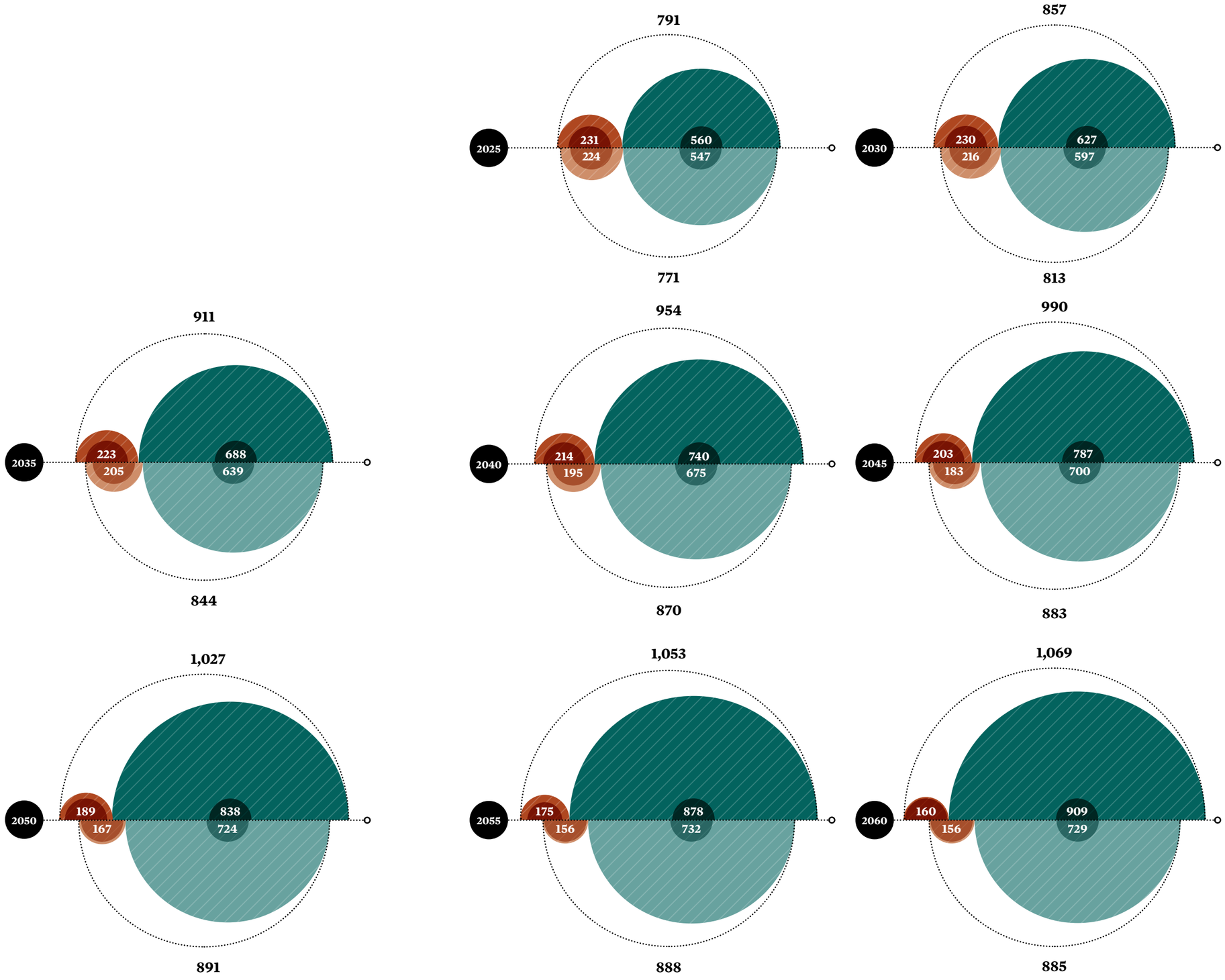
*Using Uganda National Household Survey 2016/17, UN World Population Prospects (2019).

FIGURE 19A.
COST OF MAINTAINING CURRENT ACCESS LEVELS FOR ELECTRICITY, WATER AND SANITATION / ELECTRICITY PROVISION
Source: Author's calculations*



*Using World Bank (2020d), Hutton and Varughese (2016) on previous results.

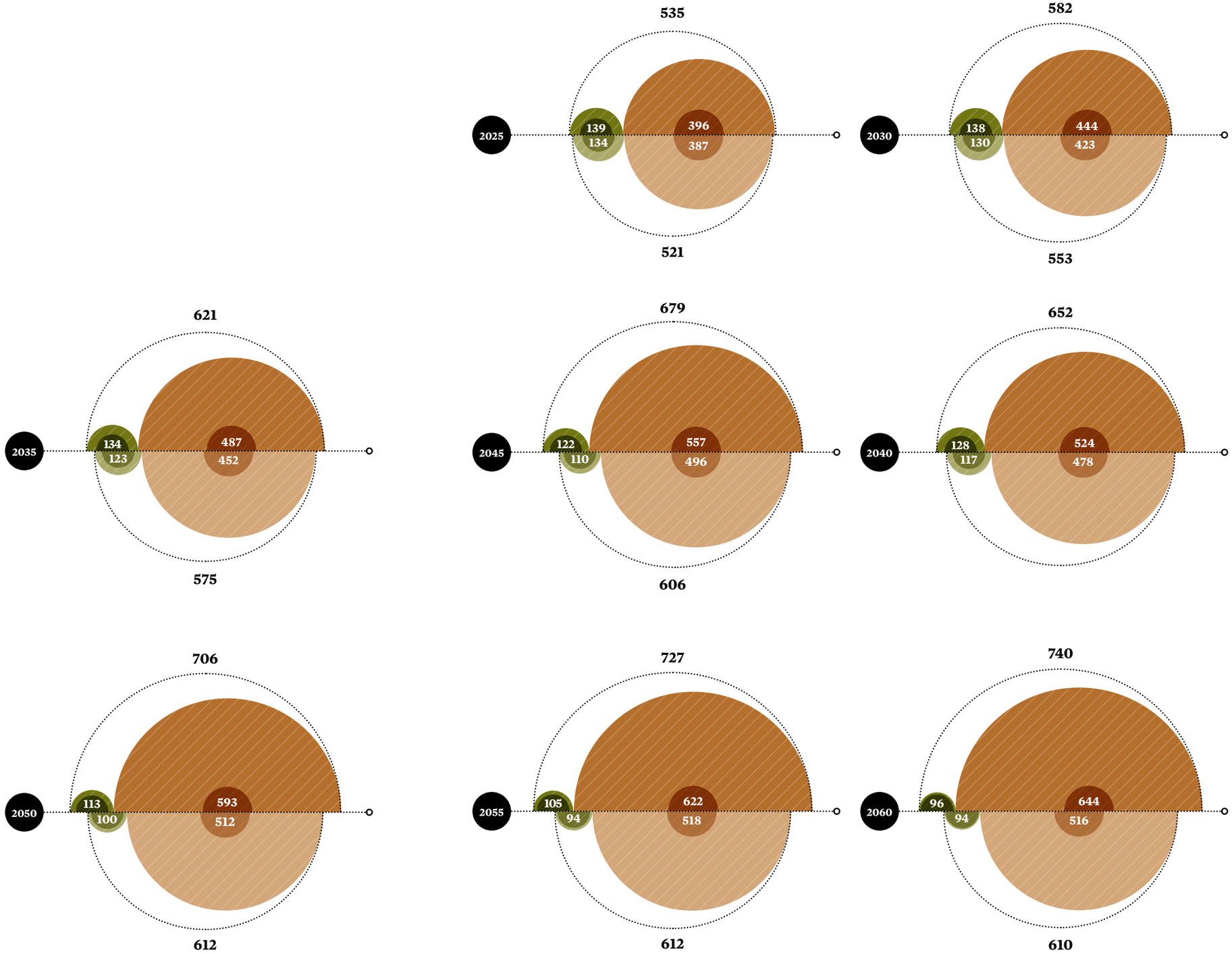
FIGURE 19B.
COST OF MAINTAINING CURRENT ACCESS LEVELS FOR ELECTRICITY, WATER AND SANITATION /
PIPED OR IMPROVED WATER PROVISION
Source: Author's calculations*



Urban (medium fertility)
Urban (low fertility)
Rural (medium fertility)
Rural (low fertility)

*Using World Bank (2020d), Hutton and Varughese (2016) on previous results.

FIGURE 19C.
COST OF MAINTAINING CURRENT ACCESS LEVELS FOR ELECTRICITY, WATER AND SANITATION / IMPROVED AND PRIVATE SANITATION
Source: Author's calculations*



- Urban (medium fertility)
- Urban (low fertility)
- Rural (medium fertility)
- Rural (low fertility)

*Using World Bank (2020d), Hutton and Varughese (2016) on previous results.

D.3.4
'ENHANCED EQUILIBRIUM' OR ACCESS FOR ALL - THE COST OF MEETING THE SDGS

In order to meet the SDGs in all three sectors, rural areas may require tailored attention. This is shown in each of these figures below by the steep rise of providing access to the rural population until 2030. Like the estimates with access kept constant at current rates, access by the initial starting population in both rural and urban areas are shown for 2020. By 2030, universal access in both rural and urban areas is reached and then maintained until 2060. As expected, the increases in access are far steeper than under the 'Business as Usual' scenario.

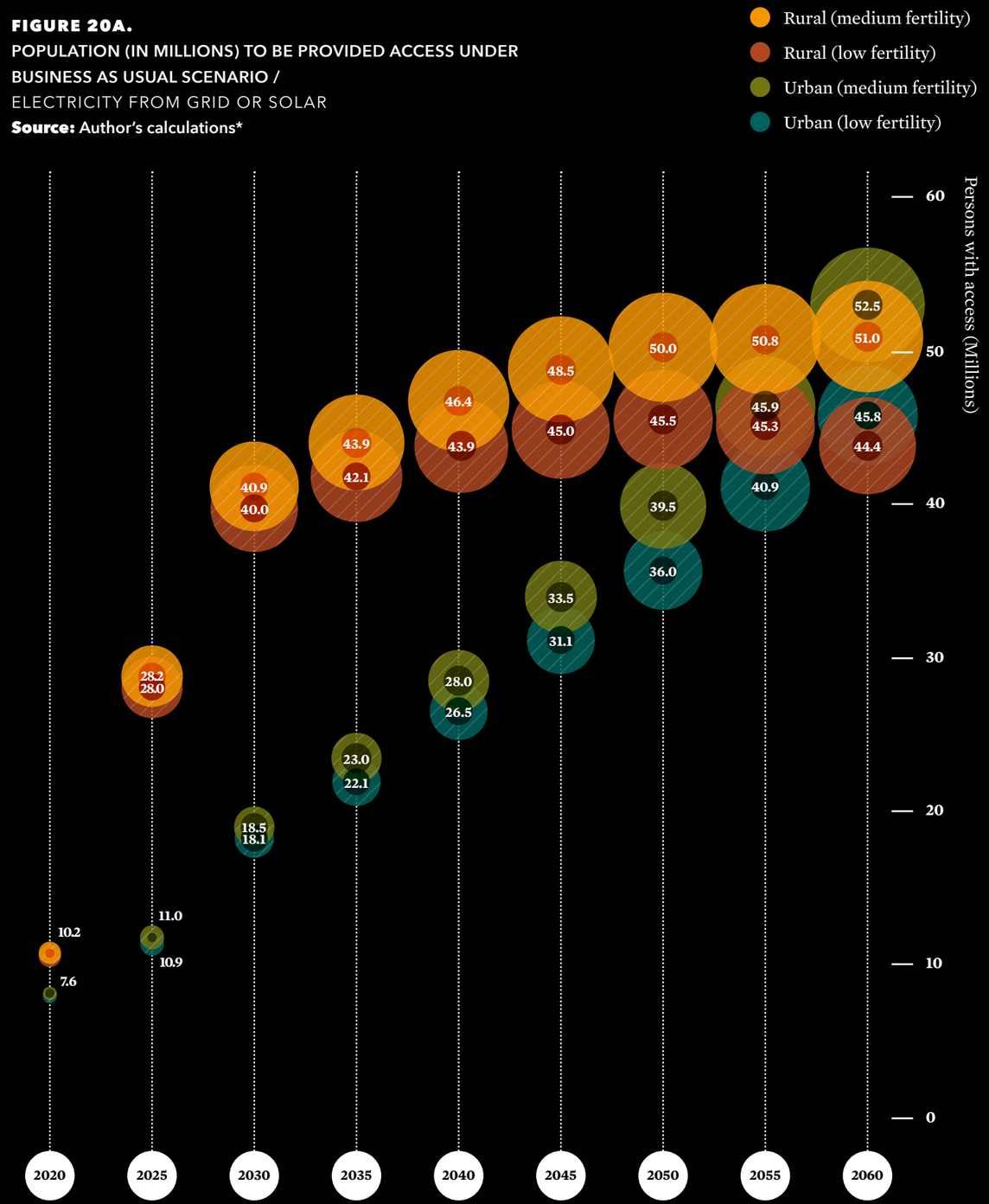
For example, access to rural sanitation would need to increase by nearly ten-fold, from the current 5.8 million to 51 million under the medium and 44 million under the low fertility scenario (Figure 20).

The projected costs are front-loaded toward the early years and decrease over time, with the low-fertility scenario incurring significant cumulative fiscal saving of 12 percent up to the year 2060. Even though far higher costs need to be shouldered in the years up to 2030, the total average spending until 2030 is still shy of 3.35 percent of GDP annually under the medium-fertility path and slightly lower at about 3.25 percent of GDP under the lower fertility path. Certainly, differences in the savings due to different fertility paths are not as discernable during the early years, where the difference in population growth is still very small (Figure 21). However, cumulative spending on all three sectors until 2060 would amount to US$ 42.4 billion under the medium fertility and US$ 37.4 billion under the low fertility scenario, suggesting cumulative savings of more than US$ 5 billion.

The investment requirements, as percentages of GDP, calculated by Ranganathan and Foster (2012), are slightly above the percentages computed in this analysis, but not significantly so. More specifically, excluding operation and maintenance and focusing only on the cost for energy, water supply and sanitation (WASH), they estimate an average annual spending requirement of 3.6 percent of GDP, slightly above the percentages computed in this analysis (0.26 and 0.35 GDP points for the medium and low-variants, respectively). Another difference is that the proportion of investment in energy versus the WASH sectors is slightly higher in this analysis because power generation has not been included in the cost estimates of this study, as generation capacity is expected to be financed by private investors in that competitive segment of the energy sector and also because the SDGs are slightly more demanding for the WASH sector, which makes WASH investments more costly.[42]

42. Specifically, the SDGs specifies the WASH goal as 'bacteria-free drinking water', which cannot be necessarily guaranteed in urban areas through improved water sources and 'safely managed' sanitation with safe excreta disposal.

FIGURE 20A.
POPULATION (IN MILLIONS) TO BE PROVIDED ACCESS UNDER BUSINESS AS USUAL SCENARIO /
ELECTRICITY FROM GRID OR SOLAR
Source: Author's calculations*



*Using Uganda National Household Survey 2016/17, UN World Population Prospects (2019).

FIGURE 20B.
POPULATION (IN MILLIONS) TO BE PROVIDED
ACCESS UNDER BUSINESS AS USUAL SCENARIO /
PIPED OR IMPROVED WATER WITHIN 30 MINUTES DISTANCE
Source: Author's calculations*

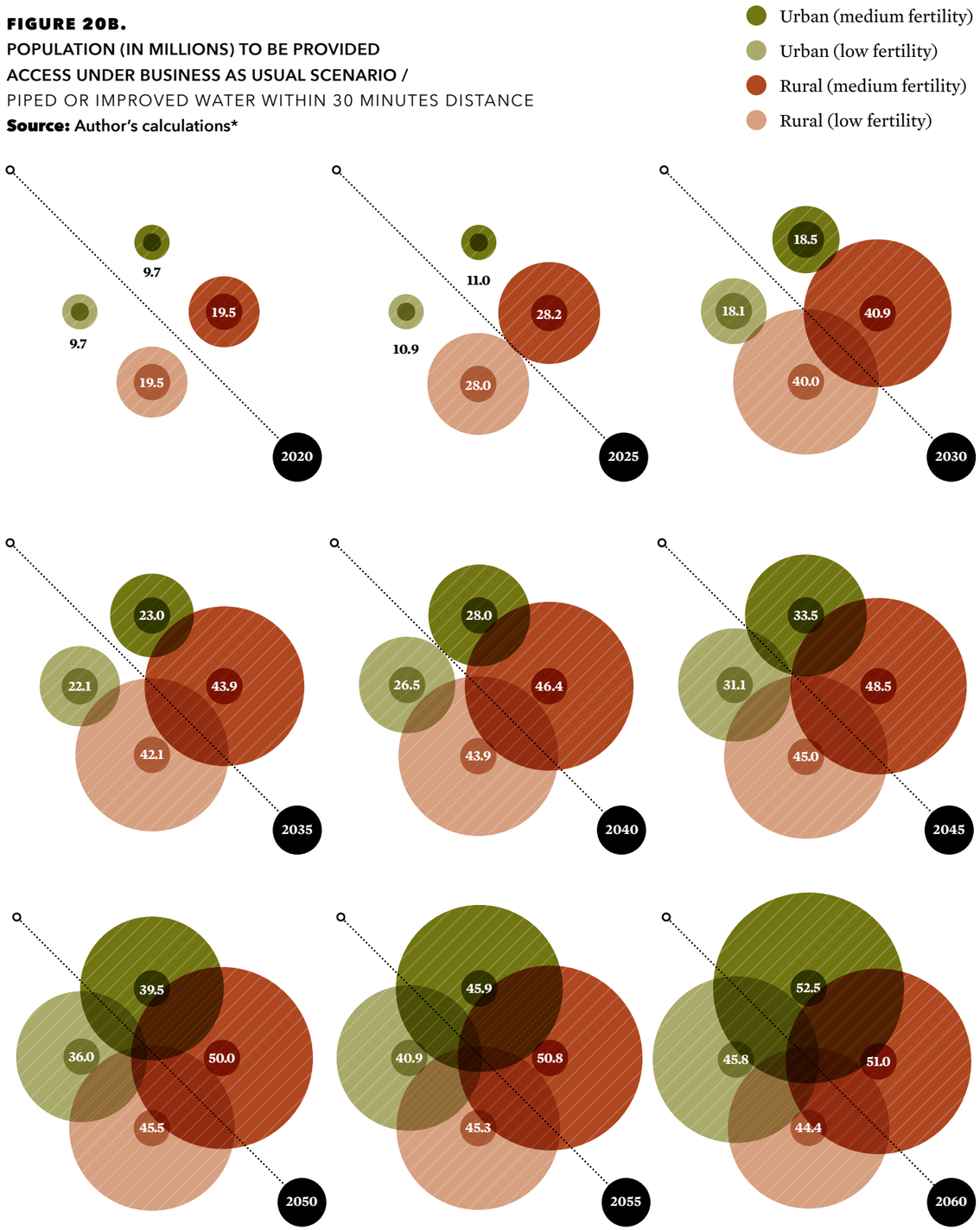
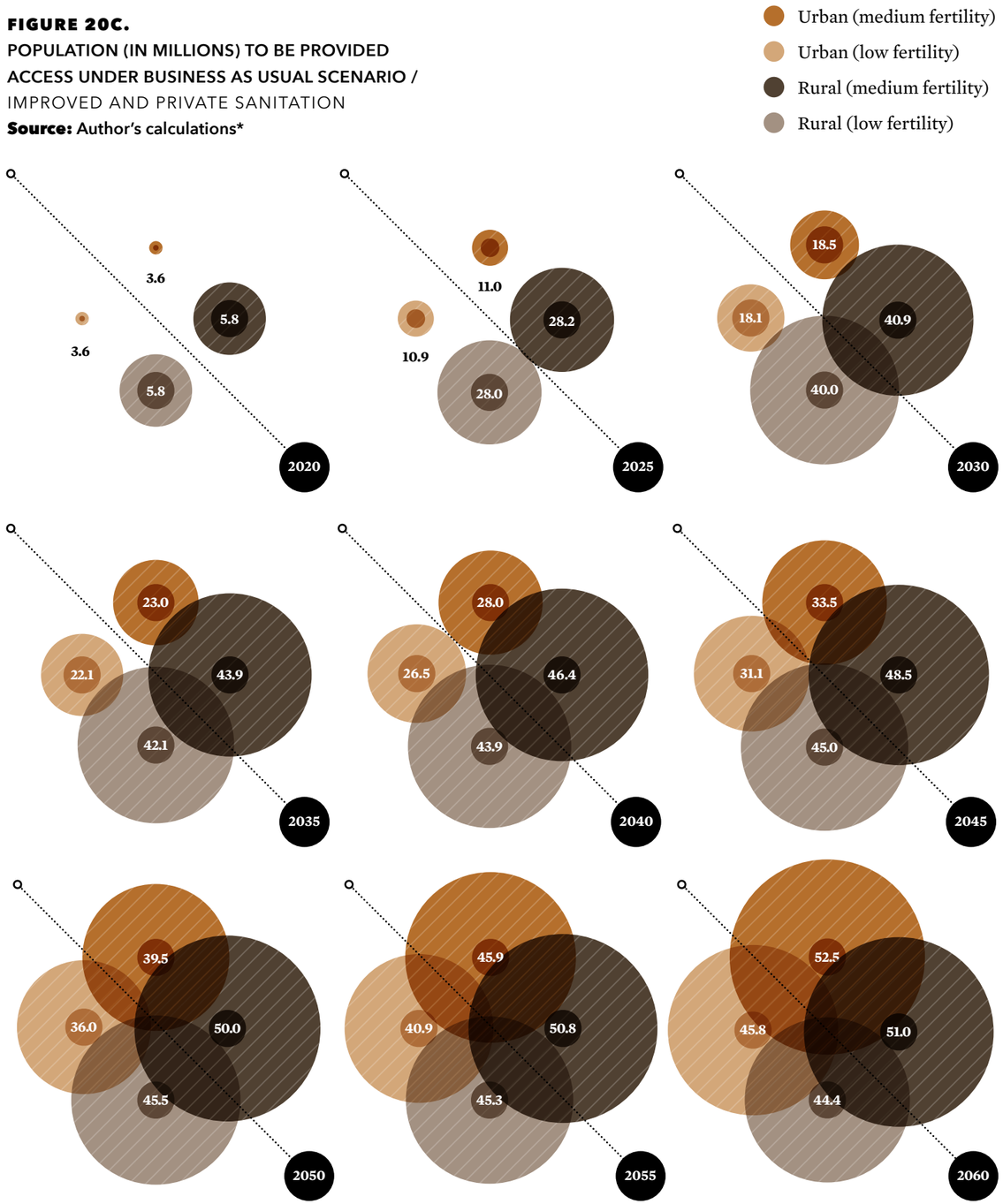


FIGURE 20C.
POPULATION (IN MILLIONS) TO BE PROVIDED
ACCESS UNDER BUSINESS AS USUAL SCENARIO /
IMPROVED AND PRIVATE SANITATION
Source: Author's calculations*



*Using Uganda National Household Survey 2016/17, UN World Population Prospects (2019).

FIGURE 21A.
COSTING TO MEET THE SDGS FOR ENERGY, WATER AND SANITATION AND BEYOND / ELECTRICITY PROVISION (USD MILLION)
Source: Author's calculations*

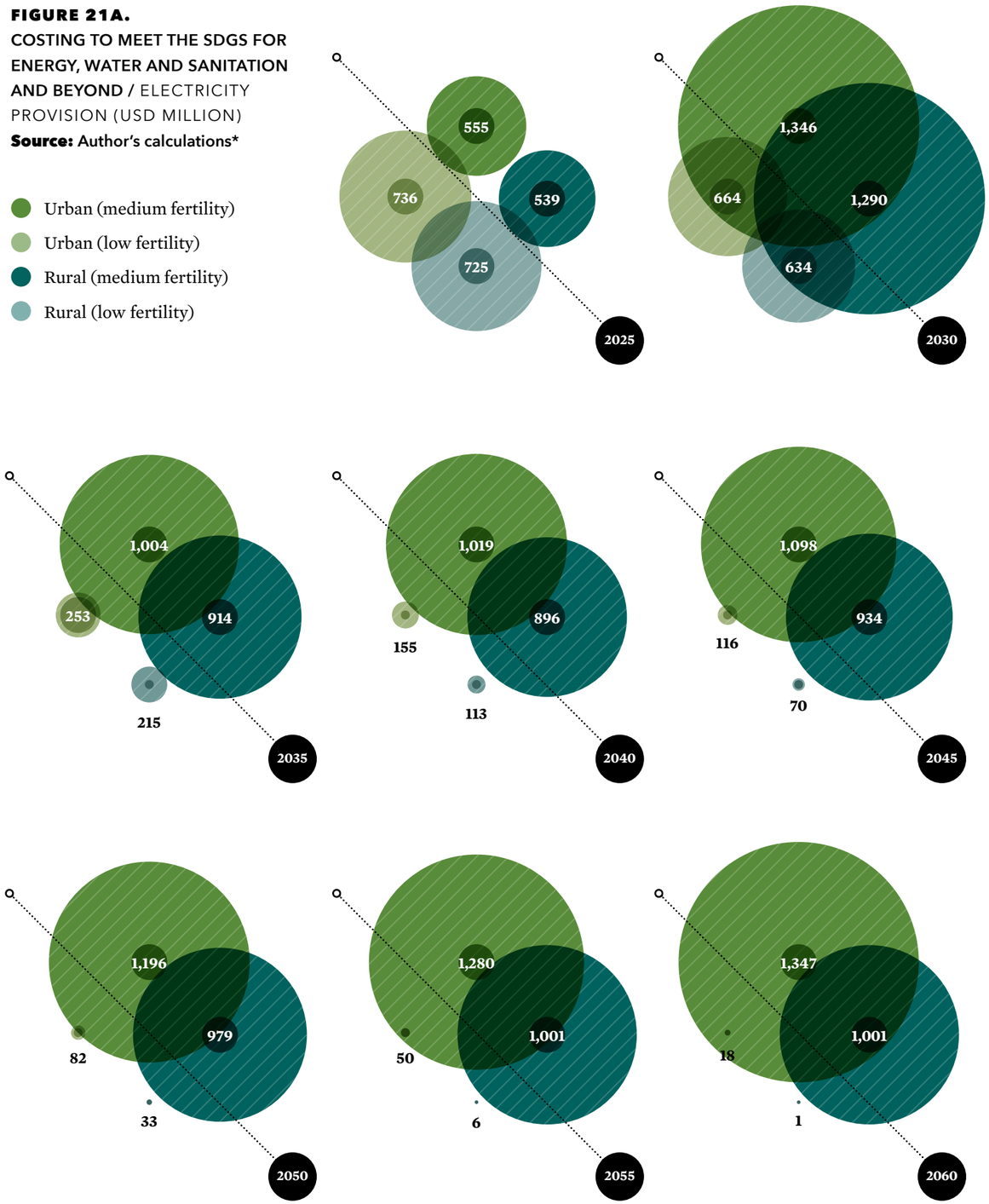
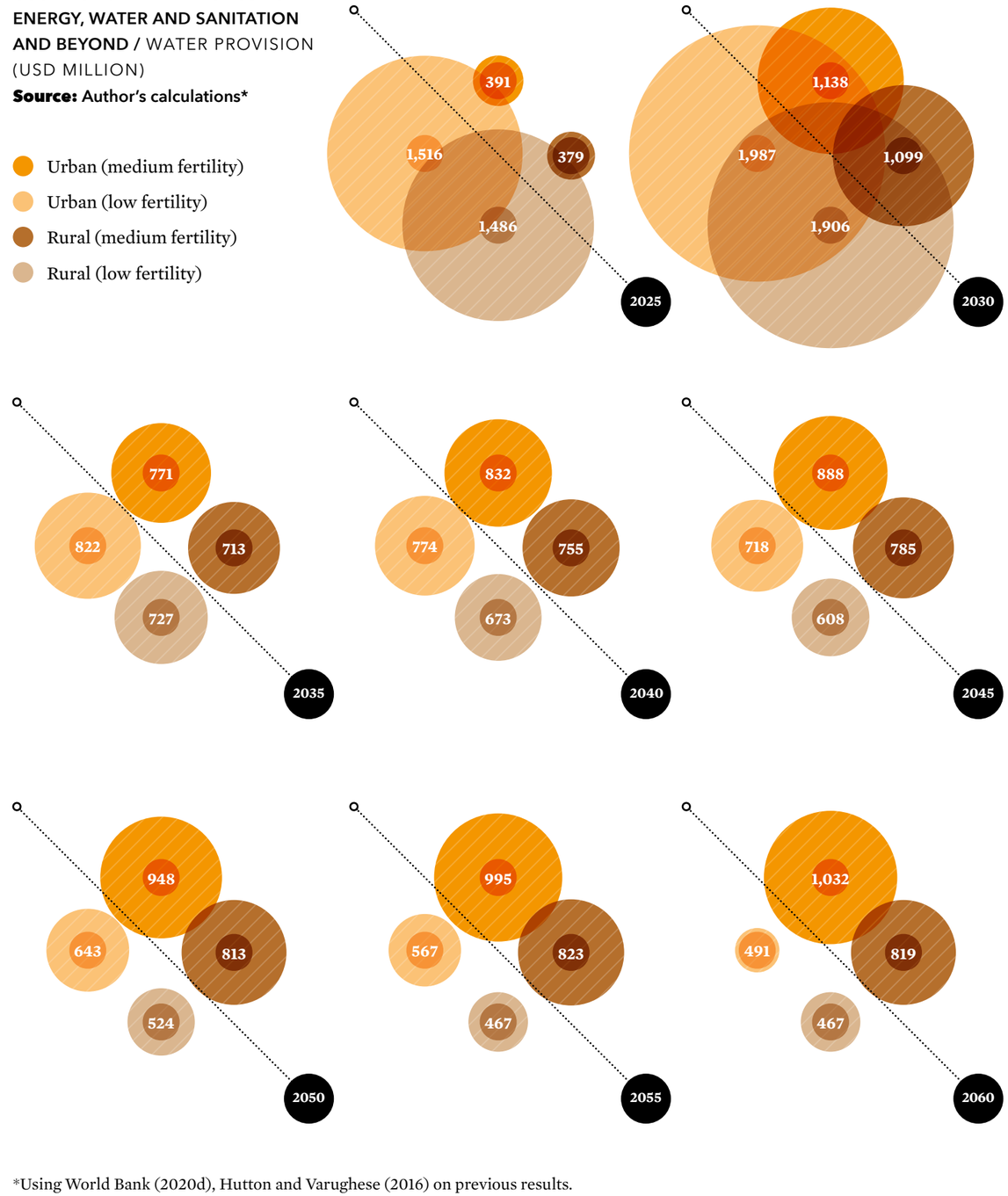
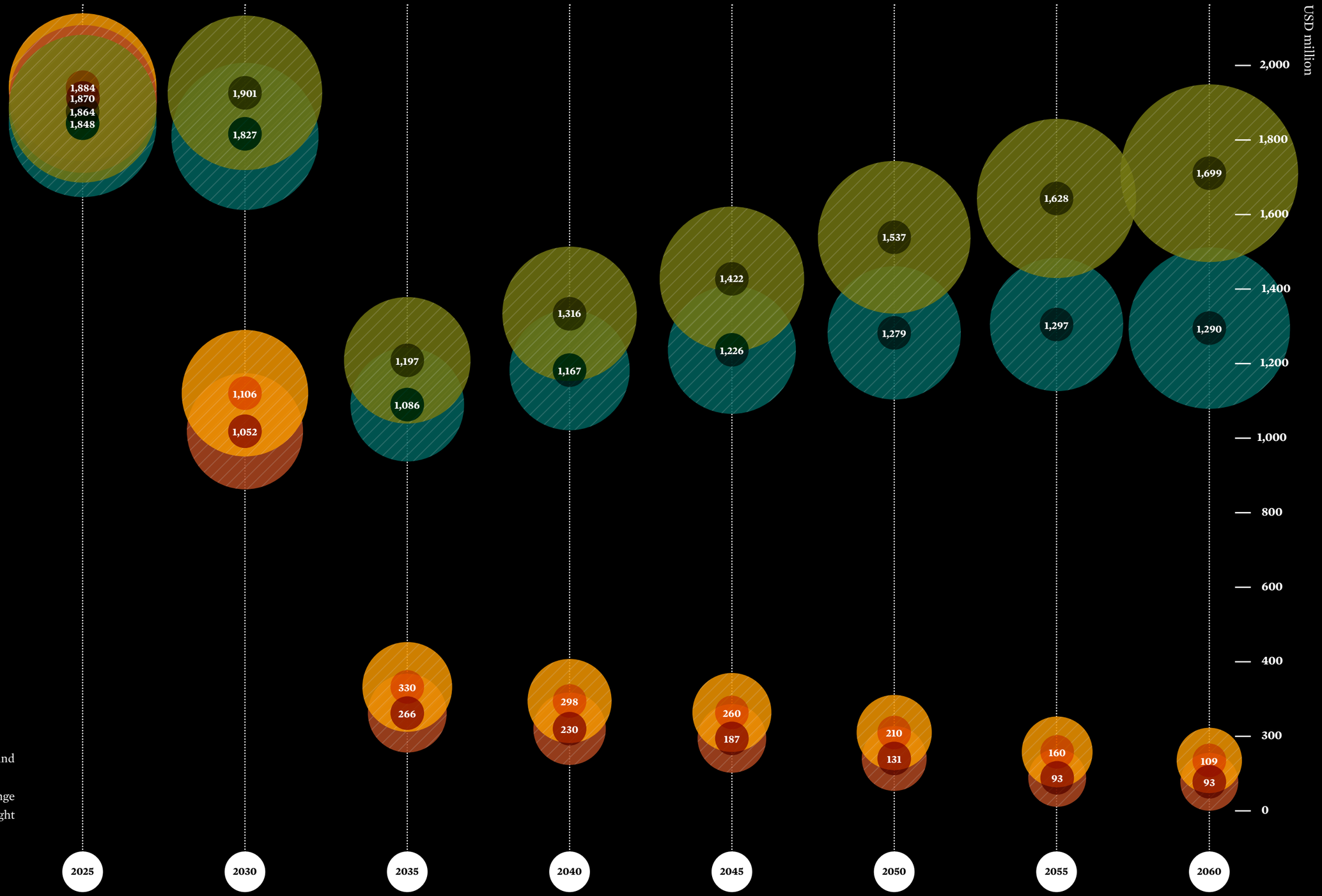


FIGURE 21B.
COSTING TO MEET THE SDGS FOR ENERGY, WATER AND SANITATION AND BEYOND / WATER PROVISION (USD MILLION)
Source: Author's calculations*



*Using World Bank (2020d), Hutton and Varughese (2016) on previous results.

FIGURE 21C.
COSTING TO MEET THE SDGS FOR ENERGY, WATER AND SANITATION AND BEYOND /
SANITATION
Source: Author's calculations*



Urban (medium fertility)
Urban (low fertility)
Rural (medium fertility)
Rural (low fertility)

*Using World Bank (2020d), Hutton and Varughese (2016) on previous results.
Note: Medium-fertility projection in orange and green; low-fertility projections in light orange and light green.

TACKLING THE DEMOGRAPHIC CHALLENGE IN UGANDA

D.3.5 THE ROLE OF SMART POLICIES AND PLANNING IN FACING THE RISING URBAN POPULATION

The higher population density that will be observed in Ugandan cities over the next four decades can bring opportunities if well-managed. Higher densities enable efficient public service provision since the cost per person to lay the infrastructure for roads, drainage, pipes, mass transit, and electricity lines are shared, generating economies of scale not feasible without them. However, urban densities can also generate negative externalities – from traffic congestions to human health threats caused by inadequately managed sewage – that threatens urbanization's promises of improved livability and prosperity. Retrofitting sewage pipes in informal, non-planned areas increases access costs substantially and can result in complicated land acquisition and resettlement processes. It is thus important for cities and their governments to lead the *urban development and not to follow it*. According to a recent regional policy report on Africa's urbanization (Hommann and Lall, 2019), this requires:

1. A functioning land administration system with formal, readily transferrable land rights.
2. Capacity to plan, coordinate, and regulate infrastructure and private investments.
3. Financing from donors or the private sector to leverage the sizeable cost of network infrastructure investments, while assuring local governments of predictable transfers to manage the operation and maintenance of infrastructure assets.

Outside of Kampala, Uganda's other cities and regions collect lower taxes and, therefore, require extra transfers to meet the SGDs goals. Uganda's local governments are highly dependent on transfers from central budgets and they have little revenue that can guard them against their fluctuations, which leads to a lack of financial flexibility for local investment decisions. This is particularly true for local governments outside of Kampala, which collected an average of US$ 26 per capita from various locally administered taxes, compared to US$ 59 per capita in Kampala for the year 2013/14 (Ibid). Additionally, many cities in Africa do not have the responsibility to perform all the required functions (i.e. cadaster management, property taxation, infrastructure investments, etc.). In cases where they do, political economy considerations often prevent the fair application of property and asset taxes.

Uganda can increase its capacity to address the growing population challenges and meet the SDGs by improving land administration and land rights and the ability to plan and implement urban infrastructure and private investments in cities. While fiscal space is very limited – much of the recent uptake of private investments were going towards the energy sector followed by transport– Uganda can aim to improve (i) land administration system with formal, readily transferrable land rights, and (ii) the capacity to plan, coordinate and regulate private investments in infrastructure. Reaching these goals requires less financial capital and more political capital. Not even 20 percent of Uganda's private land is registered and titled (Ibid), and much of the remaining non-private land is constrained by the complex customary land regulations. Addressing these capacities will lead to more financial support from donors and the private sector and allow the attainment of the country's infrastructural goals.

E

IMPLICATIONS FOR LABOR MARKET AND POVERTY INDICATORS

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E2. LABOR MARKET AND POVERTY TRAJECTORIES UNDER DIFFERENT POPULATION SCENARIOS **Page 138**

E3. FACING THE LABOR MARKET AND POVERTY CHALLENGES OF POPULATION GROWTH **Page 150**

As discussed above, Uganda is in the early stage of its demographic transition, and one of the main challenges over the next 40 years will be to ensure that the growing young population bulge has access to productive job opportunities. Recent experience shows that it is not an easy endeavor: while the working-age population has been expanding rapidly, at around 3.9 percent per annum between 2011 and 2017, and is more educated than before[43], labor demand has not increased at the same pace (Merotto 2019). After increasing in the late 2010s, labor force participation has fallen, especially for young people and women.[44] These are worrisome trends, as one of the mechanisms through which countries capitalize on a demographic transition process is through increased income generated both by the growing youth population and women entering the labor force.

Moreover, Uganda's labor market is characterized by slow structural transformation and low labor productivity, which is reflected in poor-quality jobs. Most workers are engaged in agriculture—close to 65 percent of the labor force in 2016—even though the sector accounts for less than a quarter of the country's GDP. Furthermore, the productivity of that sector is well below comparable peers in Africa. Wage employment is scarce (24 percent) and underemployment is persistent, reflecting high levels of dependence on subsistence agriculture.[45] At the same time, the overall quality of jobs is notably low. In addition, labor earnings have been falling across the board, as is expected when supply exceeds demand, particularly in the services sector (Merotto, 2019).

Similarly, while Uganda has made considerable progress in reducing poverty in the last two decades, this issue remains at the center of its development pathway. While the incidence of poverty is considerably lower now than it was two decades ago, the recent trends show a reversal of that trend. The poverty headcount rate under the international poverty line of U$1.90 a day stands currently at 41.6 percent, around 20 percentage points lower than in 2002 (62.2 percent). Nonetheless, and reflecting the high degree of vulnerability to external shocks (such as weather and price shocks) that households face, poverty increased moderately between the two most recent official measurements. Poverty increased from 34.6 percent in 2012/13 to 41.6 percent in 2016/17, a 6 percentage-point increase that resulted in an increase of the poor population by 4.5 million people.

Poverty in Uganda remains a rural phenomenon, with 90 percent of the poor population residing in rural areas. In addition, the poverty increase observed in recent years was mostly driven by an increase in rural poverty, as poverty rates in urban centers have remained stagnant for the past decade. The increase in rural poverty is mainly attributed to households engaged in agriculture who suffered the consequences of a severe drought that affected the country for the better part of 2016 and 2017. Going forward, in order to continue a path of poverty reduction, Uganda will need to adopt measures to reduce the vulnerability of households to external shocks and enhance the income of the rural poor while ensuring that those residing in urban areas have increasing access to income generating opportunities given that a larger share of the population will reside in urban centers in the years to come.

This section highlights the magnitude of the jobs and poverty challenge by exploring the implications of population growth over the next 40 years in terms of select labor market and poverty indicators. In particular, it shows how the rapid expansion of the working-age population poses a major challenge for the sluggish labor market in Uganda. In addition, and based on GDP per capita projections, it shows how the incidence of international poverty is likely to evolve between 2020 and 2060.

43. The primary level completion rate (for both men and women) increased from 39 percent in 2011 to 44 percent in 2016. http://data.uis.unesco.org

44. In the case of young individuals, this is partly but not totally explained by an increased school attendance.

45. Where mean working hours are irregular (below 30 hours per week) and earnings are low (below 35 USD per month), Merotto (2019).

E.1
METHODOLOGICAL CONSIDERATIONS

The projections for the labor market indicators are based on the Demographic Dividend (*DemDiv*) Model, which is designed to gauge the potential economic benefits of the demographic dividend in high fertility countries. DemDiv is an open-access, customizable projection model developed by the U.S. Agency for International Development (USAID) through the Health Policy Project.[46] It is structured as a two-part model that projects demographic changes and economic changes with equations to estimate employment and investment, along with an estimation of GDP and GDP per capita. More specifically, the demographic component underlies the model structure, projecting child mortality, dependency ratio, fertility, population size and structure, and life expectancy. These demographic calculations then feed into the economic model, which consists of three equations describing capital formation, employment growth, and total factor productivity as a function of age structure and other social and economic variables. The two model components interact over the projection period to describe the combined effects of changes in both sub-models, ultimately projecting GDP and GDP per capita. [47]

The model was calibrated with the latest data available for Uganda and run under two population growth scenarios that mimic the medium and low population variants discussed in Chapter 3. More specifically, the data comes from a number of publicly available sources (see Table 7), and the two alternative population scenarios mimic the medium and low-variant population projections by the UN population Division for the period 2020 through 2060 (see Box 1 for further details on the population growth assumptions used in the model).

The poverty incidence projections are based on the poverty projection tool developed by the Poverty and Equity Practice of the World Bank. More specifically, they are based on a 'poverty-to-growth elasticity' (PGe) methodology. The PGe is understood as the rate of change in the poverty rate brought about by the change in real GDP per capita. This elasticity varies depending on a 'pass-through' indicator, the factor of adjustment between GDP per capita growth and the welfare aggregate growth (found in household surveys). Conceptually, a higher pass-through rate signals more inclusive growth, in which poverty responds more significantly to economic growth, while a lower pass-through rate signals that poverty is not as affected by economic growth. For this study we consider two alternative pass-through scenarios: a high pass-through setting which assumes a factor of 1 and a medium pass-through scenario in which the elasticity is adjusted by a factor of 0.87.

46. http://www.healthpolicyproject.com/

47. See Moreland et al., 2014 for further technical details.

TABLE 7.
MAIN SOURCES FOR INDICATORS USED IN DEMDIV[48]

Topic	Secondary Education
Demographic indicators	Demographic Health Survey for the country (DHS, 2016) and the UN Population Division (UN PopDiv 2019).
Health indicators	WHO, UNICEF, UNFPA, the World Bank and UN PopDiv for the year 2019.
Education indicators	UNESCO Institute for Statistics Database (2014) and the Barro-Lee dataset (2014).
Economic indicators	World Economic Forum (2015) and the World Development Indicators dataset (2013).

48. For a full list and the description of the variables used see Moreland et al., 2014; Appendix A., p. 29

BOX 1.
POPULATION GROWTH ASSUMPTIONS USED IN THE DEMOGRAPHIC DIVIDEND (DEM DIV)

The *DemDiv* model is run under two alternative population growth scenarios (a medium-variant and a low-variant scenario). The **medium-variant** scenario assumes a moderate and gradual growth in the contraception prevalence rate (CPR) from 26 percent in 2020 to 39.4 percent in 2060. Following standard practice for demographic variables, the definition for CPR is the ratio between the number of women aged 15 to 49 using any contraceptive method (modern or traditional) and the total number of women in that age range.

Alternatively, the **low-variant** scenario assumes a faster rate of growth in the use of contraception in Uganda, reaching a CPR of 70 percent by 2060. The CPR growth under the medium-variant scenario corresponds to an increase from the current prevalence rate in Uganda to a level for a reference country such as Kenya. As an additional reference, the CPR average in low-income countries was 35 percent and in lower-middle income countries it was 52 percent in 2014. The alternative low-variant scenario resembles the pathway towards the level of contraceptive use in middle-income countries, for which the average CPR was 65 in 2014 .[49]

49. Data source for fertility indicators: www.data.worldbank.org/indicators, accessed April 29, 2020

E.2
LABOR MARKET AND POVERTY TRAJECTORIES UNDER DIFFERENT POPULATION SCENARIOS

Our results indicate that the employment gap will increase considerably over the next 40 years, creating a heavy burden on the Ugandan labor market. Age-specific population projections reveal that the labor market will need to accommodate 14 million additional workers by 2040, under both the medium and low-variant scenarios.[50] While the number of new entrants to the labor force is expected to peak after 2050 (at a level of 1.2 to 1.4 million people per year; see Figure 22b) the employment gap (defined as the difference between the number of people in the labor force[51] and the number of people employed[52] will grow at a steady pace of 350,000 jobs per year or at an average annual rate of 3 percent throughout 2020-2040 (Figure 22a). The jobs deficit will double by 2045, from the current, already burdensome value; reaching 16 million people (about 29 percent of the total labor force) under both of the projection variants**.**

Under the most likely scenario, the medium-variant, the employment gap will increase threefold by 2060, reaching a value of 25 million jobs (or lack of job opportunities). The number will be lower under the low-variant scenario: by 2060, the Ugandan economy will need to create 3.3 million jobs less at that time if population growth is curbed under this lower fertility outlook (Figure 22a). It must be noted that while the model is projecting an economy that is growing in real terms over the next 40 years, it is not assuming major changes to its structure, which partly explains the sizeable employment gap projected. At the same time, under the low-variant scenario, the number of entrants to the labor market increases to 1.2 million by 2050, and by 2060 the labor market will be welcoming one million new participants, 29 percent less than under the medium-variant scenario.

The projections also suggest that Uganda is still more than a decade away from attaining low-middle income status and that there are significant economics gains to curbing fertility. The DemDiv model is also able to project the country's economic over the next 40 years under the alternative population growth scenarios. The results indicate that Uganda will not obtain low middle-income country (LMIC)[53] status until 2033.[54] Only by then, would GDP per capita grow enough (about 20 percent in real terms over the next 13 years or an average of 1.4 percent real growth per year), from the current level of US$710 (in constant 2010 prices). Moreover the 13-year horizon occurs under the more optimistic low-variant scenario (Figure 22c). Under the more likely scenario, Uganda would have to wait until 2038 to become a LMIC. By 2060, the difference between the two scenarios is considerable, with a GDP per capita almost 40 percent higher under the low fertility variant. For refence, this is similar to the gap in GDP per capita currently observed between Uganda (US$710) and Ethiopia (US$570)[55], suggesting that there are substantial gains to effectively manage population growth over the medium term.

50. As mentioned in Chapter 3, the two scenarios show very little difference in terms of the population projections of age groups up until 2040.

51. For the analysis throughout this section the labor force is defined to include all the population aged 15 and above.

52. Following ILO standards, employment is defined as work performed in return for pay or profit. This definition, adopted by ILO since 2013, is suitably narrower than the scope of the previous definition which included some unpaid activities such as subsistence work (ILO, 2013).

53. The World Bank classifies the world's economies into four income groups — high, upper-middle, lower-middle, and low (For further details about the country classifications see: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups).

54. This calculation is based on the current country income classification thresholds determined by the World Bank at the start of each fiscal year; in this case FY19-20. The lower-middle income country (LMCI) thresholds were set at GNI per capita (current US$) values ranging between US$1,029 and US$3,995. To calculate the corresponding threshold in terms of GDP per capita we first inferred the conversion factor between the two per capita output measures (i.e. GNI and GDP in constant 2010 US$) using the latest values for 2019. This factor was then used to construct the projected GNI series for the 2020-2060 period. The deflated value of the current US$1,029 threshold corresponds to a threshold of US$876.92 in constant 2010 US$. Using the constructed GNI series we determine that Uganda crosses threshold crossed in 2033 when the GNI per capita is projected to reach a level of US$888 (in constant 2010 prices).

55. In constant 2010 prices.

FIGURE 22A.
LABOR INDICATORS AND GDP PER CAPITA 2020-2060 /
GAP BETWEEN THE LABOR FORCE AND EMPLOYMENT
Source: Author's calculations based on Dem Div projections

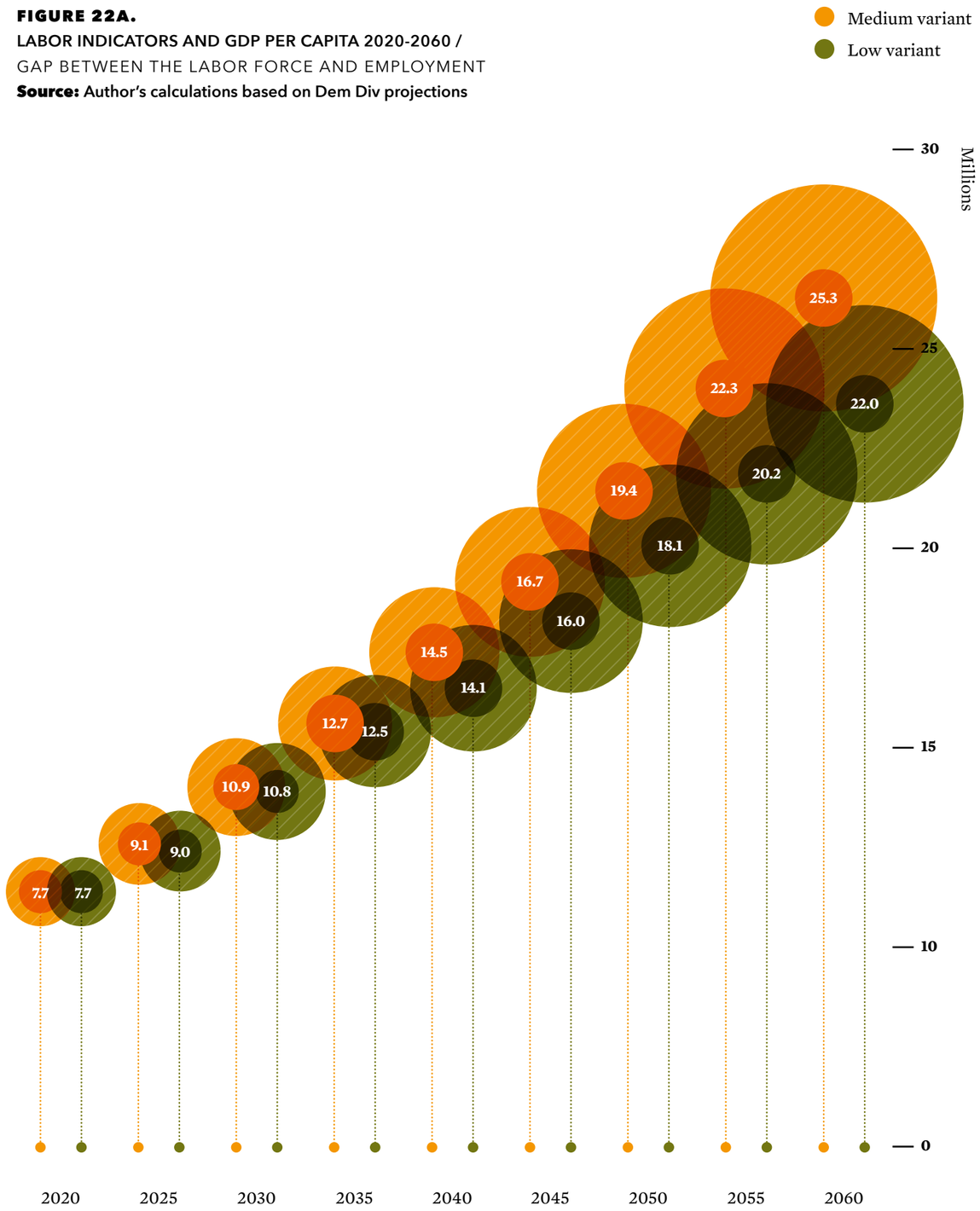


FIGURE 22B.
LABOR INDICATORS AND GDP PER CAPITA 2020-2060 /
ENTRANTS TO THE LABOR FORCE PER YEAR
Source: Author's calculations based on Dem Div projections

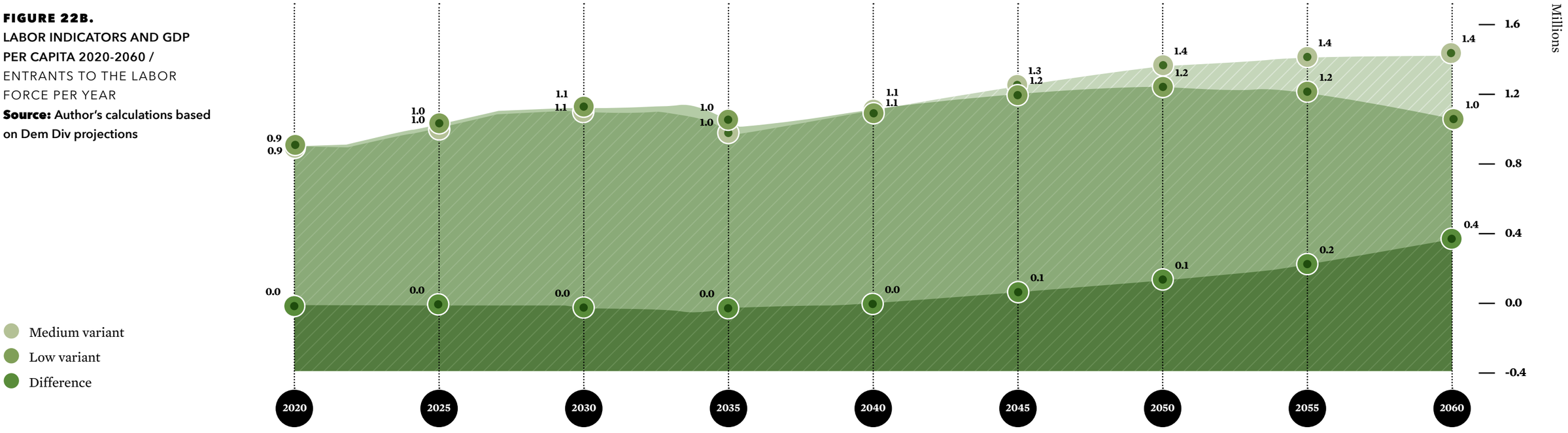
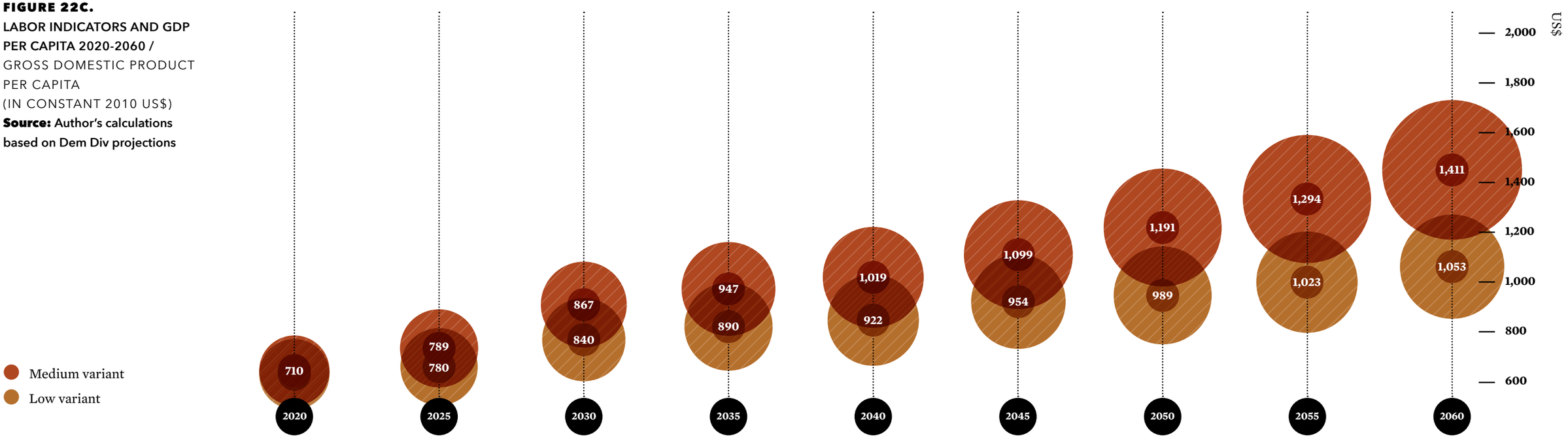
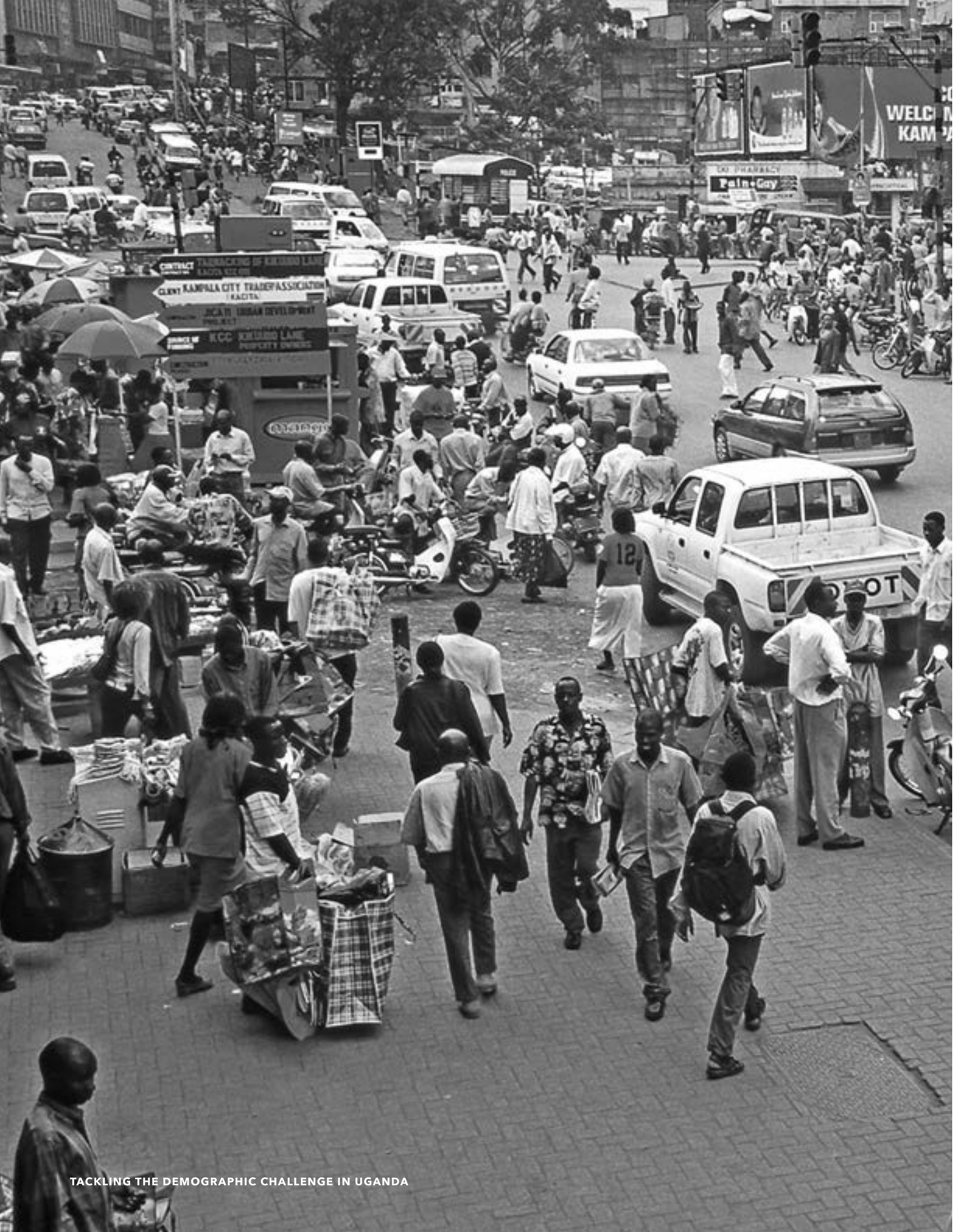


FIGURE 22C.
LABOR INDICATORS AND GDP PER CAPITA 2020-2060 /
GROSS DOMESTIC PRODUCT PER CAPITA (IN CONSTANT 2010 US$)
Source: Author's calculations based on Dem Div projections





TACKLING THE DEMOGRAPHIC CHALLENGE IN UGANDA

While the poverty rate is expected to decline steadily over the next 40 years, the number of poor will increase in Uganda. The empirical exercise shows under the most likely population projection scenario (medium-variant), and assuming a medium pass-through, the incidence of poverty under the international poverty line of U$ 1.90 (2011 PPP) a day will decline from 41.6 in 2020 to about 30 percent in 2060 (see Figure 23a).[56] However, given the rate at which the population will continue to expand, even though the rate is falling, there will be an increase in the number of poor to around 12 million (a 63 percent increase), reaching 31 million poor Ugandans in 2060. Results are only slightly more positive when a more inclusive growth profile (benefitting the poor more) is assumed (see Figure 23c). In that case, by 2060 the poverty rate will decline to 29 percent, while the number of poor will reach 29 million (an additional 11 million poor at the end of period compared to the current 19 million). Overall, the results suggest that in order to reduce poverty, there is a need for more radical poverty-reducing policies and a structural transformation of the economy.

A similar pattern is expected for the vulnerable population: while the share of vulnerable people as a proportion of the total population will decline, the number of vulnerable people will increase by 2060, with important implications for the planning of social safety nets. Often, those living under U$3.2 (2011 PPP) a day – derived from the national poverty lines in low middle-income countries – are considered to be vulnerable: either living in poverty or at risk of falling into poverty as a result of a covariate or idiosyncratic shock.[57] Under the medium-variant and medium pass-through assumptions, the proportion of vulnerable is projected to decline from 70 percent in 2020 to 61 percent by 2060, while the number of vulnerable under the medium-variant scenario is projected to increase from 32 million to 63 million people (an increase close to 50 percent, see Figure 23b). These results suggest that the need for a comprehensive social-protection system will persist over the medium term. As before, these numbers only improve marginally under the more inclusive growth scenario (high pass-through), as shown in Figure 23d.

Under the low fertility variant scenario, the poverty incidence in Uganda is projected to decrease while the number of poor remains relatively unchanged between 2020 and 2060 (although a significant decline compared to the medium-variant scenario). A curb in fertility, as assumed under the low-variant population scenario, reduces the proportion of the population living in extreme poverty under the medium pass-through assumption to 24 percent by 2060, a 6 percentage-point reduction compared to the medium-variant (see Figure 23a). In addition, in this particular case the number of poor remains relatively stable at 22 million poor Ugandans by that same year, around 2 more million than currently estimated. A growth trajectory that benefits the bottom of the distribution more (high pass-through elasticity assumption) lowers the poverty incidence to 22 percent (which would half the current poverty rate) and would only increase the number of poor by one million (see Figure 23c) at the end of the 40-year period.

As with poverty, the proportion of the population considered vulnerable declines considerably under the low-fertility scenario, in comparison to the medium-fertility scenario. The projections show that efforts in reducing fertility would be translated into a vulnerability rate that is 6 percentage-points lower compared to the most likely scenario (see Figure 23a).[58] This is in turn would represent an annual average reduction close to 0.4 percent between 2020 and 2060. A marked difference between the different population scenarios is observed with respect to the number of vulnerable: 14 million less vulnerable people would be expected under the low fertility scenario (a 22 percent difference) in 2060, as shown in Figure 23b. Thus, a reduction in the pace at which population grows provides clear gains in terms of the welfare of the population as well as the number of poor and vulnerable people.

56. The U$ 1.90 a day (2011 PPP) -the international poverty line- is the average of the national poverty lines of the poorest 15 countries in the world (expressed in 2011 PPP dollars of 2011) and is often referred as the extreme poverty line.

57. This is an approximation, as there are more sophisticated definitions of vulnerability, see Chaudhuri (2003).

58. The proportion of the population considered vulnerable would reach 55 percent by 2060.

FIGURE 23A.
POVERTY RATES AND NUMBER OF POOR 2020-2060 / PROJECTED POVERTY RATES (MEDIUM PASS-THROUGH ELASTICITY)
Source: Author's calculations based on Dem Div projections and UNHS surveys

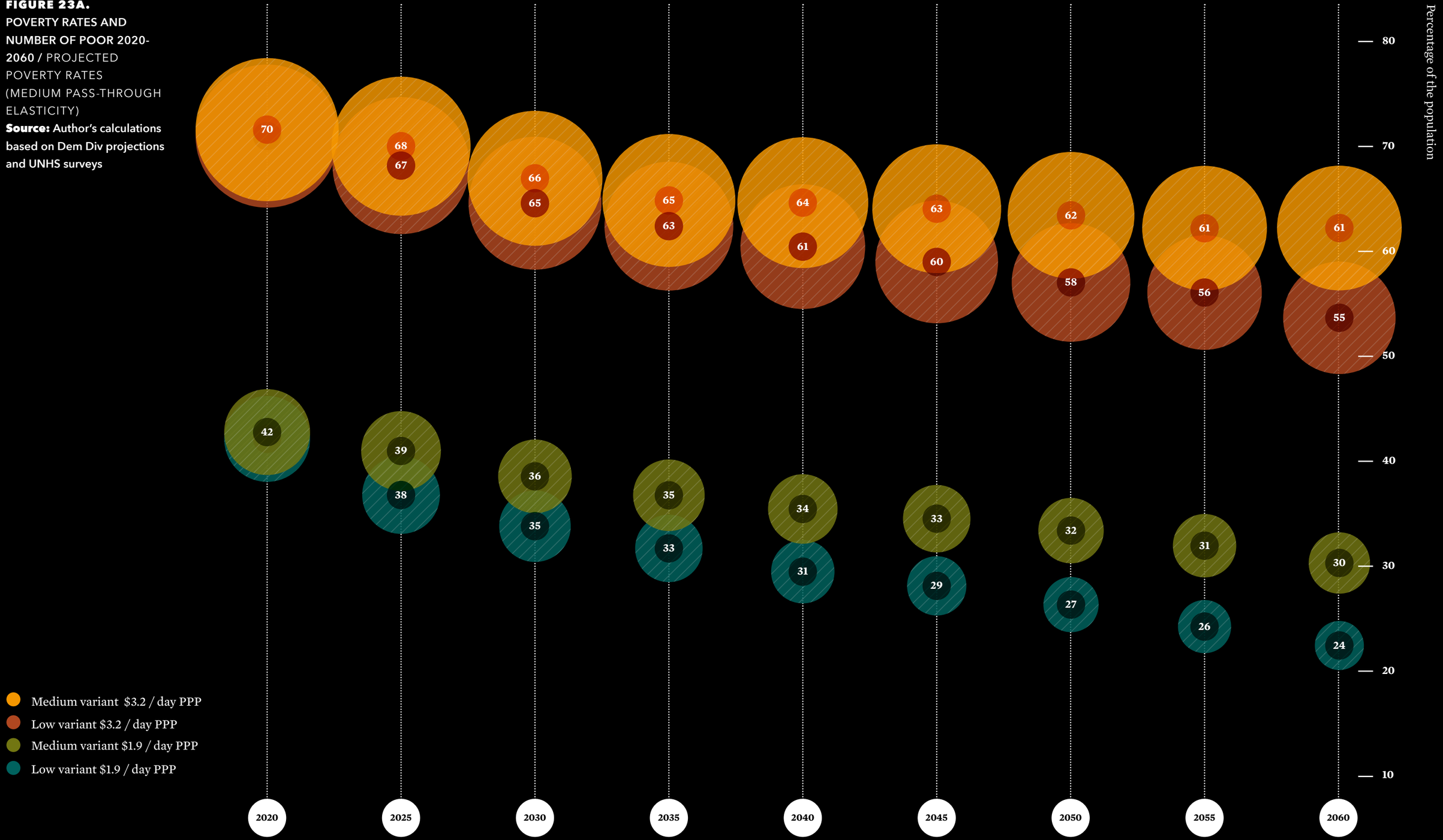


FIGURE 23B.
POVERTY RATES AND NUMBER OF POOR 2020-2060 /
PROJECTED NUMBER OF POOR
(MEDIUM PASS-THROUGH ELASTICITY) (MILLIONS)
Source: Author's calculations based on Dem Div projections and UNHS surveys

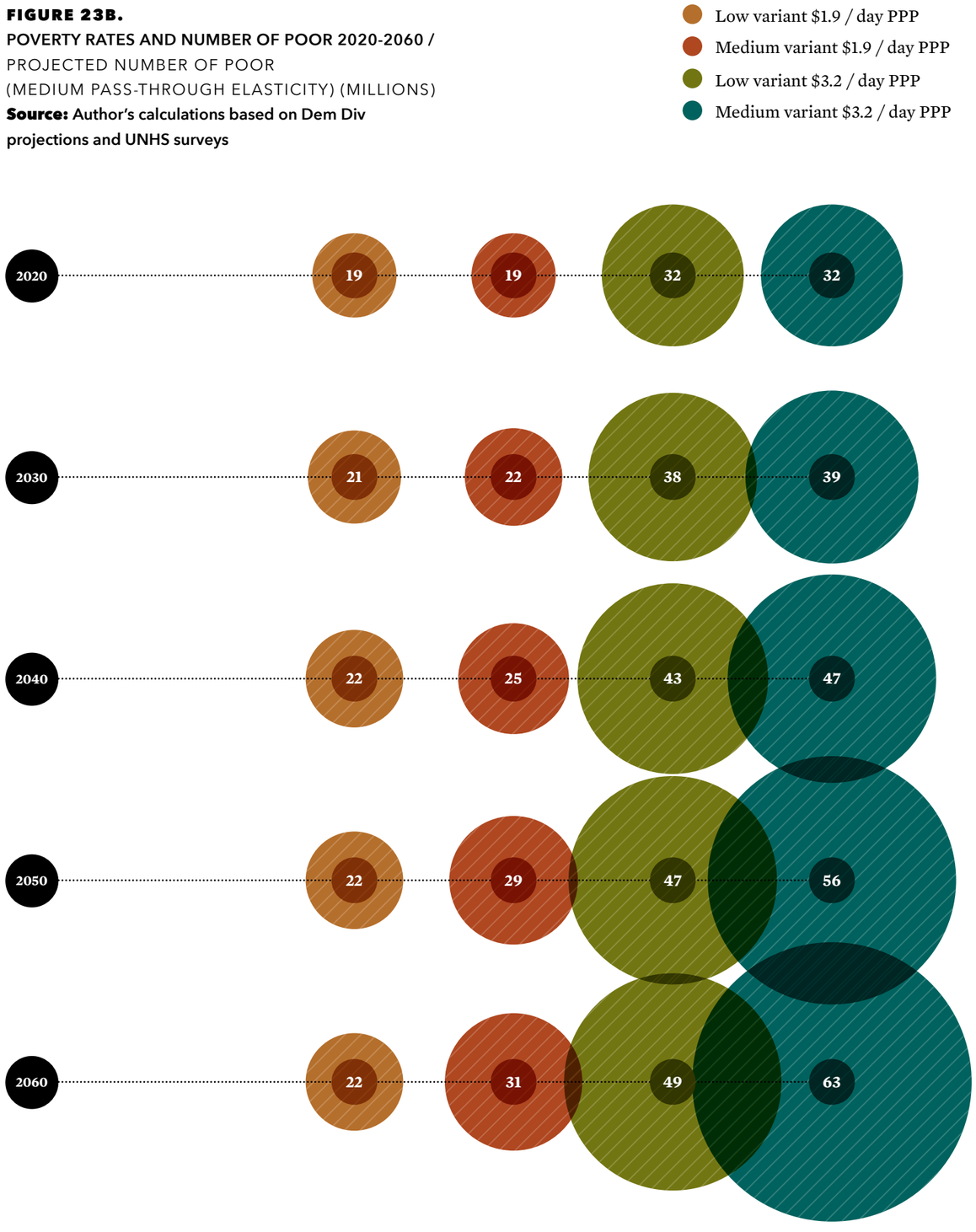


FIGURE 23C.
POVERTY RATES AND NUMBER OF POOR 2020-2060 /
PROJECTED POVERTY RATES (HIGH PASS-THROUGH ELASTICITY)
(PERCENTAGE OF THE POPULATION)
Source: Author's calculations based on Dem Div projections and UNHS surveys

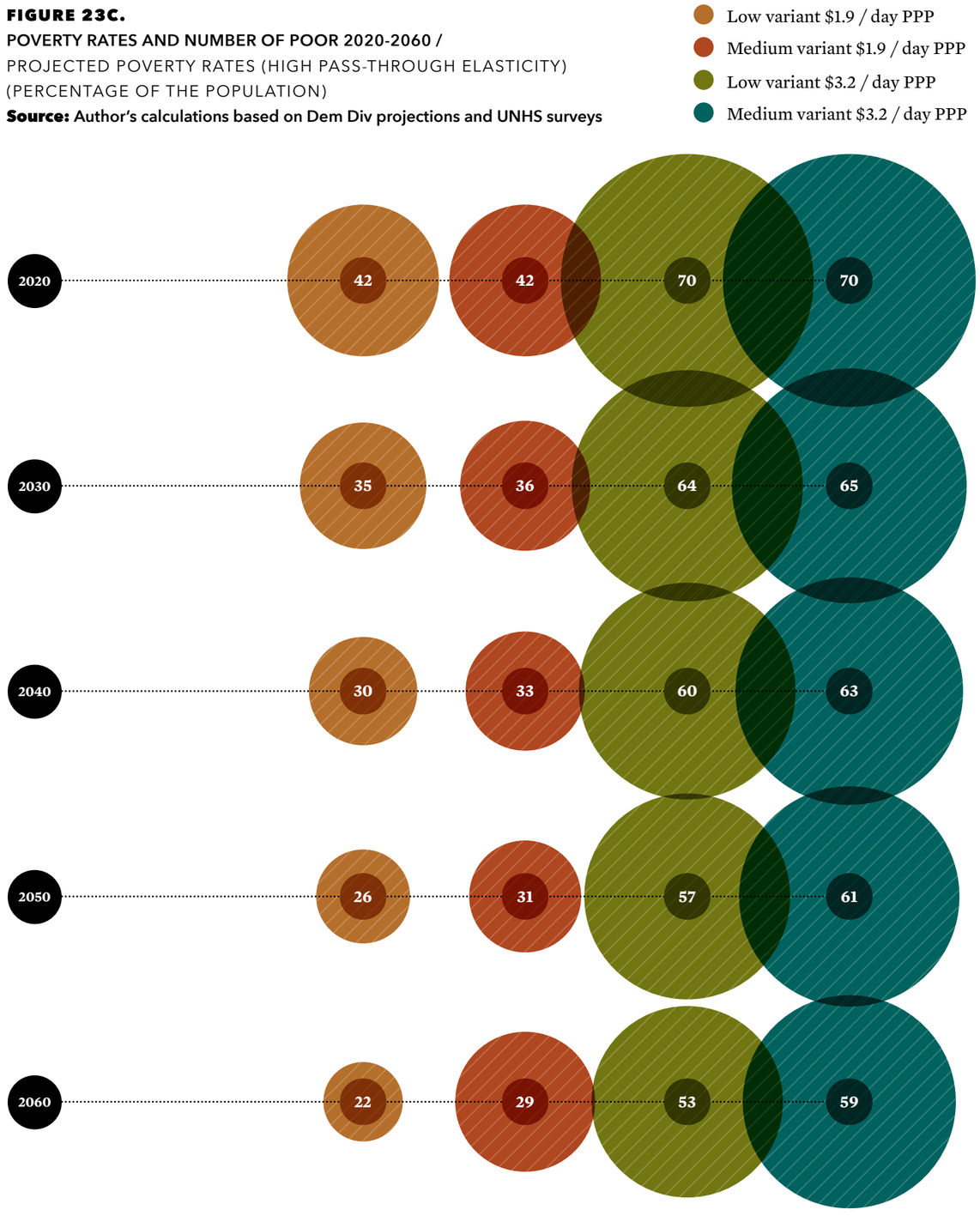
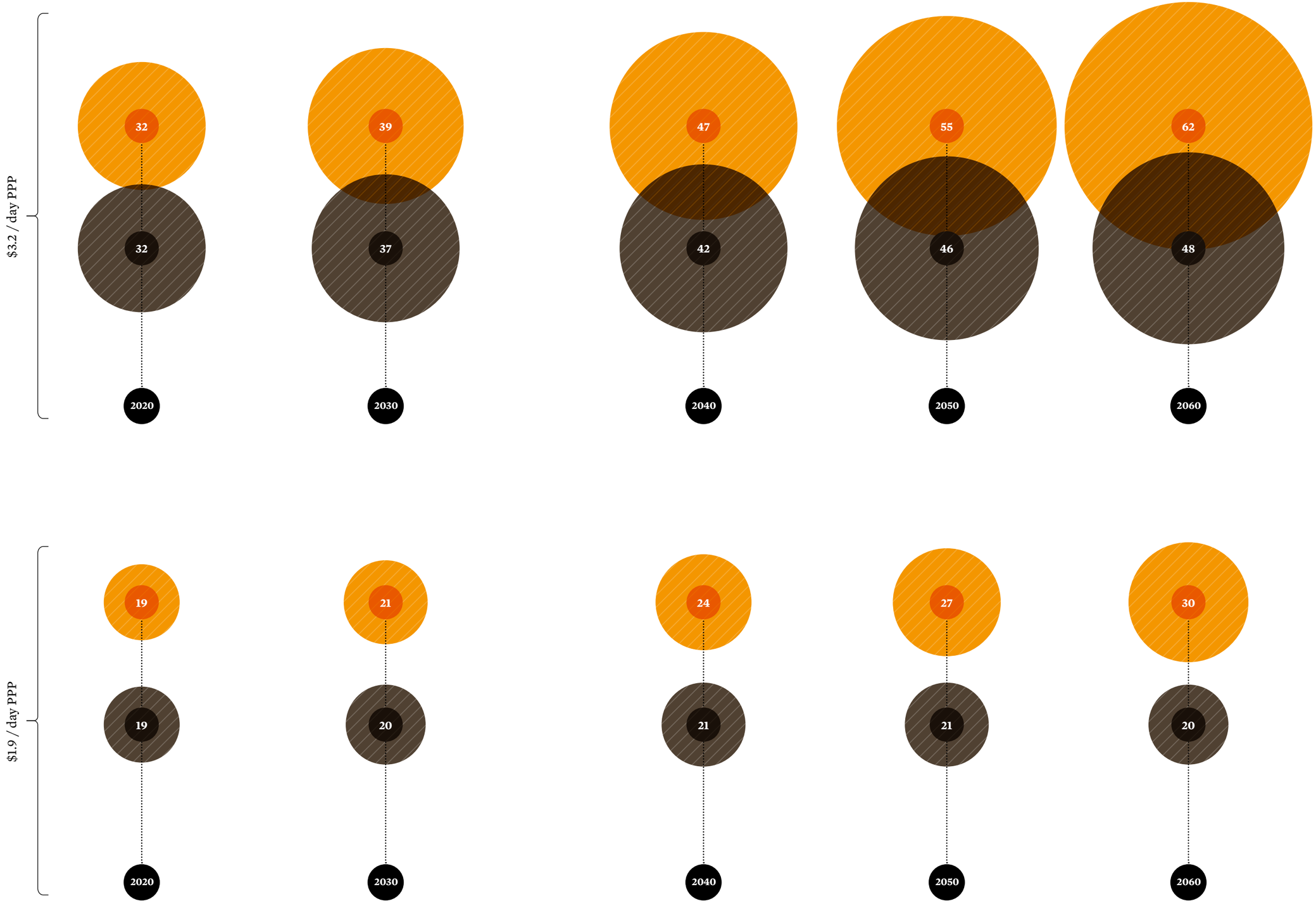


FIGURE 23D.
POVERTY RATES AND NUMBER OF POOR 2020-2060 / PROJECTED NUMBER OF POOR (HIGH PASS-THROUGH ELASTICITY) (MILLIONS)
Source: Author's calculations based on Dem Div projections and UNHS surveys



E.3
FACING THE LABOR MARKET AND POVERTY CHALLENGES OF POPULATION GROWTH

The results presented in this section highlight that perhaps one of the biggest challenges posed by the population projections for Uganda in the medium term is labor demand. As discussed in Chapter 2, the full economic benefits of going through a demographic transition can be achieved only if there is strong demand for labor: the supply of labor is not enough in the absence of insufficient demand. Moreover, the workforce has to be engaged in productive economic activities in order for the country to experience an increase in the income of households. As pointed out by Canning et al. (2015), the East Asian economies were able to reap a demographic dividend thanks to the combination of a fast demographic transition and export-oriented economies that expanded the demand for labor.

The Ugandan labor market requires a profound transformation in order to be able to accommodate approximately 1.1 to 1.2 million new entrants into the labor force per year over the next 40 years. The number of new entrants will increase to 1.1 million individuals per year starting in 2027, which will continue to widen the existing labor gap under the most likely population scenario. While an effort to curb fertility will lessen the burden moderately, particularly after 2035, this will still be a considerable burden for the country's labor market.[59]

It seems unlikely that, without a profound transformation, Uganda's labor market will be able to rise to this challenge. At the moment, the economy is not creating employment at a sufficient pace to provide enough job opportunities to the Ugandan youth.

The challenge not only comprises the creation of more jobs, but also higher quality jobs. At the moment, nearly three out of four workers in Uganda are still non-wage workers, who largely work for themselves or contribute to the family business in low productivity activities. While this ensures their livelihood, these jobs add little value to the economy and can be precarious and unstable. Over the next few decades, Uganda requires policies to accelerate its economic transformation, which is the basis for the creation of formal wage jobs in productive sectors of the economy. This will entail faster and planned urbanization and industrialization transitions over the medium term, as well as providing the necessary conditions to attract Foreign Direct Investment. The development of commercial agricultural and agro-industrial activities, as well as regional trade integration, has been indicated by many (Merotto 2019, World Bank 2018[60]) as key first steps in this direction. This will necessarily need to be accompanied by larger investments, both by the public and private sectors (UNICEF, 2020).

The projections also indicate that Uganda is still more than a decade away from attaining low middle-income status and that the country will still be grappling with a considerable number of poor in 40 years. While the poverty incidence rate under the international poverty line is expected to decline steadily between 2020-2060, the number of poor is projected to increase due to the pace at which the population expands. Under the most likely population scenario, the poverty incidence rate under the U$1.90 a day is set to reach 30 percent by 2060, resulting in a total of 31 million poor Ugandans. The little progress in terms of the number of poor, despite a favorable (although not spectacular) real growth rate shows the need to promote a more inclusive economic model. The link between economic growth and poverty reduction may be strengthened by allowing those at the bottom to benefit from the sectors driving growth, which is currently not the case. Moreover, the GoU can strongly focus on a strategy to enhance the income of the rural poor while at the same time managing urbanization so that urban centers are welfare enhancing and help raise the living conditions of the population.

Similarly, the vulnerability of falling into poverty will still be a reality for a large proportion of the Ugandan population by 2060. This underscores the need for examining how social protection programs in Uganda can enhance the resilience of households to shocks, in addition to the role they play in supporting human capital investments, particularly in the long term (World Bank, 2020c). At the moment, given that financing to the sector is limited, the existing direct income support programs only reach 3 percent of the population. Considering the government's limited fiscal space, it would be beneficial to consider a shock responsiveness approach to social protection and to focus the expansion of programs to the poorest individuals in the neediest geographical areas. Existing disaster risk financing pilots are a good alternative to scale up, as well as agricultural insurance, which can help rural household to cope with the recurrent weather shocks. At the same time, given the low coverage of social insurance schemes, fiscal incentives may need to be provided to improve take-up of voluntary savings schemes by informal sector workers, which make up 90 percent of Uganda's labor force (World Bank, 2020c).

59. Few countries in Africa (perhaps Mali and Gabon) have seen their workforces grow at such as pace (Merotto, 2019).

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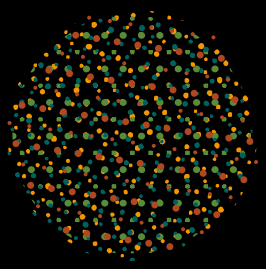

Uganda is entering a key stage of its development path given the expected demographic trends over the next 40 years. The population of Uganda, currently estimated at 46 million, will at least double between 2020-2060. Under the most likely scenario, the total population of Uganda will reach 104 million people by the year 2060. Around 70 percent of that population will be of working age, and about half of the population will reside in urban centers (a two-fold increase in the proportion of urban population observed today). Considering that the country already encounters multiple challenges in the delivery of basic services, specifically in education, health, electricity and water and sanitation, and in managing public investment projects, serving the projected population and improving the current access levels will not be an easy task.

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