

POPULATION GROWTH AND HEALTH CARE DELIVERY IN ADAMAWA STATE OF NIGERIA.

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ABSTRACT

Adamawa state population is projected to be approximately 2,819million by the year 2001. This gives an increase of 716,784 as compared to the 1991 census figure, which is 2,102,053 for the state. The last census (1991) formed the basis of this projection. Further, 1996 projected population was projected to the year 2001. The projections were obtained using an exponential growth model.

The 1996 Doctors/population and Nurses and mid -Wives/population ratios obtained as 1:29,840 and 1: 7197 respectively are above the World Health Organisation's recommendation (1:10,000 and 1:5,000 respectively).

KEYWORDS: Adamawa State, Exponential Growth Model, Population, Ratio,

INTRODUCTION

Population provides basis for planning health care delivery to the people in any community and Adamawa State is one such community. World wide, it has become a major factor in any national planning and development. The Economic Commission for Africa (ECA) noted that the population of a country is as much an agent as the beneficiary of any planned economic and social development undertaken

(Shyrock, 1976). In any plan therefore, the population advancement into the future must be given due attention so that it can serve as an integral part of any planning process.

Population is used in different senses in demography and statistics. In demography, it relates the number of people in a given area, while in statistical context; it means the universe of units under consideration, which may be people, light bulbs, rats (Newell, 1998).

There are only three (3) ways in which the number of people in any given area can change (population dynamics):

- birth may occur
- death may take place
- movement of people from and to another (migration).

These three instances are referred to as fertility, mortality and migration respectively. They continuously operate on population and determine its size and growth and hence are regarded as components of population growth (pollard, 1973).

Rapid population growth constitutes a great difficulty to efforts aimed at providing enough health personnel to people. An improvement in health services will be expected to raise the standard of living and economic development of the people. World Health Organization (WHO) target for 2000 on health delivery systems is

One doctor: 10,000 people

One nurse/midwifery: 3,000people.

The research is therefore intended to find out the projected population of Adamawa state by local government areas so as to match it with projected total number of medical personnel (doctors and nurses/midwives) and hence to determine the ratio. This will be compared with the WHO target ratios for the year 2000, on health delivery system. The result is expected to guide the Adamawa State Health Policy makers on the health care delivery system plan of action.

METHODOLOGY

Exponential and geometric growth models will be used to project the population by sex and by local government areas of Adamawa state for the year 2001. This method will be appropriate in estimating the population of a state, country, or region as compared to the other methods mentioned above (Collins, 1988). A five- year time period will be used. 1991 population census will be used as a base to project the population to the year 1996. Further, the 1996 projected population will be projected to the year 2001. The Nigeria annual population growth rate of 2.83% (national population commission 1996) will be

used for the projections. The exponential and geometric growth models are, respectively:

$$P_t = P_0 e^{rt}$$

$$P_t = P_0(1+r)^t$$

P_t = projected population at time period t ; P_0 = base year population; r = growth rate; t = time periods (expressed in years)
 $e = 2.71828$

The models are chosen because of the following reasons:

- There is a known population growth rate (2.83%)
- It does not require basic statistical data on birth, death, and net migration
- It considers projecting for shorter periods and (usually five years).

CALCULATIONS AND RESULTS

RESULTS

The results of the two projections the Doctor/peoples' ratio and the Nurses and midwives/ peoples' ratio are summarised as follows:

Projected Population of Adamawa State using the two models.

Exponential		Geometric	
1996	2001	1996	2001
2,446,906	2,818,837	2,442,182	2,807,871

Doctor/Population Ratio

Exponential		Geometric	
1996	2001	1996	2001
1:29,840	1:34,376	1:29,783	1:34,242

Nurses and Midwives/Population Ratio

Exponential		Geometric	
1996	2001	1996	2001
1:7,197	1:8,299	1:7,183	1:8,256

DISCUSSION OF RESULTS

Adamawa State population is expected to be approximately 2.819 million or 2.808 million by the year 2001 using the exponential and geometric models respectively. This enormous population will have serious implications on provision of adequate services to the people. The Doctor /population and the Nurses and Midwives population ratios of 1:29,840 and 1: 7197 respectively, in 1996 are not in conformity with the WHO's ratio of 1:291as Doctor/peoples' ratio and 1:961 as Nurses and Midwives/peoples' ratio in 1995. The projected populations are in appendices 1-4.

CONCLUSION

The population of Adamawa State is projected to 2.819 million using an exponential growth model and 2.808 million using geometric growth model.. Increase of 13.20% from 1996 projection is observed. The basis for the projection is the 1991 population. There is also an unequal distribution of the health personnel, which is evident from the fact that as at the time of this projection, there was no medical doctor in Fufore local government area. The Adamawa state government should therefore plan towards meeting the efficient health service delivery system that should match the expected population. Such plans can be through training of the indigenes of the state in medical schools of the Universities.

REFERENCES

Polard, A. H., 1989. Demographic Techniques, Pergamon b Press, Sidney, Oxford, New York.

Colin Newell, 1988. Methods and Models in Demography, Belhaven Press Oxford.

National Population Commission : Population Projection of Nigeria, 1996.

Newell, 1998. A New Breed of Doctors, WHO World Health Forum, An International Journal of Health Development, Geneva, Vol. 11, No. 3.

Shryork, H. S., Siedel, J. S., 1976. Methods and Materials of Demography, Condensed Edition , Stockwell, Academic press Inc., London

APPENDICES

The results of the population projections are summarized in the following tables:

Appendix I: Projected Population for the year 1996 using the 1991 census as a base.

LOCAL GOVT. AREA	1991 POULATION		1996 PROJECTED POPULATION BY SEX AND LOCAL GOVT. AREA OF ADAMAWA STATE	
	MALE	FEMALE	MALE	FEMALE
FUFORE	78,978	74,800	90,983	86,170
GANYE	86,386	84,673	99,517	97,647
GOMBI	43,589	44,836	50,215	51,651
GUYUK	33,424	36,180	38,504	41,679
HONG	62,315	63,957	71,787	73,679
JADA	60,349	63,837	69,522	73,540
MADAGLI	44,757	47,348	51,560	54,545
MAIHA	48,814	43,785	56,234	50,440
MAYO-BELWA	59,736	61,290	68,816	70,606
MICHIKA	51,502	60,210	66,242	69,362
MUBI	132,586	110,828	152,739	127,674
NUMAN	115,842	112,569	133,450	129,680
SHELLENG	27,821	28,387	32,050	32,702
SONG	99,757	93,335	114,920	107,522
YOLA	132,968	113,100	153,179	130,291
TOTAL	1,084,824	1,039,295	1,249,718	1,197,188

Appendix II: Projected Population for the year 2001 using the 1996 projected population as a base

LOCAL GOVT. AREA	1996 PROJECTED POULATION AS BASE YEAR FOR 2001 PROJECTION		2001 PROJECTED POPULATION BY SEX AND LOCAL GOVT. AREA OF ADAMAWA STATE	
	MALE	FEMALE	MALE	FEMALE
FUFORE	90,983	86,170	104,812	99,268
GANYE	99,517	97,647	114,647	112,489
GOMBI	50,215	51,651	57,848	59,502
GUYUK	38,504	41,679	44,357	48,014
HONG	71,787	73,679	82,699	84,878
JADA	69,522	73,540	80,089	84,718
MADAGLI	51,560	54,545	54,545	62,836
MAIHA	56,234	50,440	64,782	58,107
MAYO-BELWA	68,816	70,606	79,276	81,338
MICHIKA	66,242	69,362	76,311	79,905
MUBI	152,739	127,674	175,955	147,080
NUMAN	133,450	129,680	153,734	149,391
SHELLENG	32,050	32,702	36,922	37,673
SONG	114,920	107,522	132,388	123,865
YOLA	153,179	130,291	176,462	150,095
TOTAL	1,249,718	1,197,188	1,439,676	1,379,161

Appendix III: Projected Population/Doctor Ratios by Local Government Areas

DOCTOR/POPULATION RATIO BY LOCAL GOVT. IN ADAMAWA STATE			
LOCAL GOVT. AREA	1996 POPULATION	NO. OF DOCTORS AS AT 1996	DOCTOR/POPULATION RATIO
FUFURE	177,153	-	-
GANYE	197,164	4	49,291
GOMBI	101,866	5	20,373
GUYUK	80,183	1	80,183
HONG	145,466	3	48,489
JADA	143,062	1	143,062
MADAGLI	106,105	1	106,105
MAIHA	106,674	1	106,674
MAYO-BELWA	139,422	3	46,474
MICHIKA	135,604	2	67,802
MUBI	280,413	13	21,570
NUMAN	263,130	11	23,921
SHELLENG	64,752	1	64,752
SONG	222,442	2	11,122
YOLA	283,470	34	8,337
TOTAL	2,446,906	82	
RATIO			1:29,840

Appendix IV : Projected Population/Nurses and Midwives Ratios by Local Government Areas

NURSES AND MIDWIVES/POPULATION RATIO BY LOCAL GOVT. IN ADAMAWA STATE			
LOCAL GOVT. AREA	1996 POPULATION	NO. OF DOCTORS AS AT 1996	DOCTOR/POPULATION RATIO
FUFURE	177,153	2	88,577
GANYE	197,164	8	24,646
GOMBI	101,866	54	1886
GUYUK	80,183	11	7289
HONG	145,466	14	10,390
JADA	143,062	1	143,062
MADAGLI	106,105	-	-
MAIHA	106,674	-	-
MAYO-BELWA	139,422	41	3,401
MICHIKA	135,604	19	7137
MUBI	280,413	5	56,083
NUMAN	263,130	106	2,482
SHELLENG	64,752	5	12,950
SONG	222,442	3	74,147
YOLA	283,470	71	3,993
TOTAL	2,446,906	340	
RATIO			1:7197