

**DEMORGRAPHIC ANALYSIS OF POPULATION DISTRIBUTION IN NIGERIA
(CASE STUDY OF 2006 POPULATION CENSUS FIGURE OF NPC MINNA, NIGER
STATE)**

BY

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CERTIFICATION

This is to satisfy that this project work was carried out by Babakatun Abdullahi Alhaji with registration Number PGD/MCS/2008/1249 in the Department of Mathematics/Computer Science, School of Science and Science Education, Federal University of Technology , Minna.

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DEDICATION

This project work is dedicated to Almighty Allah (SWT) who has given me the knowledge, wisdom, patience and perseverance to start and finish this work successfully. May you be glorified.

ACKNOWLEDGEMENT

Glory is to Almighty Allah for His guidance and wisdom throughout my studies.

Let the gratitude be to Almighty Allah for making it possible for me to witness the successful completion of this programme. I am also very grateful to my parent particularly my father in person of Alh. Babakatun Yahaya for his unquantifiable contribution towards the realization of my dreams, my mother and step mothers am indeed very grateful.

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WABILLAHIL AMD

BABAKATUN ABDULLAHI ALHJI

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CHAPTER ONE

1.1 INTRODUCTION

The term demography is literally translated from two greek words "Demos and Graphein". Demos mean people and graphein writing or sketching.

We study demography with regard to size, structure, distribution and changes that occur within the population.

According to demography dictionary of United Nations, it is the scientific study of human population. By oxford advanced learners English dictionary, demography is the study of the changes in numbers of birth, death, diseases in a community over a period of time. In other word, demography can be defined as a discipline that seeks a statistical distribution of human population such as demographic position in a country or area.

Soeradji Budi (1986) writing on a simple frame for population research, highlighted that the answer to the question "what is the need for studying population statistics" it is simply to find out or investigate what happen within the population, the causes, how it occurs and to formulate a practicable model to improve the situation or bring it to normality or hazardous to life.

Some other writers put it that population statistics is important in that it helps in the proper planning of distribution of social and economic facilities or amenities needed by the citizens e.g. Education, Health, Housing and more.

1.2 AIMS AND OBJECTIVES

- I. To present population distribution by age and sex
- II. To present numerical and percentage distributions of population by state and sex.
- III. To know the differences between the mean of male and the mean of female
- IV. To check the ratio of the active population that is working population to the dependence population.

.3 SCOPE OF THE STUDY

The study will cover the population of the whole nation, thus the data for the study is an aggregate for the whole nation. The population figure is the population figure of Nigeria from the 2006 population census conducted by the Nigeria Population Commission (N.P.C.).

1.4 THE SUBJECT MATTER OF DEMOGRAPHY

One of the major subfield of demography is the discovery, measurement and explanation of differences in composition.

Some of the characteristics of demographer interest are as follows

- i. Demographic characteristic – Age and Sex
- ii. Economic characteristics – Occupation and Industry for Employment
- iii. Social Characteristics – Social Amenities.

1.5 SOME DEFINITION OF DEMOGRAPHIC TERMS

SIZE: The number of person in the population

DISTRIBUTION: The geographical distribution of the persons by various social and economic characteristics. That is the arrangement of the population in space at a given time.

ACTIVE POPULATION: This is the population of the people that constitute labour force, which is population of age 16 – 65.

INACTIVE POPULATION: This is the population of people outside the population of labour force i.e. age group below 16 and above 65.

DE-JURE: Account for the total population is the enumeration of persons who usually reside in a given place.

DE-FACTO: This is the means whereby the enumeration records only person who spent census night at a given place.

CENSUS: This is a canvas of a given area resulting in an enumeration of the entire population and compilation of demographic, social and economic information pertaining to that population at a given time.

STRUCTURE: Information about age, sex, distribution as other component e.g occupation and education.

CHANGES: The growth or decline of population i.e the current level, trend and pattern of fertility.

BIRTH RATE: This is the measure of fertility.

DEATH RATE: This is the measure of mortality or the number of death per 1000 population in a given year.

DEATH: This is the permanent disappearance of all evidence of life at anytime after birth has taken place.

SEX RATIO: This relates the number of male to that of female in the same population and measure the numerical balance between the two sexes.

MASCULINITY: This is the population of male divided by the total population.

MASCULINITY SEX RATIO: This is the population of male divided by total populations multiply by 100.

HOUSE HOLD: This is the number of people living together and eating in the same pot.

CENSUS NIGHT: This is the night preceding the start of the census day. It serves as a reference point because it is expected that by that midnight the enumerator's job begins.

COHORT: This is a group of people sharing a common temporary demographic experience.

ESTIMATE: This is an indirect measure of past or present condition that can be directly measured.

EMIGRATION: This is the movement of people out of the country.

IMMIGRATION: This is the movement of people into the country.

1.6 HISTORICAL BACKGROUND

1.61 THE NIGERIA POPULATION CENSUS

Nigeria has had a long history of census taking. The first was in 1866. The census of 1866, 1871 and 1896, were restricted to Lagos Island and part of Lagos main land. The census of 1901, 1911 and 1921 covered in addition to Lagos, a few more urban towns in the Colony. Most of these census exercises were actually a population estimate. Although, the census of 1952/1953 was elaborated in organization, it non simultaneous which had implication for possible double Country is considered its weak point.

The first post independence census in Nigeria was carried out in 1962. This was out rightly cancelled and another conducted in 1962. The 1963 census result became the official and was used until 1991 census exercise took place and the result was never accepted.

A population census has several uses in a nation. It provides the total number of persons and their characteristics type in every village, town or locality. The information provide data for planning programmes in education, health, housing and other social services at all level of governance. In addition to, it is used by government, information derived from census helps business or private sector to plan their activities. Census programmes usually lapse the interval of 10 years.

1.62 THE 2006 NATIONAL POPULATION CENSUS

According to The National Population commission (NPC), had census in March 2006. The post enumeration survey (PES) followed in April 2006.the conduct of population census is one of the statutory functions of the NPC, according to decree no 23 Of 1989.

The Two types of questionnaire were used during the census, including the main questionnaire, NPC 02. The main questionnaire had four sections namely, identification, household information, socio – economic characteristics and household continuation.

The PES questionnaire had all the questions in NPC 01 and addition, attainment fertility and mortality.

1.7 LIMITATION OF CESUS DATA

In a census, only a limit of questions can be asked. It to answer the questionnaire must be considered.

1.71 USES OF POPULATION DATA (CENSUS)

- Population data is used for planning, administration and also for many aspect of economic and social research.
- Estimating the future population size and the distribution which are fundamental to long term planning of many public programmes.
- Investigating the adequacy of the relationship between demographic and socio – economic process.
- Measure the levels and trend in the standard of living of the population.
- Allocate of parliamentary seats
- Allocate of resources

1.72 STAGES OF POPULATION CENSUS

Census is a complex process, which has to be stated for years before the main enumeration. In this process of stages of census has to be taken into consideration. The stages are:

- Pre- enumeration
- Enumeration
- Post- enumeration.

PRE – ENUMERATION

The pre- enumeration stages starts in about three years before actual enumeration and it covers the whole process just before the main enumeration. This stage involves lots of planning, settings up offices, making necessary laws, preparing the mind of the people that a census exercise is going to take place. Therefore a lot of emphasis on the census exercise depends largely on the pre-enumeration stage.

STAGES OF PE-ENUMERATION

- Planning
- Development of questionnaires
- Development of data processing system
- Data dissemination plans
- Publicity plan
- Cartographic work

ENUMERATION

This is the main census, after this stage involves taking the schedule to the field to obtain information while enumeration is taking place, some such as field checking will also be going on. This stage takes the least of time and its success depends on the pre- enumeration stage.

STAGES OF PE-ENUMERATION

- Recruitment and training of census field workers
- House listing
- Census enumeration
- Post enumeration survey

POST – ENUMERATION

This has to be done after the main enumeration, to know the effectiveness of the main enumeration. This stage involves the returning of census schedule from local offices to the main census office (head quarters) for data processing.

Data processing entails editing, organization, presentation, analysis and publication of results. Another important aspect of post enumeration is that bias and incorporation is the post enumeration survey.

CHAPTER TWO

2.0 LITERATURE REVIEW

According to America Encyclopedia International (1967) Demography is the branch of social science that studies the size, distribution and composition of human population.

According to G.M.K Kpedekpo, demography is concerned with the description, analysis and understanding of population phenomena. It seeks a mathematics and statistical description of human population. Its scope embraces the examination of the size (i.e the number of persons in the population), distribution (arrangement of population in space at a given time), structure (distribution according to age and sex).

Demography is the analytical study of size, territorial, distribution and composition of population and changes through fertility, mortality and migration. As the science of population, demography is related to other disciplines, such as economics, geography, sociology, statistics, genetics and ecology. It emphasizes analysis of the components of population variation and change. This aspect is known as formal demography or the study of the size, distribution, structure and change of population.

PROCEDURE OF STATISTICAL ANALYSIS

The basic statistical analysis to be employed for the demographical study of the population distribution in Nigeria is based on the 2006 census figures are:

1. Multiple regression analysis (matrix method)

$$Y = a_0 + b_1x_1 + b_2x_2 + N$$

Where Y is the total population of the country (dependent variable)

x_1 = Total number of male in each state

x_2 = Total number of female in each state

Where x_1 and x_2 are independent variable respectively

$$\sum y = na_0 + b_1 \sum x_1 + b_2 \sum x_2 + N$$

$$\sum x_1 y = a_0 \sum x_1 + b_1 \sum x_1^2 + b_2 \sum x_1 x_2$$

$$\sum x_2 y = a_0 \sum x_2 + b_1 \sum x_1 x_2 + b_2 \sum x_2^2$$

$$\sum y = \quad n \quad \quad \quad \sum x_1 \quad \quad \quad \sum x_2 \quad \quad \quad a_0$$

$$\sum x_1 y = \quad \sum x_1 \quad \quad \quad \sum x_1^2 \quad \quad \quad \sum x_1 x_2 \quad \quad = \quad b_1$$

$$\sum x_2 y = \quad \sum x_2 \quad \quad \quad \sum x_1 x_2 \quad \quad \quad \sum x_2^2 \quad \quad \quad b_2$$

$$B = (x_1 x_2)^{-1} (x_1 y)$$

$$= \begin{pmatrix} x_1 x_1 & x_1 x_2 \\ x_2 x_1 & x_2 x_2 \end{pmatrix} \begin{pmatrix} x_1 y \\ x_2 y \end{pmatrix} = \begin{pmatrix} b_1 \\ b_2 \end{pmatrix}$$

Where $(x_1 x_2) = \begin{pmatrix} x_1 \\ x_2 \end{pmatrix}$ $x_1 x_2 = \begin{pmatrix} x_1 x_1 & x_1 x_2 \\ x_2 x_1 & x_2 x_2 \end{pmatrix}$

$$(x_1 y) = \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} \quad (y) = \begin{pmatrix} x_1 y \\ x_2 y \end{pmatrix}$$

Where N is error term or distribution term

2. Using Chi - square

$$X^2 = \sum \left(\frac{O_i - e_i}{e_i} \right)$$

This is a form at which the data will be tabulated into observation, expected and summation of each. Hypothesis set to know the difference in male and female mean.

H_0 : X^2 there is no difference in mean population

O_i : is observation frequency for the whole population

e_i : is the expected frequency for the whole population

2.1 WHY DEMOGRAPHY STUDY IS ESSENTIAL

The study of demography becomes very important in a Country most especially the area of vital events and information about such Countries. For instance birth rate, death rate, marriage, divorce, accident and so on; the record on the above listed event can be encouraged in a nation as the following:

Death and birthrates are the major determinant of population of any given Country. It can be expressed as percentage, but they are commonly expressed as per 1000 people.

Birth and death rates can be said to be influenced by age distribution of a Country's population. The rate of birth is said to depend on the number of people in child bearing age group. It creates room for the calculation on birth and with death rate in relation population changes.

In analyzing changes in the size and distribution of population the demographer considered these three components:

Birth rate, Death rate and Migration (emigration and immigration)

The population of a Country increase or decrease through the net balance of Immigration and Emigration. Therefore changes in this vital event bring changes in the characteristics and structure of the population. The dynamic changes in the population have effect on the programme of social changes.

2.20 POPULATION

Population is a group of individual of the same species occupying a particular geographic area. Population may be relatively small and closed, as on an island or valley, or they may be more diffused and without a clear boundary between them and a neighbouring population of the same species.

Statistically, population is the entire aggregation of items from which sample can be drawn. It is an estimate of the means of population.

Population as described by Famojuro I.O (2004), in his lecture on Economics social statistics as the total number of people living in a giving or defined geographical area at a particular point in time.

SOURCES OF POPULATION

Population statistics are derived mainly from the following tradition source:

- (i) Periodic census of enumeration
- (ii) Sample surveyor enquiry
- (iii) Vital registration system
- (iv) Population register

2.21 POPULATION CENSUS

The census is the main source of demographic statistics in many Countries. It is usually defined as the total process of collecting, compiling and publishing demographic economic and social data at a specific time to all persons in a country or designated territory (United Nation 1965).

The census of a population provide a satisfactory method of recording the size distribution and other characteristics, a vast undertaking and care for advance planning adequate provision of resources and painstaking control and training of the enumerator are essential for its successful implementation

2.3 VITAL REGISTRATION

In view of the problem of census in Nigeria, it was the view of the federal government that another source of data collection, but complimentary of census must be established, consequently on this, the civil registration or vital registration was established starting on an experimental basis in 1988.

It is the legal registration, statistical recording and reporting of the occurrence of vital event and the collection, compilation, analysis, presentation and distribution of the statistics pertaining to the live, birth, death, foetal deaths, marriage, divorce, accidents, adoption, annulment and legal separations.

2.4 SAMPLE SURVEY

One of the most important aspect of obtaining is thinking about how much data you need and the quality of data that you will obtain. Sometimes it is possible to include everyone in your research if it is concerning a small target group such as teachers at a school or member of one youth group. But more often the target group is too large and a sample of total population is needed for the research to be feasible to carryout.

When deciding on what size of sample to take and who to include, you need to bear in mind that the sample should be representative in order for your research to validity.

2.5 RATIO

According to G.M.K. Kpedekpo in his book titled Essential of Demography Analysis for Africa. Ratio is a general term given to any numeral denominator relationship between two numbers.

2.51 SEX RATIO

Sex ratio relates the number of male to female in the same population and therefore measures the numerical balance between the sexes. Mathematically it can be represented as

$$\text{sexratio} = \frac{\text{allmale}}{\text{allfemale}} \times 100$$

2.52 DEPENDENCY RATIO

The dependency ratio is defined as the ratio of youth under 15 years of age plus person aged 65 and above to adult aged 15-64 years. It indicates the relative predominance of persons in the dependency ages in relation to those in the

productive ages as broadly defined in most social and economic system. Mathematically it can be represented as

$$D.R = \frac{\leq 14 \text{ years} + \geq 64 \text{ years}}{(15 - 64) \text{ years}} \times 100$$

2.53 AGE RATIO

Age ratio or sex ratio can be used either separately or jointly in evaluating the equality of census return by age groups. Age ratio is usually defined as the ratio of the population in the given age group to one half of the population in the two adjacent age group. Mathematically it can be represented as

Let $5P_x$ be the age range between x to age $x+5$, $5P_{x-5}$ be the preceding and the following age group respectively. Then

$$A.R = \frac{5P_x}{\frac{1}{3}(5P_{x-5} + 5P_x + 5P_{x+5})} \times 100$$

2.54 CHILD WOMAN RATIO (C.W.R.)

The child woman ratio is the number of children per 1,000 women of child bearing age. Various age of children have been used but usually the numerations refers to children age 0 -4, 5 -9, or 0 -9 and the denominators refer to women aged 15 -49, 20 -54 or 15 -54.

$$C.W.R. = \frac{{}_4P_0^{f+m}}{{}_{49}W_{15}}, \quad \frac{{}_5P_0}{{}_{35}W_{20}}, \quad \frac{{}_5P_0}{{}_{35}W_{15}}$$

2.6 POPULATION DENSITY

Population pyramid shows the total picture of a population per age and sex. It is usually way of illustrating the age of the population.

2.7 CONSTRUCTION OF PYRAMID

In a pyramid, the absolute number in each group can be represented by a rectangle. Ages are located on the vertical axis and the total of each of the different ages (or age group) are shown on the horizontal axis.

The rectangle for male is shown on the left side of the diagram and those for the female on the right side. The open –ended age group can be represented only approximately.

2.71 FORMS OF PYRAMID

Pyramid is of different shapes. The shapes are determined by three factors: Fertility, Mortality and Migration. Therefore each rectangle representing an age or age group has a length that depends on:

- I. The total at birth of the corresponding cohort or group of cohort
- II. The amount of reduction by mortality
- III. The amount of migration.

2.8 WORLD POPULATION GROWTH

Some 12,000 years ago, the estimate world population was about 5 millions people than the number of people living in any major city today. At the beginning of the Christian era some 2,000 years ago world population had grown to nearly 250 million, less than a quarter of the population of China today.

For ADI to the beginning of the mid revolution around 1950 it increased two fold to 728 million people living in India today.

During the next 200 years (1750 – 1950) an additional 1.7 billion people were added to the earth's number. But in the last 35 years (1950 – 1985) world population has almost doubled again, bringing the total number at the beginning of 1985 to 4.9 billion at this rate, by 2000 of the world's population will be almost 6.2 billion with Chinese Republic 1/5 of the world population.

2.81 THE STRUCTURE OF THE WORLD POPULATION

The world's population is very unevenly distributed by the geographical region, by fertility and mortality level and by age structure.

Source – Population Reference Bureau, 1984

2.82 WORLD GEOGRAPHIC REGION

Of the world total population in 1985, more than or less than $\frac{1}{4}$ (one quarter) lived in the economically developed

North America	6.0%	North America	4.7%
U.S.S.R	6.4%	U.S.S.R	5.0%
Europe	11.4%	Europe	8.4%
Latin America	9.1%	Latin America	9.7%
Africa	12.1%	Africa	13.5%
Asia and Oceanic	55%	Asia and Oceanic	58%
Year 1984 Total POP = 4,762million		Year 2000 projected POP = 6,250million	

Source: Population Reference Bureau, 1984

2.9 AGE DISTRIBUTION

There are four major division of age distribution

- I. Age 0 or the radix from a life table from which the infant mortality rate is calculated
- II. Ages 1 – 14 years, used to calculate child mortality rate
- III. Ages 0 – 14, constitute the economically inactive young population
- IV. Ages 60 years upward constitute the economically inactive old population.

2.91 ASCERTAINING OR ESTIMATION AGE

The following methods have been used to ascertain or estimate age:

- a. Birth certificate: The most appropriate means of assessing age.
- b. Calendar of event: Assessing age through the recording of past historical events e.g Second World War (1939), death of King Sobhuza 11(1982).

- c. Cohort age assessment: Once the age of one member of an age group can be determined, other people in the same category can be identified, however a mistake in the primary identification will have a multiple effect.
- d. Age declaration through affidavit.

CHAPTER THREE

3.1 RESEARCH METHODOLOGY AND DESIGN

Many authors and writer who are usually prompted to supply definition about major concept they are discussing have defined research. However all of them have major focal point which is investigation to provide information for decision making.

According to Osunala (1982) research is simply the process of arriving at dependable solution to problems through the planned and systematic collection analysis and interpretation of data. Research by Chambers universal reader's dictionary says it is a close and careful study to find out new fact or information.

RESEARCH DESIGN

The basic research design used in this project work is historical base on the 2006 population census conducted by National Population Commission (NPC).

TYPES OF DATA

There are various different types of data that you will encounter when looking at educational statistics or during research. When conducting research, the nature of the data you collect depends on both what you are researching and how you collect the data. The two main types of data are

- **PRIMARY DATA:** is the type of data that is collected by the researcher itself using method such as interviews and questionnaires.

ADVANTAGES OF PRIMARY DATA

- Relatively cheap
- Can be posted, e-mailed or faxed
- Wide geographic coverage

DISADVANTAGES OF PRIMARY DATA

- Design problem

- Question have to be relatively simple
- Require a return deadline
- **SECONDARY DATA:** is data collected by someone other than the user. Common source of secondary data includes censuses, survey, organizational records and data collected through qualitative methodologies.

ADVANTAGES OF SECONDARY DATA

- Considerably cheap and faster than doing original studies
- It is economical
- You can benefit from the research from someone of the top scholars in your field, which for the most part ensures quality data.

DISADVANTAGES OF SECONDARY DATA

- Difficult time in finding solution.
- Difficult statistical packages.

SOURCES AND TYPE OF DATA USED

The data used is a secondary data. It is a Nigeria population figure from 2006 population census conducted by (NPC). This was obtained from the population commission office in Minna Niger State, and it covers the whole population ratio.

3.2 MODE OF PRESENTATION OF DATA

Statistical information is much more graced when it is presented inform of graph or chart than when it is written. This form of presentation of statistical information enables greater control to be exercised; planning is made easier comparism is facilitated.

Some of the geographical presentations that can be used include tables, pyramid, and so on. The main types of presentation to be used in this project are tabular presentation, graphical, pyramid and other descriptive statistics are also used.

CHAPTER FOUR

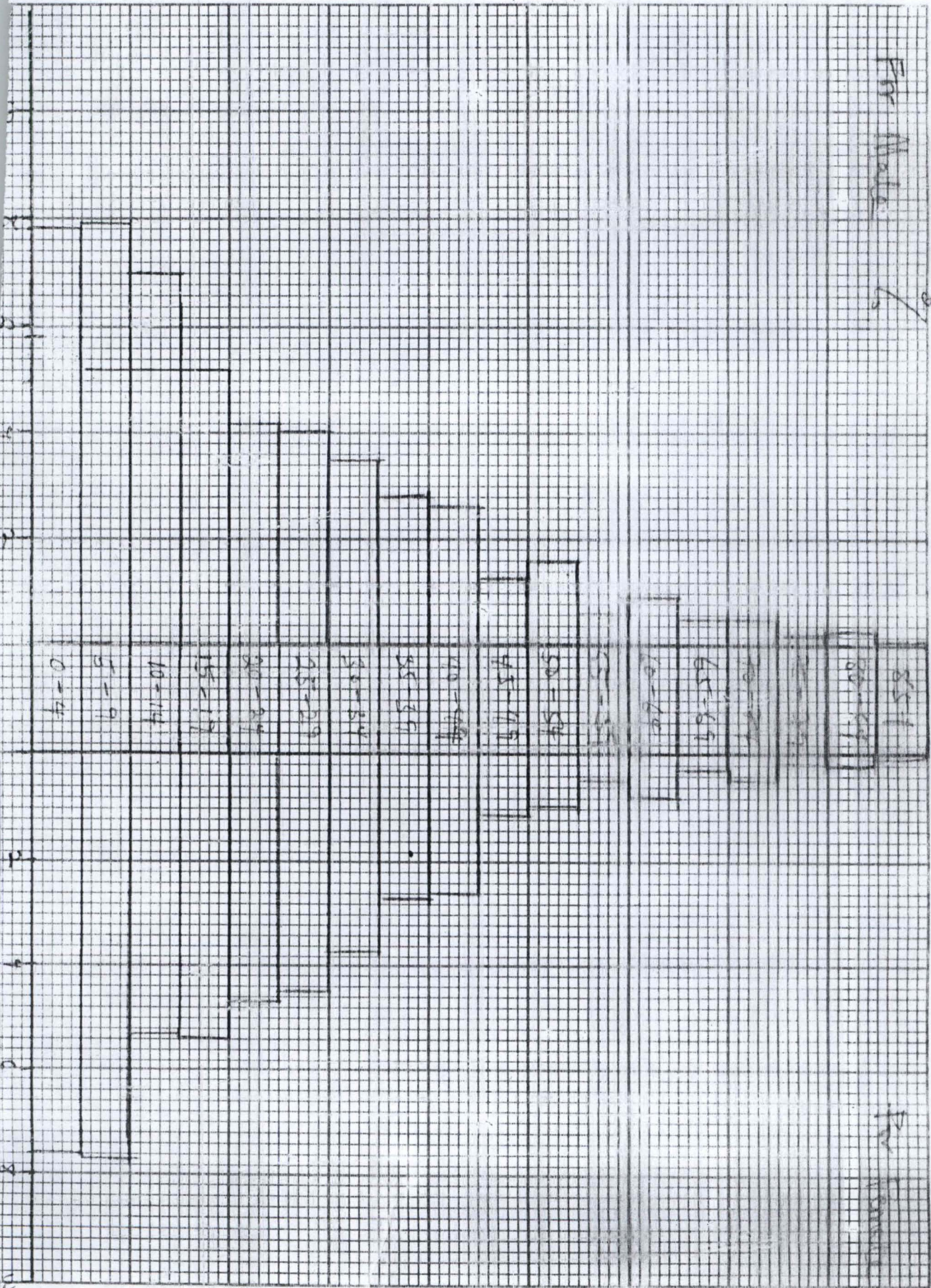
PRESENTATION ANALYSIS OF DATA

DISTRIBUTION OF POPULATION AMONG THE AGE

AGE GROUP	BOTH SEX POP.	%	MALE POP.	%	FEMALE POP.	%
0 – 4	21,569,916	15.4	10,957,567	7.8	10,612,349	7.6
5 – 9	21,783,805	15.6	11,015,988	7.9	10,767,817	7.7
10 – 14	17,210,784	12.3	9,843,590	7.0	7,367,194	5.3
15 – 19	14,737,350	10.5	7,229,592	5.2	7,507,758	5.4
20 – 24	12,465,398	8.9	5,910,717	4.2	6,554,681	4.7
25 – 29	11,975,728	8.6	5,636,769	4.0	6,338,959	4.5
30 – 34	10,068,709	7.2	4,886,020	3.5	5,182,689	3.7
35 – 39	7,750,674	5.5	3,974,742	2.8	3,775,932	2.7
40 – 44	7,247,206	5.2	3,671,841	2.6	3,575,365	2.6
45 – 49	3,397,246	2.4	1,845,373	1.3	1,551,873	1.1
50 – 54	3,607,488	2.6	2,306,995	1.6	1,300,493	0.9
55 – 59	1,627,751	1.2	892,371	0.6	735,380	0.5
60 – 64	2,406,274	1.7	1,256,751	0.9	1,149,523	0.8
65 – 69	1,142,287	0.8	675,694	0.5	466,593	0.3
70 – 74	1,383,863	1.0	740,967	0.5	642,896	0.5
75 – 79	580,012	0.4	309,550	0.2	270,462	0.2
80 – 84	701,961	0.5	363,697	0.3	338,264	0.2
85+	347,090	0.2	191,635	0.1	155,455	0.1

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NUMERICAL AND PERCENTAGE DISTRIBUTION OF POPULATION BY STATE AND SEX

STATE	NO. OF BOTH SEX	%	NO. OF MALE	%	NO. OF FEMALE	%
ABIA	2,833,999	2.02	1,434,193	1.02	1,399,806	1.0
ADAMAWA	3,168,101	2.26	1,606,123	1.15	1,561,978	1.12
AKWA IBOM	3,920,208	2.80	2,044,510	1.46	1,875,698	1.34
ANAMBRA	4,182,032	2.99	2,174,641	1.55	2,007,391	1.43
BAUCHI	4,676,465	3.34	2,426,215	1.73	2,250,250	1.61
BAYELSA	1,703,358	1.22	902,648	0.64	800,710	0.57
BENUE	4,219,244	3.01	2,164,058	1.55	2,055,186	1.47
BORNO	4,151,193	2.97	2,161,157	1.54	1,990,036	1.42
CROSS-RIVER	2,888,966	2.06	1,492,465	1.07	1,396,501	1.00
DELTA	4,098,391	2.93	2,074,306	1.48	2,024,085	1.45
EBONYI	2,173,501	1.55	1,040,984	0.74	1,132,517	0.81
EDO	3,218,332	2.30	1,640,461	1.17	1,577,871	1.13
EKITI	2,384,212	1.70	1,212,609	0.87	1,171,603	0.84
ENUGU	3,257,298	2.33	1,624,202	1.16	1,633,096	1.67
FCT-ABUJA	1,405,201	1.00	740,489	0.53	664,712	0.47
GOMBE	2,353,879	1.68	1,230,722	0.88	1,123,157	0.8
IMO	3,934,899	2.81	2,032,286	1.45	1,902,613	1.36
JIGAWA	4,348,649	3.11	2,215,907	1.58	2,132,742	1.52
KADUNA	6,066,562	4.33	3,112,028	2.22	2,954,534	2.11
KANO	9,383,682	6.70	4,844,128	3.46	4,539,554	3.24
KATSINA	5,792,578	4.14	2,978,682	2.13	2,813,896	2.01
KEBBI	3,238,628	2.31	1,617,498	1.16	1,621,130	1.16
KOGI	3,278,487	2.34	1,691,737	1.21	1,586,750	1.13
KWARA	2,371,089	1.69	1,220,581	0.87	1,150,508	0.82
LAGOS	9,013,534	6.44	4,678,020	3.34	4,335,514	3.1
NASARAWA	1,863,275	1.33	945,556	0.68	917,719	0.66
NIGER	3,950,249	2.82	2,032,725	1.45	1,917,524	1.37
OGUN	3,728,098	2.66	1,847,243	1.32	1,880,855	1.34
ONDO	3,441,024	2.46	1,761,263	1.26	1,679,761	1.2
OSUN	3,423,535	2.45	1,740,619	1.24	1,682,916	1.2
OYO	5,591,589	3.99	2,809,840	2.01	2,781,749	1.99
PLATEAU	3,178,712	2.27	1,593,033	1.14	1,585,679	1.13

RIVERS	5,185,400	3.7	2,710,665	1.94	2,474,735	1.77
SOKOTO	3,696,999	2.64	1,872,069	1.34	1,824,930	1.3
TARABA	2,300,736	1.64	1,199,849	0.86	1,100,887	0.79
YOBE	2,321,591	1.66	1,206,003	0.86	1,115,588	0.8
ZAMFARA	3,259,846	2.33	1,630,344	1.16	1,629,502	1.16
TOTAL	140,003,542		71,709,859		68,293,683	

DISTRIBUTION OF POPULATION AMONG THE STATE AND BY SEX

STATE	NO. OF BOTH SEX	NO. OF MALE	NO. OF FEMALE
ABIA	2,833,999	1,434,193	1,399,806
ADAMAWA	3,168,101	1,606,123	1,561,978
AKWA IBOM	3,920,208	2,044,510	1,875,698
ANAMBRA	4,182,032	2,174,641	2,007,391
BAUCHI	4,676,465	2,426,215	2,250,250
BAYELSA	1,703,358	902,648	800,710
BENUE	4,219,244	2,164,058	2,055,186
BORNO	4,151,193	2,161,157	1,990,036
CROSS-RIVER	2,888,966	1,492,465	1,396,501
DELTA	4,098,391	2,074,306	2,024,085
EBONYI	2,173,501	1,040,984	1,132,517
EDO	3,218,332	1,640,461	1,577,871
EKITI	2,384,212	1,212,609	1,171,603
ENUGU	3,257,298	1,624,202	1,633,096
FCT-ABUJA	1,405,201	740,489	664,712
GOMBE	2,353,879	1,230,722	1,123,157
IMO	3,934,899	2,032,286	1,902,613
JIGAWA	4,348,649	2,215,907	2,132,742
KADUNA	6,066,562	3,112,028	2,954,534
KANO	9,383,682	4,844,128	4,539,554
KATSINA	5,792,578	2,978,682	2,813,896
KEBBI	3,238,628	1,617,498	1,621,130
KOGI	3,278,487	1,691,737	1,586,750
KWARA	2,371,089	1,220,581	1,150,508
LAGOS	9,013,534	4,678,020	4,335,514
NASARAWA	1,863,275	945,556	917,719

NIGER	3,950,249	2,032,725	1,917,524
OGUN	3,728,098	1,847,243	1,880,855
ONDO	3,441,024	1,761,263	1,679,761
OSUN	3,423,535	1,740,619	1,682,916
OYO	5,591,589	2,809,840	2,781,749
PLATEAU	3,178,712	1,593,033	1,585,679
RIVERS	5,185,400	2,710,665	2,474,735
SOKOTO	3,696,999	1,872,069	1,824,930
TARABA	2,300,736	1,199,849	1,100,887
YOBE	2,321,591	1,206,003	1,115,588
ZAMFARA	3,259,846	1,630,344	1,629,502
TOTAL	140,003,542	71,709,859	68,293,683

ANALYSIS OF DATA

From the population distribution by state and sex of population figure from census 2006,

The total population ----- 140,003,542

The male population ----- 71,709,859

The female population ----- 68,293.683

The number of male per 100 female in the country

Masculinity and Feminity proportion

Masculinity proportion is given as:

$$\begin{aligned}
 & \frac{P_m}{P_t} \times 100 \\
 &= \frac{71,709,859}{140,003,859} \times 100 \\
 &= 51.2
 \end{aligned}$$

Feminity proportion is given as:

$$\begin{aligned} &= \frac{P_f}{P_t} \times 100 \\ &= \frac{68,293,683}{140,003,542} \times 100 \\ &= 48.8 \end{aligned}$$

From the above calculation, it shows that there is no much difference between the proportion of male and female.

SEX RATIO

Masculinity ratio (ratio of male per female)

$$\begin{aligned} &= \frac{P_m}{P_f} \times 100 \\ &= \frac{71,709,859}{68,293,683} \times 100 \\ &= 105. \end{aligned}$$

Feminity ratio (ratio of female to male)

$$\begin{aligned} &= \frac{P_f}{P_m} \times 100 \\ &= \frac{68,293,683}{71,709,859} \times 100 \\ &= 95.24 \end{aligned}$$

The sex ratio show that there is no much difference between the male and female sex ratio which is 105 and 95.24 respectively

The excess or density of male as a percentage of the population

$$\begin{aligned} &= \frac{P_m - P_f}{P_t} \times 100 \\ &= \frac{71,709,859 - 68,293,683}{140,003,542} \times 100 \\ &= 2.44 \end{aligned}$$

DEPENDENCY RATIO

Dependency ratio is the ratio of youth under 15 years of age plus person age 65 above, over adults aged 15 – 65 years.

Mathematically it can be represented as

$$\begin{aligned} D.R &= \frac{P_{0-14} + P_{65}}{P_{15-65}} \times 100 \\ &= \frac{60,564,505 + 4,155,213}{75,283,824} \times 100 \\ &= 85.97 \end{aligned}$$

This shows that the dependency age is a bit large, which implies that those that fall within these economically inactive populations are too much and thereby causing economic depression, which makes Nigeria to be yet economically undeveloped.

The aged dependency ratio of 2006 population census in Nigeria is 85.97 (economically inactive population).

AGED PERSONS RATIO

This is the ratio of people that are aged, they are no more in working force they are dependant (65 and above) years.

Mathematically it can be represented as:

$$\begin{aligned} &= \frac{P_{65 \text{ above}}}{P_t} \times 100 \\ &= \frac{4,155,213}{140,003,542} \times 100 \\ &= 3.0 \end{aligned}$$

Aged child ratio is the population of 65 and above group divided by 0 -14 age group population per 100.

$$\begin{aligned}
&= \frac{P_{65+}}{P_{0-14}} \times 100 \\
&= \frac{4,155,213}{60,564,505} \times 100 \\
&= 6.86
\end{aligned}$$

These show that there is difference between aged child ratio and aged person.

Proportion of children under 15 years of age group divided by the total population per 100

$$\begin{aligned}
&= \frac{P_{0-14}}{P_t} \times 100 \\
&= \frac{60,564,505}{140,003,542} \times 100 \\
&= 43.26
\end{aligned}$$

This show that population of children under 15 years of age (which are economically inactive population) is large, which indicate high birth rate during the period.

SEX RATIO OF EACH STATE

This is given by:

$$\frac{P_m}{P_f} \times 100$$

Where P_m is male population of each state and P_f is the female population of each state.

ABIA:

$$\begin{aligned}
&\frac{1,434,193}{1,399,806} \times 100 \\
&= 102.46
\end{aligned}$$

ADAMAWA:

$$\begin{aligned} &= \frac{1,606,123}{1,561,978} \times 100 \\ &= 102.83 \end{aligned}$$

AKWA IBOM:

$$\begin{aligned} &\frac{2,044,510}{1,875,698} \times 100 \\ &= 109.00 \end{aligned}$$

ANAMBRA:

$$\begin{aligned} &\frac{2,174,641}{2,007,391} \times 100 \\ &= 108.33 \end{aligned}$$

BAUCHI:

$$\begin{aligned} &\frac{2,426,215}{2,250,250} \times 100 \\ &= 107.82 \end{aligned}$$

BAYELSA:

$$\begin{aligned} &\frac{902,648}{800,710} \times 100 \\ &= 112.73 \end{aligned}$$

BENUE:

$$\begin{aligned} &\frac{2,164,058}{2,055,186} \times 100 \\ &= 105.30 \end{aligned}$$

BORNO:

$$\frac{2,161,157}{1,990,036} \times 100$$
$$= 108.60$$

CROSS RIVER:

$$\frac{1,492,465}{1,396,501} \times 100$$
$$= 106.87$$

DELTA:

$$\frac{2,074,306}{2,024,085} \times 100$$
$$= 102.48$$

EBONYI:

$$\frac{1,040,984}{1,132,517} \times 100$$
$$= 91.92$$

EDO:

$$\frac{1,640,461}{1,577,871} \times 100$$
$$= 104.00$$

EKITI:

$$\frac{1,212,609}{1,171,603} \times 100$$
$$= 103.50$$

ENUGU:

$$\frac{1,624,202}{1,633,096} \times 100$$
$$= 99.46$$

FCT ABUJA:

$$\frac{740,489}{664,712} \times 100 \\ = 111.40$$

GOMBE:

$$\frac{1,230,722}{1,123,157} \times 100 \\ = 109.58$$

IMO:

$$\frac{2,032,286}{1,902,613} \times 100 \\ = 106.82$$

JIGAWA:

$$\frac{2,215,907}{2,132,742} \times 100 \\ = 103.90$$

KADUNA:

$$\frac{3,112,028}{2,954,534} \times 100 \\ = 105.33$$

KANO:

$$\frac{4,844,128}{4,539,554} \times 100 \\ = 106.71$$

KATSINA:

$$\frac{2,978,682}{2,813,896} \times 100$$
$$= 105.86$$

KEBBI:

$$\frac{1,617,498}{1,621,130} \times 100$$
$$= 99.78$$

KOGI:

$$\frac{1,691,737}{1,586,750} \times 100$$
$$= 106.62$$

KWARA:

$$\frac{1,220,581}{1,150,508} \times 100$$
$$= 106.09$$

LAGOS:

$$\frac{4,678,020}{4,335,514} \times 100$$
$$= 107.90$$

NASARAWA:

$$\frac{945,556}{917,719} \times 100$$
$$= 103.03$$

NIGER:

$$\frac{2,032,725}{1,917,524} \times 100$$
$$= 106.01$$

OGUN:

$$\frac{1,847,243}{1,880,885} \times 100$$
$$= 98.21$$

ONDO:

$$\frac{1,761,263}{1,679,761} \times 100$$
$$= 104.85$$

OSUN:

$$\frac{1,740,619}{1,682,916} \times 100$$
$$= 103.43$$

OYO:

$$\frac{2,809,840}{2,781,749} \times 100$$
$$= 101.01$$

PLATEAU:

$$\frac{1,593,033}{1,585,679} \times 100$$
$$= 100.46$$

RIVER:

$$\frac{2,710,665}{2,474,735} \times 100$$
$$= 109.53$$

SOKOTO:

$$\frac{1,872,069}{1,824,930} \times 100$$
$$= 102.58$$

TARABA:

$$\frac{1,199,849}{1,100,887} \times 100$$
$$= 108.99$$

YOBE:

$$\frac{1,206,003}{1,115,588} \times 100$$
$$= 108.10$$

ZAMFARA:

$$\frac{1,630,344}{1,629,502} \times 100$$
$$= 100.05$$

SEX RATIO OF EACH STATE

STATE	SEX RATIO
ABIA	102.46
ADAMAWA	102.83
AKWA IBOM	109.00
ANAMBRA	108.33
BAUCHI	107.82
BAYELSA	112.73
BENUE	105.30
BORNO	108.60
CROSS RIVER	106.87
DELTA	102.48
EBONYI	91.92
EDO	104.00
EKITI	103.50
ENUGU	99.46
FCT – ABUJA	111.40
GOMBE	109.58
IMO	106.82
JIGAWA	103.90
KADUNA	105.33

KANO	106.71
KATSINA	105.86
KEBBI	99.78
KOGI	106.62
KWARA	106.09
LAGOS	107.90
NASARAWA	103.03
NIGER	106.01
OGUN	98.21
ONDO	104.85
OSUN	103.43
OYO	101.01
PLATEAU	100.46
RIVER	109.53
SOKOTO	102.58
TARABA	108.99
YOBE	108.10
ZAMFARA	100.05

AGE RATIO

Age ratio is usually defined as the ratio of the population in the given age group to $\frac{1}{2}$ the population in two adjacent age group i.e the preceding and the following age group respectively.

$$= \frac{{}_5P_x}{\frac{1}{3}({}_5P_{x-5} + {}_5P_x + {}_5P_{x+5})}$$

i.e the ratio of the population in the given age group to $\frac{1}{3}$ the population in the two adjacent age group and the given group.

AGE RATIO FOR MALE

$$\begin{aligned} \text{AR (5 - 9)} &= \frac{11,015,988}{\frac{1}{3}(10,957,567 + 11,015,988 + 9,843,590)} \times 100 \\ &= 103.87 \end{aligned}$$

$$\text{RATIO} = 103.87 - 100 = 3.87$$

$$\begin{aligned} \text{AR (10 - 14)} &= \frac{9,843,590}{\frac{1}{3}(11,015,988 + 9,843,590 + 7,229,592)} \times 100 \\ &= 105.13 \end{aligned}$$

$$\text{RATIO} = 105.13 - 100 = 5.13$$

$$\begin{aligned} \text{AR (15 - 19)} &= \frac{7,229,592}{\frac{1}{3}(9,843,590 + 7,229,592 + 5,910,717)} \times 100 \\ &= 94.37 \end{aligned}$$

$$\text{RATIO} = 94.37 - 100 = -5.63$$

$$\begin{aligned} \text{AR (20 - 24)} &= \frac{5,910,717}{\frac{1}{3}(7,229,592 + 5,910,717 + 5,636,769)} \times 100 \\ &= 94.44 \end{aligned}$$

$$\text{RATIO} = 94.44 - 100 = -5.56$$

$$\begin{aligned} \text{AR (25 - 29)} &= \frac{5,636,590}{\frac{1}{3}(5,910,717 + 5,636,590 + 4,886,020)} \times 100 \\ &= 102.90 \end{aligned}$$

$$\text{RATIO} = 102.90 - 100 = 2.90$$

$$\begin{aligned} \text{AR (30 - 34)} &= \frac{4,886,020}{\frac{1}{3}(5,636,590 + 4,886,020 + 3,974,742)} \times 100 \\ &= 101.11 \end{aligned}$$

$$\text{RATIO} = 101.11 - 100 = 1.11$$

$$\begin{aligned} \text{AR (35 - 39)} &= \frac{3,974,742}{\frac{1}{3}(4,886,020 + 3,974,742 + 3,671,841)} \times 100 \\ &= 95.15 \end{aligned}$$

$$\text{RATIO} = 95.15 - 100 = -4.85$$

$$\begin{aligned} \text{AR (40 - 44)} &= \frac{3,671,841}{\frac{1}{3}(3,974,742 + 3,671,841 + 1,845,373)} \times 100 \\ &= 116.05 \end{aligned}$$

$$\text{RATIO} = 116.05 - 100 = 16.05$$

$$\begin{aligned} \text{AR (45 - 49)} &= \frac{1,845,841}{\frac{1}{3}(3,671,841 + 1,845,841 + 2,306,995)} \times 100 \\ &= 70.77 \end{aligned}$$

$$\text{RATIO} = 70.77 - 100 = -29.23$$

$$\begin{aligned} \text{AR (50 - 54)} &= \frac{2,306,995}{\frac{1}{3}(1,845,841 + 2,306,995 + 892,371)} \times 100 \\ &= 131.18 \end{aligned}$$

$$\text{RATIO} = 131.18 - 100 = 31.18$$

$$\begin{aligned} \text{AR (55 - 59)} &= \frac{892,371}{\frac{1}{3}(2,306,995 + 892,371 + 1,256,751)} \times 100 \\ &= 60.08 \end{aligned}$$

$$\text{RATIO} = 60.08 - 100 = -39.92$$

$$\begin{aligned} \text{AR (60 - 64)} &= \frac{1,256,751}{\frac{1}{3}(892,371 + 1,256,751 + 675,694)} \times 100 \\ &= 133.47 \end{aligned}$$

$$\text{RATIO} = 133.47 - 100 = 33.47$$

$$\begin{aligned} \text{AR (65 - 69)} &= \frac{675,694}{\frac{1}{3}(1,256,751 + 675,694 + 740,967)} \times 100 \\ &= 75.83 \end{aligned}$$

$$\text{RATIO} = 75.83 - 100 = -24.17$$

$$\begin{aligned} \text{AR (70 - 74)} &= \frac{740,967}{\frac{1}{3}(675,694 + 740,967 + 309,550)} \times 100 \\ &= 127.30 \end{aligned}$$

$$\text{RATIO} = 127.30 - 100 = 27.30$$

$$\begin{aligned} \text{AR (75 - 79)} &= \frac{309,550}{\frac{1}{3}(740,967 + 309,550 + 363,697)} \times 100 \\ &= 65.67 \end{aligned}$$

$$\text{RATIO} = 65.67 - 100 = -34.33$$

$$\begin{aligned} \text{AR (80 - 84)} &= \frac{363,697}{\frac{1}{3}(309,550 + 363,697 + 191,635)} \times 100 \\ &= 126.15 \end{aligned}$$

$$\text{RATIO} = 126.15 - 100 = 26.15$$

AGE RATIO FOR FEMALE

$$\begin{aligned} \text{AR (5 - 9)} &= \frac{10,767,817}{\frac{1}{3}(10,612,349 + 10,767,817 + 7,367,194)} \times 100 \\ &= 112.37 \end{aligned}$$

$$\text{RATIO} = 112.37 - 100 = 12.37$$

$$\begin{aligned} \text{AR (10 - 14)} &= \frac{7,367,194}{\frac{1}{3}(10,767,817 + 7,367,194 + 7,507,758)} \times 100 \\ &= 86.19 \end{aligned}$$

$$\text{RATIO} = 86.19 - 100 = -13.81$$

$$\begin{aligned} \text{AR (15 - 19)} &= \frac{7,507,758}{\frac{1}{3}(7,367,194 + 7,507,758 + 6,554,681)} \times 100 \\ &= 105.10 \end{aligned}$$

$$\text{RATIO} = 105.10 - 100 = 5.10$$

$$\begin{aligned} \text{AR (20 - 24)} &= \frac{6,554,684}{\frac{1}{3}(7,507,758 + 6,554,684 + 6,338,959)} \times 100 \\ &= 96.39 \end{aligned}$$

$$\text{RATIO} = 96.39 - 100 = -6.61$$

$$\begin{aligned} \text{AR (25 - 29)} &= \frac{6,338,959}{\frac{1}{3}(6,554,684 + 6,338,959 + 5,182,689)} \times 100 \\ &= 105.20 \end{aligned}$$

$$\text{RATIO} = 105.20 - 100 = 5.20$$

$$\begin{aligned} \text{AR (30 - 34)} &= \frac{5,182,689}{\frac{1}{3}(6,338,959 + 5,182,689 + 3,775,932)} \times 100 \\ &= 101.64 \end{aligned}$$

$$\text{RATIO} = 101.64 - 100 = 1.64$$

$$\begin{aligned} \text{AR (35 - 39)} &= \frac{3,775,932}{\frac{1}{3}(5,182,689 + 3,775,932 + 3,575,365)} \times 100 \\ &= 90.38 \end{aligned}$$

$$\text{RATIO} = 90.38 - 100 = -9.62$$

$$\begin{aligned} \text{AR (40 - 44)} &= \frac{3,575,365}{\frac{1}{3}(3,775,932 + 3,575,365 + 1,551,873)} \times 100 \\ &= 120.48 \end{aligned}$$

CHILD WOMAN RATIO (C.W.R.)

Child woman ratio i.e.

$$\text{C.W.R.} = \frac{{}_9P_0}{{}_{54}P_{20}} \times 100$$

${}_9P_0$ implies that the population of children of age group 0 – 9

${}_{54}P_{20}$ is the population of woman of child bearing age 20 – 54

$${}_9P_0 = 21,569,916 + 21,783,805 = 43,353,721$$

$${}_{54}P_{20} = 12,465,398 + 11,975,728 + 10,068,709 + 7,750,674 + 7,247,206 + 3,397,246 + 3,607,488 = 56,512,449$$

$$\text{Therefore, C.W.R.} = \frac{43,353,721}{56,512,449} \times 100$$

$$= 76.72$$

REGRESSION EQUATION

The model for regression is given as:

$$Y = a_0 + b_1X_1 + b_2X_2 + U$$

Where,

Y = Dependent variable (total population of the country)

X_1 = total number of male in each state

X_2 = total number of female in each state

X_1 and X_2 are independent variable respectively.

U is the error term or disturbance term

The model is therefore given in a matrix form below