POPULATION DATA FOR INFORMED NATIONAL PLANNING AND DEVELOPMENT

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1 INTRODUCTION

The United Nations has defined National Planning as the process of setting national goals and developing strategies and outlining tasks and schedules to accomplish the goals. And national goal is a development target to attain for the nation a virile status, secure borders, robust infrastructural system, a balanced and productive economy and pervasive socio-economic health; it also involve attainingmotivated citizenry, well-resourced people, sustainable peace, balanced social structures, people-oriented political system; it targetshaving a people and nation that are secure and resilient with capacity to create, sustain and utilize resources for overall development and peace of the people and thehealth of the environment; it should make a citizenry able to anticipate, confront and defeat threats to its welfare, and to manage hostile circumstances that might prove outside its control.

The National Plan necessarily involves **commitment to initiate, sustain, evaluate and monitor development processes**. National planning should be objective, led by a multi-step process consisting of a system of projects each of them defined in terms of activities that should be targeted at stated objectives and goals. The typical project is implemented in phases starting from initiation to completion. Input, output, outcome and impacts are the main components ofthe process each with its own objective. Every phase of the project and of the plan must be tracked and evaluated.

Every phase of the project is a matter of data, quantitative of qualitative data to acquire knowledge about the system, and data to design and implement the plan, data to monitor, evaluate, and assess impact. It is data that is planned, specific, relevant, analysable, interpretable and repeatable. Planned data to achieve the purpose of the project;design, collection and analysisof the data are essential elements of activities at the input, output, outcome, and impact levels of a plan, project or program.

Population is technically the aggregate or totality of the units that constitute a universe of elements that could be animate or inanimate, tangible or intangible. The population is discrete where the elements are distinguishable, tractable and identifiable; the population can be finite or infinite, mobile or immobile. Man intervenes or interferes in population growth/development process, exploits relevant aspects and features of the population for his own progress and development; he studies the world around him and tells the story in data.

However, the title of this lecture seems to have narrowed the concept to its application to human population

This understanding therefore restricts the concept 'Population data' to its reference to any qualitative or quantitative information about any aspect of the human population, i.e. all that pertains to the population including its membership, its structure, its activities, processes, and indeed, its world.

But, we are not so restrictive in our definition of population data to population census being the most basic statistical operation of a country and designed to achieve a head count of the entire human population of country to collect information on its main demographic, social and economic characteristics (*Population and Societies, 2010). It is* the total process of collecting, compiling, evaluating, analyzing and publishing and disseminating demographic, economic and social data pertaining, at a specified time, to all persons in a country or in a well delimited part of a country UN,*(South Africa Statistics, 2011).*

Population data is inclusive of derivatives of the population census data including proportions, ratios, rates, demographic profile, relationships, and information products of the census data whether processed or unprocessed. There are a limitless proliferation of these population concepts telling one story or another about the population and pertinences.Population data also more than population census data and its products; census is not an everyday affair; it is always an expensive project highly

consumptive of physical, capital and human resources; they are conducted at least ten years apart. There must be projections about the population in theintercensal years; there must be national sample censuses, national sample surveys, and large sample surveys at national or subnational level to provide needed information about the population or its parts. These intercensal events are also population data in context and content.

Population data particularly census data could be very basic, very crucial to national planning and development; it is inevitable in formulating economic and administrative policies on revenue formula, resource distribution, governance, security, trades, industry, etc; it is essential to the government for policy-making, planning and administration.

In Nigeria, the National Population Commission (NPC) is statutorily empowered to conduct reliable national population census and to collect, analyze and disseminate population/demographic data; it is alsoto undertake demographic sample surveys, compile, collate and publish migration and vital registration statistics as well as monitor the country's Population Policy. But census taking in Nigeria has continued to trigger political, social, ethnic, religious controversies, geopolitical distrust and disputes that negatively affect nation building and sustainable development.

The census data has been used by the more populousregion to attract more government amenities, more seats in the parliament, more local governments and states; population census has been seen as a symbol of political weapon to be used to take undue advantage of the other ethnic groups, an Instrument of dominance instead of instrument of sustainable development. It has been a gross abuse of what elsewhere has been a tool for national planning and development

2 POPULATION DATA

2.1 Statistical Population: Definitions, Interventions and Investigation

Statistically, the population is technically defined as the aggregate or totality of the units that constitute auniverse of elements that could be animate or inanimate. Ideally, a study or description of the population should involve complete census of the units where necessary details of each unit are documented; the population is necessarily a

discrete system ofdistinct, identifiable and describable members structurally linked together intoa composite architecture that may or may not be so obvious.

Planning is to decide interventions in the natural population process to make the population attaina targeted state. But the intervention cannot be arbitrary or subjective; it must be focused, objective and evidential. It must be targeted at a set of objectives defining expectations about the population and its state after the realization of such objectives. The intervention must acknowledge the dynamics of the population and the factors responsible; the knowledge could only come from some deep knowledge ofthe population dynamics; this knowledge must come from studies based on data whose design, collection and analysis must also be guided by principles and procedures tooptimize description and inference.

In Statistics, the population is conceptualized as the universe from which some members could be selected for access and enumeration in lieu of a complete census of the population in order to obtain sample information that could projected against the entire population. This is the concept of population and sample. The sample results provide indications of the relevant characteristics of the population. The essence of sampling techniques is always to attain sample objectives at minimum costs andwith optimum efficiency.

2.2 Objectives and Goals of Statistical Investigation of Populations

There are two basic categories ofobjectives in a statistical instigation or project. The first category is concerned with the data, its collection and its analysis; the second category is about the consequence of theinvestigation procedure on the attainability of the goal of the objective. There are stochastic and deterministic considerations when a data is being planned in a project. The stochastic concern the statistical properties of the data and its derivatives e.g. precision, efficiency, accuracy, bias, and mean square erroramong others; while deterministic consideration includes simplicity, accessibility, interpretability, relevance, representativeness and general comprehensibility of the data. Data here mean the collected information and its relevant functions.

On the other hand, there are objectives defining extent and nature of attainment of the project goals wheregoals areexpectations from theproject while objectives are the

anticipated achievement of the investigation, i.e achievement that should facilitate the attainments of the ultimate goals of the investigation. There are requirements that the objectives must meet and there are principles guiding the formulation of such objectivestowards meeting these requirements; there are also principles for assessing the prospects of stated goals under the objectives. The objectives must be SMART, an acronym expatiated below:

- specific i.e. strategically focused at specific area of improvement; the objective must be
- measurable, quantifiable; and motivating,
- achievable or attainable, assignable oralignableto the goals;
- relevant, realistic, resourced, reasonable, results-based
- time-related i.e. time-bound, time-limited, tractable, time-based, time-oriented, time/cost limited timely, time-sensitive, timeframe, testable

2.3 Sampling: An Investigative Process

Reasons of costs, accessibility, feasibility, etc., mighthave compelleda sample rather than a census of the population the sample design must specify the process for the selection, collection and analysis of the data, for evaluating the entire process in relation to attainment of the desired objectives and for the interpretation of the outcome of the analysis. We are now into the realm of population and sample. The sample results are projected against the population and the results should guide decisions about the population; the sample data are described in functions, statistics that bear relevance to the objective of the sampling exercise in relation to the population. The formulation and implementation of the sample are guided by a body of theoriesand techniques (Cochran, 1977), Sampling Theory (Des Raj), Sample Design (Des Raj) or Sample Design and Analysis (Kish)

The goal in all of these is to attain the sample objectives at minimum costs, optimum efficiency, maximum representativeness, good analyseability, relevanceand tractability.

But population in the conventional context refers to population of people, human beings as target and focus of development. And population data is about information, both quantitativeand qualitative, about peoples, their activities, and such other

existences that define the state of man. Population could be of subjects or objects. This application of the word, I suppose, is the intent of this lecture. We are concerned with human population, data about human population, about projects, plans, policies to advance the course of human development.

2.4 Population Census and Sampling Frame

The population census is a full enumeration of all elements of the population where all personal and environmental details about each personare observed.The quality of a sampleis never better than the quality of itssampling frame. But agood sampling frame is representative, complete and comprehensive; no undue inclusions, no illegitimate exclusions and no duplications; the population units should anticipate future sampling units so that the units of the population align with sampling units in subsequent sampling exercise.

The census data is the most basic population data; it is basic to every sampling exercise where the population, in its entirety or in part is the target. It provides the frame for all sampling exercises coming before the next census. Hence, the population census data must meet the requirements of a good sampling frame. There must be no undue inclusions or undue exclusions; hence, the population census must be complete, comprehensive, of adequate scope, appropriately exhaustive, accurate and anticipatory of needs of future sampling exercises.

2.5 Scope and Depth of Population Data

Population data is a generic application far wider in scope and in depth than its narrow connotation as a population census data bearing the minimum details about the personal dataor population sample census data. It is inclusive of information about the human person and his attributes, behaviours and practices, his activities, and his environment. Population data is about the data of first instance, the whole data, its components or partitions, its structures or architecture. Population data includes functions and derivatives of the data, all of them telling one story or the other about the population; they describe exhaustively aspects or features of the population.

An important aspect of data analysis is statistical modelling providing functions that are either descriptive describing some features of the population or of its activities; or predictive providing indication of future status of the population, its structure, or of

events relating to advances and development. The population data may be processed into statistical models, mechanical in context providing insight into the mechanics of the development process.

Advances and developments in all areas or aspects of Man flow from planned or guided investigation, information expressed best as quantitative data in form and content that facilitate and enhance analysis both descriptive and inferential. There is always a purpose for a data, and its collection; and a data could be good or bad. A good data allows analysis whose result adds to knowledge of the situation under study and aid generation of and implementation of plans. Analysis of population data in appropriate statistics and formulations could, on interpretation engender actions and activities whose outputs and outcomes would impact on human development. A bad data is a failed data; it fails its objectives

3 NATIONAL DEVELOPMENT PLANS

A plan is adetailed proposal, scheme, idea, strategy, intention or decisionon processes for achieving an objective, goal, object, target, hope, aspiration, ambition, etc. e.g. a development goal or objective; examples are plan of action,master plan,game plan, development plan. In statistical context, plans may include design and analysis of data to provide knowledge of the population including its dynamics and generate informed advice on what interventions to make to achieve objectives which must be definitive and possess other desirable elements

Planning is a process as to what to do and how it is to be done to achieve the plan objective; the planning process determines the quality of the plan; but the plan resembles a project that must meet requirements embedded in the SMART concept. A good plan has the following attributes.

- Recognizes need for action, for intervention
- Acquires relevant data to provide requisite knowledge about the system
- Is not arbitrary but proceeds from the knowledge of the system accruing from the data
- Has objectives which must align with the goal of the plan

- Develops premises or assumptions crucial to achieving the plan objectives
- Is robust i.e. insensitive to some trivial violations of the assumptions
- Is flexible, providing choices to enhance the scope of its validity
- Based on scientific analysis and relevant mathematical/statistical theory and methods
- Must have inbuilt monitoring mechanism to facilitate tracking and enhance tractability
- Should be a product of multidisciplinary, collaborative effort
- Must be SMART

3.1 National Planning and National Plans

National Planning is the process of setting goals, developing strategies, and outlining tasks and schedules to accomplish national goals. The national goal is a development target to attain for the nation a virile status, secure borders, robust infrastructural system, a balanced and productive economy, pervasive socio-economic health, motivated citizenry; well-resourced people, good peace, balanced social structures, people-oriented political system and a people and nation, secure and resilient and with capacity to create and utilize resources for overall peace of the people and the environment and capability to anticipate and protect the nation against threats to its peace and to mitigate effects of hostile circumstances that might prove outside its control.

The National Plan should involve a **commitment not only to initiate but also to monitor and evaluate progress**. National planning should be objective, led by a multi-step process outlined in the following activities Taylor (1998), Patton and Sawicki (1986) among others

1. Collection and analysis of relevant data to gain relevant knowledge of present development issues
2. Do a SWOT analysis to identify strengths, weaknesses, opportunities and threats in respect of the issues
3. Identify the problems and locate them in perspectives that engender solution
4. Set the goals in the context of the problems and resources available for attention

5. Determine alternative plans and policies in terms of relevant projects and programmes that are adequately aligned to defined goals
6. Define and evaluate the projects in terms of the project inputs, outputs, outcomes and the impact on development
7. Establish objective criteria or models to aid choice of plan/project/programme from a set of alternatives
8. Evaluate the alternative plans in terms SMART properties of specific objectives
9. Put in place mechanisms for periodic evaluation of the plan and for monitoring its implementation and its consequences and the progress towards intended goals
10. Assess the consequences of all options on the basis of specified assessment criteria
11. Translate consequences of the plan into some composite index summarizing the balance of the benefits and limitations of the plan; the index being determined on a set of criteria, against which performance (or consequences) of plans can be judged.
12. A report on the plan/project/programme/policy must be produced detailingthe antecedents of considerations that informed the making of the plan; itsSWOT opportunities and the weaknesses and threats must be spelt out; all of these must be based on requisite sound analysis and good understanding of all the problems and opportunities and informed anticipation of all the consequences of the options, (*Loomis, John; Helfand, Gloria, 2001)*

Some of the activities listed above coincide with the specification of the so called rational Planning Modelfor Policy Making (Taylor, Nigel (1998) and Patton, C. and Sawicki, D. (1986)); which has been described as a style of behaviour appropriate to the achievement of given goals, within the limits imposed by circumstances of the populationSimon, Herbert (1976) and Thomas, Ian (2007).summarized the requisite steps to includethe following in addition to the step identified in the foregoing;

- The process that generate the model is adequate in respect of the quality, quantity, currency and relevance for evaluating the model in the context of existing and future data
- The model must be robust and applied in a system that replicates the conditions and the factors that are consistent with the m0del

- Implementorsof the option have a good understanding of the model and are conversant with the requisite assumptions
- The model accurately anticipates and accommodate the vagaries of the developmental process

3.2 Plan Implementation Process

A development plan is essentially multi-dimensional in content and purpose; it is an aggregate of projects/programmes with objectives or goals that must be blended in to a comprehensive system; it is like activities in the network analysis that should be aligned to build the network. A plan is successful when all the elemental projects/programmes have been successfully accomplished. Project of program implementation is a sequence of processes, namely, inputs, outputs, outcomes and impact.

Inputs are resources invested into the program; it could be material, physical, human efforts, etc. Design and analysis of data like in Censuses, Sample censuses, or samples could be defined as a project within a development plan. The financial, material and human resources invested in the project are inputs; in the larger context where the entire development plan is the project, data collection and analysis constitute an input.

Outputs are immediate products of the inputs. The data collection and analysis would yield information about relevant aspects of the population, about the development issues under consideration; the project may be aboutimproving health facilities in the state; a survey of existing facilities that include data on population, number and type of health facilities, volume and nature of services provided, etc would end up in a report on the findings complemented with recommendations. The report is an output.

Outcomes are effects which the program or projectproduces on the population or on the issue under consideration; in our case, on the development issue. It is the change which the program has brought to its target; in development context, it is the extent of the benefits due to the implementation of the program.

Impacts are the long-term or indirect effectsof outcomes. They are the ultimate goals of theproject. The ultimate goal of any health development program goes beyond the

increase in the quality and quality of health facilities; it is in improvement of the health status of the people;

Development is about man and his environment**, about** implementation of plans**, to** improve the lots of man, to advance living conditions, to improve his environment, about creating and sustaining facilities of development, about invigorating societal strengths, exploiting opportunities for development, overcoming weaknesses in the system and converting threats to opportunities. All of these need relevant information and relevant data for relevant analysis to generate appropriate bases for action.

Inputs, outputs, outcomes and impact as elements of development plan or process are better devised, implemented, assessed, evaluated and analyzed when they are each SMART i.e. specific or strategically-focused, , measurable, achievable, relevant or well- resourced, and time sensitive or time-specific.

3.3 Population Data in Planning

Planning assumes that we have information that is adequate in quality and quantitymeeting requisite level of comprehensiveness, scope, currency, accessibility, relevance and accuracy and/or precision. The term population, as applied here, refers to human population within some defined boundaries. And population data cover a large spectrum of data with the communality that they are about aspects of human population,

3.4 National Development

National development is about rational management of physical, natural, and human resources of the nation to promote development of the people. It is about harnessing, managing, sustaining and utilizingeconomic, environmental, and social capital to achieve equitable and balanced development; it ensures equity and equality of opportunities for well-being; it is about comprehensiveness of objectives, balancing so many diverse development objectives including economic, growth efficiency and stability; social, full employment, equity, security, education, health, participation,

cultural identity; environmental, health, renewable natural resources & conservation ofnonrenewable natural resources, among others.
It is development that must be sustained. Sustainable development includes economic, environmental, and social sustainability; it is the development that meets the needs of the present without hurting the prospects of development of coming generation, without *Brundtland Report (1987*) *(WCED, 1987)*

4 POPULATION CENSUS DATA

4.1 Conceptual Issues

A population census is the procedure for systematically accumulating statistical data about a population, the exercise is vital to democracy and development. *Osinaike, Aiyeola and Alao (2006*). The term is used mostly in connection with national population and housing censuses;

The exercise involves the entire process of collecting, compiling, evaluating, analyzing and publishing or disseminating demographic, economic and social data pertaining, at a specified time, to all persons in a country or in a well delimited part of a country UN,*(South Africa Statistics, 2011).*It is usually a head count of the entire population to collect information on its main demographic, social and economic characteristics (*Population and Societies, 2010); it is* vital to democracy and development (*Osinaike, et al, (2006)*.

Population census is a fundamental task of the government. a backdrop for government‘s political, economic and social policy formation, one of the key planning strategies towards sustainable development and progress of a nation, providing answer to: How many we are‟ in terms of the total number of people living in the entire nation, —Who we are?‟ in terms of age, sex, education, occupation, economic activity and other crucial characteristics, as well as „Where we live‟ in terms of housing and access to social amenities*(Mimiko, 2006).* Population census is generally seen as an information base that aid planning and development

The United Nations defines the essential features of population and housing censuses as "individual enumeration, universality within a defined territory, simultaneity and

defined periodicity", and recommends that population censuses be taken at least every ten years. United Nations recommendations also cover census topics to be collected, official definitions, classifications and other useful information to co-ordinate international practices (*CES 2010 Census Recommendations*, 2013; Census Quality Evaluation: considerations from an international perspective, 2012; Salant, Priscilla, and Don A. Dillman, 1995)

4.2 Uses of Population Census Data

The following are some of the uses to which the census data can be put:

- Obtaining a number of people who live in the country and the structure of the society
- Determining size and distribution of tax payers and revenues from that source
- forecasting the country's socio-economic needs, e.g., electricity, housing, food, infrastructure, security,
- Determining the level of manpower and employment status of the citizen
- Formulating economic policies, for example, revenue formula can be based on population figures
- Determining structures and elements of population dynamics including density, distribution,
- Providing information on socio-economic structure on distribution of social amenities
- Helping government to develop the economy and balance the nation's economy
- Providing some understanding of spatial distribution and changes in the socio-economic status of the residents.
- Aiding estimation the environmental impact of population growth, use of water, land and other resources.

Particularly, importance of population census to national development and planning can be outlined as follows.

- It is at the center of every planning activity and no meaningful development planning activity can be conducted without population census data.

- It helps not only to estimate the changes in the number of the population in the country at a specific time but to evaluate other crucial changes important to the country.
- It provides the data essential to the government for policy-making, planning and administration aimed at enhancing the welfare of the population.
- Population census data is needed to guide the process of effective planning.
- The importance of population census as a specific type of accurate statistics of the population characteristics and social trends is the basis for the successful development of the country.
- It helps to utilize the nation's human and natural resources to increase the standard of living which is not possible without meaningful planning based on the accurate population census data.
- It provides the data essential to the government for policy-making, planning and administration aimed at enhancing the welfare of the population.
- Population census data on residential mobility provides a better understanding of spatial differences and changes in the socio-economic status of the residents.
- National and regional population data obtained from the population censuses play an essential role in estimating the environmental impact of population growth, use of water, land and other resources.
- The population census is helpful in obtaining a number of people who live in the country and the structure of the society
- Population census helps in the determining the number of people who can pay taxes which helps to estimate the amount of revenue that can be obtained from the sector.
- Population census helps to forecast the country's economic needs
- Helps in formulating economic and administrative policies on revenue formula, resource distribution, governance, security, trades, and industry can be based on population figures

The population census is the count of every member of the population, the counting process detailing personal information as well as relevant demographicsand other information about the individual and his environment.

4.3 The Essence of Population Census in Survey

The population census is the basic source of population data and data for national planning and national development; it remains very critical, crucial and pivotal to Intercensal population survey activities and results.

The essence of population census data in the study of the population can be itemized as follows

- The population census provides the sampling framefor intercensal surveys
- The population census data provides reference for Intercensal population estimates
- The census data provides a basis for evaluating future information about the population
- Census values of population characteristics are population values that are free of sampling
- Census values could only be subject to deterministic errors
- A faulty population census data could be disastrous for Intercensal results based on the census results since the quality of sample estimates cannot be better than the quality of its sampling frame.

But population census has some drawbacksposing as weaknesses and threats to its essence as main source of data for national planning and development include

- Heavy operational cost that could hardly be borne by many nations
- Inadequate scope due to paucity of information items covered
- Superfluity due to inclusion of elements foreign to the population and duplication of entries
- Inaccuracy due to deterministic error like incorrect information
- Staleness due to infrequency and irregularity of the exercise
- Political considerations given precedence over what seems largely a scientific exercise with adverse consequences for the accuracy and genuineness of the data
- Heavy investment of time, expertise, and other resources Etc.

4.4 Population Data and Population Demographic Profile

While population census remains the main source of data for national planning and development, intercensal data gathering exerciseslike national sample censuses, national sample surveys (regular, periodic or adhoc) and other subnational population sample exercises are inevitable alternatives compelled by the drawbacks identified with the population census.
Demographic characteristics are population characteristics such as age, income, employment, sex, educational attainment, home ownership, employment status, and residence etc, all of them used in demography to develop a demographic profile.

Advances and development at the level of the population as consequences of National planning and national development efforts are related to demographic profile of the people expressible in the following concepts among others:

- Age and age distribution
- Age dependency ratio
- Sex ratio
- Birth Rates(Crude and Standardized)
- Death Rates (Crude, Standardized)
- Fertility Rates (General, Total, Specific))
- Mortality Rates (Neonatal, Infant, Child)
- Specific Mortality Rates(Age-specific, Cause-specific, etc)
- *Cause - Specific Mortality Rates*
- *Neonatal Mortality Rate (NNMR)*:
- Age-Specific Mortality Rates
- Migration Rates (Gross, Net)
- Dependency Ratios (Age, Resource, Task, Goal)β

4.5 Population Values and Sample Estimates

Development criteria as expressed above are essentially quotients, ratio-like entity$\rho = \frac{\alpha}{\beta}$ where ρ isproportion, ratio or rate. In the proportion, the numeratorαis a part ofβ asthe whole,; in the 'ratio', α and βare in same units of measurement and

may or may not be different characteristics of same population unit; in rates, α and β are in different units of measurement and the rate expresses numerator α in units of the denominator β.

When $\alpha$and β are population values, the quotientρ is also a population value subject to only deterministic error and not to statistical error; we cannot therefore talk of precision but of accuracy.

Whensample estimates $\hat{\alpha}$ and$\hat{\beta}$, replacepopulation values α or β, the resultant quotient $\hat{\rho} = \frac{\hat{\alpha}}{\hat{\beta}}$ is subject to both deterministic and stochastic errors. We therefore need to determine propertiessuch as bias, mean square error, root mean square error, variance and higher momentsof $\hat{\rho}$as may be required when the estimate $\hat{\rho}$ is of alternative formulation from which one has to be preferred on the basis of some specified selection criteria.

Populations are often hierarchical where the most basic unit could be the individual, or the household, or the enumeration area, or the ward, or the local government, or the state like we have in Nigeria.Ratios like sex ratio, dependency ratio exist first at the enumeration or ward stage. Such ratio at the higher hierarchies could be obtained as separate ratio, or combined ratio or separate regression or combined regression entities. In Nigeria, there are three levels of government namely local government, state and Federation. Estimates of each ratio-like entities have to be obtainable at each level.

Population census has always beenan expensive, infrequent and irregular data production procedure; for instance, Nigeria had her last National Census in 2006. Also, censuses in Nigeria have been limited to a few personal data items and have been largely financed by international donors with insignificant financial and material contribution from governments; and in the spirit of the aphorism that he who paid the piper dictates the tune, the censuses both in content and methodology have been dictated by foreign interests; there has been little or no domestication of the exercise in its major aspects.

National planning and development criteria in the form of socio-economic indicators and demographic profile like ones listed above, among others should be determined

on annual basis; they could be determined as population values in the census year and as derivatives of the census data when the census is comprehensive, detailed and accurate enough. In other years, they are either estimated as projections from the population values or, more often than not as estimates from sample surveys. The ratio, rate or proportion obtained as sample estimates outside the census year are estimates with statistical properties that depend on the sampling technique, population structure, functional form of the composite indicator and nature and inherent variabilities and covariabilities of the elements $\hat{\alpha}$ and $\hat{\beta}$ of $\hat{\rho}$

4.6 Optimum Estimation of Socio-Economic Indicators and Demographic Profile

There are many alternative estimators of ratio-like parameters identifying and assessing elements of planning and development processes. These are essentially composites of basic demographics obtaining at levels of the state and therefore determinable as separate or combined ratio or regression parameters, Also, there are instances where projections have to be made for the entire state and its components respectively. Should we have a bottom up procedure where we make projections for the components first; these individual projections are then aggregated in according to some pattern to obtain the composite projection for the whole entity.

The estimator of a parameter at a next higher hierarchy of a population is a matter of choice between alternative systems of aggregation which systems generate differential states of each of stochastic properties e.g. bias, mean square error, root mean square error, variance, precision, accuracy etc, or of deterministic measures feasibility, accessibility, tractability, interpretability, etc. Also, projection may have tobe made of future value of a quantitative attribute for a whole population and for its components, e.g. states and federation; do we implement a bottom-up approach where we project the value for each state and then aggregate the state projections to obtain the Federation's value. We may want to make projection of the nation's total population and also for each age group; yet, dependency ratio for the states and for the Federation. There are many options here; and a good solution should be well articulated and meet most requirements for a good project.

5 POPULATION DATA FOR NATIONAL PLANNING AND DEVELOPMENT: NIGERIA EXPERIENCE

The early censuses in Nigeria were conducted in 1866, 1871, 1896, 1901, 1911, 1921; they were conducted by the British and limited to the Southern Protectorate. Censuses covering the whole country were conducted in 1952, 1962, 1963, 1973, 1991 (Library of Congress, 1999), and 200. The 1952 census put the total population at 31.6 millions and the Hausa/Fulani having the lion share; so the ethnic group dominated and controlled post colonial government established in 1960. The 1962 census which cut down the Northern share of the population to mere 30% was rejected by North-dominated, North-controlled Federal government; the census process was reviewed in a re-count in 1963 when the seeming over-count total figure of 55.6 million had the Northern dominance restored to a share of 67%. The 1973 census figure was also very controversial andeventually rejected. The 1991 census returned a total figure of 88.5 million against aprojection of over 100 millions. The 1991 census was also heavily criticized and subjected to controversies; charges of undercounting or over-counting, falsifications and manipulationswere rife. The last census in Nigeria was held in 2006, 14 years ago. It put the total population at 140.0 million;

Ezeah, et al. (2013) in their *Challenges of National Population Census and Sustainable Development in Nigera* lamented that 'Census taking in Nigeria has been a serial failure triggering political, social, ethnic, religious controversies, geopolitical distrust and disputes that negatively affect nation building and sustainable development; higher population figures has been used as argument to attract more government amenities, more seats in the parliament, more local governments and states; population census exacerbated political consciousness becoming a symbol of political weapon to win undue advantage over less populous ethnic groups and an Instrument of dominance instead of instrument of strategic planning and sustainable development; a consequence was over-zealousness about the value and importance of population census, and they always do anything to enumerate all their people, even doing the illegal to promote electoral violence and falsification and manipulation of population figures *(Stallings, 2006).*Lack of accurate census figures has contributed to Nigeria's policy summersault and under development; the planning process becoming distorted as a result

In Nigeria, population census has been used as social dominance weapon, chronic group-based oppression and systematized institutional and individual discrimination where critical benefits are allocated not on merit but disproportionately in favour of the more numerous groups while disfavours are more for the numerically disadvantaged group; population figure has become the yardstick with which national resources and political representation are shared, each ethnic group battled to inflate and manipulate census figure in order to sustain dominance over ethnic groups with the advantages of socioeconomic and political dominance. Every population census held in Nigeria before and after independence has ended in national controversy, strong allegations of population falsification and in fact no general consensus among the populace as to the size of the total population of *Nigeria (Eniayejuni, A. T. and Agoyi, M, 2011).*

In the recent past, the Federal Office of Statistics and its successor the National Bureau of Statistics held regular and adhoc surveys all of them using the census data to generate sampling frames and to serve as reference to assess development or otherwise in situations and conditions of Nigerians. Time was when Nigeria had a virile national statistical system led by the FOS and states' statistical agencies doing well to conduct national and subnational surveys to generate data for planning and development; they collate, organize and publish official and non-official statistics; there were credible though crude information as basis for informed national planning and development.

5.1 National Surveys in Nigeria

But there were four or five large national surveys that were national editions of Global Surveys. Two most prominent ones included the National Demographic and Health Survey (NDHS) and the Multiple Indicator Cluster Survey (MICS) The surveys were commonly financed by consortia of international donors and governments. The NDHS series were National Population Commission (NPC) affair while the MICS series were National Bureau of Statistics operations.

The Nigeria Demographic and Health Surveys (NDHS) have been designed to provide data for monitoring the social and health situation in Nigeria. There have been six editions of the global survey conducted in 1990, 1999, 2003, 2008, 2011,

2018); the 1990 and 1999 editions were conducted by the FOS.The objective of the survey was to provide reliable estimates of demographic and health indicators including fertility, family planning, breastfeeding practices, nutritional status of women and children, maternal and child health, childhood and adult mortality, women's empowerment, domestic violence, female genital mutilation, malaria, HIV/AIDS and other sexually transmitted infections (STIs), disability, and other adult health issues. The information from theNDHS can be used by programme managers and policymakers to evaluate and improve existing programmes.

The five editions of Nigeria Multiple Indicator Cluster Surveys (MICS) wereconducted in 1995, 1999, 2007, 2011, 2017 by the NBS in collaboration with United Nations Children's Fund (UNICEF). The series were part of the global MICS exercise aimed primarily to collect data on main related to survival,development and protection of children, women and men; the survey serves as a source of reliable information and a sound basis for informed decision-making for planners, policymakersand programme implementers.More specifically, Nigeria MICS collected data on indicators related to child mortality; childand maternal nutrition; child health, reproductive health; water and sanitation; child development;literacy and education; child protection; knowledge of HIV and AIDS; access to mass media and useof information and communication technology among others.

Nigeria MICS data would aid monitoring progress towards Development Goals, and would be instrumental in formulating sectoral plans and shaping policies towards the post-MDG and sustainable development goals; MICS products have been widely and effectively adopted by the public, most especially the policy-makers, planners, researchers, development partners and Non Governmental Organizations (NGOs) to formulate andmonitor programmes and strategies.

We have dwelt much on the criticisms, shortcomings, failures and limited usability of Nigeria population census due to misconceptions andabuses of population census data as a political weapon rather than a tool for national planning and development; at no time since independence in 1960 has the census received unanimous acceptance; information actually confirmed that our censuses have invariably been a huge waste of resources. The government regards the NPC as a political rather than a technical, professional agency of government and people with inadequate exposure to

quantitative science and demography or census practice were appointed to rule the waves. Nigeria has always been rich in expertise and competence in the fields of population statistics and demography; but there has been sustained allegations that government has always been more comfortable hiring so called foreign experts, with suboptimal qualifications than engaging Nigerians many of them internationally recognized statisticians and demographers for the NPC; the foreigners were usually pliant and were ready to go along with the dirty request of their hirers; the Nigerian experts would normally want to defend their country and their profession and be less pliable.

The redeeming feature of the data production aspect of Nigeria National Statistical System is the fact that national surveys compensate for the serial failure ofnational population censuses to provide data for national planning and development; these surveys have been able to provide dire statistics for national planning and national development.

But there are still further problems with statistics production in Nigeria. Thagainst each other. And it appears the government is abetting this anomaly. The statistics act gives NBS the total authority to take charge of total statistics, i.e. statistics on all aspects of situations and conditions of Nigerians; the same government places the NPC in charge of all population and demographic statistics without deference to NBS; indeed, the government has always placed in NPC greater recognition in matters concerning population statistics and all issues connected with it. It appoints into the NPC powerful politicians who easily gain the ears of the government while it appoints technocrats with minimum political voice into the NBS.

5.2 The Panacea

It is compelling the government should move the country away from the use of national population as main tool for allocation or distribution of benefits; it should consider for implementation the following recommendations adopted from Ezeah et al. (2013); the recommendations remain as valid as ever to return health to the Nigerian National Statistical System and make National Census Data a source of information for national planning and national development and provide a valuable basis for current national and global surveys to complement the national census.

1. The government should de-politicize the use of census figure by embarking on nationwide re-orientation campaign on the importance of census for common national development.
2. Questions about ethnic group, language and religion which trigger tension and inflation of census data should continue to be removed from the census questionnaire in Nigeria.
3. NPC should make use of relevant professionals in conducting the census exercise
4. NPC should re-train their staff on massive application of ―new‖ technologies such as Satellite Imagery, remote sensing techniques, machine readable forms, and other ICT devices used in conducting census
5. The government should adherence to 10 years interval in conducting census exercise in Nigeria.
6. The NPC should strengthen the vital registration of birth, death, and migration, and others forms of data capturing that will greatly enhance fair estimation and updating of population and household data in Nigeria.
7. Government should review the laws as they affect headcount in the country to empower the National Population Commission to conduct future credible census exercise.

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