

COVENANT UNIVERSITY

TUTORIAL KIT

PROGRAMME: DEMOGRAPHY  
AND SOCIAL STATISTICS

ALPHA SEMESTER

100 LEVEL



*Raising A New Generation Of Leaders*

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**DSS 111: INTRODUCTION TO DEMOGRAPHY 1**

**COURSE CODE: DSS 111**  
**COURSE TITLE: INTRODUCTION TO DEMOGRAPHY 1**

**INSTRUCTIONS:** QUESTION 1 IN SECTION A IS **COMPULSORY**. THEN, ANSWER ANY **ONE** QUESTION IN SECTION B AND, ANY **ONE** QUESTION IN SECTION C.

**SECTION A (COMPULSORY)**

**Question 1:**

**(30 Marks)**

The table below gives the population data of a small country called Ceylon in a particular year.

<b>Ages</b>	<b>Population Size (Mid-Year)</b>	<b>No. of Deaths</b>
1-4	700,762	20,683
5-9	811,363	5451
10-14	805,642	2589
15-19	680,614	3345
20-24	641,571	5104
25-34	1,027,405	9305
35-44	790,514	8775
45-54	515,695	8209
55-64	293,598	8075
65 and over	229,498	21,958

**Calculate:**

1. The Population size of Ceylon in that year **(3 marks)**
2. Total number of deaths in Ceylon in that year. **(3 marks)**
3. The Crude death rate in that year **(3 marks)**
4. The Under-five mortality rate **(3 marks)**
5. The elderly (or old age) mortality rate **(3 marks)**
6. The Dependency Ratio **(5 marks)**
7. Given that females constitute 55% of the population aged between 15 and 44 years, estimate the Child-Woman Ratio in Ceylon in that particular year? **(6 marks)**
8. What proportion of the population is in the working ages? **(4 marks)**

**ANSWER**

1.

**The Population size of Ceylon in that year**

The population size of Ceylon in that year was= 6,496,662 (Six million, four hundred and ninety six thousand, six hundred and sixty two)

2.

**Total number of deaths in Ceylon in that year**

The total number of deaths in Ceylon that year was 93,494(Ninety three thousand, four hundred and ninety four.

3.

**The Crude death rate in that year**

$$\text{Crude death rate} = \frac{\text{Total Deaths}}{\text{Mid-year pop}} \times 1000$$

$$\frac{93,494 \times 1000}{6,494,662}$$

$$= \underline{14.40}$$

**The crude death rate for Ceylon in that year was 14 deaths per 1000 population.**

4.

**The Under-five mortality rate**

$$<5 \text{ Mortality} = \frac{\text{Total deaths for age group 1-4}}{\text{Mid-year population for age group 1-4}} \times 1000$$

$$\frac{20,683 \times 1000}{700,762}$$

$$\underline{29.52}$$

**This means there is approximately 30 under-five deaths per 1000 persons in that age category**

5.

**The elderly (or old age) mortality rate (i.e., death rate among 65 years and older)**

$$\frac{\text{Total deaths for age group 65+}}{\text{Total/Mid-year pop of age group 65+}} \times 1000$$

$$\frac{21,958 \times 1000}{229,498}$$

$$\underline{95.68}$$

The elderly or old age mortality rate for Ceylon that year was approximately 96 deaths per 1000 elderly persons

6.

**The Dependency Ratio**

$$\text{Dependency ratio} = \frac{P_{0-14} + P_{65+}}{P_{15-64}} \times 100$$

$$= \frac{700,762 + 811,363 + 805,642 + 229,298}{680,614 + 641,571 + 1,027,405 + 790,514 + 515,695 + 293,598} \times 100$$

$$\frac{2,547,065}{3,949,397} \times 100$$

**64.49**

Approximately 64.5

7.

**Given that females constitute 55% of the population aged between 15 and 44 years, estimate the Child-Woman Ratio in Ceylon in that particular year?**

**ANSWER**

- Foremost, we need to calculate the population of people aged between 15 and 44 in Ceylon that year and then find 55% of them reputed to be women.
- Total population of people aged between 15 and 44 is the addition of population in these age groups: 15-19(680,614), 20-24(641,571), 25-34(1,027,405) and 35-44 (790,514) = 3,140,104
- If 55% of 3,140,104 persons in this age group are women, this means that the total population of women in these age groups is approximately 1,727,057

$$\text{CWR} = \frac{P_{0-4}}{W_{14-44}} \times 100$$

$$= \frac{20,683}{1,727,057} \times 100$$

**Child-woman ratio is approximately 1.2.**

- This means that there is at least 1 child aged between 0 and 4 to every woman in child-bearing age in Ceylon.

8.

**What proportion of the population is in the working ages?**

## ANSWER

The proportion of the population in working ages =  $\frac{\text{population in working ages}}{\text{mid-year population of Ceylon}}$

$$= \frac{P_{15-64}}{P_{0-65+}}$$

$$\frac{3,949,397}{6,496,662}$$
$$= 0.61$$

The proportion of the population in working ages = 0.61. If converted to percentage, it means 61 per cent of the population is in working ages.

## SECTION B (ANSWER ONLY ONE QUESTION)

### Question 2:

(20 Marks)

A (i). Define or explain the term “**Demography**”? (4 marks)

A (ii). In Demography, what does the term “**growth**” mean? (3 marks)

A (iii). List the population “**growth components**” that you know of. (3 marks)

B (I). Talking about a population, differentiate between “**absolute size**” and “**density**”?  
(4 marks)

B (ii). If one **square kilometer** of land can inhabit only 250,650 people, how many people will an area of 10,000,000 **square meters** inhabit? (3 marks)

B (iii). In 2008, Nigeria population per square kilometer was 160. Given that Nigeria occupies a total land area of 925,000 square kilometers, what was the total population of Nigeria in 2008?

(3

marks)

## ANSWER

Ai

The word ‘demography’ is a combination of two Latin words, ‘demos’ meaning people and ‘graph’, meaning to study. Therefore, Demography is traditionally the study of population or

people. Demography has been defined in several other ways by different scholars as shown below;

- ) Demography is the [statistical study](#) of human [populations](#)
- ) Demography is the scientific study of characteristics and dynamics pertaining to the human population, including things like size, growth rate, density and distribution of a specified group.
- ) The Multilingual Demographic Dictionary (IUSSP, 1982, p. 101) defines Demography as the scientific study of human populations primarily with respect to their size, their structure [i.e., composition] and their development [i.e., change].

### **Aii**

In Demography, the term 'growth' simply implies change in population size. Note that this does not necessarily mean population increase. Though the population of a place is expected to grow or increase but this may not always be so especially if there is an occurrence of natural disasters such as earthquakes, flooding, volcanic eruption, etc. Population may also change in times of civil conflicts or war which may lead to forced migration or exodus of myriads of people from an area. So, growth in demography may mean population increase or decrease.

### **Aiii**

Population growth components are those demographic events that occur in a population that produce changes in the population size. In Demography, there are three major population growth components, namely; Fertility (births), Mortality (deaths) and migration (human mobility)

### **Bi**

Talking about a population, absolute size simply means the total number of people in a given population or an administrative area, while density is the relationship between population size and the space in which the population is located which is usually measured in persons per square mile or kilometer

### **Bii**

- 1 km<sup>2</sup> of land can occupy 250,650 people
- How many people will 10,000,000 square metres of land inhabit?
- Note: 1 square kilometres = 1,000,000 square mile
- Converting 10,000,000 square mile to square kilometer will give 10 square kilometer
- So, if 1 km<sup>2</sup> can occupy 250,650 people, 10 km<sup>2</sup> will be able to occupy 250, 650 x 10

**= 2,506,500 people**

**Biii**

If population density =  $\frac{\text{Total Population}}{\text{Land Area}}$

- Total population then = population density x land area
- Total population of Nigeria in 2008 = population density of Nigeria x total land area of Nigeria for 2008
- $160 \times 925,000 = 148,000,000$
- The total population of Nigeria in 2008 was **148,000,000**

**Question 3:**

**(20 Marks)**

- a) The study of population can be in its **Static** and **Dynamic** aspects. Differentiate between the two aspects, giving **three (3)** examples of each.  
**(6 marks)**
- b) Differentiate between **“Pure Demography”** and **“Population Studies”**. **(4 marks)**
- c) Give **THREE (3)** reasons why you consider demography to be a relevant social science discipline? **(6 marks)**
- d) Identify **FOUR (4)** different areas of employment (or places of employment) that a demographer can work. **(4 marks)**

**ANSWER**

**3a**

The static aspects of population studies include those characteristics of population that remain unchanged. Examples of such population aspects include population compositions such as age, sex, race, etc. The dynamic aspect of population studies on the other hand are those population characteristics that keep changing from time to time. They are never static. Examples include; fertility, mortality, migration, etc.

**3b**

Pure demography is the study of components of variation and change in demographic variables and the relationships between them. It is also called demographic analysis or formal demography. Pure demography aims at explaining or predicting changes or variations in population variables or characteristics such as fertility, mortality, migration, growth rates, size, density and distribution, or age and sex composition of a population. **Population studies** on the other hand is the study of the relationships between demographic variables and other

variables such as social and economic variables. For example, the study of relationship between religion and age at marriage falls in the category of population studies

### 3c

1. Demography is a relevant social science discipline because it provides statistics for government actions and inactions in any country of society.
2. Demography is a relevant social science discipline because almost all government policies are population-based. This is made possible by demographers by furnishing the government with relevant statistics on population of a country or society from time to time through census or survey.
3. The discipline also provides relevant statistics to research institutes and other stakeholders upon which relevant policies are formed.

### 3d

- a) Federal government parastatals such as National Population Commission (NPC), Independent National Electoral Commission(INEC), National Drug Law and Enforcement Agency(NDLEA), National Centre for Disease Control (CDC), etc.
- b) International Agencies and/or NGOs such as United Nations Organisation (UNO), International Planned Parenthood Federation(IPPF), World Health Organisation(WHO), World Bank, UNICEF, ILO, ICRW, etc.
- c) Federal and State Ministries such as Ministry of Health, Ministry of Education, Ministry of Environment, etc.
- d) Teaching or Lecturing- A demographer can work as a statistics teacher in a secondary school setting or as a lecturer in any of the following departments that has population studies or social statistics as one of their branches-Demography & Social Statistics, Sociology, Economics, Geography, Mathematics and Statistics and Biological Sciences

## SECTION C (ANSWER ONLY ONE QUESTION)

### Question 4:

**(20 Marks)**

- a). Census is one of the **major** primary sources of demographic data. Name two other **major** sources of demographic data that you know of? **(2 marks)**
- b) Explain the difference between “Census” and the other two methods that you have identified in (a) above. **(4 marks)**

c. Name **THREE (3)** groups of information (i.e., characteristics or contents) that there has been an international consensus that a census must provide data on, and give **TWO (2)** examples of variables in each of the three groups that you have identified.

**(9 marks)**

d. Define or describe the two types of census that you know of, highlighting the differences between them. **(5 marks)**

## ANSWER

### 4a

**Vital statistics** and **sample survey** are the two other major sources of demographic data besides **census**

### 4b

- Census is defined as the process of collecting, compiling, evaluating, analyzing and publishing or disseminating demographic, social and economic data about the entire population of a well-defined territory at a specified time. The common characteristics of census include universality, simultaneity, and Individual enumeration. This means that all countries in the world normally conduct census from time to time. It is usually carried every five or ten years. Census is normally conducted by the government of a country because it is very expensive to conduct census and publish its results. Simultaneity means that census is conducted at the same period in a place and individual enumeration means that everybody is counted in a country. It takes serious planning and time to conduct a successful census.
- Sample survey on the hand is not as stressful as census because unlike census where the entire population is counted; sample survey takes a subset of the population for questioning or to acquire the information needed. Information is obtained from a representative sample of the population. It saves time and is less expensive than census. It also allows for deeper questions to be asked because less people are interviewed.
- The last one is vital statistics. It is a continuous, permanent and compulsory recording of the occurrence and the characteristics of vital events such as births, deaths, marriages and divorces. It is also an important source of demographic data especially for social data such as fertility, mortality, and marriage

### 4c

The **THREE (3)** groups of information (i.e., characteristics or contents) that there has been an international consensus that a census must provide data on, and **TWO (2)** examples of variables in each of the three groups identified are as follows;

1. Socio-demographic Information: Examples of characteristics or contents here include; age and sex
2. Economic data or information: Examples of characteristics here include income and occupation,
3. Social Data or information: Examples of characteristics here include housing type and educational status

### 4d

**De jure** and **de facto** are the two known types of census. While de jure means legal or customary attachment to an area; de facto on the other hand means physical residence. This means that for de facto, people are registered where they usually reside or their origin; while

for de facto, people are registered where they are currently staying or residing at the time of the census

**Question 5:**  
**Marks)**

**(20**

On January 1, 2012, the population of a community in Ota LGA was 85,000 people. During that year, a total of 2,850 new people moved into that community, while 1,250 moved out to live elsewhere. It was also recorded that during that year, a total of 3,250 babies were born and 1,550 people died. Calculate:

- I. The population of the community on January 1, 2013 **(3 marks)**
- II. The size of the population on July 1, 2012 **(3 marks)**
- III. The Crude Birth Rate and Crude Death Rate in that year. **(6 marks)**
- IV. The Rate of Natural Increase in that year. **(4 marks)**
- V. The number of years it will take for that population to double its size. **(4 marks).**

**ANSWER**

**I.**

**The population of the community on January 1, 2013**

$$\text{Total population of the community} = P_1 + B - D + I - E$$

$$85,000 + 3,250 - 1,500 + 2,850 - 1,250 = \underline{\underline{88,300 \text{ people}}}$$

**II.**

**The size of the population on July 1, 2012**

- The size of the population on July 1, 2012 is termed the “**mid-year population**”
- This can be derived by adding the population of the community at Ota on January 1, 2012 and January 1, 2013 and divide the result by 2.
- The population size of the community at Ota LGA on January 1, 2012 was 85,000 and that of January 1, 2013 was 88,300
- July 1, 2013 (mid-year population) =  $\frac{85,000 + 88,300}{2}$
- The population of the community on July 1, 2012 was **86,650**

**III.**

**a) The Crude Birth Rate in that year.**

$$\underline{\underline{\text{Total Births} \times 1000}}$$

Mid-year population

$$\frac{3,250 \times 1000}{86,650}$$

$$\underline{\underline{37.5}}$$

This means there is approximately 38 births per 1000 population in that community that year.

**b) The crude death rate in that year**

$$\frac{\text{Total Deaths} \times 1000}{\text{Mid-year population}}$$

$$\frac{1550 \times 1000}{86,650}$$

$$\underline{\underline{= 17.9}}$$

This means there is approximately 18 deaths per 1000 population in that community in that year

**IV.**

**The Rate of Natural Increase in that year.**

Rate of natural increase (RNI) is measured as the difference between the crude birth rate (CBR) and crude death rate (CDR), usually expressed as a percentage.

$$\text{RNI} = \frac{(\text{CBR} - \text{CDR}) \times 100}{1000}$$

$$\text{RNI} = \frac{(38 - 18) \times 100}{1000}$$

$$\text{RNI} = 2\%$$

The rate of natural increase in the community in the year is 2%

**V**

**The number of years it will take for that population to double its size.**

- Since the annual rate of increase has been known to be 2%.
- Therefore the population will double its size in  $70/2$  years which is 35 years.
- It will take the population about 35 years to double its present size.