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FERTILITY DATA IN TANZANIA MAINLAND

Fertility data in Tanzania mainland

1. Introduction: The fertility is the most important element of population dynamics when the mortality level is stationary. With the stabilization of mortality at a rather low level in the developing countries any conceivable policy in controlling the population growth will obviously relate to the fertility and the formulation of the population programme will depend on the current trend and level of fertility. But unfortunately in most of the developing countries including Tanzania the current fertility level is not known owing to incomplete coverage and defective registration of vital events. To bridge this existing gap in Tanzania Mainland, attempts were made through sample censuses to estimate the fertility level. Some isolated efforts were made in the past to estimate the vital rates but the samples selected were very small to throw any estimate at the national level. This paper presents some of the results based on the fertility data of the sample censuses without going into the question of the validity of such data.

2. Sample Censuses: The sample census procedure for African population was adopted for the first time in 1948 in order to obtain information which was thought to be useful for the purpose of the Government but which would have been too time-consuming to collect for the whole population of Tanganyika. The 1948 sample was the first nation-wide census of the African population which collected information for each individual in each hut of the sample areas. The 1948 sample census was undertaken immediately after the general census of African population in August 1948 with a sampling fraction of 1 in 10. The selection of areas was purposive rather than random. No report on the sample census was published but some of the important results on the age-distribution and fertility have been presented in a paper and in a supplement to the United Nations monograph on the population of Tanganyika. The 1948 census of the Non-African population, it may be noted was carried out in February with detailed information collected from each individual and there is a full-census report.

The 1957 African Census of Tanganyika also included a sample census to throw light on some important demographic characteristics of the African population. The 1957 sample census, as in 1948 census was carried out immediately after the general census. The design of the sample census was stratified two-stage, with territorial census areas (T C A) as first-stage units and Headmen's areas as second stage units. T C A s were selected with probability proportional to population size and the headmen area in systematic fashion. The overall sampling fraction was 1 in 20 but at the tabulation stage some of the sample areas were rejected. All the important results of the sample census have been presented in 1957 - African census report.

Fertility data in Tanzania mainland

In the 1967 population census, the first census to be conducted in the post-Independence period, the census procedure was modified. Unlike the two previous censuses, the African and Non-African population were enumerated on the same day and the same questionnaire was canvassed in the two segments of the population. In 1967 Census, detailed demographic information was collected from each individual in the urban areas and on sampling basis in the rural areas. The sample census and the general census was carried out simultaneously in the rural areas. The detailed questionnaire was canvassed in about 20 percent of the enumeration areas in the rural areas. The sample design, broadly speaking was unistage stratified with enumeration areas as the sampling units.

3. Fertility questions in the sample censuses: In the 1948 sample census of African population, details of children born were collected from adult females together with the number of children born (since last dry season) in the household. The fertility content of the 1957 sample census schedule was similar to that of 1948 but instead of collecting the information on the number of births on household basis it was collected on individual basis. The detailed questionnaire of 1967 Census included three questions of fertility relating to 'the number of children born alive', 'children alive at census date' and 'children born during last 12 months preceding the date of survey,' and these questions were asked to women aged 12 and over. The fertility content of the three sample censuses are shown below:

| I T E M | Census Year | | |
|---|-------------|------|------|
| | 1948 | 1957 | 1967 |
| (1) | (2) | (3) | (4) |
| 1. Total children born alive | + | + | + |
| 2. Number of still-births | + | - | - |
| 3. Children alive at census date | + | + | + |
| 4. Children died under 1 year | + | + | - |
| 5. Births during last 12 months/ since last dry season | + | + | + |

Wording of the questions was not same in different sample-census it may be noted.

4. Fertility Results from Sample Censuses: The results presented for the 1948 and 1957 sample census relate to the African Population and those for 1967 census to the entire population including non-African population which constitutes a very small segment of the total population. The inclusion of non-African population in 1967 census analysis is not

expected to affect the results of the African population to any appreciable extent and hence these results can be compared with the earlier sample censuses.

Various measures of fertility have been calculated from the three independent sets of data collected in the censuses. These three data relate to (i) age (ii) birth since the last dry season/births during last 12 months and (iii) the total number of children born alive. The simplest measure of fertility is obtained by relating the total number of births since the last dry season/during last 12 months with the enumerated population. The crude birth-rates thus obtained from the sample censuses are presented in Table (1) together with the age-structure of the population.

Table (1): The Age-structure of population by broad age-groups and crude birth rate per 1000 population in different censuses.

| Census | Age - group | | | | Birth rate per '000' population. |
|----------|-------------|---------|------|-----|----------------------------------|
| | 0 - 15 | 16 - 45 | 46 - | All | |
| (1) | (2) | (3) | (4) | (5) | (6) |
| 1948 | 42.2 | 47.8 | 10.0 | 100 | 44 |
| 1957 | 43.9 | 44.2 | 11.9 | 100 | 42 |
| 1967 (1) | 43.9 | 40.1 | 16.0 | 100 | 54 |

(1) age-groups for 1967 are 0 - 14, 15 - 44 and over.

The age-structure of the population in different censuses is found to be broad-based and such a structure is normally associated with high fertility as observed in the developing countries. The birth rate of 54 per 1000 persons obtained from the 1967 census data appears to be rather high and need closer scrutiny. With the enumerated population under one year and the reported number of deaths under one year during the same period, the birth rate is found to be around 41 per 1000 population against the observed birth rate of 54 per 1000 population. Wide divergence between the two estimates shows the response error in the data. The birth rate obtained from the enumerated population under one year in 1957 census under the assumption of infant mortality of 190 per 1000 live-births was found to be 44 per 1000 population against the observed birth rate of 42 per 1000 population.

With the individual ages of women recorded in the sample censuses, the fertility rates of women in various age-groups have been calculated to highlight the fertility performance in different age-groups. In calculating age specific rates, women not stating their ages were not included in the analysis. It may be of interest to know that in 1957

census only 12 percent women in the age-groups 16 - 45 knew their individual ages; enumerators were asked not to record any estimated age as was done in 1967 census but classify into five broad age-groups (under one year, 1 - 5 years, 6 - 15 years, 16 - 45 years and 66 years and over).

Table (2): Age-specific fertility rates per 1000 women in 1957 and 1967 censuses.

| Age-groups | Fertility rate per 1000 women | |
|------------|-------------------------------|------|
| | 1957 | 1967 |
| 12 - 14 | - | 7 |
| 15 - 19 | 102 | 169 |
| 20 - 24 | 190 | 334 |
| 25 - 29 | 173 | 316 |
| 30 - 34 | 126 | 260 |
| 35 - 39 | 112 | 201 |
| 40 - 44 | 78 | 115 |
| 45 - 49 | 23 | 60 |
| 50 - | - | 27 |

Table (2) presents the age-specific fertility rates for the 1957 and 1967 censuses. The fertility rates are found to be significantly higher in each age-group in the 1967 census compared to those of 1957 census. There is nothing to suggest such significant changes in fertility performance, in different age-groups excepting reporting error. There is possibility of some bias in 1957 census results as women with known ages were included in the tabulation. The fertility pattern over the ages in the two censuses is found to be more or less same with the highest fertility rate in the age-group 20-24. The average number of children to be born to women surviving the whole reproductive period is estimated to be 7.3 as per age-specific fertility schedule of 1967 census and 4.02 as per schedule of 1957 census. In case the average number of children born to women with completed fertility is around 7, then the results of 1967 census give closes estimate of the fertility performance over the ages.

The average number of children born alive to women in various age-groups are shown in Table (3). As in the case of age-specific fertility rates, the number of children born over different age-groups is found to be consistently higher excepting the first. This suggests an appreciable increase in fertility but it is very unlikely.

Table (3): Average number of children born per women by age-groups from 1957 and 1967 censuses.

| Age-group | Number of children per women | |
|-----------|------------------------------|------|
| | 1957 | 1967 |
| 15 - 19 | 0.52 | 0.52 |
| 20 - 24 | 1.60 | 2.00 |
| 25 - 29 | 2.64 | 3.17 |
| 30 - 34 | 3.43 | 4.16 |
| 35 - 39 | 4.06 | 4.78 |
| 40 - 44 | 4.70 | 5.04 |
| 45 - 49 | 3.90 | 5.22 |
| 50 - | 4.49 | 5.18 |

This may be ascribed to better reporting in 1967 census as the people were less apprehensive of the census. The average number of children born to women with completed fertility is found to be 4.49 and 5.18 in the 1957 and 1967 census respectively. These figures are considered to be under - estimates when compared against the total fertility obtained from current fertility data. The number of children who died in infancy are generally overlooked. This has been observed in censuses and surveys of other countries also.

5. Fertility Differentials: In 1967 census, the fertility data were analysed by rural-urban differential. Table (4) gives the annual birth rate for the rural and urban areas of Tanzania Mainland together with age-structure of the population. The birth rate in the urban areas is found to be considerably less compared to rural counterpart as expected.

Table (4): Age-structure of the population and birth rate per 1000 population in the rural and urban areas of Tanzania Mainland 1967 census.

| Area | Age - structure | | | | birth rate per 1000 population |
|-------------------|-----------------|---------|------|-----|--------------------------------|
| | 0 - 14 | 15 - 44 | 45 - | All | |
| (1) | (2) | (3) | (4) | (5) | (6) |
| Tanzania Mainland | 43.9 | 40.1 | 16.0 | 100 | 54.1 |
| Tanzania Rural | 44.4 | 39.4 | 16.2 | 100 | 54.5 |
| Tanzania Urban | 35.0 | 54.2 | 10.8 | 100 | 45.6 |

Considering the age-structure of the urban population it appears that births were over-reported. The birth rate calculated on the basis of enumerated population under one year and deaths under 1 year is found to be 32.2, against the observed rate of 45.6 per 1000 population. Thus the over-reporting of birth in the rural and urban areas is found to be more or less of the same order when compared against the rates calculated from the enumerated population and deaths under one year.

As the birth-rate is considerably influenced by the age and sex-structure of the population, let us consider the age-specific fertility rate of the two areas which are presented in Table (5).

Table (5): Age specific fertility rate per 1000 women in the rural and urban areas of Tanzania Mainland, 1967, census.

| Age- groups | Fertility rate per 1000 women | | |
|-----------------|-------------------------------|--------|--------|
| | Rural | Urban | Total |
| 12 - 14 | 7.4 | 10.8 | 7.5 |
| 15 - 19 | 169.0 | 162.4 | 168.6 |
| 20 - 24 | 337.6 | 274.3 | 333.6 |
| 25 - 29 | 321.3 | 233.7 | 316.1 |
| 30 - 34 | 265.0 | 164.6 | 259.7 |
| 35 - 39 | 205.2 | 110.1 | 200.7 |
| 40 - 44 | 117.4 | 52.3 | 114.7 |
| 45 - 49 | 61.0 | 30.1 | 59.9 |
| 50 - | 26.0 | 13.5 | 26.5 |
| Total fertility | 7539.2 | 5237.4 | 7421.5 |

Excepting the first age-group 12 - 14, the fertility performance of rural women in each age-group is higher than that of the urban women. The fertility in the age-groups 15 - 19 is found to be almost equal but in other age-groups it is significantly higher. Beyond age 34, the fertility performance of the urban women is found to be less than half compared to the rural counterpart. The fertility pattern over ages in the two areas is found to be more or less same, with the fertility rate attaining maximum in the age range 20 - 24. According to age-specific fertility schedules of the rural and urban areas, a woman is expected to give birth to 7.5 and 5.2 children respectively if she survives throughout the reproductive period. The total fertility as obtained from the reported number of children born alive could be examined against the above two estimates.

Table (6) presents the number of children born per women in different age-groups by rural and urban breakdown.

Table (6): Average number of children born per women by age-groups of women in the rural and urban areas of Tanzania Mainland, 1967 Census.

| Age - group | Number of children born per woman | | |
|-------------|-----------------------------------|-------|-------|
| | Rural | Urban | Total |
| 12 - 14 | 0.02 | 0.04 | 0.02 |
| 15 - 19 | 0.52 | 0.51 | 0.52 |
| 20 - 24 | 2.00 | 1.58 | 2.00 |
| 25 - 29 | 3.22 | 2.42 | 3.17 |
| 30 - 34 | 4.22 | 2.95 | 4.16 |
| 35 - 39 | 4.86 | 3.23 | 4.78 |
| 40 - 44 | 5.12 | 3.25 | 5.04 |
| 45 - 49 | 5.29 | 3.30 | 5.22 |
| 50 - | 5.30 | 3.38 | 5.18 |

Average number of children born to woman with completed fertility is found to be 3.38 in the urban areas and 5.3 in the rural areas. These figures are found to be much less compared to the estimated ones obtained from the age-specific fertility schedules of the rural and urban areas, the estimated figures being 5.2 and 7.5 children in the urban and rural areas respectively. The fertility level of rural women beyond age 19 is found to be considerably higher.

The total number of children born alive to women in various age-groups has been presented in Table (7) by the years of schooling of the women to examine the impact of years of schooling on the fertility, if any.

Table (7) : Average number of children born by age-groups and years of schooling in Tanzania Mainland, 1967 census.

| | Years of Schooling | | | | All |
|---------|--------------------|-------|-------|----------|------|
| | 0 | 1 - 5 | 5 - 8 | 9 & Over | |
| 12 - 14 | 0.04 | 0.01 | 0.01 | 0.01 | 0.02 |
| 15 - 19 | 0.64 | 0.41 | 0.16 | 0.49 | 0.52 |
| 20 - 24 | 2.07 | 1.77 | 1.39 | 0.48 | 2.00 |
| 25 - 29 | 3.21 | 3.09 | 2.97 | 1.52 | 3.17 |
| 30 - 34 | 4.16 | 4.35 | 3.81 | 2.15 | 4.16 |
| 35 - 39 | 4.78 | 5.12 | 4.41 | 2.37 | 4.78 |
| 40 - 44 | 5.03 | 5.56 | 4.58 | 2.29 | 5.04 |
| 45 - 49 | 5.21 | 5.75 | 4.92 | 1.94 | 5.22 |
| 50 - | 5.10 | 5.74 | 3.98 | 1.28 | 5.18 |

For women aged 50 and over the fertility is found to be highest among women with years of schooling in between one to four years followed by women with no schooling. This apparent difference might be due to differential responses. Women with more than 8 years schooling show much lower fertility compared to other three groups.

6. Proposed Fertility Survey: The sample censuses although give some broad results on the current fertility level and trend no firm conclusion can be drawn without proper evaluation on vital events with reference to a specific period in a sample census where there is little scope for probing. Reliable information on fertility could be obtained by strengthening and extending the registration machinery throughout the country but in view of shortage of adequate manpower, the moment and moreover this would involve diversion of funds from other more important development programmes. To meet this situation a sample survey on fertility is proposed to be undertaken in the current financial year (1972 - '73) for obtaining reliable fertility picture at the national level. A pilot enquiry has been undertaken in six enumeration areas for carrying out the proposed survey in more efficient manner. Broadly speaking, detailed information on fertility history of woman will be collected as suggested in the UN document 'Variables And Questionnaire For Comparative Fertility Survey'.

Table (1) : Average number of children born by age-groups and years of schooling in Tanzania Mainland, 1967 census.

| Age Group | Years of Schooling | | | |
|-----------|--------------------|-------|-------|----------|
| | 0 & Over | 1 - 4 | 5 - 7 | 8 & Over |
| 15 - 19 | 0.04 | 0.04 | 0.04 | 0.04 |
| 20 - 24 | 0.04 | 0.04 | 0.04 | 0.04 |
| 25 - 29 | 0.04 | 0.04 | 0.04 | 0.04 |
| 30 - 34 | 0.04 | 0.04 | 0.04 | 0.04 |
| 35 - 39 | 0.04 | 0.04 | 0.04 | 0.04 |
| 40 - 44 | 0.04 | 0.04 | 0.04 | 0.04 |
| 45 - 49 | 0.04 | 0.04 | 0.04 | 0.04 |
| 50 - 54 | 0.04 | 0.04 | 0.04 | 0.04 |
| 55 - 59 | 0.04 | 0.04 | 0.04 | 0.04 |
| 60 - 64 | 0.04 | 0.04 | 0.04 | 0.04 |
| 65 - 69 | 0.04 | 0.04 | 0.04 | 0.04 |
| 70 - 74 | 0.04 | 0.04 | 0.04 | 0.04 |
| 75 - 79 | 0.04 | 0.04 | 0.04 | 0.04 |
| 80 - 84 | 0.04 | 0.04 | 0.04 | 0.04 |
| 85 - 89 | 0.04 | 0.04 | 0.04 | 0.04 |
| 90 - 94 | 0.04 | 0.04 | 0.04 | 0.04 |
| 95 - 99 | 0.04 | 0.04 | 0.04 | 0.04 |
| 100 - 104 | 0.04 | 0.04 | 0.04 | 0.04 |
| 105 - 109 | 0.04 | 0.04 | 0.04 | 0.04 |
| 110 - 114 | 0.04 | 0.04 | 0.04 | 0.04 |

A P P E N D I X

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