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Which Demographic Quintile Benefits from Public Health Expenditure in Nigeria: A Marginal Benefit Analysis

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Abstract: Policymakers concur that social investments are crucial, and that inequality must be decreased to accomplish long-term poverty reduction. Nigeria, one of the 20 poorest countries in the world, has a severely unequal society at the moment, with over 80% of the people living in deep, severe, and pervasive poverty, with an estimated 5% of the population possessing 85% of the country's resources. This article's focus is on how benefits are dispersed among various demographic groups. Previous data collection does not reflect the present realities of this topic. For this analysis, in southeast Nigeria, data sets from government agencies and for-profit service providers were utilized. The benefits of distinct quintiles were estimated using a marginal benefit incidence analysis. The results show that governmental spending in Nigeria is not pro-poor and that the country's southeast governments supported spending for the wealthy rather than the poor. The results show, among other things, that investment in health is not well directed; benefits from primary education and primary healthcare appear to be disproportionately dispersed to the upper class in the states studied, as they are throughout Nigeria. The paper serves as an example of the value of benefit incidence analysis (BIA). This article recommends effective targeted discretionary spending to lower systemic poverty and inequality. If education and health spending were more pro-poor, better education and health outcomes, strong governance, high per capita income, and wider access to information would all be more likely.

Keywords: health; expenditure; poverty

JEL Classification: A11; A13; G31; G32; G38



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1. Introduction

Lack of resources can hurt relationships, health, life expectancy, education, and other factors (Victoria 2018). However, global sustainable development goals are supporting initiatives to fight poverty and enhance living conditions. Despite being Africa's top oil producer, Nigeria still has trouble turning its resources into better living circumstances. According to recent estimations, Nigeria has emerged as the archetype for high-income poverty in Africa. This is especially important given the 2014 GDP rebasing, which elevated it to Africa's largest economy, and the mismanagement of oil revenues since the 1970s. When multiple perspectives on the nature of poverty in Nigeria are applied, there is evidence that socially excluded people are impacted (Victoria 2018). However, compared to other African and Asian nations with comparable histories, Nigeria's development paradox stands out. Despite receiving over \$300 million in total oil revenue from 1975 to 2015, Nigeria's current per capita income is still meager in real terms and lower than the prediction. Adejuwon and Adekunle estimate that approximately 70% of Nigerians live in poverty (2012). In Nigeria, poverty is widespread, severe, and enduring.

Nigeria is currently one of the world's 20 poorest countries, with roughly half of the population controlling 5% of the nation's resources. This raises significant questions regarding what transpired with the social investments, and, on the other hand, who

benefited from them. Furthermore, [Dauda \(2017\)](#) observes that Nigeria's poverty pattern differs from that of many other countries in that, despite appearing to be making economic progress, poverty is still increasing, with the North-West and North-East zones leading the poverty index. On the other hand, prosperity has reduced poverty in developing nations in Europe, North America, and Asia. This confirms the widely accepted view that there is no direct correlation between poverty, development, and advancement.

[Agu and Caliar \(2014\)](#) assert that the government, including Nigeria, is responsible for a sizeable percentage of the economic activity in most rising nations. They contend that determining who gets what, when, and how is an important responsibility for the government at all levels. However, experts have long disagreed on the connection between government spending and economic growth. However, governments serve two main purposes. These functions encompass social, public, and security benefits. Despite the lack of an established framework on the mechanisms, the relationship between poverty reduction and public spending has been a topic of discussion over the past 20 years ([Aigbokhan 2008](#); [Al-Yousif 2000](#)). The relationship between demographic dividends, inequality, poverty, and public health spending is part of society's larger picture. Injustice and a lack of resources generate poor health outcomes since the impoverished receive few significant benefits. Data show that residents of developing and transitional nations have less access to healthcare services than citizens of affluent nations. Additionally, access to healthcare is limited for the impoverished in their home countries. Furthermore, it is said that in developing nations, access to healthcare is frequently hampered by a lack of information and financial means.

Research indicates that there is a wide range of access to and utilization of government services by Nigerian families ([Eboh and Diejomaoh 2010](#)). Typically, higher-income groups benefit more from social investment by the government. Ben-Shahar asserts that the poor are frequently left unprotected from the detrimental effects of budget cuts; these cuts are frequently brought on by a framework's inability to predict revenue, such as a decline in the price of oil globally, which could result in a reduction in distributions to socioeconomic areas ([Brian et al. 2001](#)). The Nigerian health system, which includes tertiary facilities, is in disarray, according to data from numerous studies, which has fueled health tourism to other nations with better health facilities. The wealthy classes are still supported of despite this. In addition, Nigeria's productive sectors of the economy have declined significantly over the last two decades, and there is currently concern that the poor will pass on their poverty to their children, as poverty has become hereditary in the country.

Throughout most of Sub-Saharan Africa, the poor are especially vulnerable. Poorer households, for example, face crippling healthcare costs, thus allocating more healthcare discretionary non-food spending has become imperative. Long-term, business analysts and demographers have concluded that social interests in health and education should be prioritized to achieve equitable gains across demographic groups and long-term poverty reduction ([Ogujiuba and Mngometulu 2022](#)). Furthermore, contrary to earlier advancement assumptions that financial disparity promotes poverty reduction and growth, [Cornia et al. \(2004\)](#) assert that while inequality persists, no discernible progress toward sustainable development can be made. This contradiction draws attention to the well-being framework's apparent value in promoting economic development and eliminating poverty. However, rather than focusing on who receives what, when, and how, a large portion of the current debate among experts on the relationship between public spending and demographic dynamics has focused on determining the ideal population size and its implications for expectations for everyday comforts.

In 2015, 368 million of the world's 736 million extremely poor lived in just five countries, accounting for half of the total. India, Nigeria, the Democratic Republic of the Congo, Ethiopia, and Bangladesh have the highest number of extremely poor people (in descending order). They are also the most populous countries in South Asia and Sub-Saharan Africa, which account for 85 percent (629 million) of the world's poor. As a result, large reductions in poverty in these five countries will be critical if the global target of reducing extreme

poverty (those living on less than \$1.90 per day) to less than 3% by 2030 is to be met (Roy and Divyanshi 2019). Nonetheless, it is undeniable that most efforts made by densely populated nations to offer a respectable standard of living in terms of social services are continually stymied by rapid population growth without commensurate economic growth. The benefit incidence among the various quintiles hence becomes crucial in general.

Howbeit, interests in health, education, and social issues were highlighted by the Poverty Reduction Strategies Programs of the World Bank during the 1990s. They contend that boosting the creation of human capital lowers poverty. According to the World Bank (2021), human capital improves people's human capacities and productivity, allowing them to alleviate poverty and raise income through better chances. This simply suggests that poverty is reduced positively when expenditure is placed on social issues, and adversely when spending is concentrated on loss financing, economic, and community services. Policymakers must comprehend the distributional effects of such expenditure since the Nigerian government has resorted to using discretionary funds to mitigate the effects of poverty over time due to economic hardship. There are various perspectives and studies on the relationship between public sector spending and social development, even though most scholars believe that there are situations where less government spending is beneficial to social development and others where the opposite is true. As a result, there is a two-way relationship between social progress and government investment. This is because higher growth leads to better results, and higher sectoral outcomes, on the other hand, complement expenditures on social infrastructure. As a result, understanding the links between poverty reduction and redistribution impacts has become not just necessary but also imperative.

Nigeria, a third-world African country, is known as the world's poverty capital. It has surpassed India in terms of the number of people living in extreme poverty. Approximately 86.9 million people, or roughly 50% of the total population, live in extreme poverty. Despite its smaller size, both geographically and in terms of population, the country is failing to reduce poverty rates. This is due in part to the mismanagement of the oil industry and the presence of corruption. In addition, the country is experiencing a "population boom", which will make managing poverty rates more difficult. However, the Nigerian government has started several programs to aid those who are poor, but it is obvious that these efforts have not been effective enough, largely to poor targeting of resources. The country's programs are not successfully reducing the rates of poverty because of the high levels of corruption, unemployment, and inequality. The fact that Nigeria is the world's poorest nation influences the entire world in addition to Nigeria. Thus, Nigeria falls short of the United Nations ambition to end world poverty by 2050. A bigger plan to adopt a sustainable development framework, reducing the income gap between the wealthy and the poor, and efficient resource allocation, is essential. Ogundipe and Nurudeen (2013) assert that such a strategy would significantly lower poverty if social investments, notably in health and education, were made with care. Due to inadequate healthcare, the poor are vulnerable. Quality healthcare services affect attitudes toward work and society and beliefs and value systems. They also have an impact on precise knowledge and the development of a broad cognitive skill set. Lack of access to healthcare makes the poverty of the poor even worse.

With a growing emphasis on the importance of pro-poor health financing, it is becoming increasingly important to be able to monitor the impact of policy and strategy on poor healthcare consumers. While National Health Accounts are an important tool for establishing the level, sources, and allocation of financial resources within the health system, they provide little information about who benefits from the expenditure. Benefit incidence studies look at how well governments use their limited resources to meet the needs of the poor. They provide a revealing analysis of how, for example, groups divided by income or gender use primary and hospital services differently in rural and urban settings. The objective of this article is to demonstrate the effects of spending on a variety of demographic groupings. Because of the close links between health sector policy goals relating to equity of access, determining who benefits from public subsidies is critical for policymakers. The

distribution of the benefits of social programs has a significant impact on progress toward the SDGs' general poverty reduction targets. Thus, periodic benefit incidence studies could be a useful performance indicator for the health sector (for possible incorporation into Sector Wide Approaches and Poverty Reduction Strategy Papers). Governments can be held accountable for their success in allocating public resources, but they cannot be held accountable for health-related improvements. This article provides context and assists in the correction of existing flaws, allowing for the more effective implementation of future resource distribution methods for reducing poverty and economic imbalance in Nigeria.

2. Literature Review

There is an alternative path that the causal relationship between healthcare benefits and absenteeism takes. [Leo \(2014\)](#) claims that Nigeria's social investment was already among the lowest in the world before the 2010 GDP rebase, but it dropped even lower after that. For instance, public health spending represented 2% of GDP before rebasing but just 1% following it. In most impoverished countries, medical care is routinely postponed, which hurts people's well-being, income, and out-of-pocket spending over the long run. Income, poverty, and education have a negative correlation, according to a prior study ([Dabalén et al. 2013](#)). Before the Boko Haram insurgency in northern Nigeria, 10 million Nigerian children (42 percent), according to [Zachary \(2014\)](#) and [Bourne \(2015\)](#), were not enrolled in school (2015). In emerging nations, fiscal policy formulation and implementation are challenging. Contrary to established economies, developing nations lack a de facto progressive tax system and efficient tax administration to change the distribution of income after taxes ([Alesina 1999](#); [Zee 1999](#); [Atkinson 1999](#); [Chu et al. 2000](#); [Tanzi et al. 1999](#)). In a similar vein, many nations lack the administrative capacity and the resources necessary to carry out cash transfer programs that can affect post-transfer income, consumption, or other welfare metrics ([Tanzi 1998](#); [Chu et al. 2000](#); [Bourguignon et al. 2008](#)). Since in-kind transfers often consist of social services such as education, healthcare, and social safety net programs, governments of developing countries prefer to distribute resources in this way. While many sorts of government spending are important for individual well-being, social services are frequently viewed as the most important for enhancing the population's long-term earning capacity, especially for the poor.

The utilization of government inpatient and delivery services in India is pro-poor, according to the findings of [Bowser et al. \(2019\)](#). When gross and net benefits are considered, however, services become more equal and less pro-poor. Gross benefits are nearly equal for all services when measured using state-level unit costs. Although there are some pro-poor gross benefit trends for national outpatient services, the findings also show that national gross benefit equality conceals a significant disparity across Indian states. While several Indian states have pro-poor outpatient gross benefits, few have pro-poor inpatient and delivery services. Net benefits, which consider both unit costs for each service and out-of-pocket (OOP) expenses, follow a similar pattern. In addition, those who use public facilities spend considerable OOP to supplement government services. On the other hand, according to [Peter et al. \(2017\)](#), based on available international costing norms, India does not finance primary healthcare services at a level sufficient to provide a comprehensive package of services to its citizens. While states bear most of the financial burden for healthcare, the federal government provides targeted grants for primary care to supplement state spending, particularly in poorer states. Furthermore, the weak and disadvantaged members of society may experience uncomfortable conditions and higher degrees of poverty as a result of the lack of social benefits (transfers).

[Castro-Leal et al. \(1999\)](#) looked at health and education spending using comparative benefit incidence analysis. Government health expenditures for the wealthiest 20% of the population were roughly 2.5 times greater than for the poorest 20%, according to their data. The wealthiest 20% of the population in five of the seven countries had more financial improvements than the bottom 20%. Overall, the wealthiest 20% received around 1.5 times the amount spent on primary care as the lowest 20%. The analysis indicated that public

spending is reversing in all the countries studied. Moreover, the bounds of traditional benefit-incidence were extended in research in Nepal, Sri Lanka, and Bangladesh studied by [Rannan-Eliya et al. \(2001\)](#). To examine the total fairness of healthcare finance rather than just the government's share, this included both private and public healthcare spending. While Sri Lanka's health and financial situation has improved, Bangladesh's has worsened. The distributional effects of health expenditures in India and its major states were also evaluated by [Ajay et al. \(2000\)](#) using BIA, and they found that the wealthy benefit more from health spending than the poor. Compared to hospital treatment, the financial benefits of primary and outpatient care were divided more fairly. Pro-rich favoritism was more prevalent in rural than urban areas and poorer than affluent states. However, the findings of [Gomanee et al. \(2005\)](#) demonstrate the need for new techniques in battling poverty rates, as social service spending is not as successful as it should be in reducing poverty due to inadequate targeting strategies. This has sparked a lot of debate over how effective the Nigerian government's targeting strategy is.

MBIA (marginal benefit incidence analysis) is a well-known approach for assessing healthcare and education spending distributions in connection to socioeconomic welfare distributions ([Bowser et al. 2019](#)). Instead of comparing descriptive statistics by stratified variables, it integrates the distribution of benefits throughout the population into a single number that is nearly comparable to the Gini coefficient and may be used to compare results over time and space. This characteristic has led to the method's usage in a variety of non-industrialized nations, such as Vietnam, Pakistan, Jordan, and Nigeria, to give quantitative proof of how medical care administration and expenditures are dispersed to various population segments based on their socioeconomic position ([Bowser et al. 2019](#)). Despite inherent subjective limitations and challenges to quantifying concepts, marginal benefit incidence analysis has assumed a central role in most policy evaluations. This method (MBA) is frequently employed to discover which demographic groups benefit from government spending and to investigate the distributional impact of government spending (cash or in-kind). The main premise is that government spending benefits should be dispersed evenly, with those in the lowest quintile benefiting more than those in the richest quintile. The method can therefore be used to assess how pro-poor the government's fiscal policies are. In other words, the Keynesian model proposes that government investment be utilized to close skill gaps in the market, raise proficiency, and guarantee a fair distribution of economic advantages ([Van-de-Walle 1995](#)).

The World Bank, [Demery et al. \(1995\)](#), [Castro-Leal \(1996\)](#), [Sahn and Younger \(1998\)](#), [Van-de-Walle \(1995\)](#), and others have all utilized this method to examine low- and middle-income countries. Furthermore, according to [Reinikka \(2002\)](#), the use of BIA is most beneficial because there is minimal evidence of the effect of public sector investment on development indicators, which is the case in Nigeria. However, classifying the receivers of government healthcare spending is the same as evaluating how well healthcare initiatives are working to combat poverty and inequality. Nonetheless, most subsequent benefit incidence investigations were started by ([Selowsky 1979](#)). An estimate of the distributional advantages of government spending is produced by their research.

3. Data and Methods

The numbers for this study were compiled using data from the Nigerian Living Standard Survey 2018 report as compiled by the [World Bank \(2021\)](#) microdata. The survey targeted both city and rural families at the same time, and it included roughly 19,000 families. The survey included a wide range of topics (including social and financial advice), and the data included information on a family's total spending. The 2018/19 NLSS questionnaire covers all the demographic indicators, including those related to education, health, labor, spending on food and non-food items, non-farm enterprises, household assets, and durable goods, access to safety nets, housing conditions, economic shocks, exposure to crime, and farm production indicators. The survey data includes information on resources and their accessibility at the third level of government and is broken down by state, geographical

region, and orientation (male/female). The 2018 HNLSS was a development of the 2010 review and an expanded adaptation of it. The sampling frame for the 2018/19 NLSS was the national master sample created by the NBS, referred to as the NISH2 (Nigeria Integrated Survey of Households 2). The enumeration areas (EAs) for the 2006 Nigeria Census Housing and Population conducted by the National Population Commission were used to create this master sample (NPopC). The NISH2 was developed by the NBS as a framework for surveys covering issues at the state level. For surveys containing LGA-level domains, NBS created a separate master sample from which the NISH2 EAs were produced (the “LGA master sample”).

This analysis is premised on the data on income, spending, health, and education in each of the five states in the southeast states of Nigeria. BIA identifies the recipients of public goods and services. Additionally, using the information on unit costs, shows how benefits affect various populations. Expenditure on health, for example, can be formally written as:

$$X_j \equiv \sum_{i=1}^3 E_{ij} \frac{S_i}{E_i} \equiv \sum_{i=1}^3 \frac{E_{ij}}{E_i} S_i \quad (1)$$

This is computed by multiplying the main health facility unit cost by the number of secondary accesses multiplied by the secondary health unit cost, plus the number of tertiary accesses multiplied by the tertiary unit cost. The number of secondary healthcare consumers is then multiplied by the secondary healthcare unit cost, which is then multiplied by the secondary healthcare unit cost. The number of tertiary healthcare users is multiplied by the unit cost of supplying tertiary healthcare to obtain the result. According to Amakom (2012), X_j is the total amount of social assistance (wellness) cash that benefits group j (j is the economic group, and for the sake of this article, all families were divided into five quintiles based on their economic status—from the lowest to the highest income group). The subscript i denotes the level of social assistance (in Nigeria, medical care is divided into primary, secondary, and tertiary, so $i = 1$ to 3), and the subscript S and E denote the government social sector (health) subsidy appropriation and the number of people expected to benefit from the wellbeing office for the (wellbeing area), respectively (wellbeing area). This is determined by increasing the unit cost of an essential wellbeing office by the quantity of primary access duplicated by the optional unit cost of auxiliary wellbeing, in addition to the quantity of tertiary access duplicated by the tertiary unit cost.

As per Amakom (2012), the advantageous occurrence of absolute well-being attributed to the group is not entirely settled by “the number of clients of essential medical services from the gathering” (E_{pj}). The quantity of buyers of optional medical services is then duplicated by the unit cost of giving auxiliary medical care, which is then increased by the unit cost of giving auxiliary medical services. The outcome is determined by duplicating the amount of tertiary medical care clients by the unit cost of conveying tertiary medical services.

The percentage of total health spending attributable to group (X_j) is then calculated by:

$$X_j \equiv \sum_{i=1}^3 \frac{E_{ij}}{E_i} \left\{ \frac{S_i}{S} \right\} \equiv \sum_{i=1}^3 e_{ij} s_i \quad (2)$$

Two important determinants are used in Equation (2):

1. The e_{ij} s are the group’s percentages of overall service usage (number of people who visit a health facility in the health sector), indicating household behavior.
2. Government behavior is reflected in the s_i , which is the share of public spending allocated to different types of services.

This study employed an approach where the monetary worth of the benefits people receives from utilizing public services is not based on their behavior. Instead, the unit cost of the service, or its value, was distributed equally among all users of the services in the form of rewards. Instead, rather than determining the precise worth of services provided

by the government, this research concentrates on the distribution of service recipients and the benefits of counterfactual reciprocity of expenditures (Heltberg et al. 2003). The possibility that a group will benefit from a government subsidy or investment is known as this. Ajwad and Wodon (2001) and Lanjouw and Ravallion (1999) calculated the distribution of additions to public service access rates at the margin using a single cross-sectional data set. The spread of new access in lagging regions is predicted to follow the pattern observed in areas with greater access rates; hence, both studies used this assumption to anticipate the development of access through time. However, the methods used by Ajwad and Wodon (2001) and Lanjouw and Ravallion (1999) to rate persons are dissimilar. In addition, while Ajwad and Wodon categorized individuals based on their position in the local income distribution, Lanjouw and Ravallion classed individuals as affluent or poor based on their place in the national income distribution. This assumes that the works of Lanjouw and Ravallion (1999) and Ajwad and Wodon (2001) disagree. The details are as follows:

1. How is endogeneity bias handled in the marginal benefit incidence analysis calculation? Both authors used the overall access rate means to derive the access rate in each quintile. Ajwad and Wodon use the leave-out mean as their right-hand side variable to eliminate endogeneity. Except for the quintile in which the relapse is complete, they regressed against the mean of the admission rates across all quintiles. Lanjouw and Ravallion, on the other hand, used an instrumental method to instrument the real mean, using the leave-out mean.
2. Ajwad and Wodon used marginal benefit incidence analysis to constrain their estimates. Although Lanjouw and Ravallion disagree, they believe that removing the restriction will slant the numbers downward.

Lanjouw and Ravallion also describe the following econometric procedure, which has been used in other studies (Ajwad and Wodon 2001; Kamgnia-Dia et al. 2008):

$$\rho_{i,j,q} = \alpha_q + \beta\rho_k + \mu_q \quad (3)$$

where i refers to a small geographic unit, k to a bigger one, and q to the welfare quantile. The program engagement rate for the partition and quantile is the left-hand variable. The regressor is the percentage of people who participate in programs in the division's region. The marginal effect of increasing people's program participation rates in a particular location and quantile is q . Lanjouw and Ravallion (1999), as the percentage of a specific quintile population who partakes in a program sponsored by the government, defined the average participation rate. Each quantile's regressor is run separately. Furthermore, because ijk is included in k , the estimation has an upward bias. Lanjouw and Ravallion, as previously stated, settled this issue by instrumenting k with the left-out mean. The thinking behind the estimate is that by recognizing contrasts in cooperation, it will be feasible to see how better coverage affects the participation of various demographic groupings. Assuming q is greater than one, an overall expansion in inclusion is related to a lopsidedly critical expansion in support of that division and quantile. Nonetheless, a key postulate in our model is that the political process is consistent across all places and drives the link between program preference and prevalence.

MBIA, on the other hand, is the consequence of government and household efforts achieving "equilibrium". It does not refer to a paradigm that guides government or household activity. On the other hand, studies of demand functions for public services (e.g., Younger 1999) address this gap, but they are few. It also contrasts the costs and benefits. The cost of providing public services is used by BIA as a measure of the value ascribed to such services, and it is assumed that the costs of provision are a decent approximation to the benefit that users attach to such services. MBIA does not, in most cases, cover the total cost of providing public services (e.g., tax administration), including both monetary and nonmonetary costs. At a given point in time, MBIA captures the best benefit incidence of government spending. MBIA is required to provide a dynamic picture of incidence over time for different years. Behavioral models, on the other hand, can better capture

dynamic advantages from government spending than BIA. Benefit incidence estimates frequently represent the average incidence. This means that BIA does not often provide information on who gains from an increase or decrease in government spending, which are crucial problems for policymakers; for a study of marginal incidence, see [Younger \(2002\)](#). More MBIA should be carried out more frequently for emerging countries and transition economies, despite the several inherent limitations of MBIA that have been recognized, even when BIA is absent in many poor nations. When creating and implementing future policy interventions, it is essential to establish a benchmark benefit incidence pattern with the understanding that better methodologies for incidence evaluation should be employed when resources are available.

Analytical Technique (Marginal Benefit Analysis)

Summarily, the steps employed in this article to compute marginal benefit analysis for the southeast states of Nigeria are as follows:

1. The population was divided into equal-sized sections according to welfare standards. This made it possible to split the population into quintiles. More information was broken down by states, locales, and gender.
2. Identification of the households that received government assistance (education and health). The Nigerian Living Standard Survey from 2018 served as the basis for this (NLSS). Additional data was acquired from hospitals visited and schools.
3. The State Universal Basic Education Board (SUBEB) provided primary school information; the Post-Primary School Management Board (PPSMB) provided secondary school information; and the NCCoE, National Board for Technical Education (NBTE), and National Universities Commission provided tertiary school information (NUC).
4. Information on primary healthcare was obtained from the Primary Health Care Development Agency (PHDA) of the southeast states, information on secondary healthcare from the Hospital Management Boards (HMB) of states, and information on tertiary healthcare from the Ministry of Health within the states. See [Figure 1](#) for a map of Nigeria showing the area for analysis
5. Data sets were matched while considering any potential biases in household data brought on by survey design, questionnaire format, and sample size. Using 2018 NLSS household data, we ranked persons in the southeast states based on household consumption per capita, and an exception was given to those who received benefits.
6. The estimated cost of providing a service was determined by dividing government expenditure on the service by the total number of users of the service, and then dividing the estimated cost of providing quality service by the estimated price of providing the service to arrive at the average benefit from government expenditure on the service, using the methodology of [Amakom \(2012\)](#).
7. Finally, a two-stage least square method was used to calculate the distributional spread of benefits across quintiles.

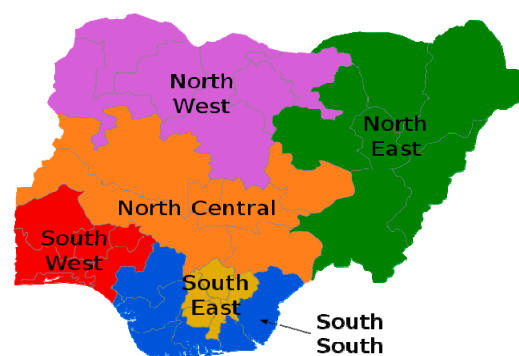


Figure 1. Map of Nigeria showing regions (spatial context for Southeast).

4. Results and Discussion

Tables 1–3 below show the projected benefits and marginal odds of using public primary, secondary, and tertiary healthcare services. Regressing each quintile’s participation rate against the average participation rate yielded these results. The tables show the increase in subsidy incidence per capita for each quintile because of a one Naira increase in aggregate primary healthcare spending. According to Table 2, only three of the five SE states (Anambra, Ebonyi, and Enugu) have a pro-poor goal in terms of primary healthcare. Quintiles (1, 2, and 3) for the states demonstrated that the allocations helped the neediest people the most. They were given a government benefit that was worth more than the N1 they spent. SDG 3: Good Health and well-being correspond to this. This increase, however, will not result in a better average because the other states are still significantly below the planned aim.

Beneficiaries of Health Expenditure across Quintiles in Southeast Nigeria

Below Table 1 shows the spread across quintiles for primary health care amongst the SE States in Nigeria.

Table 1. Primary healthcare (benefit spread using 2018/19 HNLSS).

| States | Abia | Anambra | Ebonyi | Enugu | Imo |
|------------|-------|---------|--------|-------|-------|
| Quintile 1 | 0.964 | 1.385 | 1.113 | 1.453 | 0.988 |
| T—Stat | 2.515 | 2.335 | 2.449 | 2.262 | 1.558 |
| Quintile 2 | 0.997 | 1.520 | 1.063 | 1.480 | 1.088 |
| T—Stat | 1.644 | 2.521 | 2.277 | 1.734 | 1.785 |
| Quintile 3 | 1.112 | 1.393 | 1.067 | 1.327 | 1.063 |
| T—Stat | 2.559 | 3.060 | 2.446 | 1.555 | 2.466 |
| Quintile 4 | 1.014 | 0.514 | 0.957 | 0.449 | 1.039 |
| T—Stat | 1.875 | 1.768 | 1.788 | 2.150 | 1.908 |
| Quintile 5 | 0.923 | 0.200 | 0.822 | 0.300 | 0.837 |
| T—Stat | 6.619 | 1.997 | 5.992 | 3.908 | 8.282 |
| Total | 5.010 | 5.012 | 5.021 | 5.008 | 5.015 |

Source: Author’s Computations.

Table 2. Secondary healthcare (benefit spread using 2018/19 HNLSS).

| States | Abia | Anambra | Ebonyi | Enugu | Imo |
|------------|-------|---------|--------|-------|-------|
| Quintile 1 | 1.015 | 1.068 | 0.964 | 1.074 | 0.995 |
| T—Stat | 3.747 | 3.156 | 2.246 | 3.622 | 3.889 |
| Quintile 2 | 0.927 | 1.117 | 1.016 | 1.076 | 1.015 |
| T—Stat | 6.721 | 2.458 | 7.400 | 2.142 | 3.556 |
| Quintile 3 | 1.115 | 0.979 | 1.015 | 1.065 | 1.023 |
| T—Stat | 4.832 | 2.152 | 2.720 | 2.663 | 5.956 |
| Quintile 4 | 0.879 | 0.973 | 0.891 | 0.993 | 1.057 |
| T—Stat | 1.445 | 1.591 | 1.958 | 1.163 | 1.727 |
| Quintile 5 | 1.066 | 0.863 | 1.117 | 0.793 | 0.913 |
| T—Stat | 3.887 | 3.519 | 2.847 | 2.649 | 3.483 |
| Total | 5.002 | 5.000 | 5.003 | 5.001 | 5.002 |

Source: Author’s Computations.

N/b:

1. Based on the 2018 HNLSS, Tables 1–3 show the instrumental variables estimate of the quintile-specific service rate regression coefficient on the average rate for the southeast region.
2. The instrument for the real mean is the leave-out mean area service rate.
3. The t-ratios are the numbers in parentheses.
4. Quintile 1 (very poor); quintile 2 (poor); quintile 3 (moderate); quintile 4 (rich); and quintile 5 (extremely wealthy).

Table 3. Tertiary healthcare (benefit spread using 2018/19 HNLSS).

| States | Abia | Anambra | Ebonyi | Enugu | Imo |
|------------|-------|---------|--------|-------|-------|
| Quintile 1 | 0.633 | 0.700 | 0.670 | 0.760 | 0.803 |
| T—Stat | 2.246 | 2.934 | 1.705 | 2.450 | 3.177 |
| Quintile 2 | 0.814 | 0.850 | 0.788 | 0.882 | 0.699 |
| T—Stat | 3.208 | 1.776 | 2.012 | 1.499 | 2.803 |
| Quintile 3 | 1.082 | 0.974 | 1.019 | 1.070 | 0.975 |
| T—Stat | 4.525 | 2.167 | 2.456 | 2.886 | 3.850 |
| Quintile 4 | 1.207 | 1.132 | 1.113 | 1.067 | 1.186 |
| T—Stat | 4.648 | 2.360 | 2.829 | 1.996 | 4.485 |
| Quintile 5 | 1.264 | 1.344 | 1.411 | 1.223 | 1.338 |
| T—Stat | 4.613 | 3.926 | 3.258 | 4.165 | 3.615 |
| Total | 5.001 | 5.001 | 5.002 | 5.001 | 5.001 |

Source: Author's Computations.

The affluent were substantially subsidized by the other three states, which increased poverty and weakened the nation's healthcare system. Despite some targeting displayed by Ebonyi state, an overwhelming amount of money was given to the wealthy. This cash might have gone toward aiding the underprivileged and impoverished people in our society. Quintile 5 received funding from the states of Anambra and Enugu of 3.9 percent and 5.9 percent, respectively, on a scale of 100 percent, while the states of Ebonyi, Imo, and Abia provided 26.4 percent, 16.7 percent, and 18.4 percent, respectively, in support of the same group. This scenario assumes that anyone without access to basic healthcare will at the very least experience poverty. The affluent were extensively supported by the other three states, which led to a rise in poverty and a deterioration of the nation's healthcare infrastructure. Even though Ebonyi state showed some targeting, a disproportionate amount of money was given to the wealthy. The less fortunate people in society may have benefited from the use of these funds. Quintile 5 was financed by the states of Anambra and Enugu, with 3.9 percent and 5.9 percent, respectively, on a scale of 100 percent, while the states of Ebonyi, Imo, and Abia supported the same group with 26.4 percent, 16.7 percent, and 18.4 percent, respectively. According to the hypothetical situation, those without access to primary healthcare will, at the very least, experience poverty.

The predicted gains and marginal probability from utilizing public secondary and tertiary healthcare are shown in Tables 2 and 3 and were determined by regressing the participation rates of each quintile against the overall participation rate. The estimated figures in the table show the increase in the distribution of subsidies per capita for each quintile because of an increase in total healthcare spending in Naira. For the demographic group in quintile 1, three states in the southeast had an incidence of more than one at the secondary healthcare level. However, the quintile 4 and quintile 5 demographic groupings benefited the most from state governments' discretionary spending. Table 3 demonstrates that quintiles 1, 2, and 3 were more effectively targeted than quintiles 4 and 5. More than 60% of the resources were obtained by them. However, quintile 5 only received about 20% of the funding, which is anti-poor and goes against SDG 1's No Poverty aim. An identical pattern was discovered at the tertiary level.

Table 4 below demonstrates that quintiles 4 and 5 had high significant values throughout the five states. This group received around half of the public resources. However, it is believed that this trend may be found across all of Nigeria's states. The conceptual framework demonstrates how the poor are shut out of the development process. Targeting was insufficient for quintiles 1 and 2. In this case, the SDG 10 goal of reducing gaps was not achieved because the disadvantaged groups (quintiles 1 and 2) did not benefit at this level. They had about 155 resources in total. This condition is an abnormality in development. Additionally, tertiary healthcare is designed to help the poor who cannot afford specialized care, but in this case, that is not the case. In Nigeria's five eastern states, the extremely wealthy and wealthy fared better than the less fortunate. This circumstance will simply serve to exacerbate the system's growing inequity. Foster et al. (2002) agree with our results.

Furthermore, previous research in Ghana, Malawi, Mozambique, Tanzania, and Uganda revealed a lopsided benefit structure that favored the wealthy over the poor.

Table 4. Access to the healthcare system (poor versus rich): In the SE states, a summary of health benefits is available (quintiles 2, 4, and 5).

| Abia State | | | |
|----------------------|-----------------------|-------------------------|------------------------|
| Quintiles | <i>Primary System</i> | <i>Secondary System</i> | <i>Tertiary System</i> |
| Poor | 19.9 | 18.5 | 16.3 |
| Rich | 38.6 | 38.9 | 49.4 |
| Benefit/Loss | −18.7 | −20.4 | −33.1 |
| Anambra State | | | |
| Poor | 30.3 | 22.3 | 17 |
| Rich | 14.2 | 36.7 | 49.5 |
| Benefit/Loss | 16.1 | −14.4 | −32.5 |
| Ebonyi State | | | |
| Poor | 21.2 | 20.3 | 15.8 |
| Rich | 35.4 | 40.1 | 50.4 |
| Benefit/Loss | −14.2 | −19.8 | −34.6 |
| Enugu State | | | |
| Poor | 29.6 | 21.5 | 17.6 |
| Rich | 14.8 | 35.7 | 45.8 |
| Benefit/Loss | 14.8 | −14.2 | −28.2 |
| Imo State | | | |
| Poor | 21.7 | 20.3 | 13.9 |
| Rich | 37.4 | 39.4 | 50.5 |
| Benefit/Loss | −15.7 | −19.1 | −36.6 |

Source: Author compilation; Underlying data were derived from estimates sourced from the National Bureau of Statistics (NBS) and Harmonized Nigeria Living Standard Survey (HNLSS). Notes: Figures derived from Annexure A; Benefits refers to Coefficient/Total $\times 100$; Rich—Quintile 4+5; Poor—Quintile 2.

Because they cannot afford to pay for private medical care, the poor and very poor make up a larger share of the population in developing countries and are in urgent need of medical care. The state's inability to lower child mortality, improve maternal health, combat malaria, and treat other diseases, as outlined in the Sustainable Development Goals, may be evidenced by lower life expectancies, an increase in the prevalence of chronic diseases, and poor health conditions for the poor and very poor (SDGs). As a result, poor people with poor health access have higher rates of poverty, lower incomes, and reduced productivity. The fact that impoverished people have low earnings, which makes it difficult for them to pay for treatment, remains the driving force behind initiatives to improve their access to quality healthcare.

Compared to the wealthy in Abia state, the poor and very poor have less access to healthcare services. However, the poor people of Anambra have little access to medical facilities. Study findings indicate that wealthy people profit from secondary and tertiary health programs available in the state, whereas the very poor receive fewer healthcare advantages than wealthy people. The very poor are given precedence when it comes to access to primary healthcare, but they still need more access than the wealthy, who can pay for their care. Due to the outcomes, the poor and very poor are at risk of going even further into poverty if a large portion of their population is unemployed or underproductive because of inadequate access to healthcare. This goes against the SDGs, which call for the eradication of extreme poverty and hunger while simultaneously protecting the environment. On the one hand, the wealthy may be vulnerable to the spread of disease or illness, requiring additional spending and possibly a sacrifice in the meager comforts enjoyed by the poor and severely poor to protect their area. The government will need to increase recurrent spending to safeguard the state due to the chronic under-provision of healthcare services for the poor. The gap between healthcare benefits for the very poor and poor in Ebonyi state has widened. Healthcare remains prohibitively expensive for low-income citizens of the state since the poor and the very poor have limited access to it.

In addition to the prior discussion of the affordability issue, the lack of the restricted benefit could hinder social development because many individuals are ill and cannot obtain the right diagnosis or treatment because they lack access to qualified medical personnel. For the state to encourage and maintain growth, it is pertinent to provide healthcare access for the poor and the very poor. However, several factors that contribute to the core poor's lack of access to healthcare, including a lack of skilled personnel and funds, insufficient logistics, a lack of a maintenance culture, and a high level of leadership turnover has been identified in extant literature and studies. However, the repercussions could be detrimental to the state's ability to achieve inclusive growth.

The expansion of healthcare facilities in Enugu state has not directly led to higher incomes for the underprivileged. The three healthcare systems' distribution of benefits to citizens, particularly the primary, secondary, and tertiary systems, continues to favor the wealthy. This implies that the state's most vulnerable residents cannot afford its healthcare system. The rural health system's provision of primary healthcare services aids the poor and very poor, yet it is still insufficient for those with low incomes and a high risk of requiring medical attention. Increased access is necessary to promote pro-poor growth because these people have limited awareness of affirmative action and healthcare. Increased access to healthcare services for these groups is justified economically in terms of revenue production and stable policies that provide a smooth and well-functioning environment that encourages entrepreneurship and creative thinking. Only productive citizens, that is, those who are physically and mentally well will provide more revenue to the government. If the poor and very poor have better access to healthcare, they will be more productive and contribute their fair share to economic advancement. Even though the findings showed increased access to primary healthcare services for all categories, which supports MDGs 4, 5, and 6, Enugu state could perhaps increase the benefit of secondary and tertiary healthcare services, which specifically benefit the core poor, to achieve these goals.

Additionally, findings indicate that Imo state's extremely poor residents are benefiting less from healthcare services. As a result, those who fall into the extremely poor and poor groups are more likely to experience early death and low quality of life. Imo state is still far from achieving the Sustainable Development Goals due to the unequal distribution of healthcare services. that nonetheless, in order to provide the core poor with sustainable healthcare services, the state must manage the resources allotted, involve the population of the poor, encourage education, and employ skilled health staff. Figures 2–6 shown below typify healthcare services in Abia, Anambra, Ebonyi, Enugu and Imo States in Nigeria.

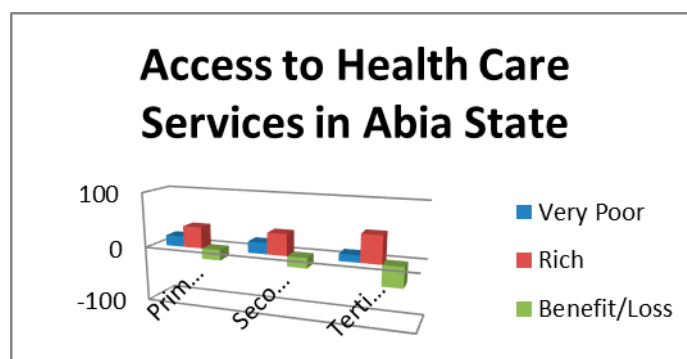


Figure 2. Access to healthcare services (Abia state). Source: Graphed by the author; Underlying data were sourced from the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS).

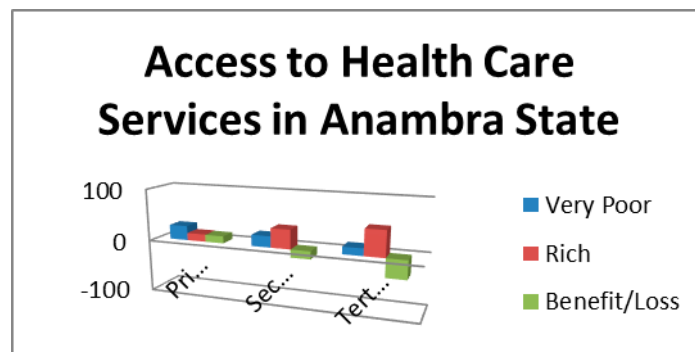


Figure 3. Access to healthcare services (Anambra state). Source: Graphed by the author; Underlying data were sourced from the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS).

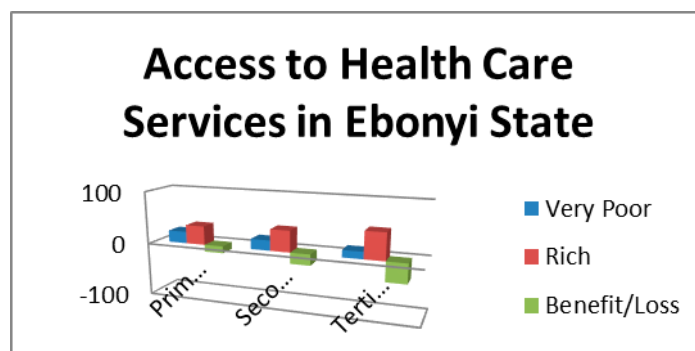


Figure 4. Access to healthcare services (Ebonyi state). Source: Graphed by the author; Underlying data were sourced from the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS).

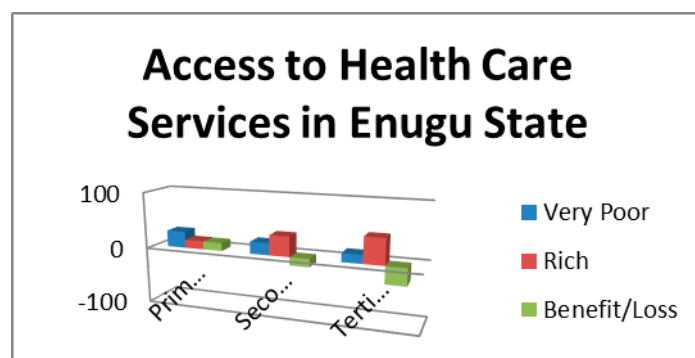


Figure 5. Access to healthcare services (Enugu state). Source: Graphed by the author; Underlying data were sourced from the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS).

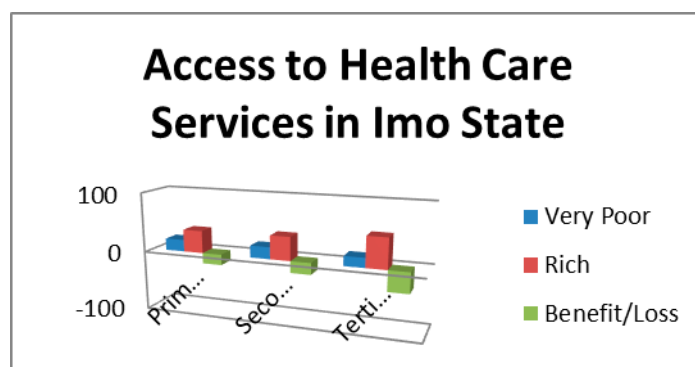


Figure 6. Access to healthcare services (Imo state). Source: Graphed by the author; Underlying data were sourced from the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS).

Amakom and Uju (2012) investigated the relationship between a family's health out-of-pocket spending and its level of poverty. Their findings imply that substantial out-of-pocket healthcare expenses have helped numerous families escape poverty. The foregoing conclusions seem to be supported by WDI statistical data. The Nigerian Medical Association (NMA) estimated in 2012 that roughly 5000 Nigerians travel to India and other countries monthly for clinical therapy, indicating that the nation spends between \$1 billion and \$2 billion on medical tourism annually. This means that out-of-pocket health spending made up 95.34 percent of all private health spending in 2018. In the southeast region of Nigeria, healthcare spending is wholly out of control. Families in need do not receive aid, but wealthier people receive substantial subsidies. The Nigerian Living Standards Survey from 2004 formed the basis for Amakom's (2011) study of Nigeria, which is supported by our findings. Using the benefit incidence technique, he examined public spending initiatives aimed at alleviating poverty and inequality at all levels of the health system (BIA). Primary healthcare did not appear to be specifically pro-poor, despite secondary healthcare's inconsistent outcomes.

Furthermore, results from other studies (Olamide et al. 2022) suggest the use of bilateral links among countries in the reduction of poverty within a zone. This could be achieved by leveraging the benefits of ICT's poverty-reducing impacts, economic growth, financial development, and trade openness. As applicable in other advanced and emerging economies, the digital competence of Nigeria needs to be synchronized for effective service delivery to the most vulnerable groups.

5. Conclusions

Improvement in the health of a country's population, providing financial risk protection, and citizen satisfaction are the three goals of health systems. The availability of good-quality and relevant data and evidence on the resources allocated and used to finance and deliver health services is important for developing and implementing strategies to meet those goals. Systematic health resource tracking can contribute to this effort. The methodological framework of this article is more concerned with a broad philosophy than with a policy framework for extending social services. The effect must be within the political restrictions set by each group's cost, benefits, and political clout, regardless of whether procedures are approved, according to the research. The demographic quintiles gained from discretionary government spending were analyzed in this article. This article employed a modified method in which behavior data is not used to regulate the value of money regarding the benefits a person receives from using government amenities. Fairly, all persons who used the services received the same monetary worth of benefits, which is the worth of the unit cost of delivering the service. This study focused on the distribution of service beneficiaries rather than determining the exact value of government-sponsored services to recipients. The binary strategy given by Sahn and Younger (1998) was introduced because of the government's deficient data structure and plan estimates. As a result,

technicalities, such as the necessity to estimate unit subsidies, which are not included in the first and second formulae, were avoided. The focus was solely on whether a service is used, with consumers of communal services being counted and receiving one benefit while non-consumers receive zero. Furthermore, how the health budget is split among the population for health facilities is determined by the utilization of government resources. This is known as current accounting, although the results may not accurately reflect the distribution of changes across all groups or quintiles.

Empowerment in Nigeria could be enhanced by improving social investment facilities. An increase in assets and capabilities is defined as empowerment. Quintiles 1 and 2 will be able to fully participate, bargain, and hold accountable authorities that have an impact on their lives because of this. For Nigeria to meet the task of invigorating sweeping economic growth and social change, spending options should be created considering proof-based examination and a survey of who obtains what, when, and how. To sum up, measures for lessening poverty and inequality in Nigeria should consolidate distributive components in addition to a high level of inclusion. Several indicators are indicating that those living in poverty in the southeast region of Nigeria do not receive the same level of attention and treatment as others who have a higher income. Some people might not be able to receive any medical care at all because of inefficient discretionary targeting of healthcare resources. This implies that the poor are less likely to benefit from the health protection provided to others and that most children living in impoverished households do not receive the necessary vaccinations against avoidable diseases. According to the aforementioned, the most efficient strategy for all Nigerian states to tackle poverty in the nation would be to focus all social sector resources on households in quintiles 1 (very poor) and 2 (poor) throughout the entire nation. This would help to alleviate poverty by increasing the productivity of able-bodied men and women.

The foregoing findings present a dilemma to policymakers: if existing users of public education and health services are not the policymakers' intended beneficiaries, a pertinent question arises as to what policies should be implemented to modify the observed benefit incidence and, as a result, enhance social spending targeting. To make public services, at least, progressive, policymakers in nations with high poverty levels must make every effort to skew the incidence of public social spending in favor of the poor and boost the use of public services by the poor.

Recommendations

To make progress in this area, it is necessary to address several issues, including governance, gender bias, the location of public healthcare and education services, pro-urban bias, and the search for alternative in-kind transfer modalities in addition to joint public financing and public provision of healthcare and education services. This article recommends that policymakers in Nigeria should, amongst others, educate households and communities and make them more aware of how to effectively receive healthcare in their numerous jurisdictions to have the greatest positive influence on their socioeconomic situation. Furthermore, a proper targeting mechanism for safety net measures must be developed and is critical, as it would mitigate the current detrimental effects of health and education spending, especially on the poor. One of these possibilities is better targeting of healthcare and education spending among the poor. In addition, income redistribution can still be accomplished through subsidies rather than direct consumer transfers, if persons with exceptional needs are adequately targeted. The Nigerian government should invest more in social services and enhance access to basic healthcare to reach SGD targets, concentrating on outcomes rather than outputs.

To ensure an equitable distribution of resources, the income-sharing formula between Nigeria's three levels of government needs to be revised. Nonetheless, future studies could focus on calculating the precise value of government-sponsored services to its users. An important methodological lesson from this work is that future MBIA studies should pay more attention to recording incidence statistics and other data breakdowns (such as by

location, gender, and ethnicity), and the required auxiliary IDs. To make it simple to assess the degree of progressivity of social spending, they should also provide information on income or consumption distribution.

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