

## **Sierra Leone**

Currency is Leone (Le)

1 Le = 100 cents

On January 3, 2022

US\$ 1 = Le 11,165

Fiscal Year

January 1 – December 31

## **Acronyms and Abbreviations**

ACE	Africa Coast to Europe
CIMS	COVID-19 Impact Monitoring Survey
EA	Enumeration Area
EDSA	Electricity Supply and Distribution Authority
FAO	Food and Agriculture Organization
FPMA	Food Price Monitoring Analysis
GDP	Gross Domestic Product
GPS	Global Positioning System
GRID3	Geo-Referenced Infrastructure and Demographic Data for Development
ha	Hectare
JMP	Joint Monitoring Program for Water Supply and Sanitation
JSS	Junior Secondary School
Le	Leone
LIC	Low-income country
M	Million
MICS	Multiple Indicator Cluster Surveys
MPI	Multidimensional Poverty Index
OSM	Open Street Map
PER	Public Expenditure Review
PHC	Population and Housing Census
PPP	Purchasing Power Parity
SAE	Small Area Estimates
SALCAB	Sierra Leone Cable Limited
SLIHS	Sierra Leone Integrated Household Survey
SSA	Sub-Saharan Africa
SSS	Senior Secondary School
WDI	World Development Indicators
UNFPA	United Nations Population Fund
US	United States



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## Acknowledgements

The Sierra Leone Poverty Assessment was prepared by a World Bank team from the West Africa Poverty and Equity unit. The team was led by Sarosh Sattar (Senior Economist) and included Aibek Baibagysh Uulu (Consultant), Paul Andres Corral Rodas (Senior Economist), Elizabeth Mary Foster (Economist), Walker Turnbull Kosmidou-Bradley (Geographer), and Ambar Narayan (Lead Economist). The report was prepared under the overall guidance of Pierre Laporte (Country Director, AFCW1); Johan Mistiaen (Practice Manager, EAWPV); and Abdu Muwonge (Country Manager, Sierra Leone). The report benefited from comments from peer reviewers Alejandro De la Fuente (Senior Economist) and Yeon Soo Kim (Senior Economist). Etsehiwot Berhanu Albert (Program Assistant) and Syed Sada Hussain Shah Naqvi (Temporary) provided administrative assistance.

## Executive Summary

1. **This report sheds light on why poverty remains high in Sierra Leone and has fallen only gradually in recent years.** Understanding the factors that influence poverty and welfare is the first step in trying to ameliorate a situation that degrades human dignity and prevents the economy from reaching its potential. However, poverty varies across space more than it varies across time. This report seeks to explain why some places are poorer than others and to understand the role of urbanization in poverty reduction. A key finding is that though urbanization presents challenges, there is also an opportunity in urbanization—an opportunity that should be seized. With the right policies this can be a driver for poverty reduction.

2. **The analysis is based on an empirical approach to understanding poverty trends and developments, its correlates, and drivers.** The report draws on a range of data including recent household surveys, national accounts, and satellite data—the first two sources are collected primarily by Statistics Sierra Leone. The population's welfare is measured using consumption data collected from surveys. People are ranked from the lowest to the highest per capita consumption. The share of the population with consumption below the national poverty line (defined by the Government of Sierra Leone) is living in poverty.

### *Poverty reduction has been slow despite economic growth*

3. Is Sierra Leone's poverty rate excessive given its income? We can attempt to answer this question by doing an international comparison of income and poverty rates. **As in other low-income countries, GDP per capita in Sierra Leone is correlated with a high level of extreme poverty.** Many countries achieve lower rates of poverty than predicted by their GDP per capita, likely because they have good economic and social policies and effective institutions. Middle-income countries (often with economies that have started on the path of structural transformation) appear to be especially successful in achieving lower rates of poverty, possibly thanks to enhanced productivity (see Figure 1).

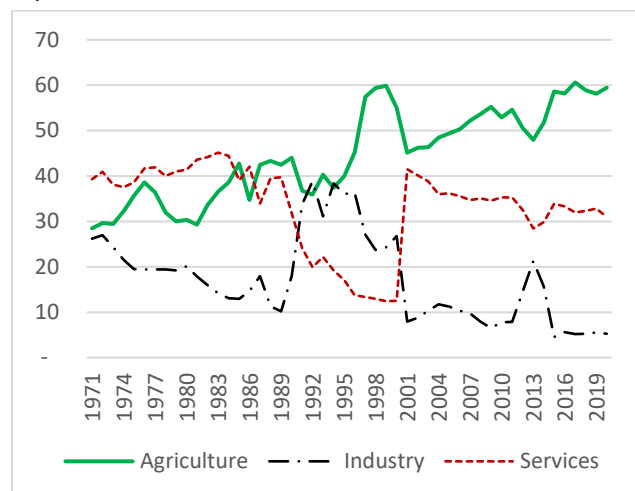
4. **The level and sources of economic growth changed in Sierra Leone over the past two decades, affecting welfare.** During 2003–2011, as the economy began to recover from conflict, the expansion of agricultural production drove growth. This broad-based growth resulted in a 2.4 percent annual increase in GDP per capita and a 13 percentage point decline in poverty (using the national 2003 poverty line). In the next decade (2011–18), as mining sector growth and mineral exports became more prominent, economic growth slowed and became more volatile. GDP per capita increased by 1.8 percent a year, and poverty fell by 6 percentage points. The growth elasticity of poverty fell from -0.9 to -0.7—

**Figure 1: A Comparison of GDP Per Capita (PPP) and Extreme Poverty**  
*In percent of population below PPP \$1.9 per day*



Source: WDI. Note: Latest available between 2014-2018.

**Figure 2: Sector Value-Added in GDP**  
in percent



Source: WDI.

meaning in the latter period, for every one percent increase in GDP per capita, poverty fell by 0.7 percent. The increase in mining did not indicate structural transformation—since there were little or no spillovers into other parts of the economy. During this period, according to the national accounts, Sierra Leone’s economy became *more*, not less, dependent on agriculture—a pattern that differs from other developing countries. It is not clear whether this is indeed true, as there is evidence from household surveys which contradicts this finding. According to surveys from 2003 and 2018, the adult population engaged in farm-only employment has fallen from 39 percent to 33 percent and non-farm-only employment has increased from 10 percent to 17 percent of the adult population.

5. **Over the past decade, the main driver of poverty reduction was strong growth in urban areas, followed by growing urbanization.** An estimated 43 percent of Sierra Leone’s population lives in urban centers—about average for Sub-Saharan Africa’s low- and middle-income countries. Although the number of private sector jobs increased in urban areas, many of the new jobs are nonwage low-productivity jobs in retail trade and to a much lesser extent in transport, construction, and food services. Population growth is exacerbating pressures on the urban economy, as the number of youth entering the labor force is growing rapidly. The low investment in urban infrastructure may be constraining economic growth in cities and towns and, consequently, improvements in welfare as well.

6. **Poverty reduction has likely stagnated or even reversed during the height of the COVID-19 pandemic.** The estimates show that GDP contracted by more than 2 percent in 2020, due to imposed mobility restrictions, which mostly affected service sector. The close relationship between economic growth and poverty reduction indicates that during the pandemic, poverty reduction was adversely affected. The analysis uses two approaches to estimate poverty rates and finds that both methodologies show a slight increase in poverty. This is further supported by a qualitative survey undertaken in the early months of the pandemic that finds that urban households dependent on self-employment income report a decline in income compared to pre-pandemic levels, and by the end of 2020, some households, especially in rural areas, had seen improvements in income.

### *Done well, urbanization can reduce poverty*

7. **The main message of this report is that the forces of urbanization can be harnessed to promote productivity, improve living standards, and expand markets efficiently while reducing poverty.** In 2020, an estimated 44 percent of Sierra Leone’s population lived in urban areas. Poverty has been declining more rapidly in urban areas than in rural areas. The larger the settlement size, the lower the poverty rate and the higher consumption per capita—even though urbanization partially reflects “push” factors (such as lack of services) in rural areas rather than “pull” factors (such as rapid job creation in manufacturing) in urban areas.

8. **Under the right circumstances, urban areas can expand markets and increase productivity.** Because of economies of scale, it is less costly for governments to expand services in urban areas,

especially secondary cities and towns, where congestion does not eventually reduce the benefits of agglomeration. The government has the opportunity to increase growth and improve welfare by (a) investing in secondary cities to make them more productive and take the pressure off Greater Freetown, (b) increasing communication and connectivity between outlying rural areas and secondary cities to improve rural welfare, and (c) continue to aim for universal provision of basic services, including in small villages. This approach can yield externalities that benefit both rural and urban populations in a fiscally responsible way.

### *Overall poverty fell, but rural poverty stagnated*

9. **Sierra Leone is a small low-income country faced with significant challenges but also opportunities.** With a GDP per capita of US\$ 509 in 2020, it ranks sixth from the bottom among 27 low-income countries globally. It has a small domestic market due both to its low income but also its modest population of around 8 million. Sierra Leone has the benefit of a relatively long coastline and is favorably positioned on the southwest coast of Africa. Its economy is characterized by a large traditional agriculture sector and a small but important mining sector which leads to frequent boom-and-bust cycles. Its economy has also been adversely affected w nationwide health crises such as Ebola (2014-2016) and now currently COVID-19. Over time, governments have been making a concerted effort to increase human capital through better delivery of social services.

10. **More than half of Sierra Leone's population—and three-quarters of the population in rural areas—still lives in poverty.** The official poverty rate in 2018 was 57 percent of the population. The incidence of poverty varies significantly across the country, ranging from 23 percent in Greater Freetown to 49 percent in other urban areas and 74 percent in rural areas. The geographic dispersion of poverty is wide, with the North province experiencing the highest rate of poverty (77 percent) and the Greater Freetown area experiencing the lowest rate (23 percent). Provincial poverty rates mask the large pockets of poverty within them.

11. **Average welfare improved over the past decade, but inequality increased.** Poverty fell by about 5 percentage points between 2011 and 2018—a significant achievement given that iron ore prices crashed in 2016 and the country suffered from an Ebola outbreak. The gains in poverty reduction were achieved exclusively in urban areas, however; the rural population remained impoverished. Moreover, extreme poverty in rural areas rose from 9 percent to 13 percent, although it remained unchanged nationally. As the gap between mean consumption in rural and urban areas widened, the Gini coefficient which measures inequality, rose from 0.33 to 0.37.

12. **The widespread nature of poverty and the uneven dynamics across rural and urban areas in Sierra Leone point to the importance of understanding developments in the economy.** The increasing concentration of poverty in less economically vibrant areas—rural and secondary cities—seems to signify that macroeconomic developments and structural changes in the economy are the first place to start in unpacking the drivers of welfare improvements in Sierra Leone.

### *The population is spatially dispersed with many living in very small settlements*

13. **Almost half of Sierra Leone's population lives in small settlements.** About 57 percent of the population lives in rural areas. Its population density (110 persons per km<sup>2</sup>) is almost double the global and Sub-Saharan Africa averages as most of the land is arable. Sierra Leone's average density masks the fact that almost half of its population lives in small settlements (or "localities") of less than 750 persons and another 11 percent in settlements between 750-3000 people. Greater Freetown is the country's

megacity with over one million residents. There are only five major cities with population size between 100,000 to 250,000, in which about 12 percent of the population lives.

**Table 1: Localities by Population Size**

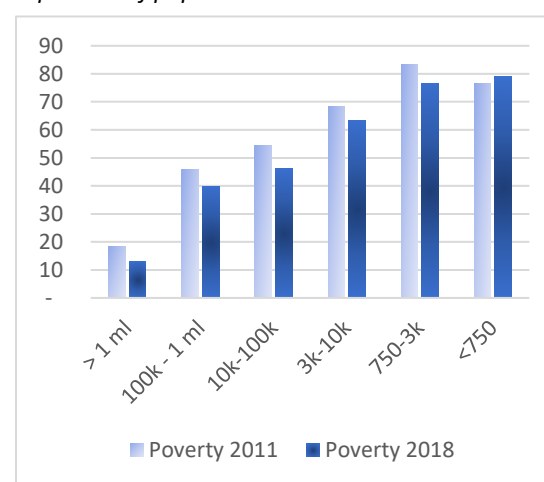
	Population	Class	Number of localities	Percent of total population
1	Over 1 million	Greater Freetown	4 <sup>a</sup>	18
2	100,000 to 250,000	Secondary Cities (Bo, Kenema, Makeni, Waterloo, Koidu)	5	12
3	10,000 to 100,000	Large Towns	24	7
4	3,000 to 10,000	Mid-sized Towns	97	7
5	750 to 3,000	Rural Towns	511	11
6	Less than 750	Rural Villages	5,983	46

Source: Staff calculations based on 2015 Census Data and 2015 Settlement Extents (GRID3).

14. **Poverty is increasingly concentrated in the smallest settlements (Figure 3).** Although poverty declined between 2011 and 2018, the gains in welfare accrued exclusively to urban centers; poverty rates in smaller towns and rural areas remained high and stagnant. Physical connectivity through roads did not mitigate the isolation and limited access to markets faced by these small communities, possibly because of the lack of means of transport, the high cost of transport service, and/or the poor quality of the roads (most are unpaved). Many rural settlements are close to roads, though unpaved roads are often not navigable during the rainy season (April/May–November).

*Providing basic services to a dispersed population is difficult*

**Figure 3: Changes in Poverty, 2011-2018, by Locality Size**  
in percent of population



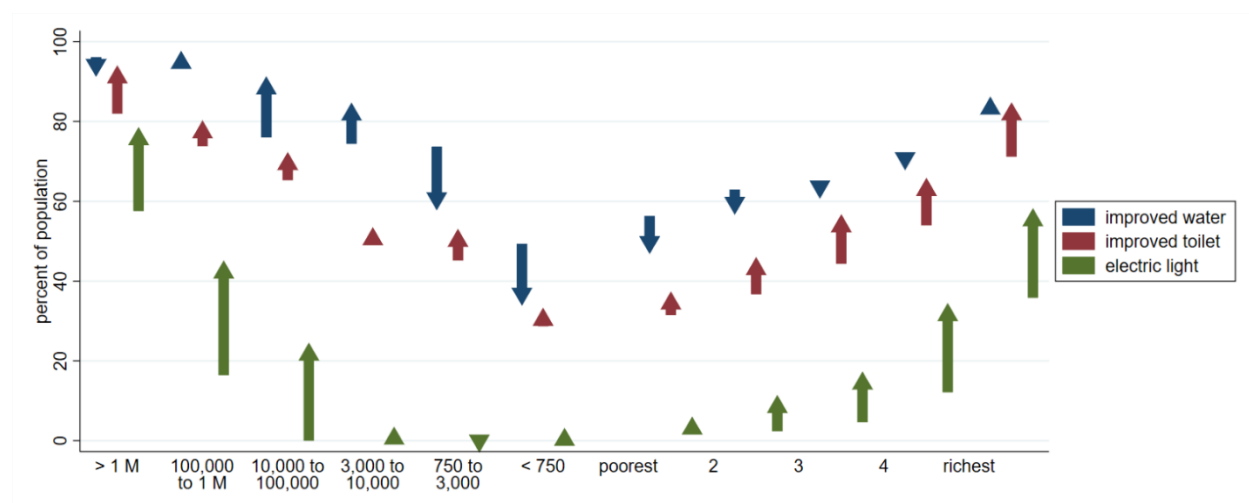
Source: Staff calculations based on SLIHS 2011 and 2018.

15. **Smaller settlements lack access to basic public service such as electricity and improved water and sanitation (figure 4).** Compared with other countries in Sub-Saharan Africa and other low-income countries, Sierra Leone lags significantly in providing electricity and basic sanitation services to its urban and rural populations. It performs comparably in the provision of basic drinking water. Households in towns of less than 10,000 people and poorer households remain far behind in terms of access to electricity, access to an improved water source, and access to an improved toilet. Smaller settlements saw little improvement between 2011 and 2018, and access to improved water actually deteriorated.

16. **Between 2011 and 2018, access to telecommunication and banking, which are provided by private companies, soared.** Mobile phone coverage and use is high: 80 percent of the population live in an area with mobile network coverage, and 73 percent live in a household in which at least one adult owns a cellphone. Mobile network coverage is almost universal for settlements with at least 10,000 people; it falls off to just over 60 percent for the smallest communities. Cellphones also provide access to banking services, through mobile payment services. As of 2018, just over a quarter of adults with a cellphone had used it to send or receive money in the past year, accounting for about 12 percent of the total adult population. This share is about twice the share of people who have a bank account. Use of mobile money is common across genders, education levels and settlement size.



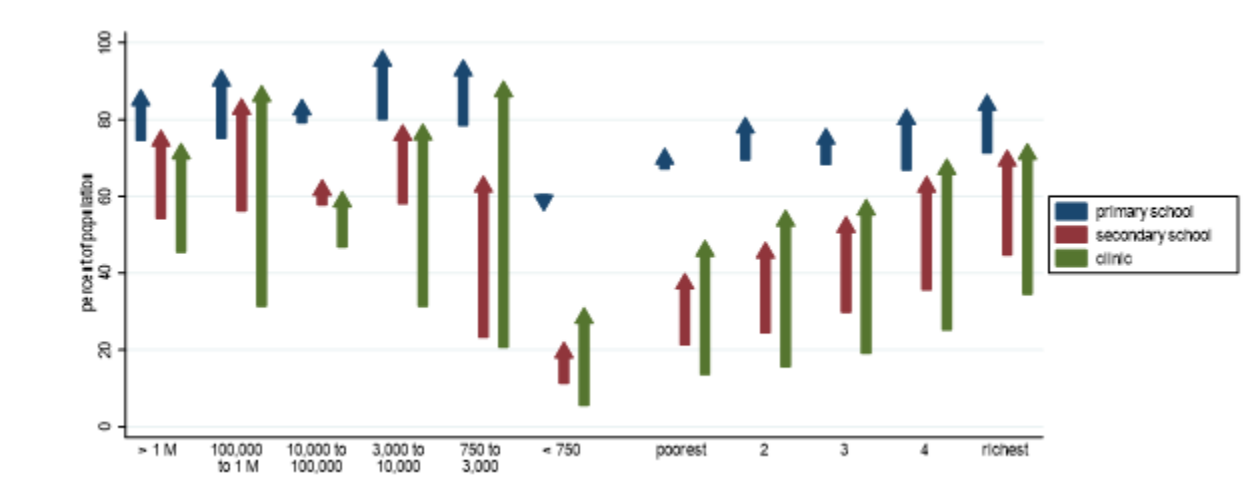
**Figure 4: Changes in Access to Public Utilities, 2011-2018, by Locality Size and Consumption Quintile**



Source: Staff calculations based on SLIHS 2011 and 2018.

17. **The government has expanded primary school and primary health care to much of the country, thereby improving education and health outcomes.** Sierra Leone's human capital indicators are low. For example, the life expectancy is 55 years and working age adults have an average of 4.2 years of education. These poor outcomes may have their roots in the disruptions to education, healthcare and nutrition during the civil strife of the 1990s. The government's concerted effort to expand access to primary services has been successful, especially in education where 99 percent of the population is within 5 km of a primary school. Yet, despite these efforts, uptake among small settlements is lagging, especially for health care services. Furthermore, access to secondary schools for the 45 percent of the population living in small settlements is low at around 20 percent, indicative of the low human capital acquisition occurring in these areas.

**Figure 5: Changes in Access to Schools and Clinics in 2011-2018, by Locality Size and Consumption Quintile**



Source: Staff calculations based on SLIHS 2011 and 2018.

18. **There is no easy way to expand public services to small settlements.** Although Sierra Leone is not a large country, the dispersion of the population across many tiny settlements makes it difficult to provide the needed infrastructure. Even in sectors like education, where coverage is high, estimates of the cost of achieving universal coverage far outstrip the resources available. In some sectors, mobile

technologies have facilitated leapfrogging, allowing households to access the Internet and banking services without laying cable or building bank branches in every village. But to date, no alternative exists to building roads and connecting electricity cables to every house to provide those services. This systematic lack of infrastructure is one driver of urban migration, as even the poorest households in Freetown have better access than the richest households elsewhere on many measures.

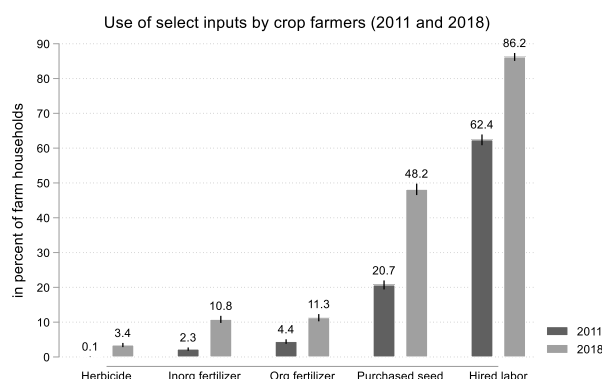
### *Rural poverty is pervasive, and farmers lack many basic productivity-enhancing assets*

19. **The agricultural sector is the backbone of Sierra Leone’s economy, but most of it is small-scale subsistence farming.** The sector contributes about 50 percent to GDP and employs two-thirds of the labor force. About 80 percent of rural households are engaged in crop farming on a small scale. The average size of a landholding is 4.4 acres (1.8 hectares) and appears to be declining. Although farmers grow mostly food for their own consumption, subsistence farming provides only 30-40 percent of total food consumption value. Most agricultural households grow only staples (rice, cassava, groundnuts); less than 12 percent cultivate cash crops (oil palm fruit, cocoa, and coffee), constraining the earning potential of farming.

20. **Although more farmers are buying and selling agricultural products, rural poverty remains stagnant.** Between 2011 and 2018, more farmers began selling some of their harvests. In 2018, 49–73 percent of households that raised rice, maize, or groundnut sold some of their harvest. Along with the growing share of farm households selling their harvest, the share of households applying agricultural inputs has increased modestly, though still at relatively low levels except for seeds. However, it would be misleading to interpret increased sale of produce as a move towards commercial farming. Rural households sell their produce right after harvest (possibly because of lack of storage facilities or delayed

demand for nonfood items), prices are low, and then buy staples when prices are high. This practice could explain why the increased marketing of crops is not affecting rural incomes.

**Figure 6: Use of Select Inputs by Crop Farmers, 2011 and 2018**  
in percent of farm households



Source: Staff estimates based on SLIHS 2011 and 2018.

21. **The drivers of income differences between poor and nonpoor farmers appear to be related mostly to returns to assets rather than differences in endowments.** One in three farmers in Sierra Leone is not poor, suggesting that farming can be a viable occupation. Although nonpoor farmers have marginally higher access to infrastructure and markets, higher human capital, and fewer children than the poor, these variables are not enough to explain the difference in welfare.

Rather, the difference in incomes between poor and nonpoor farmers appears to be associated with the higher returns that nonpoor farmers leverage with the assets they have and buying and taking advantage of market access. Additional research is needed to understand what differentiates poor and nonpoor farmers—and whether the barriers are insurmountable without significant investment by the government. The issue of risk in farmers’ decision-making process also needs to be better understood. Farmer may be pursuing low-return/low-variability over higher-return/higher-variability strategies

because they cannot afford the cost of failure, which could be life threatening. Living on the margin of existence changes the calculation of what to produce and more research is needed on this topic.

**22. Rural households engaged in nonfarm enterprises are less likely to be poor than other rural households.** The share of rural households that engage in nonfarm activities increased between 2011 and 2018. However, both poor and nonpoor rural households engage predominantly in small-scale trading activities. A slightly larger share of nonpoor rural households engaged in transportation (8 percent versus 5 percent), and a larger share of poor households engaged in artisanal mining (7 percent versus 4 percent). About quarter of rural households combined farming and nonfarming activities; only 13 percent engaged in nonfarming exclusively. The sector of activity alone thus does not determine a household's welfare status; what matters more is the returns to activities, which depend mostly on access to market infrastructure.

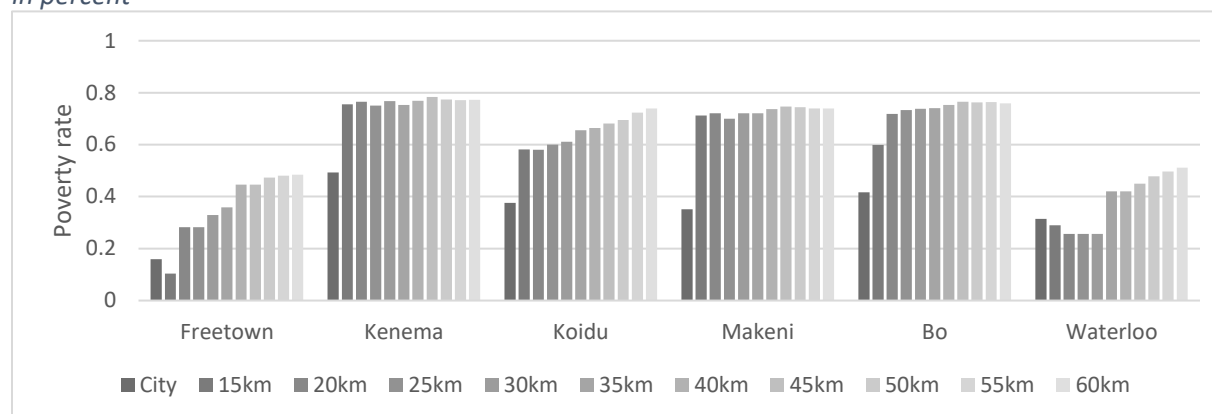
*Secondary cities can play a pivotal economic role in improving welfare and accelerating poverty reduction*

**23. Sierra Leone's urbanization has been robust due both to growing population and rural migrants.** The last census in 2015 found that 41 percent of population lived in urban areas or 3 million persons. Sierra Leone has had a faster rate of urbanization than the average seen in Sub-Saharan Africa. This may have been a result of push rather than pull factors—meaning, people have been “pushed” out of rural areas due to lack of jobs, rather than being “pulled” to urban areas due to demand for labor. Freetown is the most economically vibrant of all cities in Sierra Leone, followed by five secondary cities—Makeni, Bo, Koidu, Kenema, and Waterloo.

**24. As Freetown's population grows, its ability to cost-effectively offer services and opportunities to its residents declines.** Freetown was home to 15 percent of the country's population in 2015. Between 2004 and 2015, Freetown's population grew by 36 percent from and is now over 1 million. Rapid population increase has made it difficult for the city to keep up with growing demand for electricity, water, and waste management. Moreover, the city's location on a peninsula near mountains limits its ability to expand spatially.

**25. Secondary cities have lower poverty rates and higher human capital than surrounding areas (Figure 7).** Most of them experienced population growth of more than 50 percent between 2004 and 2015. Although poverty rates in secondary cities are high (ranging from 31 percent in Waterloo, which is near Freetown, to 49 percent in Kenema), they are significantly lower than in the areas surrounding them. The contrast between secondary cities and the surrounding areas is especially stark when it comes to human capital. The share of the adult population with at least secondary education is 31 percent in Kemena, for example, and just 6 percent in the areas within a 15-km radius of the city. Secondary cities also offer other opportunities and more public services than neighboring areas.

**Figure 7: Poverty Rates in Sierra Leone's City and Surrounding Areas, 2015**  
in percent

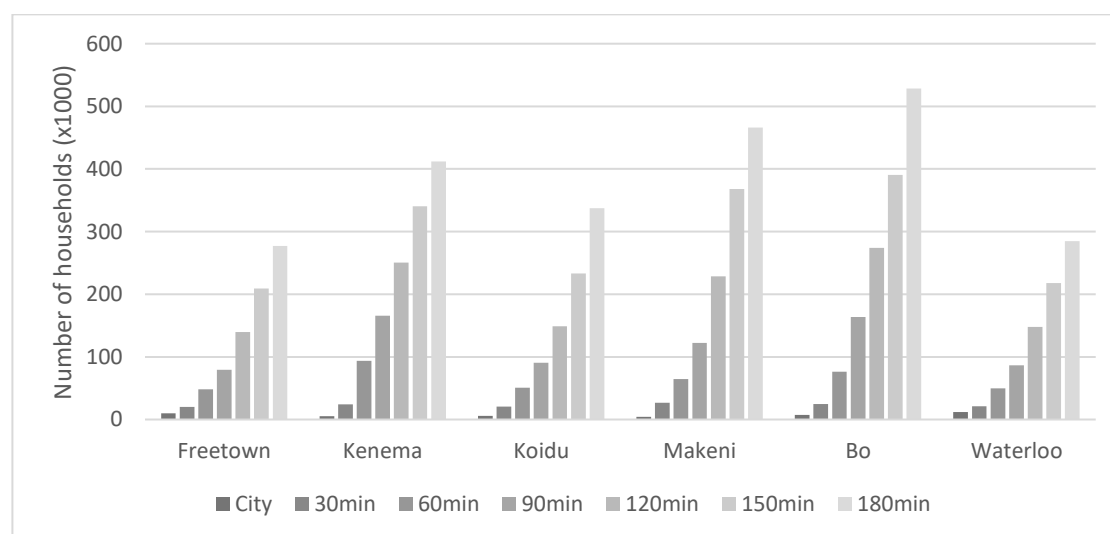


Source: 2015 population census.

Note: The figure presents a distance (straight line) weighted average of the poverty rate of surrounding chiefdoms. Under this scenario, the farther away a chiefdom is from the center of the city the lower weight it will carry in the average. The value does not include the city itself, just the distance weighted average of all the chiefdoms whose centroid falls within the indicated radius.

26. **Farmers have greater access to secondary cities than to Freetown.** Cities provide farmers with markets for their goods; they may also provide goods and services they need, such as inputs. The area around Freetown has the smallest share of households involved in farming; relatively few farming households live within a three-hour drive of the capital (figure 7). Many more farmers live near secondary cities. The road network between secondary cities and Freetown is relatively good. With modest additional cost, food could be delivered from secondary cities to Freetown if there were adequate agriculture surplus.

**Figure 8: Number of Households Involved in Farming in Cities and Neighboring Areas (travel time)**



Source: 2015 population census.

Note: Figure presents the number of households in farming in the city and within a given radius. The value does not include the city itself; it is just the sum of farming households within that radius from the city's centroid. Areas considered outside of the city are at the EA level

27. **Sierra Leone's poverty reduction has become less responsive to economic growth in recent years raising questions on what steps can the government take to reverse this trend.** The analysis in this report reveals the strong spatial aspects of poverty in the country indicating that there exist pathways to raising welfare, especially in worse off areas. Larger settlements, meaning urban areas, are better off than rural areas. Sierra Leone can accelerate poverty reduction by capitalizing on the benefits of urban centers. This can lead to poverty reduction in both rural and urban areas.

- a. **Increased investment in secondary cities could yield considerable poverty reduction in Sierra Leone.** There are a larger number of poor individuals in the immediate neighborhood of secondary cities than around Freetown. This suggests that investment in secondary cities could have considerable effect on poverty reduction as investment in secondary cities can reach a much higher number of the poor at, perhaps, a lower cost since people, particularly the poor are constrained by distance when considering where to migrate.
- b. **For farming households, cities could act as hubs for adding value to their crops but the majority of farming occurs far away from Freetown.** For this to be the case farmers need to be able to access cities and adequate roads and transportation can help many farmers and their family make the most of the many opportunities nearby cities and towns may have to offer. Access to urban markets will also increase their access as well as incentive to increase the uptake of agricultural inputs.
- c. **For the rural poor, increased education and skills can allow them to make the most of the many opportunities available in cities.** While secondary cities have a much larger share of individuals in paid employment than surrounding areas, the paid employment share in cities, including Freetown, is very low. Despite informal jobs being an effective avenue for job creation and poverty reduction, these are not long-term solutions and are unlikely to spur economic transformation. However, to access formal employment in cities, rural Sierra Leoneans will likely have to acquire more education. Increased investment in education provision and quality can help more Sierra Leoneans access formal opportunities while at the same time investment is needed to ease the production constraints faced by firms so that productivity can improve and enable these firms to expand and demand more skilled employees.



## Chapter 1: Introduction

1.1. What drives poverty in Sierra Leone? This report addresses this question by exploiting multiple data sets and applying a development lens. It focuses on economic growth and structural changes, human capital, agriculture, and secondary cities, drilling down into specific topics and asking the following questions:

- What economic developments affect poverty?
- What role do public and private assets play in welfare?
- Is the agriculture sector a poverty trap or an unexploited opportunity?
- What role do secondary cities play in poverty reduction?

1.2. The selection of the areas of deep dive was informed by the findings of the World Bank report *Poverty and Shared Prosperity in Sierra Leone, 2011–18* (World Bank 2019c), an in-depth exploration of the 2018 Sierra Leone Integrated Household Survey (SLIHS). The analysis identifies how many people in Sierra Leone lived in poverty, their characteristics, and where they live. It also provides an explanation of the methodology used to measure the national poverty line, which was carried out in collaboration with the Statistics Sierra Leone.

1.3. This chapter familiarizes readers with the welfare landscape in Sierra Leone. It examines the data sets used to develop the narrative of the rest of the report. It also acknowledges the report's major shortcomings.

### Country Context and Poverty Profile

1.4. **Sierra Leone is a low-income country with GDP per capita of US\$509 (Le 5.0 million) in 2020.** Its income per capita is about one-third the average for Sub-Saharan Africa. Sierra Leone's development has lagged because of many factors, both within and beyond its control. It is a young nation-state, having achieved independence from Great Britain in 1961. Investments in service delivery and infrastructure during colonial rule appear to have been low, making the era of self-rule challenging. The country also experienced extended political instability and civil wars in 1991–2002.

1.5. **Sierra Leone is a small multiethnic country with the benefits of a coastline, mineral deposits, and agriculture land.** It has 7.9 million people, 40 percent of whom are below the age of 15 years. The population comprises some 18 ethnic groups. Sierra Leone's modest-sized domestic market and commodity-heavy production point to the importance of global and regional trade in any long-term growth strategy. The export of commodities increases the country's vulnerability to boom and bust cycles, however, and its dependence on agriculture leaves it vulnerable to the increasing frequency and severity of droughts, floods, and severe storms. Sierra Leone faces the challenge of managing risks on multiple fronts while trying to find a way to distribute resources in a balanced manner across its spatially dispersed population.

1.6. **According to official statistics, 57 percent of Sierra Leone’s population was poor in 2018, defined as living below the updated national poverty line of Le 3.921 million (USD\$ 494) per adult equivalent.<sup>1</sup>**

People who live below the national poverty line are unable to meet very basic food and nonfood requirements appropriate to the Sierra Leone context. The government also measures extreme poverty, defined as the share of the population unable to meet even minimum food needs, estimated to cost Le 2.125 million (USD\$ 268) in 2018. About 13 percent of the population lives in extreme poverty.

1.7. **Poverty, especially extreme poverty, is largely—although not exclusively—a rural phenomenon in Sierra Leone.** About 57 percent of the population lives in rural areas, roughly the average for low- and middle-income countries in Sub-Saharan Africa. Poverty rates in rural areas (74 percent) are more than twice those in urban areas (35 percent).<sup>2</sup> Extreme poverty rates are even more disparate, at 20 percent in rural areas and 4 percent in urban areas.

1.8. **Poverty rates at the provincial level hide large pockets of poverty at the district level.** The country can be divided into three poverty groups: low in the West (23 percent), medium in the North West (62 percent) and South (68 percent), and high in the North (77 percent). Tonkolili (in the far South), Pujehun (in the center), and Falaba (in the far North-East) are the poorest districts. The least poor districts are Kambia (North West) and Bonthe (South).

1.9. **The poverty rate fell about 6 percent between 2011 and 2018,** a turbulent period for Sierra Leone because of volatile mineral prices and the Ebola breakout. This level of poverty reduction was modest given the increase in real GDP per capita of 13 percent. It reflected rapid population growth, which increased the number of poor by 250,000 to 4.3 million. During this period, poverty in rural areas remained almost flat, but there was a significant reduction in urban poverty, albeit primarily in areas outside of Freetown. **Very concerning is that though extreme poverty remained constant at the national level, it increased in rural areas from 7.6 percent to 12.9 percent during this period.**

1.10. **Although there was shared prosperity in Sierra Leone during 2011–18,<sup>3</sup> it was unequally distributed,** with the consumption of the bottom 40 rising by 9 percent and the consumption of the top 60 percent increasing by 15 percent. This finding is consistent with the increase in the Gini coefficient, which rose from 0.33 in 2011 to 0.37 in 2018. The growth in inequality reflected the widening difference between mean consumption in rural and urban areas.

1.11. **The poor in Sierra Leone share many characteristics with the poor in many other developing countries, including large household size, low education of the head of household, and dependence on subsistence farming.** In Sierra Leone, households whose heads have even a little education above the primary school level have lower poverty rates than households whose heads have no education. The source of income makes a large difference as well. Households that rely exclusively on primary production

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<sup>1</sup> An adult equivalence scale is defined as the proportionate increase in income (or consumption) per adult necessary to maintain a certain level of household living standard given some change in demographic circumstances (typically, the introduction of children).

<sup>2</sup> Given the significantly lower rates of poverty in the capital city and its environs, it makes sense to disaggregate Greater Freetown from other urban centers, as the poverty rate is 23 percent in Greater Freetown and 49 percent in other urban areas.

<sup>3</sup> Shared prosperity occurs when average mean consumption of the bottom 40 percent of the population increases.



(subsistence farming) have a high probability of living in poverty; households that rely on business income or have at least one wage earner are less likely to be poor.

1.12. **The COVID-19 pandemic set back poverty reduction in Sierra Leone but did not derail it.** In the absence of a household survey to measure poverty, the government of Sierra Leone and the World Bank launched two surveys to understand the economic and social impact of COVID-19. These surveys captured the economic and welfare consequences of the pandemic, especially early on, when the government imposed mobility restrictions to help curtail the spread of the virus. These restrictions affected urban areas and the services sector. After the initial slowdown, GDP appears to have bounced back, which could suggest that poverty did not increase significantly. Urban residents, especially in Greater Freetown, report experiencing significant drops in income and financial hardship.

### Data Sources

1.13. **This poverty assessment relies on several data sets to understand the drivers of welfare in Sierra Leone:**

- a. **Sierra Leone Integrated Household Surveys, 2011 and 2018.** These surveys, carried out by Statistics Sierra Leone (Stats SL), are the official source for estimating poverty. The quality of the 2018 survey is superior to the earlier one, as it followed international best practice in collecting data.
- b. **Population and Housing Census, 2015.** This is a critical source of data, not least for ensuring proper sampling in other surveys. It has the benefit of being comprehensive. It is the fifth in a series of modern censuses. The previous one was carried out in 2004.
- c. **COVID-19 Impact Monitoring Surveys, Rounds 1 and 2.** These surveys were carried out by the World Bank in partnership with UNICEF. Two cellphone surveys were launched, in July and November/December of 2020. The two rounds collected data from 7,369 and 5,685 households, respectively.
- d. **National accounts.** These data are collected annually and shared by the government. They include data on GDP and related aggregates, the consumer price index, and foreign trade statistics.
- e. **Data on social and financial infrastructure.** School census data collected by the government include GPS coordinates on facility locations. The Bank of Sierra Leone collects GPS coordinates for banks and other financial service providers.
- f. **Multiple Indicator Cluster Survey (MICS), 2017.** The 2017 survey was the sixth round of the MICS. It was carried out by Statistics Sierra Leone, with technical support from UNICEF.
- g. **Geospatial data.** The main inputs were settlement extends from Geo-referenced Infrastructure and Demographic Data for Development (GRID3), population data from

WorldPop<sup>4</sup>, and night lights data from the US National Oceanic and Atmospheric Administration (NOAA).

### Shortcomings of This Report

**1.14. This report is based mostly on data collected before the pandemic.** It draws on the SLIHS 2018. The analysis assumes that the behaviors identified before the pandemic will remain largely unchanged and that economic and social activities will revert to pre-pandemic states, if not levels. This assumption may or may not prove accurate. Sierra Leone was spared the worst of the pandemic, but supply chains and global trade have not returned to pre-pandemic trends. The effects on the global economy will have consequences for Sierra Leone, given the importance of mineral exports to its economy.

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<sup>4</sup> WorldPop collects open spatial demographic data and develops methods for the construction of open and high-resolution geospatial data on population distributions, demographic and dynamics with a focus on low- and middle-income countries.

## Chapter 2: Structural Transformation, Growth and Poverty Reduction

### Introduction

**2.1. Structural transformation is key to accelerating economic development and improving the population's welfare.** As countries develop, their economies often modernize through similar patterns. Industry and services play larger economic roles, and the population urbanizes (McMillan and Headey 2014). The economy formalizes and produces a more complex mix of goods and services, businesses increase in scale, and greater commercialization of economic activity takes place. All of these phenomena are linked to structural changes to production. Structural transformation is the process through which the mobility of labor and capital enables total productivity to grow, as a result of sectoral shifts. As resources flow from less productive to more productive activities, the economy expands. By enabling overall productivity to grow, structural changes raise incomes and thus directly contribute to poverty reduction.

**2.2. Sierra Leone's progress in structural transformation since independence has been mixed.** Following the civil conflict and deep economic contraction, the country recovered, thanks to steady growth in agriculture, considerably reducing poverty. After initial progress, however, the slow pace of structural reforms, caused by reliance on natural resources rent, inhibited broad-based economic development. Sierra Leone's export mix is heavily concentrated in minerals and therefore susceptible to swings in international prices. Mineral exports have not led to poverty reduction, and agriculture—which remains the backbone of the economy—remains characterized by low levels of productivity, holding back improvements in household welfare.

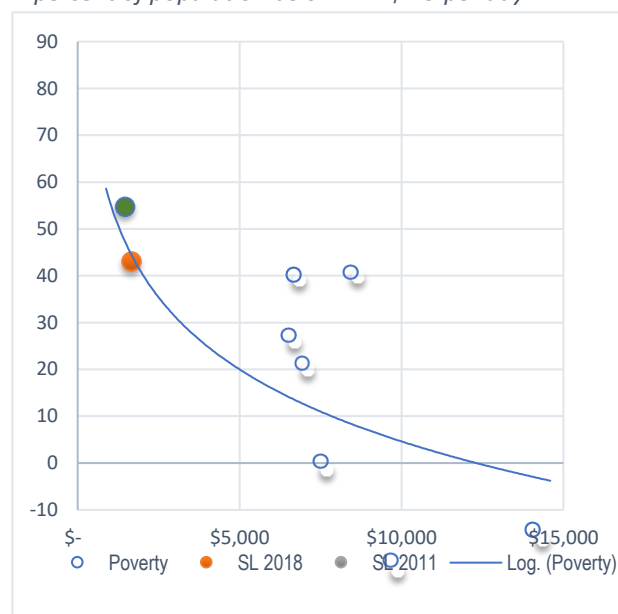
**2.3. The nature of growth matters: Cross-country experience over the past two decades indicates that broad-based growth, driven by agriculture, was highly pro-poor whereas minerals-based growth slowed poverty reduction.** Mining booms appear to have affected the terms of trade and led to reduction in the competitiveness of the nonmineral sectors of the economy (primarily agriculture). Increased imports, including of rice, and an overvalued exchange rate are the signs of weak competitiveness of domestic production in international markets.

**2.4. This section reviews the experience of Sierra Leone with respect to structural shifts and relates the patterns of economic growth to changes in poverty.** It draws on data from national and trade accounts, households and individuals, and population censuses. The analysis finds that some aspects of Sierra Leone's economy differ from the average for Sub-Saharan Africa and low-income countries—and not always to the country's advantage.

## Economic Growth

2.5. As in other low-income countries, Sierra Leone's GDP per capita and poverty are correlated, indicative of the importance of economic development for welfare. For international comparison purposes, purchasing power parity (PPP)-adjusted GDP per capita and extreme poverty using the international poverty line of \$1.90 a day are employed. In 2018, Sierra Leone had per capita PPP-adjusted GDP of \$1,694 and an extreme poverty rate of 43 percent. These figures were comparable to the average for low-income countries of \$1,939 and 47 percent, respectively. Globally, countries with low per capita income also have high poverty rates (figure 2.1). Although the level of income appears to be correlated with poverty rates, however, many countries achieve even rates of poverty than predicted by their GDP per capita, usually thanks to good economic and social policies and effective institutions. As seen in figure 2.1, middle-income countries (often that have started on the path of structural transformation) appear to have been especially successful in achieving lower than predicted rates of poverty.

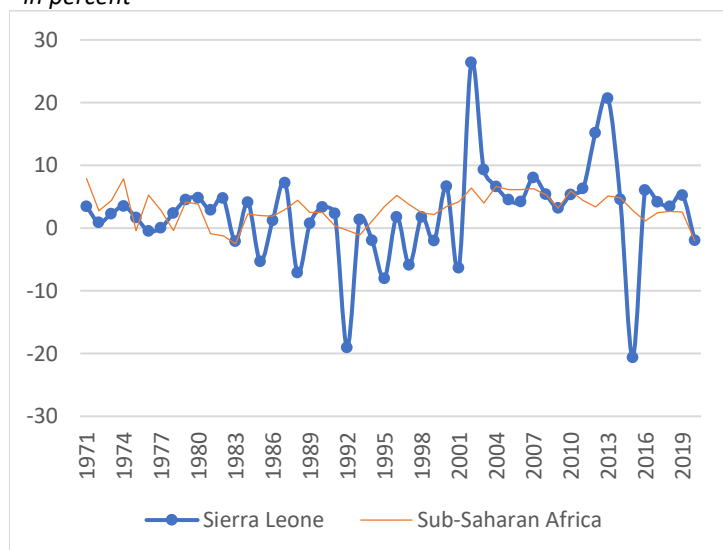
**Figure 2 - 1: A Comparison of GDP Per Capita (PPP) and Extreme Poverty (latest available, 2014-18)**  
in percent of population below PPP \$1.9 per day



Source: WDI.

**Figure 2 - 2: Annual GDP Growth Rates in Sierra Leone and Sub-Saharan Africa, 1971-2020**

in percent



Source: WDI.

from -21 percent to 27 percent.

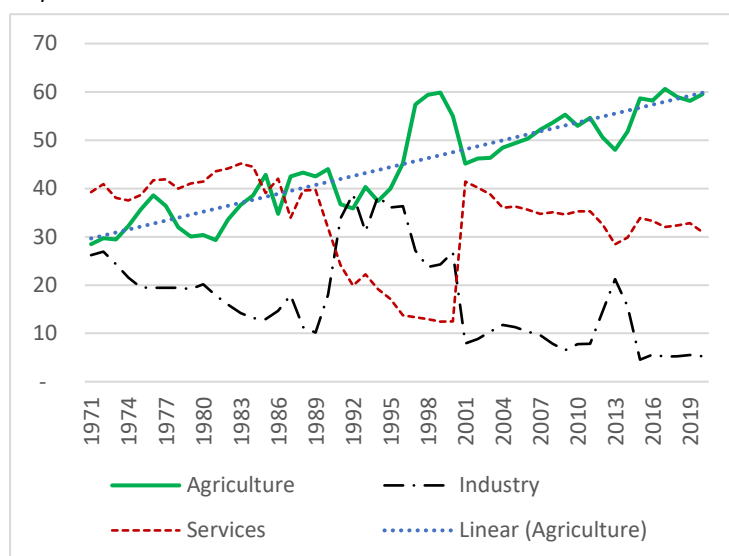
2.6. Sierra Leone's economy has grown faster but with greater volatility than other Sub-Saharan African countries. During 2003–20, Sierra Leone grew at an annual rate of 5.0 percent compared with 3.9 percent in Sub-Saharan Africa. Its economy also exhibited far greater economic volatility than Sub-Saharan Africa's (figure 2.2), largely because of the economic dominance of bauxite, diamonds, and other mineral exports, which have left Sierra Leone's economy vulnerable to boom-and-bust cycles. Sierra Leone also suffered from two major health shocks, Ebola and COVID. Consequently, in recent years, Sierra Leone's annual GDP growth ranged

**2.7. Economic growth in Sierra Leone has led to an “average” reduction in poverty, but the impact of growth on poverty reduction has been weakening.** How effectively economic growth reduces poverty can be measured using the “growth elasticity of poverty”. Since, Sierra Leone launched three household surveys to measure poverty in 2003, 2011, and 2018, it is possible to compute this elasticity over periods for which comparable poverty rates are available. In Sierra Leone, during 2003 and 2011, for every 1 percent increase in real GDP, extreme poverty declined by 0.9 percentage point. During 2011-2018, it was -0.7 which means that for every 1 percent increase in GDP, extreme poverty fell by 0.7 percentage point. This decrease in the growth poverty elasticity is indicative that economic growth has not had as large an impact on poverty reduction as before – perhaps due to the shift from agriculture to mining as a driver of growth. However, Sierra Leone’s growth poverty elasticity falls within the wide range of values observed in other countries of Sub-Saharan Africa, ranging from 3.8 in Angola to -4.8 in Gambia.

### Sectoral Shifts

**2.8. Over the long run, the agriculture sector appears to be playing a larger role in GDP.** In 2003, at the end of the civil conflict and during the early years of economic recovery, the agricultural sector (which includes forestry and fishing) accounted for 46 percent of GDP, services sector contributed 39 percent, and industry contributed about 10 percent. By the end of 2020, the share of agriculture had increased to 60 percent, services remained at 31 percent, and industry contributed just 5 percent, according to the

**Figure 2 - 3: Sector Value-Added in GDP 1971-2020**  
in percent



Source: WDI

and industry higher. Transformation of the economy does not appear to be moving in the desired direction.

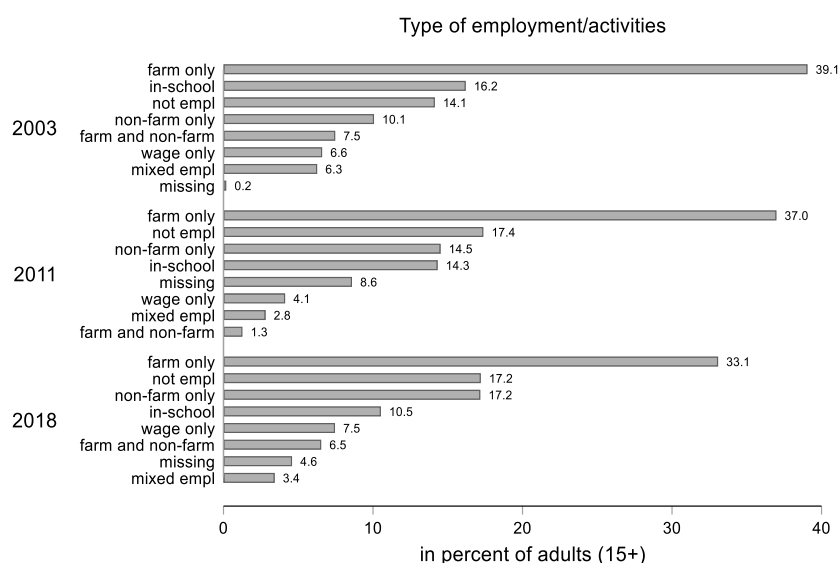
**2.9. In contrast to national accounts indicators, micro survey data show expected, albeit slow, changes in the sectoral composition of employment.** Census data indicate that the share of the population residing in urban areas (broadly defined as settlements of at least 2,000 people) increased

World Development Indicators.<sup>5</sup> Thus, except for a short period between 2012 and 2014, when iron and other ores were intensively mined (and mineral production reached a high of 21 percent of GDP), the structure of the economy has not changed in a way that would suggest a successful transformation. The share of agriculture in Sierra Leone’s economy is one of the highest among low-income and lower-middle-income countries in Sub-Saharan Africa region (17 percent of GDP in 2020). International experience suggests that at its level of development, the share of agriculture in Sierra Leone’s economy should be much lower and the shares of services

<sup>5</sup> Shares do not sum to 100 percent; the balance is achieved when financial intermediation services indirectly measured (FISIM) and taxes are accounted for.

from 37 percent in 2004 to 40 percent by 2015. A moderate increase in the share of the urban population is also reflected in household survey data, which show an increase of 5 percentage points between 2003 and 2018. The shift from rural to urban jobs is confirmed by subtle changes in the structure of employment activities. Household survey data show that the share of the adult population exclusively engaged in farming activity declined from 39 percent in 2003 to 37 percent in 2011 and 33 percent in 2018. The share of nonfarm employment increased by more than 7 percentage points, to a still low 17 percent of the adult population. Microeconomic and population data thus point to some reallocation of labor from farming to nonfarming activities, albeit at a slow pace.

**Figure 2 - 4: Changes in adult population activities, 2003-2018**



Source: Staff estimates based on SLIHS 2003, 2011, 2018.

**2.10. The labor market shows signs of structural changes, albeit in just two sectors (agriculture and services).** Because of the lack of consistent time series data on the labor force composition, the sectoral gross employment numbers are derived from modeled projections by the International Labor Organization, which are broadly consistent with trends observed in micro-survey data. As the economy recovered in the post-war period, the share of the labor force engaged in farming declined from 68 percent in 2004 to 54 percent in 2018 and the share of the labor force engaged in nonfarming activities rose, from 25 percent to 38 percent. Industry has traditionally been an enclave sector, which employed about 8 percent of the labor force in both years.

**2.11. Expanding production in agriculture and services implies that value added per employed person, a crude proxy for labor productivity, must have been gradually increasing in agriculture and leveling off in services.** These employment patterns are consistent with structural transformation in which labor moves from less productive sectors (agriculture, farming) to more productive and urban sectors (nonfarming, services). However, the lack of employment growth in industry, where productivity is much higher than in services, suggest a more complicated story of structural transition. A key question that requires further research with better data is whether the observed structural changes in employment have been driven by a pull from or a push out of agriculture and rural areas.

**2.12. Sierra Leone experienced two distinct periods of economic growth, with differential impacts on household income.** Between 2003 and 2011, before the start of intensive ore mining and its export in 2012, national GDP grew steadily at an average annual rate of 5.4 percent. During this period, the poverty rate (using the national poverty line) declined by almost 13 percentage points. Poverty declined across all regions, and rural poverty declined by 12 percentage points. In contrast, after 2012, economic growth was extremely unstable, driven by volatility in mineral production and exports in 2012–15 and economic disruptions related to the Ebola pandemic in 2014. The average annual rate of GDP expansion during 2011–18 was 4.8 percent, which translated into only a modest reduction of poverty of 5.6 percentage points (4.7 percentage points using the 2003 poverty line). Most of that reduction was in urban areas; in rural areas, poverty levels remained stagnant.

**2.13. During the post-war period, agriculture has been the main engine of economic growth, but its capacity to further reduce poverty has slowed.** Economic growth in the first period (2003–11) was driven mostly by a post-war rebound in agricultural production, which grew at an average annual rate of 7 percent. Much of that growth was related to rice production (which contributed 12–16 percent to total GDP) and expansion of cultivated land area. The total area of arable land increased from 681,520 ha in the early 2000s to 1.65 million ha by 2011. Over the same period, rice production increased by a factor of more than five, from 132,000 tonnes to 753,000 tonnes. In the later period (2012–18), average growth in agriculture fell to 3.5 percent a year, rice production declined from its peak of 837,000 tonnes in 2013 to 631,000 tonnes in 2019, and total arable area shrunk to 1.584 million ha. Assuming that the share of total land under rice remained roughly similar across years, crop yields and agricultural incomes must have followed a similar trend, picking up in the post-war recovery phase and then stagnating or declining during the high minerals export phase (that is, after 2011–13).

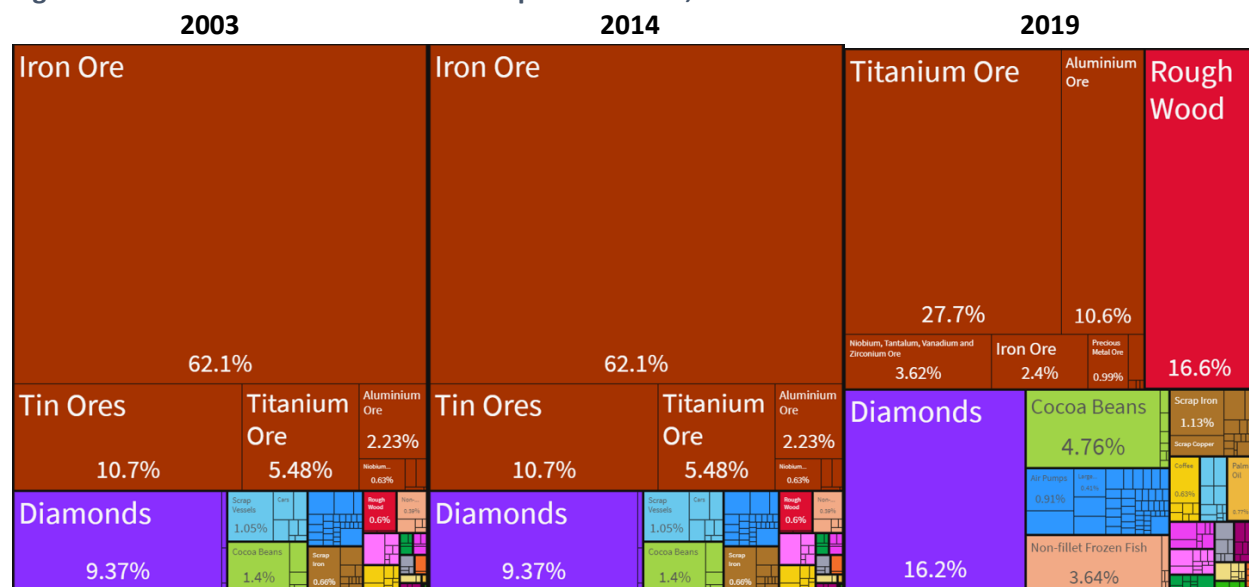
### Trends in Exports and Poverty

**2.14. Domestic demand is an important source of economic growth, but sustaining economic expansion requires finding larger markets.** With a population of 7.9 million, residing mostly in rural areas, and GDP per capita of just US\$509, Sierra Leone has limited capacity to generate sufficient domestic demand and stimulate the emergence of large-scale, modern sectors with sufficient employment potential. Sierra Leone could take advantage of its comparative advantage (low labor cost) to realize the massive opportunities in external markets. Trade and broad-based exports could help it expand its economy beyond the limits of domestic demand. However, the relationship between export and economic growth is not linear; it changes when exports are highly concentrated and based on a few primary commodities, as in the case of Sierra Leone. Though high exports are favorable in general, mineral exports tend to be volatile due to changing international prices, and they do not lead to widespread job creation due to weak linkages to the rest of the economy.

**2.15. The pattern that emerges from external sector dynamics indicate two distinct engines of growth: one based on stable domestic demand and one on volatile export demand.** Over the past two decades, the value of exports increased, but so did volatility, driven solely by minerals. Total export value, which has been declining since the late 1990s, gradually picked up, from US\$106 million (in constant 2015 US\$) in 2001 to US\$320.8 million in 2011. In 2003, half of export value was related to diamond mining and only 3.4 percent to cocoa beans (figure 2.5). By 2011, the share of cocoa beans had increased to 13.4 percent while diamonds' share had declined, giving way to aluminum, iron, and titanium ores, which together accounted for 25 percent of export value. Total export value peaked in 2014, at US\$1.8 billion,

as did the share of minerals, which reached 80 percent. By 2019, minerals' share had declined to about 40 percent, and total exports had leveled off at about US\$1 billion a year. Minerals now feature less prominently in Sierra Leone's export structure than previously, still contribute the bulk of its exports.

**Figure 2 - 5: Structure of Sierra Leone's Export of Goods, 2003-2019**



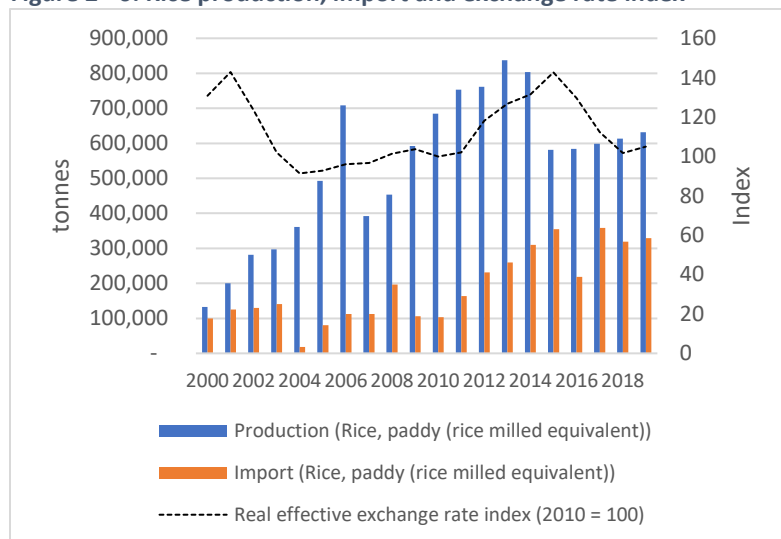
Source: <https://oec.world/en/profile/country/sle>

2.16. **Sierra Leone's export basket is concentrated in a few commodity-based products.** Economic progress is based on the application of productive knowledge, factors of production, and technologies to produce ever increasingly complex products. The low complexity of Sierra Leone's export products reflects the low technological capacity of the economy, and the lack of export diversity leaves the economy vulnerable to external conditions. Sierra Leone's export mix is both a cause and effect of slow economic development.



2.17. **The dependence on mineral-based exports has also led to an overvalued exchange rate and the import of consumer goods rather than investment goods.** In 2003, rice constituted just 0.5 percent of total imports of goods; by 2019, it represented almost 10 percent of total import value. While not perfect,

**Figure 2 - 6: Rice production, import and exchange rate index**



Source: <https://www.fao.org/faostat/en/#data> and WDI.

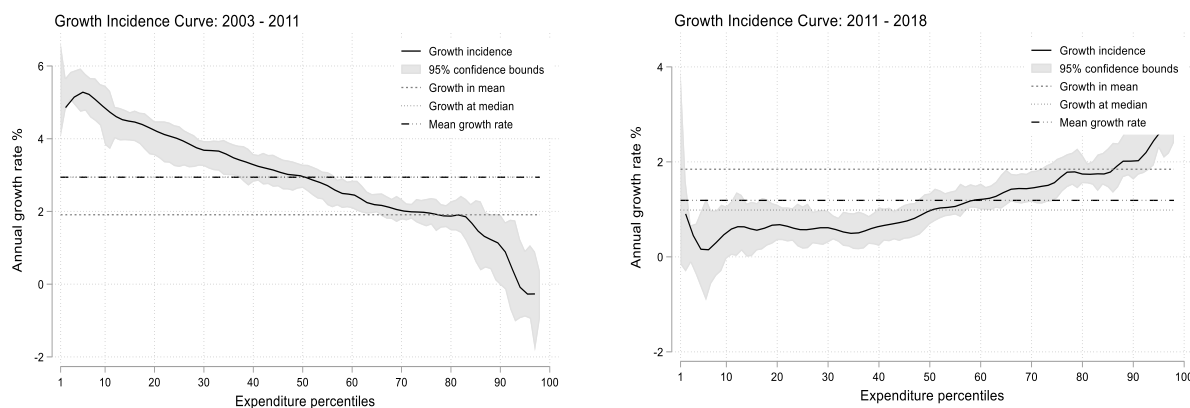
there is a relationship between domestic production of rice, imports of rice, and the exchange rate (figure 2.6). Between 2003 and 2011, the exchange rate and rice imports remained relatively stable, while domestic production of rice was picking up. The trend changed in 2012, when the *leone* started appreciating, imports picked up, and domestic production sharply declined. This pattern is somewhat related to Dutch disease, the phenomenon in which the export of minerals puts pressure on the currency to appreciate, fueling import demand and suppressing domestic supply

via domestic prices. Domestic production of rice took a double hit after 2012 from the appreciating *leone* and the growing preference for imported rice. As a result, the sector, which has high multiplier effect on domestic income, slowed, depressing incomes and welfare in rural areas.

### Distributional Impact of Economic Growth

2.18. **During both periods, households' income grew at an average annual rate of 2 percent, but growth in the first period was highly pro-poor and growth in the second was not.** Analysis of the impact of economic growth over the past decade and a half explains the differential impact of growth on welfare. The effect of growth on poverty was higher in 2003–11 not only because the economy expanded more rapidly but also because of the more equitable distribution of growth. Decomposing poverty changes by employment types shows that poverty reduction was greatest among farmers. Income among people in the lowest first quintile rose by 5.6 percent a year during this period. In contrast, during 2011–18, people in the top quintile benefited most from economic growth, gaining 3.2 percent a year, while the incomes of low-income households stagnated. During this period, nonfarm employment contributed most to the modest poverty reduction. Economic growth that was driven by agricultural expansion had a greater impact on poverty reduction than did growth based on extraction of minerals, which proved to have limited multiplier effect on household incomes.

**Figure 2 - 7: Growth incidence curves**



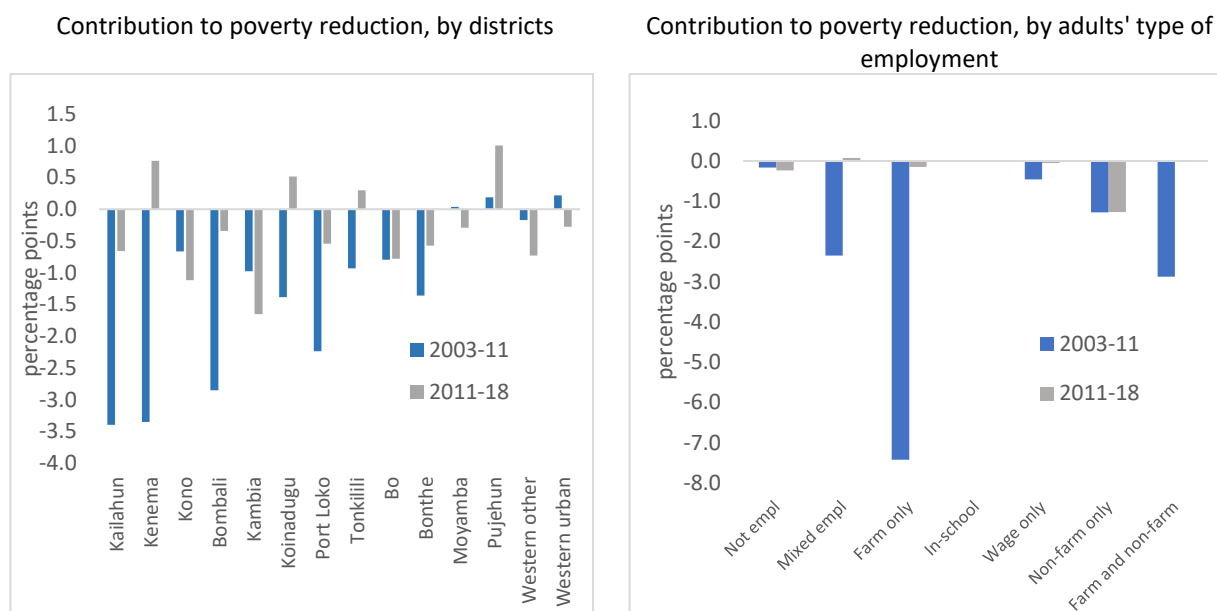
Source: Staff estimates based on SLIHS 2003, 2011, and 2018.

**2.19. Income equality declined in the second period.** The first period of poverty reduction was accompanied by reduction in inequality indicators, with the Gini coefficient declining by more than 6 percentage points. In contrast, during the second period, as poverty reduction decelerated, the Gini coefficient increased, from 31.7 in 2011 to 35.7 percent in 2018.<sup>6</sup>

**2.20. Regional poverty decomposition also tells two distinct stories of poverty reduction corresponding to the two episodes of economic growth (figure 2.8).** During the first period, when the economy was recovering, poverty declined by an average of 20 percentage points across all districts except a few better-off districts in the Pujehun and Western areas. Poverty reduction was entirely due to income growth within districts; there was little relocation of poor people across districts. In the second episode, the poverty reduction pattern was uneven across districts. Poverty continued declining by 16–20 percentage points in Kono, Kambia, and Bonthe, but it increased by 10–15 percentage points in Kenema, Koinadugu, and Pujehun. About 20 percent of total poverty change in this period was accompanied by shifts of poor people from districts with high poverty to districts with lower poverty. **Unlike in the first period, the most important contribution to poverty reduction in the second period was income growth and migration to urban areas. Demographic factors appear to be playing an increasingly important role in welfare dynamics.**

<sup>6</sup> Gini coefficients are estimated using per adult equivalent consumption expenditures, the same variable used to calculate poverty indices.

**Figure 2 - 8: Regional and Employment Decomposition of Poverty Changes**

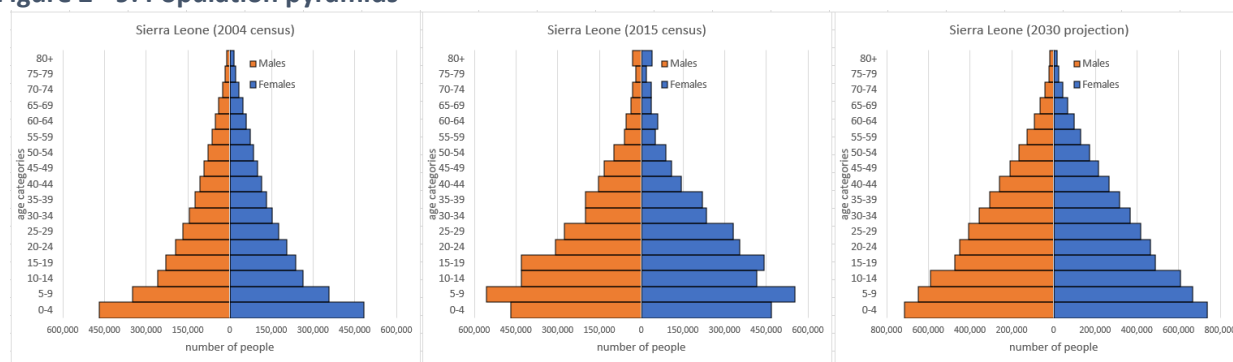


Source: Staff estimates based on SLIHS 2003, 2011, and 2018.

## Population Growth and Urbanization

**2.21. Sierra Leone's population has been growing rapidly.** Census data from 1974 and 1985 indicate annual average population growth of 2.1 percent. The 2004 census revealed a slowdown in population growth to 1.8 percent, as a result of significant out-migration related to civil conflict. With the end of the war and the gradual return of refugees, population growth picked up again, to 3.2 percent a year. By 2015, the population had swelled to more than 7 million people, up from 4.9 million in 2004; it is projected to reach more than 10 million by 2030. The recent rise in the population has likely put pressure on welfare growth, resulting in 1 million new poor people in just seven years (an increase from 3.7 million in 2011 to 4.7 million in 2018).

**Figure 2 - 9: Population pyramids**



Source: Staff estimates based on SSL publications of Census 2004 and 2015.

**2.22. High fertility and declining mortality rates play a central role in population dynamics (the return of refugees was an important but temporary factor).** Demographic and Health Survey (DHS) data for Sierra Leone indicate a slight reduction in total fertility, from 5.1 in 2008 to 4.9 in 2013. Census data reveal a reduction in total fertility rates from 6.1 in 2004 to 5.2 in 2015. Despite the decline, fertility rates in

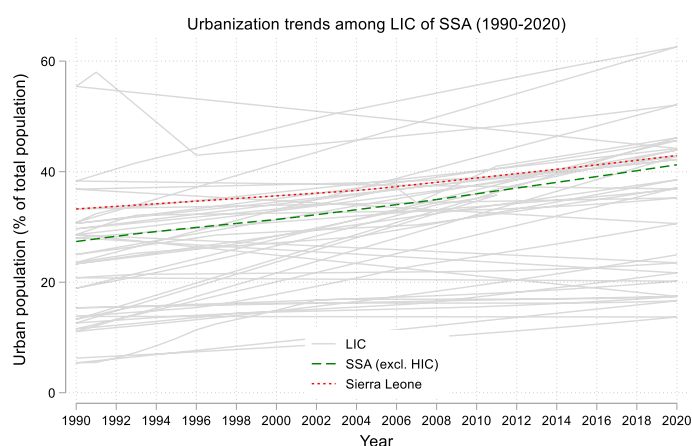
Sierra Leone remain higher than the Sub-Saharan African average of 4.7. Infant and under-five child mortality rates remain high, although they have been declining. Under-five mortality declined by almost 20 percent between 2008 and 2013, from 194 per 1,000 live births to 156. These factors contributed to population growth and the large share of children and youth in the population (figure 2.9). More than 40 percent of Sierra Leone’s population is under the age of 15, and this will figure will decline only slightly, to 39 percent, by 2030. As youth join the working-age population, the age dependency ratio will keep declining, from 92 percent in 2004 to 79 percent in 2015 and 73 percent in 2030.

**2.23. The demographic structure is changing gradually, presenting both challenges and opportunities for economic growth and poverty reduction.** A declining age-dependency ratio could lead to improvements in welfare. It is estimated that in 2004, more than 90,000 young people joined the working-age cohort. In 2015, the number of new entrants was more than 170,000; by 2030, this number will reach 190,000. Reaping the benefits of this potential demographic dividend requires ever-increasing numbers of productive jobs and income-earning opportunities for labor market newcomers.

**2.24. So far, the demographic dividend has not been reflected in improved welfare indicators in Sierra Leone.** The modest reduction in poverty incidence in combination with the growing share of the working-age population indicate that there are not enough jobs in the productive sectors of the economy. Between 2011 and 2018, GDP expanded by an average of 4.8 percent a year while the working-age population grew at 4.4 percent; economic growth was sufficiently robust to maintain existing employment and welfare trends. Without more rapid structural changes and growth in labor productivity, the demographic shifts will slow rather than boost productivity improvements and economic growth.

**Figure 2 - 10: Urbanization trends in LICs and SSA, 1990-2020**

*in percent of total population of country or region*



Source: WDI. Note: SSA=Sub-Saharan Africa; LIC=low-income countries; HIC=high-income countries.

**2.25. The share of the urban population in Sierra Leone has always been greater than the Sub-Saharan Africa average, but the gap is closing, as a result of the high rate of urbanization in the rest of Africa.** Census data from 2015 estimate that 40 percent of the population in Sierra Leone lived in urban areas, with close to half of the urban population in Freetown. The share of urban residents rose from 33.2 percent in 1990 to 42.9 percent in 2020. Most urbanization is driven by internal migration to Freetown and, increasingly, to adjacent areas. Urbanization is often associated with economic growth and poverty reduction, thanks to the better jobs and

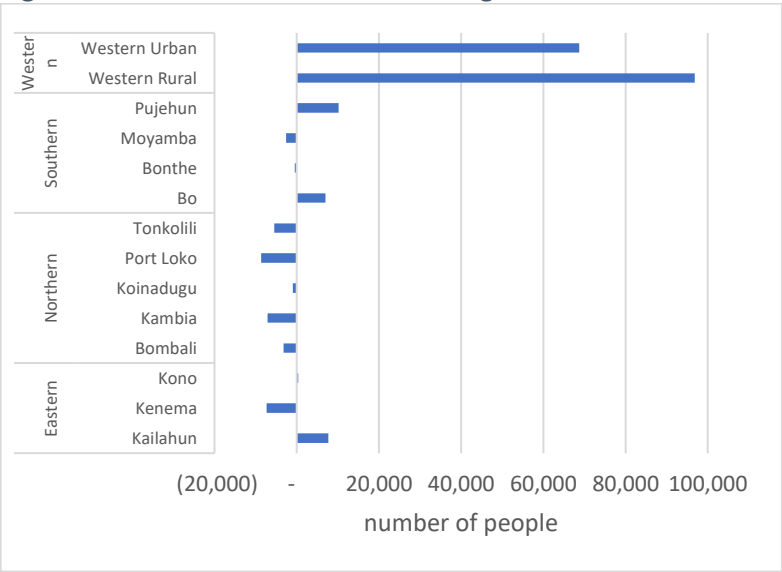
higher productivity found in agglomerated areas. However, the benefits of agglomeration—that is, economies of scale and productivity of high specialization—do not come about automatically (World Bank 2018). Adequate infrastructure—roads, transportation links, reliable electricity, utilities, housing, and urban planning—are conditions for agglomeration effects. Although the share of the urban population in Sierra Leone has been increasing, the share of manufacturing in total GDP has not increased. Urban areas

consist mostly of small-scale services and trade sectors, with few manufacturing firms. This urbanization pattern is not consistent with economic models based on urban areas as engines of growth and productivity. With low capacity for creating good jobs and sustaining incomes, Sierra Leone’s urban areas risk turning into congested areas that fail to generate agglomeration benefits to young enterprises.

2.26. **Though urban infrastructure has expanded only slowly, rural to urban migration remains robust.** Data from the 2015 census indicate that in the Western Rural Area (mostly in the vicinity of Freetown), almost 30 percent of the population are internal migrants who moved there since 2010 (figure 2.11). The district with the second-highest share of migrants is the Western Urban Area (Freetown itself), where more than 16 percent of the population are from other districts. **Out-migration also appears to be regionally concentrated.** The Northern province has the largest number of out-migrants: On a net basis, more than 25,330 individuals moved out of Northern districts between 2010 and 2015. More than third of recent migrants are between the ages of 20 and 30; within this age category more than half are men.

2.27. **Internal migration without infrastructural development and job creation in urban destination areas may pose more risks rather than opportunities.** Recent patterns of rural–urban migration and the slowing of poverty reduction are consistent with growing pressures in urban areas and the need for pro-active urban planning and structural reforms. The share of migrants in other districts, such as Bombali (6.1 percent) and Bo (7.9 percent) is much lower.

Figure 2 - 11: Net inflow of domestic migrant



Source: Staff estimates based on SSL publications of Census 2015.

### Indicators of Human Development and Economic Growth

2.28. **Three indexes measure well-being: the Human Development Index (HDI), the global harmonized Multidimensional Poverty Index (MPI), and the Human Capital Index (HCI).** The trends and levels are consistent with one another and convey the same message (Table 2.1). All three indices show improvements in well-being over time, but Sierra Leone remains among the countries with the poorest outcomes.

- i. The HDI is a summary measure of human development along three dimensions: a long and healthy life, access to knowledge and a decent standard of living. It ranges from 0 to 1 (highest). Sierra Leone’s HDI improved between 1995 and 2019, rising from 0.287 to 0.452. It remains lower than other low-income countries and lower than the Sub-Saharan African

average of 0.547, however.<sup>7</sup> Moreover, improvements appear to have slowed in recent years. Between 2005 and 2010, the index rose by 0.9 percentage points a year; between 2015 and 2019, the increase declined to 0.5 percentage points for all three components.

- ii. The MPI is an international measure of acute multidimensional poverty in three areas: health, education, and living standards. It ranges from 0 (best) to 1. The MPI trend for Sierra Leone shows decelerated improvements in nonmonetary dimensions of welfare. Between 2013 and 2017, the MPI declined by 0.027 points a year, reaching 0.300; between 2017 and 2019, it declined by just 0.014 a year, to 0.272.<sup>8</sup>
- iii. The HCI measures the amount of human capital a child born today can expect to attain by age 18. It assesses the productivity of the next generation of workers against a benchmark of complete education and full health. Sierra Leone's HCI of 0.36 in 2020 places it in the lower tail of the distribution across all four dimensions: probability of survival to age five, adult survival rate, years and quality of schooling, and share of children under five not stunted.

**Table 2 - 1: Measures of Wellbeing in Sierra Leone**

	<b>Earlier Period (year)</b>	<b>2019</b>
Human Development Index	0.287 (1995)	0.452
Human Capital Index		0.36*
Multi-dimensional Poverty Index	0.409 (2013)	0.272

Sources: UNDP, OPHI, and World Bank. Note: HCI\* is for 2020.

**2.29. Economic growth and policies have had a heterogenous impact on many aspects of well-being.** The type of economic model that drives growth matters. In Sierra Leone, broad-based growth driven by agriculture and domestic demand was highly pro-poor and improvement spanned many welfare dimensions. In contrast, the economic model driven by minerals and external demand likely crowded out internal sources of income growth and had limited linkages with sectors that support the livelihoods of large shares of population. As a result, the recent episode of economic growth weakened the pace of and capacity for poverty reduction.

**2.30. Public spending on social sectors in Sierra Leone is relatively low compared to other Sub-Saharan countries.** Government spending on education, which takes up 43 percent of all social expenditures, represented 2.5 percent of GDP in 2019, one of the lowest shares in Sub-Saharan Africa. General government health expenditures accounted for 1.5 percent of GDP, less than the Sub-Saharan African average of 1.8 percent. Sierra Leone spends less than 0.7 percent of GDP on social assistance, less than the regional average of 1.5 percent.

**2.31. The 2021 Public Expenditure Review of Sierra Leone reveals the low efficiency of spending and the high dependency on donor funding.** Between 2015 and 2019, the average government share of funding in the health sector was just 11.2 percent, with the rest coming from donors (table 2.2). In education, 45 percent of spending for primary and secondary levels of education was financed by development partners. The government funded just 17 percent of its flagship social assistance program

<sup>7</sup> See <http://hdr.undp.org/sites/default/files/Country-Profiles/SLE.pdf>. The HDI is adjusted for inequality of access, the ranking for Sierra Leone worsens.

<sup>8</sup> See [https://ophi.org.uk/wp-content/uploads/CB\\_SLE\\_2021.pdf](https://ophi.org.uk/wp-content/uploads/CB_SLE_2021.pdf).

*Ep Fet Po.* This low level of government financing raises questions about sustainability, the adequacy of social expenditures, and inequality of opportunities, which is closely linked to the persistency of poverty

**Table 2 - 2: Public spending on social sectors**

Health and Other Social Sectors Compared, 2015–2019 (Le in Million)								
Ministry	2015	2016	2017	2018	2019	Total	Average	Percent of Total
Education Sci & Technology	597,305	691,894	672,994	789,934	668,105	3,420,231	684,046	43.47
Health & Sanitation	223,717	325,031	240,052	230,231	394,400	1,413,430	282,686	17.97
Labour, Employment & Soc Security	6,404	7,306	8,314	6,880	7,754	36,568	7,332	0.47
Soc Welfare, Gender & Children's Affairs	12,143	12,792	12,811	15,977	37,371	91,699	18,340	1.17
Sports	5,999	11,901	7,826	16,765	28,410	70,900	14,180	0.90
Technical & Higher Education					260,015	260,015	260,015	3.30
Tourism & Cultural Affairs	5,485	9,348	4,664	4,364	2,361	26,822	5,364	0.34
Works, Housing & Infrastructure	412,273	739,695	515,634	517,111	307,408	2,492,221	498,424	31.68
Youth Affairs	6,009	15,427	5,868	11,333	16,359	55,596	11,119	0.71
<b>Total</b>	<b>1,269,340</b>	<b>1,813,394</b>	<b>1,468,163</b>	<b>1,592,594</b>	<b>1,723,984</b>	<b>7,867,474</b>	<b>1,575,495</b>	<b>100</b>

Source: Public Expenditure Review of Sierra Leone, World Bank 2021.

**2.32. The link between economic growth and social expenditures works in both directions.** The level of investment and government spending, which affects human development indicators, depends on economic growth and revenues, and human capital is a key factor in economic development (Alper and Demiral 2016). Additional research is needed to empirically confirm the link between public expenditures and economic growth, but it is apparent that the low level and efficiency of public social spending in Sierra Leone are correlated with low levels of welfare.

### Impact of the COVID-19 Pandemic on Poverty

**2.33. The COVID-19 pandemic likely led to an increase in poverty in Sierra Leone.** In lieu of poverty surveys, there are two methodologies that can be used to estimate poverty in 2020, the first year of the pandemic. The first methodology uses only GDP to predict poverty since there is a strong correlation between national income and household welfare. Since GDP contracted by 2 percent in 2020, poverty is estimated to have risen to 57.7 percent. The second methodology applied a technique called “survey-to-survey imputation” used the 2018 Sierra Leone Integrated Household Survey and the 2020 household food security survey. This yielded an increase in poverty to 58.9 percent though it was not statistically significant.

**2.34. Urban areas, particularly Freetown, are likely to have seen the largest increases in poverty during the pandemic.** Poverty in Freetown is estimated to have increased substantially between 2018 and 2020, as a result of the population’s heavy reliance on services. In other urban areas, the increase has been estimated to be much smaller; in rural areas, poverty is estimated to have declined marginally, to 71 percent. By province, the increase in poverty was largest in Western Area (which is dominated by Freetown and the surrounding urban area), followed by the Northwest, where poverty increased from 62 percent to 67 percent. This province includes the area around the international airport, the main overland trade route to Conakry, and the iron mine closed by the dispute with Sierra Leone Mining.

**2.35. Households report that their incomes declined in 2020, particularly from self-employment and jobs in the private sector.** As part of the World Bank’s global program of cellphone surveys monitoring the impact of COVID-19 on households, over 5,000 households in Sierra Leone were interviewed by cellphone in July 2020 and then again in November/December 2020. Households were asked about up to three main sources of income. In the first round, 86 percent of respondents reported a decline in income between March and July 2020. Incomes from self-employment (mainly small trading activities) were the hardest hit, followed by formal jobs in the private sector (the largest sectors are construction and transport). Households with income from formal jobs in the public sector (public administration and education) were more likely to experience an increase than a decrease in income from that source. A significant number of households saw incomes rise between July and November/December, but average incomes remained lower than in March 2020. For households with income from agricultural activities, more households saw an increase than a decrease in their incomes between November 2020 and November 2021. Incomes from staple crops (rice and cassava) and vegetables (grown for own consumption or sale in the domestic market) did well compared with income from cash crops (cocoa, coffee, and other crops grown for export). There was little change in employment activities during the pandemic; most people continued working in the same activities, for the same number of hours.



## Chapter 3: Poverty, Locality and Access to Services

### Introduction

**3.1. Poverty in major urban areas of Sierra Leone is declining, but poverty in smaller towns and rural areas has been stagnant, and the rate of rural extreme poverty has increased.** What characteristics of rural areas are driving these trends? Rural areas are sparsely populated. Does the absence of sufficiently large markets prevent farmers from commercializing their operations and limit the development of small businesses? Is the size of the settlement in which a household lives an important determinant of poverty? Is the presence of a nearby town important?

**3.2. Rural areas have less access to both public and private infrastructure than other areas.** Public infrastructure includes roads and electricity (which contribute directly to productivity), water and sanitation (which contribute indirectly through improved health), and education and health care (which contribute indirectly through their effect on human capital). Private infrastructure includes cellphone systems and banking. Does lack of access to all of these kinds of services prevent households from escaping poverty.

**3.3. This chapter seeks to understand why urban poverty is decreasing but rural poverty is not by looking at three dimensions: remoteness, infrastructure, and human capital.** It explores patterns of inequality in each of these dimensions, the ways in which these patterns have changed, and the effects on poverty. This should provide insight into not only the differences between urban and rural households, but also between different types of urban areas or different types of rural areas, and between different types of households within the same community.

**3.4. Infrastructure and human capital require investments from many sources: the central government, local governments, private companies, nongovernmental organizations (NGOs), communities, and households.** The central government uses its resources to extend basic primary services to the population. However, given limited public resources, the government has to prioritize which services are universally delivered, and which are delivered selectively. Local governments—if properly funded—can provide complementary services, especially those that are best delivered at the municipal level. Businesses play an important role in delivering services that are not publicly provided.

**3.5. Sometimes complementary inputs are needed.** For example, education requires that the government provide schools and households send their children to study in them (paying at least the opportunity cost of forgone labor). Business investments prioritize filling gaps left by the public sector when deciding where to extend services whether electricity, mobile phone services, or elite education. Rolling out education programs is less expensive in larger schools. Economies of scale as well as the larger impact that can be achieved in cities and towns leads to systematic underinvestment in the poorest, most remote areas, which are difficult and costly to reach and have low purchasing power. Households may choose not to invest in basic health or education services if they perceived the quality or benefit is not worth the cost.

**3.6. To reduce poverty and share prosperity, Sierra Leone needs to allocate resources—and incentivize the private sector and households to do so—in ways that are both efficient and pro-poor.** The chapter discusses prioritization and planning in a few key sectors and makes suggestions on how to

make them more pro-poor. Chapter 5 continues this discussion, focusing on the potential of investment in secondary cities to reduce poverty.

**3.7. In addition to helping reduce poverty, investments in many areas—education and health care, housing, basic sanitation—improve households’ well-being.** The last section of this chapter examines the Multidimensional Poverty Index for Sierra Leone in order to shed light on differences between monetary poverty and multidimensional poverty, particularly in the face of the kinds of shocks (mining boom and collapse, Ebola, COVID-19) Sierra Leone has experienced in recent years.

### Locality and Market Access

**3.8. Sierra Leone’s rural and urban settlements exhibit significant diversity in size with implications for poverty levels.** In Sierra Leone, the designation of “urban” areas is based mainly on population size<sup>9</sup>; the finding that poverty is higher in rural areas extends to a more general statement that poverty is higher in smaller settlements, even when a finer breakdown is used. A household that lives in rural areas is known to have a significantly higher probability of falling below the poverty line than an urban resident all else equal. However, sectors are a crude aggregation of settlements and mask heterogeneity of welfare outcomes across the size and type of settlement. Often, size is erroneously considered to overlap with proximity to markets—meaning small villages are assumed to have low access to markets. However, these are two different concepts and need to be analyzed separately. This section will delve more into the types of settlements as well as market access—and whether these two variables affect the welfare.

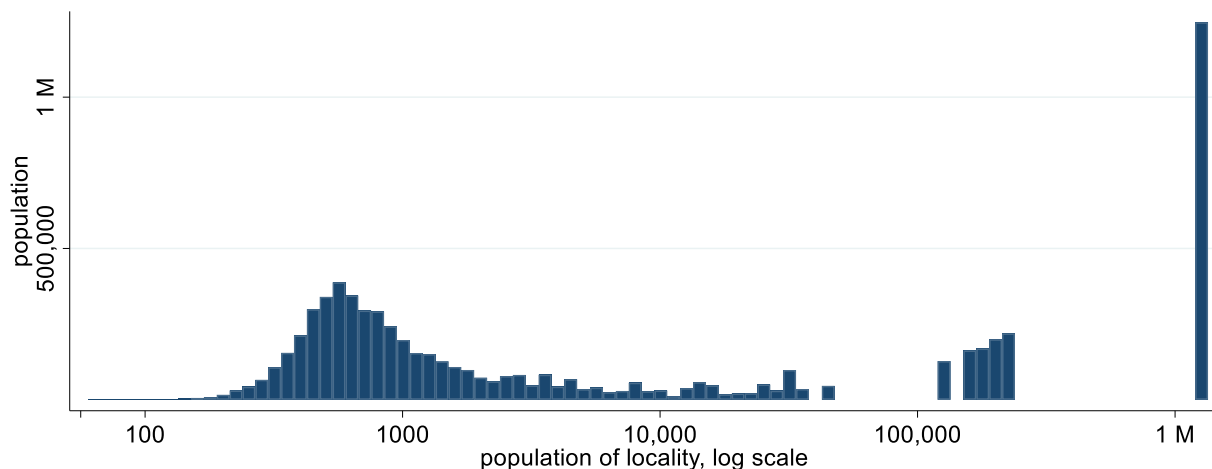
**3.9. Most of Sierra Leone’s population lives in very small settlements or large cities.** The population of Freetown proper was just over 1 million in 2015, and another 200,000 people live in urban areas adjacent to the city. The secondary cities (Bo, Kenema, Makeni, Waterloo, and Koidu) are much smaller, with populations of 100,000–250,000 each.<sup>10</sup> These cities are more than twice as large as the next-largest set of cities, with populations of less than 100,000. Settlements in Sierra Leone are classified into six categories based on population size (Table 3.1).

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<sup>9</sup> Most localities under 3,000 persons are classified as rural, most over 3,000 persons are classified as urban.

<sup>10</sup> Information grouping enumeration areas into settlements was not incorporated into the 2015 census. The grouping was done by the authors, using the shapefiles from the 2015 census and information on settlement extents constructed from GRID3 data.

**Figure 3 - 1: Distribution of Locality Size in 2015**



Source: Staff calculations from 2015 Population and Housing Census (PHC) and 2015 Settlement Extents (GRID3).

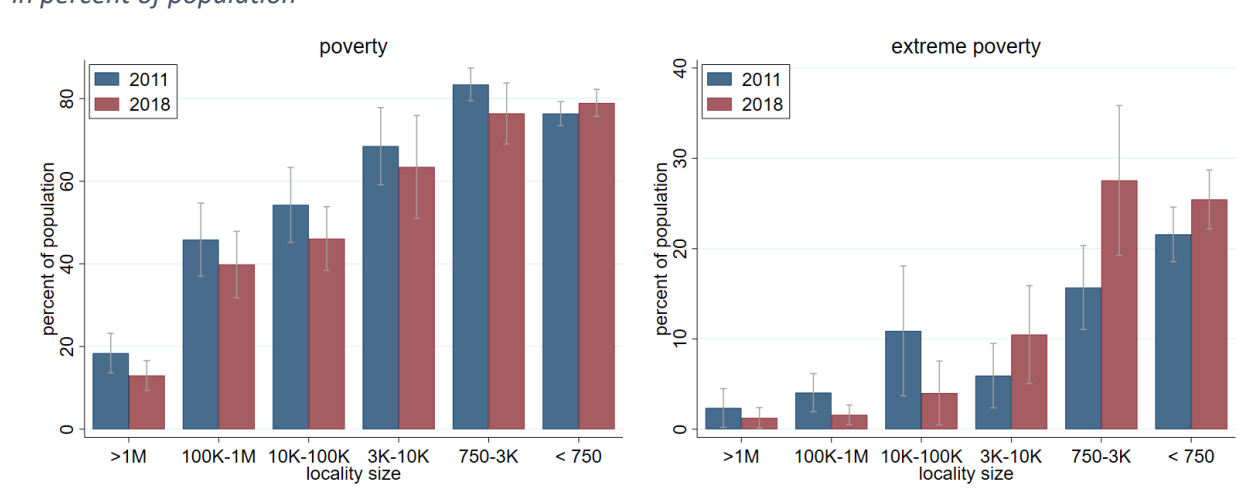
**Table 3- 1: Number of Localities by Population Size**

	Population	Class	Number of localities	percent of total population
1	Over 1 million	Greater Freetown	4*	17.6
2	100,000 to 250,000	Secondary Cities (Bo, Kenema, Makeni, Waterloo, Koidu)	5	12.4
3	10,000 to 100,000	Large Towns	24	7.00
4	3,000 to 10,000	Mid-sized Towns	97	6.56
5	750 to 3,000	Rural Towns	511	10.89
6	Less than 750	Rural Villages	5,983	45.50

Source: Staff calculations from 2015 PHC and 2015 Settlement Extents (GRID3).

**3.10. The strong negative correlation between settlement size and poverty has increased over time.** Poverty in the largest settlement, Greater Freetown, is much lower than anywhere else in the country (Figure 3.2). In 2018, it was 18 percent, less than half the rate in secondary cities (almost 40 percent) and much lower than the rate in rural areas (74 percent).<sup>5</sup> Between 2011 and 2018, poverty fell in all settlement categories except rural villages, which account for 45 percent of the population, where it increased. There is also a strong negative correlation between extreme poverty and settlement size. Extreme poverty is concentrated in rural areas, where it affects roughly 20 percent of the population. The figure in towns with 10,000 or more people is just 5 percent. The rate of extreme poverty declined between 2011 and 2018 in towns with a population of 10,000 or more but increased in towns with fewer than 10,000 people.

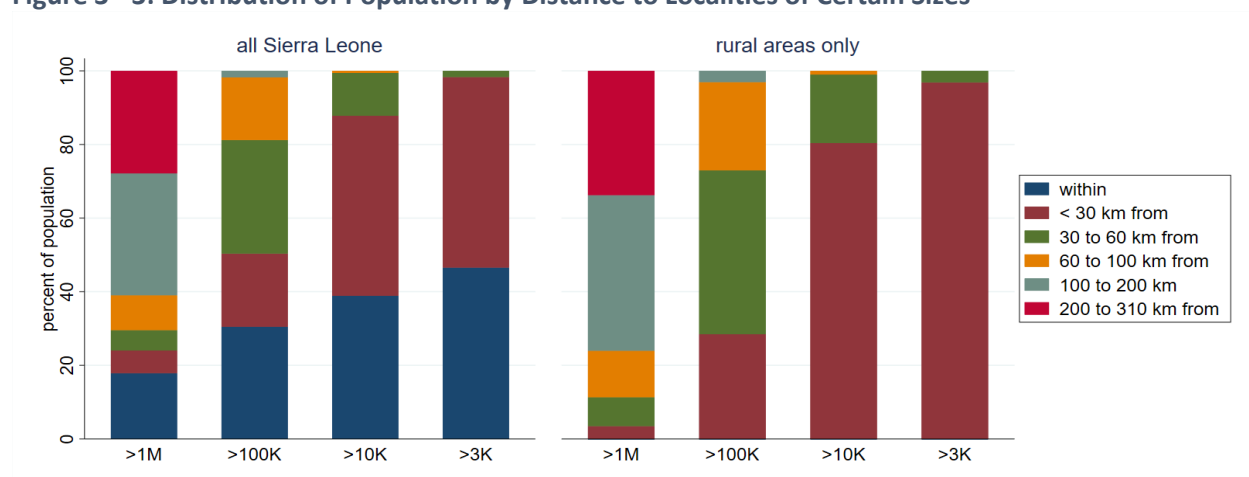
**Figure 3 - 2: Share of Population Living in Poverty and Extreme Poverty, 2011 and 2018**  
in percent of population



Source: Staff calculations based on SLIHS 2011 and 2018.

**3.11. Virtually all of the population (98 percent) lives within 60 kilometers (km) of a town of at least 10,000 people.** Eighty percent of rural residents live within 30 km of at least a large town, and 29 percent live within 30 km of a secondary city. Rural residents living in small settlements are thus not far from markets. Poverty rates are broadly similar for households however far they live from a secondary city or a town with a population over 10,000 (Figure 3.3). This finding suggests that secondary cities and larger towns do not have positive spillover effects on the surrounding rural areas.

**Figure 3 - 3: Distribution of Population by Distance to Localities of Certain Sizes**



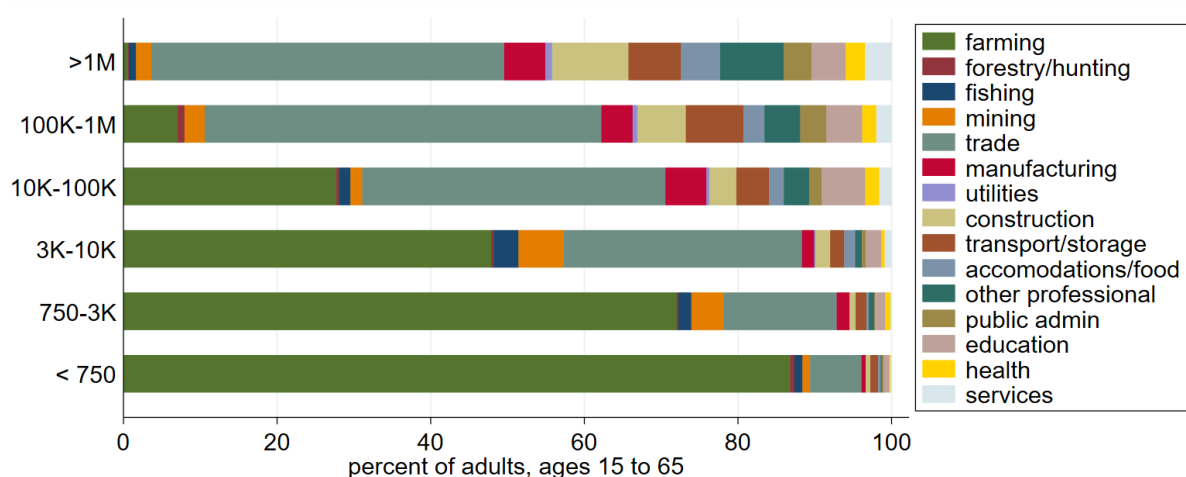
Source: Staff calculations from 2015 PHC.

**3.12. Rural households rely heavily on purchased food to meet their consumption needs.** Own production of food accounts for only about 12 percent of total consumption. Even in the 41 percent of households in which all adults are engaged in agriculture as their primary activity, own production accounts for only 16 percent of the value of food consumed.

**3.13. Participation in agriculture is high throughout Sierra Leone, except in the largest cities** (Figure 3.4). Farming is the main sector of employment for 87 percent of the population in rural areas. It is

important even in mid-sized and large towns, where 30–50 percent of employed adults work in agriculture.

**Figure 3 - 4: Sector of Employment by Locality Size**



Source: Staff calculations from SLIHS 2018.

**3.14. The second-largest sector of employment in Sierra Leone is trading.** Almost half the population in Freetown is employed in trading. It is also the largest sector for secondary cities and major towns and the second-most important sector of employment after farming in rural areas. Mining and fishing are concentrated mostly in small to mid-sized towns

### Access to Public and Private Infrastructure

**3.15.** This section describes and analyzes access to key publicly and privately provided infrastructure services: roads, electricity, water, sanitation, telecommunications, and banking.

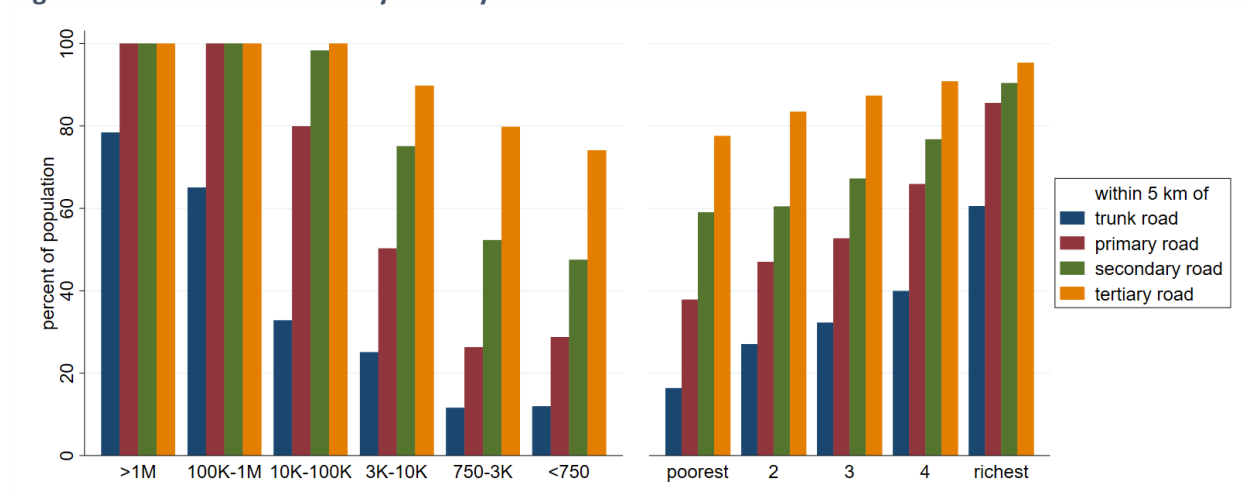
#### Roads

**3.16. Sierra Leone's road system is underdeveloped.** It has only 971 km of paved roads on which vehicles can move safely and efficiently. Most of the country depends on the 10,400 km of unpaved roads, which deteriorate from the annual heavy rainy season and under the weight of overloaded transport vehicles.<sup>11</sup>

**3.17. People in smaller settlements have less access to roads than people in larger towns and cities.** Access to the road network is critical to allow access to markets, for both people and goods. It is measured by whether the settlement is within a 5-km radius of a specific type of road. This access is much higher for larger urban areas, as primary or trunk roads connect all of the country's secondary cities. It is much lower for smaller communities on average. The share of the population that lies within 5 km of a trunk or primary road is 56 percent nationally and just 28 percent in rural areas.

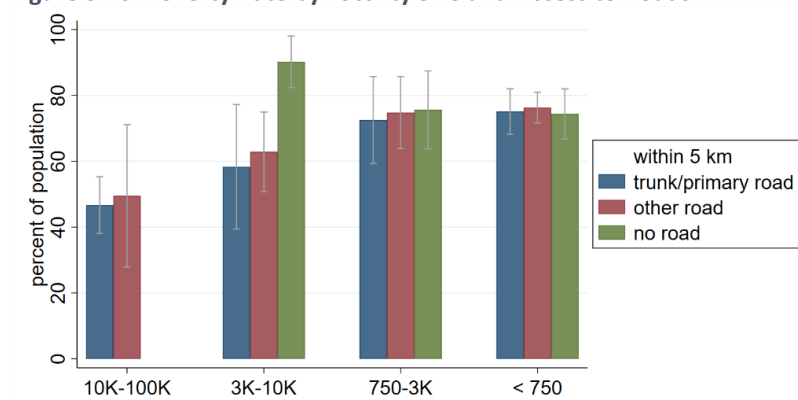
<sup>11</sup> Data on roads come from the Open Street Map, which classifies roads in Sierra Leone as trunk (the most important roads in the country's system), primary (major transportation routes between and into major cities within the country), secondary (major transportation routes connecting cities and large towns), and all other roads. No roads in Sierra Leone are classified as motorways. See [https://wiki.openstreetmap.org/wiki/Highway\\_Tag\\_Africa](https://wiki.openstreetmap.org/wiki/Highway_Tag_Africa).

**Figure 3 - 5: Access to Roads by Locality Size and Welfare Status**



Sources: Left panel: Staff calculation from Open Street Map road data and gridded population estimates. Right panel: Staff calculations from OSM road data and SLIHS 2018.

**Figure 3 - 6: Poverty Rate by Locality Size and Access to Roads**



Sources: Staff calculations from OSM road data and SLIHS 2018.

**3.18. Access to roads has little impact on poverty, once the size of the settlement is controlled for.** The analysis is restricted to the population outside Freetown and secondary towns, which is divided into three groups: settlements within 5 km of a trunk or primary road, settlements not on a primary or trunk road but within 5 km of a secondary or tertiary road, and settlements that are more than

5 km from any road. The only significant difference is for towns with populations of 3,000–10,000, among which settlements that are not on any road are significantly poorer than settlements that are on a road.

**3.19. Less than 10 percent of households own any kind of vehicle.** Only 2 percent of households own cars, 4 percent own bicycles, and 6 percent own motorbikes.<sup>12</sup> The most common means of transport is motorbike taxis. Over a 20-day period, 70 percent of households paid for transport by motorbike taxi; 22 percent for a bus or minibus within a city; 18 percent for a taxi within a city; 15 percent for transport between towns (by bus, minibus, or taxi); and 7 percent for a boat or ferry. Use of public transportation other than motorbike taxis is in the single digits outside of Freetown. Two-thirds of Freetown residents and 82 percent of residents of other urban areas use motorbike taxis. Transport by motorbike expanded greatly between 2011 and 2018, when only 15 percent of households spent anything on transport by

<sup>12</sup> These figures are slightly lower than in 2011, when 3 percent of people in Sierre Leone owned a car, 6 percent owned a bicycle, and 6 percent owned a motorbike.

motorbike (only 6 percent in rural areas). Use of other kinds of transport also increased, although not as dramatically.

### Access to Electricity, Water and Sanitation

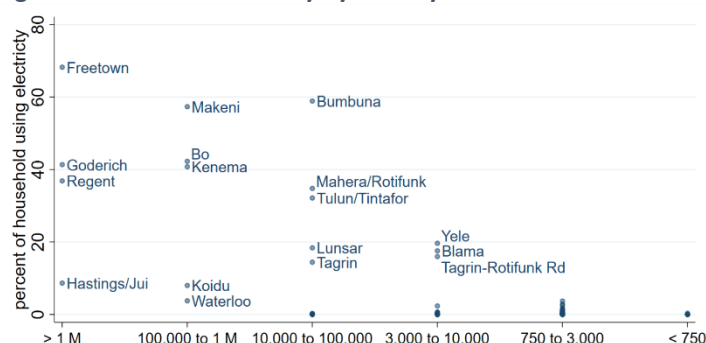
**3.20. Delivery of key utilities—electricity, water and sanitation—are low by international standards and confined mostly to urban areas.** Access to electricity at 23 percent is half that for sub-Saharan Africa (47 percent) and substantial below that for low-income countries (41 percent).<sup>13</sup> Access to at least a basic toilet facility<sup>14</sup> in Sierra Leone is also very low, 17 percent compared to 29 percent for low-income countries and 33 percent for sub-Saharan Africa. Sierra Leoneans access to access to basic drinking water services<sup>15</sup>, at 64 percent is comparable to the average for Sub-Saharan Africa and higher than the rate for low-income countries (59 percent).

**3.21. Only about a third of households in Sierra Leone pay for any utilities.** In the top quintile, 45 percent of households pay for water and 52 percent pay for electricity, compared with only 6 percent and 2 percent in the bottom quintile, respectively. Among households that pay for utilities, median spending represents 1–4 percent of total expenditure. Richer households and households in urban areas spend a larger share of their total expenditure on utilities than other households.

**3.22. Access to the national electric grid—the Electricity Supply and Distribution Authority (EDSA)—**

**is limited mainly to a handful of major cities, including Freetown and its surrounding areas, Bo, Makeni, Kenema, and the Lungi area<sup>16</sup>** (Figure 3.7). Electricity is also available in the town hosting the hydropower plant (Bumbuna) and some smaller towns along main roads (Lunsar, Yele, Blama). It is available only on a limited basis in Waterloo and Koidu.

**Figure 3 - 7: Use of Electricity by Locality in 2015**



Source: Staff calculations based on PHC 2015.

households in towns with more than 10,000 people have a connection to their dwelling. This be in part because the grid is new in these places and the process of getting a connection and meter can be time-

**3.23. Not all households located in places where EDSA operates have a connection.** About 80 percent of

<sup>13</sup> All figures from WDI (data.worldbank.org). Comparable indicators for electricity access and improved water source were found, much less so for sanitation.

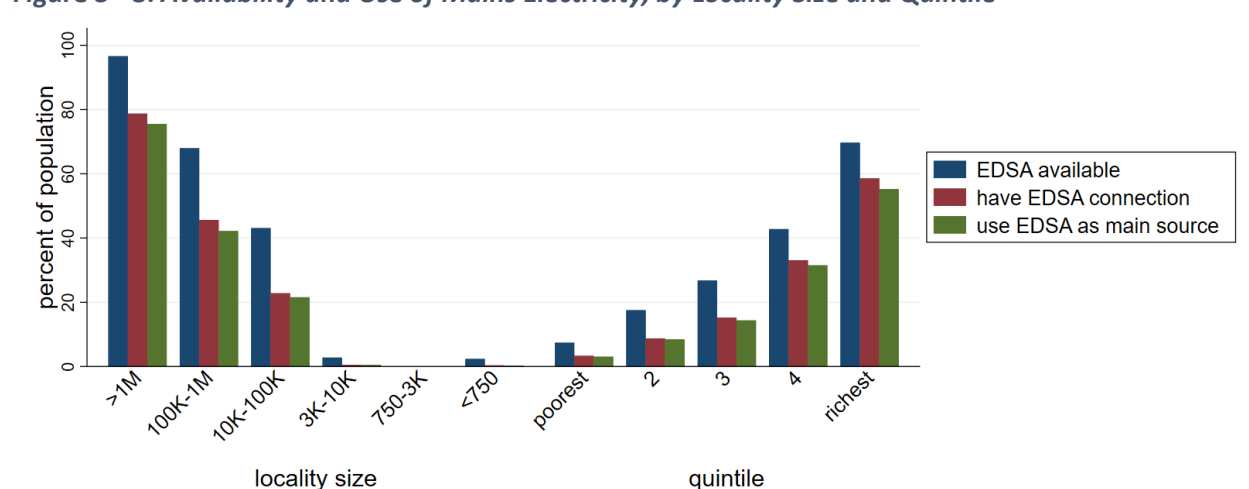
<sup>14</sup> As defined by Joint Monitoring Program for Water Supply and Sanitation (JMP), this is defined as use of an improved facility not shared with other households. As seen in World Bank (2019c), about three quarters of households in Sierra Leone share their toilet facility.

<sup>15</sup> As defined by the Joint Monitoring Program for Water Supply and Sanitation (JMP), this is defined as water from an improved source with a collection time of not more than 30 minutes.

<sup>16</sup> The Lungi area is the area across the river north of Freetown, from Lungi Airport along the main road connecting it to the ferry crossing. It includes Mahera/Rotifunk, Tulun/Tintafor, and Targin.

consuming and expensive. Even among the top quintile of households, just over half use EDSA as their main power source.

**Figure 3 - 8: Availability and Use of Mains Electricity, by Locality Size and Quintile**

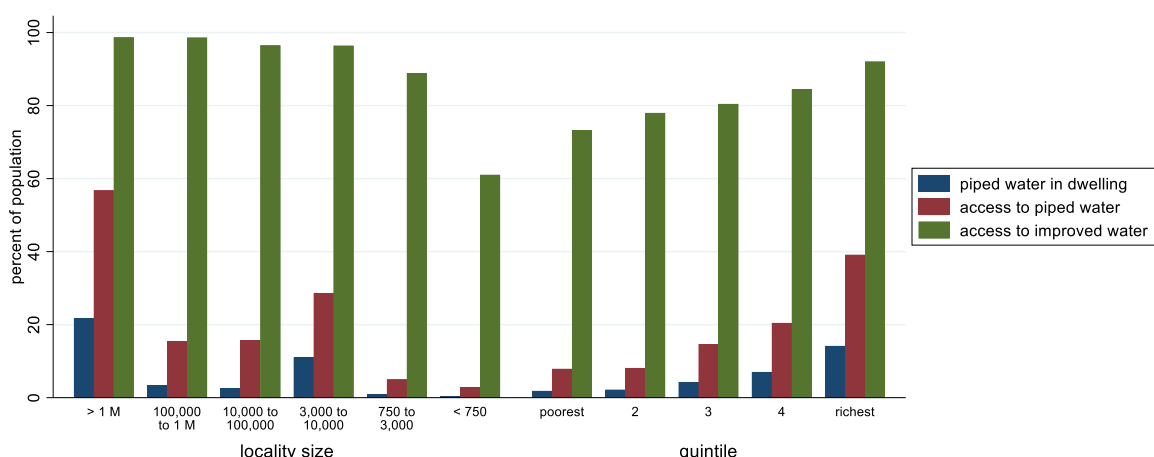


Source: Staff calculations from SLIHS 2018.

**3.24. Access to improved water is high, but few households have access to piped water.** Access to an improved water source is above 89 percent for households except those living in the smallest communities, but access to piped water, especially a private tap, is limited almost exclusively to Freetown and the richest households. Only 61 percent of households in settlements of less than 750 people have access to piped water, compared with more than 89 percent of people in larger settlements. Outside Freetown, the main source of water is wells, with boreholes and protected dug wells about equally common. Outside Freetown, less than 20 percent of the population has access to piped water of any kind, and piped water inside the home is almost unknown. In greater Freetown, 43 percent of the population in the bottom quintile have access to piped water, almost double the rate for the richest quintile anywhere else. About a quarter of Freetown's population relies on packet water as its main source of drinking water. Packets contribute to solid waste and flooding, because of blocked drainage in Freetown. In cities of 100,00–1 million, 4 percent of the population uses packet water; elsewhere the share is less than 2 percent.



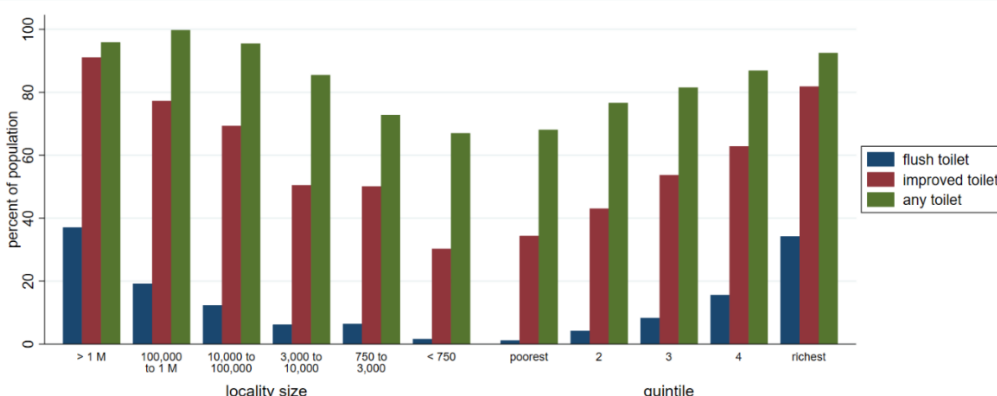
**Figure 3 - 9: Access to Water Sources by Urban/Rural and Quintile**



Source: Staff calculations from SLIHS 2018.

**3.25. Access to toilet facilities is also concentrated in urban areas and among the richest households, with a quarter of poor and rural households having no toilet facility at all.** More households have a flush toilet than piped water inside their house; these toilets can be flushed by pouring water from a bucket and drain, usually to a tank that needs to be emptied periodically. City sewerage systems do not exist in Sierra Leone outside of a small area in central Freetown. For toilet facilities, there is less of a difference between Freetown and other urban areas. Overall, just over half the population uses an improved toilet facility (mostly covered latrines outside of urban areas), and another quarter uses an unimproved toilet (uncovered latrines). About 20 percent have no toilet facility at all. The poorest households in Freetown have better access to improved toilet facilities than the richest households outside of Freetown.

**Figure 3 - 10: Access to Toilet Facilities by Locality Size and Quintile**



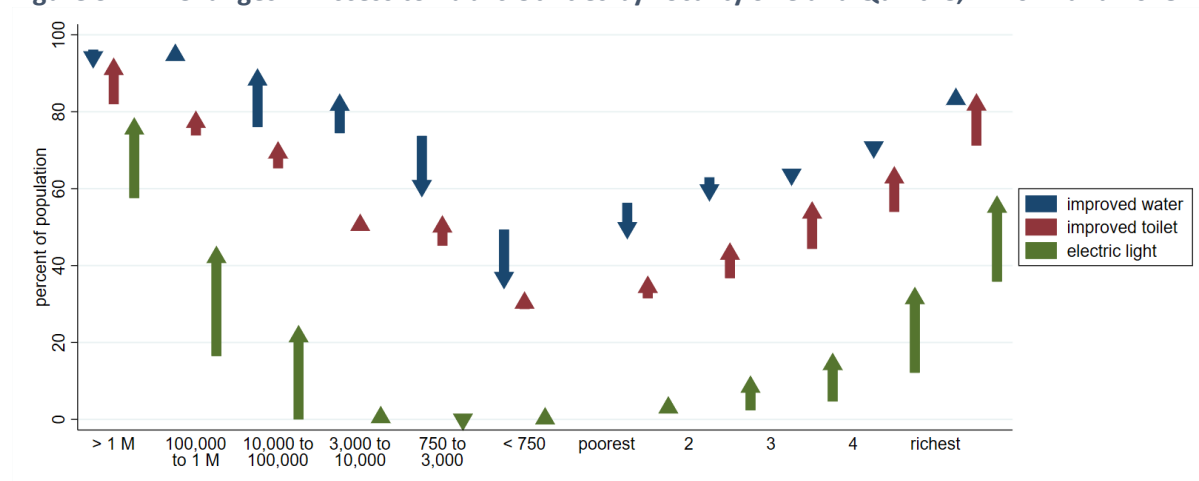
Source: Staff calculations based on SLIHS 2018.

**3.26. Improvements in utilities have been concentrated in urban areas, where they benefit more affluent households.** Households in towns with less than 10,000 people and poorer households remain far behind in terms of access to electricity, access to an improved water source,<sup>17</sup> and access to an improved toilet. Use of an improved water source did not change significantly between 2011 and 2018, remaining at about two-thirds of the population, and use decreased in rural areas and for the poorest

<sup>17</sup> Sustainable Development Goal definitions are used for water source and toilet facilities.

households.<sup>18</sup> Richer households and households in urban areas turned increasingly to packet water as a drinking water source, but this source of water is unavoidable of unaffordable for many households. Nationally, access to an improved toilet increased from 48 percent to 55 percent, with the largest gains in Freetown and among richer households. The largest gains in access to electricity were for towns of 10,000–1 million people, with smaller settlements remaining completely unserved. Although it is more efficient to connect larger towns to the grid first, doing so perpetuates patterns of inequality. Overall, access to electricity doubled from 11 percent to 23 percent between 2011 and 2018.

**Figure 3 - 11: Changes in Access to Public Utilities by Locality Size and Quintile, in 2011 and 2018**



Source: Staff calculations based on SLIHS 2011 and 2018.

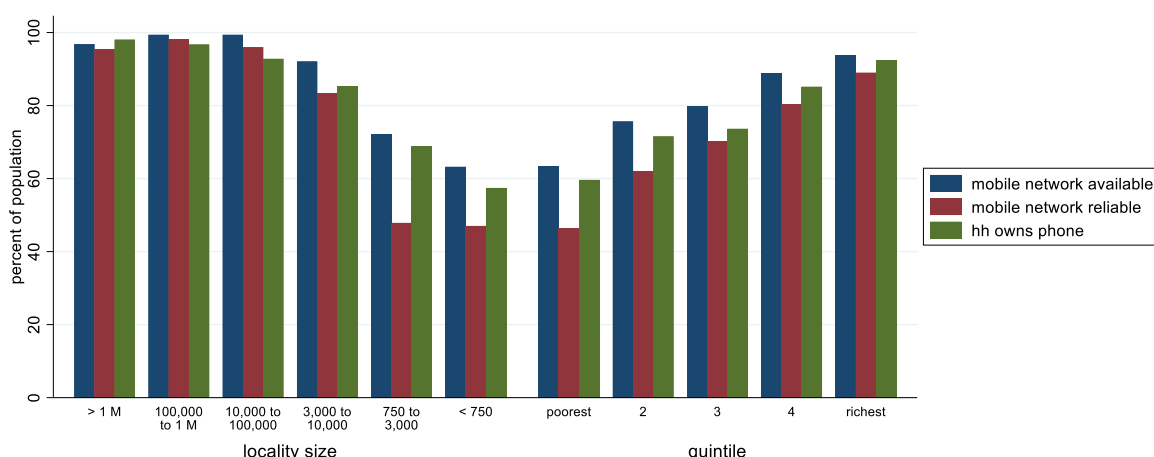
### Telecommunications and Banking

#### 3.27. Private companies provide some essential services, such as telecommunications and banking.

Cellphone coverage and use is high, with 80 percent of the population living in an area with mobile network coverage and 73 living in a household in which at least one adult owns a cellphone. Mobile network coverage is almost universal for settlements with more than 10,000 people but falls off to just over 60 percent for the smallest communities. Network quality is an issue for smaller communities, with a substantial fraction of people living in areas where a network is available but not reliable. Rates of cellphone ownership very closely match rates of network coverage, even among the poorest households, showing how useful this asset is considered. Ownership of cellphones far exceeds access to electricity. Two-thirds of people who own a cellphone report charging it outside their home, often at small businesses that run a small generator to charge cellphones, sometimes in conjunction with another service, such as airing football games on TV or serving cold drinks.

<sup>18</sup> There was a slight methodological change between 2011 and 2018.

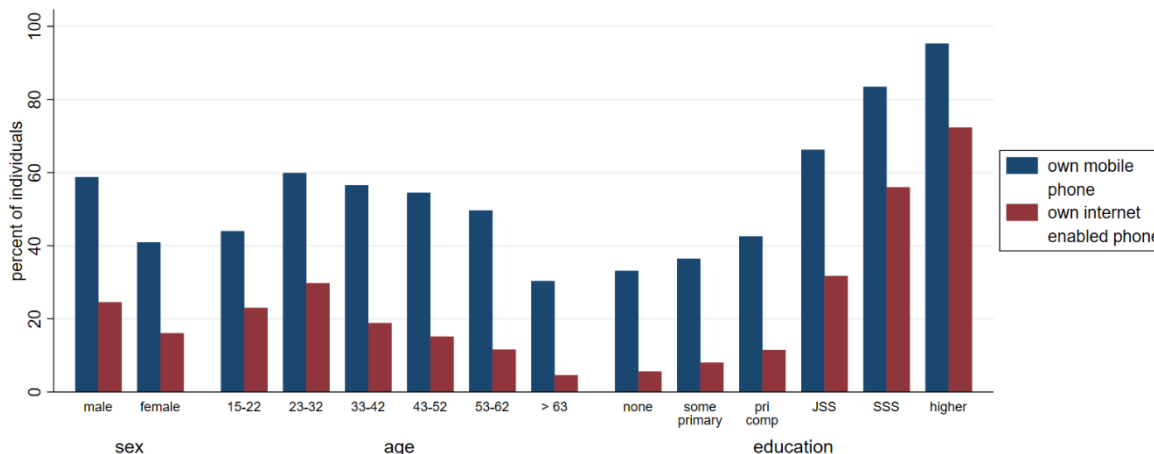
**Figure 3 - 12: Network Coverage and Phone Ownership by Locality Size and Quintile**



Source: Staff calculations based on SLIHS 2018.

**3.28. Within households, phone ownership is correlated with education, and also skews somewhat to men over women.** Overall, 48 percent of adults in Sierra Leone reported owning a mobile phone in Sierra Leone. Phone ownership is actually higher for those with no education than those who attended primary school but not secondary. From there, the rates of ownership increase steeply with level of education, reaching 96 percent for those with higher education. Ownership of phones that can access the internet is also highly concentrated among those with higher education. There is also a gender gap, with 59 percent of men owning a phone compared to 40 percent of women; the gap is smaller for smart phone ownership. There is a gentle curve in terms of age, with those around 25 or 30 being the most likely to own a phone, the pattern is more distinct for smart phones.

**Figure 3 - 13: Phone Ownership by Sex, Age and Education**

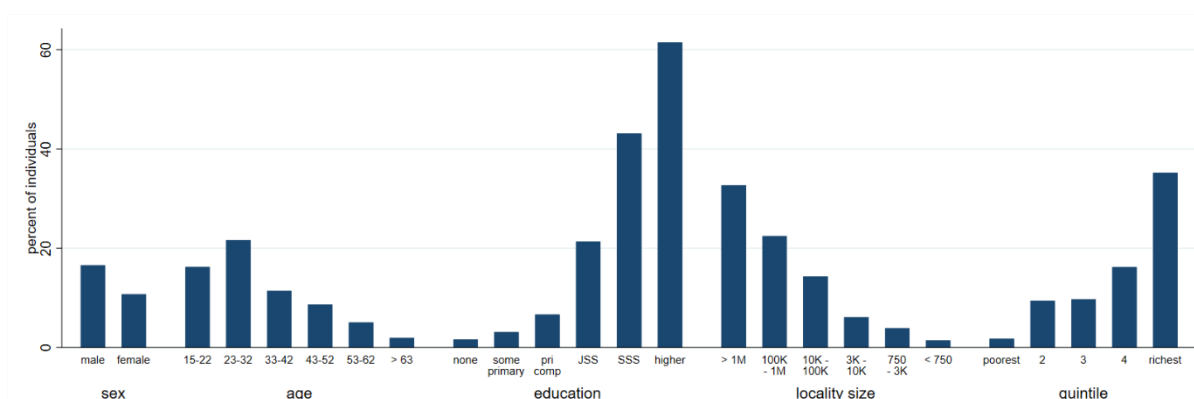


Source: Staff calculations based on SLIHS 2018.

**3.29. Mobile phones are the main way people in Sierra Leone access the Internet.** About 13 percent of people 15 and older used the Internet the previous year; 93 percent of them did so via a cellphone (figure 3.14). In 2019, 62 percent of the population had access to 4G network coverage.<sup>17</sup> Men are more likely to use the Internet than women, and people 25–30 years, like cellphone ownership. Less than 10 percent of people who did not attend primary school use the Internet, compared with 65 percent of

people with higher education. Internet use among the richest quintile is more than twice that for the next quintile.

**Figure 3 - 14: Internet Use by Individual and Household Characteristics**



Source: Staff calculations based on SLIHS 2018.

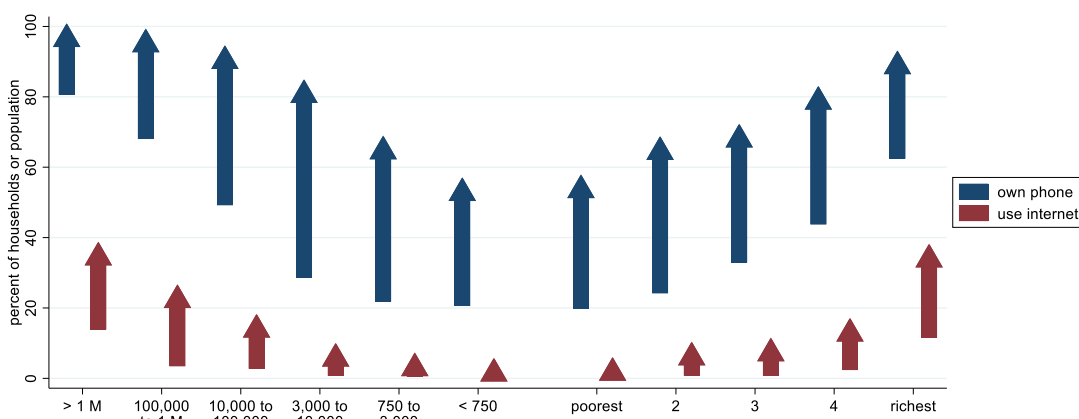
3.30. **By far the most common use of the internet was for social media**, such as Facebook and WhatsApp, which more than 90 percent of respondents cited as their primary activity online. It was followed by music and news. Businesses in Sierra Leone use WhatsApp extensively. The government uses WhatsApp to send official notices (via press releases); it appears to be the second-most important communication medium for the government, after radio. Internet on cellphones is provided mainly by the two largest private mobile network operators, but the government plays a major role in this sector. International connectivity through the ACE submarine cable is managed by a state-owned company, SALCAB, which has a monopoly on wholesale broadband. The government, with funding from various partners, has constructed the land-based fiber optics backbone, which now connects most major cities and towns.<sup>19</sup>

3.31. **Mobile phone ownership and internet access increased significantly between 2011 and 2018 (Figure 3.15).** Cellphone ownership rose from 39 percent to 73 percent of households, and the share of the population 15 and older using the internet increased from just 3 percent in 2011 to 13 percent in 2018. Increases in Internet use were concentrated in the largest cities and among the richest households. In contrast, gains in cellphone ownership were much more widely spread, with households in the middle catching up to those at the top.<sup>20</sup>

<sup>19</sup> Sierra Leone Digital Economy Diagnostic, World Bank (2020d).

<sup>20</sup> GSMA Intelligence Data

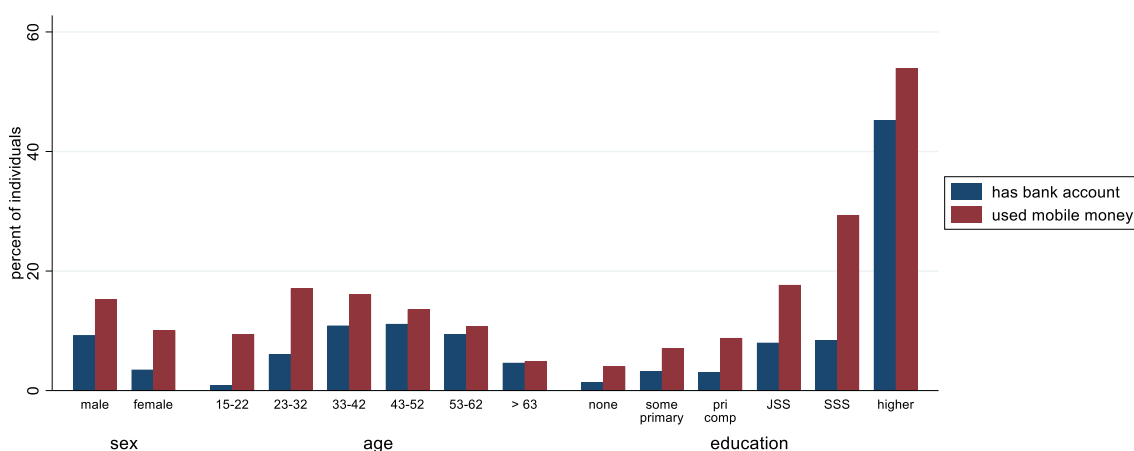
**Figure 3 - 15: Changes in Phone Ownership and Internet Use, 2011 to 2018**



Sources: Staff calculations based on SLIHS 2011 and 2018.

**3.32. Mobile phones also provide access to banking services through mobile payment services.** As of 2018, just over a quarter of adults with a phone had used it to send or receive money in the past year, accounting for about 12 percent of persons aged 15 and older. This is about twice the number of people who have a bank account. Use of mobile money also shows less of a gender gap, and less of a gap by education level and locality size compared to more traditional banking services.

**Figure 3 - 16: Use of Bank Accounts and Mobile Money Services**

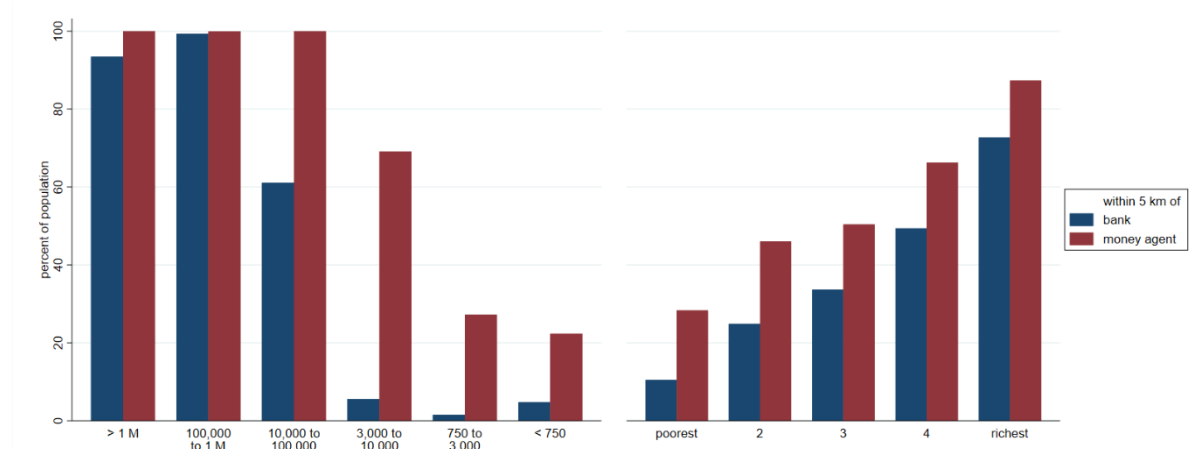


Source: Staff calculations based on SLIHS 2018.

**3.33. The use of cellphones for banking partly reflects accessibility.** A geospatial mapping of financial access points commissioned by the Bank of Sierra Leone in 2017 found only 111 commercial bank branches but 1,357 money agents providing cash in/cash out services for mobile money. Using these data with gridded population estimates indicates that 37 percent of the population lived within 5 miles of a commercial bank branch, compared with 57 percent within 5 miles of a mobile money agent. Physical access to a money agent shows smaller disparities than access to a commercial bank branch. Coverage of money agents is almost universal for settlements of 10,000 people or more; it exceeds 20 percent of the population even in the smallest settlements, where just 6 percent of the population has access to a commercial bank branch. Mobile money services are also more accessible to the poor, with 27 percent of

the poorest households having access to a money agent, compared with only 8 percent with access to a commercial bank branch.

**Figure 3 - 17: Physical Access to Commercial Banks and Money Agents**



Sources: Staff calculations based on BSL data and gridded population estimates (left panel) and SLIHS 2018 (right panel).

## Human Capital

**3.34. The civil war (1991–2002) interrupted the development of human capital in Sierra Leone.** The war caused the loss of an estimated 50,000 lives, massive disruptions in the provision and demand for basic education and health care services, and the destruction of physical infrastructure, especially schools (World Bank 2007). The generation whose prime school-going years (6–15) overlapped with the war are now 25- to 45-years-old and represent the majority of working-age adults.

**3.35. Human capital challenges and opportunities differ significantly by generation.** This section first focuses on education, as measured by completed years of schooling; it also considers time lost to illness and rates of disability. It then examines the process of forming human capital for the next generation, looking at access to basic facilities, schooling rates, and basic health indicators for children. The Human Capital Index indicates that children born in Sierra Leone in 2020 are projected to be only 36 percent as productive as they could have been as adults if they had enjoyed full education and health. These deficits are not equally distributed; patterns in differences in education and health of children today will lead to patterns of productivity in 20 years.

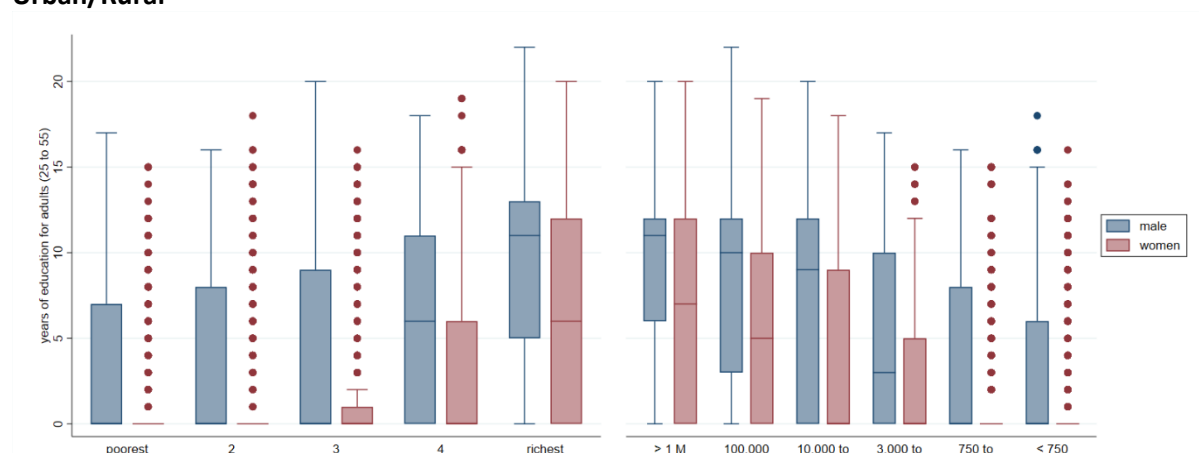
**3.36. Increasing human capital requires government investment in building (or rebuilding) and maintaining schools and clinics.** The government appears to be responding. The number of schools and clinics in the country has increased dramatically since the end of the war. In 2019, the government allocated 6.5 percent of its budget to health and 11.0 percent to education.<sup>21</sup> It has also launched major initiatives for free health care and free education. The quality of these services is not high, however, which may explain some of the gaps in usage. Households must also do their part, sending children to school, making use of health facilities, and finding the financial resources to pay any associated costs.

**3.37. Education levels for working-age adults in Sierra Leone are low, with wide disparities between rural and urban areas and between men and women.** In 2018, more than half of people 25–55 had no

<sup>21</sup> These shares are larger than for any other sector (World Bank 2021).

formal education, and the mean years of education was only 4.2, far short of the government’s standard of 9 years of basic education (6 years of primary and 3 years of junior secondary). More than half of men through the third consumption quintile and women through the fourth quintile have no education, and only men in the top quintile meet the government’s standard. Differences are also vast between rural and urban areas. The median man in towns with over 10,000 people having 9–11 years of education, and the median woman in Freetown almost meets the government’s standard of 9 years. Indeed, in rural areas and the bottom 40 percent, at least 75 percent of adult women have no education.

**Figure 3 - 18: Distribution of Years of Education for Adults, by Sex, Consumption Quintile and Urban/Rural**



Source: Staff calculations based on SLIHS 2018.

**3.38. The human capital stock of a household, measured as the average years of education of its adults, is one of the most significant correlates of current welfare.** A multivariate regression—including controls for the location of the household (urban/rural and region), household size, the number of children, the gender of the household head, and employment type (farming, self-employed, formal employment) of adults in the household—was constructed to explain the welfare level of the household (real per adult equivalent consumption or expenditure). Even with all these controls, the mean years of education of adults are highly significant (the most significant variable in the model) and positively correlated with household welfare.<sup>22</sup> The magnitude of the coefficient is small. However, it would take almost three additional years of education per adult to bring a household from 10 percent below the poverty line to 10 percent above the poverty line, and it would take almost nine years of education (the difference between no education and completing the government’s standard of basic education) to make up for the welfare shortfall that comes from living in a rural area rather than an urban one.

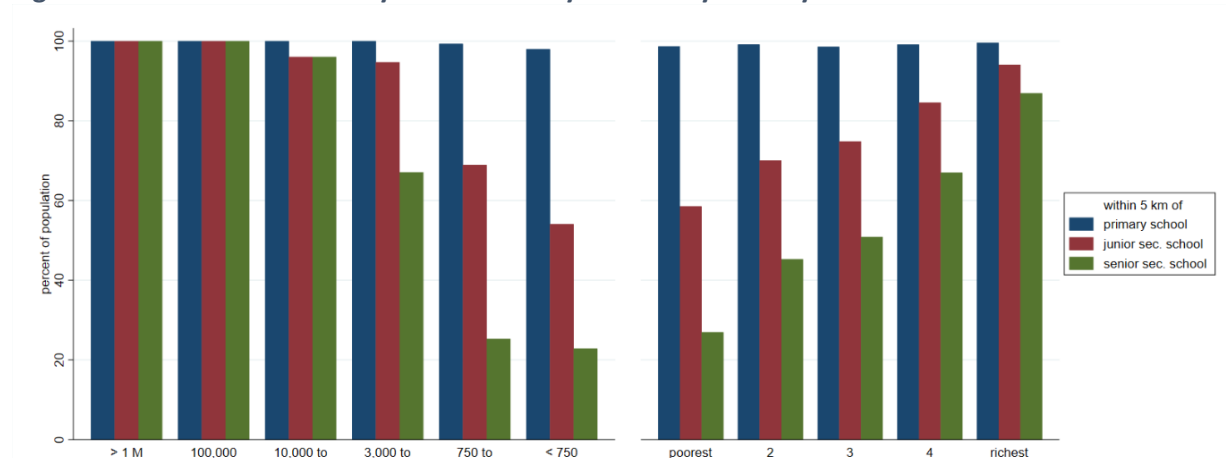
**3.39. Adults lose a significant percentage of their time to illness, especially in rural areas.** Poor health and disability as an adult, and the lingering effects of poor health and malnutrition as a child, can significantly reduce productivity. Comprehensive data to estimate these effects are not available for Sierra Leone, but there are some data on loss of work from injury or illness and levels of disability among the working-age population. Over 20 percent of adults reported having been sick or injured in the previous

<sup>22</sup> Analysis for the education public expenditure review (World Bank 2021) finds significant returns to education only at the secondary and tertiary levels.

four weeks.<sup>23</sup> Over 90 percent of adults who were sick reported having to stop their usual work because of the illness. The median time away from work because of illness was three days, but 20 percent of sick adults were away from work for seven days or more. Each working adult is estimated to lose 23 days a year to illness on average, 6 percent of their workdays. In a context where the majority of adults depend on self-employment in agriculture or small businesses, this loss likely translates directly into a loss of income. The lost time is greater for women than men (25 versus 22 days) and in more rural areas (26 days for small towns and rural areas compared with 22 days for other urban centers and 17 days for Greater Freetown). There is little difference by welfare quintile; indeed, adults in richer households took more sick days than poorer people, perhaps because they could afford to do so.

**3.40. Access to primary schools is nearly universal; access to secondary schools is more limited, constraining the ability of the next generation to accumulate human capital (figure 3.19).** Because of the land tenure system, households engaged in agriculture are tied to the land to which they have traditional rights and cannot move elsewhere to take advantage of services like schools (GoSL 2015). Because the road network is weak and public transportation limited, children must be able to walk to school. The Ministry of Basic and Senior Secondary Education has established 3 miles (about 5 km) as the maximum distance a household can be from a primary school. Nationally, 99 percent of the population lives within 5 km of a primary school,<sup>24</sup> and coverage rates remain above 97 percent for even the poorest households and the smallest communities. About 76 percent of the population has access to a junior secondary school, but only 56 percent lives near a senior secondary school. There is greater disparity in access to secondary schools, with only about a quarter of children in the smallest communities or poorest quintile having access to a senior secondary school.

**Figure 3 - 19: Access to Primary and Secondary Schools by Locality Size and Welfare**



Sources: Left panel: Authors' calculations from 2020 Annual School Census data and gridded population estimates. Right panel: Authors' calculations from ASC 2020 data and 2018 SLIHS.

**3.41. The gender gap in school enrollment has closed through the end of junior secondary school, but wide disparities remain between urban and rural areas and between richer and poorer households.**

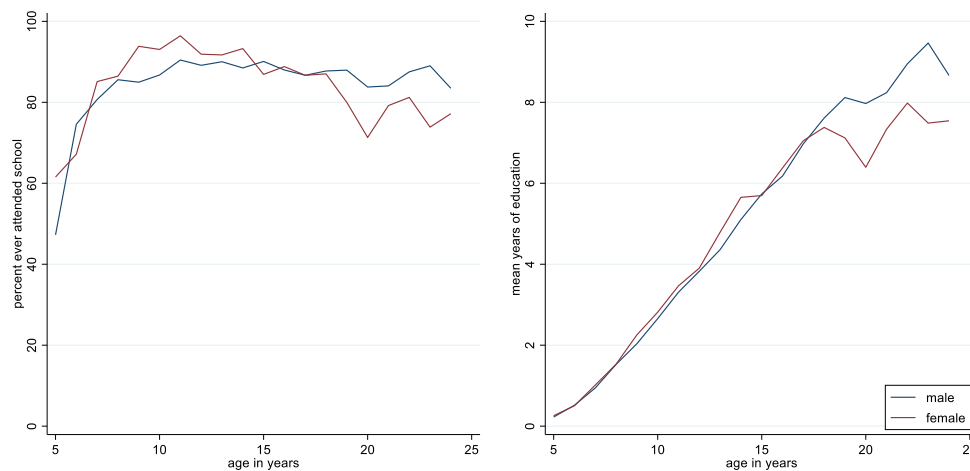
<sup>23</sup> The most common symptom reported was fever, followed by headaches and joint pain. Among people who sought medical care, the most common diagnosis, given to over half of patients, was malaria.

<sup>24</sup> This figure is the same as the one found by 2020 Education Coverage in Sierra Leone, using slightly different methodology.



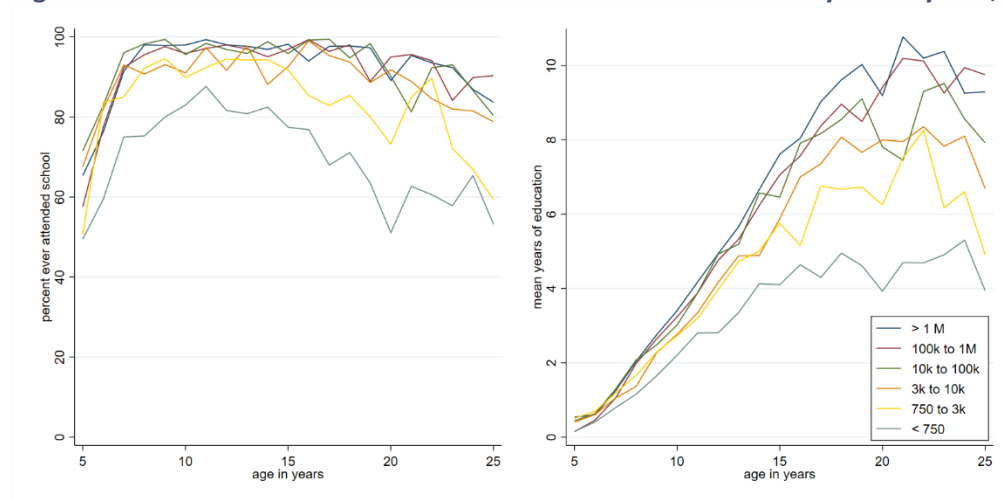
Through the late teens, there is no difference between boys and girls in terms of the percent who ever attended school (about 90 percent) or the mean years of education obtained. In contrast, there is a wide gap between children in settlements of various sizes. Over 95 percent of children in towns or cities of more than 10,000 people attend school through their late teens. The figure drops to 80 percent or less in the smallest villages. By their late teens, children in the most rural areas have about three years less education than those in settlements with more than 10,000 people. Marked differences by welfare quintile also exist, with children in the top quintile having about five more years of education than children in the bottom quintile.

**Figure 3 - 20: Ever Attended School and Mean Years of Education by Gender, 5- to 24-year-olds**



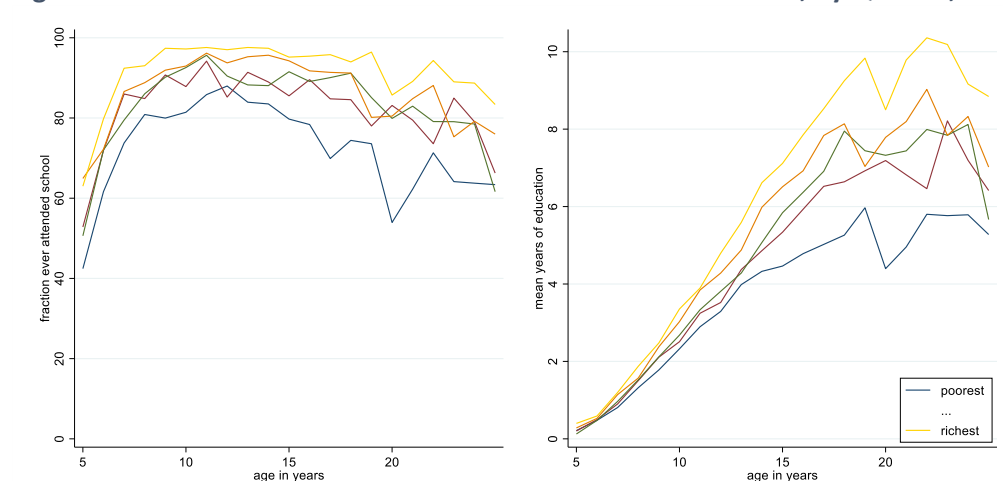
Source: Staff calculations based on SLIHS 2018.

**Figure 3 - 21: Ever Attended School and Mean Years of Education by Locality Size, 5- to 24-year-olds**



Source: Staff calculations based on SLIHS 2018.

**Figure 3 - 22: Ever Attended School and Mean Years of Education, by Quintile, 5- to 24-year-olds**



Source: Staff calculations based on SLIHS 2018.

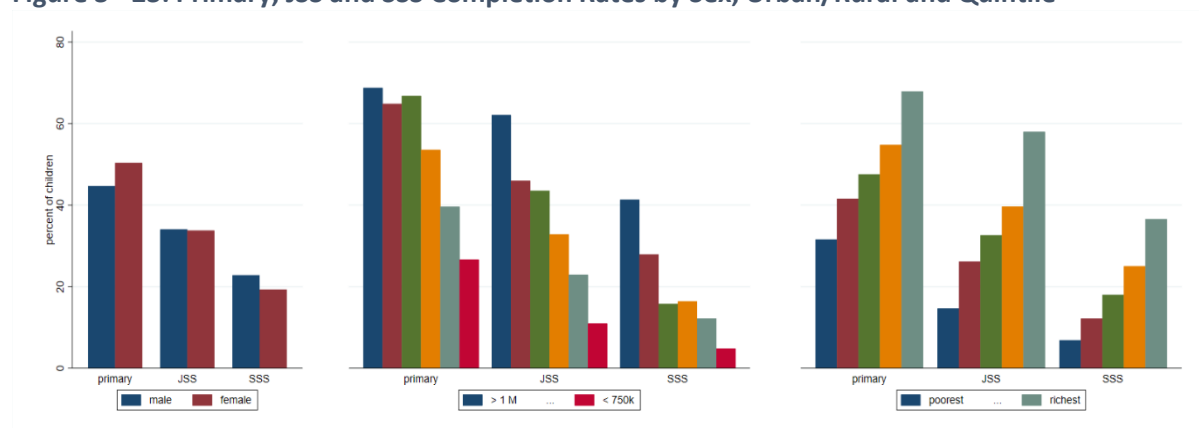
**3.42. Primary and secondary school completion rates also show the lack of a gender gap but strong gradients by settlement size and quintile.** Using years of education as the outcome instead of gross or net enrollment rates is problematic, because of inaccuracies in age reporting, even for children,<sup>25</sup> and the fact that many children are significantly behind in terms of the official class for age.<sup>26</sup> A complement to analysis based on years of education is analysis based on completion rates for each level based on the percent of children between the target age for completion of the level and four years older that complete the level. For girls, primary school completion rates are actually higher for primary school and only slightly lower for secondary school relative to boys. The most marked differences are by welfare quintile, where

<sup>25</sup> There is significant bunching even at ages 10, 15, and 20, especially among less educated families. Even many educated 18- to 22 year-olds give their age as 20. As a result, the data show that this age group has a larger percent of uneducated people than the age groups next to it.

<sup>26</sup> More students 15–17 years old are still in primary school than in secondary school. The official age of students in senior secondary school is 15–17.

a sharp gradient exists for all school levels. By settlement size, primary completion rates begin to decrease for towns smaller than 10,000 people. Secondary completion rates are higher in Freetown than elsewhere.

**Figure 3 - 23: Primary, JSS and SSS Completion Rates by Sex, Urban/Rural and Quintile**



Source: Staff calculations based on SLIHS 2018.

**3.43. The COVID-19 pandemic presented additional challenges for the education sector.** One of the biggest impacts of the pandemic in Sierra Leone was the closure of schools. Even before the first novel coronavirus case was confirmed in Sierra Leone, the government announced that schools would close on March 31, 2020, and that the national examinations usually held in May and June would be rescheduled. Schools reopened on July 1, 2020, for students who were sitting for these exams; they opened for all students on October 4, 2020. Schools were also closed for about nine months in 2014–15, during the Ebola epidemic. Although the earlier closure may compound the losses for students, it meant that the government was well prepared. It quickly rolled out a radio education program and campaigns to prevent pregnancy among girls and promote inclusion of the most disadvantaged children (pregnant girls, children with disabilities, girls from rural areas), learning from experiences during the Ebola epidemic.

**3.44. Almost all children reported returning to school once schools reopened.** As of November–December 2020, when the second round of the COVID-19 Impact Monitoring Survey (CIMS) was conducted, students who had sat for their exams at the end of junior secondary school and senior secondary school had not received their results and thus had not been able to enroll in school (advance to senior secondary school or continue with higher education). For students in other classes, 97–99 percent reported having returned to school, with no significant difference across groups. These very high rates of return to school are confirmed by the Comprehensive Food Security and Vulnerability Analysis, conducted by the World Food Programme in January 2021, which found that 97 percent of boys and 99 percent of girls had returned to school. In other countries, higher rates of children dropping out of school have been attributed to income losses. By the time the school year started, in October, incomes for many households had started increasing again. The Free Quality School Education Program has reduced households' out-of-pocket expenditure on education.

**Figure 3 - 24: Percent of Students Returning to School by Sex, Location, School Type, Welfare Quintile and Class**



Source: Staff calculations based on CIMS round 2.

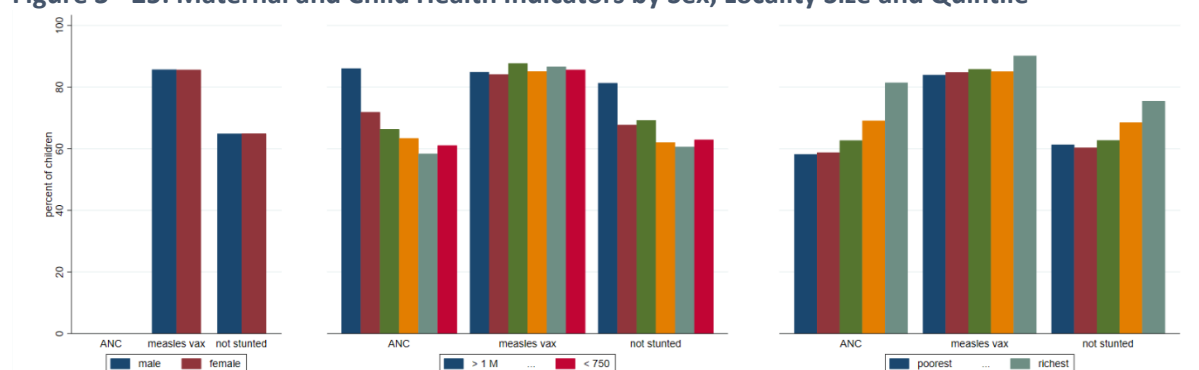
3.45. **There is no evidence that large number of girls became pregnant during school closures.** The vast majority of girls returned to school; among those who did not, only 10 percent cited pregnancy as the reason. (Results from the 2018 SLIHS on reasons why girls drop out of school before completing secondary school find that marriage or pregnancy was the most common reason, at 36 percent.<sup>27</sup>).

3.46. **Although almost all students returned to school, 28 percent repeated a grade. Repeating rates were higher in rural areas and among poorer households.** The 2018 SLIHS found that only 8 percent repeated a class in the 2017/18 school year. There was no significant difference in promotion rates by gender, but rates were higher for students in urban areas (particularly Freetown) and for wealthier students, although the differences were small (72 percent for students in the poorest quintile and 75 percent for students in the richest quintile). The high rate of repeating is concerning in a context in which students are usually significantly behind in terms of class for age (about half of students of 12- to 14-year-olds are still in primary school) and learning outcomes are poor (the Human Capital Index finds that harmonized test scores for Sierra Leone are among the lowest in the world).

3.47. **Similar disparities in health indicators for children reinforce the conclusion that children from poorer and rural households will not be able to accumulate as much human capital as their peers and that inequalities will persist into the next generation.** Three indicators for early childhood health were constructed, using data from the 2017 MICS: whether or not the mother received at least three antenatal care visits, whether children 12–23 months had been vaccinated against measles, and whether or not the child had avoided stunting. For health, there was no significant difference by gender; measles vaccination rates are consistently above 80 percent for both boys and girls. There are differences in the use of antenatal care across sectors and welfare quintiles; the differences for stunting are smaller. Greater Freetown has significantly higher access to antenatal care and lower rates of stunting than secondary cities.

<sup>27</sup> The CIMS did not include a code for marriage as a reason for not returning to school, but a code was provided for “other,” which was used for a significant number of cases.

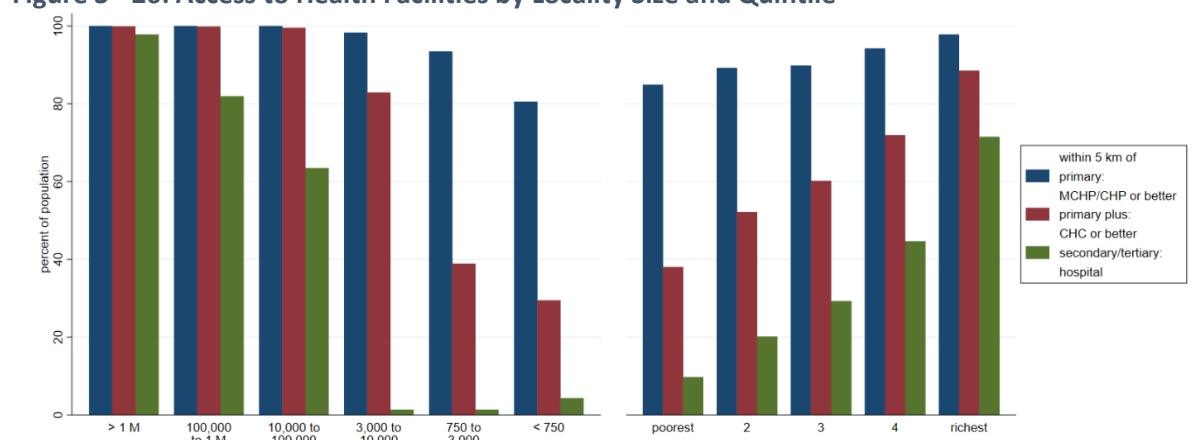
**Figure 3 - 25: Maternal and Child Health Indicators by Sex, Locality Size and Quintile**



Source: Staff calculations based on SLIHS 2018.

**3.48. Geographical coverage of primary clinics is high; coverage for other types of health facilities is lower.** Three kinds of clinics provide primary health care: maternal and child health posts, community health posts, and community health centers. Community health posts have a laboratory and a pharmacy, provide basic emergency neonatal and obstetric care, and are run by a more qualified community health officer (roughly equivalent to a nurse practitioner). Secondary care is provided at district and regional hospitals; tertiary care is provided at a handful of specialist hospitals, all in greater Freetown. As community health centers and hospitals also provide basic preventative and outpatient care to the surrounding communities, access is considered in terms of access to a facility of a given type or higher (Sierra Leone Basic Package of Essential Health Services, 2015–2020). Nationwide, 91 percent of the population lives within 5 km of a facility providing primary services. The figure ranges from 80 percent for the smallest communities to almost universal coverage in towns of over 1,000 people.

**Figure 3 - 26: Access to Health Facilities by Locality Size and Quintile**

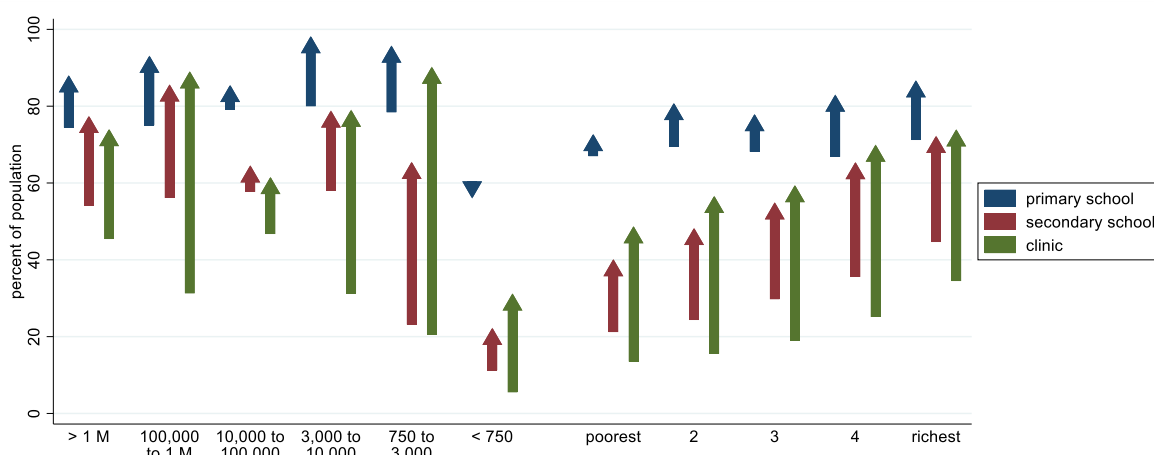


Sources: Left panel: Staff calculations from Health Facilities data and gridded population estimates. Right panel: staff calculations from Health Facilities data and 2018 SLIHS.

**3.49. Access to primary plus services (services provided at the level of a community health center or higher) is universal for towns of 10,000 or more but falls off rapidly, to 29 percent, for the smallest communities. Access to secondary care is almost nonexistent for communities of less than 10,000 people. There is a strong positive relationship between access to health facilities and welfare quintile for all levels of service.**

3.50. **Government investment in health and education infrastructure has been impressive but has perpetuated patterns of inequality.** The number of primary health units in Sierra Leone almost doubled between 2004 and 2020, rising from 622 to 1,187 (2007 World Bank Education in Sierra Leone and 2020 Annual School Census). The number of primary schools increased from 4,015 in 2003 to 7,020 in 2020, and the number of secondary schools rose by a factor of 9, from 246 to 2,259 (2017 MoHS Report on Service Availability and Readiness Assessment, 2020 Health Facilities Data). Data on self-reported travel time to schools and clinics from the 2011 and 2018 SLIHS suggest that the poorest and smallest communities have been left behind, with no convergence in coverage rates. In this analysis, a household is considered to have access to a facility if its reports that one is available within a 30-minute walk. Access to primary schools and clinics improved more for better-off households. The sample sizes for some medium-size settlements are small and no clear trend emerges, except that the smallest communities continue to be left far behind others.

**Figure 3 - 27: Changes in Access to Primary and Secondary Schools and Clinics**



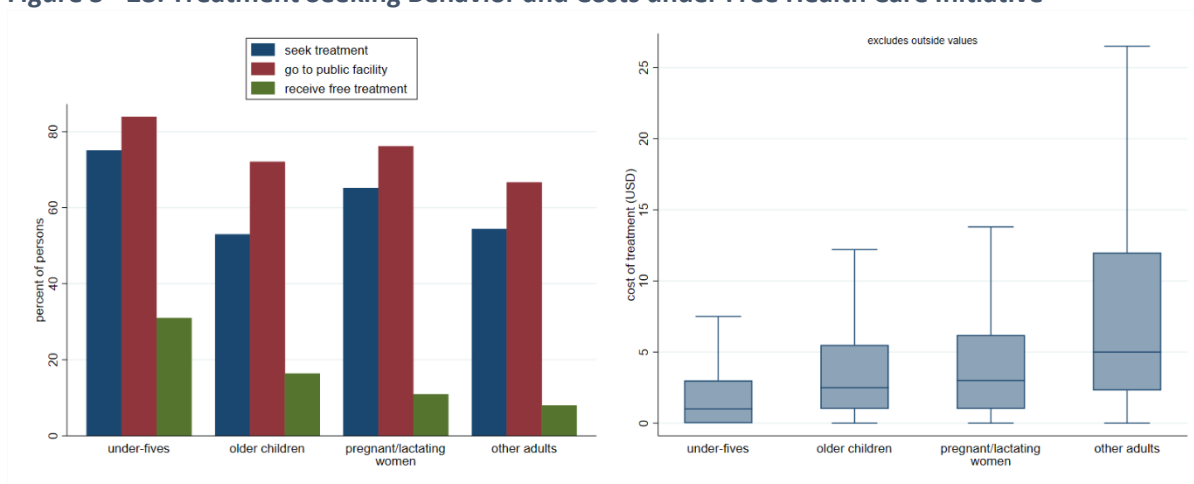
Sources: Staff calculations based on SLIHS 2011 and 2018.

3.51. In addition to investing in infrastructure, governments invest in human capital by funding recurrent expenditures for health and education services. The government provides free public services under the Free Health Care Initiative and the Free Quality School Education program. **The long-term impact of the 2010 Free Health Care Initiative is seen in modest increases in health care utilization and reduced costs for target groups (children under-five and pregnant/lactating women).** The previous administration introduced the Free Health Care Initiative, in 2010, which targeted pregnant and breastfeeding women and children under five, aiming to provide them with free preventative and outpatient care. Implementation of this policy in 2018 was inconsistent. The targeted groups were more likely to seek treatment if sick or injured, more likely to go to a government facility if they were, and more likely to receive free treatment from that government facility.<sup>28</sup> Differences in care-seeking behavior were small, and only about 30 percent of children under five and 10 percent of pregnant/lactating women received completely free care at government facilities. On average, the targeted groups did pay less than

<sup>28</sup> This section considers only treatment for illness and injury, not preventative care, such as vaccinations or antenatal care, which are supposed to be free. Pregnant and breastfeeding women were proxied by women who gave birth in the past year. Some of these women may have given birth more than six months earlier and no longer have been breastfeeding.

other patients, with charges for pregnant/lactating women capped and larger payments (more than \$10) much rarer than for other adults.

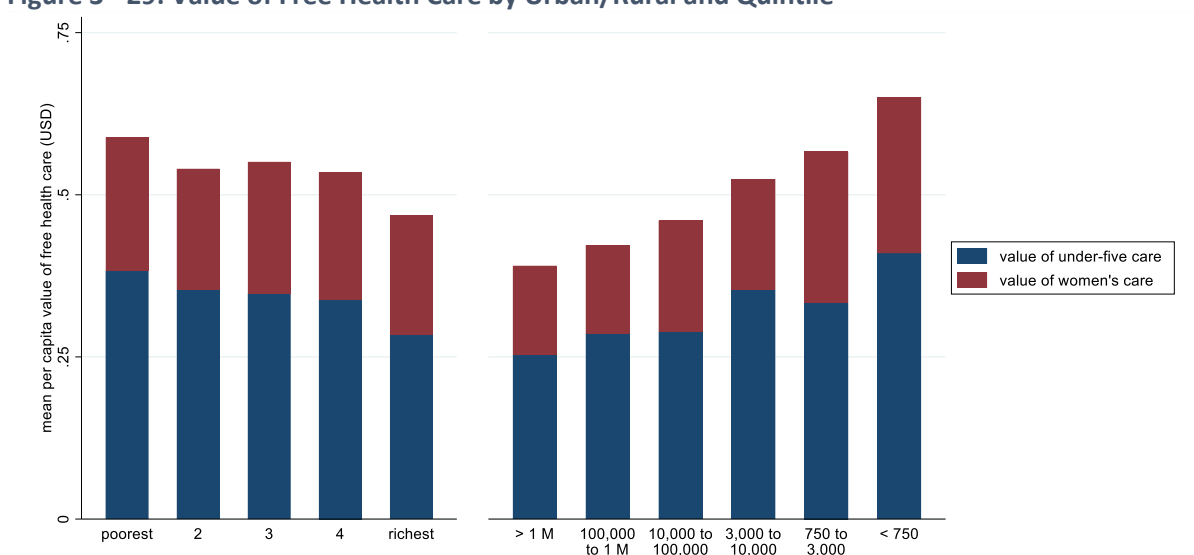
**Figure 3 - 28: Treatment Seeking Behavior and Costs under Free Health Care Initiative**



Source: Staff calculations based on SLIHS 2018.

**3.52. Rural households benefit most from the program, as they make much more use of government health care facilities than other households.** A first-order approximation of the incidence of the policy can be estimated by assuming that, in the absence of the program, children under-five and pregnant/lactating women would pay the same for treatment as older children and other adults, respectively. The benefits are greatest for households in small towns and rural areas. In these areas, 83 percent of health care consultations take place in government facilities, compared with about half in urban areas. The program is also moderately pro-poor, with poorer households benefiting more on average than richer ones, particularly from free health care for children under five.

**Figure 3 - 29: Value of Free Health Care by Urban/Rural and Quintile**



Source: Staff calculations based on SLIHS 2018.

**3.53. Neither the design nor the roll-out of the free education program were pro-poor but tended to provide fewer resources later to schools serving poorer children.** In 2018, the Government of Sierra

Leone announced a Free Quality School Education program. Under this program, public schools would not be allowed to charge school fees but would instead receive a per student grant from the government. The program was rolled out over several years. For the 2018-2019 school year, about 41 percent of schools representing 62 percent of students benefited from the program. In the second and third years, additional schools were brought in, bringing these totals to 69 percent of schools and 84 percent of students. This roll-out favored larger, more established schools in urban areas who had completed the registration process with the Ministry of Education.<sup>29</sup> The program also provided much larger per student grants to secondary schools (USD 15 and USD 18 for JSS and SSS respectively, compared to just USD 3 for primary schools). While these amounts reflect median school fees charged at these levels, secondary schools predominantly serve better off households in urban areas. The program was quite effective in eliminating school fees; data collected in February / March 2020 as a supplement to the SLIHS found that fees had been eliminated in over 90 percent of public schools participating in the program.<sup>30</sup> The program does also include other components, such as the provision of textbooks, payment of exam fees for external exams, and (most notably) a school feeding program targeted at primary school children in certain rural chiefdoms that had been identified as food-insecure.

**3.54. Preliminary beneficiary incidence analysis of Free Quality Education (World Bank, 2019) found a fairly equal distribution of the benefits of the program by welfare decile.** This analysis was based on the planned implementation of the program for the first year (2018/2019) and data from the 2018 SLIHS on the number of children enrolled in public schools, although not all public schools would benefit immediately. About 8–13 percent of the total value of the program was projected to go to each welfare decile, with poorer households benefitting more from the school feeding program and richer households from the grants covering secondary school fees. This analysis did not consider the gradual roll-out of the program, which meant that schools in more urban areas were more likely to benefit during the first couple of years, or the actual targeting of the school feeding program by measures of food insecurity.

**3.55. Nationwide, spending on education accounts for about 6 percent and spending on health care about 5 percent of total household expenditure.** The share is highest for the richest households, which are able to invest substantially more in these areas and have access to better housing and sanitation to protect these investments. The gradients by welfare are not very steep, however, and even the poorest households invest about 8 percent of their financial resources in these services (Figure 3.30).

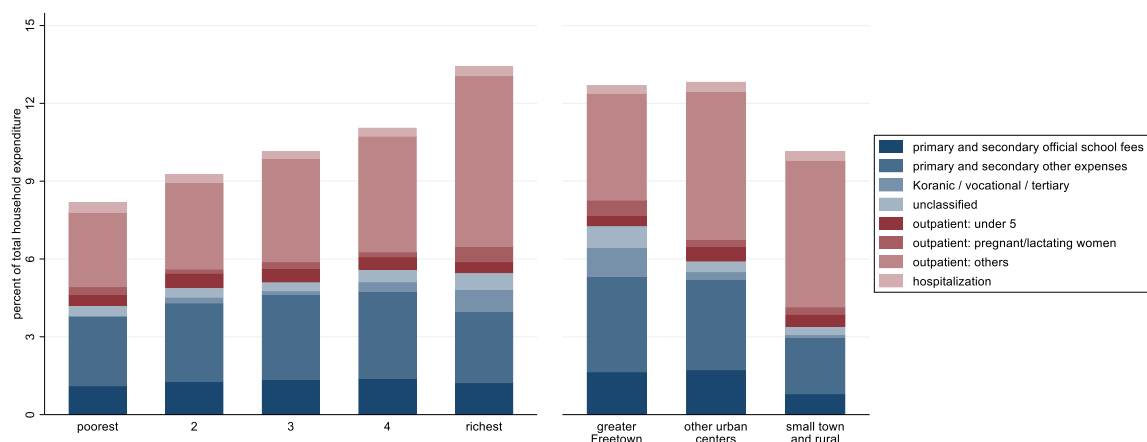
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<sup>29</sup> See World Bank (2019b), Immediate Effects of Free Quality Education

<sup>30</sup> World Bank (2019b)



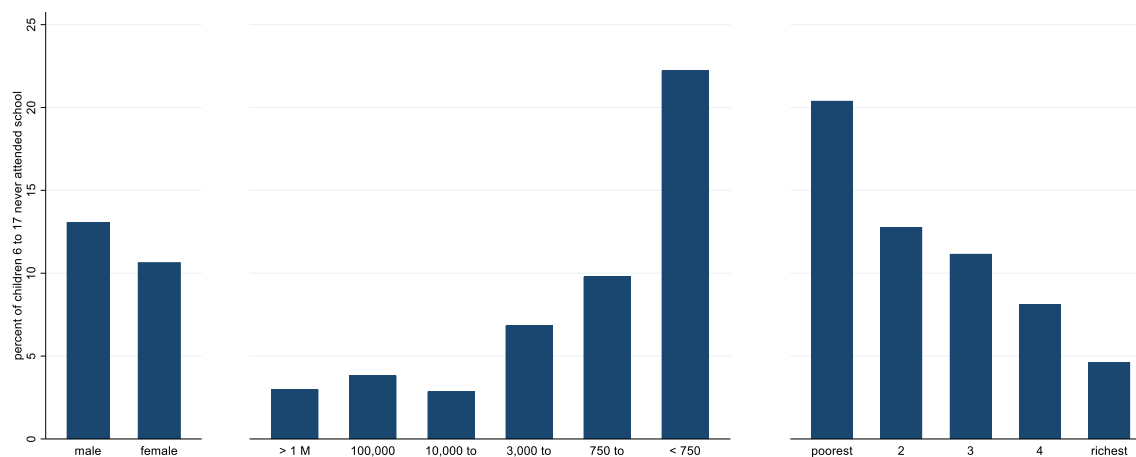
**Figure 3 - 30: Education and Health Expenditures as percent of Total Expenditure by Quintile and Urban/Rural**



Source: Staff calculations based on SLIHS 2018.

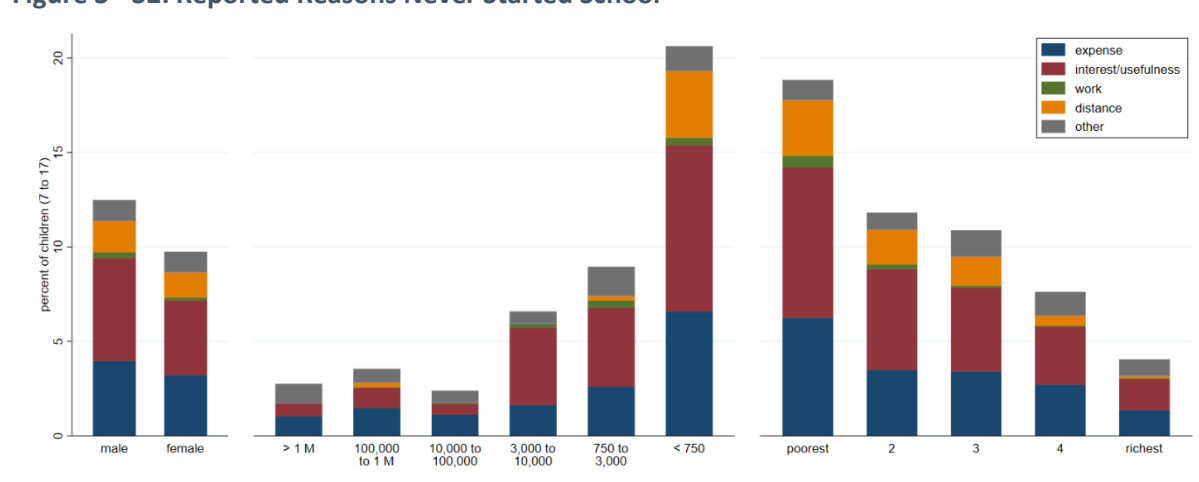
**3.56. Cost and lack of easy physical access discourage households from making investing in human capital by taking advantage of the health and education services available, but a bigger factor seems to be the perceived quality of the services.** Children who never attended school are concentrated in the poorest and most rural households. The reasons households cite most often are lack of interest in school and the lack of usefulness of school. Distance to school is cited only for children in the smallest communities (unsurprisingly, given the estimated 99 percent coverage of primary schools nationwide.)

**Figure 3 - 31: Children Never Attending School, by Sex, Locality Size and Welfare**



Source: Staff calculations based on SLIHS 2018.

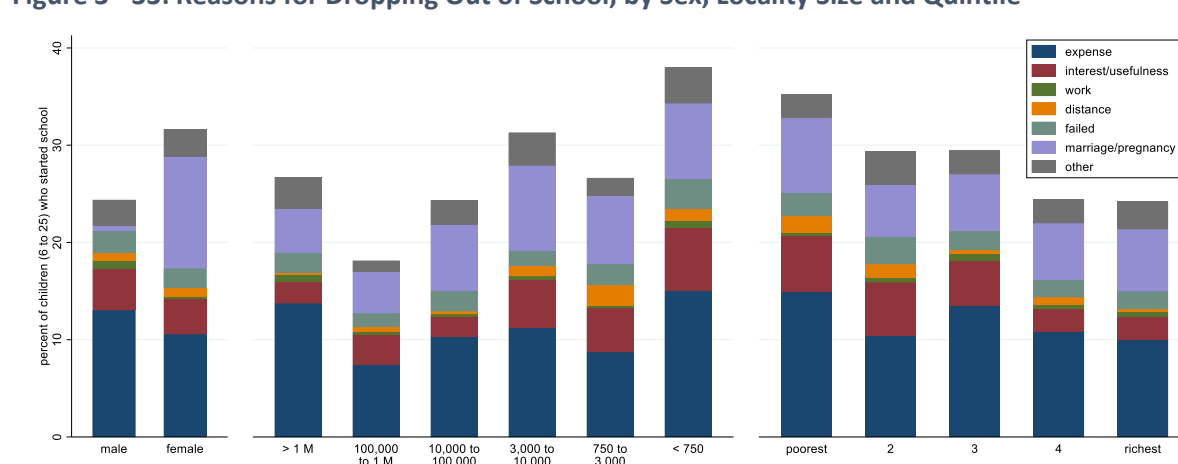
Figure 3 - 32: Reported Reasons Never Started School



Source: Staff calculations based on SLIHS 2018.

3.57. **Although educational attainment is very highly correlated with welfare for adults, households do not seem to recognize it or believe that the quality of education has fallen.** There are many reasons to be concerned about quality of education. The Human Capital Index finds that Sierra Leone has some of the lowest harmonized test scores for the any country considered. Completion rates are lower for more rural areas and poorer households. Households' main reported concern is expense, followed by marriage and/or pregnancy for girls (Figure 3.33). The more generous subsidy for secondary education should reduce expense as a reason why children drop out of school. The gender gap has closed through junior secondary school. In contrast, getting girls to complete senior secondary school when they would traditionally get married and start having children is proving very challenging. Distance is rarely cited as the reason given why children drop out. (This analysis is based on data from 2018 and thus children who dropped out before the Free Quality School Education program.)

Figure 3 - 33: Reasons for Dropping Out of School, by Sex, Locality Size and Quintile

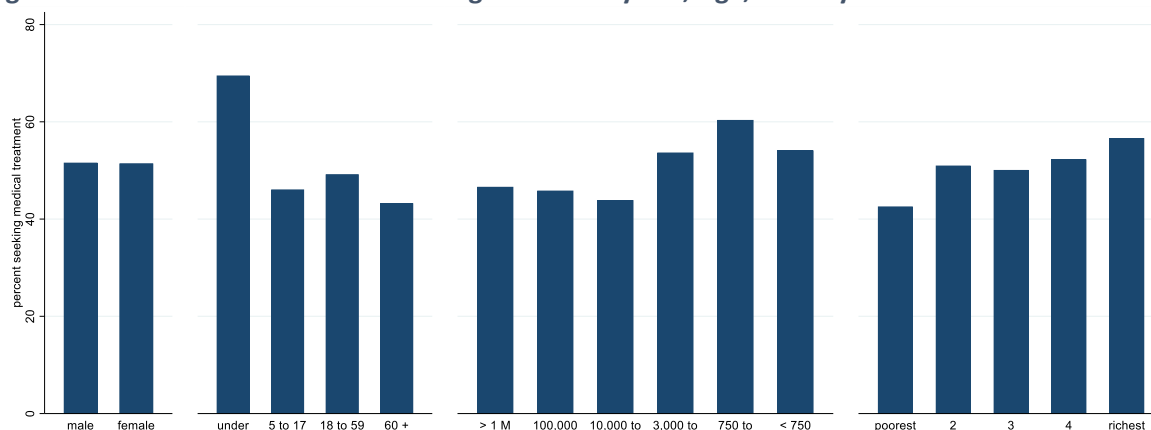


Source: Staff calculations based on SLIHS 2018.

3.58. **Treatment seeking behavior for sickness or injury shows much less difference by locality size or welfare level.** Although the poorest quintile is somewhat less likely to seek medical treatment, the difference is small, 43 percent for the poorest quintile compared to 57 percent for the richest. As seen previously, households are significantly more likely to seek treatment for a sick child under-five, perhaps

because of the free health care initiative, or perhaps because of the inherent greater seriousness of an illness in a young child, as there does not seem to be any discontinuity in the likelihood of seeking treatment at exactly age 5. Those in smaller communities are actually more likely to seek treatment than those in larger, although this may be due in part to less availability of drugs for self-treatment outside the government clinics.<sup>31</sup>

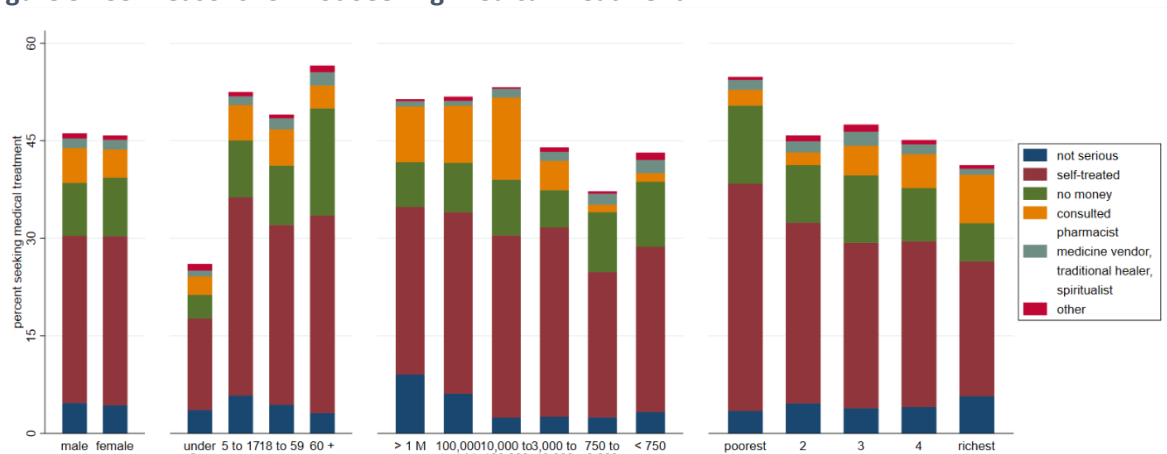
**Figure 3 - 34: Medical Treatment Seeking Behavior by Sex, Age, Locality size and Welfare**



Source: Staff calculations based on SLIHS 2018.

**3.59. Most patients who did not seek medical treatment chose to self-treat, without explicitly citing cost, distance, or quality of services available at health facilities.** Cost was cited by 22 percent of respondents for the reason medical treatment was not sought. Reasons did not vary much by demographics, location, or welfare quintile, except that use of pharmacists was greater in larger towns. Answer choices were provided on the questionnaire for “too far,” “poor services” and “not safe” but were given by less than 1 percent of respondents in each case and are subsumed under “other” in Figure 3.33.

**Figure 3 - 35: Reasons for Not Seeking Medical Treatment**



Source: Staff calculations based on SLIHS 2018.

<sup>31</sup> Although the Health PER (World Bank 2021) also highlights limited availability of drugs within the government health care system.

3.60. **Although coverage of health and education services has expanded since the end of the war to near universal levels and major programs have made an impact in reducing out-of-pocket costs, concerns over equity and quality of services remain.** Forty-five percent of the population live in the smallest communities, where they remain significantly behind the rest of the population in terms of access to health care facilities and secondary schools. The definition of access used here—5 km distance, or 30 minutes time, in most cases—is very close to the government’s own standard for schools (3 miles). It is appropriate given the poor road network and lack of transportation infrastructure. However, there is a greater burden on rural residents in terms of time and exertion to reach schools and clinics (for example, it is especially difficult for a sick person or a women in labor to get to a clinic that is 3 miles away when a vehicle may not be available.) The Health Public Expenditure Review highlights the imbalance between spending on hospitals and primary health care, and an uneven distribution of health care resources across the country as two of the main challenges. It likewise highlights the very poor health outcomes in Sierra Leone in terms of very low life expectancy (54 years in 2017). The Education Public Expenditure Review likewise highlights three main challenges, two of which are low and inequitable access and poor learning outcomes.

3.61. **Efforts are being made in both the health and education sectors to harness the power of data to improve targeting of services to close coverage gaps.** The availability of GRID3 population estimates for Sierra Leone and small area estimates of poverty from the poverty map have created a rich data environment that is beginning to be exploited. The Ministry of Health and Sanitation is concerned with the rates of high maternal mortality (717 per 100,000 live births in 2019) and how to make use of the existing network of clinics to extend the reach of basic emergency obstetric services. It carried out an extensive optimization exercise, with support from UNICEF and the World Bank (World Bank 2020a, 2020c). The Ministry of Basic and Senior Secondary Education (MBSSE) is starting to take seriously the allocation of resources (especially teachers) within the sector and is starting to develop a school catchment area planning policy with a focus on “radical inclusion,” making sure that even the most disadvantaged children, including the poorest, are included (MBSSE 2021).

3.62. **Rapidly improving the performance of these sectors is critical to prevent deficits in the current generation of children from impeding development in Sierra Leone for the next 50 years. But an educated and health population is not sufficient for economic growth and poverty reduction.** A similar approach to investments in other sectors can help provide the infrastructure for economic development for the majority of the population that is still stuck in a subsistence farming poverty trap.

#### D. Monetary and Non-Monetary Poverty

3.63. **Many countries, including Sierra Leone, are increasingly using nonmonetary, or multidimensional, poverty measures to complement the traditional monetary poverty measure.** In 2010, the United Nations Development Programme (UNDP) and the Oxford Poverty and Human Development Initiative (OPHI) launched the Multidimensional Poverty Index, which measures the multiple deprivations poor people experience, such as poor health, lack of education, inadequate living standards, disempowerment, poor quality of work, the threat of violence, and exposure to environmental hazards.<sup>32</sup>

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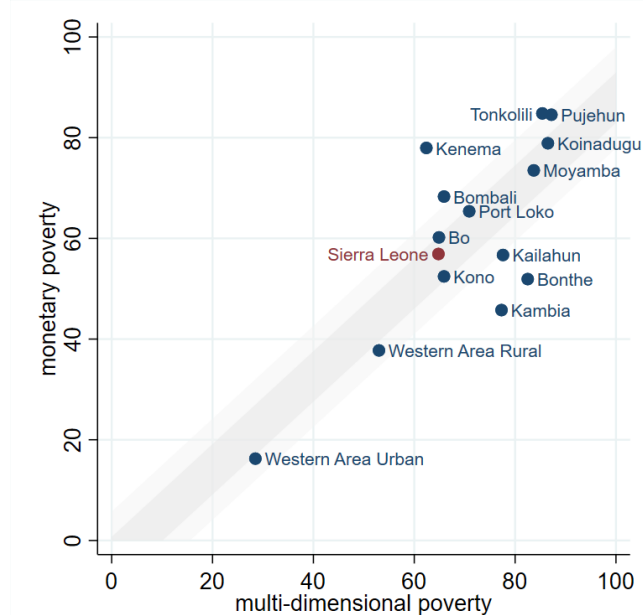
<sup>32</sup> In 2018, the World Bank launched its own multidimensional poverty index. For most countries, it covers three dimensions: monetary poverty, education, and access to basic infrastructure. The results for Sierra Leone are highly inconsistent year to year and are not considered here.

It was implemented in 2019 in Sierra Leone, in partnership with Statistics Sierra Leone, using data from the 2017 MICS. In Sierra Leone, the index focuses on deprivations in five areas:

- education (years of education, attendance)
- health (nutrition, child mortality, vaccination)
- housing (housing materials, asset ownership, overcrowding)
- living standards (water, bank account, sanitation)
- energy (Internet, cooking fuel, electricity).

3.64. There is some overlap between multidimensional poverty and monetary poverty as defined for Sierra Leone, as use value of durable goods and the value of housing occupied (which is modeled based on characteristics such as size, materials and access to utilities) are components of the welfare aggregate. Housing and durable goods, however, account for only 6 percent and 3 percent of the consumption aggregate, respectively (only 4 percent and 1 percent for poor households); food accounts for about 60 percent.

**Figure 3 - 36: Monetary and Multidimensional Poverty at District Level**



Source: Staff calculations based on SLIHS 2018 and UNDP (2019).

**these differences.** The monetary poverty measures focus solely on current consumption; the Multidimensional Poverty Index focuses on factors such as the education level of adults, characteristics of the house, and ownership of durable goods. An economic boom that provides poverty-escaping jobs will not increase the education level of adults (low levels of which may continue to impede their participation

3.65. **The Multidimensional Poverty Index gives a slightly higher poverty rate overall than the monetary measure (64.8 percent versus 58.6 percent).** But there is good correlation between the Multidimensional Poverty Index and monetary poverty at the district level, with some outliers. Outliers include Bonthé and Kambia, which have lower levels of monetary poverty than would be expected looking at multidimensional poverty, and Kenema, which has higher levels.<sup>33</sup> (Kambia benefited from the completion of the Freetown–Conakry road and from the mining boom of 2015, and Kenema was hit very hard by the Ebola outbreak, as roadblocks and travel restrictions cut it off from the second-largest city, Bo, usually just 30 minutes away).

3.66. **The two indices measure conceptually different things, which could explain some of**

<sup>33</sup> These findings are echoed by the poverty map, which imputes a value of the welfare aggregate for all households in the census based on a similar set of observed characteristics, such as education, durable goods, housing, and utilities.

in society and government), and it will take time for households to accumulate assets such as a house and durable goods. Conversely, if a household encounters economic hardship (because of job loss, crop failure, or other reasons), the education of adults will not change, and their housing status may well not change (because of thin markets for renting in much of the country and almost nonexistent markets for sales of houses, the household may be unable to liquidate this asset to put food on the table). The monetary poverty index will respond more quickly to these types of changes.

**3.67. More than any other factor, settlement size seems to determine the availability of the kinds of public and private investment that can increase productivity and decrease poverty.** Forty-five percent of the population lives in the smallest classification of settlements considered in this report, locales of one census enumeration area or about 750 people or less. The availability of all services except primary school was more limited in small settlements than in larger settlements. Major government initiatives in health and education have been only moderately pro-poor at best. For some services (such as access to clinics), people in the smallest settlements are significantly worse off than those in villages of 750–3,000 people, which are still officially categorized as rural. For others (electricity), services are highly concentrated in the largest cities.

**3.68. Although Sierra Leone is not a large country, the dispersion of the population across so many tiny settlements makes establishing the necessary infrastructure difficult** (World Bank 2021). Even in sectors like education, where coverage is higher, the cost of achieving universal coverage far outstrips the resources available. In some sectors, mobile technologies have facilitated leapfrogging, allowing households to access the Internet and banking services without laying cable or building bank branches in every village. But to date, no alternative exists to building roads and connecting electricity cables to every house to provide those services. This systematic lack of infrastructure is one driver of urban migration, as even the poorest households in Freetown do better than the richest households elsewhere on many measures

## Chapter 4: Drivers of Rural Poverty

### Introduction

**4.1. Despite economic growth and the expansion of the agricultural sector, rural poverty in Sierra Leone stagnated over the past decade.** The economy grew at an average annual rate of 4.9 percent between 2011 and 2018, with wide variation year to year, as minerals and extractives led to boom-and-bust years. Although the minerals and extractives sector has a relatively modest multiplier effect on the economy, it fueled demand in urban areas, leading to the expansion of service industries and the decline of poverty in urban areas, which fell from by 7 percentage points between 2011-2018. Because 58 percent of Sierra Leone's population lives in rural areas with limited linkages to the urban economy, growth had a weak impact on poverty reduction in rural areas. Stagnation in rural poverty is directly related to the near-zero economic growth in rural incomes, as proxied by household consumption expenditures. Nationally, annual income grew at an average rate of 1.9 percent between 2011 and 2018. The rate was 2.5 percent in urban areas and just 0.3 percent in rural areas.

**4.2. The pattern of poverty reduction in Sierra Leone follows the general pattern of slow improvements in welfare across Sub-Saharan Africa.** The World Bank report *Accelerating the Poverty Reduction in Africa* (Beegle and Christiaensen 2019) links the slow reduction of poverty on the continent to high fertility, dependence on minerals and natural resources, low human capital, and conflicts and risks. Perpetuation of poverty is related to the lack of household assets and access to infrastructure and public goods, which constrain the generation of income-earning opportunities, especially in rural areas.

**4.3. The main economic activity in rural areas of Sierra Leone is small-scale crop farming.** The agricultural sector is the backbone of Sierra Leone's economy, contributing about 50 percent to GDP, according to and employing two-thirds of the country's labor force.<sup>34</sup> Of the country's estimated 1.4 million households, 53 percent have access to agricultural land. Sierra Leone is endowed with substantial amount of land – over 3.9 million hectares of agricultural land<sup>35</sup>. Humid climate with significant, relatively reliable annual rainfall of 2,500-3,000 milliliters (Wadsworth, Jalloh, & Lebbie, 2019), along with fertile soil in both upland and lowland areas provide opportunities for growing produce for both domestic consumption and export. However, rural farm households are the poorest group of population with poverty incidence of 76 percent compared to 32 percent among non-farmers. Rural farmers have small land plots, limited access to and use of agricultural inputs, low human capital, and low levels of commercialization. This section of the report seeks to better understand the livelihood strategies of the rural farming households and shed some light on welfare in rural areas.

**4.4. The overarching question is why rural poverty in Sierra Leone remains persistently high.** Poverty stagnation among farmers is a puzzle given increases in GDP and average annual growth of 3.5 percent in the agriculture sector between 2011 and 2018. Virtually all rural households depend on agriculture and farming for their livelihood. The link between rural households and agriculture is direct: the majority of rural household are farmers that grow staple food and cash crops and trade agricultural produce and inputs, including labor. To understand rural income stagnation, this chapter explores changes in the main sources of income of rural households, investigates changes in rural livelihood and demographic patterns

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<sup>34</sup> See <https://www.statistics.sl/index.php/gdp.html>.

<sup>35</sup> See (<https://www.fao.org/faostat/en/#data>)

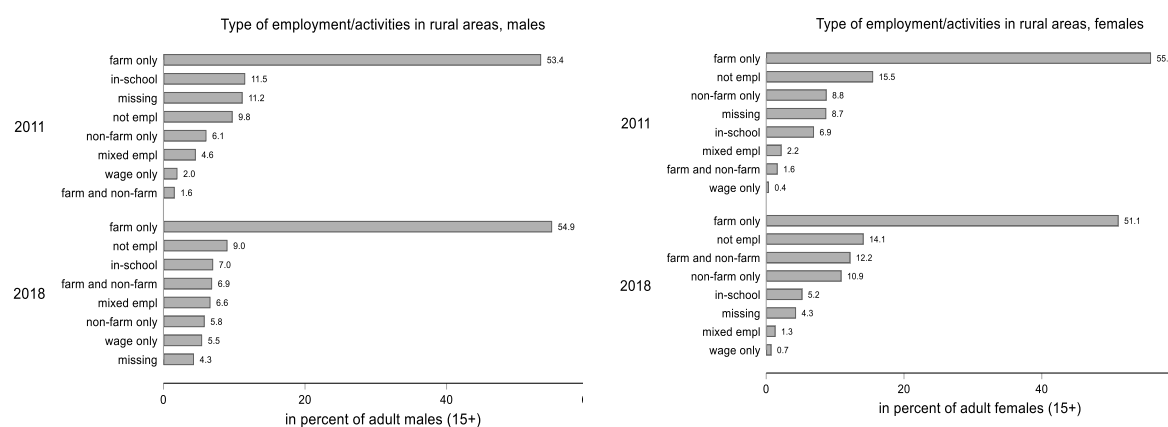
over the years, and analyzes the differences between poor and nonpoor farmers. The main question of policy interest is whether the rural sector and farming represent a geographic, sectoral poverty trap or an unexploited opportunity constrained by exogenous factors.

## Observed trends in the rural areas, 2011-2018

### *Demographic and employment changes*

**4.5. The overarching question is why rural poverty in Sierra Leone remains persistently high.** Poverty stagnation among farmers is a puzzle given increases in GDP and average annual growth of 3.5 percent in the agriculture sector between 2011 and 2018. Virtually all rural households depend on agriculture and farming for their livelihood. The link between rural households and agriculture is direct: the majority of rural household are farmers that grow staple food and cash crops and trade agricultural produce and inputs, including labor. To understand rural income stagnation, this chapter explores changes in the main sources of income of rural households, investigates changes in rural livelihood and demographic patterns over the years, and analyzes the differences between poor and nonpoor farmers. The main question of policy interest is whether the rural sector and farming represent a geographic, sectoral poverty trap or an unexploited opportunity constrained by exogenous factors).

**Figure 4 - 1: Employment activities of adult males and females**



Source: Staff estimates based on SLIHS 2011 and 2018

## Changes in the farming patterns

### *Land and plot size*

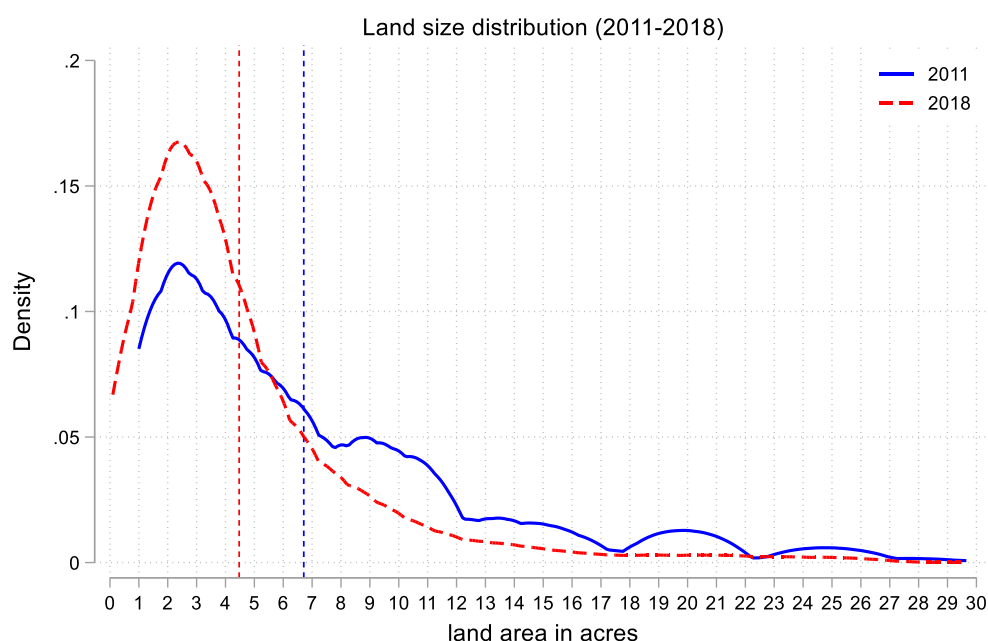
**4.6. Arable land is declining in Sierra Leone.** 65 million hectares (ha) in 2011 to 1.58 million ha in 2018, a decline of 4 percent. Data from household surveys reveal that the total land area cultivated by farming households also declined, from 2.03 million hectares in 2011 to 1.59 million ha in 2018. As the land area operated by farming households in the Sierra Leone Integrated Household Survey (SLIHS) is self-reported,<sup>36</sup> the estimates are only approximate, but they may nevertheless reveal a trend. They suggest

<sup>36</sup> In addition to self-reported values of land size, the SLIHS 2018 measured land plots using GPS tools. The correlation between self-reported and GPS measured values is 0.8, which points to the good but not perfect accuracy of household responses.



that the average area of cultivated land per farming household declined from 6.7 acres (2.7 ha) in 2011 to 4.4 acres (1.8 ha) in 2018.<sup>37, 38</sup>

**Figure 4 - 2: Distribution of landholding size across households, 2011 and 2018**



Source: Staff estimates based on SLIHS 2011 and 2018

**4.7. Land rights legislation and administration in Sierra Leone.** In western Sierra Leone (the metropolitan Freetown area), land is under freehold. In the rest of the country, land is under customary tenure, with paramount chiefs serving as trustees of communal land (Rexford and others 2019). The freehold system is ineffective and suffers from lack of capacity and limited resources to properly administer land registration. The customary land tenure system is vulnerable to arbitrary practices. It lacks credible safeguards (there are, for example, no land plot boundaries) and coherent land management rules (Johnson 2011). Apart from the negative productivity implications of insecure customary land tenure, the system potentially reduces the best use of land and mobility of agricultural households, which affects the allocative efficiency of land use. Insecure land rights also leaves rural households vulnerable to land-grabbing by foreign investors (Hofman and others 2019). Upcoming World Bank development policy financing will aim to support the government's actions to finalize and adopt the Land Commission and Customary Land Rights Bills, which would enhance land rights and access in an equitable manner. The capacity for land administration also needs to be strengthened, to ensure the security of land tenure and promote market-oriented land institutions.

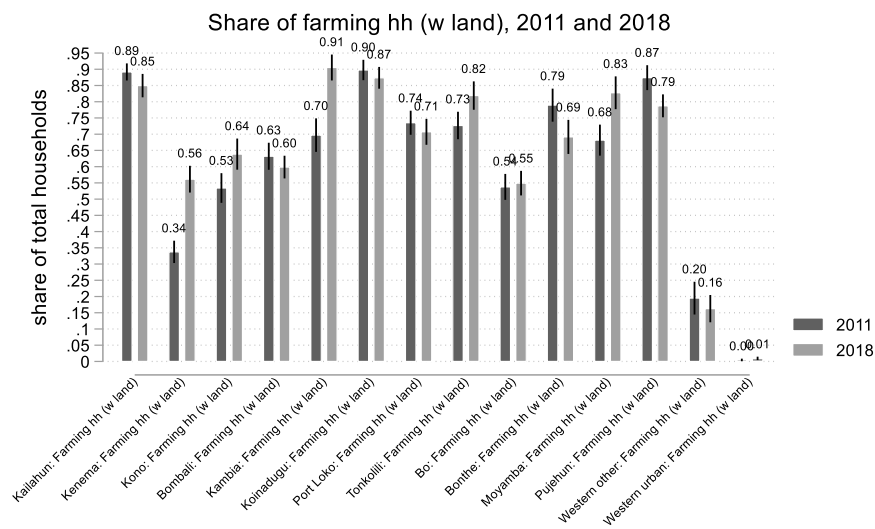
<sup>37</sup> To mitigate the influence of outliers, the estimation of mean values excludes observations of land size above 30 acres.

<sup>38</sup> Given the implication of the declining plot size, the data from the 2010 and 2017 Multiple Indicator Cluster Surveys (MICS) were used to cross-check the trend. MICS data reveal that the average size of landholding of households declined from 9.3 acres in 2010 to 4.5 acres in 2017.

4.8. **The share of households that have access to farming land increased only slightly between 2011 and 2018, but the number of farming households in rural areas increased.** Based on information from the 2015 census, Statistics Sierra Leone reports that 57.9 percent of all households can be classified as agrarian. The 2010 and 2017 Multiple Indicator Cluster Surveys (MICS) reveal that the share of households that own agricultural land remained largely unchanged (58 percent in 2010 and 57 percent in 2017). The 2011 and 2018 SLIHS estimate the share of households that had access to farmland at 52.2 percent in 2011 and 55.7 in 2018. The number of farming households increased considerably, rising from 545,000 in 2011 to 786,000 in 2018. This increase may explain the reduction in the size of the average landholding per household. The share of arable land area in total land area declined slightly, from 22.9 percent in 2011 to 21.9 percent in 2018. Sierra Leone ranks at the bottom among low-income countries in terms of average land holding per farming family (Lowder, Skoet, and Raney 2016).

4.9. **There is a geographic variation of farm household prevalence, but in general across the districts the share of agricultural households in total population has only marginally changed.** In four districts:

**Figure 4 - 3: Prevalence of farming across districts**



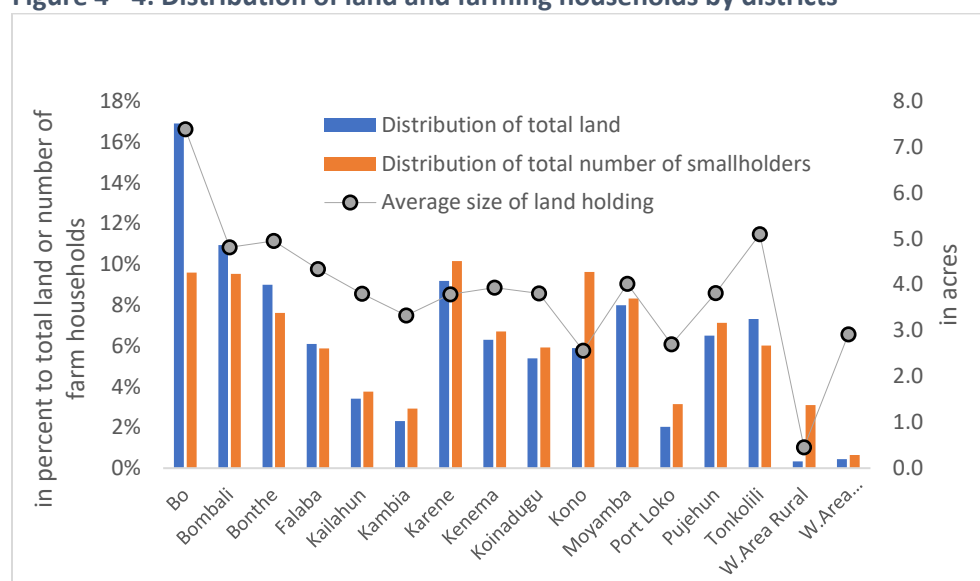
Source: Staff calculations based on SLIHS 2011 and 2018.

This underlines the importance of farming for livelihoods across regions, but also points to low mobility of households out of agricultural activities.

4.10. **The distribution of land and farming households varies across districts.** The Bo district has the highest average plot per farming household, at 7.4 acres. It accounts for 17 percent of all farming land in Sierra Leone, the largest share in the country. At the same time, only 55 percent of households are farmers, one of the smallest shares in the country. Apart from the Western Area, the Kono district has the lowest mean plot size, at just 2.6 acres. The share of farming households there rose from 53 percent in 2011 to 64 in 2018. In other districts where the share of farming households increased, a growing farming population has put pressure on land availability. Given that the cropping system in Sierra Leone is

predominantly slash and burn, which requires regeneration of soil fertility, the availability and productivity of crop land declines over time.

**Figure 4 - 4: Distribution of land and farming households by districts**

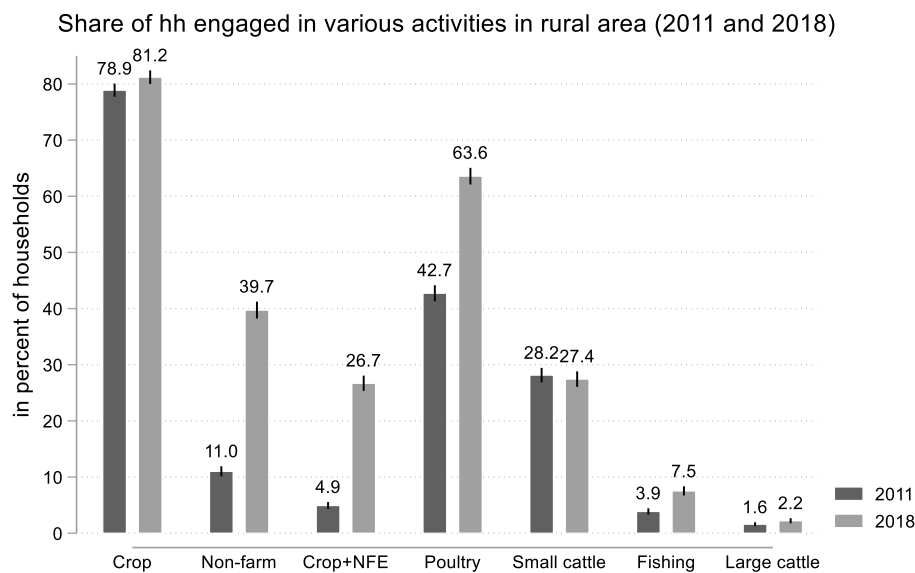


Source: Staff estimates based on SLIHS 2018

### Crops

**4.11. The cultivation of crops is the primary source of income in rural areas; engagement in nonfarm activities is a secondary occupation but is slowly picking up.** More than 80 percent of households engaged in growing some type of crop, that share has slightly increased as compared to 2011. However, rural households are also increasingly engaged in non-farm activities, as the share of rural households who have some non-farm business has increased from 11 to almost 40 percent between 2011 and 2018. Another expanding activity is poultry, which is often combined with plant cultivation. Despite some government efforts to promote raising sheep and goats as way to increase rural incomes, the share of households that own small livestock has not changed. Cattle breeding is traditionally carried out by specific groups/tribes; it remains a marginal activity in Sierra Leone. The share of households involved in fishing has marginally increased to 7.5 percent but remains an untapped opportunity for households along the coastal areas.

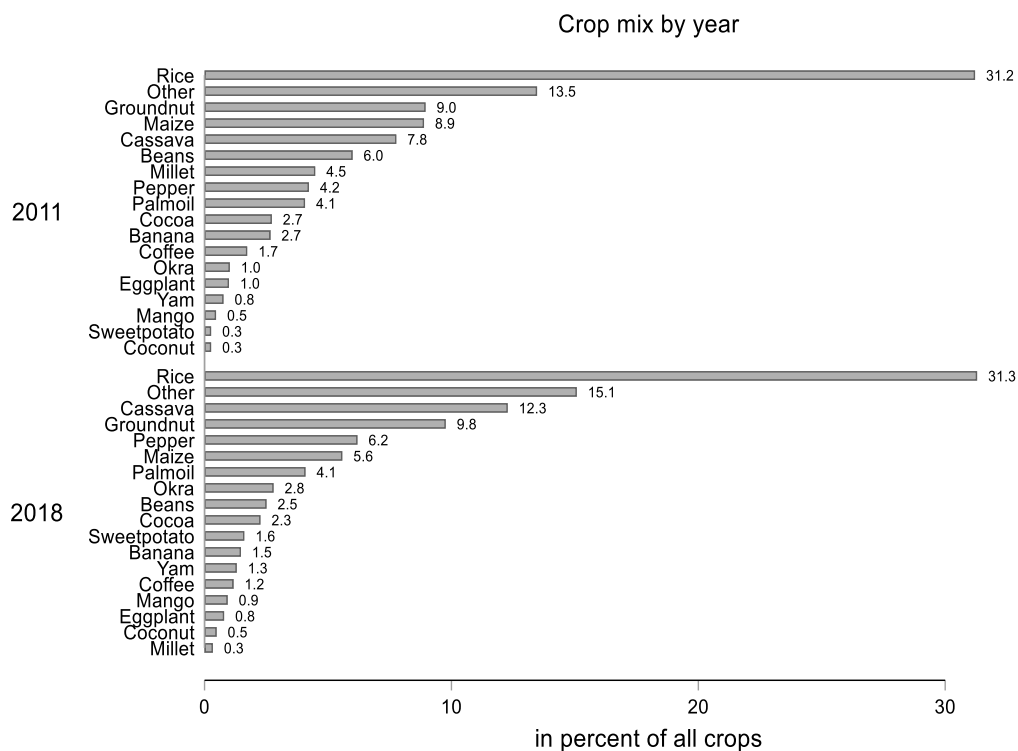
**Figure 4 - 5: Type of activities in the rural areas**



Source: Staff estimates based on SLIHS 2011 and 2018

**4.12. Rice remains the major farming crop for farming households, representing almost a third of all crops grown by farming households (by value).** The figure changed little between 2011 and 2018. The share of cassava cropping increased, from 7.8 percent in 2011 to 12.3 percent in 2018. Groundnut is also important, as both a cash and food crop. It represented 9.8 percent of farming crop output in 2018. The importance of maize, beans, and millet sharply declined between 2011 and 2018 and the importance of pepper increased. The importance of cash crops did not change. Oil palm represented 4.1 percent, cocoa 2.3 percent, and coffee 1.2 percent of the farming crop portfolio in 2018, roughly the same as in 2011.

**Figure 4 - 6: Crop portfolio of farming households**

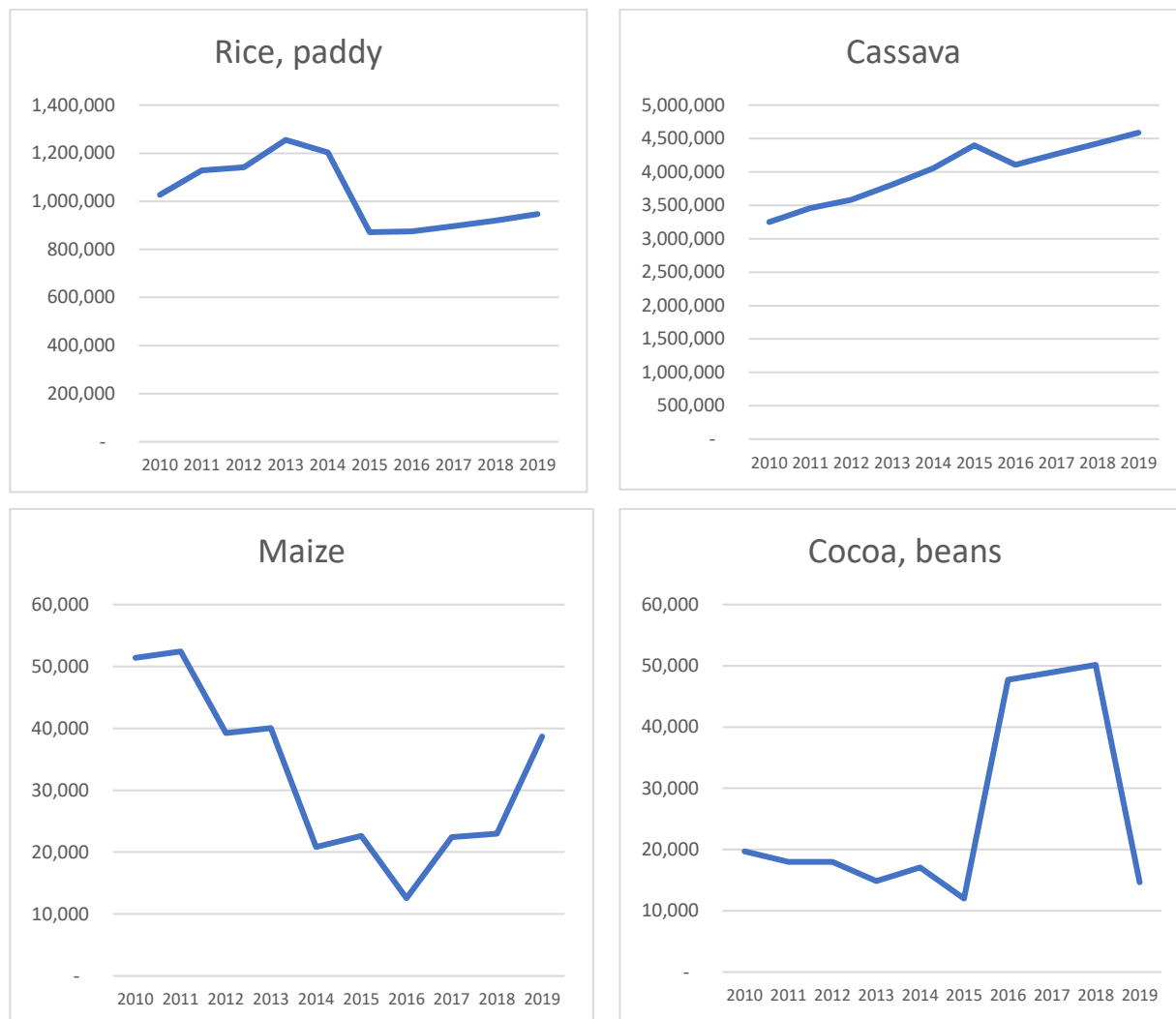


Source: Staff estimates based on SLIHS 2011 and 2018

**4.13. Production of main crops declined between 2011 and 2018.** Domestic production of paddy rice fell from 1.1 million tons in 2011 to 0.9 million tons in 2019 according to the FAO, and the share of farming households that cultivate rice declined, from 91 percent in 2011 to 79 percent in 2018. The share of farmers raising rice declined in all districts. The largest reduction was in the Bonthe and Bo districts, where the share of rice-growing households declined by 20 percentage points.

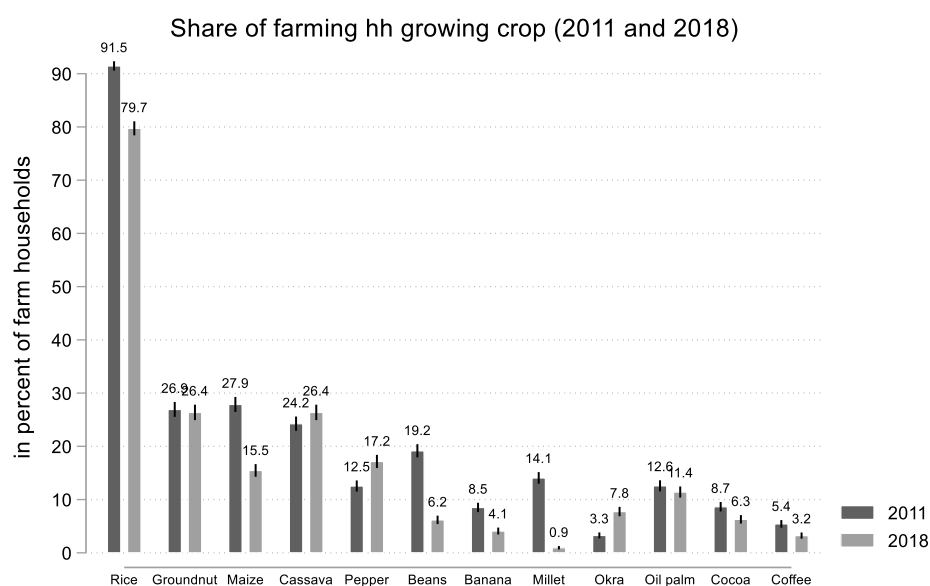
**4.14. The share of farmers that grow cassava increased significantly.** In the Bo district, the share of cassava-cultivating households increased from 38 percent in 2011 to 68 percent in 2018. Production of cassava increased every year between 2011 and 2018. Although cassava is not likely to substitute for rice in the near or even long term, its popularity will likely keep expanding, thanks to its reliability and resistance to pests and droughts.

**Figure 4 - 7: Domestic production of select set of crops**  
in tonnes per year



Source: <http://www.fao.org/faostat/en/#data/QC>

**Figure 4 - 8: Prevalence of households growing specific crop**

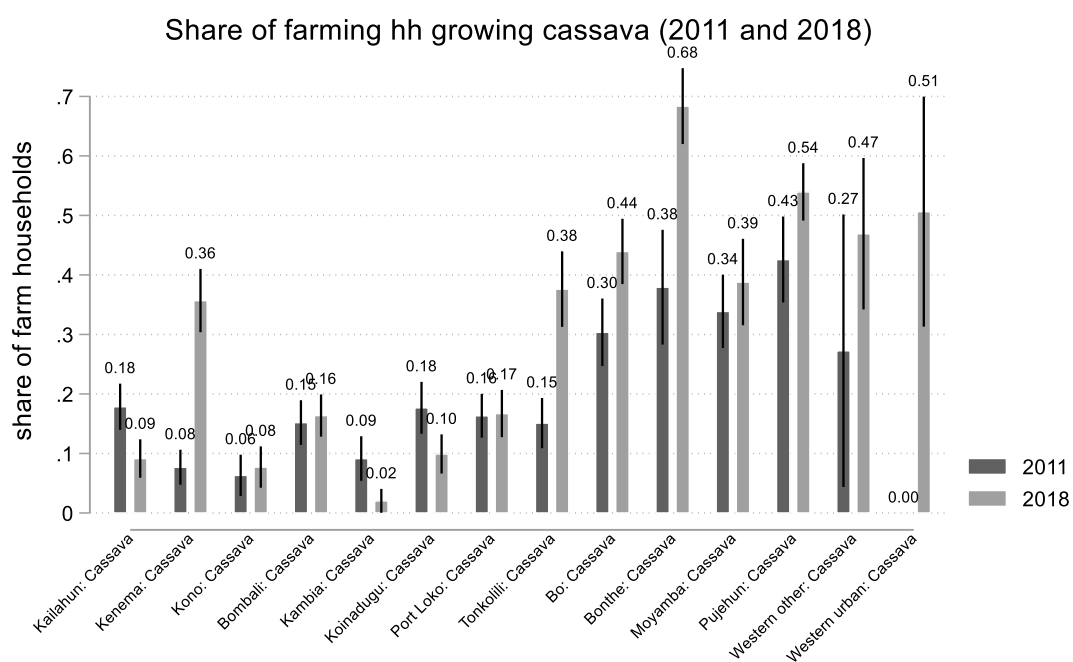
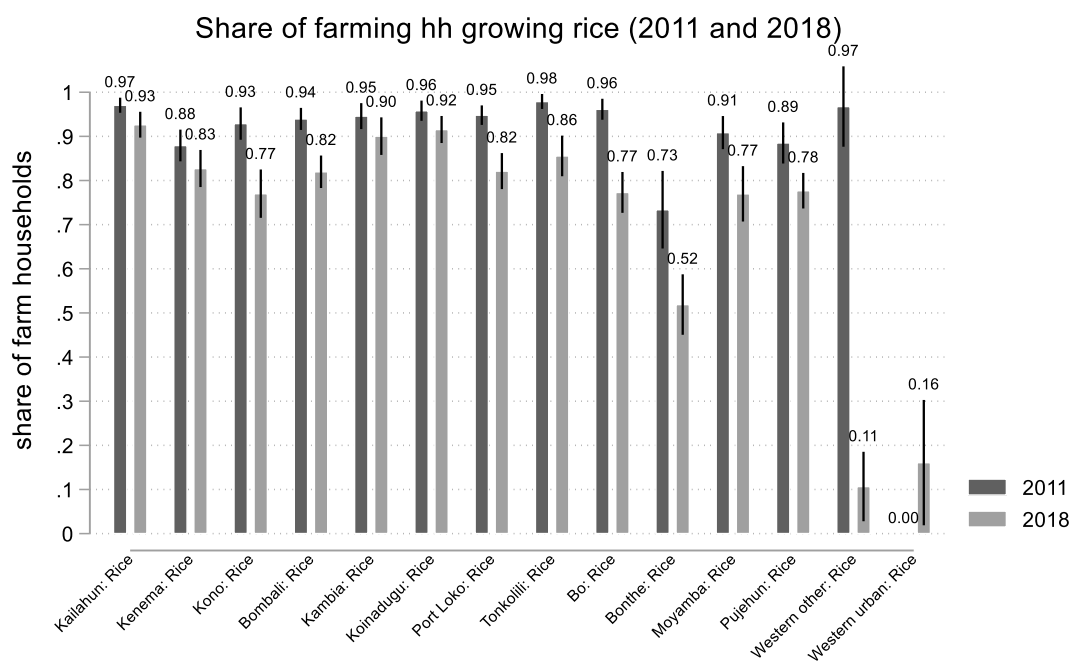


Source: Staff estimates based on SLIHS 2011 and 2018. Note: HH=household.

**4.15. The share of farmers growing cash crops (oil palm fruit and cocoa) declined slightly, but with variations across districts.** In almost all districts, the number of farm households cropping of oil palm has increased, but in Bonthé and Pujehun the share of oil palm growers declined. Overall, while there was some re-ranking of food crops among farming households, the share of cash crop growing households has not been increasing. Low levels of cash crop cultivation reduce the potential for commercialization of farming activities and is an important finding that contributes to the understanding of the negligible growth of farming incomes in rural areas of Sierra Leone. This may also reflect the trade-offs the households face in cultivating food versus cash crops, as the former appears more important for rural livelihoods.

**4.16. In the context of market failures, growing cash crops could be perceived as a high-risk strategy,** compared to food crops, which while yielding low returns provide a reliable livelihood. An important source of heterogeneity among farming households comes from agro-geographic variation. For example, some regions seem to be specializing in growing cocoa (Kailahun, Kenema, Kono); some districts grow more palm oil (Kailahun, Port Loko, Tonkolili, Bo, Pujehun) but at the same time across all districts more than 70 percent of farming households are engaged in rice cultivation for ensuring own food security. Clearly, the large part of crop specialization is linked to the climatic conditions and agro-ecological suitability of crops, but for cash crop like cocoa, the marketing infrastructure (e.g., big markets/buyers) plays an important role in motivating farmers to select the optimal crop portfolio.

**Figure 4 - 9: Prevalence of rice and cassava cultivating among farmers by districts**



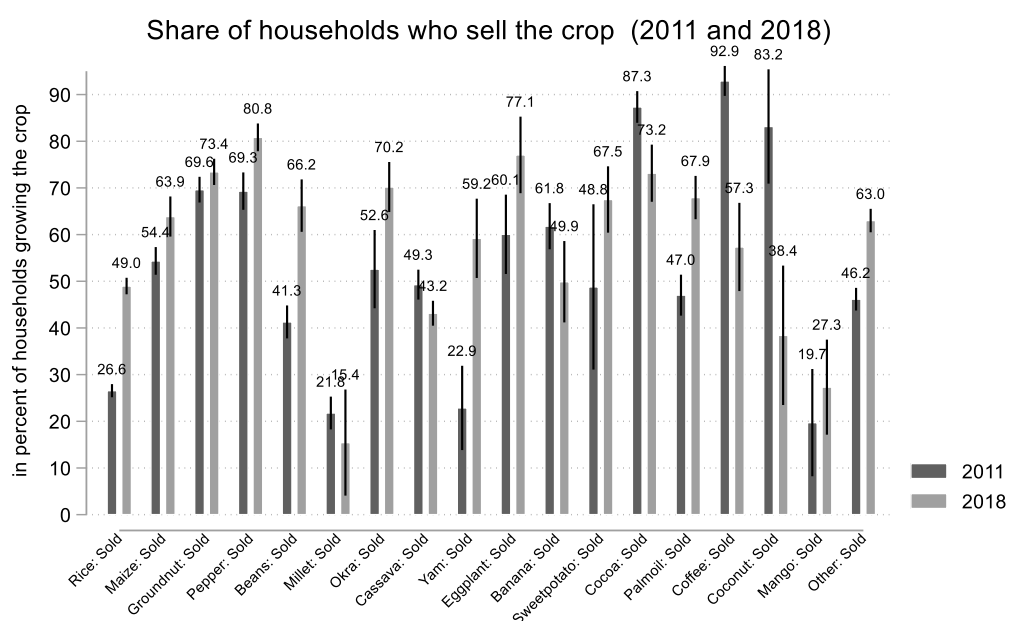
Source: Staff estimates based on SLIHS 2011 and 2018

**4.17. Many farming households sell their produce.** The most frequently cultivated crop is rice, but the share of households that sell rice is much lower, although it almost doubled between 2011 and 2018, from



26 percent to 49 percent. In contrast, only about 12 percent of farmers cultivate pepper, but almost 80 percent of pepper growers report selling part of their harvest. The share of farmers that sell some part of their major crops increased, and the share of farmers that sell cocoa and coffee declined. Research is needed to determine whether the shift to the marketing of staple crops rather than cash crops is likely to continue. Growing specialization in the domestic food market, rather than cash crop exports, might reflect hurdles in accessing the value chain infrastructure.

**Figure 4 - 10: Prevalence of crop marketing**

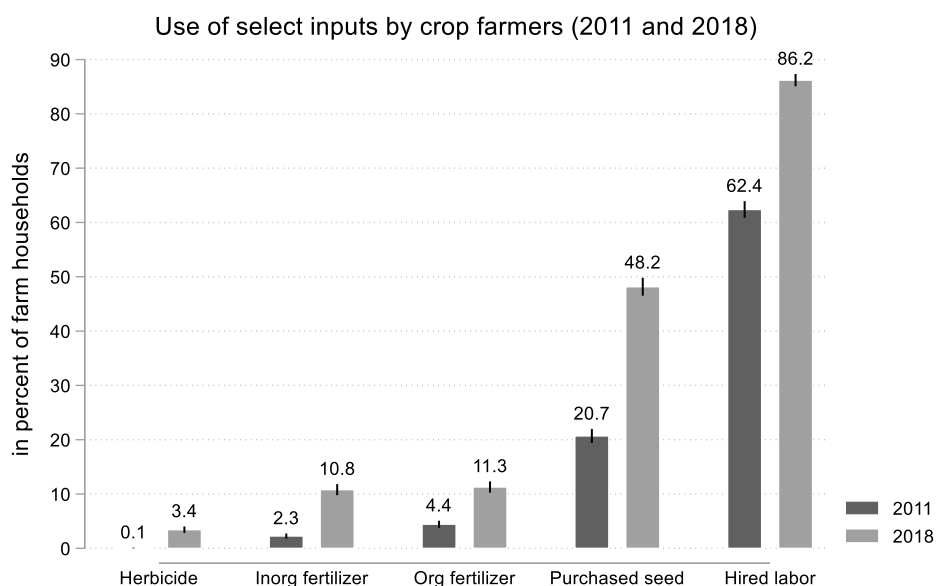


Source: Staff estimates based on SLIHS 2011 and 2018

**4.18. Despite the larger share of households selling their output, the main objective of agricultural households appears to be food self-sufficiency.** Among farmers, just 30–40 percent of total food consumption value is covered by own production. Most agricultural households grow only staples—rice, cassava, and/or groundnut—and are not well-diversified. A growing share of households sell their surplus harvest, but this appears to not be motivated by expand the farm production or garnering business profits, but rather to cover other cash needs like nonfood expenses.

**4.19. The share of households applying agricultural inputs, including labor, increased between 2011 and 2018.** In 2018, 86 percent of farming households reported hiring labor at some stage of crop cultivation (planting, weeding, or harvesting). The share of farmers using purchased (albeit not necessarily improved) seed more than doubled between 2011 and 2018, rising from 20 percent to 48 percent. The share of farmers applying organic or inorganic fertilizers and herbicides increased, but it remains very low, at just 11 percent for fertilizers and 3 percent for herbicide. Low usage of both is partly responsible for low crop yields and high levels of harvest loss.

**Figure 4 - 11: Prevalence of using agricultural inputs**



Source: Staff estimates based on SLIHS 2011 and 2018. Note: Inorg=inorganic and Org=organic.

#### *Rice yields*

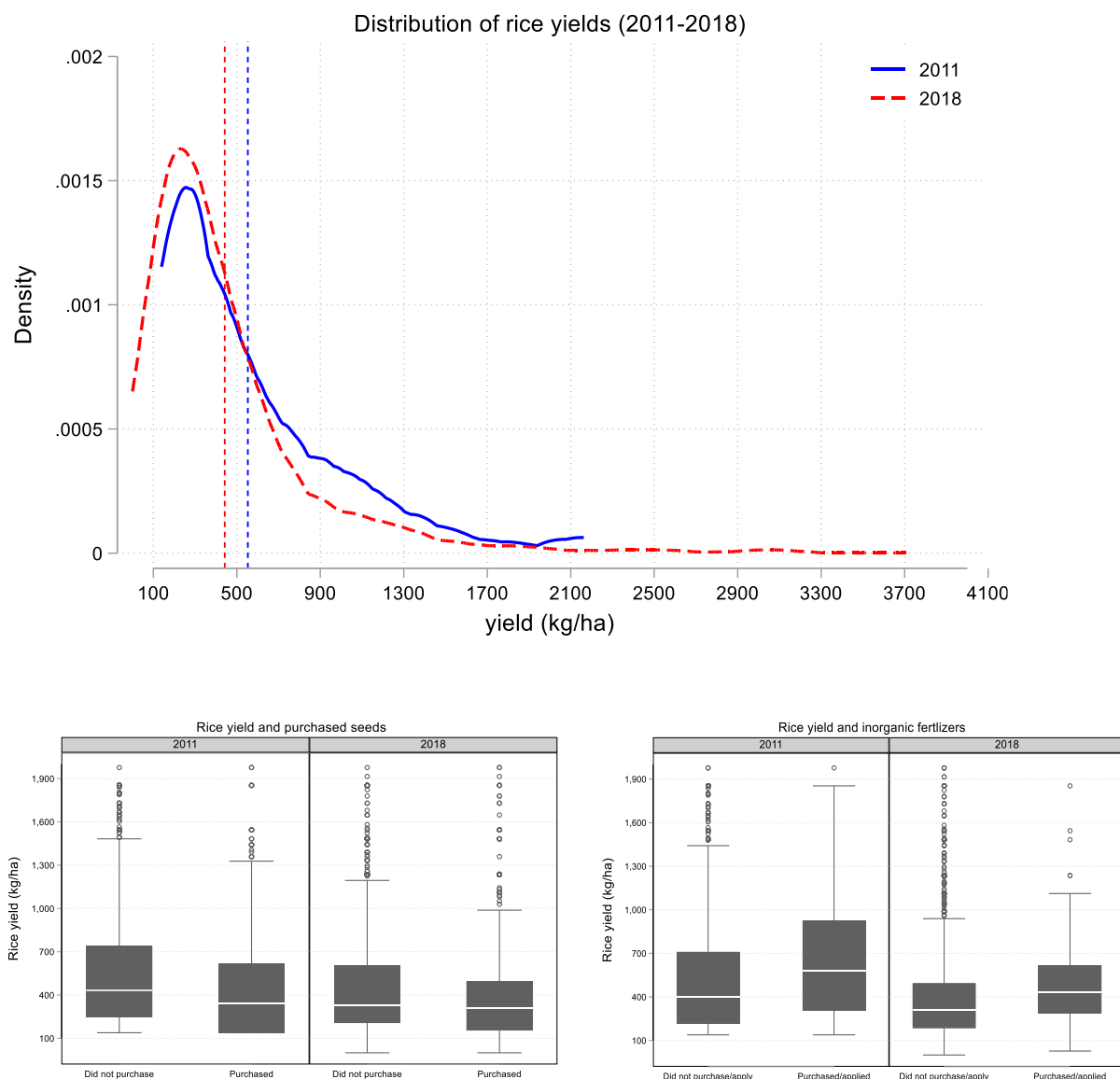
4.20. **Rice yields appear to have declined between 2011 and 2018.**<sup>39</sup> Among smallholders, average reported yields per ha fell from about 550 kg in 2011 to about 440 kg in 2018.<sup>40</sup> Declining yields shed light on why rural incomes have not increased in recent years.

4.21. **Rice yields are only weakly related to selected inputs.** Yields vary in response to application of select inputs. They are higher among households that purchased and applied inorganic fertilizers (402 kg/ha versus 500 kg/ha in 2018). Farmers that used purchased seed had lower yields than farmers that did not, however (373 kg versus 442 kg/ha). Larger plot size devoted to rice is also associated with lower rice yields, possibly because they are likely located in remote areas and therefore given less attention. Households that engaged in selling rice have higher average yields than those that do not (454 kg/ha versus 340 kg/ha).

<sup>39</sup> Calculating crop yields is challenging, because of the weak quality of data on the amount of harvested crop and the plot size at the household level. Households in rural areas use nonstandard units of measurement (“T-pence pan,” “kerosene tin,” “tuber” etc.), and few measure the harvest quantity (values reported in the survey are estimates by respondents). Calculations should therefore be taken as indicative and pointing to a pattern of change rather than reflecting absolute numbers.

<sup>40</sup> Graham, Tchale, and Ndione (2020) report average yields of 970 kilogram per ha. SLIHS data do not cover large nonhousehold entities that grow rice (such as large commercial farming enterprises), which may account for difference.

**Figure 4 - 12: Rice yields and inputs among small-holding farmers**



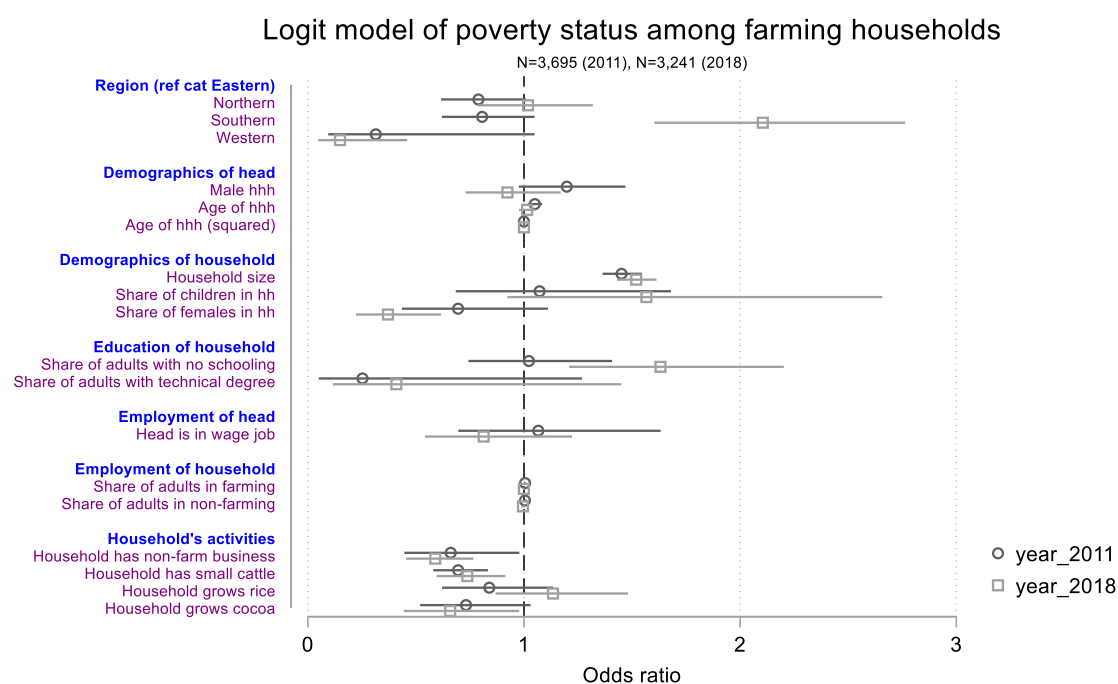
Source: Staff estimates based on SLIHS 2011 and 2018

**4.22. Changes in rural livelihood patterns between 2011 and 2018 affected the correlates and probabilities of falling into poverty (figure 4.13).** Trends in demographics, land size, crop mix, yields, farming practices, and the extent of engagement in nonfarm activities affected the poverty profile in rural areas. Rural households in the South and North were more likely to be poor in 2018 than in 2011. In contrast, the probability of falling into poverty declined slightly in the East and West. The share of female-headed households in rural area remained at 25 percent.<sup>41</sup> In 2018, male-headed farming households

<sup>41</sup> This category combines three groups: women who have been widowed or divorced, better-educated women who can afford to be a single head of family, and women in polygamous marriages. For modeling, it is assumed that the definition of female-headed household remained unchanged between 2011 and 2018.

were more likely to be poor than female-headed households. Other demographic characteristics of farming households, including having more children and having more adults with no schooling, also affect the probability of being poor. In 2011, growing rice was associated with a lower probability of being poor, but in 2018 the cultivation of rice was associated with an increased risk of poverty. As expected, diversifying livelihoods by engaging in nonfarm activities reduced the likelihood of poverty in both years.

**Figure 4 - 13: Results of the logit regression of rural poverty correlates**



Source: SLIHS 2011-2018

**4.23. Sierra Leone's economy grew between 2011 and 2018, but few of the benefits accrued to rural areas, as evidenced by stagnant levels of rural poverty.** For rural pro-poor growth to take place, farm households' productivity needs to be enhanced. The rate of commercialization of farm production and diversification into cash crops and nonfarm activities need to significantly increase. In Southeast Asia, moving up the agricultural value chain and out of agriculture contributed to poverty reduction among farmers in rural areas (Lanjouw and Murgai 2009). This pattern is not observed in Sierra Leone.

**4.24. The trends as described above have contributed to the observed dynamics of rural poverty and incomes.** Among farm households the landholding for crop cultivation is shrinking, as the mean size of the land per households has been decreasing. This is not related to the low overall availability of agricultural land, but to the growing number of households and larger household size of farm families competing for existing land in the context of low labor mobility. Rice remains the dominant produce in the crop portfolio, but the share of household growing rice has been declining, while number of cassava farmers is growing. Also, the shares of traditional cash crops – cocoa, coffee, and oil palm - have not been increasing. The mean yield of rice has also not increased between the SLIHS rounds and remains very low as compared to other SSA countries, reflecting the low use of productivity enhancing inputs (e.g., fertilizers and improved seeds). These trends were key to depressed rural incomes and welfare stagnation.

4.25. **Increasing number of farm households are selling the crop output, but this has not led to expansion of commercial farming.** Various staple and cash crops are being marketed but given the dominance of rice as major crop, selling rice is the most important source of cash for farm households. However, the true commercialization is not taking place, as many households are compelled to sell the crop right after the harvest time, while also buying rice and other food items at the higher prices. Based on the SLIHS data, under 5 percent of farming households are fully self-sufficient in rice (i.e., own production covers own consumption), the rest mostly satisfy their seasonal needs and do not pursue the commercial production. The type of commercialization whereby farm households are closely integrated into the domestic value chain, constantly increase yields, and use the productivity increasing inputs/technologies has not been yet observed.

4.26. **Farm households in the rural areas of Sierra Leone increasingly engage in rural non-farm activities, but this involvement is mostly complementing the farm work.** In other words, farm activities remain the dominant source of livelihoods for rural households, while non-farm activities are mostly off-season or home-based work to fill the underemployment gaps. The off-farm opportunities for rural households are relatively scarce, limited to the areas where urban centers are reachable (i.e., conditioned to infrastructure availability) and ultimately related to the farm activities (e.g., small-scale food processing and trade, transport). As population growth rates in both rural and urban areas is high, the opportunities for leaving agriculture in the rural areas remain few. The limits of moving up of agricultural value chain as reflected by low yields and low commercialization are likely forcing farm households to diversify the sources of income in non-farm domains. The observed growth in the non-farm activities is taking place in the background of declining share of households growing rice and shrinking average land holding size. This appears to be a strategy to mitigate/diversify the risks that some better-off rural households resort to, as opposed to strategy of exploiting new income opportunities.

4.27. **Overall, there has been continued low productivity in agricultural production, against the background of low input use and access to the markets.** This has been exacerbated by high rural population growth and leads ultimately to depressed rural incomes. At the same time, rural households appear to have re-oriented economic activity to increasing involvement in non-farm activities and migrating to urban areas. These strategies have alleviated the downward income pressures, resulting in stagnant income growth but persistent poverty.

#### Impact of COVID related economic crises on the farmers and rural areas

4.28. **Sierra Leone's economy grew modestly in recent years before contracting 2.0 percent in 2020 and growing by just 2.9 percent in 2021.** The decline in 2020 was caused largely by the 3.2 percent contraction in services and the 0.2 contraction in industry. As in other countries, the agricultural sector in Sierra Leone continued to expand during the first year of the pandemic, albeit at a slower rate (1.6 percent, down from 2.8 percent in 2019). Nationally, poverty likely increased in 2020. In contrast, in rural areas the incidence of poverty remained largely unchanged, hovering at about 71 percent of the population.

4.29. **Evidence from cellphone surveys conducted in Burkina Faso, Ethiopia, Malawi, Nigeria, and Uganda suggests that although the pandemic did not spare farming, it affected it less than other sectors** (Amankwah and Gourlay 2021). As the government response to the COVID-19 crisis consisted in large part of mobility constraints, it is not surprising that sectors and areas that were most affected were the ones in which agglomeration and human contact are important for economic activity services, industry sectors,

and urban areas. Initially, there were fears that supply chain disruptions—in transportation, processing, trading of goods and inputs—and mobility constraints on hired agricultural labor would force farmers to reduce their activities (Ayanlade and Radeny 2020). In fact, the share of households engaged in agricultural activities in studied countries has been expanding since the onset of the pandemic, pointing to the buffer role played by agriculture during economic crises (Amankwah and Gourlay 2021). Although there is no evidence that people migrated to rural areas, rural areas and farming may have served as a buffer livelihood strategy for both rural and urban households.

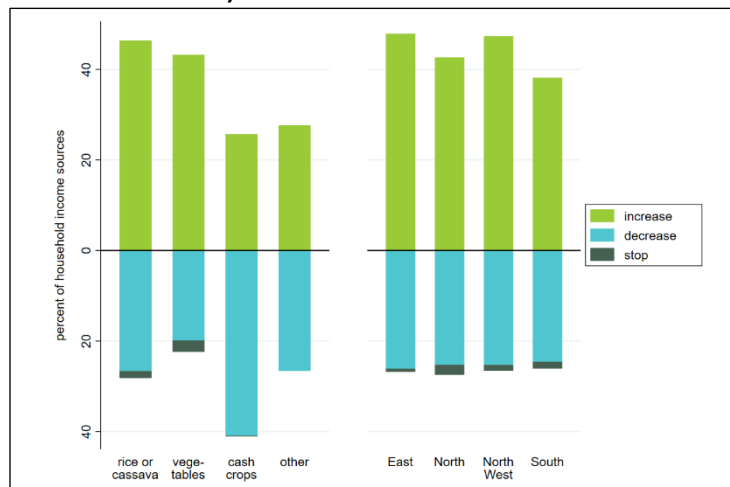
**4.30. Households cultivating staple crops experienced an increase in income in late 2020 compared to the previous year.** Data on household welfare come primarily from two rounds of the COVID-19 Impact Monitoring Surveys (CIMS) conducted in July and November 2020 and a World Food Programme survey conducted in November 2020. Findings from the surveys include the following:

- a. Two-thirds of rural households reported planting less rice in 2020 than in 2019. The most common reason given was lack of money to buy seeds—an unsurprising finding given that most households saw a decrease in income sources between March and July 2020.
- b. Incomes from rice and cassava were higher in November 2020 than in November 2019. This finding may reflect additional effort and labor put into farm activities, as employment opportunities elsewhere were less profitable or ceased altogether, as well as the increase in labor by children during school closures.
- c. The area planted with rice increased 6 percent, and production of rice rose 25 percent in 2020. Together with higher demand and rice prices,<sup>42</sup> this finding helps explain why farmers' incomes were higher in 2020 than in 2019. Average income from vegetables was also higher than the previous year.
- d. Average income from cash crops declined, although households reported that prices for cash crops were mostly the same (50 percent of households) or higher (37 percent) than the previous year. Many households reported that it was more difficult (41 percent of respondents) or more expensive (35 percent) to transport crops to market or that the usual crop buyers came less frequently (37 percent).

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<sup>42</sup> Local rice prices (outside of Freetown) were 6.7 percent higher in November 2020 than in November 2019, according to the FAO's FPMA tool.

**Figure 4 - 14: Changes in Income from Agriculture (November 2019 to November 2020)**



Source: Staff calculations based on CIMS.

The Government of Sierra Leone did allocate substantial additional funding to agriculture in the supplementary budget passed in July 2020 in response to the pandemic, focusing on providing inputs such as agricultural chemicals and seedlings, and improving access to mechanization and extension services. Another large portion of the supplementary budget went to labor-intensive public works projects mainly in roads.

Why are some farming households poor and others not?

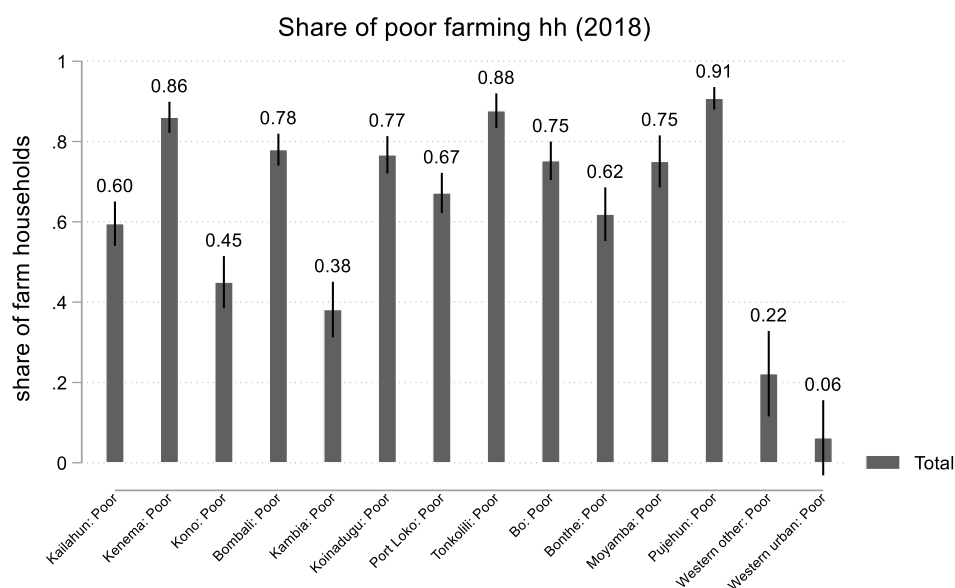
**4.31. About 30 percent of farmers in Sierra Leone are not poor.** Understanding the differences between poor and nonpoor farmers can help identify the sources of rural poverty and potential economic policies to better target poor rural households.

**4.32. In other countries, rural income growth has been associated with increasing the share of farmers moving from subsistence to commercial production via yield improvements and agricultural technology adoption.** The persistence of subsistence farming in Sierra Leone points to the presence of incentive, mobility, and infrastructural constraints beyond the simple lack of technology and inputs. Contrasting poor and nonpoor farmers could help identify them.

**4.33. There is heterogeneity across farmers, especially regarding commercialization.** Farmers in Sierra Leone can be divided into two groups: farmers that seek nothing more than food self-sufficiency, with limited capital and motivation to increase the farm production, and farmers that have accumulated economic resources and are able to increase production beyond food self-sufficiency levels.

**4.34. Poverty levels vary across districts (figure 4.15).** The districts in which the share of poverty is highest among farmers are Pujehun (91 percent) and Tonkolil (88 percent). The districts in which the share of poverty is lowest among farmers are Kambia (38 percent) and Kono (45 percent).

**Figure 4 - 15: Prevalence of poor farmers by districts**



Source: Staff estimates based on SLIHS 2011 and 2018

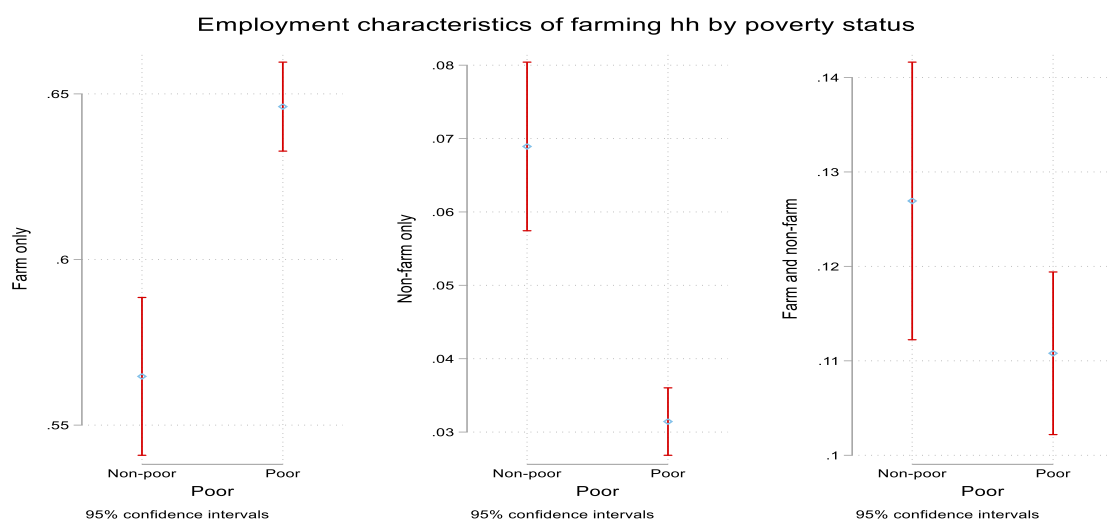
**4.35. Poor and nonpoor farmers have different demographic characteristics.** Poor farming households have much larger households (6.9 members versus 5.3 members in nonpoor farming households). The share of women and girls is larger in nonpoor farming households, and the dependency ratio is much higher among poor farmers. Larger farming families may be able to provide more farm labor, but they also have a larger number of dependents to support.

**4.36. Non-poor farmers have higher educational attainment.** The share of adults 15 and older that have no schooling/education is larger among poor farmers (65 percent versus 57 percent), and the share of adults with some secondary education is larger among nonpoor farmers (21 percent versus 15 percent). Very few farmers completed post-secondary education, but the figure is higher among nonpoor farmers. Given the low returns to farming, it is surprising that differences exist. Confounding factors such as access to schools or proximity to population centers may play a role, as better access to education is correlated with better access to roads, markets, and other infrastructure, which reduces the probability of being poor among farmers.

**4.37. Another important difference between poor and nonpoor farmers is engagement in off-farm activities.** Increasing number of farmers are supplementing the farm activities with non-farm engagement. The share of adults who are engaged solely in farm activities is higher among poor farm households. While non-poor farmers have larger share of adults in non- farm or in mixed activities (farm and non-farm): 12.7 versus 11 percent. One third of poor farm households have non-farm business, while among non-poor that number is 41 percent. Majority of off-farm business in rural area is in small-scale trade, which is prevalent among both types of farm households.



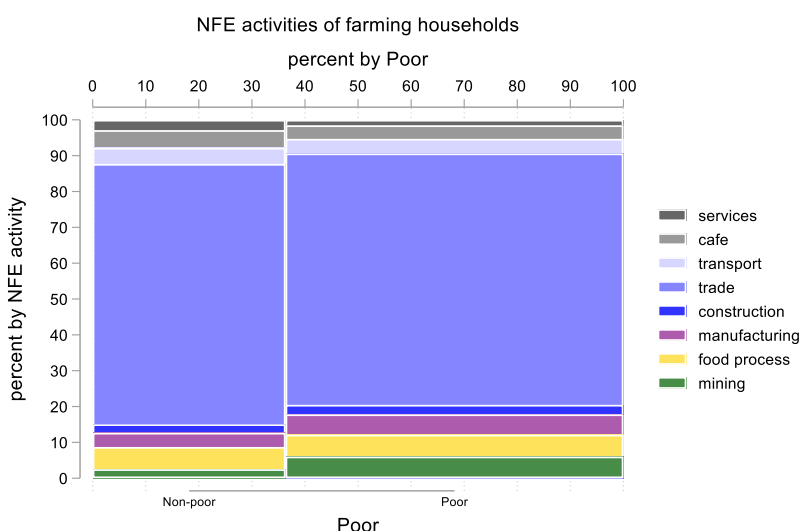
**Figure 4 - 16: Differences in Employment Types**



Source: Staff estimates based on SLIHS 2011 and 2018. Note: HH=household.

4.38. **Crop farming in rainfed agricultural systems like the one in Sierra Leone is a relatively risky livelihood strategy.** Farmers report that the start of the rainy season has become more erratic (Morlai and others 2011), affecting the start of farming periods and crop yields. Diversification into other activities is thus a risk-mitigation measure. The contribution of off-farm income to is difficult to measure but is likely not significant. Non-farm employment is strongly linked to the proximity and availability of urban demand

**Figure 4 - 17: Differences in Non-Farm Activity Types by Poverty Status**



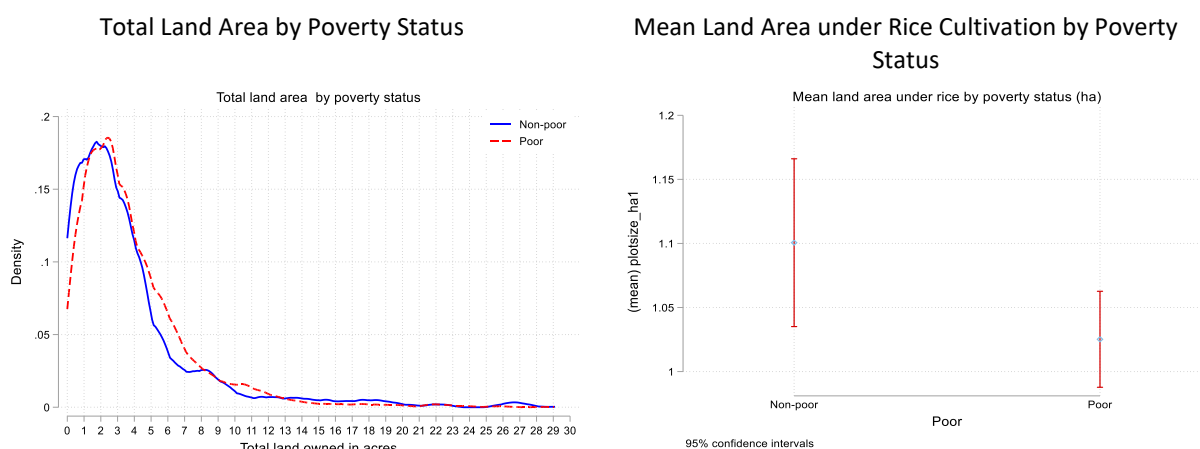
Source: Staff calculations based on SLIHS 2011 and 2018.

Coupled with risk-averseness, it may explain their low crop yields and suboptimal level of adoption of modern farming technologies.

and road infrastructure. Proximity to medium-size or large urban centers with high demand for labor and services creates opportunities to engage in off-farm employment. In locations that are poorly connected to markets or urban centers, off-farm business is a minor source of income, linked to seasonal gaps in farming employment. Poor farmers have a few opportunities for off-farm engagement.

4.39. **Poor and nonpoor farming households cultivate roughly equal areas of land, averaging 1.6 ha (figure 4.18).**<sup>43</sup> However, plot size per capita is smaller for poor farmers (0.23 ha versus 0.30 ha). This difference increases given the fact that not all members of nonpoor farming households are engaged in farming. The most common use of land is for rice cropping. Land plots under rice are larger among nonpoor farmers (1.10 ha versus 1.03 ha). It thus appears that poor farmers may be constrained by land availability in per capita terms. About a quarter of households with land are headed by a woman. This share is slightly larger among wealthier households (25 percent versus 20 percent). Both poor and nonpoor landowners tend to cultivate an average of two to three plots, which are not irrigated and mostly located in upland areas.

**Figure 4 - 18: Differences in the size of landholding**



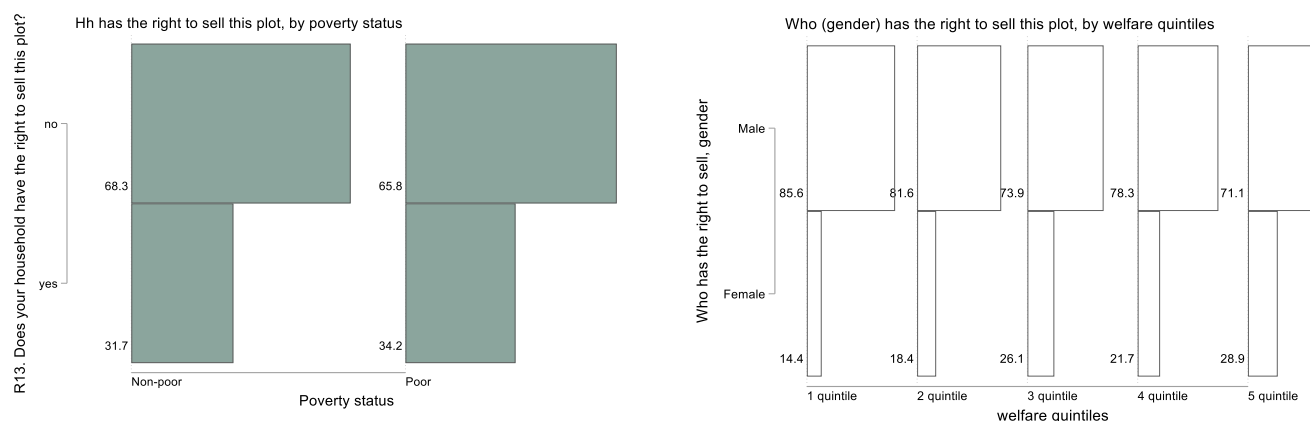
Source: Staff calculations based on SLIHS 2018.

4.40. **Among both poor and nonpoor landholding farming households, only a third report possessing the right to sell it, a reflection of the customary landholding system and uncertainties about land tenure.**<sup>44</sup> Inability to sell or use their land as collateral causes allocative inefficiencies in the use of land. When asked who in the household can sell this land plot, more than 90 percent of survey respondents pointed to the head of household. The share of households in which that person is a woman is lower among poor wealth quintiles (14 percent) than among wealthier households (29 percent). However, across welfare quintiles, women are less likely to have the right to sell their land, reflecting gender bias in land ownership and inheritance practices that are embedded in the tribal customary land tenure system.

<sup>43</sup> Figures are based on measured land plots rather than self-reported values in the SLIHS 2018.

<sup>44</sup> Legally, under the customary land tenure system, land cannot be sold or purchased, but it can be leased for up to 99 years. In practice, households report possessing the right to sell some land plots, which highlights the perception of land rights and the gap between laws and reality on the ground.

**Figure 4 - 19: Rights to sell their land of poor and nonpoor farming households, by consumption quintile, 2018**



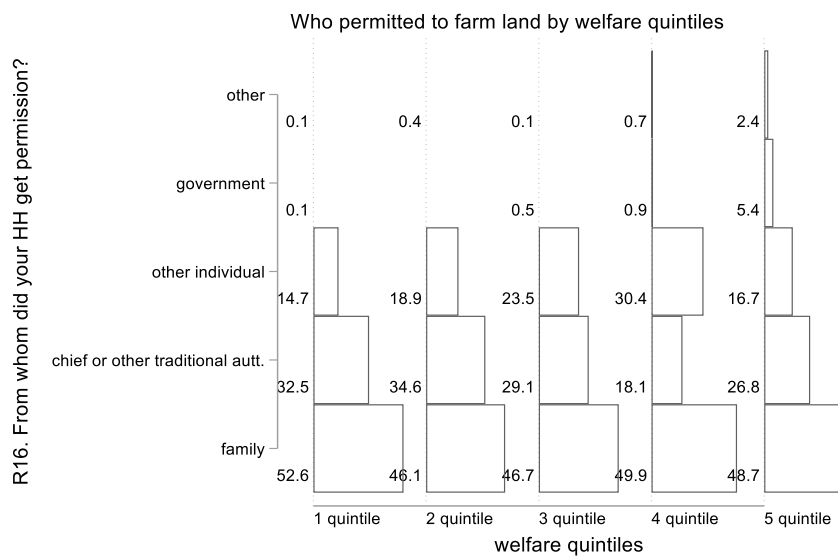
Source: Staff estimates based on SLIHS 2018.

4.41. **About half of landholding households report having received “permission” to farm the land they are cultivating.**<sup>45</sup> This share is higher (55 percent) among households in the bottom consumption quintile than it is among households in the top quintile (45 percent). Lack of permission to farm the land points to the insecurity of land rights and inefficiencies in the customary tenure system. If the household does not have or just assumes permission to use the land plot, it cannot rule out the possibility of being evicted from the plot. This uncertainty produces biases and undermines economic decisions that would increase productivity, such as investing in fertilizers, pesticide, improved seeds, and irrigation.

4.42. **A little more than half of all farming households with permission to farm land acquired it from their (extended) family.** The second-most important source is the paramount chief or other traditional authority, from whom about a third of households obtained permission. About a quarter of households received permission from other individuals. Households from the top wealth quintiles are more likely than other households to have received the permission from individuals other than extended family and tribal authorities. A third of households that received permission from extended family paid money for the land; for households that obtained permission from tribal authorities or other individuals, the shares are 47 percent and 61 percent, respectively. Despite land tenure uncertainties, a large share of landholding households engages in de facto land plot renting.

<sup>45</sup> Having permission implies that the household has permission to cultivate land but has no other rights, reflecting the insecurity of land access.

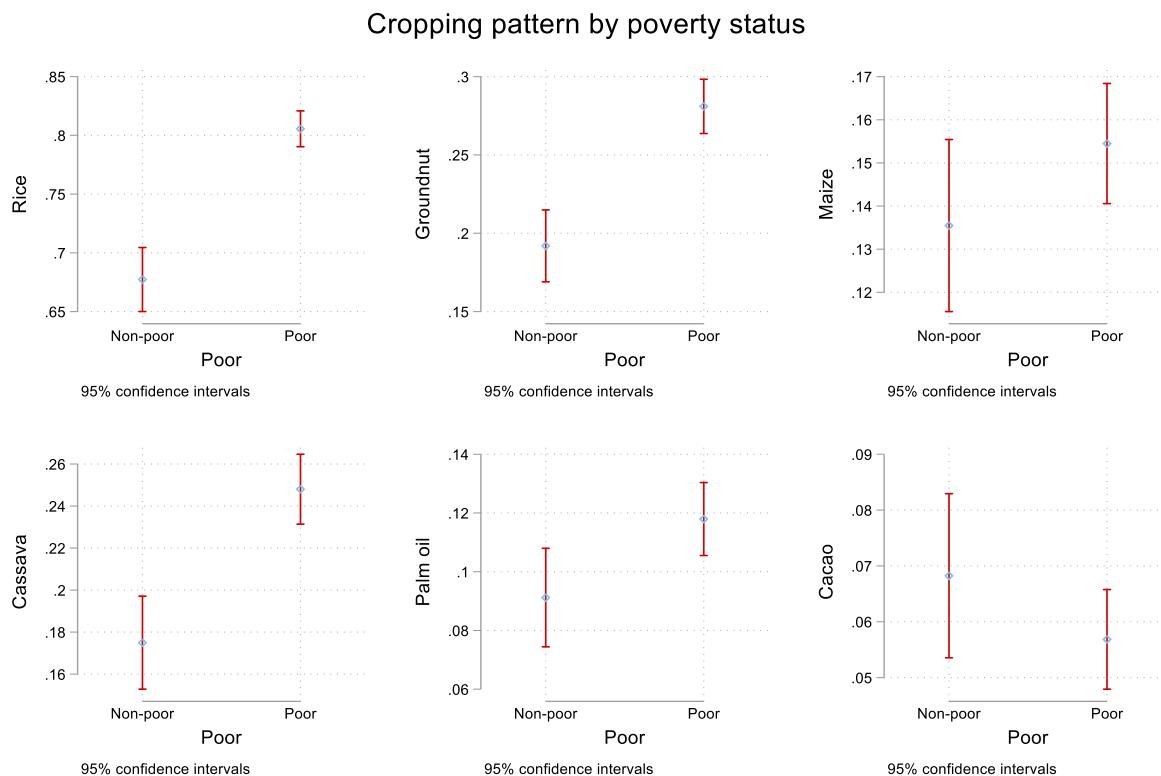
**Figure 4 - 20: The differences in the entity giving permission for land**



Source: Staff estimates based on SLIHS 2018.

**4.43. Poor and nonpoor farmers cultivate different crop types (figure 4.21).** Both types of farmers grow two to three crops on average. Rice is the most cultivated crop for types of farmers, but poor farmers are more dependent on it; they are also more dependent on other staple crops (groundnuts and cassava). Non-poor farmers are more likely to cultivate cocoa.

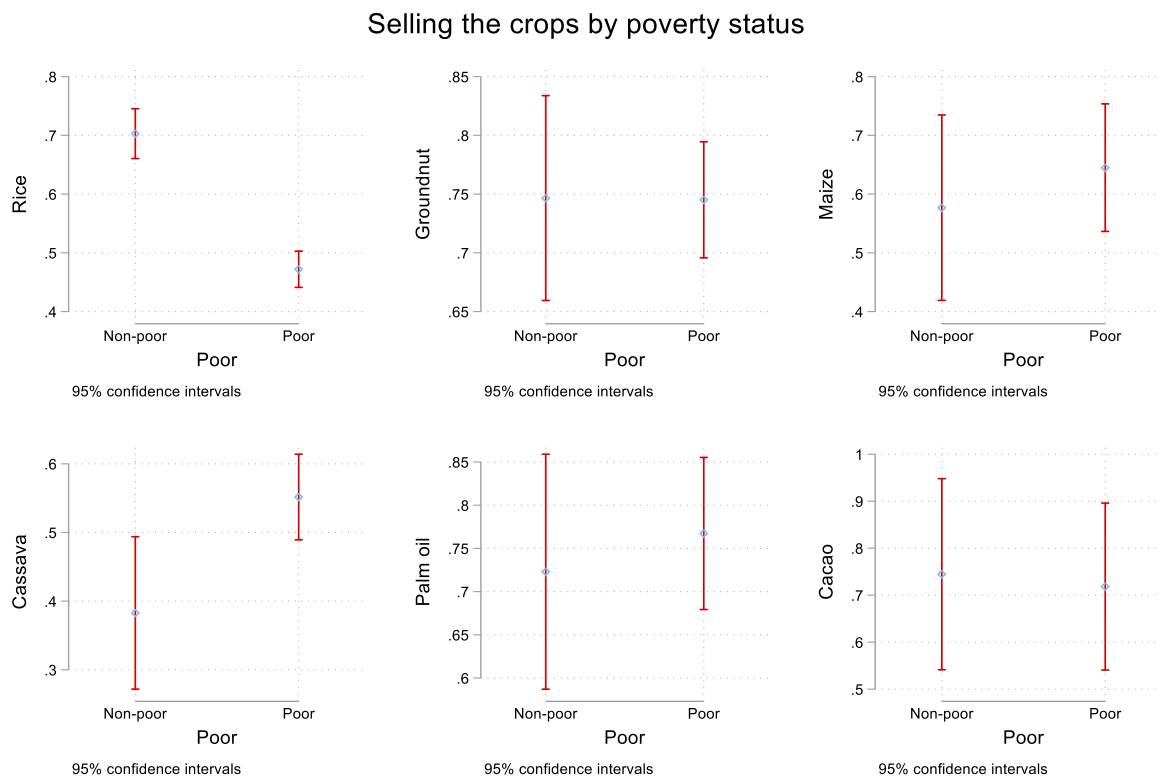
**Figure 4 - 21: The differences in crop mix**



Source: Staff estimates based on SLIHS 2018.

4.44. **Most farming households sell their crops, but this is more prevalent among non-poor farmers.** Among rice growers, 70 percent of non-poor and 49 percent of poor households report selling some part of the harvest. In contrast, 55 percent of poor sell cassava and 37 of non-poor sell that crop. Other than these two crops there are no differences in selling the major crops (groundnut, maize, palm oil or cacao). Given the extent of crop production, for poor and non-poor farmers selling the crop appears to be a secondary objective of farming. Small -holder farms can only generate production on a small scale. Crop is mostly sold after the harvest in November/December. This equally applies to poor and non-poor farmers. The better outcomes for non-poor farmers appear to be linked to the better returns they are able to receive for farm produce, which is linked to proximity to large markets.

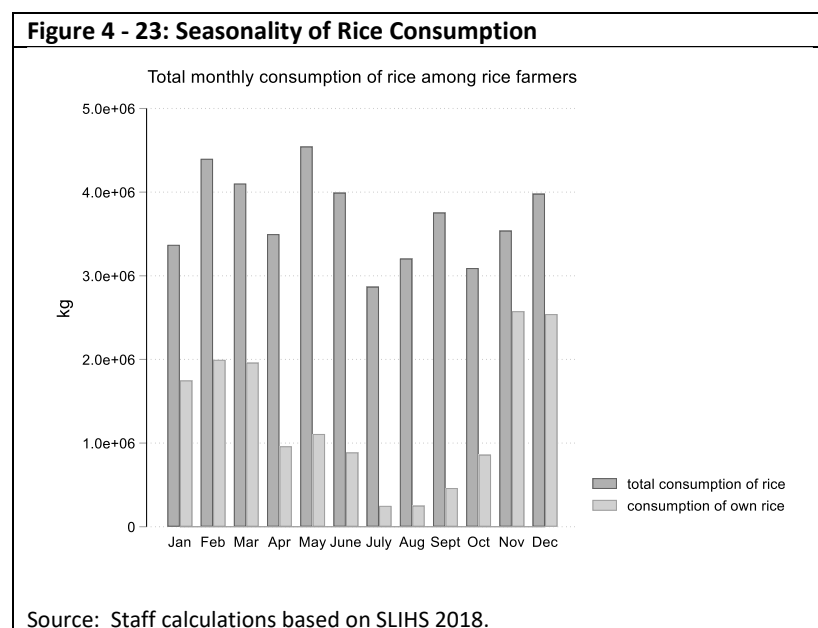
**Figure 4 - 22: The differences in degree of crop marketing**



Source: Staff estimates based on SLIHS 2018.

**4.45. The use of agricultural inputs is higher among nonpoor households.** The use of tractors and other mechanized equipment is almost nonexistent among farming households in Sierra Leone. The use of fertilizers and herbicides varies by crop type but is applied mostly in rice cultivation. The use of inorganic fertilizers is higher among nonpoor farmers (17 percent) than the among the poor (4 percent). Use of organic fertilizers and herbicides is much lower, but the pattern is the same. The use of hired labor is widespread: For rice harvesting, 73 percent of nonpoor famers and 63 percent of poor farmers use hired labor. The pattern is reversed for cassava harvesting, with 26 percent of poor farmers and 16 percent of nonpoor hiring labor.

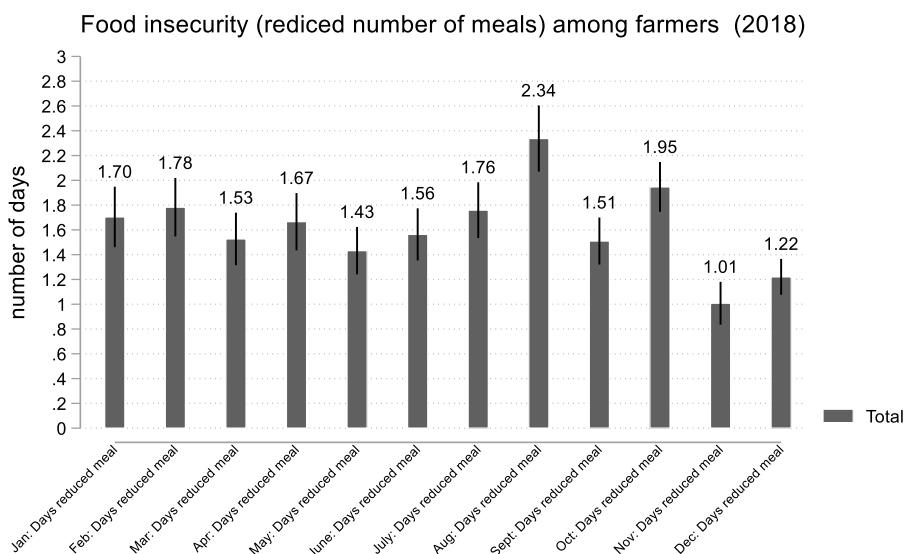
4.46. It appears that lack of storage facilities and other agricultural infrastructure make farmers vulnerable to seasonal risks. Almost all farming households, around 95 percent are net rice buyers. Selling of rice is seasonal and mostly observed after the harvest period, but once the reserves of own rice is



depleted, farm households buy rice from the market and often at higher than selling prices. According to farmers' responses harvesting of rice starts in October and is completed by December. Data also shows that consumption of rice among farmers starts declining in July and August. The share of own rice consumption in total rice consumption is lowest in July and August. This coincides with peak month of food insecurity by farm households, whereby the mean number of days when farming households reduce meal portions reaches 2.3

days over the last 7 days, while generally it is 1.6 days. Survey data shows tight correlation between rice consumption, food insecurity and rice harvest dates.

**Figure 4 - 24: Food Insecurity Among Farmers, by Month**

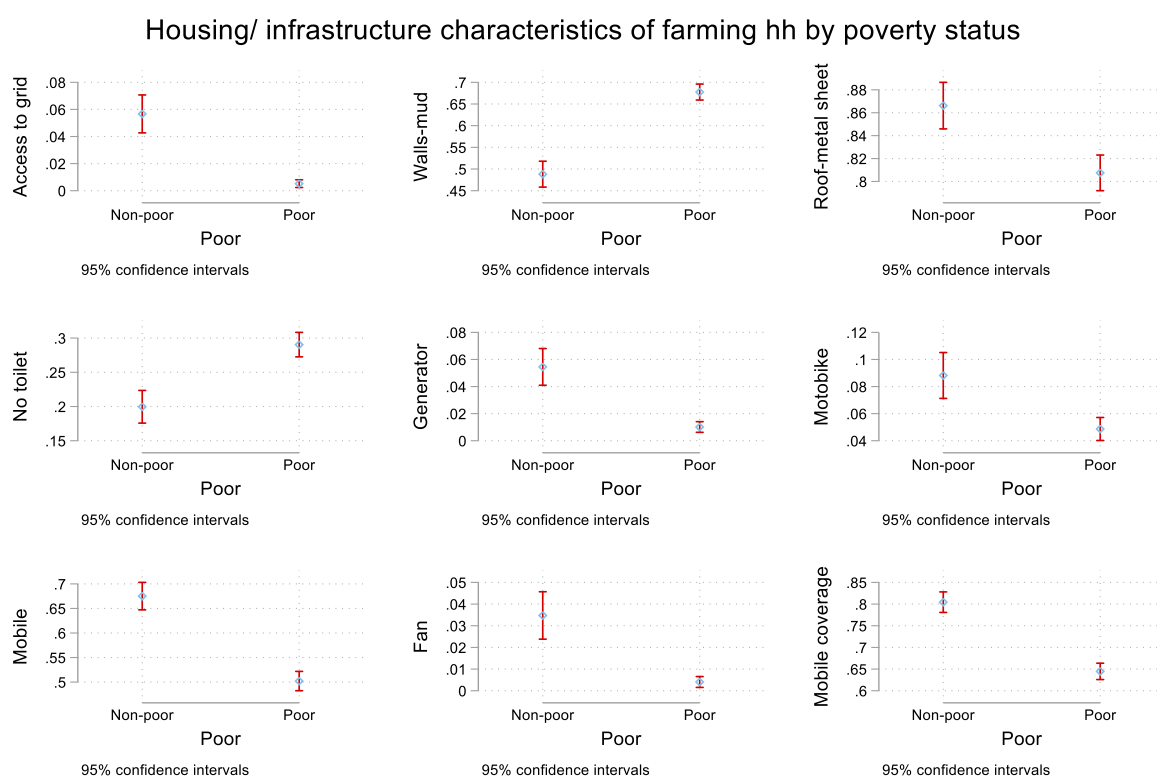


Source: Staff estimates based on SLIHS 2018.

4.47. The most important difference between poor and nonpoor farmers is the gap in access to infrastructure, such as roads, electricity, and mobile coverage (figure 4.25). The economic potential of

farm activities is linked not only to agro-ecologic environment, land size, crop mixing, and the use of technologies and inputs. It also depends on the ability of farming households to extract returns on land, labor, and other productive assets, which depends partly on access to roads to reach the market, the electricity grid, mobile coverage, and information. Access to the grid is very low among farmers; it is higher for nonpoor farmers (6 percent) than poor farmers (1 percent). A similar pattern is observed in ownership of generators (6 percent among nonpoor versus 1 percent among poor farmers). Mobile coverage is generally high (80 percent among nonpoor and 65 percent among poor farmers). The average time to reach the nearest market, a proxy for market accessibility, is about 60 minutes for poor farmers and 45 minutes for nonpoor farmers. These indicators underlie the differences between poor and nonpoor farmers in the ability to integrate into value chains. Access to infrastructure is important not just in cross-section, but also dynamically, since farming households with no access to infrastructure would accumulate low resource endowments and have low incentives to increase productivity and production, staying in low-welfare equilibrium across multiple periods.

**Figure 4 - 25: Difference in Access to Infrastructure**



Source: Staff estimates based on SLIHS 2018.

4.48. **A theoretical framework that explains differences in poverty and welfare in rural areas among farming households is the asset-based approach** (López-Calva and Rodríguez-Castelán 2016). It characterizes the dynamics of household income as a function of two factors: (a) the macroeconomic environment, consisting of functioning market institutions, good governance, infrastructure, prices, access to credit, and so forth, and (b) the microeconomic environment, which captures the capacity of



households to generate income from the assets/endowments they have. Household capacity to generate income is linked to (a) the accumulation and stock of productive assets or household capital; (b) the intensity with which such assets are used; and (c) the returns generated by the assets or capital, given the macroeconomic environment. Households' productive assets can be represented by years or levels of education, experience, ownership or stock of tools/machinery, agricultural land, access to production inputs, and markets. The degree of labor market participation and the use of land and other resources are examples of the intensity of asset use. The stock of physical and human capital generates returns that define the incomes and welfare of households. Input and output prices, including wages, affect the returns the household obtains for a given stock of capital.

**4.49. The rural welfare gap is associated with low asset endowments, low productivity of those assets, or combination of both.** The accumulation of productive assets is linked to the returns on those assets in a self-perpetuating loop in which low farming returns prevent farmers from investing in tools, machinery, seeds, fertilizers, and knowledge that make it impossible to accumulate assets. If extra efforts do not increase returns significantly, there is little incentive to invest beyond the subsistence level of farming. The theory would suggest that gaps and stagnation in rural/farming welfare are sustained because rural farmer households are stuck in low-productive activities. The low stock of productive assets, including human capital, causes current poverty and feeds into the next period's poverty—the pattern observed in rural areas of Sierra Leone.

**4.50. To empirically explain the gap in poverty and welfare across farming households, the Blinder-Oaxaca decomposition technique is employed.** The method is based on the running the regression model where dependent variable is household consumption expenditures and the independent variables are indicators correlated with poverty and household welfare (O'Donnell et al., 2008). So formally, it is posited that welfare indicator for poor and non-poor farmers ( $y_i$ ), is associated with a set of independent factors ( $x_i$ ):

$$(4.1) \quad y_i^{poor} = \beta^{poor} x_i * \varepsilon_i^{poor}$$

$$(4.2) \quad y_i^{non-poor} = \beta^{non-poor} x_i * \varepsilon_i^{non-poor}$$

Then, the mean gap in the household expenditures between these two groups could be presented as:

$$(4.3) \quad y^{non-poor} - y^{poor} = \Delta x \beta^{poor} + \Delta \beta x^{non-poor}$$

$$\text{where } \Delta x = x^{non-poor} - x^{poor} \text{ and } \Delta \beta = \beta^{non-poor} - \beta^{poor}$$

This allows decomposing the mean gap in welfare between groups into two parts: i) poor farmers have lower endowments of factors (e.g., education level, non-farm work engagement, remote location, etc.), which represent the explained part of the gap, and ii) poor farmers have lower returns on those endowments (e.g., even if poor have same access to markets, they still receive lower return/benefit from that access) – this is called coefficient or unexplained part. The method runs several counter-factual statistical simulations estimating what happens if poor and non-poor have similar endowments and what happens if poor households would have the same returns (i.e., coefficient) for given endowments as non-poor. As an output the decomposition regression produces information on the portion of the difference in welfare across groups of households related to the differences in endowments across farmers and what

share is linked to the differences in the returns to household endowments (Levy, Hausmann, Santos, Espinoza, & Flores, 2016).

4.51. **The model explaining farming households' welfare includes a wide range of factors across geographic, demographic, labor, farming and infrastructural dimensions (table 4.1).**<sup>46</sup> It posits that the population density of a settlement is strongly correlated with the welfare of households within it. Areas with higher density imply that farming households are closer to urbanized areas and have better access to labor and input and output markets. The demographic compositions of households (their size, number of children, the number of males) of poor and nonpoor farming household differ. More males and adults mean higher potential labor force participation; more children implies higher dependency, which puts downward pressure on per capita incomes. Education of adults is linked to better human capital, better job skills, and more competitiveness in the labor market. More adults working in nonfarm jobs leads to higher earnings. Access to roads and other infrastructure is critical for diversifying income sources and better marketing farm output. Growing cash crops, using herbicides and fertilizers, and selling surplus crops are linked to higher incomes.

**Table 4 - 126: Output of Decomposition Regression**

Blinder-Oaxaca decomposition		Model = linear	
Group 1: non-poor		N obs = 421	
Group 2: poor		N obs = 761	
log of cons.exp., non-poor	8.54***	explained	0.15***
	0.000		0.000
log of cons.exp., poor	7.75***	unexplained	0.64***
	0.000		0.000
difference	0.79***	<i>p</i> -values in parentheses	
	0.000	* <i>p</i> < 0.1, ** <i>p</i> < 0.05, *** <i>p</i> < 0.01	

<sup>46</sup> There is a trade-off between the comprehensiveness of the model and the problem of multicollinearity. The presence of many correlated variables reduces the statistical significance of individual coefficients. It is therefore important to strike a balance between maximizing explanatory power and mitigating the problem of multicollinearity.

	explained	unexplained		explained	unexplained
density of area	area (100,00 - 1 M)	0.00	labor market	hh engaged in commerce	0.00
		-0.51			-0.742
	area (10,000 -100,000)	-0.01		ratio of adults in farming	0.01**
		-0.346			-0.023
	area (3,000 - 10,000 )	0.00**		ratio of adults in non-farming	0.00
		-0.021			-0.737
	area (750 - 3,000)	0.03***	access to markets	distance to roads in minutes	0.01**
		0.00			-0.023
	area (< 750 )	0.04***		distance to market in minutes	0.00
		0.00			-0.476
demographic	household size	0.05***	farming	hh crops cassava	0.00**
		0.00			-0.035
	ratio of children	0.00		hh crops cocoa	0.00
		-0.442			-0.495
	ratio of male members	0.01**		hh purchased rice seeds	0.00
		-0.01			-0.385
education	ratio of adults with secondary education	0.00		hh applied herbicides	0.00***
		-0.361			0.00
	ratio of adults with vocational degree	0.01**		household sold rice	0.00*
		-0.023			-0.091
				_cons	0.96***
					0.00

Source: Staff estimates based on SLIHS 2018

4.52. **The results indicate that the income gap between poor and nonpoor farming households in rural areas is significant and associated largely with the low returns of poor farmers rather than differences in endowments.** The contribution of differences in the area of residence (by density) appears to be very important. As population density declines, the differences between poor and nonpoor farmers become significant. This finding is consistent with the prior that differences in the poverty status of farming households are closely related to how remote from urban areas/markets they are. The unexplained part of the regression indicates that for the same location, poor farmers earn lower returns—that is, the gap in consumption expenditures would be smaller if poor farmers experienced the same returns as nonpoor farmers for a given location. Decomposition indicates that the differences in demographic indicators (household size and the share of male members) contribute to the gap in welfare. A similar pattern is observed for education and employment correlates. For the share of adults in nonfarming activities, the unexplained part of the decomposition points to differences in returns to those activities that favor nonpoor farmers. Market access variables, such as distance to roads, are likely correlated with population density, but there are also significant differences in access to roads and returns to road access between poor and nonpoor farmers. The pattern of cropping, the use of inputs, and the frequency with which a farmer sells rice are different in poor and nonpoor households, but the difference in coefficients (that is,

returns) is significant only for the application of herbicides (favoring nonpoor farmers) Much of the unexplained part of the decomposition is attributed to the constant term, which includes general effects of unobserved factors (Jann 2008).

**4.53. The economic environment accounts for about 80 percent of the income gap between poor and nonpoor farmers.** Although some individual coefficients are not significant, much of the gap is attributed to unexplained factors, which supports the hypothesis that low returns among rural farming households—as opposed to low economic endowments (or assets)—perpetuate poverty. The low returns for poor farming households are consistent with observations of low connectivity and undeveloped infrastructure in rural areas. Lack of needed infrastructure prevents rural farmers from integrating into agricultural value chains. This is reflected in the low uptake of inputs, low yields, low productivity, and eventually low incomes, which lead to persistence of rural poverty.

**4.54. Full potential of small holding farming in Sierra Leone for poverty reduction remains untapped.** The role of agriculture and farming in Sierra Leone is difficult to overestimate. Half of the country’s GDP comes from agriculture, almost 60 percent of households engage in farming, and almost three-quarters of the rural population lives below the poverty line. Yet, as analysis of this chapter has shown, constraints related to access to inputs, credit and markets inhibit farm productivity and realization of agricultural potential, limiting the rural income opportunities and trapping the farmers in the low equilibrium.

**4.55. Realizing the potential of farming in Sierra Leone is possible; doing so will require investing in rural and agricultural programs.** Government strategies appear to favor agricultural development, but they are not matched by large-scale investment programs. Heavy investment is needed in improving access to fertilizers, seeds, and mechanization. But even more important is the development of storage facilities, road connections, supply chains, access to infrastructure such as electricity, and interregional and cross-border trade. Small-scale subsistence farming is a rational reaction to high risks and low returns in farming activities. The policy challenge is to streamline risk-mitigation strategies for smallholders and ensure better returns on productivity-enhancing investments in agriculture. Interventions that could achieve these goals include promoting consolidation and cooperation among smallholder farmers, making crop insurance program available and affordable, and linking farmers with guaranteed off-take programs on a large scale. Rural programs need to focus on reducing the transactions cost of engaging in productive farming activities, not only on infrastructural investments (Jayne and others 2021). The main challenge lies in fostering the institutional environment for better policy making and improved capacity for agricultural research.

## Chapter 5: Realizing the Potential of Sierra Leone's Secondary Cities

### Introduction

5.1. **Where an individual lives is perhaps the best predictor of that individual's welfare, this also holds true in Sierra Leone.** As of the 2015 population census, the share of the country's population living in urban areas has nearly doubled since 1967. The urban share of population in Sierra Leone in 2015 stood at 40 percent, with most of the urban population residing in Freetown. Poverty in Sierra Leone's urban areas is 49 percent while in rural areas it is 74 percent. Nevertheless, there are worries that the country may be experiencing urbanization without industrialization which causes concern as it is feared this may not lift many people out of poverty. The growth in urbanization has been mostly due to labor migrants from the low-productivity agriculture sector to low-productivity services in urban areas, mostly skipping a transformative industrial sector.<sup>47</sup>

5.2. **The development process of a nation involves a transformation of its spatial organization, moving from a mostly rural agrarian society towards a more concentrated urban industrial economy.**<sup>48</sup> A crucial element in this process entails the movement of people from rural areas to cities. As cities grow, successful sectors will often attract investment and lead to increased demand for labor which may attract rural populations. Nevertheless, many seeking to move to urban areas may experience worse outcomes. Moreover, a large movement of rural population can lead to increased unemployment, poverty and, possibly, urban violence.<sup>49</sup>

5.3. **It is in this context that secondary cities are believed to play a crucial role in the development process.** Christiansen and Todo (2014) find that migration out of agriculture, hence rural areas, to secondary towns as opposed to large cities leads to considerable poverty reduction. Large cities are likely to have greater per capita incomes than secondary towns and rural areas, however large cities are also more unequal. Consequently, growth in secondary cities is believed to have a more inclusive pattern. The proposed channels for increased poverty reduction are related to rural diversification and the expansion of secondary cities.<sup>50</sup>

5.4. **This section seeks to provide a snapshot of cities in Sierra Leone and their surrounding areas.** Using data from the population census of 2015 the section will provide insights into how the country's major cities compare to other places within the country. It will provide comparisons between the country's major cities and their neighboring areas to determine the potential of secondary cities for poverty reduction and growth. Then the section will present a model to analyze the determinants of population density at the enumeration area (EA) level – done with the purpose of illustrating how populations may evolve in the future.

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<sup>47</sup> AfDB (2020)

<sup>48</sup> Bardhan and Udry (1999)

<sup>49</sup> Bloom et al. (2008)

<sup>50</sup> Imai, Gaiha and Garbero (2018) – IFAD document

## Urbanization, secondary cities, and poverty - background

5.5. **GDP per capita is correlated with the share of an economy's population residing in urban areas** (Bloom, Canning, and Fink 2008), but the relationship between GDP and urban population should not be interpreted as causal.<sup>51</sup> Poor areas are not poor because people with similar characteristics that may foster poverty tend to live in close proximity (Ravallion 2016). If people were able to freely move across space, people with similar characteristics should have the same welfare level regardless of their location. However, when barriers and frictions to movement are present—such as moving and search costs—persistent geographic differences in living standards may exist. Determining what is actually the case is not straightforward, because unobserved individual factors play a role and are not easily distinguished from frictions to mobility.

5.6. **Urbanization can occur for various reasons, which may help explain why increased urbanization may not result in economic growth.** What lies behind the growth in urban populations is often the better determinant of growth. For example, urban growth in Asia was driven mostly by industrialization and the creation of millions of jobs in urban areas. Africa has not experienced this industrialization.<sup>52</sup> It is possible that what lies behind Africa's growing urbanization are factors that have pushed populations out of rural areas rather than factors pulling them to urban areas (Jedwab, Christiaensen, and Gindelsky 2017). Whatever factors lead to urbanization, the concentration of people in cities requires that governments strive to deliver the ingredients necessary for a functioning society.

5.7. **Large cities can be costly to maintain.** As cities grow, they sometimes struggle to deliver services to their inhabitants, and the cost of providing these services may also increase. As a result, larger cities may experience increased child mortality rates, lower access to potable water as well as more students per teacher. All these are related to the strain on the city's resources and capacity to deliver services that is placed by an expanding population.<sup>53</sup> Additionally, the rising cost of service delivery in expanding urban areas could lead to lessened quality of life in smaller cities that will struggle with lower funding that is detoured to large metropolises.<sup>54</sup>

5.8. **Interest in secondary cities increased in the two decades, mostly because of the gap in development between them and metropolitan regions** (Roberts 2014). The 2009 *World Development Report (WDR)* encouraged governments to invest in connective infrastructure so that the benefits of increased economic density are shared more broadly.

5.9. **Across the globe, secondary cities are some of the fastest growing areas, particularly in Africa.** Provision of services and urban infrastructure in secondary cities in Sub-Saharan Africa, however, is often

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<sup>51</sup> Bloom, Canning, and Fink (2008) note that a country's urbanization level is not a good predictor of its future income level; although the process of economic development does involve urbanization, urbanization does not affect economic growth.

<sup>52</sup> Industrialization is considered a key component of economic development. As a country industrializes, the demand for skills rises, increasing the wage premium in the market. The increased demand and returns to skills, as well as the additional budget from higher wages, incentive parents to invest in the human capital of their children. Parents may also have fewer children, potentially spurring a demographic transition (Galor 2005).

<sup>53</sup> Henderson (2002)

<sup>54</sup> Ibid.

inadequate because secondary cities often command less resources from the central government.<sup>55</sup> Secondary cities in many places often also have weak governance and urban development may occur with little oversight or planning leading to slums where many of the urban poor reside. This often leads to large swathes of the population being at risk of poverty and other calamities.

**5.10. Large income gaps between large metropolises and other locations, secondary cities included, may induce migration.** In Sub-Saharan Africa, despite the potential large income gap with secondary cities, population growth in secondary cities outpaces that of large metropolises. A similar pattern is observed in Sierra Leone. Between 2004 and 2015, Freetown's population grew by 36 percent from 772,873 to 1,050,711. Freetown was home to 14.8 percent of the country's population in 2015, a slight decrease from the 15.5 percent of the population back in 2004 who called Freetown home. On the other hand, the population growth of other urban areas has been higher. Take for example, Kenema, Makeni and Koidu. These three cities experienced an increase in population of over 50 percent between 2004 and 2015. Despite their relatively small size, most secondary cities in Sierra Leone have grown at a rapid pace. A good proportion of this growth is due to considerable rural-urban migration.

**5.11. The poverty reduction potential of smaller cities is substantial.** Small cities often benefit farmers in nearby rural areas, because they provide markets for their goods. They may also provide essential agricultural inputs and services, nonfarm employment opportunities, and technological resources critical to farming (Richards and others 2016). Agricultural goods can be processed in these cities and then shipped to consumers across the country. In Mato Grosso, Brazil, for example, urban areas grew as the city developed downstream processing facilities and value-added activities in poultry, pork, and aquaculture. Secondary cities may also provide nonfarm employment opportunities, which can lead to income diversification and higher productivity.<sup>56</sup> Given that a large share of Sierra Leone's population depends on farming and that the majority of the poor are involved in farming, these benefits hold promise for reducing poverty.

**5.12. Secondary cities provide off-farm labor opportunities where rural migrants may experience considerable welfare gains.** Additionally, rural migrants are more likely to participate in the non-farm sector of secondary towns than in primary cities.<sup>57</sup> Hence, the growth of secondary cities may be more inclusive and yield larger poverty reduction as long as there are linkages to nearby rural areas. This is despite that many of the opportunities likely to be available are informal jobs, with low productivity and low quality.

**5.13. Proximity to smaller towns for those with limited opportunities outside of agriculture plays a considerable role in the decision process of whether to migrate to a major city or a town.** This could be mostly related to the fact that it may be far cheaper to migrate to nearer places than a large city farther away as noted in a study in Tanzania.<sup>58</sup> In that same study, the authors find that the wealthier the migrant the more likely she is to choose to migrate to a large city as opposed to a town. On the other hand, the distance to the town or the city plays a considerable role towards choosing towns as opposed to cities.

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<sup>55</sup> Roberts (2014)

<sup>56</sup> Oseni and Winters (2009) discuss how off-farm income may relax liquidity constraints for farming households.

<sup>57</sup> Christiansen, De Weerd and Kanbur (2016)

<sup>58</sup> Christiansen, De Weerd and Ingalaere and Kanbur (2021)

Given that in the Tanzanian context the majority of the rural population is closer to a secondary town than to a major city, a more balanced territorial development plan is called for by the authors of the study.

5.14. **Despite the rich literature on how to define secondary cities,<sup>59</sup> in Sierra Leone this classification is simplified because of the large discrepancy between Freetown's population and that of all other cities.** There is no standard definition on what constitutes a secondary city. A popular definition used is that these are cities that fall in the second tier of a hierarchical system of cities based on population thresholds.<sup>60</sup> If a secondary city is defined by having a population of 10 to 50 percent of the country's largest city,<sup>61</sup> then in Sierra Leone there are just 4 cities that may be classified as secondary cities: i) Kenema, ii) Bo, iii) Koidu, and iv) Makeni.<sup>62</sup> The cities, according to the population census of 2015, range from 124,000 to 200,500 people, or roughly between 16 to 26 percent of the population of the country's capital, Freetown. Waterloo is also added to the list, given that the chiefdom has a population of over 200,000 people and is also densely populated.

5.15. **In summary, secondary cities offer markets and services to rural farmers nearby.** Secondary cities may also offer considerable non-farm labor opportunities for rural populations and may facilitate diversification away from agriculture which can improve agricultural productivity as well as livelihoods. Well-connected rural and urban areas may also benefit urban dwellers since they will be less reliant on food imports. The following section seeks to characterize secondary cities in Sierra Leone as well as contrast these with their surrounding areas. This is done with the aim of evaluating the potential these cities have for poverty reduction.

### Characterization of secondary cities and their neighboring areas

5.16. According to the 2015 population census, six cities in Sierra Leone have population density of over 1,000 people per square kilometer: Freetown, Makeni City, Bo City, Koidu City, Kenema City, and Waterloo. Although cities may spill over into surrounding areas, density is calculated based solely on the chiefdom boundaries for the cities, except for Freetown, whose boundary is the district. Freetown and Waterloo are very close to each other, as are Kenema and Bo City. Many of the results for these towns shown below likely overlap with those of the surrounding city.

5.17. **Unsurprisingly, Freetown has the country's lowest poverty rate, and is home to a large number of poor individuals because of its considerably larger population.**<sup>63</sup> The secondary cities in the country have poverty rates that range from 31 percent in Waterloo, which is near Freetown, to 49 percent in Kenema. Poverty rates in secondary cities are relatively high (Figure 5-1). This could considerably limit their attractiveness to those outside of the cities. However, poverty rates in secondary cities are lower than that of surrounding areas (Figure 5-2). Beyond poverty and living standards, secondary cities may offer other opportunities and amenities to those in neighboring areas.

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<sup>59</sup> See Zipf's Law, or Jefferson (1939) and Christiansen, De Weerd and Kanbur (2016)

<sup>60</sup> Roberts (2014, p20)

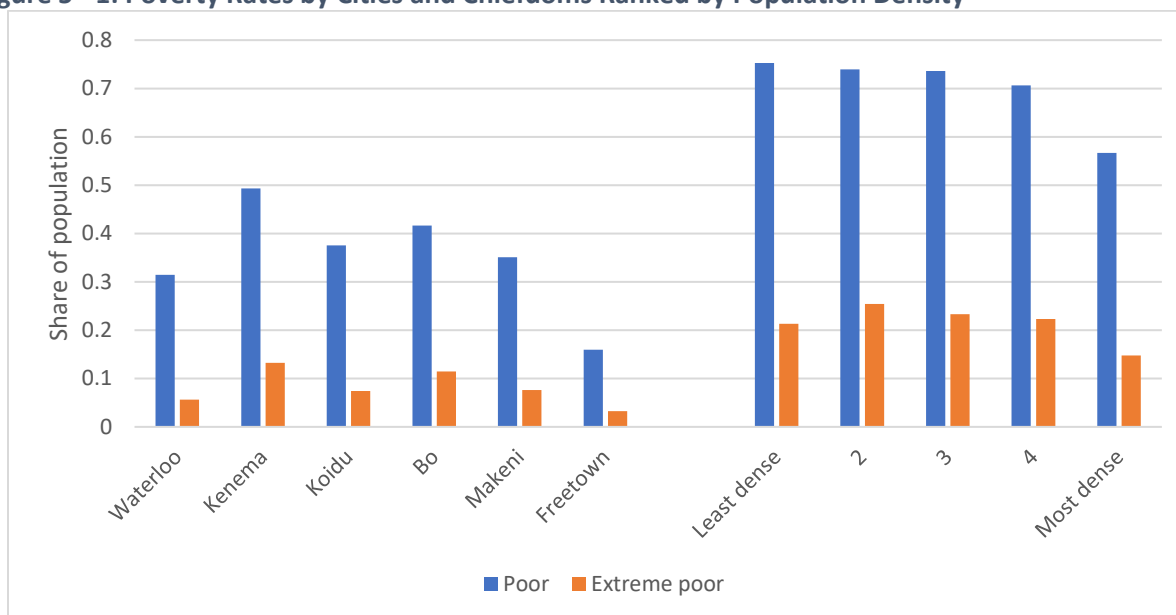
<sup>61</sup> Roberts (2014, p38)

<sup>62</sup> This is the definition promoted by UN-Habitat

<sup>63</sup> Poverty rates come from small area estimates (SAE) of poverty conducted using the SLIHS 2018 and the population census of 2015.



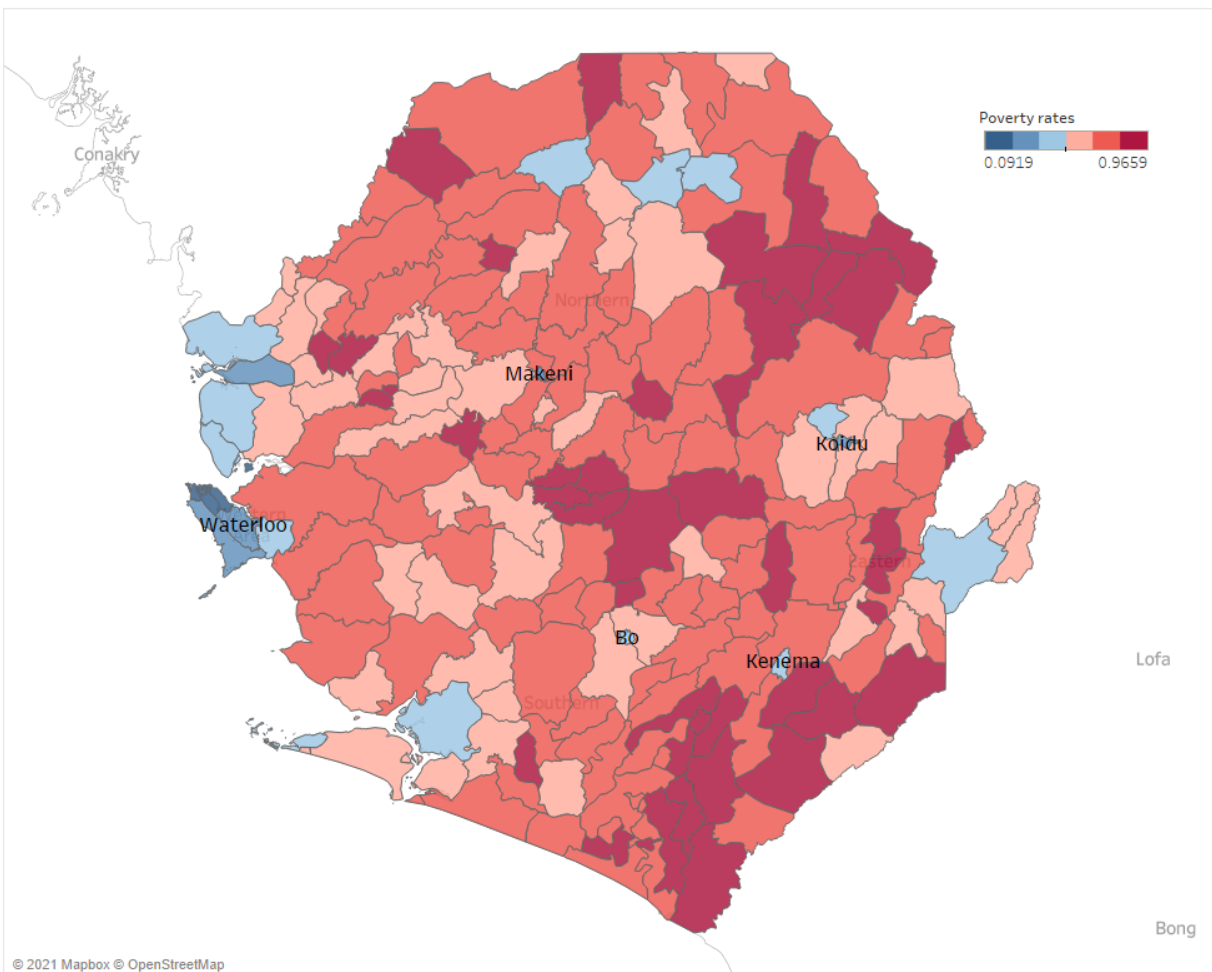
**Figure 5 - 1: Poverty Rates by Cities and Chiefdoms Ranked by Population Density**



Source: Small area estimates (SAE) from 2015 population census and 2018 SLIHS.

Note: Figure presents poverty and extreme poverty by the 6 largest cities in the country as well as all other chiefdoms (excluding the 6 cities) ranked from least densely populated to most densely populated.

**Figure 5 - 2: Poverty Rates at the Chiefdom-level**



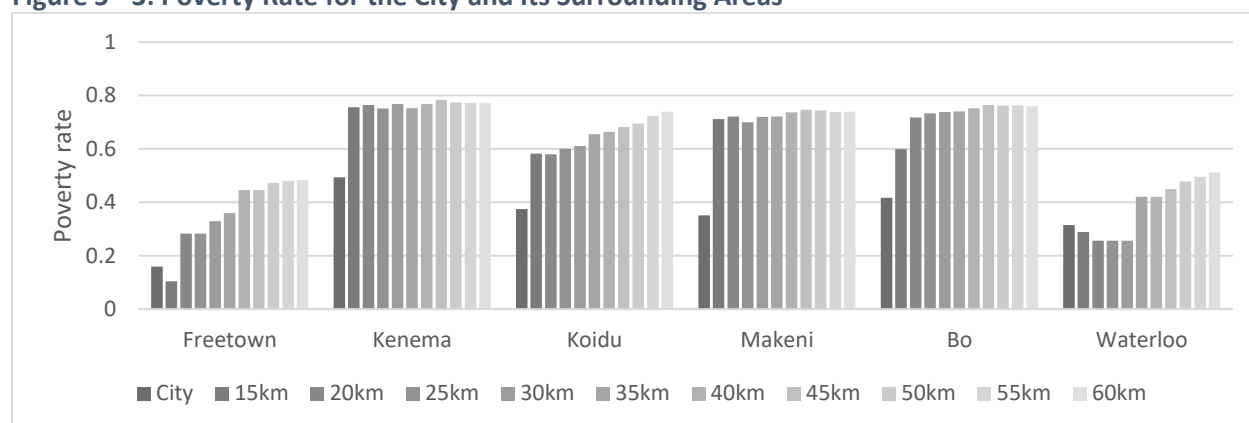
Source: SAE from 2015 population census and 2018 SLIHS.

Note: Figure presents poverty at the chiefdom level, note how the cities are less poor than most surrounding areas (blue vs. red).

**5.18. Sierra Leone's secondary cities have lower poverty rates than the surrounding areas (figure 5-3).** The poverty rate in the surrounding areas does not seem to change much as the distance increases, particularly in Kenema, Makeni, and Bo (see chapter 3). However, looking at the poverty rate in the surrounding areas is just one piece of the puzzle, as it suggests that the area surrounding Freetown has the lowest poverty rate, much lower than the areas around Bo, Kenema, Koidu, and Makeni.<sup>64</sup> The poverty rate in Freetown is much lower than the surrounding area, perhaps making it more attractive than a secondary city.

<sup>64</sup> When considering poverty rates of cities and their nearby areas, Freetown as well as Waterloo often fall within their boundaries, which could play a role in their lower average neighborhood poverty rates.

**Figure 5 - 3: Poverty Rate for the City and Its Surrounding Areas**

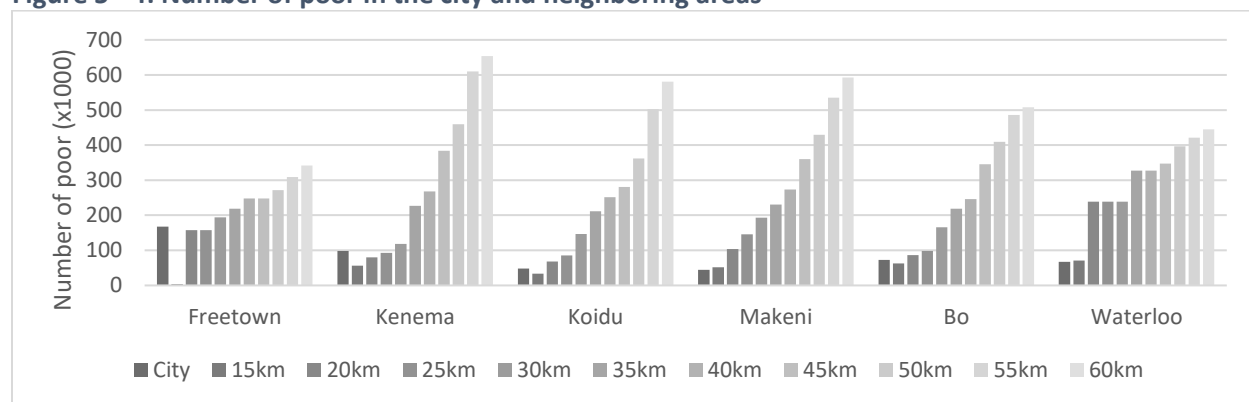


Source: SAE from 2015 population census and 2018 SLIHS.

Note: Figure shows a (straight line) distance-weighted average of the poverty rate of surrounding chiefdoms. The farther a chiefdom is from the center of the city, the lower the weight it has in the average. The value does not include the city itself, just the distance-weighted average of all chiefdoms whose centroid falls within the indicated radius.

5.19. **The potential of secondary city development for poverty reduction becomes more evident looking at the total number of poor people in a city's neighborhood (Figure 5-4).** Within a 60Km radius from Freetown, there are less than 350,000 poor individuals. On the other hand, Bo, Kenema, Koidu, and Makeni each have more than half a million poor people living within a 60Km radius from them. Kenema alone, has a little over 654,000 poor individuals within 60Km of its center.<sup>65</sup> Growth in secondary cities could be much more inclusive than growth in Freetown as more poor individuals stand to benefit from investments in secondary cities. Moreover, bigger cities become costlier to maintain and more difficult manage as they grow which could lead to larger returns from investments in secondary cities.<sup>66</sup>

**Figure 5 - 4: Number of poor in the city and neighboring areas**



Source: SAE from 2015 population census and 2018 SLIHS.

<sup>65</sup> Caveats of the method include the fact that these measure centroid to centroid distance and that distances do not necessarily equate travel time. However, since relatively precise measures of poverty are only available at the chiefdom level the approach represents a good approximation to the information needed.

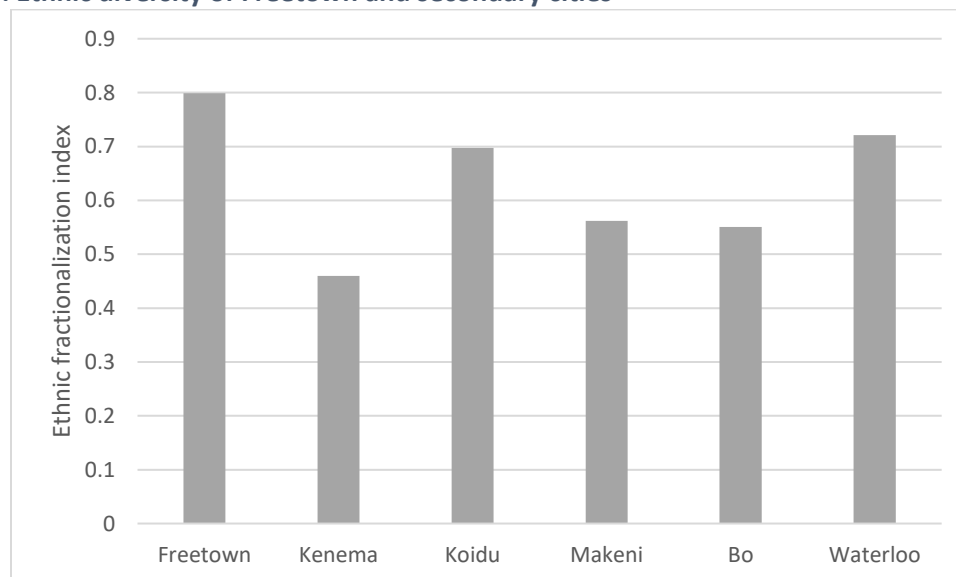
<sup>66</sup> Henderson (2002)

Note: Figure presents the number of poor individuals in the city and within a given radius. The value does not include the city itself; it is just the sum of the poor within that radius from the city's centroid.

5.20. **Distance is a key factor for individuals deciding where to migrate to and the proximity of more poor to secondary cities suggests investment in towns is crucial for inclusive development.** There is evidence that when deciding where to migrate to people will often choose to migrate to cities and towns that are closer to them rather than to farther away cities despite the larger potential gains from migrating to a larger city.<sup>67</sup> An additional factor that may explain whether people migrate is cultural proximity.

5.21. **Because cities attract people from all over the country, they are quite ethnically diverse.** The probability that two randomly selected individuals within Freetown come from different ethnic groups is 80 percent. In a secondary city, such as Koidu, the value is considerably lower at 46 percent (Figure 5-5). However, neighboring areas in Freetown have a more similar ethnic make-up to the city's ethnic make-up than most other secondary cities (Figure 5-6). This could be indicative that Freetown is still expanding its borders and as people arrive, they settle in the periphery due to higher costs within the city or a lack of dwellings within the city (see Figure A1).<sup>68</sup> On the other hand, the ethnic make-up of the neighboring areas of secondary cities seems to be somewhat more different to the secondary city. An exception to this is Waterloo, which is proximate to Freetown, where the immediate areas (15Km) have a different ethnic make-up to the city, but the more distant areas are quite similar to Waterloo. Koidu also presents a unique case where the difference in the ethnic makeup of surrounding areas suddenly jumps. It is difficult to be certain without more data, although it is possible that given Koidu's mining sector it has attracted people from much farther away and thus the difference with some of the areas in its periphery is more salient.

**Figure 5 - 5: Ethnic diversity of Freetown and secondary cities**



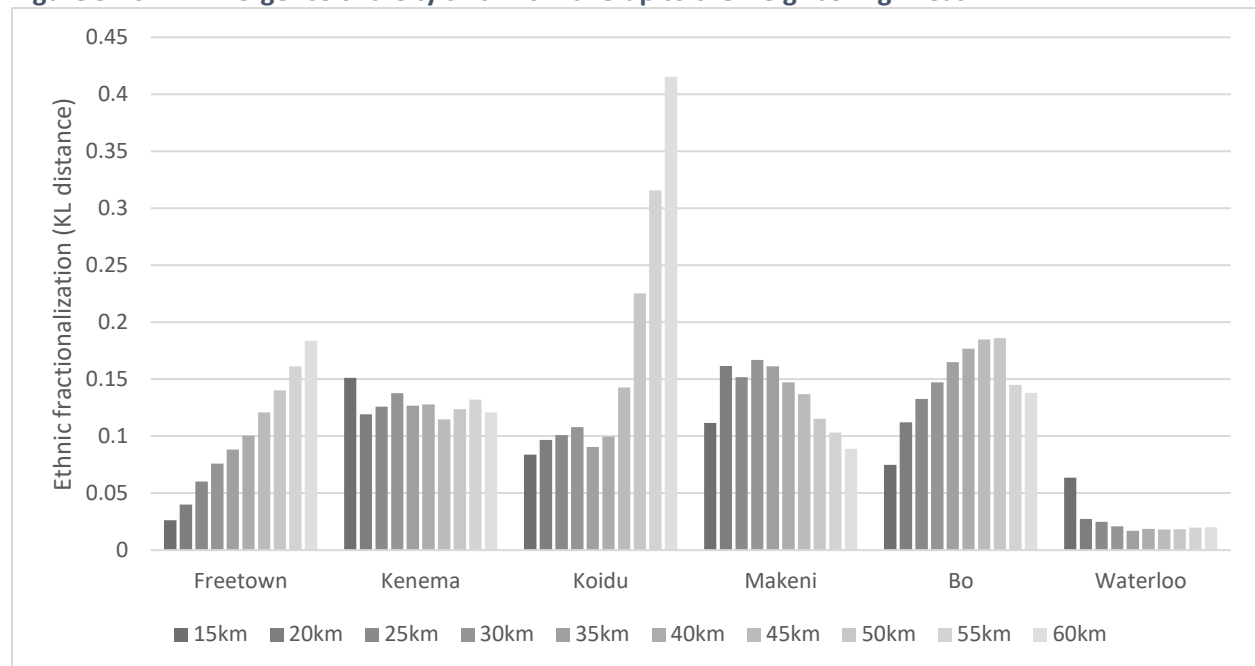
Source: 2015 population census.

<sup>67</sup> De Weerd, Christiansen and Kanbur (2021)

<sup>68</sup> All cities considered in the section have expanded considerably since 2000, although Waterloo's expansion stands out from the rest (see Appendix 1).

Note: Figure presents the ethnic fractionalization index (Alessina et al. 2003). The index represents the likelihood that 2 randomly selected individuals within the location come from different ethnic groups.

**Figure 5 - 6: KL Divergence of a City's Ethnic Make-up to the Neighboring Areas**

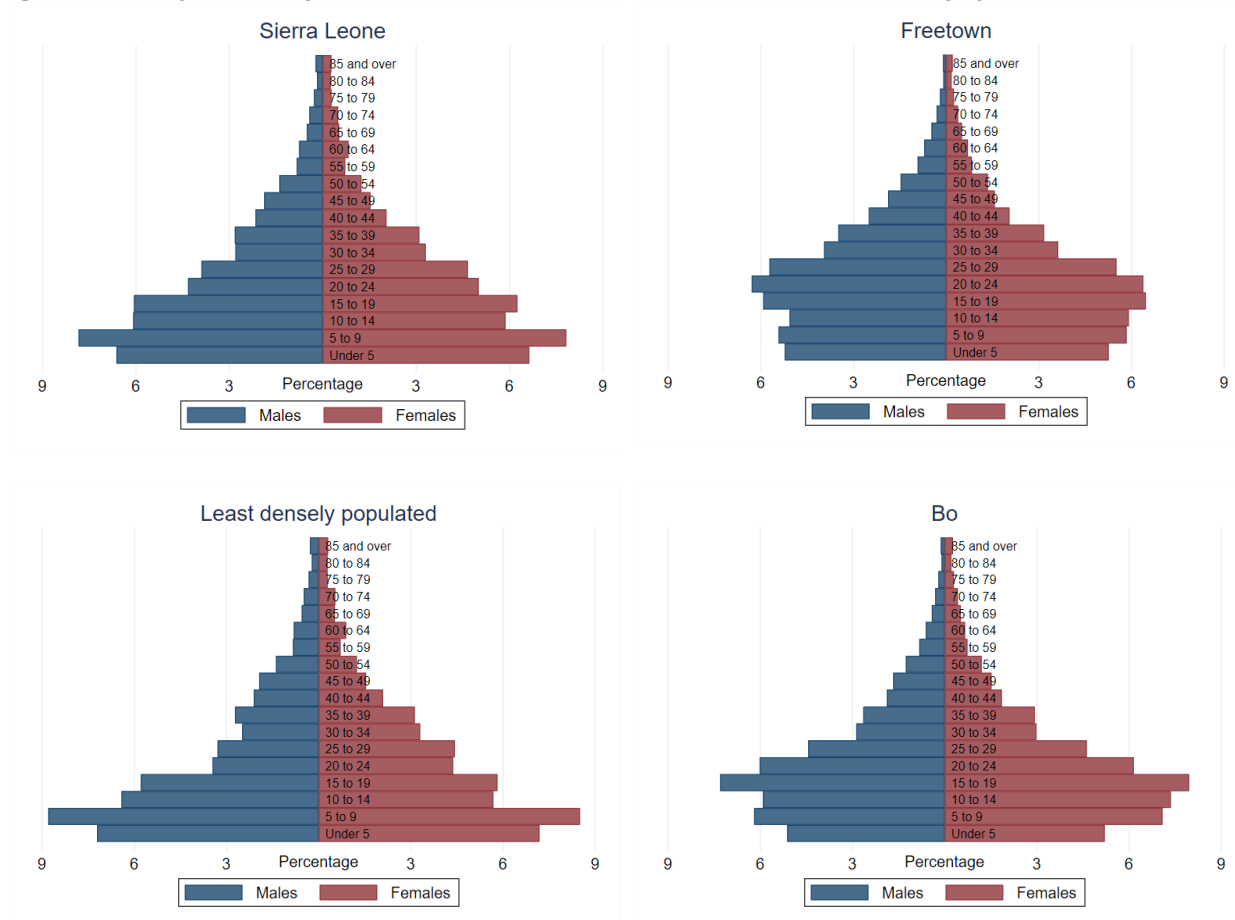


Source: 2015 population census.

Note: Figure the KL divergence between the city's ethnic makeup and that of its neighboring areas. Smaller values indicate a larger similarity between the city and the neighborhood's population.

**5.22. Cities are not just ethnically more diverse than other areas, their demographic makeup is also distinct from that of other areas.** For example, Freetown when compared to Sierra Leone as a whole is somewhat older with a population bulge among individuals 15 to 29 (Figure 5-7). On the other hand, the least densely populated chiefdoms in the country are younger than Sierra Leone as a whole. Among secondary cities, Bo presents a population pyramid that is beginning to protrude among young cohorts (ages 15 to 19). For these cities it is important that young individuals can have access to economic opportunities.

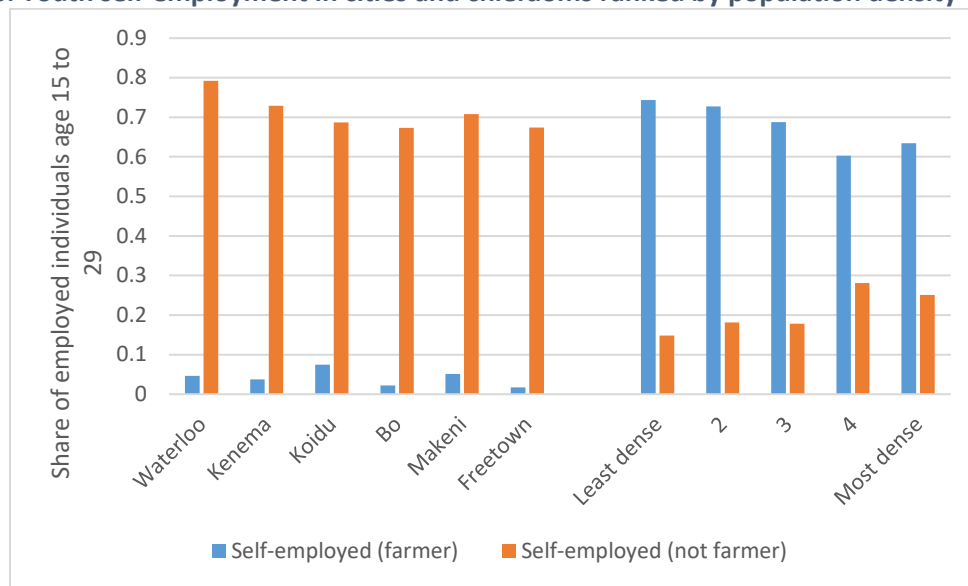
Figure 5 - 7: Population Pyramid for Sierra Leone, Freetown, Bo, and the least populated chiefdoms



Source: 2015 population census.

5.23. **Cities offer opportunities outside of agriculture for younger Sierra Leoneans.** They offer a pathway toward income diversification particularly for young entrepreneurial individuals. In the country's main cities, most young people (ages 15-29) are self-employed in activities outside of agriculture (Figure 5-8). On the other hand, even in the most densely populated areas younger individuals are more likely to be involved in agriculture than in other activities. Although, it is evident that in more populous areas there are more opportunities outside of agriculture most young people seem to maintain themselves occupied either in studies or work since the share of youths not in employment, education, or training is almost uniform across the cities and chiefdoms regardless of how densely populated these are (Figure 5-9).

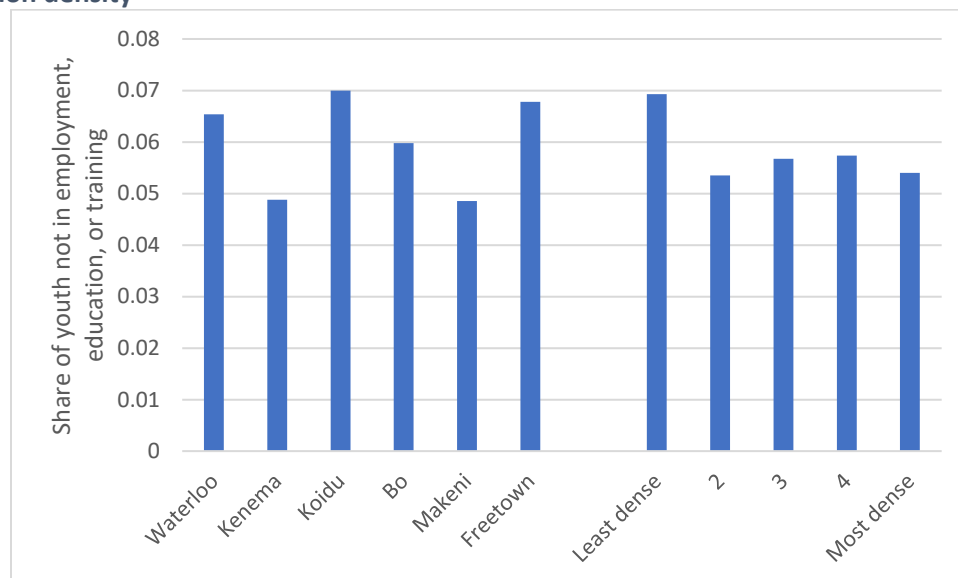
**Figure 5 - 8: Youth self-employment in cities and chiefdoms ranked by population density**



Source: 2015 population census.

Note: Figure presents share of youths (age 15 to 29) within the location for the 6 largest cities in the country as well as all other chiefdoms (excluding the 6 cities) ranked from least densely populated to most densely populated.

**Figure 5 - 9: Share of youth not in employment, education or training in cities and chiefdoms ranked by population density**

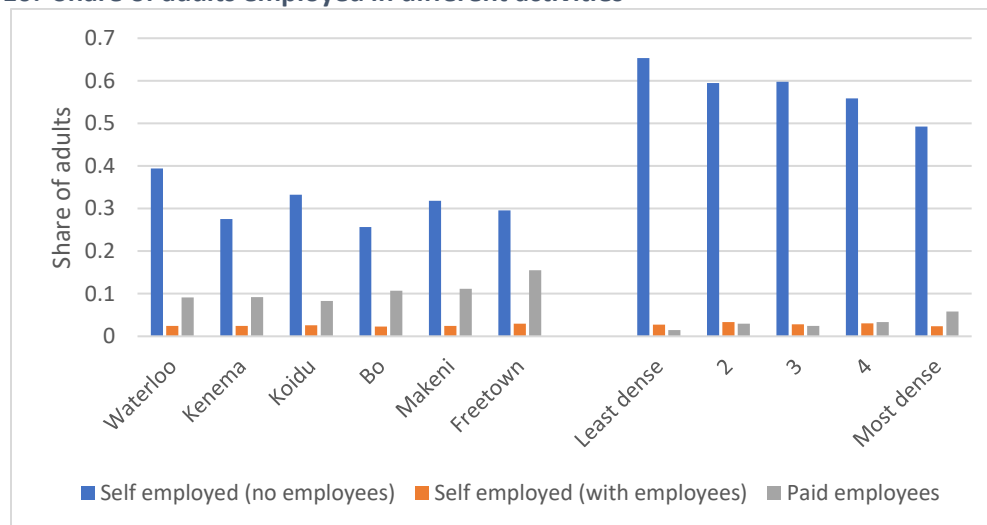


Source: 2015 population census.

Note: Figure presents share of youths (age 15 to 29) within the location for the 6 largest cities in the country as well as all other chiefdoms (excluding the 6 cities) ranked from least densely populated to most densely populated.

5.24. **Self employment without employees notwithstanding, cities in Sierra Leone offer more work opportunities than most other areas (Figure 5-10).** Considering that the difference between cities and the surrounding areas is much larger in secondary cities, paid employment opportunities are greater in secondary cities than in their surrounding areas (Figure 5-11). If education is a barrier towards accessing these opportunities in secondary cities then increased educational investments could pay off in the medium to long run. However, even if those in surrounding areas are only able to access informal jobs these can still be beneficial to poverty reduction and can offer a way of diversification for farmers which can lead to improved farm productivity. This is because diversification can lead to more investment on the farm as well resilience to shocks since farmers are less dependent on their farms for income.

**Figure 5 - 10: Share of adults employed in different activities**

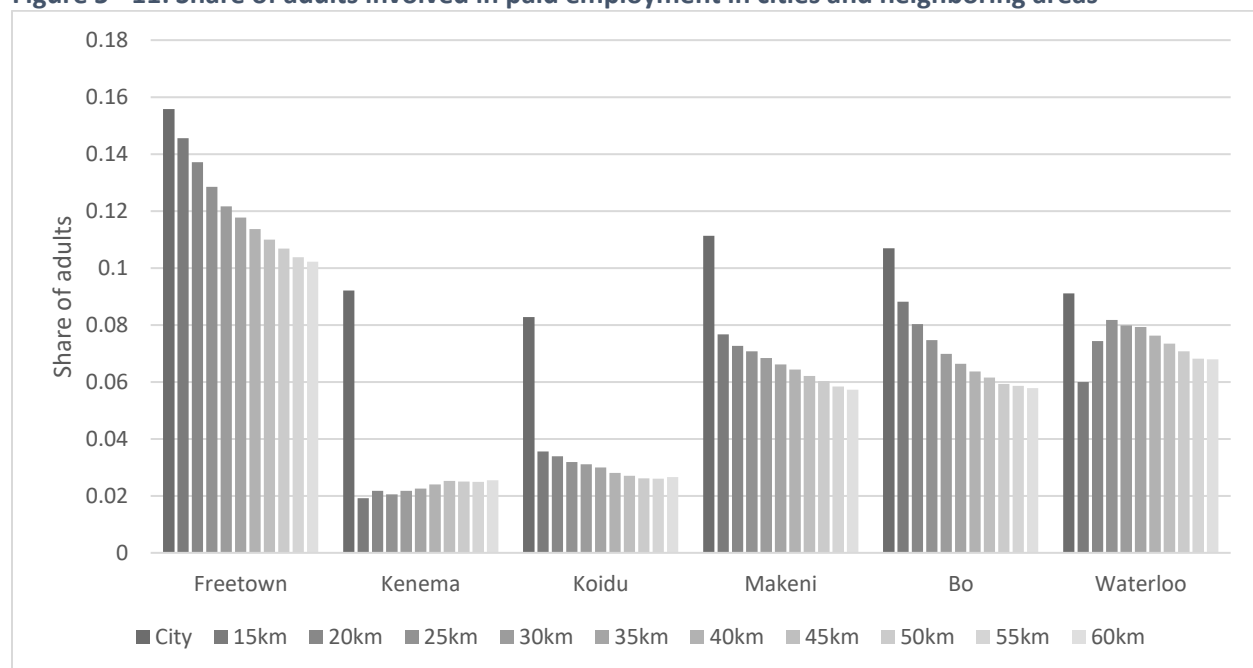


Source: 2015 population census.

Note: Figure presents share of adults within the location for the 6 largest cities in the country as well as all other chiefdoms (excluding the 6 cities) ranked from least densely populated to most densely populated.



**Figure 5 - 11: Share of adults involved in paid employment in cities and neighboring areas**



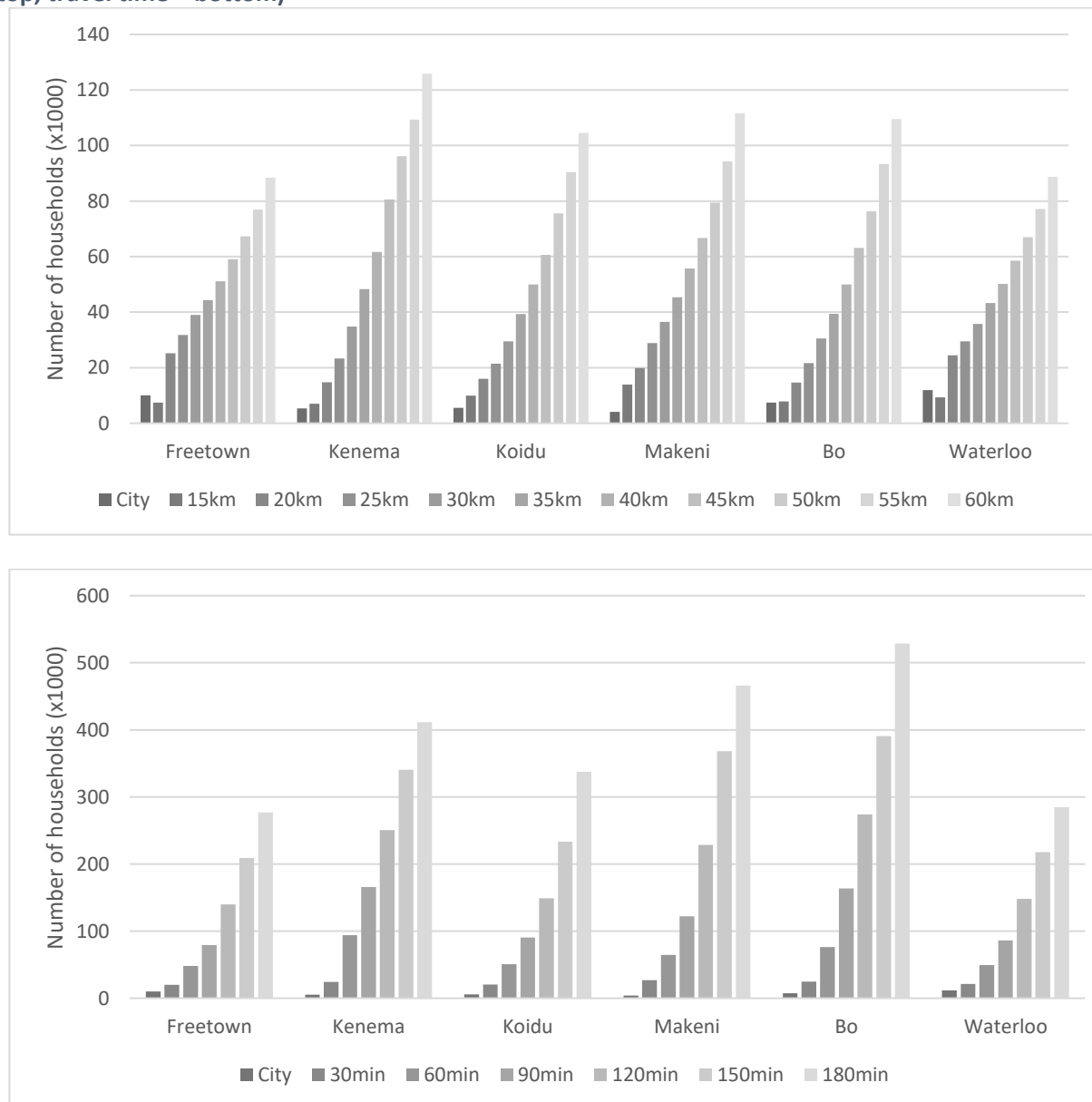
Source: 2015 population census.

Note: Figure presents the share of adults in paid employment in the city and within a given radius. The value does not include the city itself; it is just the average share of adults within that radius from the city's centroid. Areas considered outside of the city are at the EA level.

**5.25. Agriculture is more popular as one moves away from cities.** The neighborhood around Freetown has the lowest share of households who are involved in farming, it also has the smallest amount of farming households in its neighborhood (Figure 5-12). The neighborhood around Freetown and Waterloo are neighborhoods with low farming overall (Figure 5-13). Of course, what farmers may actually care about is the time it takes to arrive to the market, and in this regard Freetown and Waterloo have fewer farming households within a 3-hour drive than all other secondary cities. This is problematic for many reasons. Mainly because Freetown is the country's largest market and agriculture is a source of livelihood to most of the country, the fact that less of them have access to Freetown and its vast population limits their income generating potential. It also increases Freetown's reliance on imported food. For Kenema, Bo, Makeni and Koidu the share of the population within a 60km radius who is involved in agriculture is considerably larger than that of the corresponding cities, as well as the total number of farming households. Areas in the immediate vicinity of Koidu, Kenema, Bo and Makeni are considered farming hotspots (Figure 5-13). Proximity to the city is beneficial to farmers as it provides a market for their goods and may also provide services farmers need. For example, a place where farmers can procure inputs for their farms, as well as diversification opportunities as noted above. Additionally, proximity to the city ensures that farmers not just have access to a market to sell their goods but also a market where they can procure goods, since it is possible farmers do not sow cash crops because of the risk of not having where to procure their food.<sup>69</sup>

<sup>69</sup> For a discussion on this refer to Goldstein et al. (2013)

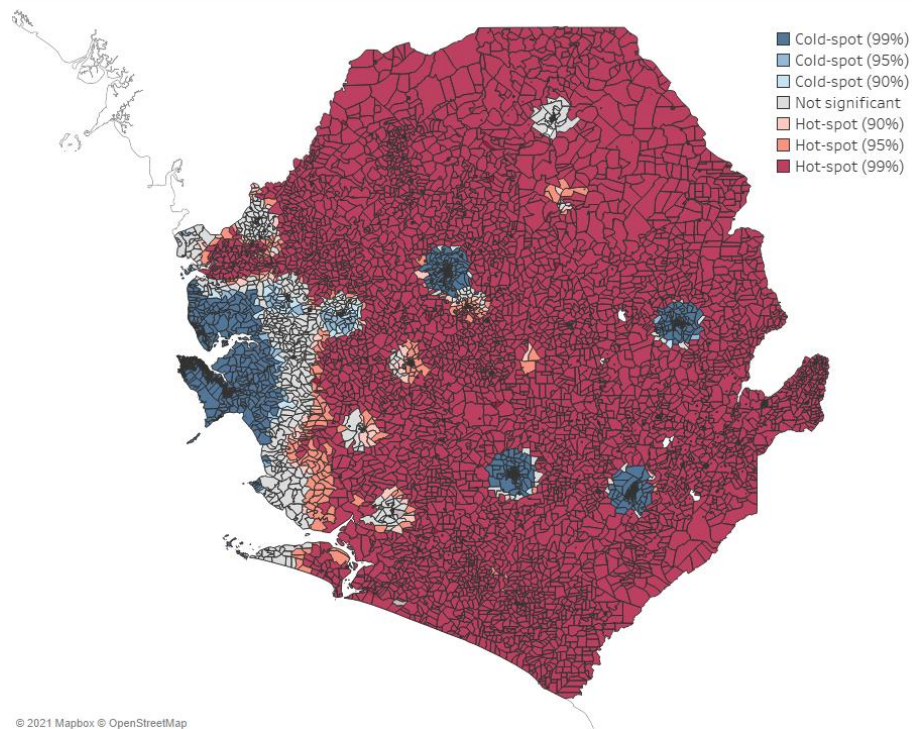
**Figure 5 - 12: Number of households involved in farming in cities and neighboring areas (distance – top; travel time – bottom)**



Source: 2015 population census.

Note: Figure presents the number of households in farming in the city and within a given radius. The value does not include the city itself; it is just the sum of farming households within that radius from the city's centroid. Areas considered outside of the city are at the EA level

**Figure 5 - 13: Share of households involved in farming hotspots (Getis-Ord)**

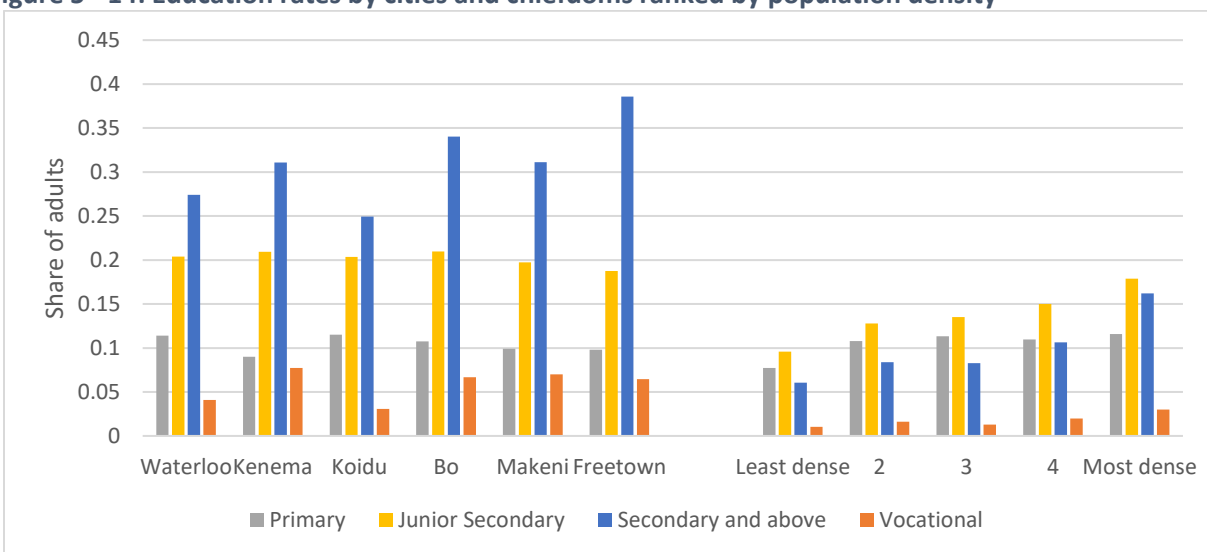


Source: 2015 population census.

Note: Figure presents the Getis-Ord hotspots of share of households involved in farming. An EA is classified as a hotspot if its value is significantly higher than that of its neighborhood. The neighborhood average is a distance weighted average where areas that are farther away from the EA carry less weight. All EAs in the country are in the neighborhood.

**5.26. Being able to access opportunities in cities requires overcoming barriers, like the lack of education.** Individuals seeking to move to cities will often be constrained by their educational level, as they are less likely to be able to attain the funds for the move and may face limited opportunities once they arrive to the city. When opportunities in cities are available, those who have higher education levels in surrounding areas may be able to seize these opportunities. Individuals in secondary cities are more likely to have secondary or higher educational levels than those in other locations within the country (Figure 5-14). Additionally, areas near secondary cities have a considerably lower share of educated adults than the city (Figure 5-15). This means that a small proportion of the population surrounding secondary cities are likely to benefit from opportunities in secondary cities that demand higher educational levels. Around Freetown the share who may benefit is considerably higher.

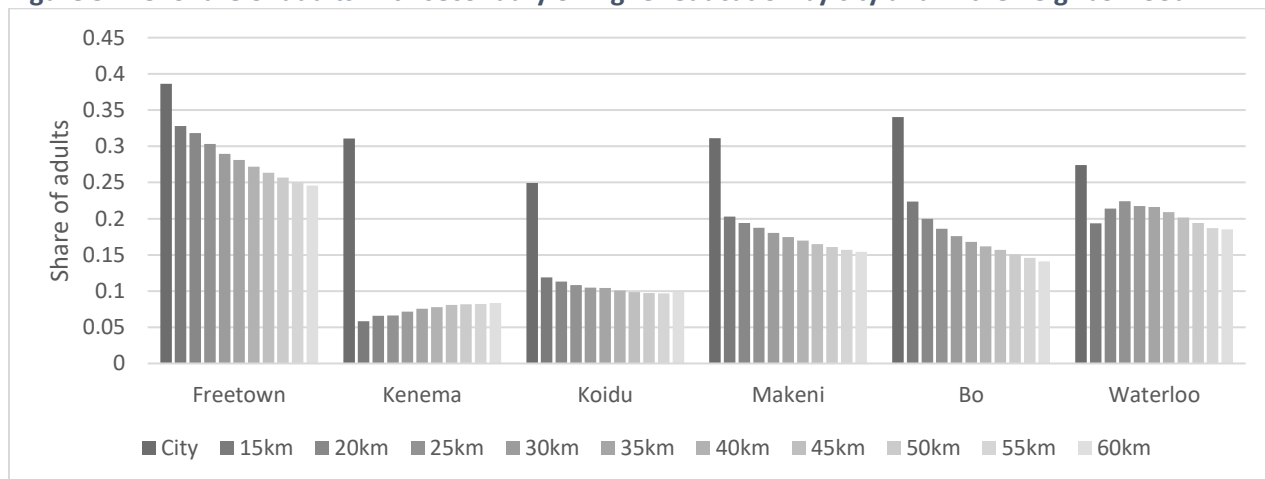
**Figure 5 - 14: Education rates by cities and chiefdoms ranked by population density**



Source: 2015 population census.

Note: Figure presents share of adults within the location for the 6 largest cities in the country as well as all other chiefdoms (excluding the 6 cities) ranked from least densely populated to most densely populated. The share of adults without education is not presented in the figure.

**Figure 5 - 15: Share of adults with secondary or higher education by city and in the neighborhood**



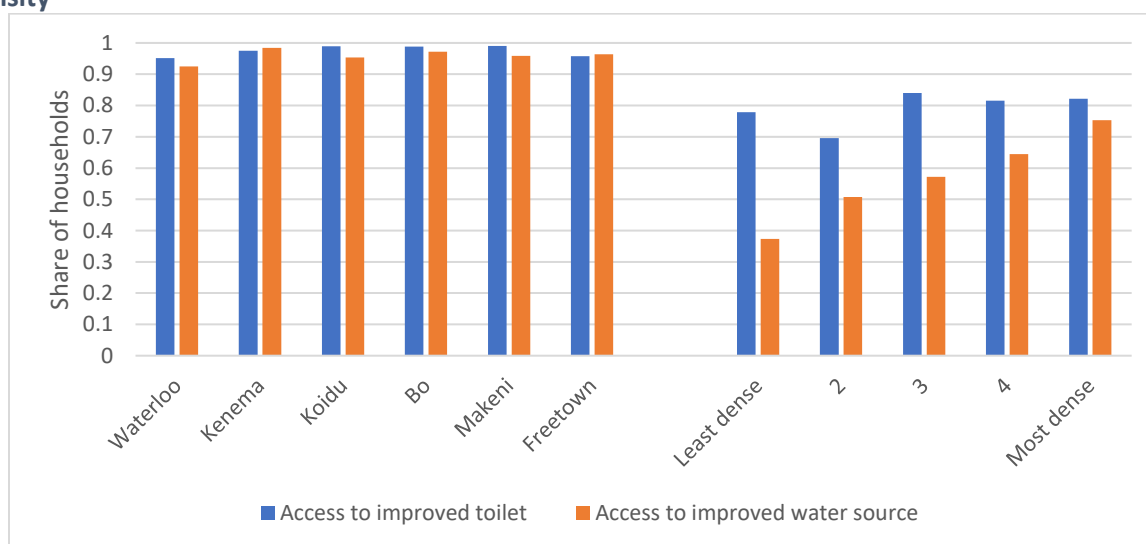
Source: 2015 population census.

Note: Figure presents the share of educated adults in the city and within a given radius. The value does not include the city itself; it is just the average share of educated adults within that radius from the city's centroid. Areas considered outside of the city are at the EA level.

5.27. **Access to services and other amenities may also play a role into the decision process of potential migrants.** Additionally, it is important for cities to be able to provide services to its population in the face of growing population. This is quite relevant as all secondary cities, except for Bo, grew faster than Freetown between 2004 and 2015. A growing population could put a strain on the city's infrastructure and many cities may not be able to quickly cope with increased demand. The capacity to deliver services effectively diminishes as population growth strains the resources available to the city.<sup>70</sup>

5.28. **Access to water and adequate sanitation (improved toilets) is high in Sierra Leone's secondary cities (Figure 5-16).** Bo, for example, has a slightly higher share of households who have access to improved toilets than Freetown. Bo also has a slightly higher share of households with access to improved water than Freetown. In all 6 cities over 9 out of 10 households have access to an improved water source and toilets. Nevertheless, access to water is lagging considerably in areas outside of the main cities (Figure 5-16). On the other hand, access to toilets is mostly lagging in the south of the country (cold spots in Figure 5-17).

**Figure 5 - 16: Access to improved water and toilet by cities and chiefdoms ranked by population density**

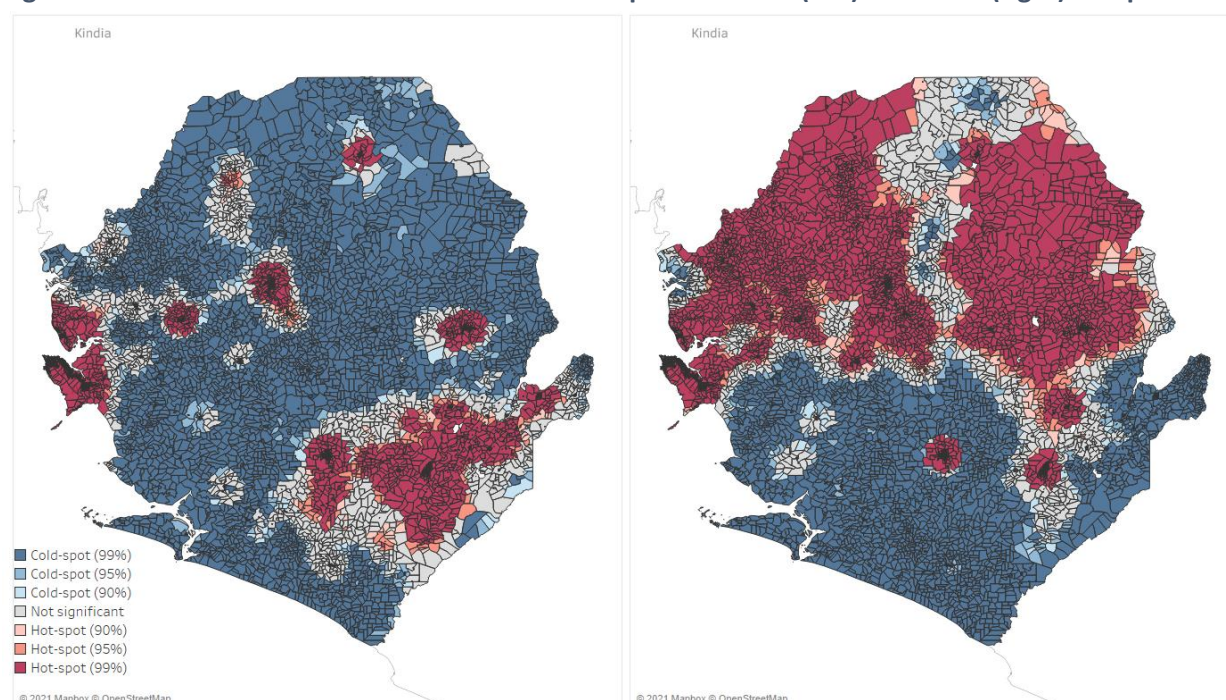


Source: 2015 population census.

Note: Figure presents access to improved toilet and water sources by the 6 largest cities in the country as well as all other chiefdoms (excluding the 6 cities) ranked from least densely populated to most densely populated.

<sup>70</sup> Henderson (2000)

**Figure 5 - 17: Share of households with access to improved water (left) and toilet (right) hotspots**



Source: 2015 population census.

Note: Figure presents the Getis-Ord hotspots of share of households with access to improved water (left) and toilet (right). An EA is classified as a hotspot if its value is significantly higher than that of its neighborhood. The neighborhood average is a distance weighted average where areas that are farther away from the EA carry less weight. All EAs in the country are in the neighborhood.

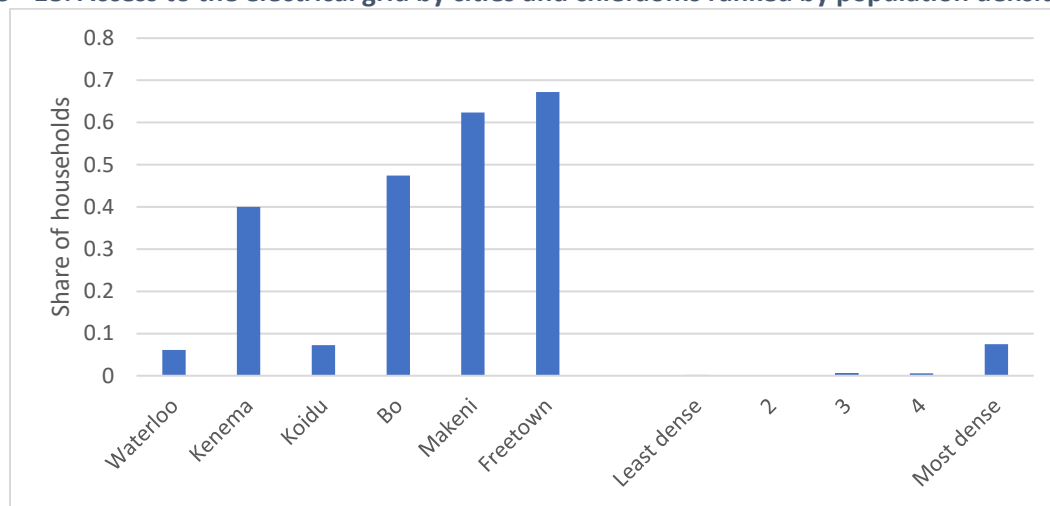
**5.29. Access to electricity is considerably limited across the country, even in some cities.** Among the 6 considered cities only in Makeni and Freetown do more than half of the households have access to electricity (Figure 5-18). Beyond cities the vast majority of the country is not connected to the grid, even within the most densely populated areas it averages less than 10 percent of the households who have access to electricity. Perhaps, even more surprising is that access in Waterloo and Koidu is less than 10 percent as well. Consequently, most of the country is a cold spot for access to electricity, including Waterloo and Koidu (Figure 5-19). Not only does limited access to electricity limit job creation and hamper poverty reduction, it also leads to considerable losses to businesses. The poor reliability of electricity in the country leads to losses which equal over 11 percent of sales, a value nearly double that of Sub-Saharan Africa and low-income countries.<sup>71</sup> With the aim of improving access to electricity the World Bank approved in 2021 a 50 million USD grant to improve electricity access in the country.<sup>72</sup>

<sup>71</sup> World Bank (2017) Enterprise Surveys.

<sup>72</sup> <https://www.worldbank.org/en/news/press-release/2021/01/28/more-than-270000-sierra-leoneans-to-get-better-access-to-electricity>



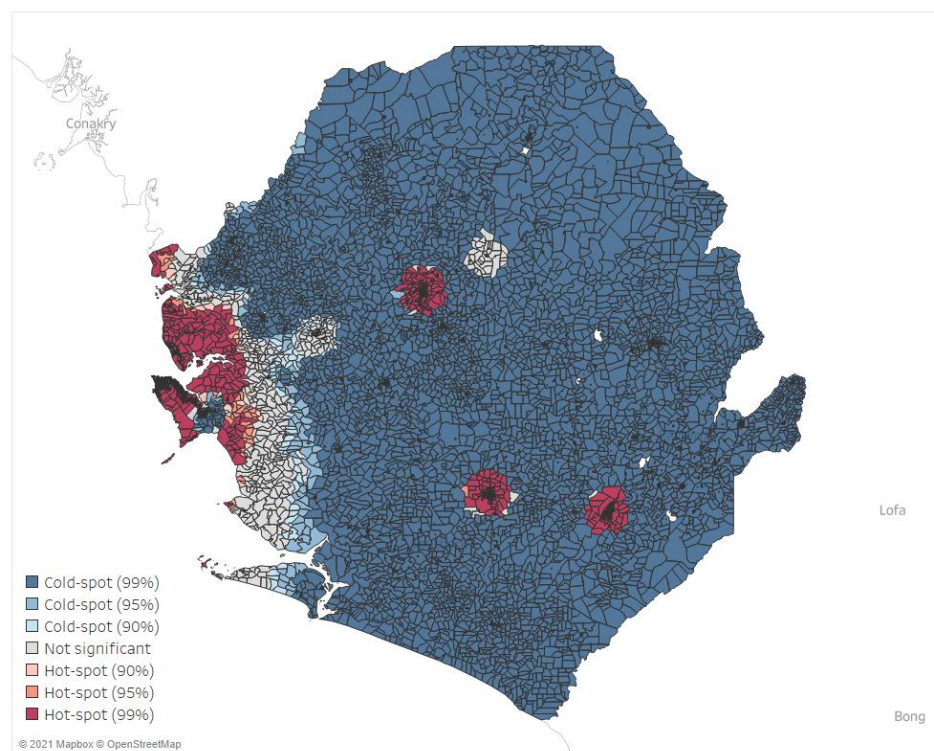
**Figure 5 - 18: Access to the electrical grid by cities and chiefdoms ranked by population density**



Source: 2015 population census.

Note: Figure presents access to the electricity grid in the 6 largest cities in the country as well as all other chiefdoms (excluding the 6 cities) ranked from least densely populated to most densely populated.

**Figure 5 - 19: Hotspots of share of households with access to the electrical grid**



Source: 2015 population census.

Note: Figure presents the Getis-Ord hotspots of share of households with access to the electrical grid. An EA is classified as a hotspot if its value is significantly higher than that of its neighborhood. The neighborhood average is a distance weighted average where areas that are farther away from the EA carry less weight. All EAs in the country are in the neighborhood.

5.30. The following section seeks to identify the factors that matter for increased population density in EA's across the country. The information from this section can be complemented by the regression results from the next section to guide policy makers toward the factors that play a role in increased population density and hence urbanization across EAs.

### Determinants of population change at the EA level

5.31. The purpose of this section is to determine the role played by different characteristics at the EA level on population density. In this section the population census of 2015 for Sierra Leone is used. Additionally, to account for unobserved heterogeneity, due to using data for just one point in time, a spatial first differences approach (Box 1) is utilized to obtain estimates of the relationship between population change (measured as population density) and the share of the population devoted to different activities as well as access to services.<sup>73</sup> The method exploits the possibility that outcomes in two neighbors would be similar if they receive the same treatment. As introduced in Druckenmiller and Hsiang's (2019) the assumption is meant to hold only for adjacent neighbors which are assumed to be conditionally independent from one and other. A slight modification to the assumption is made in this section; neighbors are defined by those who fall within a given radius and thus the comparison is made to the average of the neighborhood.

#### **Box 5.1: Spatial first-differences approach**

Cross-sectional regression can often suffer from omitted variable bias, which can affect the sign and magnitude of regression coefficients. It occurs because unobservable variables that may influence the outcome of interest may be correlated with other covariates in the model. Depending on the strength of the relationships, the bias may be significant. Because of the potential for omitted variable bias, cross-sectional analyses are often regarded as biased, and relationships are not considered causal.

Causal inference relies on the estimation of plausible counterfactual outcomes. For example, what would unit  $i$ 's wage level be if it had the education level of unit  $j$ . Under cross sectional analyses it is assumed that all units are comparable, and that the outcome of units would be similar if these were given the same treatment. In the case of the previous example, it is assumed that by treating  $i$  with the education level of  $j$  the expected outcome of  $i$  will be equal to that of  $j$ . Under unobserved heterogeneity this is not a plausible assumption as there are a litany of factors, many of which are unobserved, which may lead to different outcomes between  $i$  and  $j$ .

Druckenmiller and Hsiang (2019) propose that the treatment effect may be credibly identified under the presence of these unobservable variables, which lead to biased estimates, by comparing adjacent units. The basic idea is that this removes the assumption that all units are comparable and assumes that only neighbors are comparable, and their outcomes would be similar if treated equally. The assumption is similar to the one used in first differences models. Consequently, the key assumption in first spatial differences designs is that the unobservable variables that lead to OVB are common between neighbors, and by taking first differences the influence of unobserved factors on the outcome are removed. Additionally, if there is a component in the unobservables that is not common between the neighbors, the estimated coefficients may still be unbiased, as long as the component is not correlated to the differences in the characteristics between neighbors.

<sup>73</sup> Spatial first differences were introduced by Druckenmiller and Hsiang (2019).



5.32. Results for the regressions where the dependent variable is the natural logarithm of population density are displayed in Table 5.1. Each column presents results for a different radius used to define the neighborhood. Radii are chosen to ensure that every EA has at least a specified number of neighbors. As can be seen in the tables, results are robust to the neighborhood specified. Ordinary least squares results are also shown to assess the difference in the coefficients once spatial first differences are considered.

5.33. The first indicator of interest is the share of households involved in agriculture. As can be expected this indicator has a negative and significant relationship on the change in an EA's density. The coefficient is relatively stable when changing the neighborhood definition from 1 to 20 neighbors.<sup>74</sup> Unsurprisingly, as the share of population in agriculture in a location increases the location's population density decreases. Farming may push individuals away from a given area and given the relatively low productivity of the sector it does not attract individuals from outside. Regions with heavy agricultural presence will often lose population as households seek to diversify away from agriculture and younger cohorts seek activities away from agriculture.<sup>75</sup> Nevertheless, the effect is somewhat muted by the share of farmers in the EA who have access to a rice mill, to stores and to agricultural businesses. The share of farmers who have access to agricultural businesses is negative and not significant in the OLS results, while in the spatial difference results the coefficient is positive and significant at the 10 percent level illustrating the potential bias of a cross-sectional model. This effect for rice mills and agricultural businesses is expected as it relates to value added for farming and added opportunities outside of agriculture for the young and people from other areas.

**Table 5 - 1: OLS and first spatial differences regression results for population density (Nat. log)**

	(1)	(2)	(3)	(4)	(5)
	OLS	1st diff (N=1)	1st diff (N=5)	1st diff (N=10)	1st diff (N=20)
Sh. of HH farming	-2.279*** (0.0813)	-2.145*** (0.101)	-2.267*** (0.101)	-2.373*** (0.101)	-2.538*** (0.102)
Sh. of farm HH with access to a rice mill	0.985*** (0.0668)	0.531*** (0.0817)	0.577*** (0.0787)	0.554*** (0.0775)	0.534*** (0.0751)
Sh. of farm HH with access to ag. business	-0.00242 (0.0704)	0.145* (0.0764)	0.146* (0.0750)	0.140* (0.0741)	0.144** (0.0726)
Sh. of farming HH with access to a store	0.233*** (0.0671)	0.257*** (0.0703)	0.243*** (0.0693)	0.252*** (0.0684)	0.243*** (0.0670)
Sh. of adults	-0.712** (0.337)	-1.736*** (0.388)	-1.678*** (0.393)	-1.688*** (0.388)	-1.668*** (0.382)
Sh. of child-bearing age women	3.486*** (0.582)	3.178*** (0.647)	3.290*** (0.643)	3.305*** (0.640)	3.590*** (0.635)
Sh. of ad. with secondary or higher education	2.393*** (0.188)	2.682*** (0.217)	2.825*** (0.221)	3.021*** (0.224)	3.189*** (0.225)
Sh. of HH connected to the electrical grid	0.858*** (0.0639)	0.294*** (0.0961)	0.312*** (0.0980)	0.279*** (0.0980)	0.300*** (0.0979)
Sh. of HH with access to improved water	0.485*** (0.0411)	0.449*** (0.0461)	0.471*** (0.0451)	0.488*** (0.0449)	0.480*** (0.0443)
Sh. of HH with access to improved toilet	-0.0310	0.109**	0.100**	0.0754*	0.0684

<sup>74</sup> The radii are chosen to ensure every location has at that number of neighbors. In the case of Sierra Leone's EAs the minimum distance to ensure at least 1 neighbor is 10.8Km, for 20 neighbors it is 28Km.

<sup>75</sup> Kilic et al. (2009)

	(0.0378)	(0.0430)	(0.0429)	(0.0428)	(0.0422)
Sh. of HH with a health center (<1/2mi)	0.840***	0.778***	0.773***	0.772***	0.771***
	(0.0401)	(0.0442)	(0.0433)	(0.0432)	(0.0428)
Share of Krio speakers	0.912***	0.756***	0.861***	0.906***	0.920***
	(0.0665)	(0.0899)	(0.0858)	(0.0844)	(0.0820)
EA's square meters	-8.14e-08***	-9.41e-08***	-9.63e-08***	-9.55e-08***	-9.51e-08***
	(5.27e-09)	(6.15e-09)	(5.77e-09)	(5.68e-09)	(5.51e-09)
Constant	6.193***	-1.349***	-1.483***	-1.536***	-1.579***
	(0.167)	(0.0136)	(0.0137)	(0.0138)	(0.0138)
Observations	12,854	12,848	12,848	12,848	12,848
R-squared	0.728	0.398	0.429	0.448	0.476

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

5.34. The next potential biased coefficient under a cross-sectional framework is that of the share of adults in the EA. The OLS model yields a negative but not significant relationship between an EA's share of adults and the EA's population density. On the other hand, the spatial first differences model suggests that an increase in the share of adults is related to a significant decrease in an EA's population density. The negative effect is more than offset by the share of women of childbearing age in the EA.

5.35. The next potential biased coefficient under a cross-sectional framework is that of the share of adults in the EA. The OLS model yields a negative but not significant relationship between an EA's share of adults and the EA's population density. On the other hand, the spatial first differences model suggests that an increase in the share of adults is related to a significant decrease in an EA's population density. The negative effect of the share of adults in the EA is more than offset by the share of women of childbearing age in the EA. This makes sense, all else equal, as more adults are present in a region there is more competition for limited economic opportunities and thus many may be forced to seek to migrate in search of opportunities.

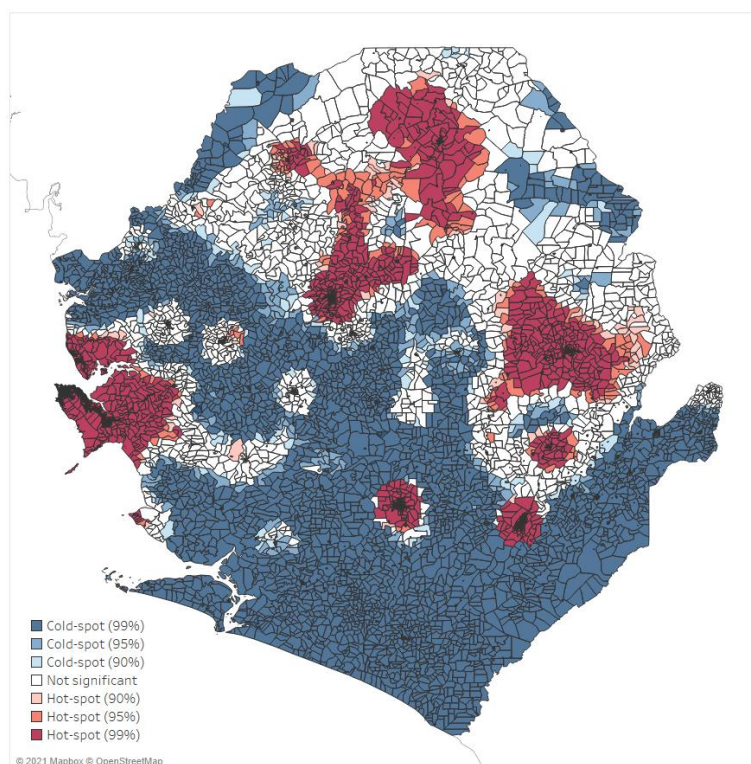
5.36. The coefficient and the sign for the share of adults with higher education is positive and significant. All else equal, EA's with a higher share of adults who are educated are likely to attract more people. This could relate towards those with education being more likely to create non-farm enterprises which may lead to job opportunities for others and attract people from other EAs; it may also foster investment in the region and attract more people.

5.37. Access to services and amenities that are in an EA or proximate to are also important determinants of an EA's population density. Areas connected to the electrical grid are likely to become more densely populated. The lack of access to electricity in a given location can limit operation and business growth, which can lead to limited job creation in the location and attract fewer individuals. Lack of electricity in an area would also limit opportunities to create agglomeration economies and thus may push individuals out of the region. Access to other services, such as water and toilets are also positive determinants to increased population density. These services may attract people from other areas but the lack of these is also a factor which may lead to increased child mortality in an area.

5.38. Finally, an increased share of the population who speaks Krio also leads to an increase in population. Krio is the most spoken language in Sierra Leone and over 70 percent of the population speaks the language. The language is most spoken around the secondary cities as well as Freetown (Figure 5-20, bottom left). Language facilitates integration in new surroundings and all else being equal the more

people who speak Krio the more people will be attracted to the city. People who speak Krio are likely more able to find opportunities in cities as well as these cities attract more people to their boundaries.

**Figure 5 - 20: Share of population speaking Krio language hotspots**



Source: 2015 population census.

Note: Figure presents the Getis-Ord hotspots of share of individuals who speak a language. An EA is classified as a hotspot if its value is significantly higher than that of its neighborhood. The neighborhood average is a distance weighted average where areas that are farther away from the EA carry less weight. All EAs in the country are in the neighborhood.

5.39. Overall, the section explores what factors may lead to increased population density, which is often used as a definition of urbanization. Economic development can lead to increased urbanization as people may seek to move to areas where opportunities for a better life are available. However, just as one can be attracted to urban areas, people can also be pushed out of rural areas. The lack of infrastructural amenities such as access to electricity, water, sanitation, and education are likely factors that push individuals away from a given area. As cities grow, they struggle to efficiently provide such services and may become less attractive. Findings in this section suggest that, all else equal, as less people have access to services, areas will lose population. Also, while increased agriculture in an area may lead to lower population density its effects may be offset by creating opportunities related to agriculture which can attract people to the area.

### Policy recommendations and discussion

5.40. **The section has highlighted that there are still large gaps in the country, not just in areas outside the main cities but also between cities.** Closing these gaps and ensuring that all Sierra Leoneans can have

access to adequate services will go a long way towards ensuring that the entire country, regardless of where they are born, have access to opportunities to improve their livelihoods. Limited access to safe drinking water and toilets can help avoid disease and improve the productivity of working age adults as well as ameliorate stunting rates across the country. For rural populations who have the economic means, the lack availability of these services in their vicinity and the availability of these in cities could act as an incentive for migration to cities.

**5.41. As Freetown's population grows, its ability to offer services and opportunities for its residents is more limited.** Efficient management of Freetown becomes more complex as it grows. Consequently, provision of services becomes more costly as people settle in more remote and difficult to reach areas within the city. Additionally, education quality in these large cities also suffers since there are fewer teachers and schools available. Resources devoted to Freetown to provide services and address congestion and environmental degradation present could come at the cost of the development in secondary cities. The argument made in the chapter is that secondary cities could offer a higher return on investment to government. Investing in Sierra Leone's secondary cities could lead to lower poverty as well as economic growth.

**5.42. Increased investment in secondary cities could yield considerable poverty reduction in Sierra Leone.** There are a larger number of poor individuals in the immediate neighborhood of secondary cities than around Freetown. This suggests that investment in secondary cities could have considerable effect on poverty reduction as investment in secondary cities can reach a much higher number of the poor at, perhaps, a lower cost since people, particularly the poor are constrained by distance when considering where to migrate. Although, investment in secondary cities could propagate to a higher share of the country's poor without necessarily increasing migration. As mentioned, if investments in cities are made so that these can add value to agriculture, there could be considerable benefits to farmers from surrounding areas.

**5.43. For farming households cities could act as hubs for adding value to their crops but the majority of farming occurs far away from Freetown.** Secondary cities hold more promise than Freetown in regards toward acting as an industrial hub for farmers where they can sell their products, purchase inputs and necessary machinery, and provide a labor market beyond agriculture that can allow farming households to diversify their incomes. Nevertheless, for this to be the case farmers need to be able to access cities and adequate roads and transportation can help many farmers and their family make the most of the many opportunities nearby cities and towns may have to offer. Food processors in cities can also benefit from increased access to fresh raw material for their production although given the limited access to electricity these processors will need reliable electricity, water, and roads to be able to increase their production in a considerable manner.<sup>76</sup>

**5.44. For the rural poor, increased education and skills can allow them to make the most out of the many opportunities cities may have to offer.** Despite informal jobs being an effective avenue for job creation and poverty reduction, these are not long-term solutions and are unlikely to spur economic transformation. These can serve as short to medium term coping strategies in the face of shocks, but formal employment is a viable path towards escaping chronic poverty. However, to access formal employment in cities, rural Sierra Leoneans will likely have to acquire more education. Increased

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<sup>76</sup> Wadie (2020)

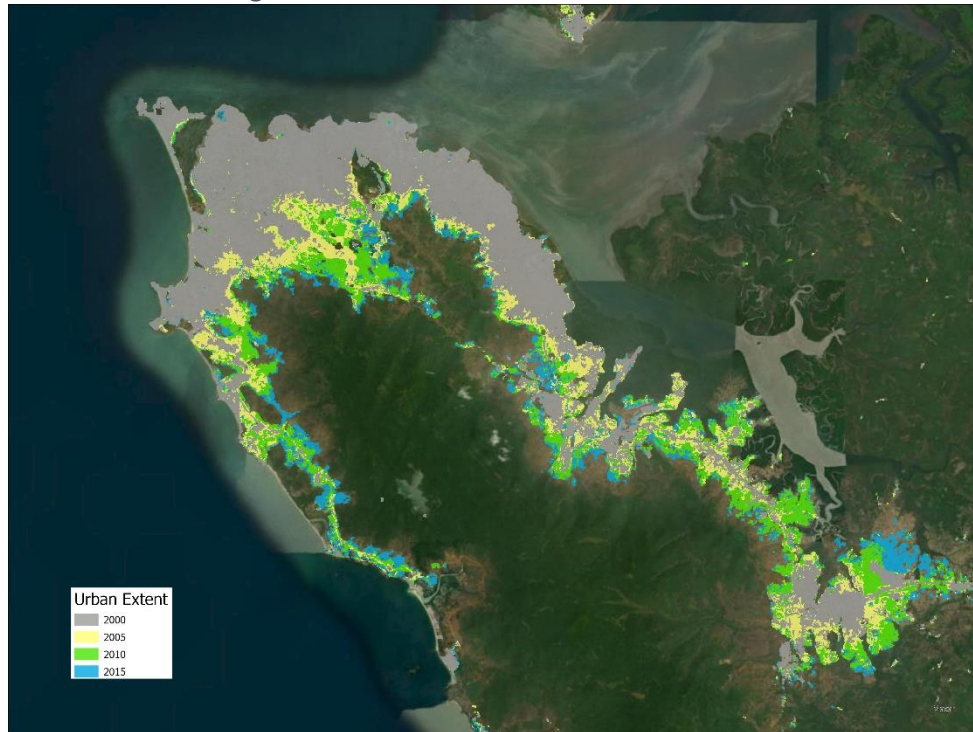
investment in education provision and quality can help more Sierra Leoneans access formal opportunities while at the same time investment is needed to ease the production constraints faced by firms so that productivity can improve and enable these firms to expand and demand more skilled employees.





## Appendix: Change in urban extent over time

**Figure A1: Freetown urban extent over time**



**Figure A2: Bo urban extent over time**

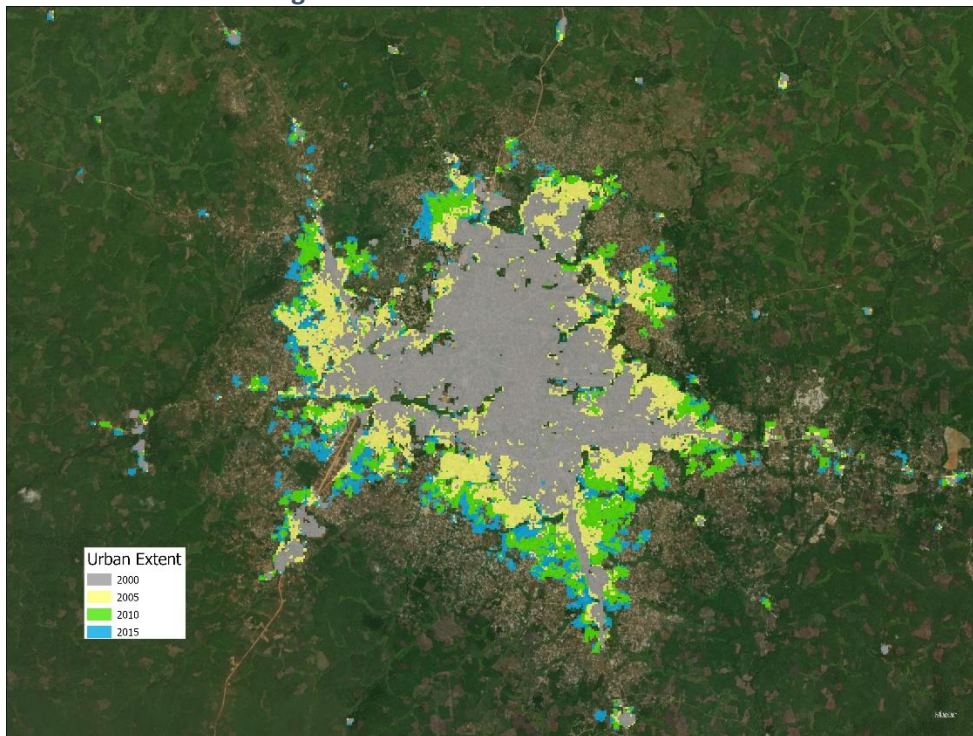


Figure A3: Kenema urban extent over time

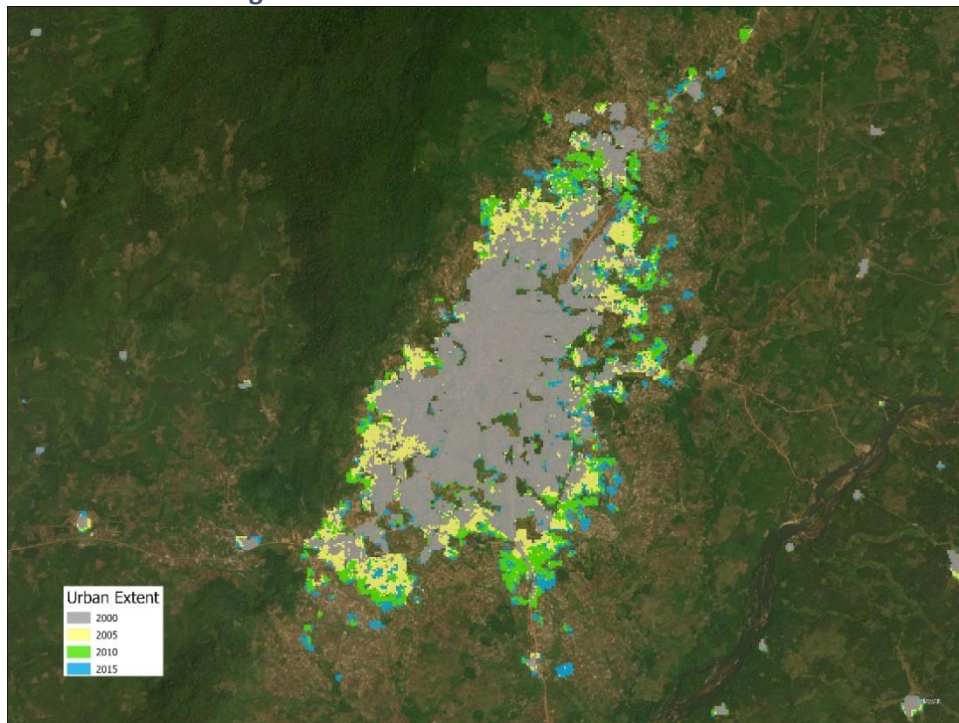


Figure A4: Koidu urban extent over time

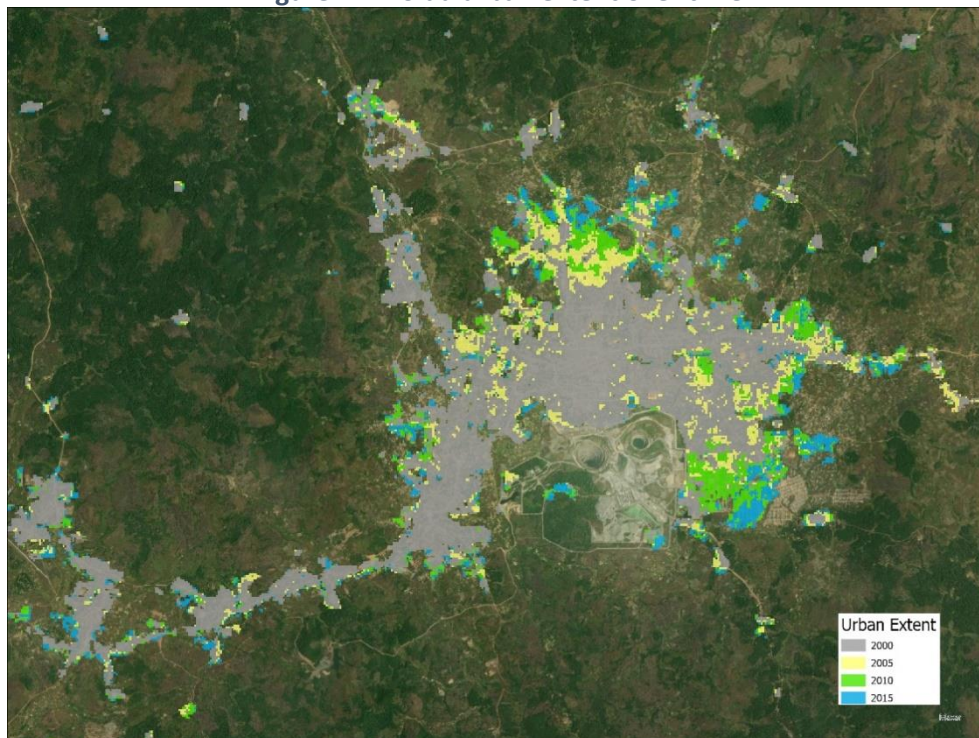




Figure A5: Makeni urban extent over time

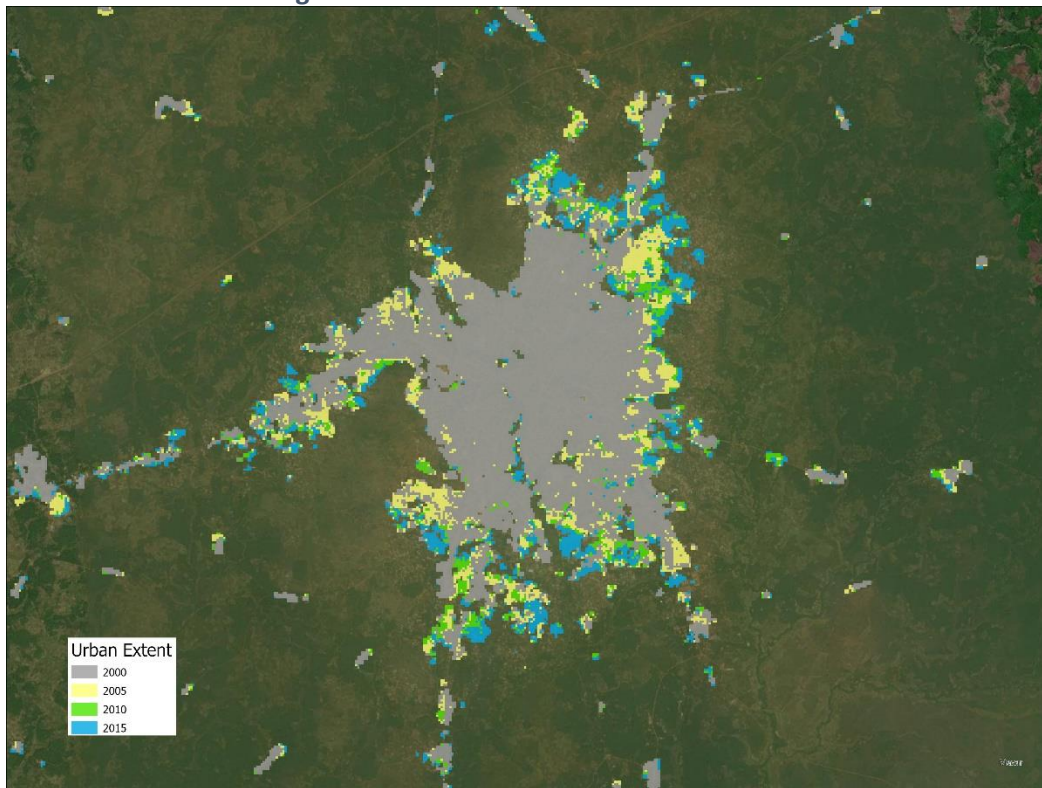
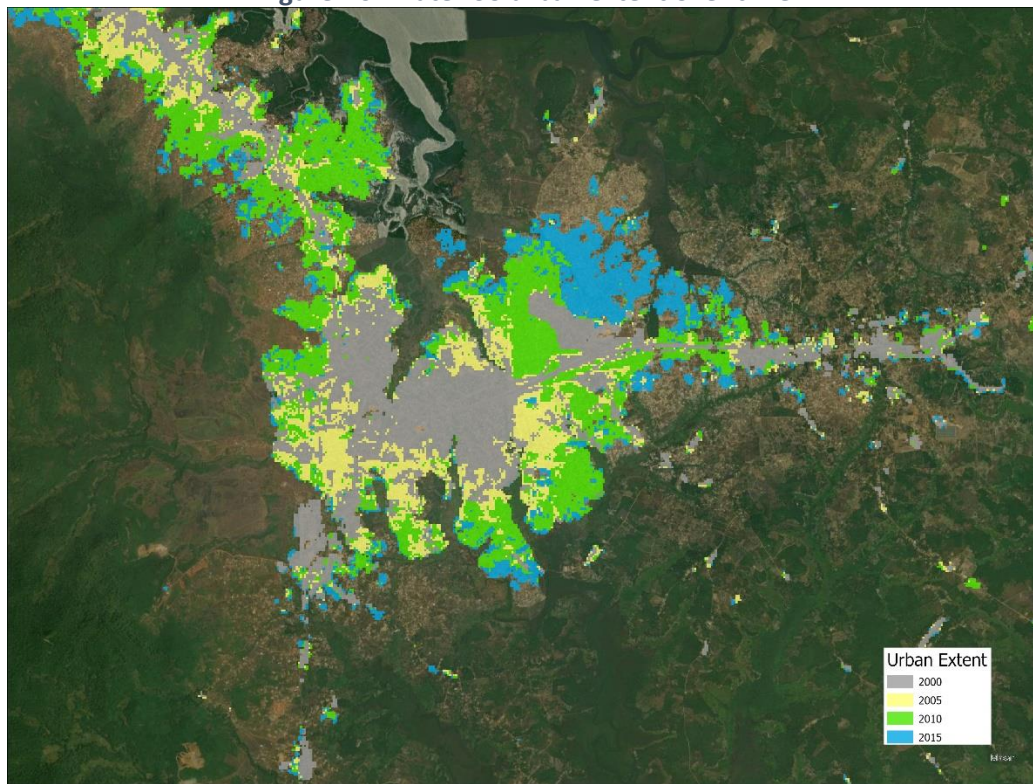


Figure A6: Waterloo urban extent over time





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