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QUALITY OF DEMOGRAPHIC DATA IN NIGERIA: PROBLEMS AND PROSPECTS

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ABSTRACT

Quality of demographic data in Nigeria has been investigated in this paper. Graphical and algebraic methods (including Myre's index, Age and sex ratio scores and the United Nations joint score) were applied to evaluate the 1963 and 1991 censuses, 1981/82 NFS, 1990, 1999 and 2003 NDHS age and sex data. Results of the analyses show that the qualities of age and sex data in Nigeria are quite low. Preference for the end digits 0 and 5 and avoidance of the end digits 1,3, 7 and 9 are pronounced in all the surveys. So also is the problem of age shifting. Therefore, improved education of the Nigeria populace, greater emphasis on registration of births, adequate training, supervision and remuneration of enumerators, among others have been recommended.

KEYWORDS: Demographic data quality, Myre's index, Age-sex accuracy index, digit preference, age shifting

1. INTRODUCTION

Quality of demographic data is as important as the quantity in the development plan, policy formulation and implementation programmes of every nation. Just as plans without data, plans based on defective data lead to wrong decisions resulting in wastage.However, until recently only quantity of demographic data was emphasized, partly because of inadequate basis for quality assessment and partly because of lack of tools for data evaluation. With the availability of more data and better tools for data evaluation today, the situation has changed.Data evaluation, according to Ramachandran (1989) is aimed at (i) identifying the types and sources of errors or biases (ii) measuring the degree of accuracy to be expected in the estimates derived from the data, (iii) determining the appropriate methods of analysis to be applied to such data and (iv) determining the type of adjustments to which the data may be subjected where necessary.Naturally, it is not possible to eliminate every error completely from any data. Teklu (1989) and Venkatacharya (1989) have noted that the quality of estimates of vital rates derived by indirect methods depends largely on the quality of data from which they were derived. Moreover, adequate knowledge of types and degree of errors in data serves as an aid to improved data quality in future surveys.Therefore, the ultimate objective of this study is to determine the quality of demographic data in Nigeria that may be useful in optimal utilization of the data and provide basis for improved data quality in future surveys. The types of error in any data depend on the source of the data among other factors. In sub-Saharan Africa, demographic data are derived mainly from censuses and sample surveys. Therefore, some of the errors associated with data from censuses and sample surveys are discussed in Section

2. Although data are collected on many items in censuses and sample surveys, age and sex are two of the few items on the bases of which data are collected, tabulated, analysed and adjusted in all demographic enquiries. Moreover, such demographic phenomenon like fertility, mortality and migration are closely related to age and sex. Socio-economic characteristics, like nuptiality, education, occupation and employment are also highly correlated with age and sex. Therefore, only age and sex data are evaluated in this study. Some of the methods of evaluation of age and sex data are discussed in Section

3. In Nigeria, the demographic data widely and currently in use are derived from censuses (the 1963 and 1991) and sample surveys (the 1981/82 NFS, 1990, 1999 and 2003 NDHS). With two censuses and four sample surveys, there are enough bases to assess the quality of data and determine levels of improvement or otherwise in data quality. Therefore, the types of errors in the available demographic data in Nigeria are examined in Section 4, while Section 5 contains the summary, recommendation and conclusion.

4. TYPES AND SOURCES OF ERROR

Errors in demographic data may be classified into two broad categories, namely: - coverage and content errors. Coverage involves the completeness of enumeration while content refers to the quality characteristic of the data collected. Quality here refers to the degree of accuracy or conformity to set standard of the data collected.Coverage errors include omission or duplication of household members, households, structures/dwelling units and/or enumeration areas (EAs). These may result from improper demarcation of the EAs, improper listing of household members, households, structures/dwelling units, inaccessibility of some remote areas due to difficult terrain and environment, nomads, mobile group and sparsely populated hamlets. Other causes, according to Ramachandran (1989) and Ekanem (1972), include ignorance, superstition, fear, hostility, anger and general feeling of insecurity, lack of technically qualified personnel, poor financial resources, improper use of some concepts such as defacto and dejure concepts, fixed and floating reference dates and the criteria for inclusion or exclusion of household members. Omission of some columns, lines or pages of the questionnaires, inadequate provisions (e.g number of lines in a questionnaire or number of questionnaires) during data collection, coding and/or analysis, ill-health, socio-economic reasons, and age (especially infancy) may also lead to coverage error. Inflation may also occur if payments are made according to number of questionnaires completed.

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Content errors include age misreporting (digit preference, age shifting across critical age boundaries and age exaggeration), use of wrong codes during enumeration, data entry and/or analysis, shifting of columns / lines or assignment of wrong numbers to questionnaires etc.

Age misreporting may result from ignorance, indifference to date of birth, deliberate misstatement of age, fear, superstition, anticipation of benefits or unfavourable end points etc. Ignorance of date of birth, for instance, leads to age estimation. When ages are estimated the problem of digit preference and other age misstatements are unavoidable. The end digits often preferred, according to Ekanem (1972), are 0, 2, 5 and 8. Young unmarried girls are usually reported as younger, while those married and/or have children are reported as older but with noted tendency to be within reproductive age. For the males, the tendency is to exaggerate age of adults. The degree of digit preference and other age misstatements varies with age, becoming more as age advances [Ramachandran (1989)]. Furthermore, when some benefits such as tax relief, free medical services, voting and school enrolment are envisaged exaggeration of age may result. Content error may also result from misinterpretation of questions, recording of answers and postponement of completion of some aspects of a questionnaire that may seem obvious to the enumerators.

When a question connotes taxation, military conscription or any other unfavourable end points, or when some questions are meant only for certain segments of the population it can result to coverage and/or content errors. Such questions as labour force, school attendance, marital characteristics, fertility etc, which are meant for specific segments of the population, might induce the enumerators to drop some of the affected persons or shift some eligible respondents across critical age boundaries to avoid additional work.

5. DATA EVALUATION AND ERROR DETECTION TECHNIQUES

Data evaluation and error detection methods can be broadly classified into two, namely: - direct and indirect methods. Among the direct methods is the post –enumeration survey (PES). When well planned and implemented, PES can be used for detection of both coverage and content errors and to collect additional information. However, as noted by Ramachandran (1989), PES may not be suitable for evaluation of coverage with defacto concept and floating reference date.

The external and internal consistency – convergency checks are among the indirect methods. In the external consistency checks the study data are compared with data from other external sources to assess the reliability of the study data. Such external sources include vital registration, school records, voters' register and labour statistics. However, in most developing countries data from these independent sources also suffer from a lot of inconsistencies. The status of vital registration is still very low. Data from school records are often inflated and manipulated to attract higher fund allocation. Voters' registers can hardly provide sound basis for data evaluation because of similar reasons. Falsification of records and the ghost – worker syndrome also render labour statistics invalid for the purpose of data evaluation. The internal consistency checks include those based on patterns in age, sex, and other characteristics of the respondents. They can be used to evaluate both content and coverage.

Age data may be reported in single years or grouped. Age estimation errors and misreporting occur mainly at ages ten years and above and become worse as age advances. According to Shryock and Siegel (1976) the ages of early childhood and extreme old age are often more strongly affected by other types of errors of reporting than by preference for any specific terminal digit. Moreover, the assumption of equal decrements from age to age is less applicable to those under 10 years. Consequently, Ramachandran (1989) recommended the restriction of the evaluation to the age range 10 – 69.

Error detection in age data reported in single years may be achieved using graphical and algebraic methods. The algebraic methods include the Whipple's index (WI), Bachis index, Myre's index (MI), Digit Preference index (DPI), Carrier and Ramachandran indices etc. Whipple's index yields indices only for digits 0 and 5 and the choice of the age range 23 – 62, according to Shryock and Siegel (1976), is largely arbitrary. Digit preference index (DPI) is better than Whipple's index in that it provides indices of preference/rejection for all the digits. However, since the age range 10 – 69, starts with the digit 0, populations reported at ages ending with 0 would be larger than those of other digits. Thus, (DPI) gives undue advantage to the digit 0.

Myre's index (MI) addresses this problem of DPI by introducing the blended population. The procedure for calculating MI starts with the calculation of 10 digits – preference indices within the age range 10 – 69, starting with the range 10 – 59 to 20 – 69. If we denote the populations at end digits 0, 1, 2, ... 9 in the age range 10 – 59 with P_{10}, P_{11}, P_{12}, ... P_{19} and in the age range 20 – 69 with P_{20}, P_{21}, P_{22}, ... P_{29}, the blended populations, P_i at the ith end digit, (i = 0,1,2 ...9) is given by

$$P_i = (i+1)P_{1i} + [10 - (i+1)]P_{2i} \quad \ldots\ldots (1)$$

Hence, the percentage of the blended population for the ith digit ($\%P_i$) is given by

$$\%P_i = \frac{P_i}{\sum_{i=1}^{9} P_i} \times 100 \quad \ldots\ldots (2)$$

If age data were correctly reported $\%P_i$ is expected to be about 10 and the sum of the absolute deviations of these percentages from 10 will be zero. Myre's index is, therefore, calculated as the sum of absolute deviations of $\%P_i$ from 10. Myres' index lies between 0 (when there is no digit preference) and 180 (when all ages were reported at a single digit). Sometimes MI is defined as half of the sum of the absolute deviations of $\%P_i$ from 10. In this case, MI lies between 0 and 90.

When age data are reported in five–year or other age groupings, data evaluation may be conducted using graphical method (which includes curves and population pyramid) or algebraic method (which includes age ratios (ARs), sex ratios (SRs), and the UN-Joint score (JS)). Three age ratios commonly in use are the United Nations, Zelnik and Ramachandran age ratios (ECA / RIPS (nd)).

For the age group [x – x+n), age ratio is defined as

$$ {}_nAR_x = \frac{200\ {}_nP_x}{{}_nP_{x-n} + {}_nP_{x+n}} \qquad \text{----------} \qquad (3) $$

by United Nations

$$ {}_nAR_x = \frac{300 {}_nP_x}{{}_nP_{x-n} + {}_nP_x + {}_nP_{x+n}} \qquad \text{----------} \qquad (4) $$

by Zelnik and

$$ {}_nAR_x = \frac{400\ {}_nP_x}{{}_nP_{x-n} + 2\ {}_nP_x + {}_nP_{x+n}} \qquad \text{----------} \qquad (5) $$

by Ramachandran .Where ${}_nP_x$ is the population aged [X – X+n).

In cases where digit preference is predominant, the Ramachandran version works better and removes some of the biases on the other two. In the absence of age misreporting these ratios should not differ very much from 100. The ratios are calculated separately for each sex, but for comparability the age grouping should be the same for both sexes. A summary index for the age ratios is the United Nations 'Age Ratio Score' (ARS), computed as the mean absolute deviations of ${}_nAR_x$ from 100. When age data are correctly reported ARS should not differ much from zero.

The data on sex may be evaluated by calculating sex ratios (number of males per 100 females). If a population is changing only from fertility and mortality sex ratio of the population should not differ very much from 100, and age-specific sex ratios should not fluctuate from one age to another. Thus, age-specific sex ratios give clues to defects in sex data by age. The 'Sex Ratio Score' (SRS) is a summary index for the age-specific sex ratios. It is calculated as the sum of the absolute deviations of successive sex ratios divided by the number of such deviations. A large score indicates the presence of error or bias in the data.

Based on empirical examples the United Nations (1955) developed a joint score, (the UN-joint score (JS)), by combining the ARS and SRS. The UN joint score (JS) is defined as

$$ JS = ARSM + ARSF + 3SRS \qquad \text{----------} \qquad (6) $$

Where, ARSM and ARSF are respectively, the male and female age ratio scores. As a measure of quality of age – sex data, a value of JS less than 20 indicates that the data may be reliable and a value of JS between 20 and 40 suggests that the data may be useable with adjustment. However, the data is considered deficient if JS lies between 40 and 60 and grossly erroneous if it is beyond 60.

To address the problem of the 'Not Stated' age group, a common practice is to allocate them to other age groups on prorata basis when the number is not large and the group does not possess any peculiar characteristic. These methods have been utilized in Section 4 to evaluate the data from censuses and sample surveys in Nigeria.

4. QUALITY OF DEMOGRAPHIC DATA IN NIGERIA

This Section discusses the quality of demographic data in Nigeria. Some of the methods discussed in Section 3 have been applied to evaluate the 1963 and 1991 censuses, 1981/82 NFS, 1990,1999 and 2003 NDHS data. For age and sex data in single years of age, data evaluation has been restricted to the range 10 – 69 years while the range 0 – 69 years has been considered for age – sex data presented in five year groups. The percentage of the population enumerated as "Age not stated" is less than one in all the surveys and do not possess any peculiar characteristic. As such, this group was allocated to other age groups on prorata basis.

Section 4.1 considers the quality of age – sex data presented in single years of age. The quality of age – sex data presented in five–year age groups is examined in Section 4.2, while comparing it with the quality of data from other countries.

4.1 Age – Sex data in single years of age.

The graphs of the age-sex distribution of the populations enumerated in some of the demographic surveys (1991 census, 1990, 1999 and 2003 NDHS) are shown in Figures 1, 2, 3 and 4 respectively. As these Figures show, the graphs are characterized by pronounced peaks at ages with end digits 0 and 5 and minor peaks at ages ending with 2 and 8. Troughs are at ages ending with

1.3.7 and 9. These characteristics are typical of age data from most developing countries and are attributable to ignorance of dates of birth that lead to age estimation. The problem of digit preference/avoidance appears to be more prominent among female than male population in the 1991 census and 1999 NDHS.

Also observable in the graph of the 1999 NDHS data is the undue proportion of female (compared with the male) population enumerated at age 9 years. This was attributed to deliberate attempt by some of the enumerators to avoid much work by pushing some eligible women (those 10 years and above) to age 9. It could be recalled that some detailed questions are meant for those women aged 10 years and above

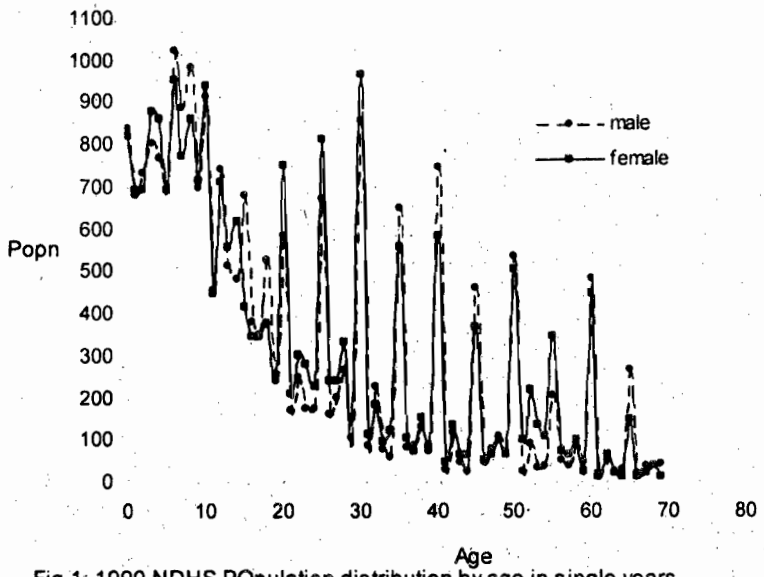

Fig.1: 1990 NDHS POpulation distribution by age in single years

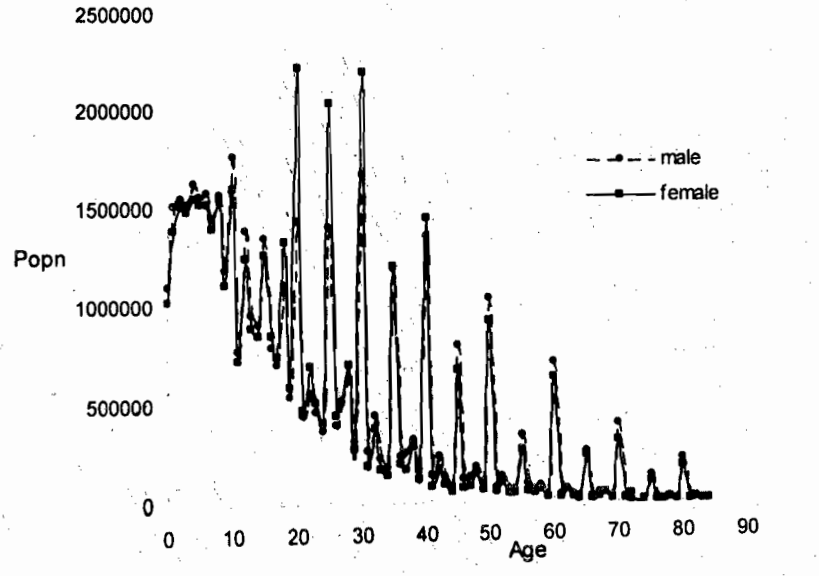

Fig.2: 1991 Nigeria census population distribution by age in single years

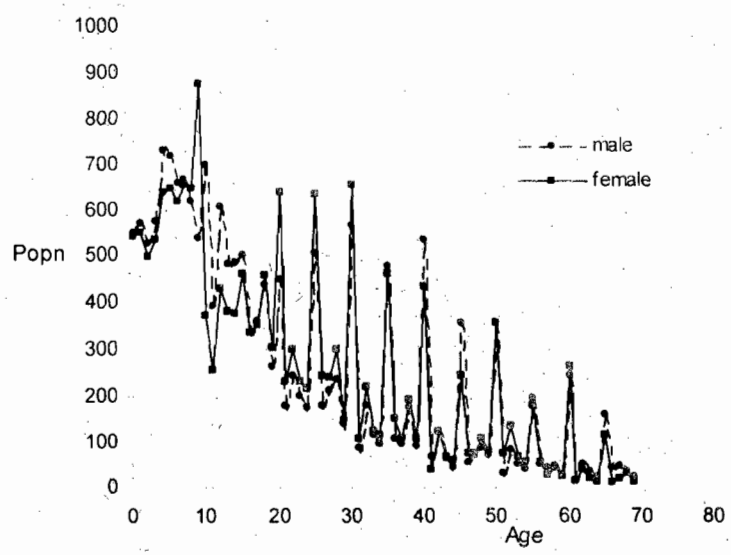

Fig.3: 1999 NDHS poulation distribution by age in single years

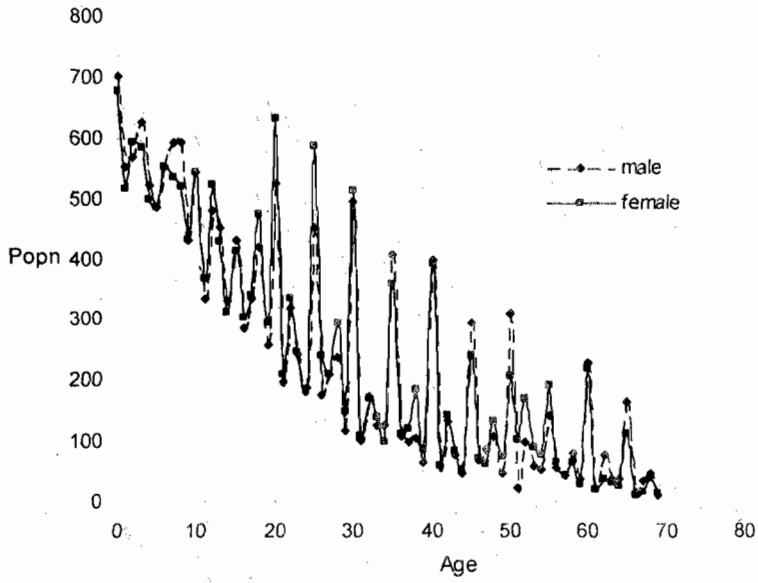

Fig.4: 2003 NDHS Population distribution by age in single years

The extent of digit preference/avoidance was quantified using Myre's index (MI). Myre's index of digit preference for the study data is shown in Table 4.1 As Table 4.1 shows, MI for both sexes is higher in census (1991) than in sample surveys (1990, 1999 and 2003 NDHS). Among the sample surveys MI declined from about 58.4 in 1990 NDHS to about 39.0 in 2003 NDHS. This may be an indication of improving data quality. According to sex, MI is higher for males than for females in the sample surveys but lower for males than for females in the 1991 census data. This suggests that quality of age data may be better for females in sample surveys and worse for them in censuses than for males. One plausible explanation of this observation is the source of the information on age data. Quality of age data appears to be better if obtained directly from the enumeration unit than indirectly from the head of household, as is often the case in censuses. Among the digits, 0 and 5 remained the most highly preferred, while 1 and 9 remained the most avoided digits in all the surveys.

When compared with the scale (0 – 180) of Myre's index for estimating the reliability of data and values from other countries the values in Table 4.1 indicate that quality of age data is quite low in all the surveys (sample and census). Myre's index for Ghana was given as 26.8 for males and 31.2 for females in 1970 census and 27.4 for males and 33.4 for females in the 1984 census data.

4.2 Age – Sex data in five–year age groups

To evaluate the age-sex data presented in five–year age groups, age and sex ratios of the study data sets were calculated. These are shown in Appendix A.

Table 4.1: Myre's indices (MI) of digit preference for some of the surveys in Nigeria

	Source/Year											
	1990 NDHS			1991 CENSUS			1999 NDHS			2003 NDHS		
DIGIT	M	F	BOTH	M	F	BOTH	M	F	BOTH	M	F	BOTH
0	19.0	17.3	18.1	17.7	21.5	19.6	13.0	13.1	13.0	11.8	10.4	11.1
1	-6.2	-5.3	-5.7	-5.1	-5.9	-5.5	-5.2	-4.9	-5.0	-4.9	-4.1	-4.5
2	-1.5	-0.9	-1.2	-1.9	-2.6	-2.3	-1.1	-0.8	-0.9	0.1	0.3	0.2
3	-5.0	-3.3	-4.1	-4.3	-5.0	-4.7	-3.2	-3.6	-3.4	-2.2	-2.3	-2.2
4	-5.0	-3.1	-4.0	-4.8	-5.4	-5.1	-3.5	-3.7	-3.6	-3.4	-4.0	-3.7
5	12.4	9.8	11.1	10.5	11.0	10.7	9.9	8.2	9.1	7.8	7.1	7.4
6	-4.4	-4.1	-4.2	-3.8	-4.2	-4.0	-3.2	-2.5	-2.8	-3.2	-2.7	-2.9
7	-3.8	-4.0	-3.9	-3.2	-4.0	-3.6	-2.3	-2.8	-2.6	-2.1	-2.7	-2.4
8	-0.4	-1.5	-0.9	-0.2	0.2	0.0	-0.7	0.4	-0.1	0.1	1.4	0.8
9	-5.1	-5.2	-5.2	-4.8	-5.5	-5.2	-3.7	-3.5	-3.6	-4.1	-3.5	-3.8
MI	**62.9**	**54.2**	**58.4**	**56.3**	**65.3**	**60.7**	**45.8**	**43.5**	**44.2**	**39.6**	**38.5**	**39.0**

Since digit preference is pronounced in all the surveys, the Ramachandran version of the age ratios was adopted.

4.2.1 Age Ratios (ARs)

As shown in Appendix A, ARs are well over 100 percent for male population aged 5 – 9 years in the 1981/82 NFS and 1990 NDHS and for both sexes in the 1991 census and 1999 NDHS. This may be attributable to either over-reporting of the population aged 5 – 9 years, under-reporting of the population of the neighbouring age groups or transference into the age group 5 – 9 from neighbouring age groups 0 – 4 and 10 – 14 years. When the ARs of the neighbouring age groups are examined the group 10 – 14 years do not seem to have been affected by any of these problems. In other words, the very high value of AR for the age group 5 – 9 may have come from those aged 0 – 4. Perhaps, some of those in the age group 0– 4 may have declared higher ages to enable them register in primary schools. Under–reporting of population aged 0 – 4 years is a common feature of most surveys, especially sample surveys in developing countries. Age ratios for both sexes are also well above 100 percent in the age groups 40 – 44, 50 – 54, 60 – 64 and 70 – 74 and well below 100 percent in the neighbouring age groups 45 – 49, 55 – 59, 65 –69 and 75 – 79. In all the surveys, most of the age groups, especially in the range 35 years and above experienced the problem of either very low AR (indicating under-reporting of population) or very high AR (indicating over–reporting of the population). Using index of dissimilarity between the reported and an "appropriate" model stable population distribution Ekanem (1972) made similar observations in his study of the 1963 Nigerian census data. This again, may be as a result of either over–reporting of the population of an age group and/or under– reporting of the population of the neighbouring age groups or transference from one age group to the neighbouring age groups.

4.2.2 Sex Ratios (SRs)

Appendix A also shows sex ratios of well over 100 percent in the age groups (i) 5 – 9, 40 –49 and 60 years and above in all the surveys, (ii) 10 – 14 years in almost all except the 1990 NDHS and 2003 NDHS and (iii) 35 – 39 years in the two censuses and 1981/82 NFS. These indicate serious excess of males in those sub-populations. The sex ratios also indicate serious deficit of males among those aged 15 – 34 in almost all the surveys, except the 1990 NDHS in which SR is well over 100 percent. The deficit of males in the age group 15 – 34 may be attributable to emigration of males outside the country or age shifting to neighbouring age groups by either or both sexes.

4.2.3 Age – Sex Accuracy Index

The summary indices (the age and sex ratio scores and the United Nations Joint Score) derived from Appendix A are presented in Table 4.2. Calculation of age and sex ratio scores was limited to the age range 0–69 years because of the worsening ratios beyond 69 years as shown in Appendix A. As Table 4.2 shows, the age ratio scores for all the surveys are far from zero, the expected value when age data are correctly reported. The scores are higher for females than for males in almost all the surveys except the 1981/82 NFS. Thus, suggesting, that quality of age reporting may be better among males than females. Ramachandran attributed a contrary observation he made on data from Lesotho to better education of women. Quality of age reporting based on ARS is better in the sample surveys than in the two censuses,

as expected. Age ratio scores also appear to be reducing from 1963 to 2003, perhaps indicating improving data quality over the years. However, when

Table 4.2: Age and Sex Ratio Scores and the United Nations Joint Score for Nigeria and some other countries in Africa.

		NIGERIA					GHANA		KENYA	LIBYA	LESOTHO
SCORE	1963	1981/82	1990	1991	1999	2003	1970	1984	1979	1973	1976
ARS											
M	13.6	14.1	7.9	9.3	4.8	4.0	8.3	9.0	3.6	5.6	9.2
F	16.9	12.5	10.7	12.0	10.8	4.7	11.6	10.3	3.9	11.0	8.7
SRS	14.6	22.2	24.4	12.0	24.3	12.4	7.6	5.7	4.1	18.4	4.9
JS	74.3	93.2	91.8	57.3	88.5	45.9	42.7	36.4	19.8	35.0	32.6

compared with figures for some other African countries, also shown in Table 4.2, the values of ARS for Nigeria are high, indicating very low data quality.

Table 4.2 shows that SRS are also far from zero, the expected value when sex data are correctly reported. Sex ratio scores are lower in the censuses than the sample surveys. When compared with figures from other African countries, shown in Table 4.2, SRS for Nigeria are quite high, indicating the presence of errors in the Nigeria data.

The United Nations joint score remained consistently high in all the surveys when compared with values from some African countries. The score is lower in the censuses than the sample surveys because of the lower SRS in the censuses than the sample surveys. Among the sample surveys, the UN joint score appears to be declining while remaining high, indicating improving data quality in Nigeria. When compared with the scale for estimating the reliability of data the least value of the UN joint score for Nigeria (45.9 in 2003 NDHS) shows that all the data sets are at best deficient. Except in the 1991 census and the 2003 NDHS, other values of the UN joint score are far above 60, indicating that the corresponding data sets are grossly erroneous.

5. SUMMARY, RECOMMENDATIONS AND CONCLUSION

In summary, quality of demographic data in Nigeria has been discussed in this paper. The importance of demographic data evaluation lies in the fact that it helps to determine the amount of confidence to be reposed on the estimates derived from the data. It enables analysts to determine the nature and degree of adjustment to which defective data may be subjected and serves as an aid to improved data quality in future surveys.

Only age and sex data were evaluated using graphical and algebraic methods. The algebraic methods include Myre's index, Age and Sex Ratio Scores and the UN Joint Score.

The results of the analyses show that quality of age and sex data in Nigeria is quite low. Myre's index (MI) indicates that preference for such end digits as 0 and 5 is highly pronounced in all the surveys. So also are the degrees of avoidance of such end digits as 1, 3, 7 and 9. These have been attributed to ignorance of dates of birth among other reasons. Myre's index also indicates that quality of age data in single years is higher in the sample surveys than the censuses and higher for females than males in the sample surveys. Better quality of data in sample surveys is expected since supervision is more thorough and few well - trained enumerators are used. In all the surveys, almost all age groups, especially in the range 35 years and above, experienced the problem of either very high or low age ratios, with adjacent groups experiencing alternate problems. The summary index, the age ratio score are far above zero, the expected value when data were correctly reported. However, ARS show a declining trend over the years. Age-specific sex ratios indicate excess of males in the age groups 5–9, 40–49 and 60 years and above in all the surveys and deficit of males in the range 15–34 years in almost all the surveys. Deficit of males in the age group 15 – 34 years may be attributed to emigration of males outside the country or age shifting. The UN joint score was found to be at least 45.9, indicating that the quality of age–sex data in Nigeria is at best deficient. However, the score shows a declining trend.

In view of these, the following recommendations are considered relevant for improved data quality in future surveys. First, it is clear that quality of demographic data on any population depends, to a large extent, on the level of education of the population. Available evidence from the 2003 NDHS still shows a very high percentage of the population with no education (30 for males and 46 for females). Therefore, education of Nigeria populace is recommended. Furthermore, greater emphasis should be laid on birth

registration and adequate machinery set in motion to ensure strict compliance. This will help to reduce the problems of age estimation and the resultant age misstatement. It will also help to check the tendency to shift from one age group to another. Enumerators should be encouraged to extract age data from the birth registration certificates. The usual practice of eliciting every information on all members of a household from the head may be responsible for some distortions in the demographic data and should therefore. be reviewed.

Adequate training, supervision and remuneration of enumerators are also recommended. These will help to reduce their propensity to suppress information by pushing eligible respondents across critical age boundaries or to play unnecessary tricks during enumerations. Some (if not all) the errors and lapses observed in the previous surveys should be highlighted during training and the supervisors should be properly armed to check them in subsequent surveys.

As noted by Ramachandran (1989), some of the problems in demographic data are caused by misuse of some of the concepts and expressions in the survey instruments. Such concepts/expressions as defacto and dejure populations, usual members of and visitors to households, variable and fixed reference dates, among others should be properly explained to the enumerators. Adequate public enlightenment on the purpose(s) of data being collected is recommended as a means of ensuring high quality data. Most respondents release distorted information when they are not properly and adequately mobilized.

Finally, quality of age and sex data is only a proxy to the quality of data on other characteristics collected in a survey. Therefore, further investigation into the quality of data on other demographic and socio–economic characteristics of respondents is recommended using more broad based data evaluation techniques.

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