

Groupe de Démographie Africaine

IDP_INED_INSEE_MINCOOP_ORSTOM

**POPULATION SIZE
IN AFRICAN COUNTRIES :
AN EVALUATION**

Volume II

Paris

1988

Le groupe de Démographie africaine IDP - INED - INSEE - MINCOOP-ORSTOM

est un organisme de liaison non officiel entre les statisticiens, démographes et autres techniciens qui s'intéressent aux questions de population dans les pays d'Afrique.

Il effectue des travaux de synthèse ou méthodologiques à partir des données recueillies ou des techniques mises en oeuvre dans ces pays ; il rend compte des travaux qui y sont réalisés dans le domaine de la démographie et d'une manière générale s'efforce d'informer les personnes intéressées par toute question ayant trait à la démographie africaine.

PUBLICATIONS DU GROUPE

- « Démographie africaine », bulletin de liaison :
 - n° 0 2^{ème} trimestre 1971 à n° 28 septembre-décembre 1978 (poursuite de cette publication à Yaoundé - IFORD)
 - numéros spéciaux 1 à 13.
- « Études et documents », prolongement des numéros spéciaux du bulletin de liaison.
- « Afrique Noire, Madagascar, Comores - Démographie comparée » tomes I et II - INSEE, INED, DGRST, Paris 1967.
- « Les enquêtes démographiques à passages répétés » Application à l'Afrique d'expression française et à Madagascar - Méthodologie - ORSTOM, INSEE, INED, Paris 1971.
- « Sources et analyse des données démographiques » - Application à l'Afrique d'expression française et à Madagascar - INED, INSEE, MINCOOP, ORSTOM, - Paris 1973-1977.
 - 1^{ère} partie : Sources des données
 - 2^{ème} partie : Ajustement de données imparfaites
 - 3^{ème} partie : Analyse des données (tomes I et II).
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FOREWORD

Begun in 1978, this assessment of the population of the African countries was completed over a period of five years. It offered us an opportunity of bringing together the results of 44 separate monographs written by 50 authors, from April 1979 to March 1983, at a rate of almost one monograph per month over a period of four years.

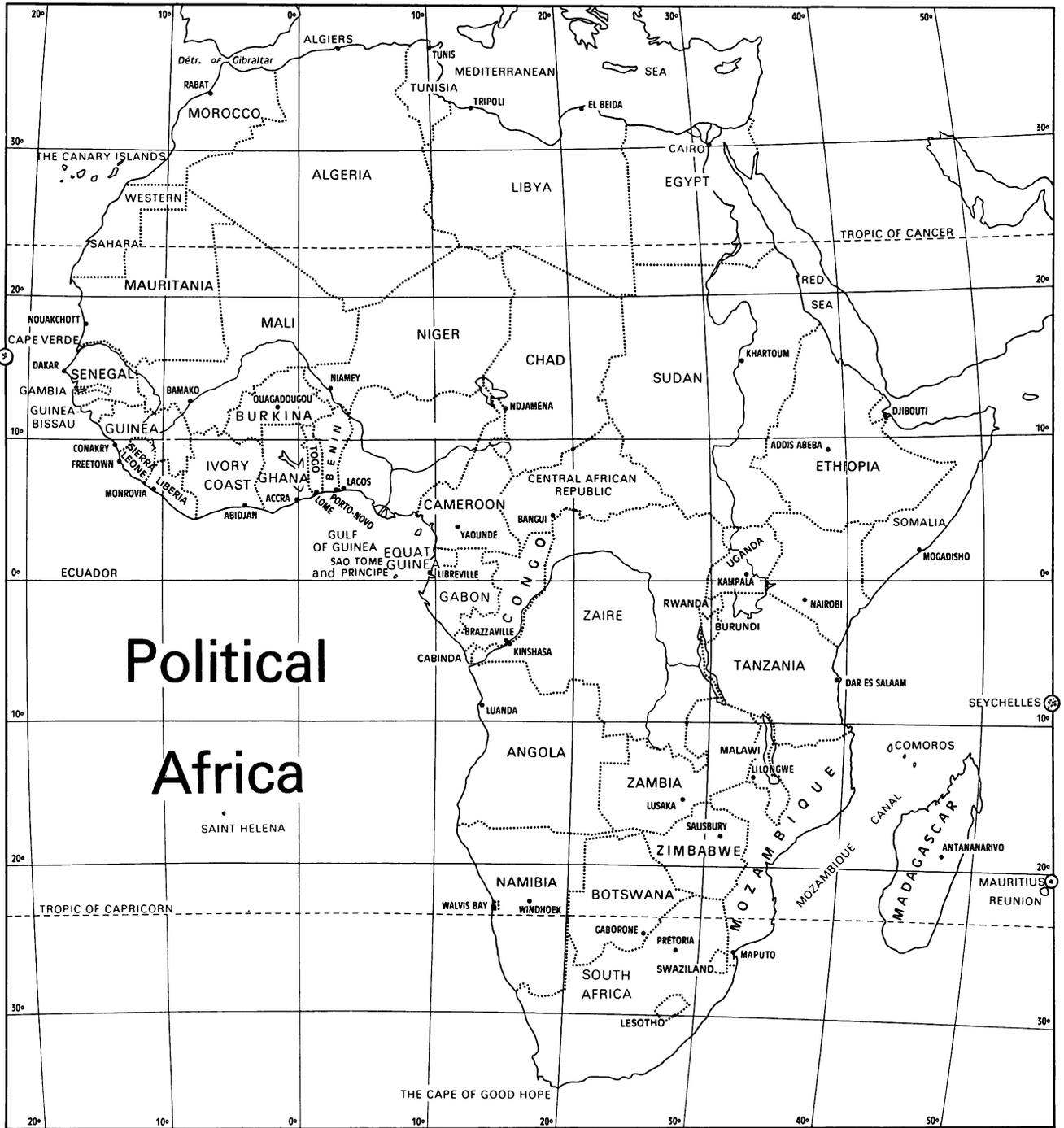
23 monographs were published in Volume I which appeared in January 1982: the remaining 21 form the subject of Volume II, which concludes with a comprehensive review of the many points discussed throughout both series of monographs (1).

(1) Technical Notes

As in Volume I:

- The footnotes are referred to in the text by a figure in brackets.
- The bibliographical references are to be found at the end of each chapter and are referred to in the text by a figure in square brackets.

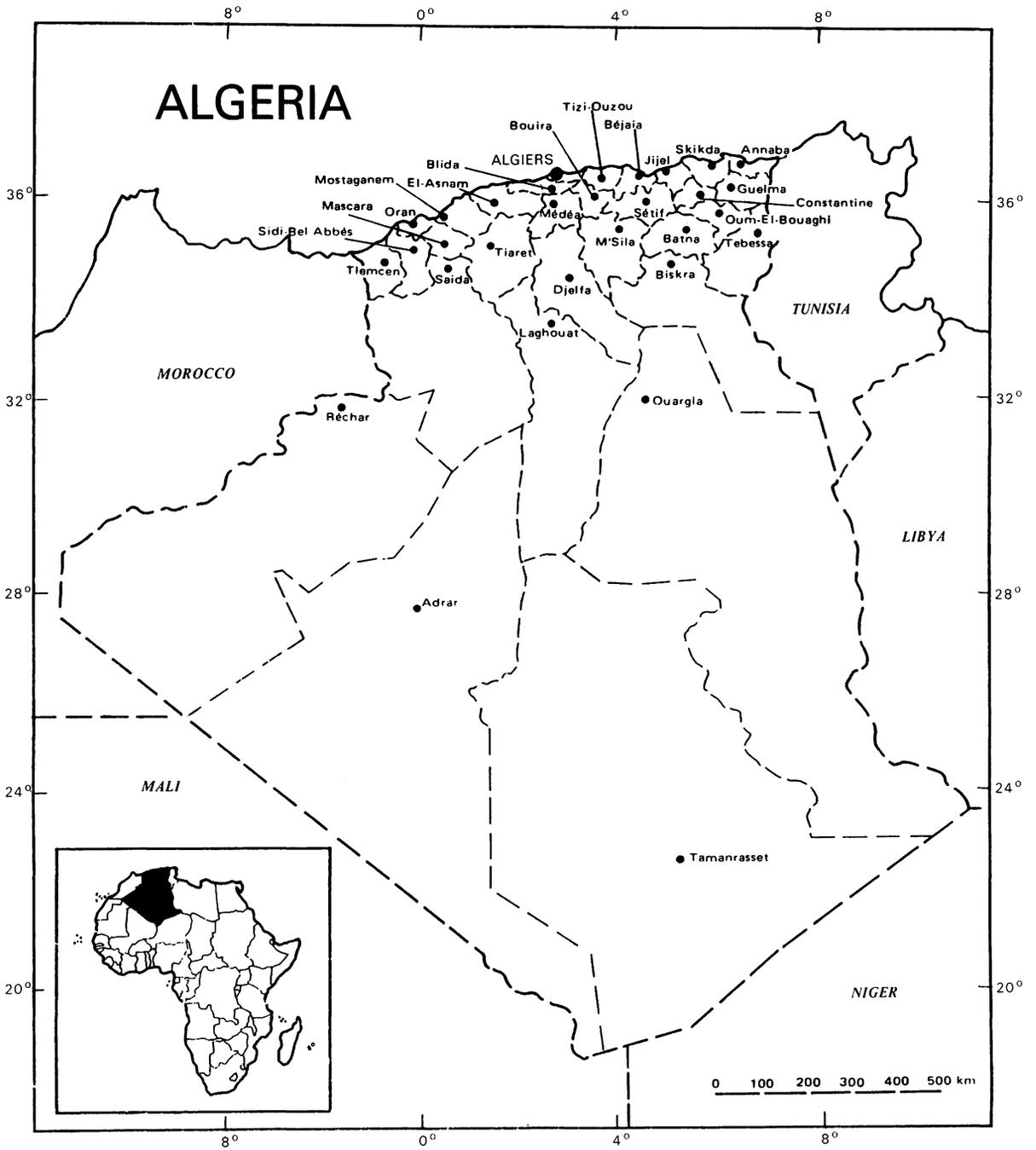




ALGERIA

MOHAMMED MAZOUZ

AUGUST 1981



A L G E R I A**I. INTRODUCTION**

Contrary to many other African countries, the Algerian population was subjected, very early on, to population counts, not all of which compare with what is today considered the 'General Population Census'. They are, nonetheless, of interest. They provide us with a deeper understanding of the Algerian population and, in particular, of its evolution.

In its own way the latter reflects the ebb and flow of colonial conquest. Today the most acceptable estimate for 1830 is 3 million inhabitants. The 1856 and 1881 censuses give a total number varying between 2.3 and 2.8 million.

The explanation for this regression is most likely due to the cursory nature of the methods used and the fact that only the so-called 'controlled areas' were covered (1); and also, to a large extent, to the excess mortality caused by the unusually violent intrusion of colonial conquest which weakened Algerian social development by destroying its socio-economic structure. "The country was laid waste. Its economic situation became critical as a result of regular, improvised and unremitting raids (pillaging of grain silos; stealing of herds; felling of trees). From then on, the undernourished population was hit by epidemics". [1, p.19].

Neither did natural disasters spare the Algerian population: drought (1847-51, 1867) and grasshopper plagues (1866) caused 'terrible famines' (1850, 1867-1868) rendering the cholera (1849-51, 1867-68) and typhus epidemics (1867-68) all the more fatal. Ch.R. AGERON estimates that between 1867-68 300,000 natives died of hunger or as a result of typhus and cholera.

At the end of the colonial conquest a new socio-political balance appeared. The expansion of administrative control over almost the whole of the territory, the end of the major natural disasters and, doubtless, qualitative improvement of the registration system, meant that from approximately the end of the 19th century a sustained population growth was underway.

II. DATA SOURCES AND MAJOR COLLECTION PROBLEMS**1) Civil Registration**

The origins of civil registration date back to the first months of colonial occupation (Decree of December 7th 1830) and in spite of the statutory and legislative measures (Articles 464, 465 and 466 of the penal code of 1875 and legislation of March 23rd 1882) intended to extend coverage over all the territory and for all events, it was still not a reliable source of demographic data by the end of the colonial period.

(1) Not all of these were, until around 1880.

At the start of Independence, it experienced several changes: e.g. by decree of December 28th 1963 (centralization of data extraction and extended use of the individual record over the whole of the territory) and edict of February 19th 1970 (civil registration functions; fuller records of events; declaration deadlines; registration; duplication of certificates; etc.).

In 1977, the coverage rate was estimated at 92.8% for births and 63.8% for deaths [18, p.15 and 24]. Civil registration is thus increasingly becoming a data source which can be used in birth and death analyses. It has already proved useful, after suitable adjustment procedures, in estimating births since 1891 [6] and infant mortality since 1901 [20].

In spite of the progress made, it is still subject to the inadequacies which differentially mar it, for determinants such as sex, age, settlement and the nature of the event.

For this reason, population censuses are indisputably the least hazardous source for the assessment and analysis of the evolution of population size in Algeria.

2) Population Censuses

The first census dates back to 1843. Its implementation, like that of others which followed (up until about 1880), was entrusted to the military authorities. The objectives were not always solely statistical [8].

From 1880 on, with the completion of the conquest and the annexation of the Southern territories, census operations were extended throughout the country (with, however, problems persisting for some groups and sub-populations).

On the whole an undercount is quoted, due to the fact that no direct surveys were conducted on the 'Muslim milieu'. The inverse situation occurred when the authorities registered fictive populations in order to benefit from the distribution of provisions following natural disasters [8].

The registration of nomadic populations raised, and still raises, extensive problems. In 1881 this population was estimated according to the number of tents, multiplied by 6 to obtain the total population [7]. Generally speaking, "several solutions were found to the problems raised by the nomadic or semi-nomadic tribes, but these were rarely comparable from one census to the next" [8]. Their population therefore varies tremendously from one operation to the next (Table 1).

Survey techniques, basic to begin with, and later directly inspired by the censuses conducted in France, were gradually adapted for colonial administrative requirements to the conditions in the country.

TABLE 1 - ALGERIA - EVOLUTION OF THE 'DE JURE' POPULATION FROM 1856 TO 1977

	MUSLIM POPULATION					NON-MUSLIM POPULATION	TOTAL POPULATION
	SEDENTARY	NOMADIC	TOTAL	FOREIGN MUSLIMS	TOTAL MUSLIMS		
1856	2 307 049	8 388	2 315 437	3 000	2 318 437	177 330	2 495 767
1861	2 732 851	...	...	5 000	...	...	...
1866	2 652 072	17 232	2 669 304	4 000	2 673 304	247 942	2 921 246
1872	2 125 052	...	...	9 000	...	...	...
1876	2 462 936	59 941	2 522 877	16 000	2 538 877	328 749	2 867 626
1881	2 842 497	...	...	18 000	...	...	...
1886	3 264 879	65 269	3 330 148	22 338	3 352 486	464 820	3 817 306
1891	3 559 687	...	...	17 376	...	...	...
1896	3 764 076	69 843	3 833 919	17 022	3 850 941	578 480	4 429 421
1901	4 063 060	...	...	26 090	...	633 850	...
1906	4 447 149	73 799	4 520 948	30 639	4 551 587	680 263	5 231 850
1911	4 711 276	71 259	4 782 535	29 250	4 811 785	752 043	5 563 828
1921	4 890 756	89 719	4 980 475	32 430	5 012 905	791 370	5 804 275
1926	5 115 980	...	...	34 776	...	833 359	...
1931	5 548 236	83 553	5 631 789	40 078	5 671 867	881 584	6 553 451
1936	6 160 930	87 527	6 248 547	40 214	6 288 671	946 013	7 234 684
1948	7 611 777	80 435	7 692 212	67 301	7 759 513	927 272	8 681 785
1954	8 364 652	96 363	8 461 015	84 680	8 545 695	984 000	9 529 695
1960(a)	9 505 111	126 413	9 631 524	97 204	9 728 728	1 059 581	10 788 309
1966	11 849 219	56 281	11 905 500	116 500	12 022 000	80 000	12 102 000
1969(b)	...	...(b)	12 893 931	...	...	...	13 032 731
1977	...	311 592	...	...	...	...	16 948 000

Sources: [3, 4, 5, 8, 10, 19]

(a) The 1960 population census conducted during the Algerian war cannot be taken into account in a study of the population. Likewise for the sample survey of 1969, the extrapolated population was not taken into account for the analysis of population trends. Indications of the population size in 1960 and 1969 are thus only given for the record.

(b) Nomadic and semi-sedentary

It was not until the census of October 31st 1948, that detailed data on the Algerian population became available. The main inadequacies which marred data from the 1948 and 1954 censuses are revealed further on.

The 1966 and 1977 censuses, conducted by Independent Algeria, are probably the best, due to the nature, the diversity and the wealth of the data provided.

The 1966 census was carried out in two stages: at the beginning of the year (January) in the South, and at the beginning of April in the North.

Analysing the quality of the data from this census, Ph. BOURCIER DE CARBON quotes on the subject of underenumeration :

- underenumeration of children of less than one year, more severe for girls than for boys;
- omission of military personnel;
- regular omission of girls married under age (16 years).

There was also a serious underestimation of residents absent abroad (emigrants).

The 1977 census was carried out over the whole of the territory at the same time (from February 12th to 26th) with the night of February 11th to 12th as the reference date.

The post-enumeration test "revealed that it was Greater Algiers that suffered from the largest number of omissions", the coverage rate there being between 89.5% and 93.5% as against 95.7% for the total resident population [11].

This surprising result shows, if necessary, that no stratum of settlement, be it the most 'developed', is safe from erroneous statistical observation. It would be interesting to study the reasons for the occultation of approximately 10% of the capital's population. Immigration and the Malthusian settlement policy would probably be evoked, the effects of which combine to provide an overloading of the housing stock and an expansion of shanty towns, both contributing to the formation of a population group whose weak ties with the locality cause the residential mobility which conceals them from the statistician's attention.

But the group for which it is most difficult to assess correct numbers is that of the emigrants living abroad, notably in France. All attempts to count them through the households to which they belonged before leaving the country, as is the case with the censuses since 1948, have resulted in an underestimation, all the more serious as their numbers were high.

In the 1966 census, the emigrant was defined as having lived regularly up until the date of departure in the household enumerated, and as having continued either to write or to send money to the household. There is thus a clear undercount of emigrant families, and individuals living alone, who left a long time previously, and consequently had less reason to write or send remittances to Algeria.

Only 275,000 emigrants were enumerated, whilst the French Ministry of the Interior put the figure, for the same, period, at 493,352 people. Based on the duration of validity of the residence permits delivered from 1969 on, the emigrants at this time would have numbered 502,255 [12].

The sex ratio among the emigrants in the 1966 census (1,377 as against 507 and 275 in the French censuses of 1962 and 1968) confirms that it is the women who are the most neglected in statistics: a woman whether an emigrant or not rarely writes and much less does she send money; thus she is not reported.

The tendency to underestimate emigrants has not spared the French censuses either. In 1968 some INSEE estimates advanced the figure of 100,000 unenumerated Algerian emigrants. In the 1975 census, only 710,690 people were enumerated, whereas several sources agree on a population estimate of more than 800,000 people [18].

Generally speaking, if data sources on emigration are not lacking, they are all unreliable, which, on the statistical level, reflects the double marginalization of this type of population.

Therefore for obvious reasons, only the 'de jure' population will subsequently be taken into consideration.

III. POPULATION GROWTH

Up until Independence (1962) population statistics were usually given according to religion ('Muslims', 'Non-Muslims'). Since Independence, the ethnico-religious statistical criterion is no longer, but legal, statistics being provided according to nationality.

Some statistics prior to Independence sometimes distinguish between 'French-Muslims', 'other Muslims' and 'Europeans'.

As the object of this study is the Algerian population, out of a respect for homogeneity, only the group of individuals known before 1962 as the 'French-Muslims' will be considered.

Although clearly erroneous, the different values of the intercensal growth rate nevertheless reflect, on the population level, the consequences of the politico-economic events which punctuated the history of colonized Algeria.

Thus the negative value of the growth rate recorded for the period 1866-76 (Table 2) can only be explained by the 1867-68 famines following the droughts, epizootics and grasshopper plagues of 1866-67, and by the cholera and typhoid epidemics of the same period.

It was during this same period that the uprising of 1871 took place, which resulted in a massive campaign of physical and economic repression.

Likewise, the estimate of the growth rate for the period of 1911-21 can be explained by the effects of the First World War and the agricultural crisis of 1920-22, just as the Second World War and its consequences explain the decline recorded after 1936.

From 1948 on, several corrections can be made to account for the overestimation or underestimation of the population.

Thus in 1948 on, several corrections can be made to account for the overestimation or underestimation of the population.

In accepting an overestimation of 3% [19], taking into account the recorded population of 7,692,212, a corrected population size of 7,468,167 is obtained.

In 1954 it was more a matter of an underestimation. As the reference date was October 31st 1954, the events which began on November 1st, and the earthquake recorded a few weeks previously in the region of El Asnam, were probably at the origin of omissions estimated at 2.3% [13, tab.XIII]. With an enumerated population of 8,461,015 individuals, the actual population would be 8,660,200.

In 1966 there appears to have been an omission of 445,638 individuals [9, p.297] which gives a population of 12,351,138.

TABLE 2 - ALGERIA - INTERCENSAL GROWTH RATE OF THE 'DE JURE' POPULATION (%)

INTERCENSAL PERIOD	GROWTH RATE %
1856-66	1.4
1866-76	- 0.7
1876-86	2.8
1886-96	1.4
1896-1906	1.7
1906-11	1.1
1911-21	0.4
1921-31	1.2
1931-36	2.1
1936-48	1.75
1948-54	1.6
1954-66	3.0
1966-77	3.15

Note : This deals with the 'Muslim Population' up to 1954 and the 'Total Population' from 1966 on

With these various rectifications, the following corrected intercensal growth rates have been calculated :

1936-48 : 1.5%

1948-54 : 2.5%

1954-66 : 3.2%

1966-77 : 2.96%

If, as is generally admitted, there was an underestimation of the population in 1936, and taking into account the corrected 1948 census results, 1.5% could well be the upper limit for the growth rate for the

period 1936-1948. There would thus have been a slackening in the increase following the redress of the period 1931-36 which is justified by the Second World War and its consequences, as well as by the typhoid epidemic of 1942, the famine of 1945-46, and the events of Sétif, Guelma and Kherrata on May 8th 1945 (1). Recent historical studies on mortality in Algeria have revealed an excess infant mortality for the period 1940-45 [16, p.8].

If the estimate of the growth rate for the period 1948-54 is accepted as probable, it would reflect the effects of the end of the aftermath of the last war and the appearance of more favorable conditions for population growth.

On the other hand, a growth rate of 3.2% between 1954 and 1966 could well provoke reservations. Indeed, this period includes the seven and a half years of the National Liberation war, the effects of which, both direct (violent war death) and indirect (precarious living conditions in internment, regrouping and refugee camps) were disastrous from a demographic point of view.

The steep birth decline registered in vital records from 1956 to 1962 [15, p.60] is not only due to administrative disorganization causing birth omissions. For those who experienced the Algerian war, this supposition alone is weak. The militarization of colonial administration, the regular military control of the territory (at least of the most populated area and in particular the urban zone where civil registration had a high coverage rate), and the institution of population registers by the army, invalidate this hypothesis.

If administrative disorganization cannot be excluded, neither can the effects of this be exaggerated by making it solely responsible for the fictitious birth decline estimated on the basis of civil registration data. This birth decline corresponds to an actual decline due to the often longterm separation of couples (mobilization in the NLA ranks; detention; internment; etc.) and to the delay in marriage (the war in particular affecting young men and not encouraging marriage prospects). All these combine to provide the real explanation for the decline in the birth rate during this period.

The study on mortality in Algeria between 1954 and 1966, which has already been quoted, revealed an excess mortality due to "war losses which accounted for as much as 10% of the average Algerian population for the period 1954-62" [16, p.10].

These considerations call into question the intercensal growth rate of 3.2% recorded between 1954 and 1966, and the spectacular recovery of the birth rate after Independence (making up for births put off during the war) is not a sufficient explanation.

Moreover, to accept such a value for the growth rate amounts to admitting that in 'normal' conditions, the Algerian population would have

(1) The administrative authorities do not refute the minimum figure of 15,000 deaths advanced by the commission of inquiry. For the Algerians, these events evoke the massacre of 45,000 amongst them.

experienced a much higher rate, which would be difficult to explain if the growth rate of previous periods is taken into consideration.

It could well be a matter of an underestimation of the population in 1954 much higher than 2.3% and/or an overestimation of omissions in 1966 (450,000 people).

D. MAISONS maintains that for the same period, a rate of 3% is a more satisfactory estimate [14, p.1084]. On the other hand, if the results of the population survey are to be believed, 2.96% for the period 1966-77 risks being below the real value of the growth rate.

For Northern Algeria, the crude birth and death rates in 1969-70 have been respectively estimated at 49.8% and 16.3%, which gives a natural increase of 3.35% [17, p.33].

Thus, after a peak in 1966, there was a slight decline in the birth rate recorded up to the survey [15, p.62]. Therefore even supposing a decline in the crude death rate, it can be considered that the natural increase was no lower than 3.35% for the period 1966-69.

Where migration flows existed, they were not able to justify the difference between the natural increase and the global growth rate. From 1973-74, with the arrest of emigration to France, the population growth rate was no doubt close to the natural increase estimated in 1977 by the Planning Department at 3.2% [2, p.5].

There is thus confirmation that the corrections made to the data registered in 1966, as indicated above, exaggerated the underestimation of the population.

The growth rates calculated before 'adjustment' (3% for 1954-66 and 3.15% for 1966-77) now seem to be accurate.

Based on the results of the 1977 census (16,948,000) and in view of the near-end to emigration, which gives a growth rate of 3.2%, the size of the 'de jure' population would have been approximately 15,885,000 inhabitants on January 1st 1975.

IV. CONCLUSION

The Algerian population is today one of the best known on the continent. It is also one of the better analysed.

In addition to the series of censuses, the demographer has at his disposal a civil registration system well on its way to covering all births and data from a population survey (ESNP 1969-70) which has enabled natality, mortality and migration studies to be approached.

Other less directly demographic sources, which should not be overlooked, are of interest for a more detailed study of the Algerian population; specialized surveys and censuses (agricultural surveys, migration surveys, consumption surveys, general agricultural census).

There thus exist the basic elements for constructing a data base which would help in the statistical and thematic analysis of problems going beyond simple demography.

The advantage this would represent calls for rapid solutions to the few remaining problems: improvement in civil registration coverage rates, and development of collection procedures able to compensate for census inadequacies and supported by monographs for particular groups such as women, emigrants, nomads, and other marginalized groups in urban and rural areas.

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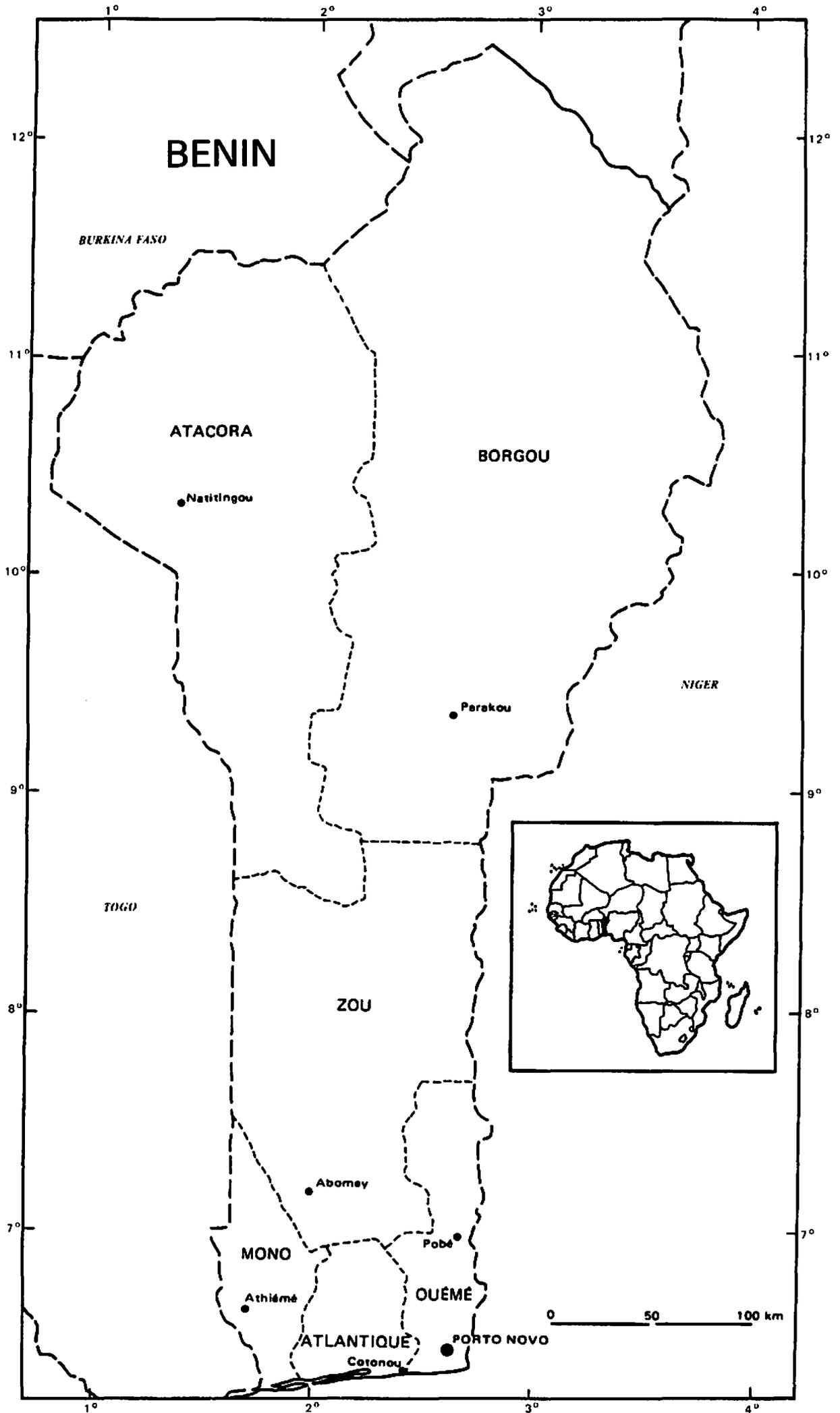
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BENIN

CODJO ADJAHOUTONON

JOSEPH TOVIESSI

OCTOBER 1980



B E N I N**I. INTRODUCTION**

The People's Republic of Benin is the name which was given to Dahomey on November 30th 1975. This country is bounded to the east by Nigeria, to the north by the Niger, to the west by Burkina Faso and Togo, and to the south by the Atlantic Ocean. It was a French colony which was integrated into the Federation of Western Africa on November 19th 1899. Like the other colonies, it was governed by a Lieutenant-governor. It obtained its independence in August 1960.

There is no available information on the negotiations which took place between the various colonizing nations (Germany, England and France) to determine the country's frontiers. A report by the Lieutenant-governor, addressed to the political authorities of his country in 1929, established the surface area of Benin at 122,010 km². This same report gave the following details : "its width of 125 km in lower Dahomey increases to 335 km in the northern parts..; from the shores of the ocean to the Nigerian savannah it extends over more than 700 km in length (6°20' to 12°25' latitude north)". This description is accompanied by a military map which is very similar to the present layout of the territory, the surface area of which is estimated at 112,622 km².

The People's Republic of Benin takes the form of a long strip of territory following a north-south direction and its climate varies according to the latitude.

The continental, tropical climate with a single rainy season and with significant temperature and hygrometric variations in the north, changes in the south into a subequatorial climate with two maximum rainfalls separated by a minimum rainfall, especially noticeable on the coast line, where temperature and humidity determinants are a lot less variable.

As a result, five climatically different regions can be distinguished from north to south:

a) The Northern Zone, bounded to the south by the mountainous regions of the north-east and the north-west (Atacora), where there is a typical continental tropical climate (Sudan variety) with a single rainy season (April-October, with a maximum rainfall in August).

Annual rainfall varies between 900 mm and 1,100 mm from north to south.

b) The Mountainous Zones of the North-East and North-West (the Atacora range), possessing the same climatic characteristics as the northern zone. However, the maximum rainfall is in September and not in August and the rainy season is a little longer there (the end of March to the beginning of November).

The population of these two areas is composed of Baribas, Dendis, Peuhls, Sombas, Tanguietas and various other very heterogeneous groups.

c) A Central Zone, between the two parallels of Djougou and Dassa. This is a transitional zone between the tropical climate of the former regions and the subequatorial climate of the coastal regions.

From Djougou southwards, a slight minimum rainfall in August becomes gradually more pronounced, separating two maxima which fall in July and September - that of the month of September dominating. At the lowest latitudes, the first maximum gradually gains over the second.

Annual rainfall is lower than in the mountainous regions of the north-east and the north-west (1,100 to 1,300 mm).

During the dry season, which extends from November to March, a certain low humidity persists.

d) A Pre-Coastal Zone, to the south of the central zone, where the characteristics of a double rainy season are gradually established through a progressive decrease in the minimum August rainfall. This, nevertheless, stays between 50 and 100 mm. The first maximum, which slowly increases, occurs in the month of June, while the second maximum tends to occur later on in October.

Annual rainfall varies between 1,000 and 1,300 mm.

e) A Coastal Zone, where the minimum rainfall in the month of August is particularly distinct (at Cotonou, average rainfall of 22 mm) whilst the maximum in June is greater than in October (at Cotonou, average of 342 mm in June, as against 177 mm in October).

With regard to annual rainfall quantities, significant differences can be seen in the east and west coastal regions; the eastern region (Porto-Novo, Sèmè) has a lot more rain (1,300, 1,400 mm on average) than the region to the west of Ouidah, where average annual rainfall is 900 to 1,100 mm, similar to the dry coastal climate of lower Togo.

These three regions are inhabited by the Fons, Aizos, Gouns, Adjas, Minas, Nagots, Yorubas, Djougous and related tribes.

The latter two regions are the most populated, the most economically developed and the most culturally homogeneous. This homogeneity is reflected in a relatively good mutual understanding of the languages spoken by the population.

The division of the country into large administrative units dates back to 1960. The country was divided into six areas or provinces: Atacora, Atlantic, Borgou, Mono, Ouémé and Zou. These provinces were subdivided into districts and, since 1978, number 84.

II. DATA SOURCES

1) Administrative Censuses

Until Independence, the administrative census comprised the sole data source for defining social, economic and cultural policies. It was established during colonization in order to 'determine tax assessment'; to recruit conscripts; and to carry out economic programmes. For a long time

it was badly accepted by the native population who found it unjustifiably restricting. The administrative census methods were subject to false statements, a source of underestimation. These censuses often leave out a proportion of women and children. Seasonal migrations are usual; they enable those who migrate to avoid enumeration and the levying of taxes. This led to the inauguration of the travel pass, by the colonial authorities, and to the signing of population movement policies with other countries. In 1930 an agreement was reached between Dahomey and Togo: "natives living in Dahomey and farming land in Togo will come under the census and administration of Dahomey. Conversely, natives living in Togo and farming land in Dahomey will come under the census and administration of Togo".

Travel difficulties, the material organization of the census operations, and the lack of personnel, did not make the task of the administrators any easier and sometimes justified the repeating of the population for the past year, for want of a current census. Nevertheless, from year to year, the operations became more exact and the young population, the under 15's who were not previously counted, were included in the census.

One of these administrative censuses, conducted some months after Independence in November 1960, served as a sampling frame for the 1961 population survey.

2) Population Surveys

Immediately following Independence, in July-August 1961, the Department of Statistics conducted a population survey with the participation of the French Ministry of Co-operation. This took the form of a sample survey using the Departments (current provinces) and rural-urban divisions as a stratification frame. The sample represents a little over a quarter of the population.

This survey is accepted as being the first to give precise details on population size, age composition, socio-economic factors, and fertility and mortality levels. As a result of material and geographic difficulties, a little over 1% of the population was not included in the survey.

To this first 'national scale' survey should be added further operations carried out either on the initiative of the Department of Statistics or at the users' request.

- Agonvy socio-demographic survey (1966);
- Hinvi population survey (1966);
- Cotonou census (1964);
- Household budget/consumption survey, with a demographic section, in the districts of Porto-Novo (1975, 1976-1977) and in the province of Atacora (1978).

For a long time the data from the 1961 Population Survey was the only available on a 'national scale'. Civil registration, known only to the urban centres, could not provide reliable data. The only events recorded, and these were far from exhaustive, were births and deaths. There was an

urgent need for a general census of the entire population of the country. This operation was carried out in March 1979 (see below).

In order to maximise the advantages of this census with regard to updating of data, a national population survey in three rounds, at six month intervals, was planned.

This survey, which was the start of a national programme for population research, had as goals, as well as census verification, the study of fertility, mortality, migration and employment.

It was conducted on a sample of 125,000 people and began on November 23rd 1981.

3) General Population Census

The first general population census was carried out from March 20th to 31st 1979. This operation was part of the 1970 United Nations census programme. It was the subject of lengthy preparations. From the time of the presidential decree of December 9th 1969, many changes were made as to its ultimate aims. The method employed involved the complete enumeration of the 'de facto' population present in the area at the time of the census. The preparatory cartography work, which made it possible to constitute a very much needed data base for future surveys, lasted almost a year and covered the entire territory, thus eliminating all risk of omissions or double counts. Estimates made during the cartography preparation gave a population size which was later confirmed by the enumeration of March 1979. Apart from the basic information (name, age, sex, place of birth), the single household questionnaire dealt with length of stay, educational level, socio-economic characteristics and type of settlement. Data processing is in progress and if dates are respected, it should be finished by 1981. In October 1980, only data by sex, broad age groups (0-5 years, 6-14 years, 15-49 years, 50 years and over) and by administrative units, were available.

Financial sources for the analysis and publication of the census data are required.

TABLE 3 - BENIN - POPULATION BY BROAD AGE GROUPS AND PROVINCES - 1979

PROVINCE	BROAD AGE GROUPS					TOTAL
	0-5	6-14	15-49	50 & +	Undeter- mined	
Atacora	120 121	110.102	194.778	56 316	192	481 509
Atlantique	163 175	170 531	289 092	69 470	1 022	693 290
Borgou	120 879	115 709	199 945	53 387	422	490 342
Mono	130 961	120 928	170 931	53 095	585	476 500
Ouémé	156 626	143 027	250 464	75 955	1 058	627 130
Zou	145 048	136 728	209 342	77 745	606	569 469
Total	836 810	797 025	1 314 552	385 968	3 885	3 338 240

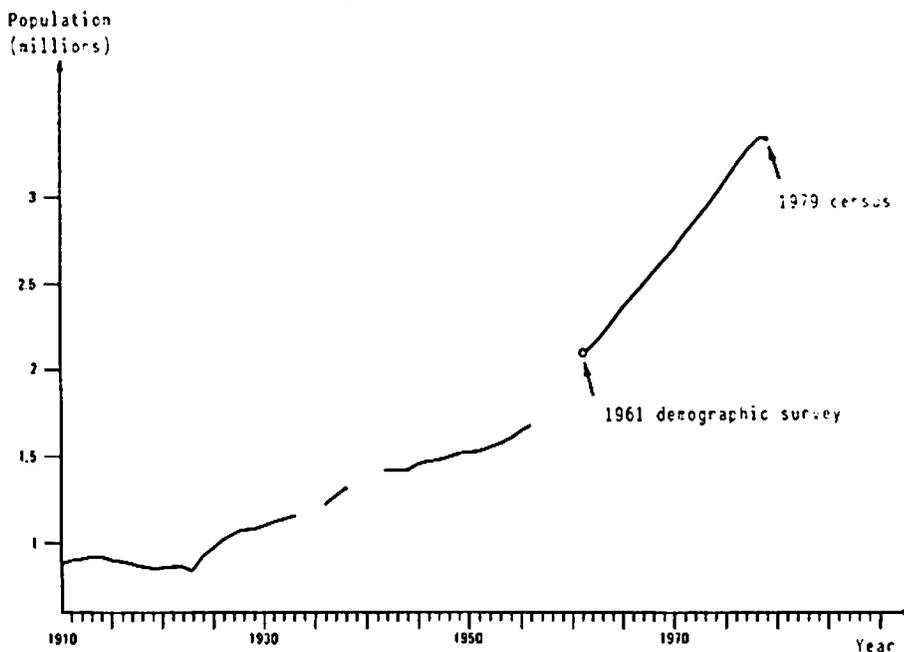
III. EVOLUTION OF POPULATION SIZE

The total population size from 1910 onwards is given in Table 4. Until 1930 (Fig.1) the estimate of the population size is unreliable, giving improbable annual fluctuations or increases. From 1945 onwards, there seems to be a constant growth. This could reflect an improvement in the administrative censuses. The annual increase of 2.5% observed from 1954 on, was maintained up to the 1979 census. Between 1961 and 1979, the population of Benin appears to have possessed the characteristics of a stable population, given the probable conformity between the projections established in 1961 and the 1979 census. There is however a difference in the age distribution. In 1979 the under 15's represented 49% of the total population (as against 46% in 1961), whilst the 15-49 year olds lost ground (43% in 1961 and 39% in 1979). This structural change could be due to the growth of international emigration, but it is possible that there are other causes, for example misreporting of ages.

The study of the geographical distribution of the population (Table 5) indicates an exodus to the province of Atlantique. In 1979, this province harboured 21% of the population, half of whom were living in Cotonou, the country's capital city. The population density of Atlantique was 215 inhabitants per km², approximately twice that of Ouémé, a province which had the highest population density in 1961. Whilst some provinces (Mono, Borgou, Atacora for example) seem to maintain the same proportion of the population, others are exposed to a depopulation movement towards Atlantique.

Fig. 1

BENIN - EVOLUTION OF THE POPULATION



Source : Table 3

This change in the spatial composition of the population is merely a result of the economic and political transformations in the country. Since 1960, the politico-administrative structures have been progressively transferred from Porto-Novo (located in Ouémé) to Cotonou.

TABLE 4 - BENIN - POPULATION TRENDS FROM 1910 TO 1979

YEAR	POPULATION (thousands)	YEAR	POPULATION (thousands)
1910	878.0	1946	1 478.6
1911	902.0	1947	1 478.6
1912	911.0	1948	1 511.7
1913	928.2	1949	1 524.9
1914	928.2	1950	1 528.0
1915	900.0	1951	1 548.9
1916	900.0	1952	1 560.4
1917	889.1	1953	1 582.5
1918	866.2	1954	1 606.3
1919	859.0	1955	1 664.3
1920	859.0	1956	1 730.6
1921	861.0		
1922	877.0	1961	2 106.0
1923	837.0	1962	2 162.0
1924	924.3	1963	2 222.0
1925	968.0	1964	2 302.0
1926	1 016.3	1965	2 377.0
1927	1 056.0	1966	2 442.0
1928	1 083.0	1967	2 508.0
1929	1 079.2	1968	2 576.0
		1969	2 646.0
1931	1 112.0	1970	2 718.0
		1971	2 792.0
1933	1 131.2	1972	2 869.0
		1973	2 948.0
1936	1 225.7	1974	3 029.0
		1975	3 112.0
1938	1 324.8	1976	3 197.0
		1977	3 286.0
1942	1 427.2	1978	3 319.0
		1979	3 338.2
1944	1 424.1		
1945	1 456.5		

Sources : 1910 to 1929 and 1936 to 1956: [2], 1931 and 1933: [3], 1961 to 1977: INSAE estimate based on the population survey [2], 1978 and 1979: population estimate based on the census [4].

During the same time, the town of Cotonou experienced an accelerated urbanization, with the setting up of many industries, a seaport and university halls of residence.

TABLE 5 - BENIN - POPULATION DISTRIBUTION IN 1961 AND 1979 ACCORDING TO PROVINCES

	PROVINCES						TOTAL
	Atacora	Atlantique	Borgou	Mono	Ouémé	Zou	
Surface Area in km ²	31 200	3 222	51 000	3 800	4 700	18 700	112 622
Population in 1961	313 500	309 400	304 600	289 900	463 500	425 100	2 106 000
Population Density per km ² in 1961	10.0	96.0	6.0	76.3	98.6	22.7	18.7
Population in 1979	481 509	693 290	490 342	476 500	627 130	569 469	3 338 240
Population Density per km ² in 1979	15.4	215.2	9.6	125.4	133.4	30.5	29.6
Annual Geometric Growth %	2.41	4.58	2.68	2.80	1.69	1.64	2.59
Proportion in 1961 %	14.89	14.69	14.46	13.77	22.00	20.19	100.00
Proportion in 1979 %	14.42	20.77	14.69	14.27	18.79	17.06	100.00
Increase in Proportions	- 0.47	6.08	0.23	0.50	- 3.21	- 3.13	

Sources : [4. 2]

The population estimate on January 1st 1975 is based on the hypothesis of a population increase at a constant rate: between August 1st 1961, when the population size was approximately 2,106,000, and March 25th 1979 when it was 3,338,200, a mean annual rate of growth of 2.65% is obtained. As a result, the population of the People's Republic of Benin on January 1st 1975 can be estimated at 2.991 million inhabitants.

IV. CONCLUSION

This study is a simple outline for the assessment of population trends in Benin. The primary sources of available data have not all been subjected to a detailed criticism. This work is not easy: it demands a painstaking search for the basic documents, which are not always available in the national archives.

The annual updating of the population size (from 1961 on) is only possible with the use of data on population change provided by civil registration. Unfortunately the registration of vital statistics is very bad, especially in the rural areas. A project to reform the system is underway, but it will need some time to gather momentum.

The focus points of this reform will be the extraction of vital records undertaken for the major civil registration centres; the revision of texts; the improvement of forms and registers, and, in particular, the methods of informing the public of the problem of civil registration.

Moreover, the National Population Survey (in three rounds), which will be nearing an end in March 1983, will make current data on population trends available.

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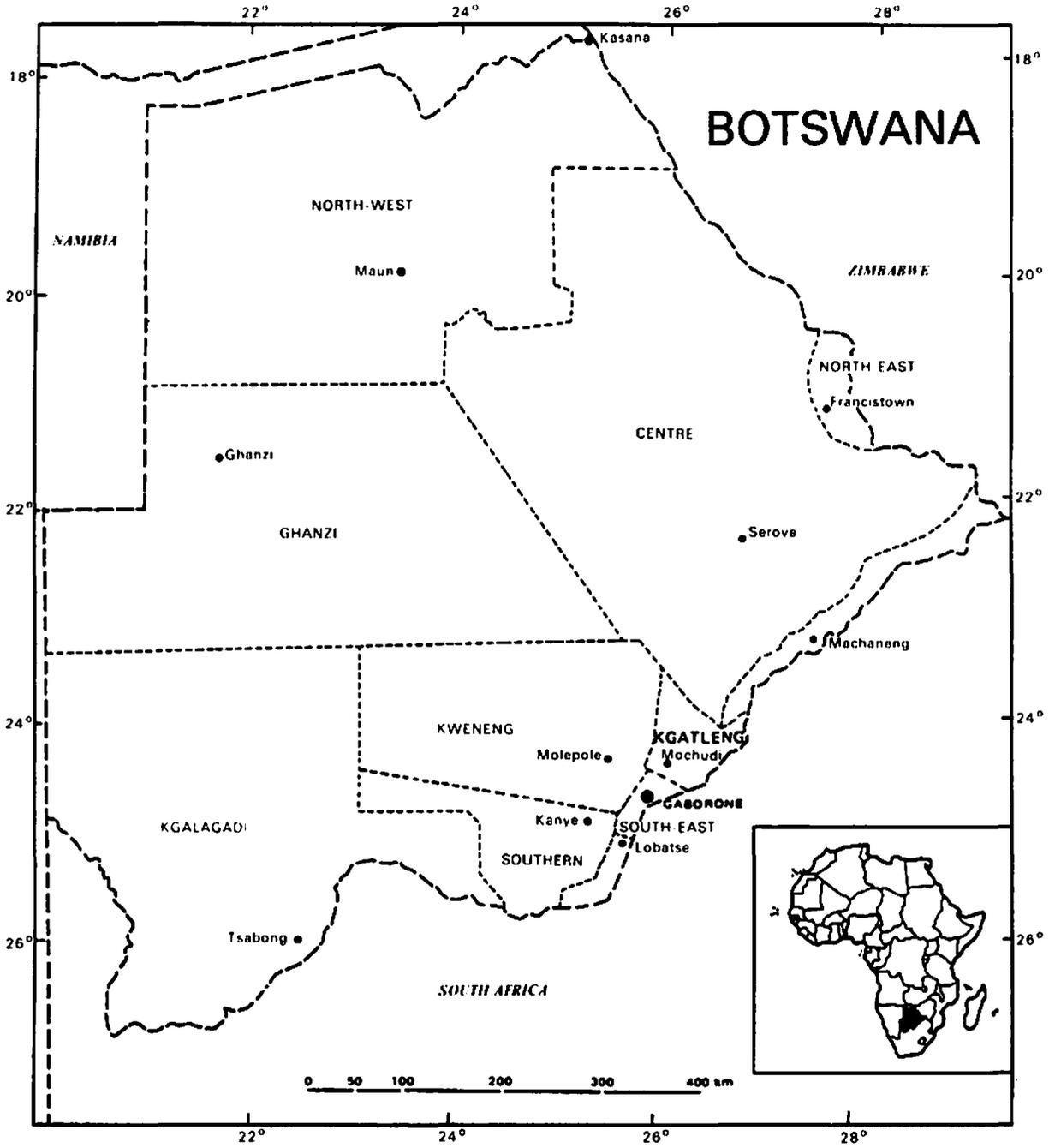
BOTSWANA

GLEND A S. FINCH

ERIK JORGENSEN

PETER O. WAY

JUNE 1982



B O T S W A N A

I. INTRODUCTION

Botswana, a southern African state of 220,000 square miles, is an entirely landlocked country bordering South Africa, Namibia, Zambia and Zimbabwe. Formerly known as the Bechuanaland Protectorate, the country was under British sovereignty from 1885 to 1966. Except for the transfer of the capital in February 1966 from Mafeking (now in South Africa) to Gaborone, the state's boundaries have remained unchanged since 1885.

In attempting to estimate the population of Botswana, two demographic characteristics must be considered.

I° - The existence of extensive emigration, almost invariably to South Africa. Botswana has longstanding traditional relations with its southern neighbour, and a customs and monetary agreement has linked the two countries for a long time. Since the end of the 19th century, the Tswana have sought cash employment in the South African bordering province of the Transvaal. Although the migrants work primarily in the mines, many have also been attracted by agricultural employment.

II° - The existence of a nomadic population. The density of Botswana's population is one of the lowest in Africa, being close to 1 inhabitant per square mile in the 1970's, but this figure hides a very unequal geographic distribution. The population is concentrated in the eastern portion of the country (almost 80% of the total population live in the Limpopo basin). The western part of the country is largely occupied by the semi-desert of Kalahari. The uncertain rainfall and poor soil account for the continued existence of a nomadic population. This consists mainly of Bakgalagadis and Masarwas (or Boschimans), the latter being practically impossible to evaluate correctly as they move around both sides of the border with Namibia.

II. DATA SOURCES

1) Administrative Censuses

The first available data on the population of the territory are given by the administrative censuses carried out by the British authorities. The first census was carried out in 1904. It was followed by five others, at more or less regular intervals, the last of which was conducted in 1956.

The first five censuses were carried out on the same methodological basis. People were assembled in their villages and counted by the village headmen, local teachers, or government clerks. The people were classed according to their sex, race, and broad age group. There were sometimes only two age groups: 'under 15 years' and '15 years and over'. The census results were thus rather rough estimates of the total population.

TABLE 6 - BOTSWANA - ADMINISTRATIVE CENSUSES FROM 1904 to 1956

DATE OF ADMINISTRATIVE CENSUS	TOTAL POPULATION	PROPORTION OF UNDER 15s (%)
1904	120.776	48.6
1911	125 350	50.6
1921	152 983	42.5
1936	265 756	42.4
1946	296 310	36.5
1956	309 175	37.0

Source: [10]

The last administrative census was conducted in 1956, and followed a different procedure. It was based on a sample taken from the tax register which was known to be incomplete and inaccurate. This census suffered from greater underenumeration than the preceding census.

2) Statistical Censuses

Censuses based on house-to-house enumeration were conducted in Botswana in 1964, 1971 and 1981. Detailed data from the 1981 census are not yet available, so the data from the 1964 and 1971 censuses are the sources for our information on the population of the territory.

The 1964 and 1971 censuses are believed to be of significantly higher quality than the preceding counts. Both provide information on the reported number of absentees at the time of the census (primarily persons working in South Africa who are expected to return to Botswana).

TABLE 7 - BOTSWANA - 1964 AND 1971 POPULATION CENSUSES

TYPE OF POPULATION	1964	1971
De facto population (a)	502 728	574 094 (b)
Absentees	35 132	45 735
De jure population	537 860	619 829

(a) : Recorded population; without correction

(b) : Including 10,861 foreigners

Sources: [9] and [10]

3) Other Sources

a) Civil Registration

A law providing for civil registration in Botswana, has been in effect since the early 1970's. This law provides for compulsory registration of births, deaths and marriages in the towns of Lobatse, Gaborone and Francistown, and for voluntary registration in the rest of the country. Thus the collected data do not reflect the national situation and cannot be used for national estimates.

b) Surveys

Botswana has had no national demographic surveys. However, other types of surveys give interesting estimates of subpopulations. Examples of these are annual agricultural surveys, annual employment surveys, a socioeconomic survey in three peri-urban areas taken in 1974 [13], and a follow-up study on 200 families from the family planning program (1976) [16].

III. CRITICAL STUDY OF DATA SOURCES

1) From 1904 to 1960

As we have already seen, the only available sources for this period are the six censuses. Unfortunately the accuracy of these data is doubtful.

a) Data Collection Problems

The first six censuses were conducted on a 'de jure' basis. However, the distinction between the 'de facto' and the 'de jure' population was not clearly defined. Thus, regional and annual differences in the counting of absentees may have existed.

For all six censuses only a portion of the population was effectively enumerated. For a large part of the country there were only estimates. This is due to the existence of a nomadic population, and the insurmountable problems of collecting data in certain remote areas. Thus, in the 1936 count, the information on the Masarwa population of Ghanzi district was limited to one line: 'estimation, 7000 men and 3000 women!', implying a 500% growth since 1921.

The method of counting used in these censuses (requesting that people assemble in their villages) has traditionally led to a large underenumeration of the population. Such a method required, for many, a long and expensive journey to the assembly village. It also meant that people outside the village had to leave their homes and cattle unattended.

Fluctuations in the implied annual intercensal growth rates would indicate notable differences in the quality of data collection at successive censuses. It is not, however, impossible that there were considerable fluctuations in the actual growth rates of the population, due to natural disasters.

The implied mean annual growth rate between the last administrative census (1956) and the first statistical census (1964) is approximately 6%. This result seems to confirm the theory that there was considerable underenumeration at the 1956 census.

TABLE 8 - BOTSWANA - MEAN ANNUAL GROWTH RATES

PERIOD	MEAN ANNUAL RATE OF GROWTH
1904 - 1911	0.5
1911 - 1921	2.0
1921 - 1936	3.7
1936 - 1946	1.1
1946 - 1956	0.4

b) The Problem of Emigration

Net emigration from Botswana dates back to around 1840 when the primary destination was the Boer farms of the Transvaal. It was only with the discovery of diamonds in South Africa, around 1884, that this emigration began on a massive scale.

The first two counts give no information on this emigration. Estimates of the absentee population given by the other four counts are:

- 1921:	5,169
- 1936:	10,458
- 1946:	14,280
- 1956:	31,500

But these figures are estimates of questionable quality.

With regard to emigration to South Africa - which represents about 90% of all emigration from Botswana - Schapera [12] provides the following estimates of Botswana workers in South Africa:

- 1910:	2,266
- 1920:	2,578
- 1930:	4,712
- 1935:	10,314

- 1940: 18,411

This is a high level of emigration, affecting 28% of the country's male adults in 1940. But here again we must take these figures as rough measures, rather than a correct evaluation of emigration. Estimation was all the more difficult as there was no requirement for a passport to travel between the two countries at that time.

2) From 1960 to 1971

a) The 1964 Census

The reference population: The census was conducted on a canvassing or house-to-house basis. The population was counted according to the village to which they 'belonged'. These villages, numbering 350, were the units of enumeration. At the same time, a count was made of the absentee population. This population included persons who had left the country intending to return and had been absent for less than a year, and those who had been absent for 1 to 5 years and still regularly sent remittances back home.

Census coverage: It was decided to enumerate only the population with fixed abode and to estimate the nomadic population. This was estimated at 11,650 people.

Census date: As Botswana was short of census takers, it was decided to conduct the census in stages. Beginning on January 15th, it was finished on June 15th (the census reference date being April 1st 1964). The fact that the census was conducted over a 5-month period raises questions as to the accuracy of the enumeration. Botswana is in fact a country where there is a high degree of seasonal migration to and from the fields and summer pastures.

Census control: No post-enumeration survey was taken as a quality check measure. There is, however, a general consensus that the published figures under-report the population of the territory.

b) The 1971 Census

On the whole, the first census of independent Botswana followed the methodology used in 1964, but nevertheless certain improvements were attempted.

Preparation of the census: In 1970, the whole of the territory was mapped out in detail. This was followed by an enumeration of dwelling units requiring 319 days of fieldwork. Finally, 10 months before the census began, a pilot census was conducted on 17,200 persons.

The reference population: The 1971 household canvass census was conducted on a strict 'de facto' basis, enumerating the people according to where they were the night before the census and not according to the village of usual residence. The census unit was the enumeration area (there were 841 of them) rather than the village, the basic unit that was used in 1964. As in 1964, there was a count of the reported absentee population, but with a modification in the definition of this population. Absentees were defined as citizens of Botswana who were absent from the country and who would live in the household if they were in Botswana. They were

classified according to whether they had been away for under or over 1 year.

Census coverage: The goal of the census authorities was to count the total population. However, financial constraints prevented a complete enumeration of the nomadic population and so the authorities adopted a compromise: the nomads located around the farms or fixed watering points were enumerated; the rest were estimated. The resulting estimate was 10,550 persons.

Census date: The census, conducted in two stages, began on August 23rd and was completed on September 30th (the census reference date being August 31st 1971). The census was timed to take place when population movement is normally at a minimum. But late rains and good harvests in much of the country that year meant that people stayed on the lands later than usual. The census therefore, coincided with some local movement from the lands to the villages. This was certainly a cause for omissions.

Census control: There was no post-enumeration survey, as it was thought to be too burdensome. Only a system of random double enumeration by the census takers' supervisors, covering 2,100 persons, was carried out.

This method of control provided no conclusive results. However, the summary of the difficulties encountered does give information on some of the omissions. In addition to the 574,094 persons enumerated in the census, the official census publication provides estimates of the following omissions:

- 6,600 persons omitted in Selebi-Pikwe [11] and in the regions of Mmadinare and of Okavango Swamps.
- 5,700 persons omitted in the large towns.
- 10,550 nomads (see above).

The resulting total of around 22,900 persons brings the population of the territory to 596,994 persons.

3) Consistency of Data

a) Comparison of the 1964 and 1971 Censuses

Projection of the 1964 census population forward to 1971 indicates underenumeration for almost all the age groups at the 1971 census, despite the inclusion of the recorded absentee population in both sets of figures. This could be due to three causes:

- underenumeration in 1971 and/or overenumeration in 1964;
- overestimation of the birth rate in 1971 and/or underestimation of the death rate;
- unrecorded emigration between the two dates.

Professor Becker - census adviser in 1971 - opts for the latter cause (amplified by an overestimation of computed fertility).

The fall of the sex-ratio, both in the 'de jure' and the 'de facto' populations, could be explained by more emigration (traditionally of males) in the 1964-71 period than had been reported. However, the hypothesis of an under-enumeration of the men present in the country cannot be excluded.

TABLE 9 - BOTSWANA - SEX-RATIO AT THE 1964 AND 1971 CENSUSES

CENSUS	1964			1971		
	M	F	S.R (%)	M	F	S.R (%)
De facto population (a)	235.900	266 800	<u>88</u>	262 100	312 000	<u>84</u>
Absentees	27 693	7 439		36 661	9 074	
De jure population	263 593	274 239	<u>96</u>	298 761	321 074	<u>93</u>

(a): Enumerated population, without corrections: rounded numbers

Sources: (9) and (10)

The study of the distribution of the absentee population gives the following results:

TABLE 10 - BOTSWANA - DISTRIBUTION OF ABSENTEE POPULATION

ABSENTEES (a)	1964	1971
Since less than a year	29 000	25 000
Since more than one and less than five years	6 000	...
Since more than one year		21 000
Total	35 000	46 000

(a): Rounded numbers

Sources: (9) and (10)

The 5-year limit for absentees in 1964 has undoubtedly led to an important underenumeration of this population. For the population absent for less than one year - the only case in which the comparison between the two censuses can be made - we can see a drop of 14% between 1964 and 1971.

b) Correction of the 1971 Census* 'De facto' Population

In a study by the U.S. Bureau of the Census, Finch and Way [4] set out to evaluate the percent error of the 1971 census.

Starting from the recorded 'de jure' population in 1971, the 10-year age groups for males and females 10 to 69 years of age were smoothed and split using a formula proposed by Arriaga [2]. The 22,900 persons that were officially estimated as having been omitted from the census were added to the smoothed and split population proportionally by age and sex. The result, after deducting the absentee population, was accepted as the adjusted 'de facto' population for ages 10 years and over in 1971.

In order to estimate the adjusted 'de facto' population under age 10, the adjusted 1971 female population over age 10 was reverse survived by 5-year age groups to 1961. The resulting 1961 female population was projected forward to 1971 using estimated age-specific fertility rates and the same mortality as was used in the rejuvenation process. For this projection, fertility was assumed to have remained constant in the 10 years preceding the census. The births obtained were separated into males and females, using a sex ratio of 1.03 and then survived to 1971 using appropriate life tables.

The authors arrived at an adjusted 'de facto' population of 601,650 persons in 1971. The estimated net underenumeration is distributed as follows:

TABLE 11 - BOTSWANA - ESTIMATED NET UNDERENUMERATION AT THE 1971 CENSUS (%)

SEX	ALL AGES (%)	UNDER 10s (%)
Both sexes	4.8	6.6
Males	5.4	7.7
Females	4.2	5.4

Source: [4]

* Absentee Population

Since Botswana's emigration is to a great degree directed towards South Africa, it is also interesting to study that country's statistics. In the 1960 South African census [5], 59,000 persons born in Botswana were reported as being in South Africa.

This number decreased to 47,000 (of which 40,840 were men) in the 1970 South African census [6].

Numerous Botswana workers in South Africa are in the country illegally and these two figures must certainly underestimate the true population. Despite higher underenumeration at the 1970 census than the 1960 one, it seems that the total number of emigrants in South Africa fell slightly between these two dates. This decrease in Botswana workers apparently did not occur in the mines, however. The number of Botswana workers employed in mines, affiliated with the South African chamber of mines, was reported to be as follows:

- 1955: 10,500
 - 1960: 16,000
 - 1965: 20,500
 - 1970: 16,300
 - 1975: 16,600
- Source: [1]

The 1971 Botswana census report 'considered that a reasonable estimate for the absentee population' was between 60,000 and 65,000 persons.

* Total Population

TABLE 12 - BOTSWANA - CORRECTIONS TO THE 1971 CENSUS

REFERENCE POPULATION	CENSUS DATA	CORRECTED DATA
De facto population	574 094	601 650 (a)
Absentees	45 735	65 000 (b)
De jure population	619 829	666 650

(a) : Source [4]

(b) : Source [10]

4) Preliminary 1981 Census Results

Preliminary results from the 1981 census have become available since the publication of 'Country Demographic Profiles - Botswana'.

These figures show an enumerated population of 936,600, for an implied annual intercensal growth rate, when compared with the enumerated 1971 census population, of 4.9%.

At this time, however, little is known about the methods used in the census or the quality of the data resulting from the enumeration. Clearly, caution should be used in interpreting this preliminary figure.

At face value, the 1981 count suggests that the 1971 census may have been subject to a greater degree of underenumeration than has been

estimated. Further analysis, however, must await the publication of more detailed census results. The preliminary release from the Central Statistics Office warns that the implied intercensal growth rate is "rather high", and that a more detailed analysis will be carried out soon to determine the cause(s).

The preliminary figures show the number of absentees declining in the intercensal period, from 45,735 in 1971 to 41,700 in 1981. The preliminary results, however, do not disclose whether or not there had been any change in the definition of absentees which might have affected these figures.

IV. CONCLUSION

To estimate the evolution of population size in Botswana since the beginning of the century:

1) For the first half of the century we have retained the figures given by the administrative censuses, since we lack the appropriate data and information to correct them.

2) For population change since 1950 we have relied on the study by Finch and Way quoted here. For the 1964 census, the authors applied the percentage of omissions they had estimated for 1971. Thus they reached a mean annual growth rate of 1.9% between the two dates. With the hypothesis that this rate had remained constant since 1950, they were able to construct a series of annual estimates of the 'de facto' population for 1950-1971.

As for the 1971-1982 period, the authors have projected the adjusted 1971 population, with three assumptions:

- The fertility rates remain constant from 1971 to 1980, with a slight decline thereafter;
- There is a slight decrease in mortality (life expectancy at birth increasing approximately at the rate of 4 months per calendar year for men and 3.5 months for women);
- The proportion of emigrants in each age-sex group remains constant.

These hypotheses give a mean annual growth rate of 2.8% :

- for 1970 - 1975 and 3.8%
- for 1975 - 1982

The projected 'de facto' population figures are shown in Table 13. The 'de facto' population estimated on January 1st 1975 is 667,371 inhabitants.

TABLE 13 - BOTSWANA - ESTIMATES AND PROJECTIONS OF THE 'DE FACTO' POPULATION (MIDYEAR)

YEAR	DE FACTO POPULATION (Estimates)	YEAR	DE FACTO POPULATION (Projections)
1950	406 900	1972	618 800
1951	414 500	1973	637 600
1952	422 300	1974	657 200
1953	430 200		
1954	438 300		
1955	446 500	1975	677 700
1956	454 900	1976	699 200
1957	463 400	1977	721 600
1958	472 100	1978	745 000
1959	480 900	1979	769 300
1960	489 900	1980	794 700
1961	499 100	1981	821 000
1962	508 500	1982	848 000
1963	518 000		
1964	527 700		
1965	537 600		
1966	547 700		
1967	558 000		
1968	568 400		
1969	579 100		
1970	589 900		
1971	601 000		

Source: [4]

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BURKINA FASO

NOUMASSI M. DAKUYO

HAMADOU LOUGUE

JANUARY 1981



BURKINA FASO**I. INTRODUCTION**

Burkina Faso, until recently Upper Volta, a continental country situated within the expansive loop of the river Niger, covers an area of 274,000 km². Its most southern point is 500 km from the sea. From a climatic point of view, it is situated entirely within the Sudanese zone.

The physical existence of the country has suffered from the vicissitudes of colonial history within the great Upper Senegal-Niger zone. Indeed, after the colonial invasion of Upper Volta by France in 1897, it was joined to Upper Senegal and Niger and was only instituted as a colony in 1919. After 13 years of existence, the decree of September 5th 1932 of the General Governor of French West Africa (AOF) put an end to Upper Volta as from January 1st 1933 and divided the territory between Mali (formerly French Sudan), the Ivory Coast and Niger. The true reasons of this suppression were due to the fact that the colonial power considered Upper Volta as a reservoir of men which would enable the economic expansion of the Ivory Coast and the development of the hydro-agricultural unit of the Office of Niger in Mali.

The decree of September 12th 1947 repealed the decree of September 5th 1932 by re-establishing the colony of Burkina Faso as it existed in 1932.

The Republic of Upper Volta, which was formed on December 11th 1958, became independent on August 5th 1960.

II. DATA SOURCES**1) Historical Estimates**

The historical estimates are those before 1960. Provided by the national archives, they are the result of population enumerations which were carried out by the authorities (administrative censuses) in order to determine the basis for per capita tax assessment. Those taxable (men and women from 15 to 59 years of age) were accurately counted; on the other hand, those not taxable, and in particular children, were underestimated. These censuses were carried out at variable periods (three to five years) and they were not simultaneous, which restricted the validity of the totals made without updating.

Based on the data from Tables XXX III to XL of the AOF statistical yearbook [2], Table 54 shows the evolution of the native population of the colony of Upper Volta between 1909 and 1960.

These estimates and the mean annual rates of growth which can be deduced are to be considered with a great deal of caution; for the period 1909-1960 the annual rate of growth was 0.4%. For shorter periods, the rates vary incoherently showing the poor quality of the data, combined with depopulation for certain periods:

- Famines between 1914 and 1916,
- Repression after the 1916 Bwaba revolt,
- Flights to Ghana to escape poll tax and forced labour.

In 1960, the survey concluded that the administrative census was underestimated by 23%. Simultaneously, the Ghana census and estimates in the Ivory Coast added 200,000 people to the absentees listed in Upper Volta. This assumes a growth rate for the population of Upper Volta of 0.5% over 50 years.

TABLE 14 - BURKINA FASO - POPULATION TRENDS ACCORDING TO THE ADMINISTRATIVE CENSUSES OF 1909 TO 1960

YEAR	POPULATION RECORDED BY THE CENSUS	MEAN ANNUAL GROWTH RATE (%)
1909	2 770 467	+ 5.3
1914	3 579 200	+ 4.6
1916	3 919 100	- 6.5
1920	3 050 000	+ 1.0
1921	3 080 600	+ 0.4
1926	3 147 339	- 1.0
1931	3 000 165	+ 0.1
1948	3 067 500	+ 1.3
1949	3 108 482	+ 1.2
1955	3 339 476	+ 1.6
1960	3 360 000	

2) Recent Estimates

Recent estimates are those dating from Independence and are taken from various surveys (Table 15).

a) Demographic Sample Surveys

Several demographic sample surveys have been carried out in Burkina Faso (or Upper Volta as it was still called at the time), on all or part of the territory; the 1960-61 Survey, the Demographic Surveys of the town of Ouagadougou in 1961 and 1968, the Mossi Survey in 1973, the National Survey on Migration in 1974-1975, the Post-Censal Survey in 1976, the Study of Migrants at the Ivory Coast Border in 1975.

TABLE 15 - BURKINA FASO - CHARACTERISTICS OF THE SURVEYS AND THE CENSUSES CONDUCTED SINCE 1960

PERIOD	NATURE OF OPERATION	AREA COVERED	ORGANIZATIONS IN CHARGE	AUTHORS	SURVEY METHOD USED	OBJECTIVES
1960-61	Population Survey	Whole Country	INSD	R. CLAIRIN	Two stage sampling Retrospective Interviews	-State of the population -Mortality -Fertility, Natality -Migration
1961-62	Survey	Two of Ouagadougou	INSD		Census	-State of the population -Migration -Fertility
1968	Survey	Two of Ouagadougou	INSD	G. PLANES A. COUREL	Sample Survey	-State of the population
1973	Survey	Mossi and Bissa Aezas	ORSTOM	JL. BOUTILLIER A. QUESNEL J. VAUGELADE	Repeated Survey	-Study of Migration Trends
1974-75	Survey	Whole country	CVRS INSD	J. GREGORY V. PICHET S. COULIBALY	Sample Survey Retrospective Interviews	-Study of international and internal Migration its Causes and effects
1974-77	Survey	Whole country	ONPE assisted by PNUD and ILO			-Study on Employment and training in Burkina Faso
1975	General Population Census	Whole country	INSD		Census	-State of the Population -Nuptiality -Migration
1976	Post-enumeration Survey	Whole country	INSD		Sample Survey	-Mortality -Natality, Fertility -Migration

* The 1960-1961 survey was carried out at a time marked by a determining political change (accession to independence), in a country where there was very little documentation about the population, uniquely provided by the administrative enumerations.

The 1960-1961 survey therefore had numerous objectives: estimation of the population, distribution according to the usual demographic characteristics, estimation of the standard ratios and quotients, knowledge of the ethnic, social and economic variables of the population. The overall population size was estimated by the survey to be 4,460,000 inhabitants.

* The demographic objectives of the 1961 and 1968 surveys in the town of Ouagadougou were standard.

* The 1973 Mossi survey focussed on the migratory movements of the Mossi and Bissa country which grouped together a resident population of 2,575,000. It was a 'repeated' survey, that is to say, it studied the evolution of those who had undergone a former survey (the 1960-61 survey). It estimated the population of active men who had migrated for work, to be 215,000.

* The aim of the 1974-1975 National Survey was to study the migrations at a national level from the point of view of their volume, their direction, their characteristics, their causes and their effects.

* The Survey on Employment and Training (1974-1977). This was the first of its kind to be carried out in Burkina Faso. Its aim was to give a more precise idea about the reality of employment and training in the country.

* The 1976 Post-Censal Survey, carried out, as its name shows, at the end of the census, was intended to provide data concerning mortality, natality, fertility and migration, but the analysis of these results is disappointing and this survey only really offer interesting information as far as fertility is concerned, which appears to be, on the whole, stationary compared to that recorded in 1960-1961.

b) The General Population Census

TABLE 16 - BURKINA FASO - DISTRIBUTION OF THE RESIDENT POPULATION BY DEPARTMENT, IN 1975

DEPARTMENT	POPULATION	DENSITY INHAB/KM2
Centre	944 706	43
Centre-East	404 602	36
Centre-North	632 285	29
Centre-West	788 962	30
East	407 215	8
Hauts-Bassins	582 810	13
North	530 192	43
Sahel	354 079	10
South-West	357 592	20
Volta-Noire	635 760	19
Total	5 638 203	21

Only one demographic census on a national scale has been carried out in Burkina Faso until now. This census, which was conducted between December 1st and 7th 1975, enumerated:

- 5,638,203 residents (present and absent)
- 334,715 emigrants (people who had lived in the compound visited, but who had been settled abroad for at least six months).

All these inhabitants and emigrants (a total of 5,972,918) form the 'administrative population'. This definition is indeed not very common, but is essential in the case of Burkina Faso, a country where the emigrants are of considerable economic and social importance.

The distribution of the population by department shows extremely varying densities; the departments of the Centre, Centre-East, Centre-North, Centre-West and North have relatively high densities, over 30 with 100 inhabitants/km² in places. The ground has grown poorer in these areas and they have become the seat of an intense emigration towards the Ivory Coast and the lesser populated areas of the country.

3) Comparison of the Different Sources

a) The data obtained by comparing the results of the 1960-1961 survey and the 1975 census are seen to be consistent with the natural increase resulting from the 1960-1961 survey which was set at 1.8% (birth rate 50 per 1,000, death rate 32 per 1,000).

TABLE 17 - BURKINA FASO - POPULATION SIZE AND ANNUAL GROWTH RATES 1960-1975

POPULATION	1960	1975	ANNUAL GROWTH RATE (%)
Résident Population	4 349 600	5 638 203	1.7
Administrative Pop.	4 460 000	5 972 918	2.0

b) The 1960-1961 survey, the 'Mossi' survey, the 1974-1975 survey and the 1975 census all also gave estimates for population growth. The 1974-1975 migration survey and the population census dealt with both internal and international migration, covering the whole of the country. The number of international emigrants thus varied as follows:

- 1960-1961 survey 110,400
- 1974-1975 survey 336,022
- 1975 survey 334,715

It can be seen that the number of emigrants increases considerably. This represents only a part of the phenomenon.

In fact, the estimate for the emigrants in 1975 should be considered with caution and should not be interpreted as the total number of nationals living abroad but as an estimate of the number of nationals living abroad whose return to their native land is probable. The total number of nationals living abroad can be estimated at one million, 700,000 of whom in the Ivory Coast, according to the national censuses of the countries of destination.

c) Population forecasts were elaborated after the 1975 census from the following hypotheses:

- The resident population was supposed to increase at a rate of 1.72% per year. This annual rate of growth corresponds to that obtained between 1960 and 1975.
- The administrative population was presumed to increase at a rate of 2.06% per year. That is to say the rate of natural increase in 1975.

Projection of the present trends leads to a net emigration between 1975 and 1990 of 500,000 people. This is insufficient considering the labour force requirements in the Ivory Coast, the country which is presently the main importer of labour from Burkina Faso. The latter will remain a country which exports its labour force, unless political or economic events severely modify the situation.

TABLE 18 - BURKINA FASO - POPULATION TRENDS FROM 1960 TO 1990

(in thousands)

	1960	1975	1980	1985	1990
Resident Population	4 350	5 638	6 145	6 696	7 297
Administrative Population	4 460	5 973	6 621	7 339	8 136
Emigrants	110	335	476	643	839

III. CRITICAL STUDY OF THE DIFFERENT SOURCES AND CONCLUSION

Two kinds of population have always been considered in the various studies of the population of Burkina Faso: the 'de facto' population and the 'de jure' population. The 1960-1961 survey and the 1975 census are the two sources which can be compared. Although the 1960-1961 survey gave quality results for the population size and the different important variables of the population, it was not however able to give results concerning the different geographical administrative areas, (regional or local). Furthermore, although the survey gave good results for the ethnic groups, this variable was ignored in the 1975 census, at a time when the

ethnic variable should on the contrary have been given importance because of the development of literacy in the national languages.

Whatever the procedures covering the national territory, the Sahel of Burkina Faso has not undergone any specific investigation and errors must certainly have slipped in (despite the precautions taken), due to the nomadism which influences the definitions adopted concerning residence. The same error has therefore been repeated a priori and will persist until a specific survey has been specially devised for this area.

Moreover, the risks of omission and double counts cannot be excluded in a country of such great mobility. Errors may also have arisen over the definition of the concepts used.

There is therefore still a vast amount of work to be done to improve the concepts, in particular to take better account of the economic activities of individuals and to define the areas of internal migration more clearly. However, the main concern should be the human factor: the training and supervision of field workers and enumerators should be improved.

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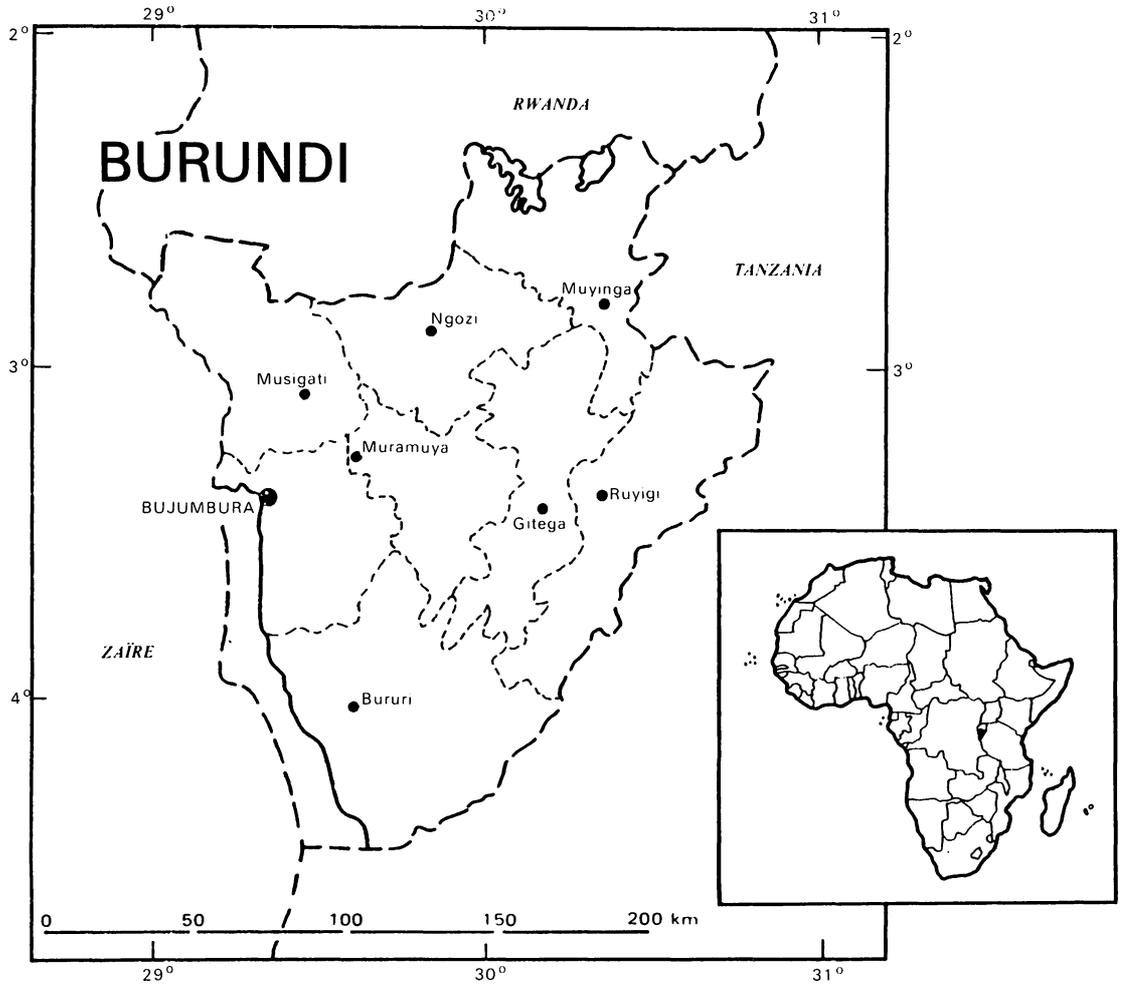
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BURUNDI

SYLVESTRE BARANDEREKA

AUREL BERCIU

JUNE 1981



BURUNDI

I. INTRODUCTION

1) Geographical Environment

Burundi, often called the 'Heart of Africa', is located between latitudes 2°45' and 4°28' South and longitudes 28°50' and 30°53' East, and is bordered by the Republic of Rwanda in the north, Lake Tanganyika and Zaïre in the West and Tanzania in the east and south.

Burundi is a land of high plateaus (almost all exceed 1,000 meters) hemmed in among the Great Lakes of Central Africa.

It has a high-altitude tropical climate with four seasons:

- a major dry season from June to October;
- a minor rainy season from October to December;
- a minor dry season from January to February (this is not a true dry season, as it does rain, but less than during the minor rainy season);
- a major rainy season from March to May.

Temperatures and rainfall vary, however, with altitude.

2) Administration

At the end of 1979, Burundi was composed of 8 provinces, each one divided into two or three districts (18 in all) subdivided into communes; the provinces and the communes form the backbone of the administration. There are 79 communes in all, including the urban commune of Bujumbura, and each province has between 5 and 15 communes.

The communes are in turn split up into a certain number of 'census hills', varying between 11 and 68 per commune. Most communes have 20 to 40 census hills divided into two or three 'zones'.

The size of these census hills varies a great deal, ranging from a few hundred inhabitants to several thousand. They are often divided into a varying number of 'sub-hills' (generally two or three). The census hill, of which there are approximately 2,500 in all, is the smallest administrative unit and may group several geographical sub-hills. (The census hills of Burundi correspond to the villages found in other countries).

3) Population

The traditional system of rural settlement in Burundi is based on the individual. Apart from a few commercial centres, villages are non-existent. The Burundese live in huts grouped together in 'rugos', which are compounds generally delimited by a hedge and containing one or several huts: living quarters for the traditional head of the family and his direct descendants,

living quarters for his parents/relatives, kitchen, storehouse. The rugos are scattered over the hill-slopes, surrounded by banana plantations and a variety of other crops.

This traditional system has changed in recent years and in certain areas (particularly the most densely populated) the rugos have disappeared, being gradually replaced by individual houses built in brick or clay.

However, whether people live in separate houses or in rugos, the population is always dispersed and the 'centres' are often nothing but a few stores situated around the square where the weekly market is held.

The inhabitants of Burundi all speak the same language: Kirundi, which is the national tongue. French, introduced by the Belgian administration before Independence, remains the official language.

As in the other East African countries, Swahili is commonly used for trading.

The influence of the Catholic and Protestant Churches is strong in Burundi: they continue to play an important role in the socio-economic and cultural development of the country.

II. DATA SOURCES

1) Historical Estimates

Until 1960, information on the population of Burundi is generally provided by data grouping RWANDA and URUNDI, these territories being considered by the colonizers as a single administrative entity.

The first data on the demographic situation of RWANDI-URUNDI go back to the early XXth century. The only sources are reports made by explorers at the time of the German government and information provided by missionaries.

In 1907, the population of these territories was estimated at 4 million inhabitants by FUCHS, and in 1914, at 5 million by MYER. The same year, the population of RWANDA alone was estimated at 3 million by RHODL, whereas CZEKANOWSKI, an ethnographer, put it at 1.5 million in 1907.

Concerning the methods used at the time for evaluating the population, only CZEKANOWSKI's is known: he estimated the population density by counting the number of huts in a region, an obviously very rough method of estimation.

The only indication concerning population growth is given by VAN DER BURGHT, who in a publication in 1903 merely stated that births exceeded deaths. This upward trend is confirmed for the next ten years by several missionaries.

If this growth had been maintained, the population size would currently be much larger than it is, but successive mortality crises due to famines and epidemics seriously reduced the population.

The changeability of the climate and the consequences on subsistence crops still regularly create serious problems for the authorities.

In 1922, when the League of Nations entrusted the government of RWANDA-URUNDI to Belgium, the latter immediately set up a registration system restricted to the able-bodied male adults (HAV) subject to taxation. Applied until 1931, this registration system, with its unavoidably incomplete coverage, provided extremely unreliable estimates of total population size.

From 4 million in 1922, the population estimate falls to 3 million in 1923, rises to 5 million from 1924 to 1927, then drops back down to 3,750,000 in 1928. The inaccuracy of this type of registration during the first years of Belgian government must be borne in mind, and that slight variations in the quality of successive censuses are sufficient to produce a high degree of error.

In 1931, the registration system restricted to able-bodied male adults was extended and transformed into a card registration system covering all males, whether able-bodied or not, and their families.

A new source of population data was introduced at that time: population surveys focussing, for each territory, on a certain number of groups considered as representative. The observations thus obtained were extended to the total population.

These surveys, based on the statistical sampling method, were conducted until 1950.

Theoretically a good idea, in practice these surveys proved disappointing; ill-chosen and insufficient population groups, inadequacy of the formulas used for calculating the estimates, technically deficient field operations were major errors.

The population estimates available for RWANDA-URUNDI (global figures for the whole territory) between 1922 and 1949 are presented in Table 19.

2) Administrative Censuses

Administrative censuses were conducted annually by enumerators dependent on each commune. As is the case for other African countries, the data they yielded are of very limited statistical value, because of well-known problems of coverage and accuracy. These censuses were originally carried out for administrative and in particular fiscal purposes; now that the 'personal tax' has been abolished, there is no longer any reason for them to be held.

The data collection procedure adopted for these administrative censuses was the following:

- the basic unit was the 'census hill', but several hills are grouped together administratively to form a 'zone'; information is therefore available at the zone level.

TABLE 19 - BURUNDI - POPULATION ESTIMATES 1922-1949 (GLOBAL FIGURES FOR RWANDA-URUNDI)

YEAR (a)	POPULATION	YEAR (a)	POPULATION
1922	4 000 000	1939	3 775 335
1923	3 000 000	1940	3 814 854
1924/1927	5 000 000	1941	3 843 436
1928	3 750 000	1942	3 830 101
1929/1931	3 450 000	1943	3 768 002
1932	3 451 000	1944	3 378 396
1933	3 244 000	1945	3 386 362
1934	3 165 000	1946	3 596 997
1935	3 385 583	1947	3 718 185
1936	3 506 094	1948	3 793 922
1937	3 693 304	1949	3 808 191
1938	3 752 742		

(a) Sources: 1922-1931 [7], 1932-1934 [5], 1935-1949 [6].

The enumeration was conducted by the zone officer, who recorded the information on green cards four inches long, one for each able-bodied male adult (HAV) in the census hill. A few cards were added for women or old men living alone and not dependent on a HAV.

Each card contained the following information:

- 1.- name and age (date of birth) of the HAV;
- 2.- name and age of his spouse(s) and other dependents;
- 3.- male under-18's (at 18 they become HAVs) and unmarried females, classified by sex and age;
- 4.- the number of adult cattle was noted on the back of the card.

For certain zones, the information on these cards was copied into notebooks, but often the totals per hill were calculated only once a year, directly from the cards, and sent to the commune.

The officers of each commune sent the data per census hill once a year to the provincial authorities.

This administrative registration system whereby population data were recorded on cards has now been abandoned. It is to be replaced by a system of registration of vital events in the framework of a new project.

3) Statistical Censuses

Burundi's first General Population Census was conducted between August 16th and 30th 1979.

The project of holding a general population census was first made in 1970, when the African Census Program was set up at the request of a certain number of African countries unable, for technical and financial reasons, to participate in the series of population censuses before this date.

A U.N.F.P.A. mission was sent to Burundi to evaluate the needs in population and other data and elaborate a project of assistance.

Following this mission, the U.N.F.P.A. appointed an Expert in 1972 and the preparatory work for the population census was initiated.

Unfortunately, a variety of reasons caused the project to be interrupted.

In 1977, a new request was made by the Government of Burundi to the U.N.F.P.A. The project was revised and the preparatory work got off the ground again, this time with two United Nations experts (a chief expert and an expert in cartography).

The mapwork necessary for the census lasted 18 months. A pilot survey was conducted in August 1978.

The actual population census was conducted between August 16th and 30th 1979. After manual processing, the provisional results of the first General Population Census of Burundi were published in early 1980. Some general data are presented in Tables 23 and 24.

The Central Census Bureau, the organism in charge of conducting the census, is presently involved in continuing the data processing and preparing the information for analysis and the publication of the final results.

4) Vital Registration

Prior to 1980, Burundi had a vital registration system operating at the commune level. A monthly statement was to be sent to the Department of Population, which drew up an annual statement of the country's natural increase.

These data did not, however, ensure complete coverage of the population and were inadequate for estimating demographic rates (birth, death and growth rates). They had many shortcomings, the more important of which were:

- non-integration of the systems of statement by the informant and registration; lack of control at a central level over the communes, and at the commune level over the informants (population):

-
- several links were missing in the communication chain (collection and transmission of information) and the checking of the field operations;
 - lack of motivation among the population.

With Decree No. 1 of January 15th 1980 establishing a Code of the Individual and the Family, the regular registration of vital events became mandatory in Burundi.

Title IV of the new code deals with vital events. A system of registration of vital events has been set up gradually since April 1st 1980, when the new code came into effect.

Presently, the Ministry of the Interior, Department of Population, has taken the following measures:

- creation of a national registration Office;
- appointment of registrars;
- creation and setting up of registration offices for each province;
- creation and setting up of registration offices for each commune;
- preparation and printing of registers of vital events (births, marriages and deaths), and of certificates and statistical reports;
- recruiting, training and setting up of registration officers at the central, provincial and commune levels;
- a widespread operation for motivating the public which is ongoing throughout the country.

All these activities took place in 1980, firstly in 14 pilot communes, then extended in the last quarter to the whole of the country.

A study for evaluating the operation is ongoing.

This action for improving the vital registration system was designed and conducted with the aid of the United Nations, in the framework of a new UNFPA project following the 1979 population census: Improvement of Vital Registration in Burundi, five-year project BDI/78/P02.

5) Demographic Sample Surveys

A number of demographic sample surveys have been conducted in Burundi since the beginning of the century and, until 1965, all were single-round surveys, therefore retrospective.

However, the data most frequently used for estimating the population of Burundi were provided by two better-known surveys carried out in 1965 and 1970-1971:

a) The 1965 Demographic Sample Survey

The 1965 demographic survey yielded good-quality data within a reasonable time, considering the resources in personnel and equipment available.

The field operations were conducted between March 1st and July 31st 1965 and the report was finalized in June 1966. This survey therefore had the advantage of yielding results fairly rapidly; but there were also several omissions:

- there were no questions on the census hill (existence of a school, a clinic ...);
- there were no questions on the rugo (number of huts, water supply ...);
- the births occurring over the last 12 months were not linked to the mothers;
- the months of birth and death were not indicated;
- there were no questionnaires for women.

There were two sampling schemes: for rural areas, two-stage sampling was used with a mean sampling fraction of 1/50; for Bujumbura, houses were first listed then a 1/10 sample was drawn.

The 1965 survey covered a sample of 10% of the population of Bujumbura and 2% of the rest of the population. The survey which consisted mainly in a check of the data yielded by the last administrative census, revealed a roughly 24% underestimation of the total population.

The population of Burundi as estimated from this survey amounted to 3,210,000 inhabitants, with a rate of natural increase of 2.0% (a birth rate of 46 per 1,000 and a death rate of 25.8 per 1,000).

The results of this survey were considered incomplete, and the error for the data collected was estimated at 5-10% (see the main results in Table 21).

b) 1970-1971 Multi-Round Survey

The lack of precision in the data yielded by the administrative censuses and the 1965 demographic survey, as well as the necessity to obtain the characteristics and demographic rates of the rural population, led the national authorities to conduct another survey on population and settlement in Burundi.

This multi-round demographic survey was prepared and carried out by the Department of Statistics, assuming the population of Burundi in 1970 to be 3,500,000. A sample of 30,000 inhabitants was selected, or 24 primary units (P.U.) of 1,250 each. The primary units were chosen using the newly adopted administrative divisions: 8 provinces, 18 districts, 79 communes, 2,427 census hills.

The division into provinces gives an approximation of the population and the list of census hills by province and district.

The primary units were distributed proportionally to the population of each province. Thus at least one primary unit was chosen per province; furthermore, because of population movement within or between provinces, it was necessary to have one primary unit per district. This gave 18 primary units: the other 6 were distributed among the districts according to population size.

The survey was conducted over 14 months, from April 1970 to June 1971, so as to observe population change over 12 complete months.

The notables and representatives of the census hills to be covered by the survey were first of all informed of its aims by the interviewer; when their consent had been obtained, a meeting was organized for all the population concerned.

The interviewer questioned everyone who had spent the night preceding his visit in the rugo, until he reached the limit of 1,250 inhabitants per census hill.

Six schedules were used:

- D1: inventory : enumeration of the 1,250 people to be interviewed by each field worker.
- D2: household : to be filled in by each household; provides information on civil status, occupation and education.
- D3: age : enables age of respondents to be known as precisely as possible, for constructing a population pyramid.
- D4: females : to be filled in by each woman of fertile age; used for computing fertility, birth and infant mortality rates.
- D5: settlement : provides information on dwelling conditions of households.
- D6: population change : provides information on the demographic changes occurring in the household in the course of the census year.

The principal results of this survey are presented in Table 22.

6) Other Sources of Population Data

Because there was no national organism for collecting and processing statistical population data, various institutions and organizations have over the years attempted to conduct surveys or partial censuses providing more or less reliable information.

These other operations carried out to obtain population data include:

a) Census of the Zege Pilot Zone for the Popularization of Farming Techniques

A first round conducted in 1970, followed by a second one in early 1971, provided, in addition to data on 'households' and settlement, certain information on population change. This partial census covered 3,000 inhabitants.

b) Census of the KABEZI-KISINGWE Area

In the framework of an irrigation and rural development project, a partial census of the population of the area concerned was carried out in May 1970; 12,000 people living in 1,800 ruzos were enumerated. Unfortunately, the data have not been processed.

c) Census of the NYANZA-LAKE Area

Like the Kabezi-Kisingwe census mentioned above, and using the same questionnaires, a partial census was conducted in the framework of a development project. Almost 20,000 people living in the Nyanza-Lake area were interviewed in December 1971, but the data have not been processed.

d) Statistical Survey (Demography, Economy) of the RUMONGE Area

A study of the structures of the population and the farms in the Rumonge area was conducted in early 1977 (January-March). A random sample of one household out of five was drawn from a complete census of the households in the area to form the survey population.

Over 5,000 out of a total of 26,230 inhabitants were interviewed.

The data obtained have been partially processed.

e) The 1969 Socio-Economic Survey in Bujumbura

In 1969, a survey was undertaken in Bujumbura in order to determine the main characteristics of the civilian labour force.

This survey was extended to the following fields:

- economy (employment status, economic activity, income of respondents);
- demography (population pyramid, nuptiality, migration);
- living conditions and sociology (housing structure, health status, social dynamics, religion ...).

Over 15,000 out of the 50,000 inhabitants of 4 districts of Bujumbura were interviewed. The statistical data obtained were not processed or analyzed in the framework of this survey, but were used to complete the rural survey data.

f) Primary Census of the Population of Bujumbura (late 1971)

In order to prepare a consumption survey, a primary census of the population of Bujumbura was conducted at the end of 1971. A list was drawn up of the parcels and dwelling units in 8 districts. Then a first sample

enabled population estimates to be made and provided the following characteristics for each respondent: sex, age group, marital status, nationality, kinship with the 'head of the household'.

The data obtained for over 10,000 respondents filled out the information provided by the 1969 socio-economic survey, and revealed disparities between the rural and urban areas.

g) Censuses of the Primary Units Selected for the Agricultural and Food/Budget Surveys

To prepare the second-stage sampling, several censuses of primary units (census hills) were conducted in the provinces of GITEGA, NGOZI, MUYINGA, RUYIGI and BURURI between 1967 and 1970.

These censuses, completed with less precise data, provided the stratified population estimates of 1970.

These different partial censuses gave, for the hills selected, the following information:

- differentiation of the 'rugos' according to their composition;
- for each hut in the rugo:
 - . the population (number, sex, age group and marital status of the head of the household);
 - . the existence of a farming unit (and/or a kitchen);
 - . possession of coffee trees and/or cattle;
 - . etc.

Furthermore, as the 46 'census hills' selected for the food/budget survey were the same as those used for the agricultural surveys (conducted in NGOZI and MUYINGA), a comparison of the data from these two sources was possible.

7) Population Studies

In the field of population research, attention should be drawn to two important socio-demographic studies conducted in 1973 and 1974, which are described briefly below:

a) Population Problems in Burundi, Results of a Survey on the Demographic Motivations of the Barundikazi (Burundese Women)

This survey, which covered 2,400 women living in the provinces of Bubanza and Ngozi, was conducted between February and May 1973 by the Faculty of Economic and Social Sciences of the University of Bujumbura, in close collaboration with the Union of Barundikazi women and with the technical and financial assistance of the Pathfinder Fund (Boston, EVA).

The aim of the survey was to acquire information on questions of fertility, nuptiality and family size and on knowledge of and attitudes towards birth spacing.

b) Family and Fertility in Burundi (Sociological Approach)

This is the title of "a systematic study of the present-day family in Burundi" carried out in 1974 by the Center for Socio-religious research at the request of the Episcopal Assembly of Burundi, and financed by the Pathfinder Fund (Boston, EVA). The results were published in 1977 by the Centre for Socio-religious Research of the Episcopate of Burundi and the Faculty of Economic and Administrative Sciences of the University of Burundi-Bujumbura.

The target of this study was "to provide objective elements of information in a domain which has so far been approached in an overly empirical and prejudiced manner".

The study focussed on "marriage, the importance attached to childbearing, the role of the child within the family group, the family unit and contraception".

Approximately 6,000 respondents (3,000 men and 3,000 women) from both urban and rural areas were interviewed.

Unfortunately, the results of these two socio-demographic surveys prove difficult to compare, in particular as the former was restricted to the rural population.

c) Future Research

Population research in forthcoming years will focus on the analysis of the results of the 1979 General Population Census and of the post-enumeration survey.

These will be completed by statistical data from the vital registration system the government intends to improve and extend.

III. CRITICAL STUDY OF DATA SOURCES

1) General Points

It is a widely acknowledged fact that to devise an economic and social development plan and apply it successfully, knowledge of basic demographic data is essential.

Many factors make it very difficult to take stock of the various sources of population data in Burundi.

- Firstly, most of the statistical demographic studies which have been undertaken in this country have collected masses of data which have never been analyzed in depth. Consequently, there is a wealth of information which has not yet been exploited.
- It is also important to note that all the population estimates published from the beginning of the century on are very rough, generally only the result of vague assessments. A small group for scientific research in population studies has only recently been set up, with the financial and technical assistance of the UNFPA.

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- As mentioned above, the information available until 1960 generally concerns the combined territory of Rwanda-Urundi, and distinguishes between the customary and the non-customary populations.
 - Under Belgian trusteeship, after World War I, there was no real progress until 1936, when the first estimate of the population of Burundi was made following the setting up of an improved administrative system of vital registration.

After this date, estimates of the population of Burundi were obtained regularly from the 'administrative censuses' based on the notion of able-bodied male adult (HAV) subject to taxation; they were also based on vital records and reports by missionaries and health officials.

For Burundi as for all developing countries, three sources of population data exist, as we have seen above: censuses, vital registration and demographic surveys. Concerning their quality, the following remarks can be made:

2) Population Censuses

These are known to be a very costly source of population data, requiring a considerable amount of financial, material and human resources, which moreover frequently exceed the possibilities of developing countries.

So far only the provisional results of the General Population Census of 1979 have been published by sex and administrative unit (provinces, communes and hills); the final data will be forthcoming at a later date.

Prior to 1979, all the population data published by various organisms were based on the 'administrative censuses'; they were often underestimated.

3) Demographic Surveys

As observed earlier, only two demographic sample surveys have been conducted in Burundi, in 1965 and 1970-1971.

These surveys indicated that the data yielded by the administrative censuses were largely underestimated. They remained the only source of demographic data until 1979, when the first General Population Census was held in Burundi.

4) Vital Registration

With regard to vital registration, as stated above, the decree of July 25th 1961 made birth, death and marriage registration obligatory in Burundi. Before this date, registration was very incomplete and vital statistics were inadequate for calculating demographic rates.

5) Assessment and Future Prospects

Prior to the 1979 General Population Census, the most recent population data were based essentially on the 1965 and 1970-1971 surveys, which provided a total population estimate of 3,210,000 inhabitants in 1970, with an annual growth rate of 2.2%.

A critical assessment of the various sources of demographic data available in Burundi leads us to observe that, in most cases, they have been sufficiently exploited, although they could have been useful tools for preparing either a national population survey or a census.

This is due to the fact that Burundi has no central organism or national institute covering all fields of statistics and supervising all the stages of a demographic operation, from planning and data collection to processing, analysis and finally publication of results.

Further evaluation of the various sources of population data in Burundi cannot be made until the recent improvements to the vital registration system (1980) have borne fruit and the final results of the country's first General Population Census have been published. Until then, the existing data should be used with a great deal of caution.

In our opinion, only the final Population Census data can prove satisfactory with regard to completeness and quality. The analysis and publication of the census data are scheduled for 1982.

The ongoing improvements to the vital registration system may moreover rapidly produce population data of a higher standard.

A national demographic survey, the project for which has been accepted by the UNFPA, is to be conducted in 1983.

In the meantime, the existing data sources, despite their deficiencies, are the only ones available for studying the population of Burundi.

IV. CONCLUSION

This list of the sources of population data in Burundi is not complete, yet it shows that, prior to the country's first General Population Census in 1979, there was a permanent concern about the need for demographic data, obtained through a variety of procedures.

Among the different sources mentioned above, it is noteworthy that no source predominates over the others. There are many reasons for this, since the choice of a method of data collection depends not only on technical criteria, but involves other factors such as:

- political decisions;
- financial problems, recruitment of employees.

In Table 20, we present the estimates of the population of Burundi between 1936 and 1979 obtained from the different sources.

These data are the only ones known and used until the final results of the 1979 General Population Census became available.

TABLE 20 - BURUNDI - EVALUATION OF POPULATION SIZE, 1936-1979

YEAR	POPULATION SIZE (thousands)	SOURCE
1936	1 746.5	[6]
1941	1 923.8	[6]
1944	1 854.7	[6]
1946	1 910.9	[6]
1949	2 012.0	[6]
1954	1 982.2	[7]
1959	2 213.5	[7]
1960	2 234.4	[7]
1963	2 471.3	Administrative census
1965	3 210.0	[3]
1970	3 350.0	[4]
1975	3 735.9	[2]
1979	4 021.9	[10]

TABLE 22 - BURUNDI - MAIN RESULTS OF THE 1970-1971 DEMOGRAPHIC SURVEY

- Population of Burundi on January 1st 1971	3 400 000
- Broad age groups (per 1,000 both sexes)	
0 - 14 years	441
15 - 59 years	518
60 years and over	41
- Rural population (scattered dwellings)	95 %
- Urban population (groups of at least 1,000 inhabitants)	5 %
- Mean number of persons :	
per rugo	5.7
per family	4.4
- Mean number of families per rugo	1.3
- Birth rate	42.0 ‰
- Death rate	20.4 ‰
- Rate of natural increase	2.2 %
- Rate of population growth (including external migration)	1.7 %
- Current fertility rate (per 1,000 women aged 15-49)	171 ‰
- Total fertility, women aged 50 and over	6.0
- Gross reproduction rate	2.9
- Net reproduction rate	1.8
- Mean age of mothers at childbirth	30 years
- Life expectancy at birth	
males	40 years
females	43 years

TABLE 23 - BURUNDI - GENERAL POPULATION CENSUS (16-30 AUGUST 1979): MAIN INDICATORS

<u>I. TERRITORIAL ADMINISTRATIVE UNITS</u>	
Provinces 8 - Districts 18 - Communes 79 - Census Hills 2 460 -	
<u>II. CENSUS UNITS</u>	
Districts 540 - Areas 4 021	
<u>III. CENSUS STAFF</u>	
1. Central Bureau of the census	15
2. Provincial representatives of the Central Bureau	25
3. Supervisors of communes	86
4. Supervisors of census districts	540
5. Enumerators	4 000
<u>IV. PROVISIONAL RESULTS OF THE POPULATION CENSUS</u>	
1. <u>Total population recorded or enumerated</u>	<u>4 111 310</u>
of which	
- residents, present	3 902 730
- residents, absent	119 180
- visitors	89 400
2. <u>De jure or resident population (RP + RA)</u>	<u>4 021 910</u>
of which	
- males <u>1 944 620 or 48.4 %</u>	
- females <u>2 077 290 or 51.6 %</u>	
3. <u>De facto or actual population (RP + VI)</u>	<u>3 992 130</u>
4. <u>Number of rugos recorded (rural zone)</u>	<u>626 480</u>
5. <u>Number of households recorded (rural zone)</u>	<u>856 860</u>
<u>V. MEAN DATA</u>	
1. Mean number of persons	
- per census district	7 610
- per enumerator	1 030
- per census hill	1 670
2. Mean number of households per rugo (rural zone)	1.4
3. Mean number of persons	
- per rugo (rural zone)	6.4
- per household (rural zone)	4.7
4. Mean number of males per 100 females	94

VI. BUJUMBURA		
1. <u>De jure or resident population (RP + RA)</u>		<u>141 040</u>
of wich		
- males	78 530 or 56.7 %	
- females	65 510 or 44.3 %	
2. Number of parcels		11 590
3. Mean number of persons per parcel		11.6
4. Number of households		28 020
5. Mean number of persons per household		5.0
6. Mean number of males per 100 females		126

TABLE 24 - BURUNDI - GENERAL POPULATION CENSUS (16-30 AUGUST 1979):
RESIDENT POPULATION (BY SEX), AREA AND POPULATION DENSITY BY
PROVINCE

PROVINCE	POPULATION			%		AREA	DENSITY
	Total	Male	Female	M	F	km ²	H/km ²
BUBANZA	329 060	164 030	165 030	49.8	50.2	2 712	121.3
BUJUMBURA	460 310	238 530	221 780	51.8	48.2	1 322	348.2
BURURI	457 510	222 070	235 440	48.5	51.5	4 957	92.3
GITEGA	682 990	322 950	360 040	47.3	52.7	3 447	198.1
MURAMVYA	380 320	183 500	196 820	48.2	51.8	1 546	246.0
MUYINGA	546 390	256 430	289 960	46.9	53.1	3 700	147.7
NGOZI	773 330	369 380	403 950	47.8	52.2	2 707	285.7
RUYIGI	392 000	187 730	204 270	47.9	52.1	5 718	68.6
TOTAL	4 021 910	1 944 620	2 077 290	48.4	51.6	26 109	154.0
Incl. BUJUMBURA-VILLE	141 040	78 530	62 510	55.7	44.3	///	///

TABLE 25 - BURUNDI - DEMOGRAPHIC INDICATORS ESTIMATED BY THE UNITED NATIONS, 1950-2000 (MEAN VARIATION)

CHARACTERISTICS	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000
Population total (thousands)	2 435	2 564	2 908	3 210	3 350	3 765	4 288	4 904	5 618	6 407	7 180
Population males (thousands)	1 203	1 310	1 436	1 585	1 654	1 858	2 117	2 424	2 779	3 176	3 606
Population females (thousands)	1 232	1 344	1 472	1 626	1 696	1 906	2 170	2 481	2 839	3 240	3 674
Population aged 0-4 years as % of total population	17.5	17.4	17.3	17.3	17.3	17.9	18.2	17.9	17.6	17.0	16.0
Population aged 5-14 years as % of total population	24.9	25.1	25.2	25.2	25.2	25.2	25.7	26.6	26.9	26.9	26.6
Population aged 15-64 years as % of total population	54.5	54.4	54.6	54.6	54.7	54.1	53.2	52.5	52.4	53.0	54.1
Population aged 65 years and over as % of total population	3.0	3.1	2.9	2.8	2.8	2.8	2.9	3.0	3.1	3.2	3.3
Population aged under 20 years as % of total population	52.5	52.6	52.7	52.7	52.7	53.1	53.8	54.3	54.8	54.4	53.4
Women aged 15-49 years for females (%)	46.8	46.7	46.9	47.0	47.0	46.4	45.6	45.0	45.0	45.6	46.6
Dependency ratio (°/°)	835.0	836.7	831.2	829.9	829.8	848.8	879.7	905.7	907.8	886.9	849.0
Child/women ratio (°/°)	741.3	735.2	727.9	727.3	726.9	761.5	787.2	789.4	775.1	736.5	679.5
Sex ratio	97.6	97.5	97.6	97.5	97.5	97.5	96.6	97.7	97.9	98.0	98.1
Median ages (years)	18.7	18.7	18.7	18.7	18.7	18.4	18.1	17.8	17.7	17.9	17.9
Proportion of urban population (%)	1.4	1.6	1.9	2.2	3.1	3.7	4.4	5.2	6.1	7.0	7.9
Population density (km ²)	87	95	104	115	120	135	154	176	202	231	267
	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90	90-95	95-2000	
Growth rate (%)	1.72	1.83	1.98	0.54	2.33	2.60	2.69	2.72	2.66	2.52	
Rate of increase (°/°)	17.2	18.3	18.7	21.7	23.3	26.6	26.8	27.1	26.5	25.2	
Crude birth rate (°/°)	48.4	48.2	47.7	48.1	48.0	47.3	45.6	43.9	41.5	38.3	
Crude death rate (°/°)	31.2	29.9	29.0	27.0	24.7	21.3	18.8	16.8	14.9	13.1	
Gross reproduction rate	...	...	...	...	3.10	3.10	3.04	2.94	2.75	2.48	
Net reproduction rate	...	...	...	...	1.87	2.03	2.10	2.12	2.07	1.93	
Completed fertility	...	...	...	...	6 293	6 293	6 165	5 974	5 583	5 029	
Fertility rate (%)	204.7	203.4	200.6	202.2	203.2	203.0	199.3	193.3	181.2	164.6	
Life expectancy, male (years)	30.0	31.9	34.4	36.9	37.5	41.4	44.4	46.9	49.3	51.8	
Life expectancy, female (years)	32.6	35.1	37.6	40.1	40.6	44.6	47.6	50.2	52.7	55.3	
Life expectancy, total population (years)	31.3	33.5	36.0	38.5	39.0	43.0	46.0	48.5	51.0	53.5	

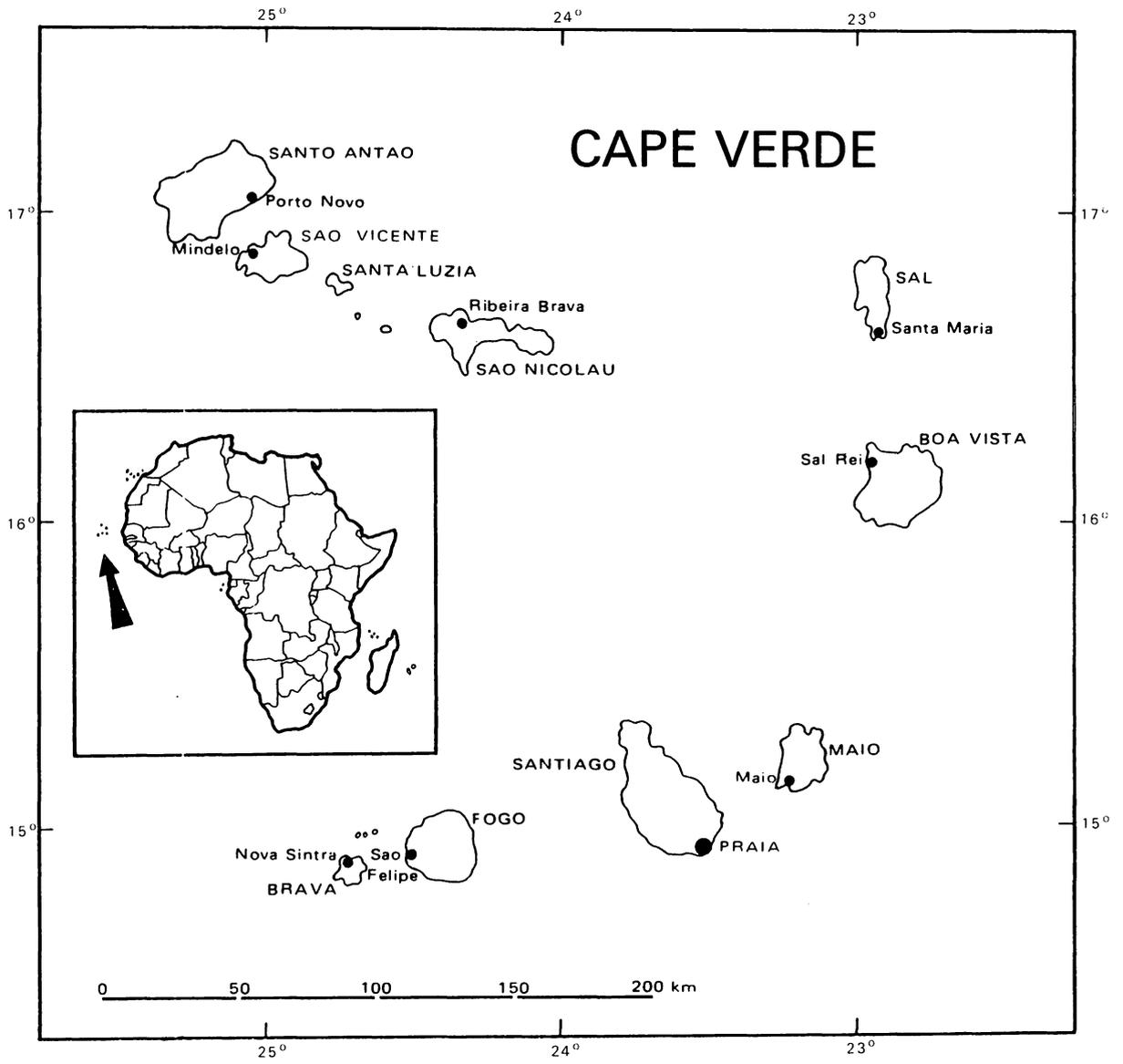
Source: [12]

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CAPE VERDE

CUSTODIO CONIM



C A P E V E R D E

I. INTRODUCTION

1) Geographical and Historical Presentation

The former Portuguese colony of Cape Verde was discovered in the XVth century (May 1st 1460) by DIOGO GOMES and ANTONIO da NOLI, respectively Portuguese and Genoese explorers, who landed in Santiago. The discovery of the other islands followed in 1461 and 1462. The archipelago was then uninhabited. The islands were populated with aborigenes from Guinea and Portuguese from metropolitan Portugal. According to a study conducted by the Sero-Anthropological Mission in 1956, "the chromosomal stock presented by the population of Cape Verde is 35% of European (Portuguese) and 65% of West-African origin" [5, p.72]. This type of population, the fruit of a dual acculturation and integration, engendered a "specific" kind of colonization, very different from the one experienced in Guinea, Angola and Mozambique. The particular origins, development and cultural values of the society have given distinctive features to all fields of activity in Cape Verde. With regard to the production of population statistics, the quality and level attained are more than acceptable (compared with the other Portuguese colonies and most African countries).

Cape Verde was proclaimed an independent state on July 5th 1975.

The Cape Verde archipelago is situated 445 km from the West African coast. It consists of ten islands (one of which, Sta. Luzia in the Barlavento zone, is uninhabited). This new African country of Portuguese expression, therefore closer to Europe, is divided into two districts, Barlavento (the windward islands) and Sotavento (the leeward islands), situated respectively between parallels 17°13' and 14°48' north and meridians 22°41' and 25°22' west of Greenwich.

The total land area amounts to 4,033.5 sq.km., distributed as follows:

BARLAVENTO

Santa Antao.....779 sq.km.
 Sao Vicente.....227 sq.km.
 Santa Luzia.....35 sq.km.
 Sao Nicolau.....343 sq.km.
 Boa Vista.....620 sq.km.
 Sal.....216 sq.km.

SOTAVENTO

Santiago.....991 sq.km.
 Fogo.....476 sq.km.
 Maio.....269 sq.km.
 Brava..... 64 sq.km.

Small desert islands:

Branco and Raso

Small desert islands:

Cima, Grande and Luis Ameiro

These five small desert islands cover a total of roughly 13.5 sq.km.

Administratively, the country is divided into sectors called 'concelhos' and 'freguesias', each 'concelho' being made up of one or several 'freguesias'. There are presently 14 concelhos and 31 freguesias distributed as follows: S. Tiago - 4 concelhos and 11 freguesias; Fogo - 1 concelho and 4 freguesias; S. Antao - 3 concelhos and 7 freguesias; S. Nicolau, Boa Vista, Brava - 1 concelho, 2 freguesias; Maio, S. Vicente, Sal - 1 concelho, 1 freguesia. In all, the population is distributed among 9 islands, 14 concelhos and 31 freguesias (1).

2) Production of Statistical Data

To understand and analyze the available statistical data and the system which produced them - as well as economic and social activities in general - in the former Portuguese territories of Africa, the nature of the relations existing between the colonizing and the colonized country must be described.

In the course of time, the presence of Portugal has been expressed in different ways in Cape Verde; a historical analysis of the Portuguese statistical system is therefore necessary for this study.

Following the example of most European countries, at the end of the XIXth century Portugal initiated a coordinated statistical activity, in particular in the field of demographic data (the first population statistics departments were created in order to conduct population censuses). After World War II, supported by Decree No. 1911 of 1935, the Government introduced a deep reform of the statistical system which has lasted to the present day (with changes in form such as the introduction of computer processing). The system is based on the principles of administrative centralization, technical autonomy, statistical authority and secrecy and control over the publication of data. In 1966, the principle of statistical coordination was introduced, a disposition for regulating the sphere of activity of the regional statistical departments. All the statistical departments in the "overseas territories" were then integrated into the structure of the central statistical department. This was in fact only the formalization of a process which had in reality already existed for a long time. Prior to 1966, the system was designed to allow for administrative decentralization, but in practice this had never operated (1) and all the regional statistical departments had become the "extension of the central department". Statistical data in Cape Verde were produced according to a programme identical to the one adopted in metropolitan Portugal, but with the added disadvantage that the necessary technical and manpower means were not available.

(1) Table 32 presents the resident population of each administrative division in 1940, 1950, 1960, 1970 and 1980 (provisional data from the census conducted on June 2nd 1980).

(1) In particular from the technical point of view.

II. DATA SOURCES

1) Administrative Censuses (Historical Estimates: 1773-1874)

Evaluations of the population of Cape Verde made at various times since the end of the XVIIIth century indicate the following evolution:

1773.....	50,000
1807.....	58,400 [7, p.122]
1826.....	55,600 [4]
1834.....	55,800 [6, vol.1, p.1]

In the first quarter of the XIXth century, the population must have been between 50,000 and 60,000 inhabitants. Official data published since 1832 - of somewhat dubious quality, because administrative data - give the following figures [9, vol.1, p.III]:

1832.....	60,000
1862.....	89,310
1864.....	97,009
1867.....	67,357
1871.....	76,053
1874.....	90,710

There are important differences between estimates, although the fluctuations observed are consistent with the type and intensity of the events experienced by the population (famine, emigration...); these will be discussed below.

2) Statistical Censuses

The first population census in Cape Verde was conducted at the end of 1878, in coordination with a census carried out at the same time in Portugal. The second took place twelve years later, in 1890. Since that date, population censuses have been conducted regularly every ten years: in all, ten censuses which constitute a previous source of statistical data for studying the demographic and social characteristics of the population.

Table 26 presents the evolution of the population according to these censuses.

The most striking features are the strong declines observed between 1900 and 1910, 1920 and 1930 and, worst of all, between 1940 and 1950. These are due to violent crises - droughts, famines, diseases, epidemics - which periodically rocked the archipelago.

The determinants of population growth in Cape Verde are directly related to non-natural phenomena, in particular famine [5, p.115]. The first great famine appeared in 1747, affecting all the islands. Then came the famines of 1773, which caused 22,000 deaths among a population of 50,000, 1830 (30,000 deaths), 1854 (when famine was associated with smallpox and cholera), 1863 (30,000 deaths), 1900 (11,000 deaths), 1920 (24,000 deaths: roughly 15% of the population), 1940 (20,000 deaths) and 1946-48. In the absence of reliable data, the number of deaths during this last famine can be estimated at 25,000 at the least: "two years which were two centuries", a description which clearly illustrates the violence of the catastrophe in 1947 and 1948. All these famines except the latter lasted

for three years. Antonio Carreira estimated elsewhere that the drought experienced in the first half of the XXth century (1900-1948) led to over 80,000 deaths [2, p.283].

TABLE 26 - CAPE VERDE - RESIDENT AND ACTUAL POPULATIONS, 1878 TO 1980

YEAR (December 31st)	POPULATION SIZE	
	ACTUAL POPULATION	RESIDENT POPULATION
1878 (a)	99 317	--
1890 (a)	127 390	--
1900 (a)	147 424	--
1910 (b)	142 552	--
1920 (b)	159 675	--
1930 (b)	146 299	--
1940 (c)	181 286	181 740
1950 (d)	148 331	149 971
1960 (e)	199 296	199 902
1970 (f)	--	272 571
1980 (g)	288 000	295 612

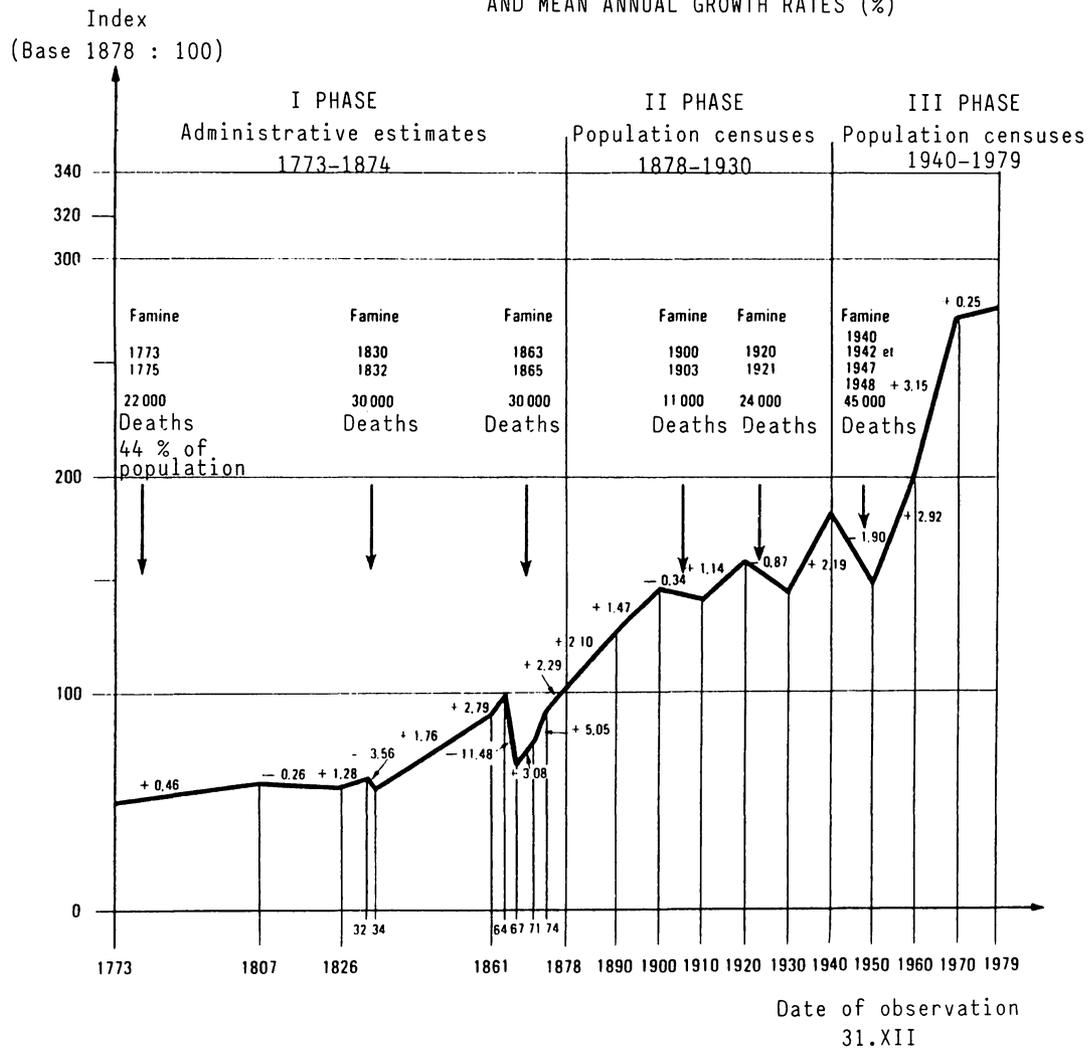
Sources: a: [11]; b: [15]; c: [16]; d: [17]; e: [18]; f: [19]; g: [20].

The famines were accompanied by considerable emigration. The consequences of these phenomena are clearly reflected in the population

trends. On the whole, we therefore consider that the evolution observed (see Fig.2), the populations enumerated and estimated and the intensity and localization of the different phenomena show an acceptable degree of consistency.

Fig. 2

CAPE VERDE - POPULATION TRENDS
(1773-1979, Base 100 in 1878)
AND MEAN ANNUAL GROWTH RATES (%)



Another aspect which is of importance is the similarity between the resident (de jure) and the actual (de facto) populations observed in the census data. As Cape Verde is a country of strong migration, and furthermore the censuses were all, apart from the last one in 1980, conducted at the end of the year, at a time - Christmas - when many emigrants come home temporarily to Cape Verde and should therefore not be counted among the resident population, the resident population should by definition be considerably lower than the actual one.

In other words, the distinction which should exist between actual and resident populations was not made at the time of the census. Consequently, there is an over-estimation of the resident population in 1940, 1950, 1960 and 1970.

At the 1980 census, a change in the date - June 2nd - and a definition of the resident population which included Cape Verdians temporarily living abroad - students, civil servants on assignment - led to an actual population which was lower than the resident population. It should be noted that these data are only provisional; to be conclusive, it is necessary to know exactly how many people temporarily absent were counted as residents. What seems certain is that if the census had been conducted at the end of the year, the resident/actual population ratio might have been inversed: the return of Cape Verde emigrants to their homeland is concentrated in the first and last quarters of the year (the emigrant population amounting to some 300,000, living in the United States, Holland, Portugal, etc.).

Despite the intensity of migration and the crises (drought-famine) experienced by the population in the course of its history (and, in recent years, demographic changes due to Independence attained on July 5th 1975), the size of the Cape Verde population doubled between 1900 and 1980.

The real intercensal growth (mean annual rate of growth total population, %) and rate of population change (base 100 in 1878) between 1773 and 1980 are presented in Fig.2.

After 1950, as a direct consequence of less famine and higher natural increase due to improved medical and health conditions, the population grew rapidly and continuously: +33% in 1950-1960, +36% in 1960-1970. However, this increase in the resident population is more apparent than real, particularly between 1960 and 1970. The population grew more slowly between 1970 and 1980, according to the data presently available (provisional data from the census of June 2nd 1980).

The mean annual rate of growth over the last thirty years is 2.27%. The trend observed, which is directly related to the country's demographic transition, also reflects improvements in coverage and in the quality of data on the state of the population and on population growth. The massive return of Cape Verdians from Angola and Sao Tome and Principe (following the decolonization of Portugal's African territories) is per se insufficient to explain such a change in population size, all the more so as this was partially cancelled out by emigration. A last explanation lies in a probable over-estimation of the 1970 census data, combined with an underestimation in the data collected for return migrants (1974, 1975 and 1976) from Angola, Sao Tome and Principe, etc.

III. CRITICAL STUDY OF SOURCES

In Cape Verde, factors related to geographical situation, communication difficulties within the most densely populated islands and technical and financial resources must be considered to understand the nature of the available statistical data.

It therefore seemed useful to assess the quality of the census operations both per se and in relation to statistics of population change, to evaluate the overall consistency of the different results.

1) The Reference Population

Since the first assessments and for all the censuses conducted up to 1970, the reference population was the actual or 'de facto' one, that is, the population present at the time of the census in each administrative district. All the variables were related to this definition of the population. The existence of a permanently high level of migration, therefore a considerable 'moving' population, means that this concept has implications for the use and interpretation of the data.

The population censuses of 1960 and 1970 adopted the notions of both actual and resident populations, the latter corresponding to all the individuals habitually living in Cape Verde. Most of the tables from the 1960 census data (published in 1978) were based on the resident population. For the 1970 and 1980 census data, processing is to be conducted at the resident population level.

2) Geographical Coverage

All the censuses since the first one in 1878 have covered the whole of the territory, the fieldwork operations being organized according to the existing geographico-administrative divisions: islands, 'concehlos', 'freguesias' and 'lugares'.

To facilitate the actual enumeration, these operations were preceded throughout the country by an 'inventory of the houses and dwelling units'. This in turn provided a list of the heads of families. The preparatory stage therefore consisted of dividing the country into 'enumeration areas or districts' based on the inventory of dwelling units. (In 1960 and 1970, within each 'freguesia', these census areas covered an average of 100 dwelling units; one census area was assigned to each enumerator). The civil administration largely contributed to organizing and carrying out the census operations, in particular recruiting the fieldworkers locally. It is probable that inadequate preliminary training of these fieldworkers is at the root of the most significant anomalies observed.

All in all, the inventory of dwelling units and heads of families and the delimitation of the census areas represented a remarkable effort, accomplished for the purpose of obtaining complete geographical coverage (without omissions or double counts) and coordinating a well-balanced operation of data collection. The success of the latest censuses, although only relative, is due to all this preparatory work.

3) The Surveys

No post-enumeration surveys were conducted to complete the census operations (by verifying the quality of the data collected).

Consistency between the different sources is slight in certain cases, but some similarities exist.

The indirect sources of population data include:

a) The agricultural sample surveys conducted since 1962, statistical operations integrated into the agricultural censuses. These surveys, coordinated by the 'Ministry of Overseas Territories', were carried out with the collaboration of the National Institute of Statistics and the Regional Department of Agricultural Statistics in Cape Verde, Agricultural Surveys Mission.

b) More recently, in April 1978 - August 1979, the Cape Verde Ministry for Rural Development conducted an agricultural survey in the framework of the operations preceding the forthcoming agricultural census. The information available is restricted to the rural population of the island of S. Tiago and is therefore inadequate for comparison.

c) The Health Services periodically made inventories of the dwelling units in Cape Verde and controlled all arrivals into the country. These data, part of which are available, provide a good source of information, although somewhat limited. These activities were recently resumed by the health authorities of Cape Verde, the direct consequence of this being the total eradication of malaria.

d) At the end of 1978, a family survey was carried out with the purpose of assessing the employment situation in the urban centres of Praia and Mindelo (1), which represent 27% of the total population of Cape Verde. A comparison of the results of this survey and the provisional data from the June 1980 population census is presented in Table 27.

TABLE 27 - CAPE VERDE - POPULATION OF THE URBAN CENTRES OF PRAIA AND MINDELO IN 1978 AND 1980

URBAN CENTRES	PETSIA / ILO SURVEY 1978		POPULATION CENSUS JUNE 2nd 1980		DIFFERENCE BETWEEN THE TWO ESTIMATES
	Population	Mean Family size	Population	Mean Family size	
(1)	(2)	(3)	(4)	(5)	(6)=(4)-(2)
Praia	40 000	5.6	39 000	5.4	- 1 000
Mindelo	30 000	5.0	41 000	5.0	+ 11 000

(1) In the framework of the Program for Employment and Technical Skills in Africa - PESA/ILO.

The reasons already mentioned - people living in communities, international and internal migrations - as well as the fact that there was a one-year interval between the two operations, may account for the differences observed. With regard to the town of Mindelo, these are very probably due to the population growth recorded. The PETSA survey data seem to be strongly underestimated (this was verified by both the mapwork operations in 1979, when the population was estimated at 35,170, and the 1980 census). In the case of Praia, the figures are very similar.

Family size was the same for both operations, which indicates a very acceptable consistency between the two series of estimates, despite the discrepancy in the collection (Mindelo).

TABLE 28 - CAPE VERDE - VARIATIONS IN POPULATION SIZE AND BALANCE OF DATA RECORDED BETWEEN 1900 AND 1980

PERIOD	INTERCENSAL VARIATION (a)	BALANCE OF BIRTHS AND DEATHS	BALANCE OF MIGRATION	OVERALL BALANCE
1900 - 1910	- 4 872	---	---	---
1910 - 1920	+ 17 123	---	---	---
1920 - 1930	- 13 376	---	---	---
1930 - 1940	+ 34 987	+ 31 214	+ 525	+ 31 739
1940 - 1950	- 31 769	- 29 134	- 23 424	- 52 558
1950 - 1960	+ 49 931	+ 58 071	- 20 273	- 37 798
1960 - 1970	+ 72 669	+ 68 328	- 27 290	+ 41 038
1970 - 1980	+ 23 041	+ 57 541	- 52 084	+ 5 457

(a) Between 1940 and 1970: resident population.

NOTE: See Table 30 for explanation of data.

4) Some Remarks on the Last Four Population Censuses

The 1940, 1950 and 1960 population censuses, the results of which were published in five volumes, are the most technically perfect of the operations conducted in Cape Verde. The results of the 1970 census have not been processed; decolonization, among other things, led to the interruption of this work.

One of the main criticisms levelled at these censuses is that they adopted methods "almost rigorously identical" to those used for Portugal.

As well as structural factors, the limits of the Cape Verde statistical departments must be taken into account: "When discussing the imperfections of the 1940 census in Cape Verde, we must bear in mind the poor financial resources of the colony, its geographical environment, the difficulties stemming from living conditions..." [8]. The report accompanying the publication of the results of the 1950 census identifies as follows the elements which most deeply affected the quality of the operations: inefficiency of fieldworkers (lack of adequate training), unsatisfactory administrative organization, misunderstanding of questions by many respondents and consequently, questionnaires wrongly filled in.

Apart from certain details concerning the data collection, the survey technique, the methods of processing, as well as the choice of definitions and classifications, were all the subject of instructions from the National Institute of Statistics in Lisbon. Referring to the 1940 and 1950 censuses, Professor Alves Morgado observed: "...these two census operations are on the whole identical and are the exact copy of the censuses conducted in metropolitan Portugal, as far as the organization and methods are concerned" [8].

Thus in most of the censuses, a great disparity is observed between the methodology adopted and the means of action available in the regional departments of the colony.

Nevertheless, despite these restrictions, the data yielded are among the best in Africa (particularly in comparison with the censuses conducted in the other former Portuguese colonies) (1).

5) Statistics of Population Change and Data Consistency

The collection of statistical data on natural increase has been systematically set up since 1930. Successive improvements have made this an appreciable source of data (although the coverage rate has not so far been assessed). The system adopted is in every aspect identical to the one used in Portugal. The main problem encountered is once more the lack of technical and financial means made available to the statistical departments. Nune A. Morgado writes: "... the central statistical department does not presently have the possibility of conducting local inspections, that is, the possibility of carrying out direct consistency

- (1) To test the reliability of the Cape Verde censuses, we calculated the Whipple index (1950) for the different islands. The following values were obtained (%):

Boa Vista: 111; Brava: 123; Fogo: 148; Maio: 117; S. Tiago: 144; Sal: 108; S. Nicolau: 118; S. Vicente: 131; S. Antao: 167. The lesser populated islands have the lowest indices, while the most populated ones (representing 80% of the population) show values ranging between 131 and 167 (mean national indice: 142), which places them among the countries with 'rough data'.

In view of the improvements introduced in the 1960 and 1970 censuses, the quality of the census data has no doubt improved. In 1950, the Whipple index placed Cape Verde in a group of countries including Algeria, Brazil, Ceylon, Costa Rica, Greece, the South African Union and Venezuela. Countries such as Bolivia, Cyprus, Egypt, Ecuador, the ex-colony of Guinea-Bissau, Mexico and Turkey represented the group with "very rough data - 175 and over".

checks on the data collected locally by administrative departments which are not specialized and moreover are already overburdened with all kinds of other charges".

Migration statistics are based on registration of arrivals and departures by the administrative authorities. As for natural increase, the quality of the data suffers from the limited capacity of action of the regional statistical departments and the lack of technical means... Various deficiencies make continuous observation of migration data impossible. Between 1900 and 1930, only data on departures are available. Since 1930 (apart from 1930 and 1932), a standardized system of collection provides both arrival and departure data. The available statistics on births, deaths, emigration and return migration (including forced emigration to S. Tomé and Príncipe) yield a series of intercensal variations and balances which is presented in Table 28.

TABLE 29 - CAPE VERDE - VARIATIONS BETWEEN CENSUS AND ESTIMATED POPULATIONS, 1930 TO 1980

PERIOD	VARIATION (A)	VARIATION AS % OF CENSUS POPULATION
1930 - 1940	+ 3 248	+ 1.8
1940 - 1950	- 20 789	- 13.9
1950 - 1960	+ 12 133	+ 6.1
1960 - 1970	+ 31 631	+ 11.6
1970 - 1980	+ 17 584	+ 6.0

(a) Based on the 'equation of consistency'.

The deficiency of data on population change between 1900 and 1930 led us to exclude this period from Table 29, which presents the differences in population size as yielded by census and estimated data for all ten-year intercensal periods since 1930.

The variations observed between 1950-1960 and 1960-1970 are most probably due to better coverage of natural increase and improved quality of census data. Between 1970 and 1980, even when such factors are considered, the important elements remain a possible overestimation of the 1970 census combined with an underestimation of return migrations and of natural increase, which has already been mentioned. We consider this assumption to be the most plausible.

IV. CONCLUSIONS

1) The various operations used to estimate and enumerate the population of Cape Verde can be divided into three distinctive phases:

Phase 1: Administrative estimates made from the end of the XVIIIth century (1773) to 1874, five years before the first population census.

Phase 2: The population censuses conducted between 1878 (first census) and 1930 (sixth census).

Phase 3: The last four population censuses (1940, 1950, 1960 and 1970) and more particularly, those conducted in 1960 and 1970.

Since July 5th 1975 (Independence Day), a certain number of attempts have been made to improve population estimates in Cape Verde. Demographic data were required for planning and reconstruction purposes, which gave new incentive to the task. Both the planning and Internal Administration and the National Statistics Departments became involved in the same methods of population estimation, although with necessarily different targets. However, the system for collecting data on population change still needs to be radically modified before it can provide a permanently updated, consistent series of estimates. A service for the collection of data on natural increase has been operating for a long time, but it has so far been impossible to provide a complete assessment of arrivals and departures (a target which has recently become the focus of statistical efforts). The estimation of both emigration and return migration remains one of the major outstanding problems. For a population of 300,000 inhabitants living in Cape Verde, the existence of the same number of emigrants represents considerable difficulties for the collection of demographic data.

2) To improve population estimates (sex, age, national and regional population size), we consider it is essential to carry out the following tasks:

a) As a population census was conducted in 1980 by the Cape Verde Government (with the financial assistance of the UNFPA African Census Program), all recent efforts have been focussed on this operation. It is the success of this census, the enumeration stage of which is completed, which will largely determine the quality of future estimates and the possibility of a proper analysis of the problems... In this perspective, the 1980 census project considers as priority demographic targets the indirect estimation of migration and the evaluation of the coverage and quality of statistics of population growth.

b) At the same time as census-taking, current population statistics should be developed and perfected, to permit updating (revisions) and thus 'keep alive' the 1980 demographic data. In the field of current population statistics, we consider that priority should be given to the following tasks:

- Revision of the system used for collecting data on births and deaths; evaluation of the accuracy of existing data.
- Setting up of a system for collecting data on population movement, covering both internal and international migrations.

-
- Collection of data on arrivals into and departures from the country. The organization of such a system is facilitated by the fact that all departures go through only two airports. A similar system could be used to cover movement between the different islands.
 - Complementary demographic surveys, for instance, fertility, migration, mortality surveys...

c) The revision of the statistical system in Cape Verde and the interest manifested by the authorities for the country's population problems certify the existence, in the very near future, of a collection problem probably tending towards an integrated system of collection of demographic data.

TABLE 30 - CAPE VERDE - POPULATION CHANGE: NATURAL INCREASE AND MIGRATION, 1901 TO 1980

PERIOD	NATURAL INCREASE			MIGRATION			OVERALL BALANCE
	Deaths	Live births	Balance of births and deaths	Departures (a)	Arrivals	Balance of migration	
1901-1910	---	---	---	18 229	1 877 (b)	- 16 352	---
1911-1920	---	---	---	29 010	4 716 (b)	- 24 294	---
1921-1930	---	---	---	6 978	1 555 (b)	- 5 423	---
1931-1940	39 395	70 609	+ 31 214	5 571	6 096	+ 525	+ 31 739
1941-1950	82 078	52 944	- 29 134	32 232	8 808	- 23 424	- 52 558
1951-1960	26 402	84 473	+ 58 071	50 866	30 593	- 20 273	+ 37 798
1961-1970	27 877	95 205	+ 68 328	75 326	48 036	- 27 290	+ 41 038
1971-1975	15 798	43 499	+ 27 701	81 285	50 451	- 30 834 (d)	- 3 133
1976-1980 (e)	42 290	12 450	+ 29 840 (c)	96 300	75050	- 21 250	+ 8 590

Sources: [12,13,14]

NOTES :

(a)- Including voluntary emigration and forced emigration (in particular to Sao Tomé and Príncipe). Since 1970, the figures concern only migration recorded at the frontiers by the Department of Statistics (D.G.E.).

(b)- Only return migration from Sao Tomé and Príncipe.

(c)- Estimation of live births and deaths for 1979 and 1980 was based on the mean values recorded between 1976 and 1978.

(d)- The values for 1974 and 1975 on the one hand and 1976, 1979 and 1980 on the other hand were calculated from the mean values of the arrivals and departures recorded in 1971-1973 and 1977-1978 respectively.

Source: Department of Statistics (D.G.E.).

(e)- Including the first five months of 1980.

TABLE 31 - CAPE VERDE - RESIDENT POPULATION: MEAN ANNUAL RATE OF GROWTH BETWEEN 1807 AND 1980 (%) AND DENSITY

YEAR DECEMBER 31st	POPULATION SIZE	MEAN ANNUAL RATE OF GROWTH %	DENSITY (a) h/km ²
1 773	50 000		12.55
1 807	58 400	+ 0.46	14.65
1 826	55 600	- 0.26	13.95
1 832	60 000	+ 1.28	15.06
1 834	55 800	- 3.56	14.00
1 861	89 310	+ 1.76	22.41
1 864	97 009	+ 2.79	24.34
1 867	67 357	- 11.45	16.90
1 871	76 053	+ 3.08	19.08
1 874	90 710	+ 6.05	22.76
1 878	99 317	+ 2.29	24.92
1 890	127 390	+ 2.10	31.97
1 900	147 424	+ 1.47	36.99
1 910	142 552	- 0.34	35.77
1 920	159 675	+ 1.14	40.07
1 930	146 299	- 0.87	36.71
1 940	181 740	+ 2.19	45.61
1 950	149 971	- 1.90	37.63
1 960	199 902	+ 2.92	50.16
1 970	272 571	+ 3.15	68.40
1 980	295 612	+ 0.85	74.18

(a) Only the inhabited islands are considered, with a total land area of 3,985 sq.km.

TABLE 32 - CAPE VERDE - RESIDENT POPULATION BY ISLAND AND 'FREGUESIA' IN 1940, 1950, 1960, 1970 AND 1980 (BOTH SEXES)

ADMINISTRATIVE UNIT		1940	1950	1960	1970 (a)	1980 (b)
Island	"Freguesias"					
BOA VISTA	S. Isabel	2 013	2 265	2 449	2 737	2 628
	S. Joao Baptista	766	720	814	790	769
	total	2 779	2 985	3 263	3 527	3 397
BRAVA	N. Sa. do Monte	2 851	2 632	2 906	2 757	2 622
	S. Joao Baptista	5 677	5 305	5 719	5 091	4 362
	total	8 528	7 937	8 625	7 848	6 984
FOGO	N. Sa da Conceição	6 318	5 262	7 432	9 133	10 061
	N. Sa da Ajuda	6 055	4 512	6 467	7 087	7 493
	S. Lourenço	7 563	5 901	8 777	9 821	9 884
	S. Catarina	3 086	1 097	2 939	3 551	3 677
	total	23 022	17 582	25 615	29 592	31 115
MAIO	N. Sa da Luz	2 237	1 924	2 680	3 451	4 103
SAL	N. Sa das Dores	1 121	1 838	2 608	5 642	6 006
SANTIAGO	N. Sa da Graça	9 390	10 084	14 475	24 883	39 794
	N. Sa da Luz	1 219	1 100	1 722	2 905	3 277
	S. Nome de Jesus	1 294	1 247	1 518	2 141	2 767
	S. Nicolau Tolentino	5 031	3 763	5 479	7 206	7 864
	S. Joao Baptista	1 274	985	1 678	2 914	3 494
	S. Catarina	20 166	14 581	22 878	31 673	32 743
	S. Salvador do Mundo	6 682	4 847	7 329	10 247	8 458
	S. Lourenço dos Orgãos	5 961	4 230	6 314	8 574	6 840
	S. Tiago Maior	7 525	5 338	8 054	12 552	16 223
	S. Amaro Abade	7 885	6 094	8 316	11 902	12 088
	S. Miguel	10 955	7 128	10 824	14 361	12 375
total	77 382	59 384	88 587	129 358	145 923	
SANTO ANTÃO	S. Antonio das Pombas	5 845	5 370	6 024	8 026	7 991
	S. André	4 347	2 778	3 972	5 333	4 165
	S. Joao Baptista	6 019	4 787	6 711	8 360	9 170
	N. Sa do Livramento	1 706	1 543	1 512	2 011	1 867
	N. Sa do Rosario	7 388	6 036	6 359	8 379	7 639
	S. Crucifixo	6 573	5 339	6 035	8 522	8 796
	S. Pedro Apostolo	4 099	2 526	3 340	4 285	3 570
total	35 977	28 379	33 953	44 916	43 198	
S.NICOLAU	N. Sa do Rosário	11 752	8 177	11 188	13 322	11 444
	N. Sa da Lapa	3 094	2 189	2 678	2 958	2 131
	total	14 846	10 366	13 866	16 280	13 575
S.VICENTE	N. Sa da Luz	15 848	19 576	20 705	31 586	41 311
TOTAL GENERAL		181 740	149 971	199 902	272 200	295 612

(a) There is a difference of 371 between the total for all freguesias and the total for the country.

(b) Provisional data from the census conducted on June 2nd 1980.

**TABLE 33 - CAPE VERDE - PROVISIONAL DATA FROM THE CENSUS OF JUNE 2ND 1980:
RESIDENT POPULATION BY SEX, NUMBER OF FAMILIES AND NUMBER OF
WELLING UNITS BY ISLAND AND CONCELHO**

ADMINISTRATIVE UNIT ISLANDS AND CONCELHOS	RESIDENT POPULATION			NUMBER OF FAMILY	NUMBER OF HOUSING UNITS
	Total	Male	Female		
BOAVISTA	3 397	1 671	1 726	760	782
BRAVA	6 984	3 199	3 785	1 489	1 752
FOGO	31 115	14 239	16 876	6 167	6 108
MAIO	4 103	1 866	2 237	845	848
SAL	6 006	3 006	3 000	1 256	1 359
SANTIAGO					
Praia	57 196	26 956	30 240	10 706	10 486
S. Catarina	41 201	17 963	23 238	8 246	8 333
S. Cruz	23 063	10 638	12 425	4 537	4 476
Tarrafal	24 463	10 288	14 175	4 926	5 073
Total	145 923	65 845	80 078	28 415	28 368
SAN ANTAO					
Paul	7 991	3 993	3 998	1 403	1 378
Porto Novo	13 335	6 652	6 683	2 475	2 618
Ribeira Grande	21 872	10 716	11 156	4 242	4 217
Total	43 198	21 361	21 837	8 120	8 213
SAN NICOLAU	13 575	6 480	7 095	2 787	2 818
SAN VICENTE	41 311	19 062	22 249	8 761	8 758
TOTAL GENERAL.	295 612	136 729	158 883	58 620	59 006

Source: [20]

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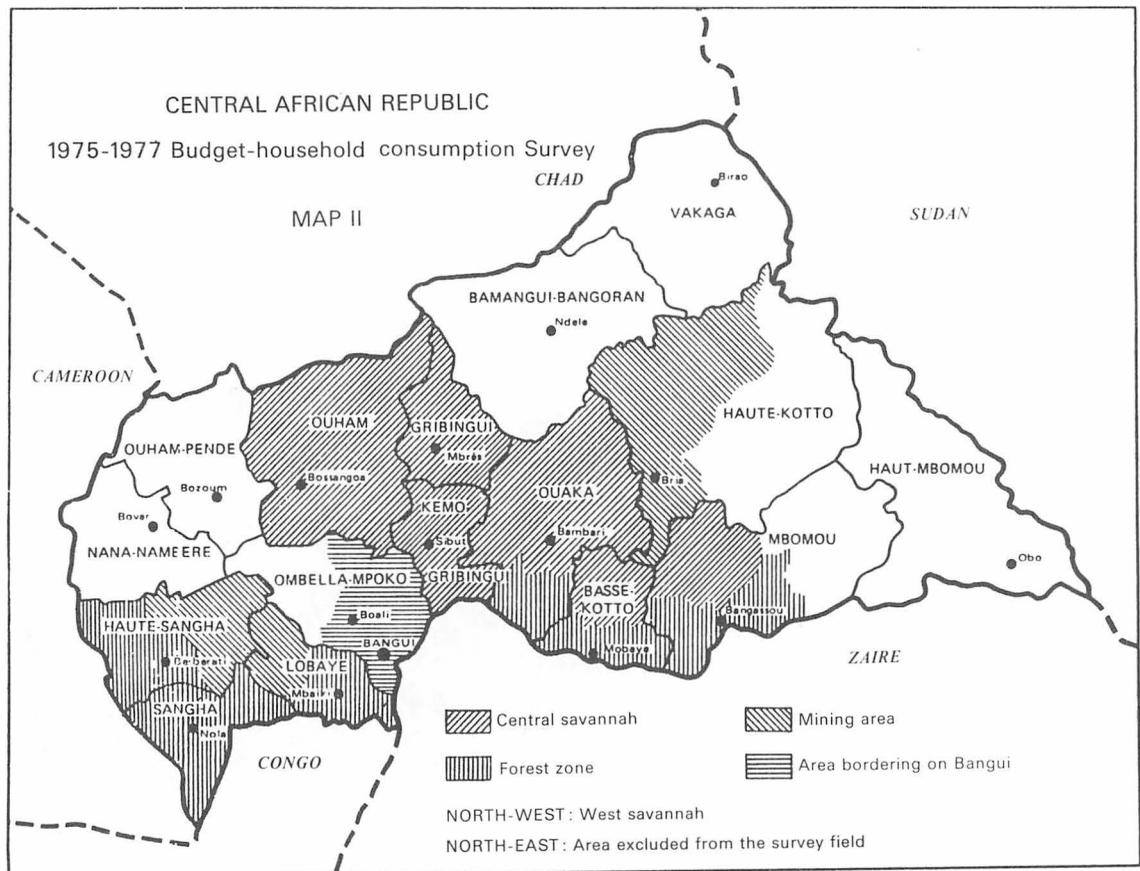
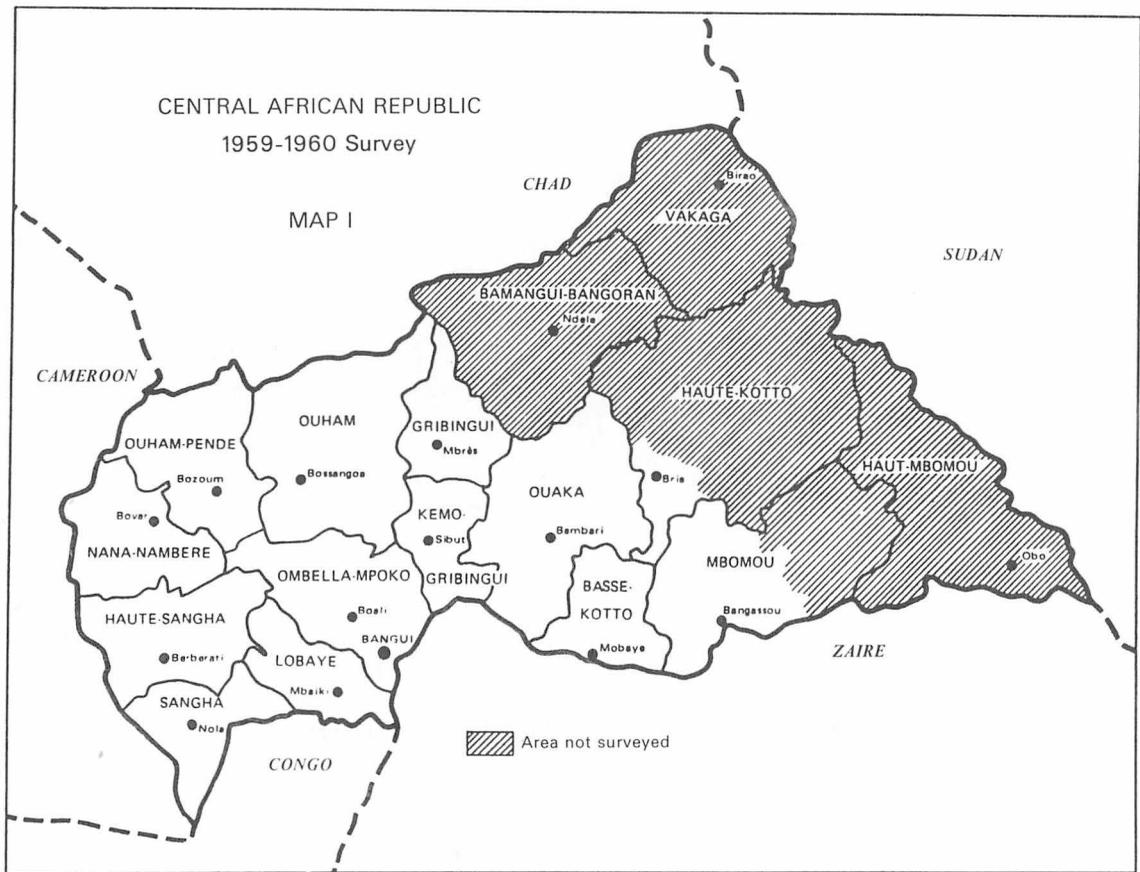
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CENTRAL AFRICAN REPUBLIC

DANIEL PANTOBE

MARCH 1983



C E N T R A L A F R I C A N R E P U B L I C**I. INTRODUCTION**

The Central African Republic is a non-coastal country of Equatorial Africa.

Covering an area of 623,000 km² it is bounded on the west by Cameroon, on the north by Chad, on the south by Zaire and Congo and on the east by Sudan.

Its geographical features consist of a vast dorsal plateau which runs from east to west with an average altitude of 300 to 500 metres, bounded on the north-west by the Massif of Yadé at the boundary of the Adamaoua plateau of Cameroon and on the north-east by the Massif of Fertyt (approximately 1,400m). Numerous water sources which have given their name to almost all the administrative districts of the country take their source from this plateau and run northwards towards the Chari basin and Lake Chad, and southwards towards that of Oubangui and M'Bomou. In the extreme east the Sudan border runs along the watershed with the Nile basin.

This explains why the former French colony was named Oubangui-Chari.

The ecology is directly linked to the rainfall pattern, marked by a dry period and a major rainy season which are more or less clearly differentiated according to the latitude. The dry season, which centres on January, lasts longer as the northern area is approached. The rainy season starts towards the month of March and ends in November with the heaviest rainfall in August and September in all areas. The annual rainfall varies from 1,000 mm to 1,600 mm. The climate is therefore equatorial in the south, intertropical in the central area and sub-Sahelien in the extreme north. Apart from the southern forest areas, most of the land is a more or less woody savannah area.

This country, which became officially independent on August 13th 1960, even though it had been declared the Central African Republic on December 1st 1958, was classified by the General Assembly of the United Nations as being one of the Lesser Developed Countries.

The GNP per inhabitant according to official estimates fell from 56,760 F (CFA) to 46,180 F at constant prices over the period from 1977 to 1980. It is at present estimated at 300 \$ US at current prices. Central Africans, the majority of whom live in villages of less than 200 inhabitants along the communication routes, devote themselves essentially to subsistence agriculture. The main subsistence crop is manioc, except in the north-east where millet constitutes the basic diet. According to a household budget and consumption survey in 1975-1977, the daily food intake of the average Central African was approximately 1,635 calories.

Livestock farming has developed in the west and central east, but trypanosomiasis has slowed down the progress. The present herd of approximately 1,000,000 is kept by the Bororo nomads.

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Central African Republic exports coffee, wood and diamonds, as well as cotton and tobacco. Being entirely enclosed by bordering countries proves an unfavorable factor for development. The port of Pointe-Noire in Congo is 1.800 km from Bangui, and Doula in Cameroon is 1.400 km away.

As a member of the UDEAC (Union Douanière et Economique de l'Afrique Centrale) along with the People's Republic of Congo, the United Republic of Cameroon and the Republic of Gabon, the Central African Republic forms part of the Lomé Convention between the 'ACP' countries and the EEC. The currency is the CFA (African Financial Community) franc.

II. SOURCES OF POPULATION DATA

Various archeological indicators have revealed that the origins of the population of the Central African savannah go back far in the mists of time. Implements of the Pebble culture were excavated, traces of the lithic sangoan technology originating in Eastern Africa. For many years now a researcher has been studying the megalithic civilization of Bouar (Nana-Manbéré).

Historical rather than geographical factors explain the present location of the population.

For the recent historical period, the present configuration of the population shows that it has been marked by numerous migrations, population impacts and invasions, the last being that of French colonization which began during the last quarter of the 19th century. The ethnic division at the time in Central Africa was more or less the same as that of today. Bayas and Mandjias in the west, Bandas in the centre neighbouring with the riverside groups of Oubangui (Banziris, Sangos, Yakomas...), Nzakaras and Zandés in the east on the banks of the MBomou. The north and north eastern areas, now almost empty of inhabitants, were no doubt populated by Banda tribes who were decimated by the razzias of the 'Sultan' slavers of Dar-E! Kouti in the north (the most famous being Senoussi and Rabah). The south was populated by Nzakaras and Zandés; the most famous, Bangassou, Rafai and Zemio, gave their name to the towns in the area.

1) Before Independence

In 1906, the Ministry of the Colonies in Paris assessed the population of Oubangui-Chari to be 2 million inhabitants; Georges Bruel [1 p.350], administrator of the colonies and former head of the geographical department of the 'AEF' from 1909 to 1911, estimated the population to be 1.375.000 in 1911. This was based on the 407.900 inhabitants enumerated (excluding children) in the areas actually controlled by France: areas which, in the first years of colonization, only covered a small part of the land. It should be noted that at this time, the surface area of the colony was appreciably less than the area of the Central African Republic today, given that part of the land had been handed over to Germany following the Convention of November 4th 1911.

The administrative censuses of the Central African populations were organized from the very beginning of colonization in the 'pacified' areas (consequently subject to taxation). In the areas where the French authorities exerted 'a certain influence', they made indirect estimates from information obtained by their native agents. The unsubjected regions,

which they entered only by chance and with arms, underwent quite arbitrary assessments. The census was however carried out carefully in the districts where it was organized, as the extract from a letter which dates back to 1910 given in annex 1 shows.

Administrative censuses were the only source of population data in the Central African Republic right up to the 1959-1960 Demographic Sample Survey.

2) After Independence

At this time, collection procedures multiplied.

- Principal sources : the 1959-1960 Population Survey together with the 1960-1961 Agricultural Survey, the General Census of December 8th-22nd 1975, and the 1976-1977 Budget-Consumption Survey;
- Secondary sources : these include the improved administrative censuses, said to be 'exhaustive' or 'instantaneous', agricultural sample surveys, enumerations of major endemics.

a) Improved Administrative Censuses

After Independence, especially between 1960 and 1970, the Government of the Central African Republic endeavoured to establish an improved administrative census which was intended to replace the former system of the village monographs. This new census was tested in the central area at the time of the preparatory operations of the 1959-1961 sample surveys.

In this new system, the census register gave way to individual schedules grouped together in compound schedules which in turn constituted a village file.

In the individual schedule the following information was recorded: complete civil status, dependents, economic activity, education, cultivation and firearms held.

The objective pursued by these 'exhaustive censuses' was to constitute a basis for civil registration so as to deliver birth and death certificates at the time of annual updatings. It was also to establish electoral lists, conscription lists and, finally, to help economic and social planning.

The census procedure consisted of covering the whole territory village by village. Enumeration was conducted hut by hut for residents only. The enumerators and an inspector were expected to cover approximately 20,000 people over a period of 3-5 months.

Several 'exhaustive' censuses of this type were undertaken. Besides that of 1959 in the central area, there was also the unfinished 1961-1963 census. Its only aim was to give figures for the eastern area where there had been no survey in 1959-1960. Unfortunately the district of NDélé (now Bamingui Bangoran) was not enumerated. Then came the so-called 'instantaneous' censuses of 1965 and 1968 for which it is impossible to find the slightest methodological information, except that there was nothing 'instantaneous' about them.

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These operations enabled the population size of the Central African Republic to be officially determined at 2.088.000 inhabitants in 1965 (Bangui: 237.971) and 2.255.536 in 1968 (Bangui: 301.793). It is generally thought that the figures actually obtained were increased by 50% for Bangui and 25% for the rest of the country.

The first signs of population inflation date from this period and show their effects over the entire period reviewed in this report.

b) The Agricultural Surveys

Annual agricultural sample surveys have existed since 1963. From 1963-1981 results have been published regularly.

TABLE 34 - CENTRAL AFRICAN REPUBLIC - EVOLUTION OF POPULATION SIZE BETWEEN 1906 AND 1976 (DEC. 31ST OF EACH YEAR)

YEAR	POPULATION (thousands)	YEAR	POPULATION (thousands)	YEAR	POPULATION (thousands)
1906	2 000 (1)	1950	1 075.1	1960	1 227.2
1911	1 375 (2)	1951	1 078.8	1961	1 244.8
1921	756	1952	1 088.8	1962	1 279.6 (8)
1926	857	1953	1 089.0	1963	1 306.0 (8)
1931	871	1954	1 098.9	1964	1 338.0
1936	940	1955	1 113.7	1965	2 088.0 (9)
1939	975.8	1956	1 134.6	1966	1 437.0 [4]
1944	1 054.7	1957	1 139.5	1968	2 255.0 (10)
1945	1 039.0	1958	1 171.2	1975	1 833.3 (11)
1946	1 069.7	1959	1 187.1 (3)		1 822.4 (12)
1947	1 062.0		968.9 (4)		1 817.8 (13)
1948	1 073.4		1 016.9 (5)		2 057.0 (14)
1949	1 067.0		1 154.9 (6)	1976	2 088.0 (15)
			1 202.9 (7)		1 771.7 (16)

- (1) First evaluation of the Ministry of the Colonies.
- (2) Estimate by G. Bruel.
- (3) Administrative census.
- (4) 1959-1960 survey; de facto population actually recorded.
- (5) 1959-1960 survey; resident population actually recorded.
- (6) 1959-1960 survey; de facto population including the areas where the survey was not conducted.
- (7) 1959-1960 survey; resident population including the areas where the survey was not conducted (official figure).
- (8) 1961-1963 general population census.
- (9) Instantaneous census of 1965 - overestimated; 4 give 1.370.0.
- (10) Instantaneous census of 1968 - overestimated.

-
- (11) 1975 census: de facto population and institutional population on December 15th.
 - (12) 1975 census: total crude de facto population on Dec.15th.
 - (13) 1975 census: de facto population corrected for rural sample bias on December 15th.
 - (14) 1975 census: de facto population on December 31st. official figure.
 - (15) 1975 census: resident population on December 31st. official figure.
 - (16) Budget-consumption survey, population estimate for the survey field on January 30th.

These surveys give estimates of the population living in rural areas except, for the most part, for the eastern area. The town of Bangui and the cattle breeding areas are also excluded from the survey field. This makes it hardly possible to use the figures obtained, given the uncertainties concerning the population in these areas. Furthermore, there were considerable sampling errors. These surveys, useful as far as agriculture is concerned, are of very little help for the problem we are interested in. The world agricultural census which was carried out in Central Africa in 1973 presents almost the same drawbacks.

c) Enumerations of the Great Endemics

This source does not reveal anything new, since in their medical prospecting the mobile teams use figures from the administrative censuses to assess the rate of coverage. It is likely that in some areas the figures are better than those of the administrative census, but for other areas, this is not the case. It all depends on the coverage, which tends moreover, to decrease regularly. Furthermore, although for a certain period, the entire territory was covered in two years, the length of time taken has tended to increase considerably over the last few years.

Table 34 gives the crude results of the different administrative and statistical collections which were carried out in the Central African Republic up to 1975.

III. CRITICAL STUDY OF SOURCES

This is limited to the main sources.

1) Before Independence

The population statistics for the entire country were obtained from the compiling of the results of the administrative censuses (in theory, annual), annexed to the economic reports of the district chiefs. The state of the population was drawn from village monographs (or population or village registers) which were brought up-to-date during the rounds. As these rounds were carried out at irregular intervals, often figures of previous years (in some cases as much as five years) would be repeated several times. However, in the Central African Republic the well-known weaknesses of the administrative censuses were made worse by continual modifications of the country's administrative boundaries, both external and internal.

As regards bordering countries not under French sovereignty, problems with England and Belgium were settled between 1885 and 1908 (1). On the other hand, the frontiers with the neighbouring territories of Chad and Mid-Congo which formed part of the "AEF", were constantly changing. The frontier areas of each of these territories were governed by one or the other of the colonies according to the period.

The internal boundaries of the administrative districts and their designations were constantly changing. PENEL [8] calculated that in 54 years, from 1904 to 1958, there was a total of 239 texts in Oubangui-Chari bearing modifications to the boundaries and designations of one or several of the administrative districts, an average of more than four per year. There were only eight years without texts ordering territorial modifications: 1908, 1924, 1927, 1941, 1942, 1949, 1953 and 1955. After the Second World War the external borders were only finally consolidated in 1950. Internal modifications continued after Independence. The most recent date back to 1976-1977.

It is clear that the administrative censuses could but suffer on account of these disorders in a country where many villages bear the same name, and, furthermore, where there is so much mobility of populated areas. Several tens of villages disappeared, or were created, or changed their name and/or administrative district each year.

2) After Independence

a) The 1959-1960 Population Survey

* The programme of the fieldwork for this operation, coupled with the 1960-1961 agricultural survey, was as follows:

- Central Oubangui area from July 6th to October 30th 1959.
- Western area, April 1960 to July 30th 1960.

* The method was a two-stage random sample with a stratification of the study area according to ethnic group and cultivation: the demographic sample corresponded to the first-stage sample and the agricultural sample to the second.

The sampling frame was constituted by the list of villages in the country, updated during the first semester of 1959 during the experimentation of a new type of 'improved' administrative census.

The sample covered approximately 102,000 people out of the total of 960,000 estimated by the improved administrative census for the survey field. This was taken after the constitution of primary units of 250

(1) Apart from the Convention of November 4th 1911, in force until 1918, which acknowledged that an area of approximately 46,000 km² west of Oubangui-Chari was under German authority.

The Franco-British agreement in 1889 and the Franco-Belgian one in 1894 enabled the eastern frontier to be fixed with Sudan and the southern one with Belgian Congo (now Zaire).

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people, which necessitated the grouping together of small villages (the most numerous) and the division of those of a larger size.

* The survey field was limited to the afore-mentioned areas. The town of Bangui and the entire eastern area were excluded, that is to say, the prefectures which are now known as Bamingui-Bangoran, Vakaga, Haute-Kotto (apart from the sub-prefecture of Bria), Haut-MBomou, the sub-prefecture of Rafai, a total of more than 264,000 km² out of the 622,436 km² in the territory.

Various nomadic groups such as the Babinga pygmies and the Bororo livestock farmers in the districts of the central region (Bambari, Ippy, Alindao, Mobaye) and the west (Bouar, Baboua, Bocaranga) were also excluded.

The results published per area of settlement (population centres and the Bush) and per region (Centre, River, West) were globally the following for December 31st 1959.

Area surveyed:

. Residents present	964 040	
. Residents absent	52 870	
- 'De jure' population	1 016 910	
. Visitors		4 900
- 'De facto' population		968 940

Areas not surveyed:

. Town of Bangui	80 000
. Eastern area	88 000
. Nomads, miscellaneous	40 000
TOTAL	186 000
OVERALL TOTAL	1 202 910

1 154 940

The figures for the areas where the survey was not conducted are, as a rule, equal to those of the improved administrative census increased by 6%, which is the overall rate of underestimation for the previous administrative census revealed by the survey.

Finally, the 1959-1960 population survey only focussed on 60% of the territory and 80% of the population of the Central African Republic.

In order to assess the significance of the figure put forward (1,200,000), the validity of the figure given for the area where the survey was conducted and of the estimates made for areas where the survey was not conducted, must be considered.

* The factors liable to have influenced the quality of the collection result from the combination of conducting the survey in two parts, its length, 114 days for the central area, 90 days for the western area, and its coupling with the agricultural survey, which led to proceeding during the rainy season. This period is when travelling the most difficult, but also when a significant part of the population of the villages and the

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largest centres disperses to go and cultivate the fields, to hunt or to fish.

The provisional survey report for the Central-Oubangui area points out this great mobility. It assessed the proportion of inhabitants possessing two residences at 15%. Thus, Bambari, Alindo, Bangassou, ... had a floating population, who, towards the month of July, returned to their semi-permanent farming villages so as to be spared from long walks.

TABLE 35 - CENTRAL AFRICAN REPUBLIC - RESULTS OF THE ADMINISTRATIVE CENSUSES FROM 1954 TO 1962 (thousands)

DISTRICTS	SURFACE AREA KM ²	1954	1955	1956	1957	1958	1959	1960	1961	1962
NDELE	58 200	17.9	17.5	19.1	17.2	17.1	17.0	18.6	18.6	18.6
BIRAO	45 500	7.7	7.7	7.1	7.7	8.0	7.8	8.1	8.5	9.7
YALINGA	43 689	...	...	...	5.4	5.6	5.3	...	...	5.1
OUADDA	32 389	7.3	7.1	8.5	3.6	3.1	2.9	...	...	3.8
RAFAI	27 885	10.8	10.7	10.1	10.2	9.0	9.7	...	...	9.6
OBO ZEMIO	56 630	21.8	20.7	20.3	20.1	18.6	18.6	18.6	18.6	18.6
TOTAL	264 293	65.5	63.7	65.1	64.2	62.9	61.3	...	...	65.4

There is no doubt that all these factors played a role in the difference observed between the figure for absent residents and the one for visitors. This indicates errors in the collection, since the proportion of Central Africans who left their country was extremely low. In fact, 2.8% of the residents absent were declared as being out of the Central African Republic. Therefore if it is certain that the visitors, who represented 9.2% of the absent residents, were wrongly recorded, it is also very likely that there were omissions or double counts, without however being able to say which prevailed.

The areas where the survey was not conducted in the east are shown in the following table, in which the results of the administrative censuses from 1954 to 1962 are given. The 1975 surface areas, valid for 1959-1960, are indicated.

Inasmuch as these figures can be considered reliable, the assessment made in 1959-1960 seems to be correct, although slightly too low.

**** CENTRAL AFRICAN REPUBLIC ******TABLE 36 - CENTRAL AFRICAN REPUBLIC - POPULATION OF THE TOWN OF BANGUI FROM 1900 TO 1967 (DEC.31ST OF EACH YEAR)**

YEAR	POPULATION	YEAR	POPULATION	YEAR	POPULATION	YEAR	POPULATION
1900	2 000	1936	24 000	1950	60 000	1957	80 000
1916	8 000	1937	20 000	1951	66 000	1958	85 000
1922	15 506	1939	23 000	1952	72 000	1959	80 000
1927	20 166	1940	23 912	1953	80 000	1960	83 000
1930	22 232	1944	21 595	1954	80 000	1961	83 000
1931	20 000	1945	25 648	1955	72 000(a)	1962	89 000
1932	16 000	1948	45 000	1956	80 000	1964	127 000
						1967	140 300

a) African Census, December 15th 1955

The given figure of 80,000 inhabitants for the town of Bangui also seems to be slightly underestimated, as shown in the Table 36. A figure of 90,000 inhabitants would have probably been closer to reality.

For the Bororo nomadic livestock farmers and the Babinga pygmies, there is no evidence available to judge the plausibility of the figure given. The estimate provided has to be accepted.

In all, it can be considered, as the authors of the report suggest [7], that the 1959-1960 survey gave a 'de jure' population with an approximation of 5% - no doubt an underestimation - for the population of the areas where the survey was conducted. This population represented approximately 80% to 85% of the total population present in the territory on December 31st 1959.

b) The 1975 Census

This census, covering the entire territory of the Central African Republic, was financed and supervised by the United Nations. Since this has already been the subject of a methodological monograph [12], the main characteristics only will be mentioned.

*** Schedule**

- 1972, elaboration of the main lines for the project.
- From March to December 1973, preliminary work.
- From December 1973 to October 1974, cartographic work.
- January 1975, pilot census.

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- March 18th 1975, interruption in the census work by order of the Government of the Central African Republic, when it was at the final preparations stage, the field enumeration being intended for April 1st-15th 1975.
 - May 9th 1975, resumption of the work.
 - December 8th-22nd 1975, general enumeration of the population.
 - January 1976 - September 1978, data processing.
 - March 1977 - 1st semester 1981, evaluation of the census, partial publication of the results. Decision to interrupt the work by the United Nations during the 1st semester 1981.

* Methodology

A general census of the total population. The reference population was the 'de facto' population: residents present plus visitors; absent residents were not enumerated.

Enumeration: the household sheet had 19 columns. It was decided that the procedure would be the following:

- the first ten columns on the household sheet would concern the total population of the country, whatever the place of residence (name and forenames, sex, age, place of birth, nationality, marital status, literacy and education);
- the following nine columns (migration, fertility, economic activity) concerned the entire urban population and a sample of 1/10 of the Rural Enumeration Areas (R.E.A.)

* There were numerous factors which were likely to have influenced the quality of the collection.

Before Enumeration

The cartography is considered to have been of a good standard, although it underwent certain difficulties which led to the dismissal of the first teams followed by a new recruitment and also a change in the method used, to accelerate the work.

Interruption of the census work was originally due to an 'error' committed by the enumerators of the Budget-Consumption survey (which was being conducted at the same time) who questioned the sister of the Head of State on her income. This interruption, which arose when all equipment, documents and fuel reserves were prepared, completely disorganized the logistics and the personnel on site and was prejudicial to the enumeration of December 1975, which took place almost a year and a half after the cartography.

During Enumeration

The DESERT report [3] put forward the following factors of omission:

- The dry season is when population groups of hunters and fishermen move and settle together around water points which are almost impossible to find. It is also the time of rest and free time for cultivators, the time for travelling;
- Ignorance of the dwelling places of many nomadic groups who were not approached at the right time;
- Existence of pygmy groups outside the socio-economical structure of the country, a minority of whom were contacted;
- Extremely inopportune visits to certain prefectures of the country by employees of the tax offices led to a part of the population fleeing;
- A lack of pirogues to take the enumerators to the riverside localities;
- Transfer, organized by local authorities, of certain population groups of a prefecture, to greet the Head of State on visit;
- The existence of quite large population groups said to be 'hostile', making it impossible for these settlements to be visited.

The report also shows that the atmosphere was extremely unfavourable. Regional authorities, in certain cases, refused to collaborate and put great pressure on the personnel to obtain fuel. As for the Government, it did not offer any vehicles for the census.

After the Enumeration

- The premises of the central census bureau were too cramped to correctly organize the coding;
- The data processing capacity of the National Office of Data Processing (ONI) of the Central African Republic was insufficient. Consequently, to accelerate the pace of work, punch cards were not checked.
- Lack of training for the computer specialists of the ONI in the processing of population data. The first tables were completely erroneous due to discrepancies which were not detected in the columns punched on the coding card.
- Contesting of the provisional figures by the Government, hence pressure to increase data at all levels for fear of dissatisfying the authorities.

Factors Revealed by the Assessment Analysis

H. SIMONET, a demographic analyst, brought many planning errors and important negative statistical factors to the fore. The most noteworthy concerned the actual realization of the enumeration and the extraction of collected data.

H. SIMONET studied the consequences of using two successive sampling procedures (instead of one as was originally intended) for the observation, then the coding of data in rural areas.

- Firstly, the observation of all the questions on the household schedule planned for 1/10th of the 'REA', (Rural Enumeration Areas) was only approximate. Only the first ten columns of the household schedule were completed for the sub-prefecture of Baboua, which formed part of the sample (approximately 42,000 people).
- After the 'REA' sample was drawn, which took place before the census, 32 communes and 5 sub-prefectures were not represented. This was only discovered after the census. It was therefore decided to draw an additional sample so that the rural zone of each sub-prefecture was represented by at least one 'REA'. However, this was not possible for the rural part of the sub-prefecture of Ouadda-Djallé (Vakaga), where any hope of a census was put off by floods. In any case, the 'REA' represented in this additional sample could only give the characteristics in the first ten columns of the household sheet, since they did not form part of the first sample drawn.
- The extraction of data, for various reasons (cost, lack of premises enabling the correct running of an office of a reasonable size for coding, and a lack of capacity in computer processing) was exhaustive (620,000 people) for the urban areas but only dealt with the 'REA's covered by the two samples drawn, approximately 100,000 people. The incomplete information collected in the other 'REA's' (9/10 of the total) was, contrary to what was originally intended, purely and simply abandoned. Furthermore, 30 files on Rural Enumeration Areas were stolen in July 1976, 16 of which had not been coded (one 'REA' and 15 urban 'EA's (Enumeration Areas), nine of which were in Bangui). They were replaced by geographically neighbouring 'EA's which were doubled.
- H. SIMONET unambiguously showed that the 'REA' sample was not representative, by taking the sex and age data from the household schedules of the 9/10 of the Rural Enumeration Areas initially abandoned.

The distortions in the total numbers were quite low (0.38%), but much more serious for the age-sex distribution of the prefectures and sub-prefectures. Although these biases could be put right for these two points at the administrative district level, a general rectification implied reviewing the entire data processing operation, which was of course ruled out.

Ultimately, the 1975 data collection in the Central African Republic was a poorly conceived and hybrid operation, having the characteristics of a census for urban areas and that of a non-representative sample for rural areas, but this was fortunately rectified.

However, and in anticipation somewhat of the third part of this report, it appears that despite what has been said above, valid figures were paradoxically obtained for the population actually recorded on the household schedules in 1975. The best proof is the result, recalled above, of the extraction of the 'REA's by the demographic analyst.

This should not come too much as a surprise. Firstly, since it was necessary to justify the concessions made to the Government, who exerted

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extremely strong pressure, so as to obtain a figure which was as close as possible to the desired figure of 3,055,000 inhabitants. An attempt may also have been made to profit from the circumstances (which were objectively extremely difficult) so as to try to cover initial planning errors by insisting on certain factors rather than on others. Whatever the case, it seems prudent to keep all this in mind so as to more accurately assess the section devoted to factors having influenced the quality of the data collection.

Thus, the results of the 1975 census were the object of what has to be called various manipulations to satisfy the Head of State at the time.

In March 1975, a technical adviser of the United Nations "analyzed the figures" from the provisional results obtained by manual extraction, so as to obtain the most accurate figure for the population nominally recorded, with the aim of presenting it to the Government of The Central African Republic for official approval [3 p. 44]. Table 38 is the fruit of this analysis.

A more precise ulterior estimate gives the following:

Total population actually recorded	1,833,322
Including institutional population	10,943
Total 'de facto' population	1,822,379

**TABLE 37 - CENTRAL AFRICAN REPUBLIC - OFFICIAL RESULTS OF THE CENSUS ON
DECEMBER 15th 1975**

RESIDENCE STATUS (a)	TOTAL	ENUMERATED	NON ENUMERATED
a) Residents, present	1 900 970	1 800 970	100 000
b) Residents, absent	184 930	0	184 930
c) Visitors	153 640	16 812	136 828
Resident Population (a + b)	2 085 900	1 800 970	284 930
Actual Population (a + b)	2 054 610	1 817 782	236 828

(a) Institutional population excluded.

Using these results and correcting the biases due to the rural survey, H. SIMONET obtained the following basic figures:

Total 'de facto' population	1,817,782
Including visitors	16,812
Residents present	1,800,970

From this corrected total, elements in Table 38 and certain ratios taken from the results of the 1959-1960 survey, H. SIMONET obtained the elements in Table 37 which were officially approved by the Government.

It would take too long to give a detailed explanation as to how these figures were obtained. One example will be taken. The absent residents who were not enumerated were obtained by multiplying the figure which was actually observed for visitors in 1975 (16,812 after correction) by the ratio observed in 1959-1960 between the absent residents and the 'visitors' ($52,870/4,900 = 10.78$ rounded to 11), giving a total of 184,930.

Based on an annual growth rate estimated at 2.47% H. SIMONET obtained, for December 31st 1975, the figures of 2,088,000 for the resident population and 2,057,000 for the 'de facto' population. The age-sex distribution of the resident and 'de facto' populations, established by the latter, after correction of the rural survey bias, can be found in Table 39.

c) The Household Budget-Consumption Survey 1975-1977

This was a sample survey organized with the material and financial assistance of the United Nations Development Programme (UNDP).

* The programme for this survey, conducted in two rounds, was as follows:

- first round from September 1975 to June 1976
- second round from June 1976 to February 1977.

The survey was carried out in the town of Bangui from August 1975 to January 1977.

* The methodology adopted was that of two-stage random sampling with a stratification of the survey area.

The census areas of the 1975 census, taken as Primary Units (PU) in this circumstance, served as a first-stage sampling frame. The Secondary Units were constituted by Budgetary Units defined in the household list of the Primary Units sample. The Budgetary Unit did not necessarily correspond to the household.

The survey area was first divided into six sectors including the town of Bangui. For five of these sectors, excepting that of Bangui, there was an urban stratum and a rural stratum. There was therefore a total of six urban strata and five rural strata.

The sampling ratio at the first stage was 1/10 in the urban areas and 1/15 in the rural areas. At the second stage, ten Budgetary units were selected at random in the field in each Primary Unit sample.

* The geographical field of the survey did not include the East of the territory of the Republic of Central Africa except, however, the sub-prefecture of Ouadda in the prefecture of Haute Kotto which came under the fourth mining sector. The area of study was therefore larger by 32,389 km² than that of the 1959-1960 survey and less than that of the 1975 census by 231,840 km².

The 'de facto' population of this sub-prefecture was 5,386 inhabitants on December 15th 1975.

* The factors which influenced the data collection and of interest in this report do not give rise to any particular comments, except the problem, which the report put forward, of finding in the field the Enumeration Areas of the 1975 census. This problem seems to have been solved satisfactorily and the sample seems to have been drawn accurately.

* The results for the population were as follows:

Population for the area studied	1,771,679
Including :	
Rural areas	1,124,222
Urban areas	402,209
Town of Bangui	245,248

IV. CONSISTENCY BETWEEN THE DIFFERENT SOURCES

For reasons already mentioned, the figures from the administrative censuses could only give doubtful approximations for the population size of the Central African Republic. However, quite an impressive similarity can be seen between the 1959-1960 survey and the administrative census of 1959, for which the figure (1,187.1) was found to be between the two estimates given by the survey (1,154.9 and 1,202.9). It should, however, be recalled that these two operations were not independent. The first attempts at improving the administrative census had in fact begun in 1959, within the framework of the preparation of the surveys to follow.

Likewise, the figure for the 'de facto' population actually recorded by the 1975 census (the bias of the rural survey having been corrected), was very close to the figure given by the budget-consumption survey of 1975-1977. These figures stood at 1,740,183 and 1,771,679 respectively for, of course, the part of the territory common to both operations. Taking differences in objectives, methods and definitions into account, it is a good result, but here again, the two collections were not independent.

In all, there are therefore two plausible population estimates separated by slightly less than 16 years, to which a third data can be added, the rate of natural increase given by the 1959-1960 survey.

According to this survey, the birth rate was 48 per 1,000 and the death rate 26 per 1,000, a rate which the authors of the survey report thought to be underestimated and probably closer to 30 per 1,000. As migration was insignificant, the crude rate of natural increase for 1959-1960 was set at between 18 and 22 per 1,000.

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TABLE 38 - CENTRAL AFRICAN REPUBLIC - GENERAL POPULATION CENSUS (December 8th-22nd 1975): TOTAL POPULATION OF THE COUNTRY PER PREFECTURE (a)

PREFECTURES, NATIONAL CAPITAL AND DISTANT AREAS	TOTAL	POPULATION NOMINALLY ENUMERATED (b)			OMITTED POPULATION 8 % (c)	ESTIMATED POPULATION (d)	POPULATION IN DISTANT AREAS (e)
		Both sexes	Men	Women			
TOTAL	2 001 679	1 820 559	886 523	934 036	145 645	10 475	25 000
Bamingui-Bangoran	24 778	22 665	10 874	11 791	1 813	300	
Bangui (Capitale)	278 238	251 475	125 596	125 879	20 118	6 645	
Basse-Kotto	156 345	144 764	68 286	76 478	11 581		
Gribingui-Economique	64 257	59 497	28 806	30 691	4 760		
Haut-Mbomou	27 278	25 257	11 924	13 333	2 021		
Haute-Kotto	41 723	38 632	19 888	18 744	3 091		
Haute-Sangha	173 285	160 449	80 797	79 652	12 836		
Kemo-Gribingui	64 060	59 315	28 493	30 822	4 745		
Lobaye	138 593	128 327	63 324	65 003	10 266		
Mbomou	106 009	98 156	46 651	51 505	7 853		
Nana-Mambere	154 188	142 767	70 600	72 167	11 421		
Ombella-Mpoko	101 975	94 421	46 064	48 357	7 554		
Ouaka	170 451	157 825	75 446	82 379	12 626		
Ouham	211 078	194 952	93 459	101 493	15 596	530	
Ouham-Pende	201 357	183 664	87 226	96 438	14 693	3 000	
Sangha-Economique	44 933	41 605	20 897	20 708	3 328		
Vakaga	18 131	16 788	8 192	8 596	1 343		
Distant areas (e)	25 000	-	-	-	-	-	25 000

(a) Provisional data.

(b) Population recorded on the household schedules used during the enumeration, including nomadic groups and other groups outside the socio-economic structure.

(c) Population not enumerated for many different reasons.

(d) Population known to be living there but not enumerated nominally, estimated using cartographic and additional data.

(e) The way of life of these population groups did not enable them to be distributed by prefecture.

In time, and considering the 'inflationary' atmosphere which reigned in the country, it came to be accepted towards the end of the 1960s that the population of the Central African Republic was growing at a rate of approximately 25 per 1,000. Since this estimate was broadly used, it is certain that this data influenced all the results obtained in the country.

The study of the consistency of the figures available means examining doubtful estimates by comparing them to a third set of data which is itself uncertain. Differences in the geographical field, in objectives, in methods and in the definitions of the operations reviewed further complicate the study.

Leaving aside the comparison of the total 'de facto' populations estimated on 31.12.1959 (1,154,940) and on 31.12.1975 (2,057,000) which gives a totally absurd mean annual growth rate (3.67%), one can first endeavour to compare, for the territory common to the two operations, the total 'de facto' population actually enumerated on 15.12.1975 (1,481,702) with that resulting from the extrapolation of the 1959-1960 data (968,940 on 31.12.1959). The result is a mean annual growth rate slightly lower than 2.69%. This rate is too high; part of the natural increase of these areas had been absorbed by the town of Bangui (not surveyed in 1959-1960) which increased during the same period from 80,000 (estimate of 1959) to 253,095 (1975 census), that is, a growth rate higher than 7%.

If the overall estimate of 1959-1960 (1,202,910) is now compared to that of 1,817,782, the growth rate is seen to be 2.61%. Although the possibility of an increase between 1960 and 1975 in the rate of natural increase cannot be excluded, it is doubtful that it reached such a level. Taking the 1975 figure, it appears that the figure for 1959-1960 is underestimated by between 2 and 14% for values of between 1.8 and 2.5%. This is presuming the basic figure for 1975 (1,817,782) is correct and has in any case not been overestimated. The corrective work carried out by H. SIMONET on the bias due to the rural survey substantiated this hypothesis. However, there is still some doubt about the figure for the nominally enumerated population presented in Table 38 if one brings to mind the enormous pressure which the authorities of the time exerted in order to obtain 'suitable' figures and if one considers the planning errors and the quite disastrous conditions in which the census was conducted.

V. CONCLUSION

Taking into account all the uncertainties which surround the series of data proposed in this report, it is possible to claim that on December 31st 1975 the Central African Republic counted 1,820,000 inhabitants, as opposed to approximately 1,270,000 on December 31st 1959. The growth rate was therefore on average 2.27% per annum for these 16 years. Figures for the periods preceding 1960 are very uncertain. Taking a figure of 960,000 inhabitants for 1939 and 1,080,000 for 1949, it can be calculated that the Central African population increased at a mean annual rate of 1.2% in the forties, 1.6% in the fifties, and a little less than 2.3% in the sixties, up to the mid-seventies. This evaluation seems plausible especially for the last period, when the superb work in health prospecting, carried out by the teams of the 'Great Endemics Department', to a certain extent counterbalanced the effects of the economic and social decline which the country had known since the end of the sixties.

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As regards sources, it can only be hoped that a census or objective and serious survey will be organized as soon as possible in order to put an end to the uncertainties about total population size and natural increase in the Central African Republic. To this end, and so as avoid a re-edition of the errors committed in 1975, it is essential that there should be better integration between the collection and analysis stages of the operations undertaken. Unfortunately, the present economic situation of the country renders the realization of this unlikely. The situation risks becoming even more serious since the country does not at present seem to be capable of organizing the traditional administrative censuses. As for civil registration, it is futile to hope to obtain any result before many years, given the complexity of the problem and the administrative competence required.

TABLE 39 - CENTRAL AFRICAN REPUBLIC POPULATION ON DECEMBER 31ST 1975 BY SEX AND AGE

AGE GROUP	RESIDENT POPULATION				ACTUAL POPULATION			
	TOTAL		%		TOTAL		%	
	Male	Female	Male	Female	Male	Female	Male	Female
0 Year	36 917	38 087	1.77	1.83	36 912	38 950	1.79	1.90
1-4	131 361	133 771	6.30	6.40	129 605	134 137	6.30	6.52
5-9	158 784	155 547	7.61	7.45	151 805	151 123	7.38	7.35
10-14	131 546	107 795	6.30	5.17	122 915	100 769	5.98	4.90
15-19	103 448	107 436	4.95	5.15	96 364	105 573	4.68	5.13
20-24	66 273	75 735	3.17	3.62	65 246	80 846	3.17	3.93
25-29	69 543	83 315	3.33	3.99	68 928	91 517	3.35	4.45
30-34	55 680	62 932	2.66	3.02	53 977	68 210	2.62	3.31
35-39	63 373	78 355	3.04	3.75	62 295	82 012	3.03	3.99
40-44	46 350	53 842	2.22	2.58	45 635	52 565	2.22	2.55
45-49	52 480	60 514	2.51	2.89	49 614	58 822	2.41	2.86
50-54	32 701	35 905	1.57	1.72	31 214	35 827	1.52	1.74
55-59	34 897	35 980	1.67	1.22	33 800	35 255	1.64	1.71
60-64	16 259	14 752	0.77	0.71	15 597	14 166	0.76	0.69
65-69	13 030	12 110	0.63	0.58	12 737	12 251	0.62	0.60
70 and+	10 486	8 796	0.50	0.42	9 783	8 550	0.48	0.42
TOTAL	1023 128	1064 872	49 00	51 00	986 427	1070 573	47.95	52.05
	2 088 000		100		2 057 000		100	

ANNEX 1

Letter from the Lieutenant-Governor (pi) of Oubangui-Chari to the Commander of the district of MBomou in Bangassou, April 20th 1910, on the population census of his jurisdiction (Excerpt).

.....

In his note 296 of July 23rd 1909, writes Mr. Rogon, the Governor (...) indicated that the population count ought to be a condition for the Sultans (...) of the free disposal of the product of indigenous reserves. He added that the census work should be directed and controlled so as to present all the desirable guarantees of exactitude and give, as far as possible, for each ethnic group, village and tribe, a complete population assessment: adult men and women and children of both sexes.

I have noted with satisfaction that the Heads of the subdivisions of Ouango, Zémio and Rafai conformed to these instructions. It does not seem that the Head of the subdivision of Bangassou took the same care in this task. This officer only gave the overall figure per village or group for the entire population, without distinguishing between adult men or women and children. It is therefore now difficult to properly appreciate the situation of this administrative district without the tax report.

.....

The Head of the District of M'Bomou clearly states in the column 'Observations' of his report on the population census for the subdivision of Bangassou that out of a total of 31,313 natives, the approximate figure for women was 10,000 and for children 7,000. There would therefore have been 14,000 men, 10,000 women and 7,000 children. It is interesting to remark that this low number of children in relation to women does not exist in the regions of Ouango, Rafai and Zemio which were carefully enumerated, where the number of children is on the contrary higher than that for women. It would be interesting to investigate the reason for this difference.

The Governor General ordered that the census of the subdivision of Bangassou should be completed. If the Heads Labassou and Bangassou Kete (added the Superior Head of the colony), put up any resistance to carrying out this operation, "would you please care to defer their right to dispose of the product of the reserves".

Source: Archives of the Barthelemy BOGANDA Museum of Bangui.

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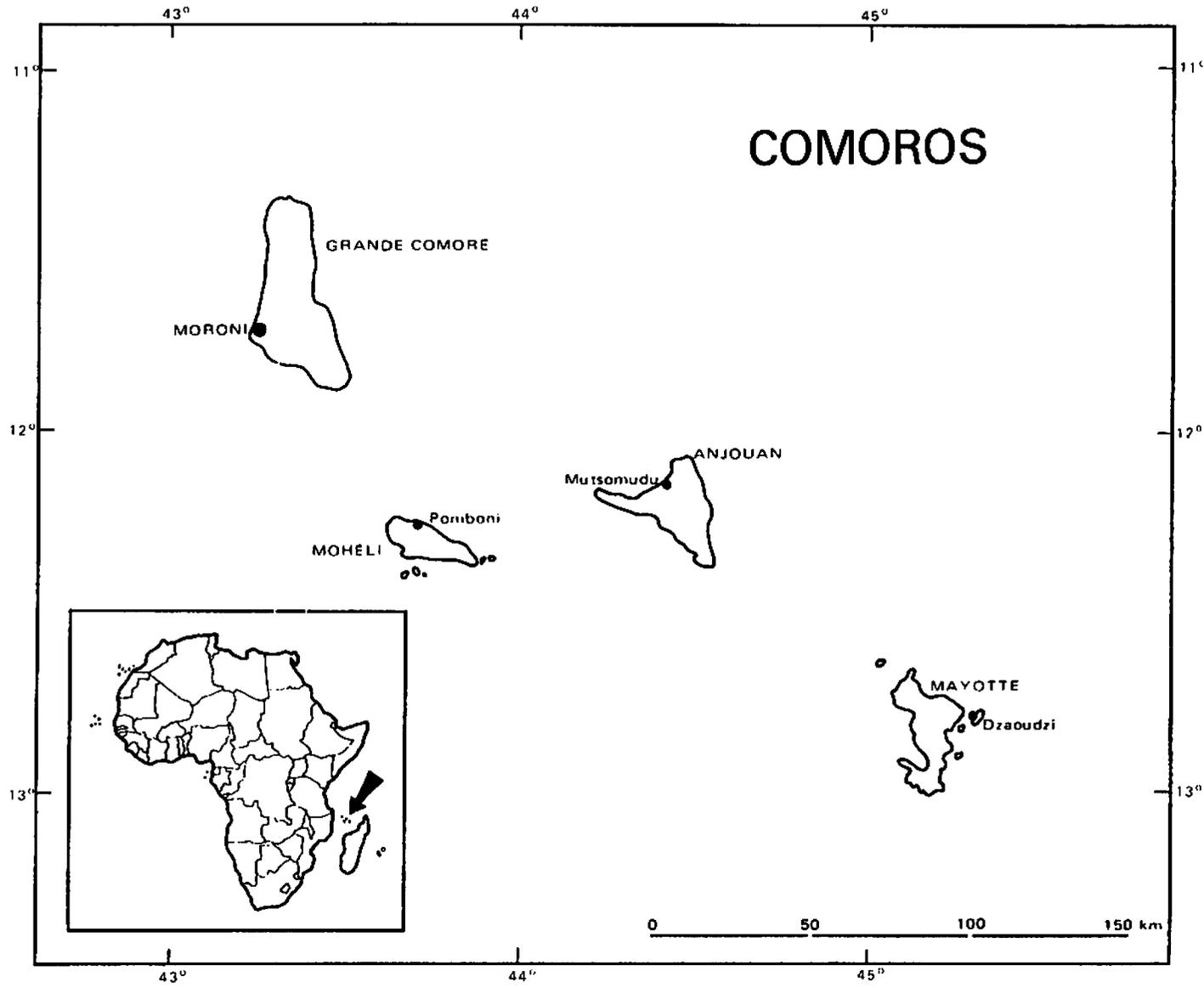
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FROM

COMOROS

FABRICE TALLON

JANUARY 1982



C O M O R O S

I. INTRODUCTION1) The Country

The archipelago of the Comoros is made up of four volcanic islands in the Mozambique Channel, between Africa and Madagascar:

- Grande Comore (Neazidja) 1,018 km²
- Anjouan (Ndzouani) 427 km²
- Moheli (Moili) 211 km²
- Mayotte (Maoré) 378 km²

These islands give a total surface area of 2,034 km² for approximately 400,000 inhabitants (the 1980 population).

Of comparatively recent volcanic origin, these four islands have a marked mountainous aspect. Due to the tropical climate, with a temperate dry season (June-October) and a rainy season, the vegetation is often prolific, whereas water sources are scarce (and even non-existent in Grande Comore) because of the porosity of the ground. This raises a serious water shortage problem at the end of the dry season.

2) Population

The population of the Comoros was formed by the successive arrival of groups of varying origins, which progressively merged and which today form a homogeneous population characterized by the same language, Comorian, (although with some variations from one island to the next) and the same religion - Islam.

The oldest group was probably comprised of the Cafres, directly related to the Bantus of Middle Africa and South Africa, who gradually merged with small groups of Arab, Persian, Indonesian and Madagascan origins. The Chiraziens, who came through the Persian Gulf, arrived towards 1000 A.D, with a second influx in the 15th century. The Arabs captured African slaves - the Makoas.

The history of the Comoros is characterized by the continuous conflict between the islands and within each island, by the existence of several sultans who tried to gain power, and by the pillaging of Madagascan pirates who captured slaves. Mayotte, the island which was the most affected, only had 3,000 inhabitants left when it came under French control in 1843.

Colonial administration was gradually established in Mayotte (1843), in Grande Comore and Moheli (1886) and in Anjouan (1912), and brought an end to the conflicts between the sultans and the Madagascan forays. From then on the population began to expand and the colonial administration began to

encourage emigration in order to ease population pressure. Today more than 100.000 Comorians are thought to be living outside the archipelago, namely in Madagascar and in East Africa (40.000 towards 1960 in Tanzania). This sometimes leads to serious problems when there are sudden mass returns as, for example, when the 18.000 "survivors of Majunga" (Madagascar) in 1977 hastily returned after confrontation with the Madagascans.

The population density is very high and overpopulation is steadily worsening, resulting in rapid deforestation causing increased land erosion (especially in Anjouan).

3) Economy

Comoros is predominantly an agricultural country. Two thirds of the population live in villages of less than 3.000 inhabitants. Farming consists of subsistence crops and home livestock breeding as well as export crops. The latter, ylang-ylang, cloves, vanilla and copra, account for almost all the country's export revenue.

However, the country can only guarantee sufficient food supplies by importing (50 kg of rice per inhabitant and per year). The activity of the secondary sector is very underdeveloped -- apart from a small fizzy drinks factory, a sawmill, a brickyard, a soap factory and some ylang-ylang distilleries. Tourism is negligible. There is a balance of payments deficit, exports only covering half the imports, and the country is obliged to rely on donations and loans.

4) Administrative Organization

The archipelago of the Comoros gained independence on July 6th 1975, apart from the Island of Mayotte which voted by referendum for the preservation of its French territorial status. Although the new Comorian State was described, on its admission to the United Nations (November 1975), as consisting of four islands, current administration is really only in effect on three islands. The census does not include Mayotte.

Comoros is an Islamic Federal Republic. The President and the Federal Assembly are elected by the entire population. Each island has a governor and an elected assembly. The governors have extensive administrative autonomy and the assembly has some legislative freedom. The islands are divided into prefectures (3 in Grande Comore, 1 in Moheli, 3 in Anjouan), themselves divided into cantons (23 cantons in all).

5) Type of Settlement

There are approximately 335 villages in the Republic of Comoros. The most important of these has an old "Arab" quarter built in stone, with flat roofs, narrow alley-ways, many shops, workshops and mosques. Dispersed settlement is rare. For the most part, the buildings are grouped together to form small villages, and are separated by railings of coconut leaves. The majority of the villages, concentrated along the communication routes which follow the coast line, are comprised of straw huts made of coconut leaves (roofs and walls). The proportion of these huts decreases as the size of the village increases. An intermediary settlement in corrugated iron (roof and walls) has recently expanded due to ease of construction and a cost which is lower than that of stone. Wooden or clay buildings are unusual (the latter are more often to be found among the refugees from

Madagascar). Modern settlements (roof of corrugated iron, walls of parpen) are developing among the wealthier part of the population.

II. DATA SOURCES

1) Civil Registration

Civil registration was developed under colonial administration. However, not long after Independence, under the régime of Ali Soilihi (now fallen), there was a systematic destruction of civil registration certificates, registers and archives. Neither is there any trace of the exploitation of historical registers. Other official documents and archives have also disappeared.

Considered the most satisfactory tool for continuous observation of population events, civil registration is currently the object of a United Nations project financed by UNFPA, which could begin in 1982.

2) General INSEE Documentation

Year by year, fascicles prepared by INSEE give various information about the Comoros. The enumeration operations carried out by the government give the results presented in Table 40.

The seeming decrease in the population in 1950 is due, on the one hand, to the December cyclone which caused over 500 deaths, and on the other hand to a tighter census of the Mayotte population, which was overestimated in 1949.

These same fascicles give the population distribution per island for given years (Table 41).

In 1947 there were 592 Europeans and foreigners in the Comoros (almost half of these were in Mayotte).

The distribution per island in 1951 does not include the 665 French and 165 foreigners.

TABLE 40 - COMOROS - RESULTS OF THE POPULATION COUNTS FROM 1935 TO 1956

YEAR OF THE POPULATION COUNT	POPULATION	YEAR OF THE POPULATION COUNT	POPULATION
1935	123 939	1950	164 938
1941	137 035	1951	165 613
1944	143 442	1954 (a)	168 000
1947	152 282	1956 (a)	176 500
1949	168 890		

a) The Native Population

TABLE 41 - COMOROS - POPULATION DISTRIBUTION PER ISLAND FROM 1947 TO 1951

YEAR	ANJOUAN	GRANDE COMORE	MAYOTTE	MOHELI
1947	49 197	80 930	17 221	4 934
1949	64 653	79 525	19 043	5 669
1950	62 970	79 525	17 206	5 137
1951	60 327	81 862	17 123	5 471

3) Population Censuses

The first real census was undertaken by INSEE, on the initiative of ORSTOM, in 1958. The questionnaire consisted of two parts, one on the household schedule, and the other on migration. A one-quarter sample survey was conducted on persons of 14 years and over and on the home (births and deaths).

The results obtained for each island show:

- the population of each village, according to sex and broad age group;
- the population of each village, according to sex and place of birth;
- the population, according to sex, age and place of birth.

TABLE 42 - COMOROS - 1958 CENSUS RESULTS

ISLAND	POPULATION
- ANJOUAN	61 815
- GRANDE COMORE	90 790
- MAYOTTE	23 364
- MOHELI	7 164
TOTAL	<u>183 133</u>

The 1966 census was conducted by the INSEE Division of overseas departments and territories.

TABLE 43 - COMOROS - 1966 CENSUS RESULTS

ISLAND	CENSUS DATES	POPULATION
- ANJOUAN	September 1-20	83 829
- GRANDE COMORE	July 18 - August 25	118 924
- MAYOTTE	September 1-30	32 607
- MOHELI	July 21-30	9 545
TOTAL		<u>244 905</u>

After Independence in 1975, and the referendum whereby Mayotte opted to provisionally keep its status, two separate censuses took place:

- the census of the Island of Mayotte, by INSEE in July 1978: 47,246;
- and the census of the other three islands forming the Federal Islamic Republic of the Comoros, with assistance from UNFPA.

Anjouan	138,000
Grande Comore	192,000
Moheli	<u>17,000</u>

Total 347,000 (provisional results)

TABLE 44 - COMOROS - POPULATION TRENDS IN THE ARCHIPELAGO

YEAR	TOTAL	ANJOUAN	GRANDE COMORE	MAYOTTE	MOHELI
1843	-	-	-	3 000	-
1866	65 000	-	-	-	-
1870 [2]	56 300	12 000	35 000	3 300	6 000
1900 [7]	-	15 000	-	-	-
1906	96 000	-	-	11 731	-
1925	120 680	-	-	-	-
1935 [3]	123 939	37 054	65 118	15 801	5 966
1941	137 035	-	-	-	-
1944	143 442	-	-	-	-
1947	152 282	49 197	80 930	17 221	4 934
1949	168 890	64 653	79 525	19 043	5 669
1950	164 838	62 970	79 525	17 206	5 137
1951 (1)	165 613	60 327	81 862	17 123	5 471
1954	168 000	-	-	-	-
1956	176 500	-	-	-	-
1958	183 133	61 815	90 790	23 364	7 164
1966	244 905	83 829	118 924	32 607	9 545
1973	-	-	130 165	-	-
1974	-	101 970	-	37 331	12 640
1978 [6]	-	-	-	47 246	-
1980 (2)	-	138 000	192 000	-	17 000

-
- (1) In 1951, the distribution by island does not include the 665 French and 165 foreigners given in the total.
 - (2) Estimates drawn from the provisional census results in the FIR of the Comoros.

4) The Ministry of Health Censuses

These are organized for vaccination campaigns. The Department for Primary Health and the Campaign Against the Major Endemic Diseases in the Comoros published an annual report in 1973 (on the Grande Comore) and another in 1974, on the other three islands, in which the population composition by age group, prefecture and canton was given.

- 1973 Grande Comore	130,165
- 1974 Anjouan	101,970
- 1974 Mayotte	37,331
- 1974 Moheli	12,640

III. CONCLUSION

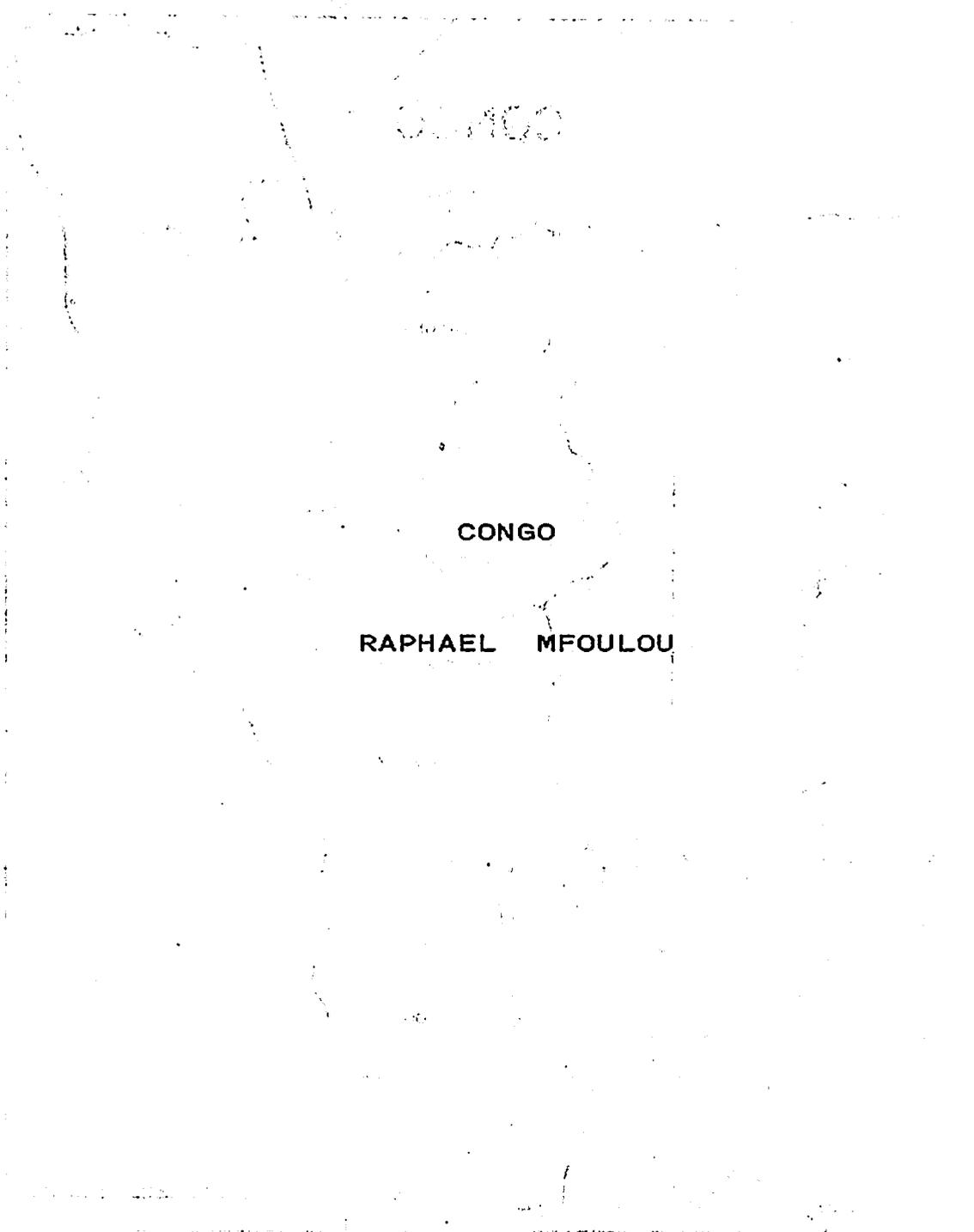
The following population estimate for January 1st 1975 can be given:

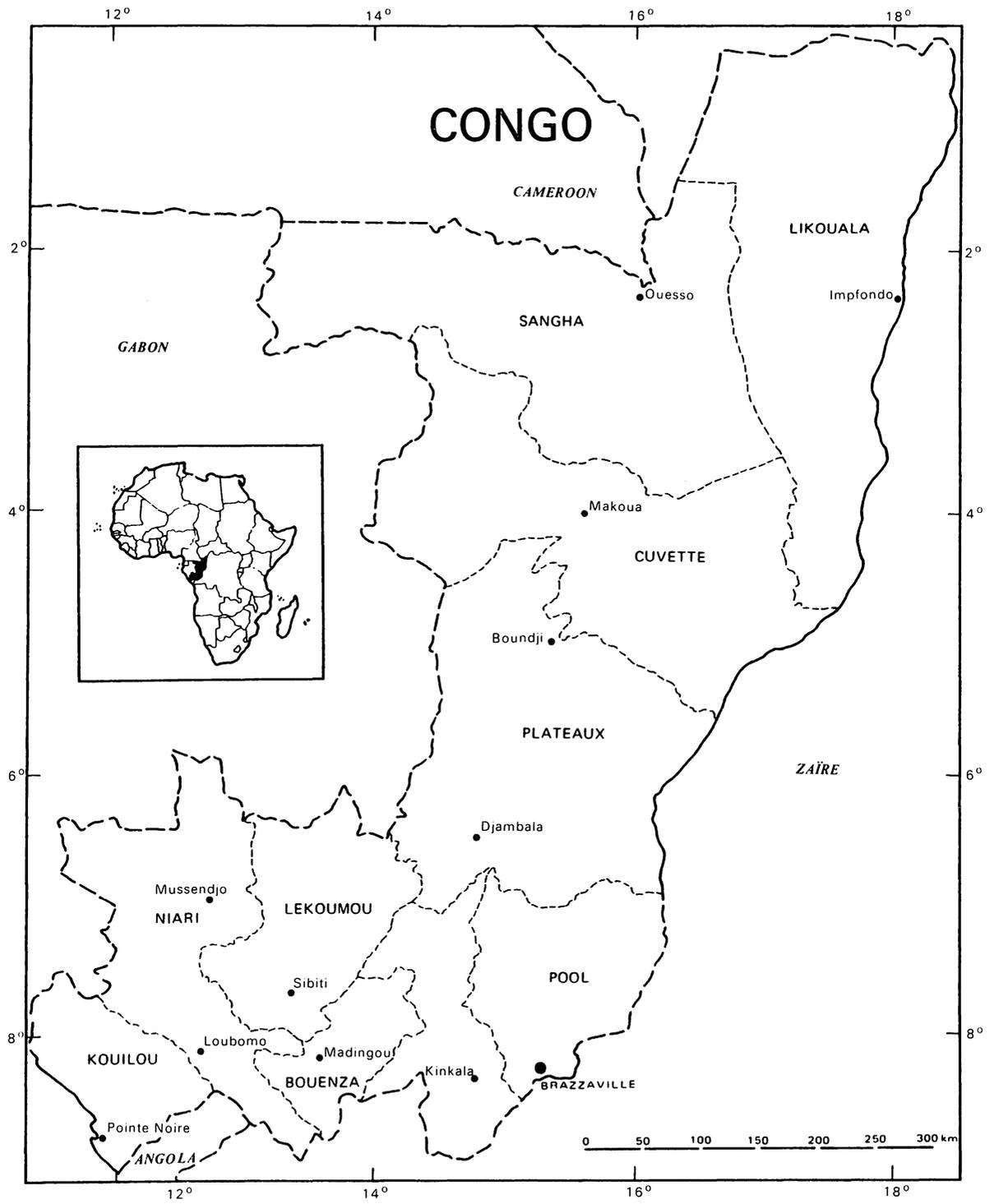
Anjouan	111,820
Grande Comore	157,123
Mayotte	42,168
Moheli	<u>13,401</u>
Total	324,512

At present, the very high growth rate means a doubling of the population every 20 years. There is reason to believe that the archipelago will number 800,000 people in the year 2000.

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C O N G O

I. INTRODUCTION

Before Independence, apart from the 1954-1955 census of the African population in the urban conglomeration of Brazzaville, the Congolese population had only undergone simple counts, all of which fell within what are known as 'Administrative Censuses'.

Congo first began its population surveys and censuses of a scientific nature in the 1960s with a general population survey divided into three sections:

- 1. Census of the town of Pointe-Noire (1958-1959);
- 2. National Population survey (1960-1961);
- 3. Census of the town of Brazzaville (1961).

These were followed by the general population census of Congo in 1974 and two population sample surveys which are worth citing.

There were two organizations at the origin of these operations, the 'Centre National de la Statistique et des Etudes Economiques' (CNSEE) and the Human Sciences Department of ORSTOM in Brazzaville. Before Independence, statistical operations were conducted by the National Department of Statistics and assisted technically by INSEE.

We have purposely not mentioned numerous studies of monographic nature where the main subject was not the population from a demographical point of view.

II. DATA SOURCES AND MAJOR PROBLEMS

The main sources of population data in the People's Republic of Congo are:

- Administrative censuses;
- Population surveys;
- Population censuses;
- Civil Registration;
- Health reports,
- Other Sample Surveys.

1) Administrative Censuses

Prior to Independence administrative censuses were the only source of data capable of giving an estimate of the total Congolese population on a national level. Indeed, the colonial authorities went ahead, once a year, with a general count of the population in every administrative district, in order to identify, on the one hand, those liable for taxation, and, on the other hand, the young healthy people who could be called upon either for heavy construction work of the infrastructures, or for the army, or for work in the plantations.

The population was grouped together in the centre of the village in families in order to carry out these censuses and every individual was reviewed. The data was collected in a village register where one page was given to the enumeration of the members of each family; the following characteristics were recorded for each individual: name and forenames, sex, relationship to the head of the family, age, health and situation in relation to tax.

Around 1956-1958, printed registers following these models were used for the first time for the entire territory of Mid-Congo. Subsequently, due, on the one hand, to the exorbitant cost of printing these documents and, on the other hand, to the arrival of national officers at the head of the administrative districts (Independence), these good intentions were doomed to complete failure. Lacking new documents, the old documents were re-used for further censuses: they consequently became illegible. Soon the new administrators were faced with many difficulties: difficulties due to deterioration in the means of communication, to the inadequacy of available means, to an increasingly incompetent personnel at all levels of the hierarchy, to the thoughtlessness, or the voluntary, or involuntary irresponsibility of certain administrators etc.

The main result of this state of affairs was the pure and simple abandonment of administrative censuses in the majority of administrative districts. As regards the results, in the best of cases, these were included in the annual administrative reports in the form presented in Table 45.

In reality, the work was not always presented in this way: the administrative reports, in general, only provided the total population in the district, distributed simply according to sex. There were no comments on how the field operations were carried out. Sometimes, it was merely a question of empirical estimates since it was necessary to give a figure for the population. The rules of simultaneity, homogeneity and universality within a given territory, which characterize population censuses, were by no means respected here. Moreover, the reference population is not defined since the natives of an area, who were recorded at a given time in this area, continue to be so even after they have permanently emigrated and are enumerated in their new residential area.

In these conditions, it is difficult to use the data from this source to give a reliable estimate of the total population.

TABLE 45 - CONGO - RESULTS OF THE ADMINISTRATIVE CENSUS OF THE PREFECTURE OF BOUENZA-LOUESSE (1957)

S/PREFECTURE	MALE			FEMALE			TOTAL
	0 to 18 years	19 to 59 years	60 years and over	0 to 18 years	19 to 59 years	60 years and over	
SIBITI	4 766	4 388	546	4 745	5 984	567	20 996
ZANAGA	2 241	2 818	283	2 014	3 553	407	11 316
KOMONO	2 802	3 554	607	2 557	4 088	838	14 446
TOTAL	9 809	10 760	1 436	9 316	13 625	1 812	46 758

2) Population Surveys

a) The National Population Survey (1960-1961)

The national population survey was a sample survey carried out over the entire territory except in Brazzaville and Pointe-Noire. The field operations which began in September 1960, were completed in February 1961. The objectives fixed for this survey were the following:

- Estimate of the total population size;
- Determination of the geographical distribution of the population, the characteristics of the structure and growth of the population.

This survey, the first of its kind, was intended to collect demographic data, which, until this period, were totally inexistent.

The sampling frame was constituted by a list of the villages provided by the different local administrations. All the villages of the same sub-prefecture were classed by land or district, with the following principal characteristics for each: total population size, principal ethnic groups, agricultural activities, social, health and economic infrastructures...

A primary stratification of these villages was conducted by distinguishing the villages with less than 500 inhabitants from those with 500 and over.

For the villages of less than 500 inhabitants, the national territory was divided into eleven strata, taking the following criteria into account: vegetation, soil, climate, type of village, principal ethnic groups. However, within each stratum the villages remained grouped by sub-prefecture. In each defined stratum, village clusters with a total of approximately 250 inhabitants were constituted; villages of more than 250 inhabitants were divided into two. Village clusters were then drawn systematically with a sampling fraction equal to 1/10th.

All the villages of 500 or more inhabitants were considered as constituting one stratum: the 12th. The sample in this stratum was drawn systematically (one village out of every three), from a list of the villages classed according to sub-prefecture.

This sampling plan, which seems quite simple to implement, encountered many problems in the field, to such an extent that it is extremely difficult to understand through the survey reports, which sampling plan was actually applied in the field.

The first difficulty was due to the poor quality of the sampling frame and to the inadequate cartography work; very frequently, villages which had moved, or dispersed, or even entirely disappeared, posed numerous problems for constituting the sample in the field.

False estimates of population size also posed problems for the enumerators who came across sample clusters with well over 500 inhabitants: this gave rise to numerous difficulties of a psychological order within the population groups who did not understand the reasons for the various divisions. As a result such clusters were enumerated either partially, as planned, or entirely, or simply omitted.

A third difficulty arose from the fact that population was not sufficiently aware of the problem. On numerous occasions, inhabitants of one or several villages systematically refused to cooperate.

A very appreciable modification in the sampling plan was decided upon during the realization of the data collection. It was decided that all the administrative centres, the industrial, agricultural and mining centres and the railway stations should be enumerated completely because of the notable increase in their population. Unfortunately, it was not possible to systematize this procedure through lack of additional funds.

b) Other Population Surveys

These were essentially surveys carried out either by the National Department of Statistics, or by the Human sciences department of ORSTOM.

The first procedure of this kind was the socio-demographic survey of Pointe-Noire in 1961-1962 carried out by ORSTOM. This survey was repeated in 1970. It essentially aimed to bring to light the components of the urban growth of the town of Pointe-Noire - natural and migratory movement and the extension of the urban area. - After data analysis, the author presented a model for population trends in Pointe-Noire.

The second was the permanent pilot observation of demographic events in the area of Lékoumou (1972-1975). This was carried out by the National Department of Statistics and ORSTOM, in collaboration. It was an assay intended to test the technical, material and human conditions to be introduced to ensure a permanent collection of basic demographic data. It used the technique of multi-round surveys. Three rounds were carried out at one year intervals on a sample of approximately 6,000 people. The first was in fact constituted of the exhaustive census of the population of the area. It was on the spot that the sampling frame from which the sample was taken was elaborated.

This survey enabled a complete study of the main demographic characteristics of the area: natality, fertility, mortality and migration.

The demographic-sociological survey of Brazzaville (1974-1977) which was carried out by ORSTOM was also a multiround survey. Its objectives were the same as the Pointe-Noire survey already cited.

At present, the National Department of Statistics is carrying out a multiround survey on infant and child mortality in Brazzaville. Field collection operations are to last three years; the methodology used is that defined by IFORD in Yaoundé.

3) The Population Censuses

a) The African Population Census of Brazzaville, 1954-1955

This is a procedure which is now only of historical interest, since in Brazzaville itself there is no available documentation. However, it is known that it was carried out by the National Department of Statistics, and that the census used individual schedules.

b) The Population Census of the Town of Pointe-Noire 1958-1959

The population census of the town of Pointe-Noire in 1958-1959 was the first real population census carried out by the National Department of Statistics. It benefited from the technical support of the French Cooperation Ministry. It did not give satisfactory results for the study of population growth; but data on state and structure are better.

c) The Population Census of Brazzaville 1961

After the national population survey in 1960-1961, the idea of an estimate of the overall characteristics of the Congolese population led the political authorities to demand a population census for the town of Brazzaville, since a few years previously a census had already been carried out in Pointe-Noire. These three operations used similar documents and the basic concepts were defined in the same way. However, it seems that the operation was generally better prepared for Brazzaville.

For these two operations, reports were published which briefly described the conditions in which data collection was conducted in the field, an analysis of the collected data with the main results obtained and a series of detailed statistical tables.

d) The General Population Census of 1974

The general population census of 1974 fits into the framework of both the United Nations African Population Census Programme of 1970 (EAC) and the joint programme of the countries of the 'Union Douanière et Economique de l'Afrique Centrale' (UDEAC) for the collection of demographic data. This programme was called the 'Programme of permanent observation of demographic events' (see decree n° 7/70-UDEAC-145 of December 18th 1970).

The 1974 census changed from the initial comprehensive survey (with a very short questionnaire) of the programme of the UDEAC countries, to become a standard census procedure using a lengthy questionnaire with

retrospective questions on natality, fertility and mortality. The objectives of the census may be summarized as follows:

- Determination of the total population size, of its geographical distribution and its principal structural characteristics;
- Estimation of the characteristics and indices of population growth;
- Constitution of a sampling frame for future population and statistical surveys and the establishment of a list of villages with the aim of producing a national village register;
- Brief study of the housing characteristics in large towns.

The preparatory work began in September 1971 with, in particular, the realization of a trial census in March 1972 in the area of Lékoumou. This operation was essentially intended for:

- Defining, then testing, an appropriate method for a general census, by correctly identifying the different parameters to be considered: efficiency of basic concepts, questionnaires and other forms used in the census, control procedures, organization of fieldwork teams, enumerators' pace of work, means of transport and other logistic aids, training programme for the staff, publicity etc.
- Assessing the costs of such an operation on a national level in order to be able to plan efficiently the necessary funds for its realization;
- Ensuring training and sound command of the various procedures for Department of statistics leaders.

All the preparatory work (cartography, elaboration of the basic concepts and documents, printing of the questionnaires, trial census etc.) took just over two years.

The period of data collection was basically marked by material problems - insufficient means of adequate transport - which prolonged, by varying degrees in the different areas, the duration of the data collection. In general, the actual enumeration process took from 12 days - Brazzaville, Pointe-Noire, Loubomo, Nkayi, Ouessou and Owando - to 30 days elsewhere. However, in the marshy areas of the Congolese Basin, communication problems were such that the operations took almost two months. This was the case for the area of Likouala, the districts of Loukolela and Mossaka and the administrative control posts of Makotimpoko and Picounda.

4) Civil Registration

Civil registration, like the administrative censuses, dates back to the colonial era. Decree n° 57/58 bore legal measures imposing all citizens to declare the following to the civil registration: birth, legitimation and recognition of children, death, marriage, divorce. It also bore two articles which gave the administrators the right to create as many secondary civil registration centres as was necessary to adequately cover the territory for which they were responsible. Naturally, the principal civil registration centres were located in the county towns of the area or district and in the quarters of the urban communes.

At the present time, it is not incorrect to state that civil registration in Congo does still not constitute a reliable source of demographic data. In the large towns, Brazzaville and Pointe-Noire, where the coverage of civil registration has reached a satisfactory level, the lack of training of civil registration auxiliaries and the poor keeping of the registers sometimes exclude the use of data from this source.

5) Health Reports

Legal measures oblige all mothers to give birth in a health clinic, and the death of a parent to be certified by a doctor from the nearest medical centre before the burial of the body. In these circumstances, the periodical health reports would seem to form a source of demographic data. In practice, it is not possible to use this source:

- The health reports are not always available;
- When they are available - as is the case for the hospitals of Brazzaville, Pointe-Noire and Owando - they only record the events which arose within their own centre; they are, above all, activity reports.

This poses a problem of geographical coverage in a given area, related to a certain extent, to the rate at which the events in question arose in health centres and the attendance ratio of these centres. These two factors clearly depend on health coverage in the country (geographical distribution of the infrastructures).

6) Other Sample Surveys

Other statistical surveys which offer, apart from their principal results, information about the population - size, structure by sex and age, marital status etc. - are very limited. The following can be cited:

- The Jacob (now Nkayl) Household-Budget Survey in 1965 by the National Department of Statistics;
- The 1967 census of the expatriated population of Brazzaville by the National Department of Statistics;
- The 1972-1973 Agricultural Census - sample survey - carried out by the Statistics Department of the Ministry of Rural Economy;
- The sample survey on the Activity Rate in Brazzaville in 1972, carried out by the National Department of Statistics.

III. POPULATION GROWTH

1) Demographic Indicators

In the absence of at least two complete coverage censuses carried out over the entire territory of Congo, it seems important to continue with a short examination of the main population factors available from the surveys and censuses mentioned above.

It can be pointed out, from the data in Table 46, that, in general, most of the indices of population growth, and in particular those of

mortality and migration, could not be determined from the operations carried out in the 60s; data on fertility, after modification, enabled certain characteristic indices of the phenomenon to be obtained.

Finally, it was the 1974 general census and the Brazzaville and Lékoumou surveys, which provided the possibility of a better evaluation of the components of population increase in Congo. However, it should be pointed out that the census data had to be adjusted using appropriate techniques in order to give plausible results.

From an analysis of this data it can be seen that:

- Mortality is a phenomenon which is steadily decreasing, even if the present level is still relatively high. There are regional differences; in the large towns, in particular, where the principal socio-cultural and health infrastructures of the country are concentrated, and mortality is considerably lower.
- Fertility is on the increase, mainly due to the improvement of general living conditions (hygiene and health education, more help for the mother and child, schooling, housing, income etc.). The decline in polygamy, especially in the rural areas, had also contributed to a certain extent to the rise in fertility. In Congo, natural fertility is the rule. Very few couples in fact use a method of birth control. Fertility seems to be the highest in large towns.
- Migration (international migration) is still very vague in Congolese demography. Not only has no study ever been undertaken in this domain, but, statistics are, moreover, almost non-existent.

TABLE 46 - CONGO - DEMOGRAPHIC INFORMATION AVAILABLE IN 1975

SOME INDICATORS	1960-1961 CONGO RURAL ZONE SURVEY	1961 BRAZZAVILLE CENSUS	1958 POINTE NOIRE CENSUS	1962 POINTE NOIRE SURVEY	1972-1973 LEKOUMOU MULTIROUND SURVEY	1974 CONGO CENSUS	1975-1977 BRAZZAVILLE MULTIROUND SURVEY
- Crude Birth Rate %	41.1	50.1	xx	58.4	38.2	47.3	41.0
- Crude Death Rate %	24.4	xx	xx	xx	23.6	17.9	11.7
- Natural increase Rate %	1.7	3.2	xx	xx	1.46	2.9	2.9
- Infant Mortality Rate %	xx	xx	153	110	133.0	124.9	69.1
- Life Expectancy at Birth (years)	xx	xx	xx	39.2	43.2	46.8	53.7
- General Fertility Rate ‰	138	219	201.6	243	172	206.6	198
- Gross Reproduction Rate	2.6	3.1	2.6	3.3	3.3	3.4	3.0
- Net Reproduction Rate	xx	xx	xx	xx	2.3	2.4	2.5
- Average Age at Child- bearing (years)	28.4	27.9	xx	xx	27.6	29.7	28.5
- % under 15s	41.3	45.0	41.5	46.8	38.6	15.9	49.8
- % 15-19 years	53.4	53.7	55.7	50.7	52.0	49.2	48.4
- % 60 years and over	5.3	1.3	2.8	2.5	2.4	4.9	1.8

xx : No reliable estimate of the indices was obtained.

At the time of the French Congo, between 1920-1940, past history reveals a strong immigration, in most cases forced, of Chad and Oubanguian populations coming to Mid-Congo, particularly for the construction of the ports of Brazzaville and Pointe-Noire and the Congo-Ocean railway. It is also to be recalled that Brazzaville, which was for a long time the capital of the former 'A.E.F.', accommodated most of the federal structures, the creation and running of which drained populations from Chad, Gabon, Oubangui and even Cameroon.

Independence movements in the 60s, on the other hand, completely changed the direction of this type of migration: everyone returned or was sent back to his native country.

Once again, there are no figures to show the extent of these changes. Nowadays, it is highly probable that external migration is low and that its effect on the population growth of the country is insignificant compared with growth due to natural increase. This observation is principally founded on the communication difficulties between the States (lack of adequate communication routes) and on the ponderous and complicated entry and exit formalities at the State borders; all these procedures making free circulation between neighbouring States extremely difficult.

2) Estimate of the Population Size in Congo

Since Congo only underwent its first complete coverage census in 1974, any figures before this date are mere estimates, the accuracy of which depends on the value of the source and the efficiency of the techniques used.

Table 47 gives three estimates for the population of Congo at three different periods. In fact, numerous estimates exist which are not given here.

The first estimate, that of 1957, is based on the administrative reports of the prefectures for that year. This data was used for the preparation and organization of the National Population Survey of 1960-1961. The administrative reports of the prefectures did not all give population figures, the missing figures were therefore either assessed somewhat empirically, or purely and simply omitted.

The second estimate, that of 1961, was obtained from the results of the Pointe-Noire and Brazzaville censuses and the National Population Survey. For each of these three sub-populations, it was necessary to make certain hypotheses on the annual growth rate in order to obtain a figure for the total population at a same date. The following growth rates were used:

- Brazzaville	5.6% per year;
- Pointe-Noire	8.1% per year;
- Remainder of the country	1.2% per year.

The final estimate of population size dates back to the General Population Census of 1974.

Taking these three figures to be valid, they would then reflect the following population trends over the period, in terms of mean annual growth rate:

- 1957-1961 period	0.8%
- 1957-1974 period	3.1%
- 1961-1974 period	3.8%

There is clearly a certain inconsistency in the data used, as although the first rate is very low, the second and third are, on the other hand, extremely high. This can only be justified by considering that the population was largely underestimated in 1957 and 1961.

In order to remedy this situation, the evolution of the Congolese population has been traced back from recent data (1972-1977) and the United Nations models on the evolution of fertility and mortality in the area. The annual growth rate for the different periods was thus determined, which enabled Table 48 to be drawn up. Population forecasts have also been calculated for the period 1980-2000 and the principal results are given in Tables 49 and 50.

IV. CONCLUSION

Throughout this document, we have tried to demonstrate that, up to a certain period, it was extremely difficult to assess the population of Congo. In general, this was due, on the one hand, to the low number and poor quality of the population surveys and censuses, and, on the other hand, to insufficient national statistics machinery. This situation is not peculiar to Congo. It is characteristic of most of the francophone African countries south of the Sahara in the years following independence.

The United Nations, by declaring 1970 to be the year for population censuses, marked a watershed in the demographic history of these countries. In Congo this change was to be seen at the Governmental level through the adoption of a programme for permanent observation of demographic events which was advocated by the 'Union Douanière et Economique de l'Afrique Centrale' (UDEAC), and for which the General Population Census in 1974 and the 1972-1973 Survey in Lékoumou were the beginnings. At present, this programme is under way, with the implementation of a project which aims, firstly, to improve the recording and statistics of vital events, and, secondly, to prepare the next general population census, planned for 1984.

Thus, whilst it may be difficult to assess the past, the future shows more favourable signs, and the richer and the more varied the results of future surveys, the higher the standard of estimates of past populations will be.

TABLE 47 - CONGO - POPULATION TRENDS ACCORDING TO DATA SOURCES AND SIZE OF PLACE OF RESIDENCE

(thousands of inhabitants)

SIZE OF PLACE OF RESIDENCE	1957 ADMINISTRATIVE CENSUS	1961 DEMOGRAPHIC SURVEY AND CENSUS OF BRAZZAVILLE AND POINTE NOIRE	1974 GENERAL CENSUS
Less than 500 inh.	535.7	497.8	460.9
500 to 4 999 inh.	83.2	92.4	231.2
5 000 to 29 999 inh.	9.5	19.9	184.8
30 000 and over	154.0	198.7	442.8
TOTAL	782.4	808.8	1 319.7

TABLE 48 - CONGO - POPULATION TRENDS FROM 1950 TO 1980

(thousands of inhabitants)

YEAR	POPULATION SIZE
1950	815
1955	885
1960	960
1965	1 070
1970	1 183
1975	1 351
1978	1 468
1980	1 546

TABLE 49 - CONGO - OVERALL FORECASTS FOR POPULATION TRENDS ACCORDING TO SEX

YEAR		HIGH VARIANT	AVERAGE VARIANT	LOW VARIANT
1980	Male	744 862	744 379	743 164
	Female	806 799	806 503	802 785
	Total	1 551 661	1 550 882	1 545 949
1985	Male	850 462	847 652	843 809
	Female	918 576	916 707	910 697
	Total	1 769 038	1 764 359	1 754 506
1990	Male	974 247	966 816	957 662
	Female	1 046 914	1 042 034	1 034 008
	Total	2 021 161	2 008 850	1 991 670
1995	Male	1 119 302	1 107 627	1 086 367
	Female	1 193 145	1 184 604	1 168 022
	Total	2 312 447	2 292 231	2 254 389
2000	Male	1 288 519	1 272 939	1 234 689
	Female	1 358 532	1 346 781	1 326 290
	Total	2 647 051	2 619 720	2 560 979

TABLE 50 - CONGO - FORECASTS FOR POPULATION TRENDS BY LARGE ADMINISTRATIVE UNITS (1974 FRONTIERS; average variant)

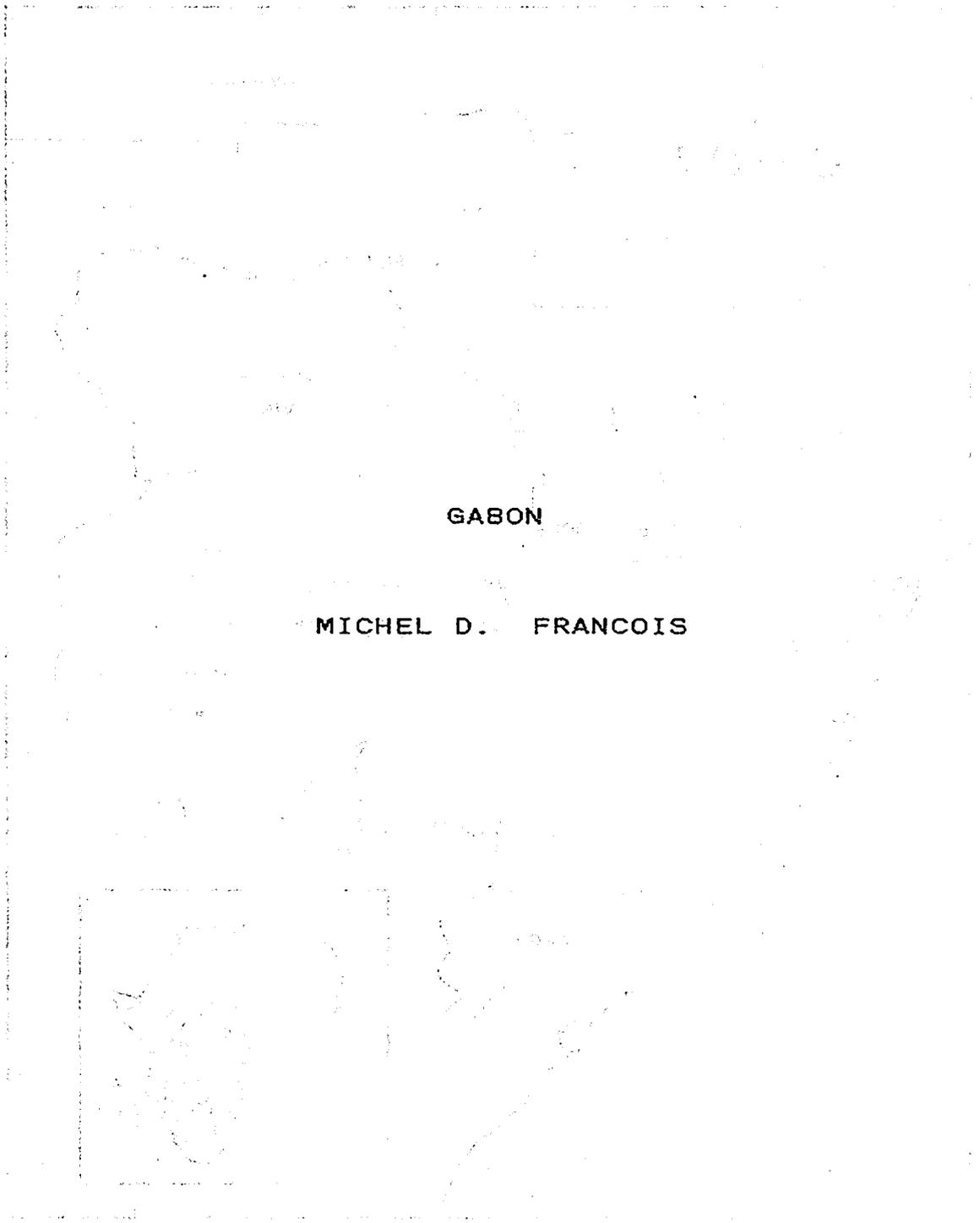
ADMINISTRATIVE UNITS	1974 (a)	1975	1980	1985
BOUENZA REGION	117 759	120 551	128 798	140 608
BRAZZAVILLE	302 459	309 755*	422 402	480 544
KOUILOU REGION	73 296	75 141	76 275	80 426
LEKOUMOU REGION	60 110	61 492	62 732	70 997
LILOUALA REGION	30 010	30 678	31 925	35 985
LOUBOMO	28 577	29 192	30 833	35 566
NIARI REGION	99 750	102 171	106 383	119 766
NKAYI	28 957	29 597	32 518	42 727
POINTE NOIRE	140 367	143 661*	185 105	236 584
POOL REGION	188 637	193 124	208 416	226 919
REGION OF THE BASIN	114 535	117 307	121 471	131 783
REGION OF THE PLATEAUX	96 148	98 657	102 667	115 840
SANGHA REGION	39 185	40 138	41 357	42 614
WHOLE OF CONGO	1 319 790	1 351 464	1 550 882	1 764 359

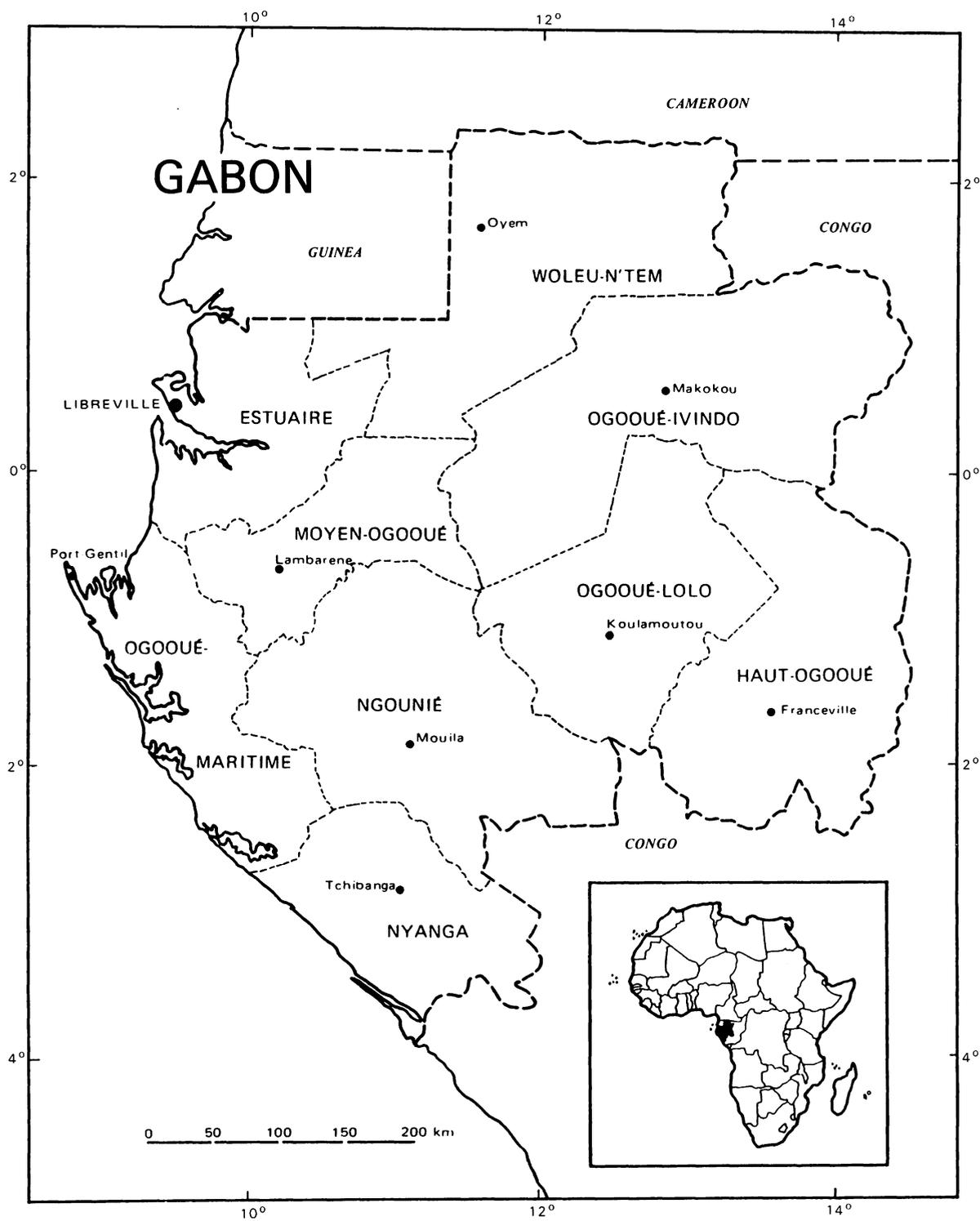
* The figures marked with an asterisk have been corrected so as to take into account the mass expulsion of illegal immigrants of principally African origins.

(a) The data for 1974 are those provided by the 1974 General Population Census.

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G A B O N

I. INTRODUCTION

Equatorial French Africa, a unitary colony acquired by the French in 1882, was a General Governorate of four territories, namely Gabon, Middle-Congo, Oubangui-Chari and Chad, which were divided into twenty administrative districts called departments.

Gabon became the Independent Gabonese Republic in 1960. This is situated on the West coast of the African continent and straddles the equator, covering over 268,000 square kilometres. It shares 1,600 kilometers of frontier with Equatorial Guinea, the United Republic of Cameroon, the People's Republic of Congo, and has 800 kilometers of coastline.

From a traditional geography of forest landscape, temporary plantations, small villages and scattered encampments, a modern geography of mines, derricks, worksites, buildings and roads has developed since Independence, centres of attraction for the rural population and also for foreigners.

It is only for the last ten years that the population of Gabon has again exceeded two inhabitants per km². Today the population composition still reveals significant consequences of a profoundly perturbed demographic history. Gabonese demography cannot exist without the use of historical data; nor can there be any correct adjustment if the role of history in natural and migratory movements is ignored. The evolution of the population size in Gabon is first and foremost a reflection of its history, and all the more so since its numbers are low (less than 700,000 Gabonese).

II. DATA SOURCES

1) Historical Estimates

The existence of documents dating back to the 15th century, the forest reduced almost everywhere to the secondary state, the certain existence of a pre-history, are all factors which go to prove the occupation of Gabon four or five centuries ago. Although a proportion of the present people seem to have come from elsewhere, and some of them could have been there for generations, we have no knowledge as to the extent to which the forest might have provided shelter and refuge with regard to extensive geographic mobility on a continental scale.

Secular States do not seem to have existed in Gabon. The study of Gabonese ethno-history is, as yet, still not advanced enough to provide significant indices on ethnic groups with no writings, which today number about forty.

The first descriptions of the Gabonese hinterland, giving an idea of the population, date back to the 19th century. These records are numerous

and detailed enough for comparison with the situation of the 1960's and for an hypothesis to be formed of a Gabonese population of approximately 600,000 inhabitants at the end of the last century.

2) Data from the Colonial Period

There are no national archives available on the subject. No attempt appears to have been made, up until now, to rectify this: few documents are therefore available. These include:

- An official note from the Office of Political Affairs and General Administration (APAG), dated 1951, which gives sixteen reports on the population of the territory between 1917 and 1950 (in the form of an annex);
- The chapter entitled "Demography" in the 1938 annual report of the General Inspection of Health and Medical Services by the physician Ledentu;
- The supplement to the 1938 XXXth monthly report, by the International Public Hygiene Office, with a paper on the demography of the French colonies.
- The statistical yearbook of French Possessions, in its provisional edition of 1944, for the pre-war years;
- The statistical yearbook of AEF, 1936-1955, 2 volumes.

From these and other documents Table 51 was compiled. This table takes into account the annexing of the Department of Haut Ogooué to Middle Congo between 1926 and 1938. In 1936 this province accounted for 47,000 inhabitants.

The first official census of Equatorial French Africa (AEF) dates back to 1933 and the last quinquennial census to 1936, but for Gabon only the results obtained during this time by "population sampling" are available and the technical basis of this "sampling" is unknown.

From 1947 onwards, the AEF Department of Statistics centralized in Brazzaville and extracted the data from the annual economic and political district reports, based on village monographs or population registers.

TABLE 51 - GABON - POPULATION TRENDS FROM 1908 TO 1960

YEAR	POPULATION	YEAR	POPULATION
1908	650 000 [4]	1950	405 000
1917	482 000	1953	393 000
1936	455 000	1955	402 000
1939	443 000	1956	408 000
1943	438 000	1957	412 000
1946	421 000	1959	416 000
1948	411 000	(1960) [16]	(448 564) [16]

In 1950, a Population and Demography Commission was created in AEF (decree of August 2nd 1950) and in this context a survey on the sex ratio (1951-1955) was conducted by the Department of Statistics of the High Commissionership of AEF in Brazzaville.

3) Recent Population Data

a) The General Population Census (1960-1961): financed by the French Co-operation and Assistance Fund, and conducted by the Gabonese National Department of Statistics with the aid of the National Institute of Statistics and Economic Studies (INSEE - Paris cooperation). Crude result published: approximately 448,564 inhabitants (Gabonese and foreigners).

b) The Demographic Sample Survey (1960-1961): carried out simultaneously with the census. The sample was based on three strata (villages, worksites, urban centres); the sampling frame was a list of population clusters; the sample was systematic (1:10 or 1:5, according to the strata).

c) The General Population Census (1969-1970): financed by the Gabonese Government and conducted by the Gabonese National Department of Statistics. Crude result: approximately 526,884 inhabitants (Gabonese and foreigners).

d) Libreville, the capital of Gabon: has had the advantage of good demographic observation: enumeration of 1943; municipal census of 1953; Lasserre study in 1958; the 1960-61 census; the 1964 census with the municipality; and the 1969 census. (Results published).

e) Civil Registration: very incomplete and sometimes non-existent in the rural environment; but it is useable for Libreville and it led to an ORSTOM study published in 1976.

f) Administrative Census: theoretically, each district chief should carry out an annual administrative census (count). By 1970, the National Department of Statistics had still not succeeded in centralizing even one of these censuses, carried out since 1960, for the whole of the country and a given year. The crude results of these counts were lower than the crude results of the 1960-61 and 1969-70 censuses by 5 to 6%

g) The Counts and their updating by the Department of Major Endemic Diseases based on routine and annual visits, were very close to the crude results of the statistical censuses (underestimation of a few %).

h) Official Population: since 1971, the National Department of Statistics has given an 'official population' figure which it seems useful to mention here, as it is representative of an attitude common to several other underpopulated developing countries.

The detailed publication of data (by province, prefecture and sub-prefecture) on the evolution of the Gabonese population from 1970 to 1978, in a monthly report by the General Board of Statistics and Economic Studies in 1979, giving a total population of 1,300,151 inhabitants in 1978, is just as significant on the eve of the 1980 census. As in 1970, the real results of the 1980 census are unknown; and, as in 1970, the reason is the political desire to overstate the population size, without distinguishing nationals from foreigners.

TABLE 52 - GABON - POPULATION TRENDS FROM 1960 TO 1978 ACCORDING TO
OFFICIAL STATISTICS

YEAR	POPULATION	MEAN ANNUAL GROWTH RATE
1960	630 000	3.1 %
1970	950 009	4.0 %
1978	1 300 151	

According to the table above, the population of Gabon has doubled in less than 18 years (the demographic survey of 1960-1961 revealed a crude birth rate of 35 per 1,000; a crude death rate of 25 per 1,000 for men and 31 per 1,000 for women; and a sterility rate in women between 15 and 49 years of 33 per 1,000).

III. A CRITICAL STUDY OF SOURCES

1) 'Historical Data' (or descriptions) are good enough to suppose, by comparing with the situation observed between 1950 and 1970, a population of more than 600,000 inhabitants at the end of the last century.

2) 'Data from the Colonial Period' is seriously disputed in the 'Statistical Yearbook of French Possessions' (provisional edition of 1944), as the following extracts illustrate:

"The inadequacy of colonial statistical documents has been noted again and again... non-existence, dispersal, partial destruction, plundering... of the documents accumulated by the statisticians of the Colonial Ministry (Colonial Department of Statistics)".

"Available documents are rare and often in their crude form, and are also of very doubtful quality".

"The varying amount of information available, in most cases inadequate, but sometimes, on the contrary, too copious in view of its low significance, has resulted in the merging of the two chapters usually dedicated - in the yearbook - to 'climatology' and 'population'...into one".

"Following a ministerial circular in February 1909, very detailed annual statistics were thought to be indicated. It therefore seems that the problem - of the census - now become insoluble, has been dealt with moreover in complete ignorance of its difficulties. It is thus affirmed, 'a priori', that colonial population statistics can have no other value than that of a rather crude estimate".

"Since around 1910, in AOF (French West Africa) and in AEF, the government has been given the task of drawing up a nominative register of the inhabitants of the villages visited, based on the statements of the heads of households and, in principle, confirmed through tests. This system

can render good results, as long as the population is stable....A study of the colonial figures for tropical Africa usually reveals the same variations, the same distribution anomalies as those found in the statistics of the other colonies".

"Several authors, both past and present, give population information, which is perhaps surprisingly not reviewed here. But the origin of their data is not specified and the very confidence they express in drawing conclusions from it is enough to suspect that it was compiled without any kind of discrimination. On reflection it is clear that this could only have come from statistics provided by the administration - the only body to conduct, well or badly, a collective effort on such a scale. But these statistics suffered all sorts of vicissitudes, the trace of which can be seen everywhere, and in the course of which they were, quite unsuspectingly, abandoned to incessant changes. As a result, the material, already inadequate at the outset, became completely hazardous. This is why, apart from the documents provided by the Governors (of which only part are still in the Department's possession), the only reports used are those of the Health Services, where the part devoted to demography is directly based on official statistics".

"The functioning of civil registration faces the same problems as the enumeration operations and there is not one French possession where statistics do not show anomalies that reveal their shortcomings".

Added to the historic interest of these quotations is their topicality. For it has unfortunately been proven that these criticisms are, for the most part, still valid in 1980; and not only in Gabon.

If the information provided by population data during the colonial period is very modest, the overall observation by officials at all levels is clear enough to confirm a population decline up to the 1950's. The monographic works available, in particular those which deal with mortality, fertility, sterility, depopulation and their causes, maintain this assertion and we consider it was a mistake to scorn the village registers or monographs, or the records of the department of major endemic diseases, the quality of which was found to be superior to that of the majority of the 'recommended' cartographic and census operations.

The population figures proposed in Table 51 for the period 1908-1959 were established on the basis of administrative documents and, in particular, doctors' reports. But until 1927 "health action" took the form of curative medicine with stationary teams. It is from 1932 onwards that all the population surveys conducted in Gabon by doctors and the administrative bodies note a steady birth decline... This depopulation, already perceived by BRUEL around 1910 and by LE TESTU around 1925, was to become more and more widespread up to 1946, when a 'human reserve' was envisaged to arrest this decline and relaunch the birth rate.

The enumeration method which was most used at the beginning of the colonial period, consisted in multiplying the number of households by a uniform coefficient. From around 1910, the administration was to draw up a nominative register of the inhabitants in each village visited, which amounted to identifying the 'de jure' population. There was a distinction between, on the one hand, the French and the foreigners - in 1936, for example, there were 1,089 French in Gabon and 134 foreigners - and, on the other hand, the natives, who could be protected subjects or French

citizens. However, only one person per family was questioned and, moreover, an assessment of the children was provided by the adult. As a result there was a notable underestimation of children, which, in spite of an evident improvement in the nominative population recording, has not completely disappeared.

As for 'age' figures, individual data which is essential for civil registration and the demographer, these have always been 'collective' in Black Africa, where the structure by age groups and the family structures are the two backbones of society. This collective data has not yet totally disappeared, particularly in Gabon.

3) Recent 'Population Data'

Four operations collecting for population data have been carried out, on a national scale, since 1960. Such operations ought, normally, to have provided a good knowledge of the Gabonese population. But the 1970 census did not result in any official publication; nor did that of 1980. Nevertheless, some results of the computer processing of the 1970 census are available. These only confirm the results of the survey and census of 1960-1961, while specifying an improvement of Gabonese 'population growth factors', slightly quicker than was foreseen.

Given these circumstances, it is very difficult to describe the current situation accurately, especially as Gabon is subjected, periodically, to political migration movements. Foreign immigration also depends on economic development and its ups and downs, which can give significant momentary population fluctuations.

It is partly due to these reasons that it is always preferable to distinguish the demography of Gabonese nationals from that of the whole population of Gabon. (In 1960 there were more than 20,000 foreigners, and in 1970, more than 30,000. 1976 estimates put the number at 250,000 foreigners, of whom 200,000 were African. Currently the foreign population seems to be in the region of 150,000 people).

In the 1960-1961 and 1969-1970 censuses, all individuals were interviewed where possible and the 'de facto' population and 'de jure' population were distinguished (1).

Since Independence, and for both censuses, four types of population have been distinguished:

- The rural population;
- The urban population (on the sole criterion of the existence of an administrative centre, and not according to the size of the city);
- The population of work sites (permanent, forestry, mobile);
- The institutional population of the communities, whatever its size.

(1) Some non-sedentary pygmy groups were identified in 1969-1970 and counted globally.

Each method used for collection operations since 1960 has been the subject of a publication.

Broadly speaking, for the Gabonese population, the comparative analysis of census data with data on population growth, reveals an underestimation. The table below gives the crude results and adjusted data for 1960 and 1970.

TABLE 53 - GABON - CRUDE RESULTS AND ADJUSTED DATA FROM THE 1960-61 AND 1969-70 CENSUSES (ONLY THE GABONESE POPULATION)

SOURCES	GABONESE POPULATION	
	CRUDE RESULTS	CORRECTED DATA
1960-61 Census	427 353	486 000
1969-70 Census	484 608	504 000

4) Factors Influencing Data Collection and Analysis in Gabon

a) Geographic, climatic, cultural, socio-cultural and other such factors are traditional obstacles. They are, nevertheless, too often ignored or scorned. This takes on special significance in Gabon, where in a small population there are no less than 43 different ethnic groups.

b) The mistaken "knowledge" of age, natality, mortality, fertility and other concepts, reinforced by the excessive use of models for redressing everything or almost, in the lack of correct statistics before civil registration becomes available, largely contributes to maintaining costly collection procedures, both rare and ill-adapted, and to neglecting the progressive introduction of locally adapted structures for observing population events.

c) The absence, or lack of consideration of, local interests by those external organisations with the necessary financial backup, whose immediate goals concerned political prerequisites rather than actual data collection, (when it is not a total lack of interest by some countries to finance this collection).

d) As has been previously indicated, the retention of migration information by the authorities; and the significance of some of these migrations on a small local population size.

e) The situation of the Gabonese population considered of no interest for family planning financing.

5) Consistency Between the Various Sources

Consistency between the different sources prior to Independence is primarily to be found in a permanent global depopulation agreement until the 1950's. It appears, moreover, that this phenomenon had a more or less direct impact on the whole of the Congo basin.

TABLE 54 - GABON - POPULATION TRENDS FROM 1900 TO 1980 (a)

REFERENCE YEAR	HISTORICAL RECONSTITUTION	CENSUSES : CRUDE RESULTS	ESTIMATES
1900			
	1908	650 000 [3]	
1910			
	1917	482 000	
1920			
1930			
	1936	455 000	
	1939	443 000	
1940			
	1943	438 000	
	1946	421 000	
	1949	411 000	
1950		405 000	
	1953	393 000	
	1955	402 000	
	1956	408 000	
	1957	412 000	
	1959	416 000	
1960		427 353	486 000
1970		484 608	504 000
1975 (1st January)			530 000
1980			556 000 (b)

(a) Only the Gabonese population.

(b) This estimate, made in 1981 corresponds to the projection calculated five years earlier.

There is also a certain consistency in the comparative analysis of data collected since Independence - this concerns known real data - which reveals a low increase due to a low birth rate (to the order of 32 to 34 per 1,000); a relatively high death rate (from 30 to 33 per 1,000); an infant mortality rate above 150 per 1,000; and from 30 to 35% of women between 45 and 54 years without children. The general fertility rate, estimated at 116 per 1,000, is the lowest in Africa.

For the period 1960-1969, the most commonly accepted estimate for the rate of natural increase is around 0.4%

For the following decade this rate is noticeably higher, due to a birth rate which, although still low, was improved; and to a lower death rate as a result of an intensive health campaign. The rate of natural increase is estimated at just over 1%. An estimate of the Gabonese population on January 1st 1975 can be given as 530,000 people.

The critical analysis of the population pyramids from the 1960 and 1970 censuses shows that anomalies cannot be accounted for by the usual errors and omissions alone, and that the observed age composition is primarily the

result of mortality and fertility trends in the history of the Gabonese peoples. This could well be the result of a superposition of two distinct populations, the most recent of which began to form between 1950 and 1960. The adjustment principle adopted is the historical reconstitution of past birth trends for each group of cohorts [8].

In such conditions, the proposed evolution of population size should be seen above all, as an attempt to define a margin of greatest plausibility within a set of very varied situations (some of which, however, are sufficiently monitored).

IV. CONCLUSION

"The contribution of demography to the comprehension of the African situation suffers two related difficulties: first, the technical preoccupation of the discipline; and second, its ideological orientation".
(1)

When observations which contradicted the commonly accepted figures were encountered in Gabon they were set aside as insignificant, and it was emphasized that they dealt with figures which were too low, or, that they were marred by registration errors. A multiround civil registration survey in several Gabonese cantons around 1965 was thus never exploited.

As a result of these facts it is obvious that an improvement in data sources is needed, based on the implementation of a structure for observing population events which would create an automatic reflex to declare the event - a fundamental factor of civil registration, as in the towns with the hospitals, maternity hospitals and mother and infant welfare clinics.

Gabonese demography does not yet come under established standards. Initiation to Gabonese demography begins with a sound analysis of the past, a good knowledge of current populations, an interest for fieldwork and for archives. By eliminating the abnormalities, plausible data for the past population can, nevertheless, be attained (with, for example, recourse to an historical calendar of known facts that have an impact on population development: famines, civil or military recruitment, epidemics - to quote only the major causes).

A further conclusion: there is a need for a separate study of the Gabonese population and the foreign population; and to continue to use regular population counts rather than censuses.

Visiting 'demographers' of the colonial period were criticized for making figures play a role in obtaining political, economic or social advantages. A similar criticism can be levelled against the politicians of to-day (as well as the adjustment specialists who would have us eradicate all traces of the past); we must ensure that this does not happen.

(1) "La démographie africaniste ou la recherche d'une technicité qui devient biais idéologique" - Introduction, Joël W. GREGORY.

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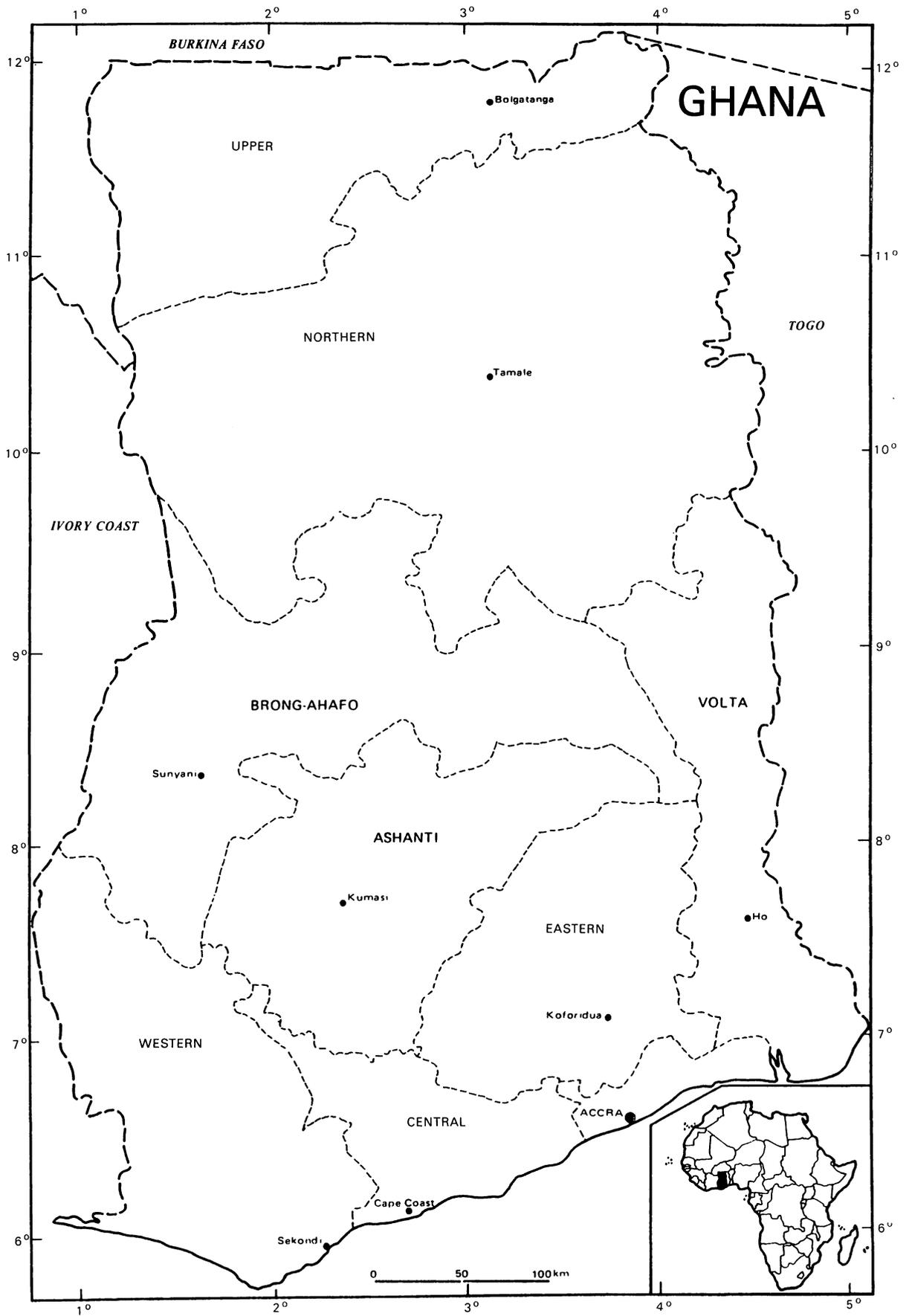
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GHANA

LUC GOARNISSON



G H A N A *

I. INTRODUCTION

Prior to the first population census in 1891, several estimates of the population of the Gold Coast were made by governors mandated by the British Crown. However, they only concern part of the territory called the 'Colony', which in 1884-1886 covered an estimated area of 20,000 sq. miles.

In 1846, Governor-Lieutenant Winniett indicated that 'based on certain data', the population within his jurisdiction could be estimated at 27,500 inhabitants or more occupying 6,000 miles (1).

In 1852, the 'Poll Tax Ordinance' ordered all inhabitants (regardless of age) to pay a shilling's tax to the governor. 151,346 shillings were collected, which led Governor Hill to estimate a population of 300,000 inhabitants, for a surface area of 8,000 sq. miles (2).

Other estimates, without indication of the information on which they are based, are provided by Governor Andrews for 1860: 450,000 (2), and by Governor Rowe in a dispatch sent in 1883: 651,000, divided into three geographical regions.

The British administrators of the Gold Coast then conducted population censuses every ten years from 1891 to 1931, with a final one in 1948. Since Independence, two censuses have been carried out in Ghana in 1960 and 1970, and a third one is planned for 1980.

The improvements made to these census operations in the course of time will be discussed in the present monograph. The surveys which have enabled estimation of population growth will then be presented and vital registration briefly mentioned. Finally, the precision and consistency of the different sources will be assessed, to estimate population size in Ghana since the beginning of the century.

II. DATA SOURCES1) Population Censusesa) The Gold Coast

* This monograph, carried out under the supervision of Francis GENDREAU, has benefited from the useful comments of Dr. K.V. RAMACHADRAN of the Regional Institute for Population Studies of the University of Ghana. Any errors or inaccuracies are to be attributed to the author.

(1) State of colonial possessions 1869. See also KUCZYNSKI [15].

(2) Blue book 1853. See also KUCZYNSKI [15].

* The 1981 Census

This covered only the 'Colony' minus the regions of Krepi and Kwala.

Organized by the village headmen ('Native Kings') at the request of the governor, an urn was set down in the village in which each head of household deposited a grain of cereal for each member of his household. (one cereal for males, another for females).

This technique copied the method, customary in pre-colonial times, by which village headmen counted the population under their authority.

The count was then carried out by the District Commissioner who filled in the forms (one line per district) and forwarded them to the Provincial Commissioner. The latter made a summary and commented on the results, which he sent to Accra. These tasks were performed on top of the routine work of these officials.

However, for 16 towns with a total population of 70,000, fieldworkers were employed by the administration; representatives of firms and voluntary workers were also called on to participate, and committees were formed. For these towns, questionnaires distributed beforehand obtained information on sex, child/adult distribution, skin colour and type of activity (8 categories); one line was allowed per dwelling unit.

764,613 inhabitants were thus counted in the 'Colony'. To allow for the important underenumeration acknowledged by the census officials, this figure was increased by 705,000.

* The 1901 Census

This census covered the whole of the 'Colony' and the 'Ashanti'. The procedure and questionnaires were very similar to those adopted for the 1891 census. The major improvement was that the operations became simultaneous: the census population is the actual population on June 1st 1901.

148,000 inhabitants were added to the 896,046 enumerated in the 'Colony'. An estimate was provided for the population of the Northern Territories: 307,724.

* The 1911 Census

The census procedure was the same, but a preliminary enumeration of dwelling units was carried out. The census was extended to the Northern Territories and in the 'Colony', two thirds of the towns and villages were enumerated using, for the first time, a questionnaire with one line per individual. Three types of questionnaire were employed, for towns, rural communes and Non-Africans. Either three, four or five age-groups were distinguished, according to the questionnaire.

The census officials considered the results to be relatively precise and did not add to the total.

* The 1921 Census

The procedure involving the counting of grains or stones was still adopted in most rural areas and certain towns. The census was extended to the territory of Togo placed under British dominion, thus covering the whole of present-day Ghana.

* The 1931 Census

Apart from certain rural zones, the population was enumerated individually using questionnaires with one line per individual. For the first time, the report included comments on the precision of the census; however, the suggested underenumeration was not estimated.

* The 1948 Census

For the 1948 census, a Temporary Census Office was officially created. The country's 19 administrative districts were divided into 39 enumeration districts, further split up into inspection areas covering several census areas. One census area was attributed to each enumerator, who was provided with a list of the localities in his sector. As in 1931, the questionnaires were filled in by the heads of households in the towns; elsewhere, they were filled in by the enumerators.

Group enumeration persisted in certain rural areas, but involved one line per dwelling unit instead of one line per village.

In the 1948 report, a paragraph devoted to the relative precision of the census results indicated that: "it may be hoped that in view of the house-by-house enumeration procedure adopted, and the low probability that any unknown villages exist, there are no longer any significant errors due to accidental omission of parts of the population". The refusal to cooperate observed in certain villages concerned no more than 0.5% of the population. In this case, any errors are more likely to produce underestimation than overestimation.

b) Ghana

* The 1960 Census

The 1960 census is the first one conducted after Independence (March 6th 1957). It follows the principles and recommendations of the United Nations and is considered as the first modern population census to take place in Africa. The 'Administrative Report, Main Census' [18] provides a full description of the methodology.

The actual census was preceded by a first field survey and a pilot census.

TABLE 55 - GHANA - OFFICIAL CENSUS RESULTS, 1891 TO 1970

	1891	1901	1911
Colony	764 613 (a)	896 046 (b)	854 055
Ashanti		345 891 (c)	288 037
Northern Territories		307 724 (d)	361 819
Gold Coast		1 549 661	1 503 911

	1921	1931	1948	1960	1970
Ghana	2 298 433 (e)	3 163 568 (e)	4 118 450 (e)	6 726 815	8 559 313

(a) Excluding the 705,000 inhabitants added on later and the territories of Kwala and Krepi.

(b) Excluding the 148,000 inhabitants added on later.

(c) Including the territory of Kintampo (10,240 inhabitants).

(d) Mere estimate.

(e) From 1921 on, ex-British Togo was included in the results for the Colony and the Northern Territories; the Gold Coast thus covered the whole of present-day Ghana.

The first field survey was conducted to test the questionnaire, the enumerator's handbook, the method of enumeration (de facto, de jure), the coverage (geographical and population), the training and to estimate the number of inhabitants that could be enumerated in a given lapse of time.

The pilot census tested all the census procedures.

Cartographic work delimited 6,788 census areas.

A widespread campaign was led to inform the population about the targets of the census, and special attention was paid to training the census personnel.

The same schedule was used for Africans and non-Africans, for town and country.

A post-enumeration survey was held three to four months after the census. This lapse of time is justified by the fact that its target was not only to measure the accuracy and completeness of the census, but also to collect additional information, in particular on economic activity outside the dry season.

The census report concluded that the population was overestimated by between 0.6% and 2.5%.

* The 1970 Census

Three operations preceded the census:

- the census areas were revised because of changes in geographical distribution and growth of the population since 1960;
- a first field survey for testing two types of questionnaire was conducted in September 1968 in 50 of the 6,882 census areas;
- a pilot census was carried out in April 1969 in 250 census areas.

The aim of the census was to obtain results as comparable as possible to the 1960 data, so that trends and changes in the structure of the population could be measured.

Contrary to previous censuses, the census unit adopted here was no longer the house or the compound, but the household.

Three weeks after the main census, an operation was carried out on a 5% stratified sample of census areas to measure coverage.

Only partial data are available for this coverage check. A comparison of the number of people enumerated during the check and during the census operations in the corresponding areas suggests an overestimation of 0.6%.

A post-enumeration test planned to check the accuracy of the contents had to be cancelled because of personnel problems.

2) Demographic Sample Surveys and Vital Registration

a) The 1931 Fertility Survey

All the 'medical officers' in the country were asked to obtain information on fertility and mortality from women who had reached the age of permanent sterility, excepting those who were already sterile when young. According to KUCZYNSKI [15], the sampling procedure used to obtain the survey population was such that the completed fertility observed (5.8 children per woman) cannot be considered representative of this group of women.

b) The 1948 Fertility Survey

A sample survey on fertility of women aged 15 and over was conducted at the time of the census. Unmarried or childless females were apparently rarely interviewed. The completed fertility obtained was 6.6 children per woman.

c) The 1960 Post-Enumeration Survey

This post-enumeration survey can be considered as a survey per se, as it not only measured the coverage and accuracy of the data collected, but provided additional information on fertility, nuptiality, mortality, religion and dwelling conditions.

A 1/20 stratified sample was selected, the sampling unit being the household. The survey population consisted of those present in the households the night before census day.

The birth rate provided by the answers to the question on births occurring over the last twelve months is 46.8 per 1,000. The use of the Brass technique [5] (adjustment of current fertility by cumulative fertility) provides an adjusted series of fertility rates which, when applied to the corrected age structure yielded by the 1960 census results, provide a birth rate of 48 per 1,000 [3].

The reverse survival ratio method (rates obtained using model life tables) leads to rates between 47 and 55 per 1,000 [5].

Questions on the number of children ever born and the number of survivors determined the choice of model life tables, which provided a series of age-specific mortality rates; applied to the corrected age structure yielded by the census, these led to a death rate of between 21 and 25 per 1,000 (Brass technique) [5].

d) The 1968-69 Demographic Sample Survey [6]

The survey consisted of two rounds, with continuous registration of births and deaths between the rounds (dual collection).

Its principal target was to obtain birth and death data from independent sources.

A stratified sample of households was selected, with a sampling fraction of 1/50.

For the first round, the questionnaire covered the composition of the household, characteristics of births and deaths occurring during the last twelve months, marriage and childbirth history, as well as knowledge of, attitude towards and practice of contraception for females aged twelve and over.

For the second round, information was obtained on changes in family composition which had occurred during the twelve months since the last round and on migration.

The first round started in October and ended in December 1968, while the second round took place between October and November 1969. Continuous registration of births and deaths began on October 1st 1968. This yielded a birth rate of 49.2 per 1,000 and a death rate of 15.4 per 1,000; the 1968 and 1969 surveys led respectively to rates of:

46.5 and 46.3 per 1,000 for the birth rate;
12.3 and 10.5 per 1,000 for the death rate.

Assimilation to a stable population based on the probability of survival between 0 and 2 years and the proportion of under-15's gives an estimated birth rate of 49-50 per 1,000 [6]. The use of a model life table chosen according to the cumulated age-specific death ratios and the mortality level inferred from the estimated probability of survival between 0 and 2 years gives a mortality rate of 19-20 per 1,000 (Bourgeois-Pichat technique) [6].

e) Complementary Survey of 1971

The survey was conducted to provide additional information which, for reasons of time and cost, could not be collected during the 1970 census; it was held 18 months after the census.

The survey population consisted of a 1/20 stratified sample of households.

The survey repeated the census questions, and additional information was collected on fertility, nuptiality, mortality, religion, education, language spoken, tribe and economic and environmental characteristics.

The birth rate obtained from the survey was 49.6 per 1,000.

f) Vital Registration Data

In 1888, the 'Cemeteries Ordinance' set up a system of death registration for the public cemeteries of certain towns in the Colony. The system was later extended to the private cemeteries of these towns, then in 1912 to birth registration. Registration in these towns became mandatory in 1935.

The areas where registration was compulsory represented roughly 9% of the population of Ghana in 1940 and 16% in 1960. However, these mainly urban zones are not representative of the country as a whole, and reporting is incomplete.

KPEDEKPO [6] compared the births recorded in the registration zones during the five years preceding the 1960 census with the corresponding number of births estimated by means of the reverse survival ratio method applied to the population of the 0-5 years age group enumerated at the census. This analysis suggested a 26% undercount.

In another study, KPEDEKPO [6] used the age structure of the deaths recorded during the third quarter of 1966 in the registration zones. Assimilation of the population to a stable one and use of the Bourgeois-Pichat technique (1958) led to an estimated death rate of 18 per 1,000 in 1966.

In 1970, vital registration offices covered 95% of the national territory, but only 20% of births were recorded.

TABLE 56 - GHANA - ESTIMATED BIRTH AND DEATH RATES ACCORDING TO SURVEY AND VITAL REGISTRATION DATA (PER 1,000)

PERIOD	BIRTH RATE	SOURCE	DEATH RATE	SOURCE
1950-60	47-55	[5]		
1960	46.8	[21]	21-25	[5]
	48	[3]		
1966			18	[14]
1968-69	49.2 (a)	[6]	15.4 (a)	[6]
	49-50	[6]	19-20	[6]
1971	49.6	[27]		

(a) Continuous registration, 1968-69 survey.

III. CRITICAL STUDY OF CENSUS DATA

Reports have been published for all the censuses, providing comments and assessments.

1) Reference Population

The 1891 and 1901 census reports do not indicate whether the population was 'de facto' or 'de jure'. However, the above-mentioned letter sent by the governor to the village headmen seems to point to a 'de jure' population.

For the 1911, 1921, 1931, 1960 and 1970 censuses, the 'de facto' population, a simpler notion was judged preferable in the Ghanaian context.

For the 1948 census, there is no way of knowing which definition was adopted. Contrary to the earlier and later censuses which provided unequivocal instructions, the report states somewhat confusedly: "Unless opposite instructions are received from the Census Office or the supervisor, the enumerators should go to each house or compound in their census area and obtain the number of people living there, including aliens or visitors resident there at that time" [18].

2) Problems Related to Recruitment of Enumerators

The first two censuses must have been conducted with a very limited number of field workers. The general rule was to call on village headmen in the rural areas, and resort to setting up committees and using voluntary workers at all levels in the towns. It seems likely, however, that in view of the low literacy rate, the mentioned self-enumeration in the towns (questionnaires distributed beforehand) must have been filled in by the census officers [18].

In 1911, funds for the payment of 323 enumerators are mentioned.

Despite an 8-fold increase in the 1921 census budget, the number of enumerators remained, in all probability, largely inadequate.

The same remark applies to the 1931 census. However, in this case, there were more voluntary workers and the most advanced school-children were also called upon.

It is only in 1948 that sufficient enumerators could be found to cover the whole country, despite the difficulties mentioned in most of the previous census reports concerning the lack of educated individuals. This shortage led, in particular in the Northern territories, to greatly expand the census areas normally set at 1,000 inhabitants per enumerator.

In 1960, 8,410 enumerators were employed for 6,788 census areas covering 700 people in rural areas and 1,000 in towns.

3) Problems Related to Motivation of Respondents

As the method of enumeration adopted for the 1891 and 1901 censuses called for the cooperation of the authorities and the native institutions, no Census Order was applied by the government, to avoid rousing fear and opposition.

In the 1901 report, mention is made of the population's natural reluctance towards the census, which is explained by a combination of superstition and apprehension about possible taxation. Furthermore, the Ashanti region was then undergoing considerable unrest: it was the time of pacification.

The 1911 and 1921 census reports once more speak of the difficulty represented by the population's fear that the census results will, following the example of neighbouring countries, serve for future tax collection purposes.

The 1931 and 1948 reports do not refer to opposition to the censuses, which the unfavourable political conditions of the time would however suggest [18].

For the 1960 and 1970 censuses, efforts to inform the population about the targets of the census obtained its cooperation. However, as B.G. GARBRAH [9] says, the data on nationality seem questionable for the 1970 census, as this was conducted shortly after the 'Alien Compliance Order' of November 18th 1969 ordering the numerous foreign residents without residence permits to go back home.

4) Simultaneity

The actual duration of the 1891 to 1931 censuses is unknown, but the difficulties encountered in recruiting sufficiently-educated fieldworkers must in many cases have extended the census operations.

In 1948, the idea of a single reference date for the whole country, which had been adopted since 1911, was abandoned. The regional census officials were given some latitude to set the date according to the regional context.

In 1960, the census areas were delimited so that a fieldworker would cover his area in two weeks. However, this was sometimes exceeded because of underestimation of the population of certain areas or its dispersal.

Similar dispositions were taken in 1970. But delays accumulated during the mapping operations created problems, in particular in the town of Accra, where certain census areas too hastily delimited comprised populations which took two months to cover.

IV. CONSISTENCY BETWEEN THE DIFFERENT SOURCES

TABLE 57 - GHANA - MEAN ANNUAL RATE OF INTERCENSAL GROWTH ACCORDING TO OFFICIAL CENSUS RESULTS (%)

	1891-1901	1901-1911	1911-1921
The Colony	0,9 (a) (b)	- 0.5 (b)	2.3 (d)
Ashanti		- 1.5 (c)	3.5
Northern Territories			3.8 (d)

	1921-1931	1931-1948	1948-1960	1960-1970
Ghana	3.2	1.6	4.2	2.45

- (a) To obtain growth rates based on identical areas, we added to the official census figure for 1891 (without the added 705,000) 58,000 individuals corresponding to the estimate of the population of Kwála and Krepi made in 1911 (probably underestimated).
- (b) The 1901 census figure used for this estimate excludes the added 148,000 inhabitants.
- (c) The 1901 census figure used for this estimate excludes the 10,240 inhabitants of Kintampo.
- (d) The 1921 census figures used for this estimate excludes the population of ex-British Togo.

1) 1960-1970

If the assumptions that the 1970 census results are overestimated by 0.6% and the 1960 ones by 1.6% are accepted, the resulting mean annual rate of intercensal growth is 2.55%.

A detailed study of migration data from the 1960 and 1970 censuses and the 1971 complementary survey led ZACHARIAH and NIAR [22] to estimate net emigration between 1960 and 1970 at 400,000, most of this occurring towards the end of the period.

According to Margaret PEIL [16], 200,000 aliens left the country during the six months following the 'Alien Compliance Order' of November 18th 1969, and some of these later returned.

Despite the inaccuracies we have already mentioned in the non-national population data provided by the 1970 census and the 1971 survey, the estimate of 400,000 seems acceptable. The rate of natural increase this implies, 3.03% in 1960-1970, is consistent with the birth and death rates generally accepted for the period (1).

2) 1931-1960

Caldwell [1] explains the apparent inconsistency between the intercensal growth rates for 1931-1948 and for 1948-1960 by the economic depression of the 1930's which, reducing resources from cocoa and consequently job opportunities, led to a decrease in the traditional inflow of migrants. The flow may even have been reversed by return migration of temporary immigrants.

According to Caldwell, the rate of natural increase for 1948-1960 can be estimated at 2.9% and the population growth rate at 3.5%. Underestimation at the 1948 census, in view of the 1960 census population, would thus be around 7.5%.

However, this underestimation may have been higher: 'retrojection' of the population born in Ghana suggests an underenumeration of 13.3% [5].

We have opted for the intermediate figure of a 10% underestimation in 1948 provided by B. GIL [11], who obtained it from the 1960 population and an analysis of the components of population growth between 1948 and 1960.

Assuming a 1.6% overestimation in 1960, this puts the mean annual rate of intercensal growth for 1948-60 at 3.1%. For 1931-1948, the rate is 2.1% assuming an underestimation of 1% in 1931, and 1.8% assuming an underestimation of 6% in 1931 (see below for the explanation of this underestimation).

3) 1921-1931

For 1921-1931, the rate seems rather high. It is true that the migration balance in the Gold Coast is favourable: KUCZYNSKI [15] estimates net immigration for the period at 200,000. However, even if we double that figure and count 400,000 immigrants, the rate of natural increase would be 1.9%, which still seems high. This implies a considerable difference in coverage between the two censuses.

The 1948 census report declares that the 1931 census data may be underestimated, but by 1 to 2% at most. KUCZYNSKI sees nothing to suggest that the 1931 census underestimated the population.

The 1931 report suggests a 5% underestimation at the 1921 census. KUCZYNSKI [15] estimates underenumeration in 1921 at 200,000 inhabitants at least (0.9%).

(1) A recent article entitled "Fertility and mortality levels, patterns and trends in some Anglophone African countries" by K.V. RAMACHADRAN, K. VENKATACHARYA and TESHAYTEKLU, presented at an ECA experts meeting, estimates the birth rate at 50 per 1,000 and the death rate at 21 per 1,000.

Using the structure of the population by broad age groups provided by the 1921 census data and assuming a birth rate of 52 per 1,000, CALDWELL [1] assimilates the population to a stable one, thus obtaining a rate of natural increase of 1.4%.

It is difficult to favour one source rather than the other. The following relations are to be observed:

For a 1.4% rate of natural increase and a 1% underestimation in 1931, underestimation in 1921 would be 9% if immigration increased the 1931 population by 300,000 and 12% if it was increased by 200,000. Assuming a 1.4% rate of natural increase and a 6% underestimation in 1931, underestimation in 1921 would be 16% with 300,000 immigrants and 20% with 200,000 immigrants.

4) 1901-1921

The rates obtained for 1901-1911 are evidently inconsistent with those for 1911-1921. DE GRAFT JOHNSON [12] observes that the assumption of a population decrease between 1901 and 1911 implied by the official figures is unacceptable. This period, immediately following the pacification of the Ashanti region, is considered as probably the one in which the fastest progress was made until 1955.

For 1911-1921, on the other hand, the growth rates seem to be excessively high, all the more so as the country experienced at the time a devastating epidemic of influenza. According to KUCZYNSKI, net immigration cannot have accounted for more than five points in the ten-year rate of population growth, and the rate of natural increase cannot have been more than 10% for the period (0.96% per year).

The Commissioner for the Western Province of the Colony estimated that the results obtained for this region in 1911 were underestimated by 20%.

Assuming a 1.8% rate of population growth (which supposes a high rate of immigration) and an underenumeration of 12% in 1921, an underestimation of 27% is obtained for 1911.

V. PROPOSED ESTIMATES OF POPULATION SIZE SINCE 1921 AND AS OF JANUARY 1ST 1975

The uncertainty which exists not only with regard to coverage at the different censuses and to natural increase, but also and more particularly to migration, which was important in Ghana throughout the century, makes it very difficult to examine the consistency of the population data. The proposed estimates should therefore be considered with caution.

TABLE 58 - GHANA - PROPOSED ESTIMATES OF POPULATION SIZE SINCE 1921

YEAR	POPULATION SIZE	INTERCENSAL GROWTH RATE GEOMETRIC MEAN (%)	IMPLIED DIVERGENCE FROM CENSUS RESULTS (%)
1921	2 526 000		- 9
	2 873 000		- 20
1931		2.4 (a)	
		1.6 (b)	
	3 196 000		- 1
	3 365 000		- 6
1948		2.1 (c)	
		1.8 (d)	
1948	4 576 000		- 10
1960		3.1	
	6 621 000		+ 1.6
1970		2.55	
	8 508 000		+ 0.6

(a) with an underestimation of 1% in 1931 and 9% in 1921.

(b) with an underestimation of 6% in 1931 and 20% in 1921.

(c) with an underestimation of 1% in 1931.

(d) with an underestimation of 6% in 1931.

The great unknown for the 1970-1975 period is the extent of emigration of nationals and non-nationals.

ZACHARIAH and NAIR [22] observe that the economic problems experienced recently in Ghana and the rapid economic expansion of neighbouring countries suggest that the 1970's could be a time of emigration for Ghanaian nationals. Thus for 1970-1975, even if their rate of natural increase exceeds 2.9%, the expected real growth of the national population is only around 2.9% because of emigration. This puts the national population of Ghana at 9,226,000 inhabitants on January 1st 1975.

For non-nationals - 562,000 inhabitants in 1970 - an annual growth rate estimated at only 1.9% because of emigration, low fertility and high mortality, puts the population as of January 1st 1975 at 617,000. The total population of Ghana at this date can therefore be estimated at 9,843,000 inhabitants.

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LESOTHO

DOMINIQUE . TABUTIN

ERIC VILQUIN

JULY 1980



L E S O T H O

I. INTRODUCTION

Lesotho, a small State of Southern Africa, possesses a certain number of original characteristics which influence the size and evolution of its population. It is a recent population (beginning of the XIXth century) and very homogeneous (Basotho), with a very small number of white colonials populating the country. It is an extremely mountainous territory giving one of the highest population densities of Africa in relation to the cultivable land. It is a country enclosed within the Republic of South Africa which it relies upon economically. South Africa uses a large proportion of its male labour force, and this 'population abroad' noticeably complicates the evaluation of the national population.

II. DATA SOURCES1) Historical Estimates

Before its independence (October 4th 1966), Lesotho, then known as Basutoland, a British protectorate, had undergone eight population counts (Table 59). These were hasty and rough evaluations; the methodology of these enumerations was neither precise nor homogeneous, even the concepts of 'de jure' population and 'de facto' population being left to the appreciation of the enumerators. It should be stressed, however, that the periodicity of these enumerations was of some concern: they took place in April or May and were decennial after 1936.

2) Statistical Censuses

The first census worthy of this name, (the first, in particular, to have counted all members of all households individually and no longer as more or less well defined groups), took place between April 14th and 24th 1966; it was followed by the last to date on April 12th 1976. In 1966, 852,361 'de facto' and 969,634 'de jure' inhabitants were recorded. To our knowledge, the final results of the 1976 census have not yet been published; there is only a provisional figure for the 'de jure' population: 1,213,960 inhabitants [6].

3) Other Sources

The demographic surveys carried out in Lesotho (1956-57; 1968-69; 1971-73) gave estimates (unfortunately often unreliable) of the components of population growth on which intercensal evaluations of population size were based.

TABLE 59 - LESOTHO - ENUMERATION OF THE POPULATION FROM 1875 TO 1956

DATE OF ENUMERATION	'DE JURE' POPULATION	'DE FACTO' POPULATION
1875	-	128 176
1891	-	218 902
7-IV-1904	-	348 848
23-IV-1911	429 137	404 507
3-V-1921	545 922	498 781
5-V-1936	663 584	562 311
7-V-1946	-	563 854
8-IV-1956	796 456	641 674

Sources [1], [3]

Other publications have quoted the same figures, occasionally with slight variations which may be due to the exclusion of the foreign population (approximately 2,000 to 3,000 people).

III. CRITICAL STUDY OF SOURCES

1) Reference Population

After 1911, all the enumerations and censuses (with the exception of that of 1946) give an estimate of the de facto population and one for the de jure population. The relatively high proportion (5% to 20% depending on the period) of 'temporary' emigrants who left to work in South Africa, usually for several years, explains the concern for this distinction which was often ignored in other countries.

Before 1956, the almost entire lack of documentation on the methodology of the enumerations, for both collection and processing of data, narrows the possibility of a critical analysis. The definitions adopted for the concepts of 'de facto' and 'de jure' population are unknown, and nothing indicates whether such official definitions even existed. Moreover, it is almost impossible to define how the foreigners living in Lesotho were classified from the figures published. However, this foreign population has always been low (2,800 people in 1956) (1).

In 1966, the difference between the 'de jure' population and the 'de facto' population, the 'population abroad', was defined as all the people with Lesothan nationality having lived abroad for less than five years. Nationals who had been away for five years or more were therefore not included in the census, which was an innovation compared with previous enumerations, and constitutes an additional obstacle for comparing time

(1) It is all the more impossible to know whether South African 'illegals' or refugees were included in these figures.

trends. This five year restriction probably explains part of the difference between the population abroad recorded in 1956 and that in 1966.

TABLE 60 - LESOTHO - POPULATION ABROAD ACCORDING TO THE ENUMERATIONS AND CENSUSES

DATE	POPULATION ABROAD
1911	24 630
1921	47 141
1936	101 273
1946	-
1956	154 782
1966	117 273 *
1976	not available

Source: Table 59

* Population having lived abroad for less than 5 years.

2) Geographical Coverage

The physical characteristics of the territory of Lesotho complicated cartography operations and the establishing of village lists prior to the 1966 census. Moreover, the staff, time and financial resources allocated for these operations were inadequate. Some of the omissions which came as a result of this were put right as a number of the 'neglected' villages were enumerated in May and June of 1966. However, without a post-enumeration test, it is impossible to evaluate the extent of the underestimation due to inadequate geographical coverage.

3) Factors Affecting the Quality of Data Collection

According to those in charge of the 1966 census, traditional motives for escaping the enumeration (fears of taxation or conscription) still existed in 1966, despite the information campaign used prior to the census.

Moreover, recruitment and training of the enumerators seems to have been too hasty, as was revealed later through the errors committed by the obviously poorly trained fieldworkers. Furthermore, the persons in charge themselves had not, by force of circumstance, any experience in the matter.

As for the population abroad, since it was recorded according to the declarations made by the people present, several causes of poor enumeration are involved: false evaluation of the length of absence, omission of isolated individuals without any close family in Lesotho, concealment through fear of the Inland Revenue (repatriation of salaries paid abroad often constituting the major part of income), etc.

There was no post-enumeration test after any of the enumerations or censuses. It is therefore impossible to assess the effect of these various causes of error. At the very most, it can be maintained that motives for an underenumeration dominate and that these affect the 'de jure' population more than the 'de facto' population.

4) Internal Appreciation of Results

Some significant defects in the census results can easily be brought to the fore when some simple indices are calculated, such as the mean annual growth rate between successive censuses or the sex ratio (Table 61).

The sex ratio for the 'de jure' population is remarkably constant and hardly lower than that which is generally seen in the majority of African countries. The ratio for the 'de facto' population reflects that the population abroad is composed of 75% to 85% men, according to the period. On the whole, these indices seem to be probable and consistent. The mean growth rates fluctuate more, and due to the exceptional scale of international migration in Lesotho, it is impossible to assess to what degree these variations are due to an improvement in the quality of the enumerations.

TABLE 61 - LESOTHO - SEX RATIO IN THE VARIOUS ENUMERATIONS AND CENSUSES;
ANNUAL INTERCENSAL GROWTH RATES ('DE JURE' AND 'DE FACTO'
POPULATION)

DATE	ANNUAL GROWTH RATE (%)		SEX RATIO (%)	
	De jure pop.	De facto pop.	De jure pop.	De facto pop.
1875	-	3.4	-	-
1891	-	3.6	-	93
1904	-	2.1	-	89
1911	2.4	2.1	92	84
1921	1.3	0.8	92	81
1936	}	0.0	93	75
1946		1.3	-	78
1956		0.9	93	74
1966	2.0	2.9	92	76
1976	2.3	-	-	-

Source: [1]

Fig. 3

LESOTHO - POPULATION TRENDS ACCORDING TO THE ENUMERATIONS AND CENSUSES (1875-1976)

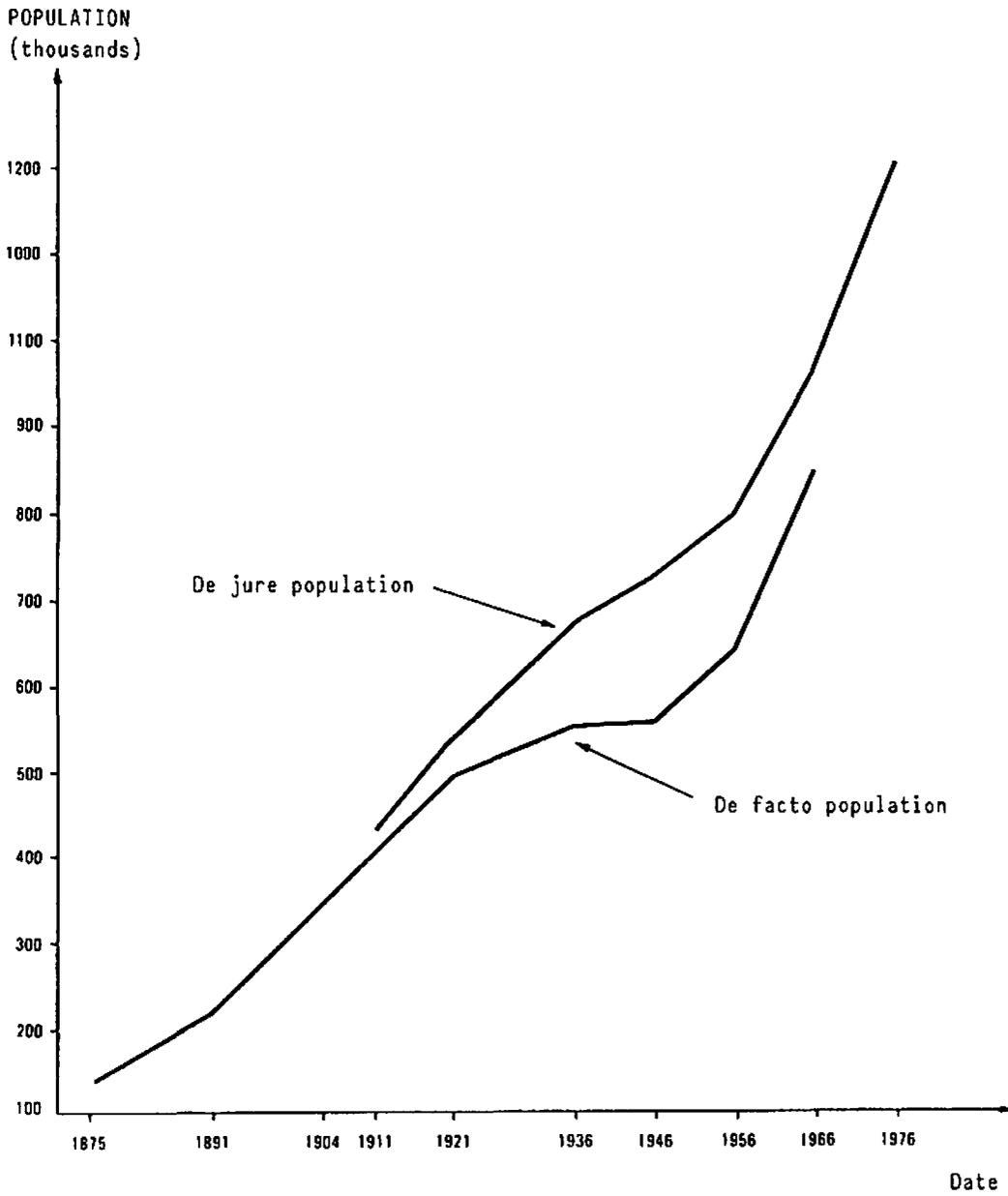


TABLE 62 - LESOTHO - POPULATION TRENDS SINCE THE BEGINNING OF THE CENTURY

DATE	DE JURE POPULATION (a)	INCLUDING POPULATION ABROAD (%)
1904	349 000 (b)	*
1911	430 000	5,7
1921	546 000	8.6
1936	664 000	15.3
1946	(727 000) (c)	*
1956	797 000	19.4
1966	970 000	12,1 (d)
1976	1 214 000	*

(a) Figures rounded up to the next thousand.

(b) 'De facto' population.

(c) Simple interpolation between the enumerations of 1936 and 1956, that of 1946 having evaluated only the 'de facto' population and ignored the population abroad.

(d) Population abroad for less than 5 years.

* Not available.

IV. CONCLUSIONS

1) Results

Since no checks were carried out for the Lesotho censuses, it is impossible to quantify, even approximately, the underenumeration which occurred. Official figures have therefore been retained, but it should be pointed out that they are very probably lower than reality.

The estimate proposed for the 'de jure' population of Lesotho as of January 1st 1975 is based on the figure given by the census of April 12th 1976 (1,213,960) and the mean annual growth rate of the 'de jure' population observed between 1966 and 1976 (2,3%):

1st January 1975: 'de jure' population = 1,180,000.

2) Sources

As regards improving the censuses of Lesotho, it would seem that priority efforts should focus on the preparatory stages: cartography, location, and, in particular, the training of persons in charge and enumerators. Concerning the special problem of the population abroad, serious comparison with the corresponding statistics of the Republic of South Africa would maybe give an idea of the extent of omissions.

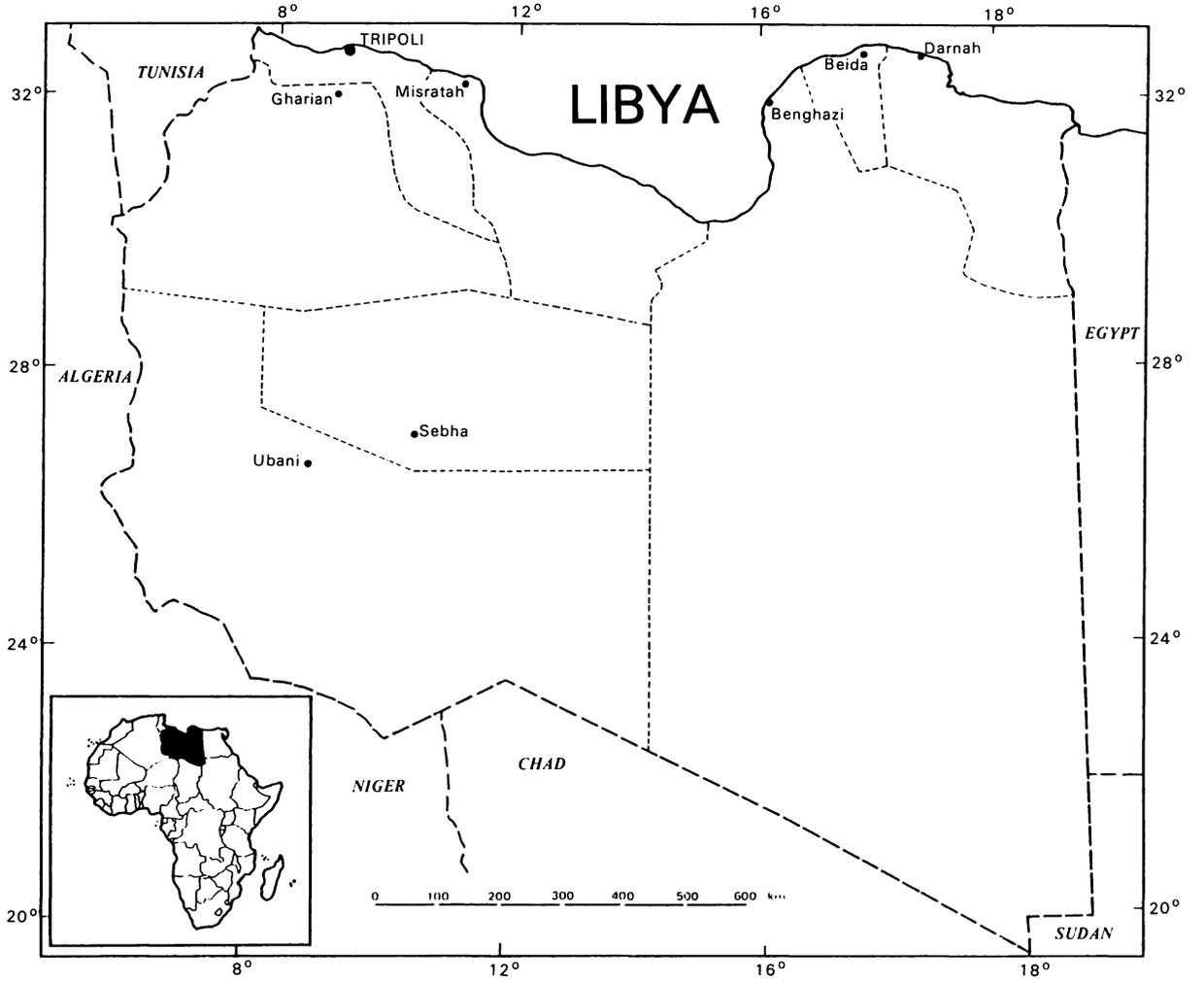
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LIBYA

K.V. RAMACHANDRAN

JANUARY 1982



L I B Y A

I. INTRODUCTION

The Libyan Arab Jamahiriya is one of the largest countries in Africa (Area 679,358 sq. miles) extending from 9°30' to 25°E and 19°30' to 34°N. It is bordered on the north by the Mediterranean sea, on the west by Algeria and Tunisia, on the south by Niger and Chad and on the east by Egypt and Sudan.

Although the land area is large, most of it is encroached on by the Sahara desert and hence is inhospitable. Most of the people live in the coastal belt and the inland oases. Of an estimated more than 400 million acres of land, only less than 10 million are suitable for cultivation. Low rainfall and inadequate agricultural machinery are major problems. Scattered nomadic tribes graze cattle, sheep and other animals on the semi-fertile lands.

Libya has a long history. It was colonized by Greeks, Romans, Vandals, briefly by Byzantines, Spaniards, Turks, Italians and finally taken over by the British - French armed forces after World War II.

In November 1949 the United Nations General Assembly decided to create an independent state of Libya and on December 24th 1951 it became the first country to get independence under UN auspices.

Its inhabitants are predominantly of unmixed Mediterranean race, with Berber elements in the south and west and black African ones in the south. Arabic is the language spoken by the majority of the population.

Until the discovery and rapid exploitation of its vast oil resources, Libya was essentially dependent on subsistence agriculture with per capita income as low as \$40 in 1951. The first oil pipe line was laid in 1961 and by 1970 Libya had a per capita income of \$1500. Today it is one of the affluent countries with per capita income estimated at around \$5000 (1979).

With the wealth accruing from oil and with a view to catching up with other countries, Libya embarked on building schools, homes, hospitals, roads, power stations etc in the 1960's. Enrolment in schools grew more than sixfold and education, health and other social services were made free and easily available.

Light industries, petro-based industries and processing of agricultural products form the main organized sectors of Libyan industry. Iron ore deposits have been discovered and plans are afoot to establish heavy industries.

Consequent on her vast wealth, small population size and inadequate trained manpower, Libya has attracted large numbers of aliens who not only work in the various industries but also help in manpower training.

II. DATA SOURCES

1) Historical Perspective

Apart from conjectures and mere impressions, there does not seem to be any basis for estimating the population of the country prior to the Italian occupation.

2) The 1931 Census

In this census, three kinds of schedule were used. The first, used only for Italians, contained questions to be obtained for each individual. The other two forms were used for the enumeration of natives according to local conditions. One of the forms had separate listing of information for each member of each family, but in lesser detail than those for Italians. The second form was for obtaining collective information for families without any identification of individuals. Enumeration was on a 'de facto' basis.

3) The 1936 Census

This census taken on a 'de jure' basis had schedules for both natives and Italians which were to be filled in for each individual. It also obtained information on name, father's name and surname or family name of each person.

For both the 1931 and 1936 censuses, census machinery as it is known was not available. In rural areas, questionnaires were filled in by heads of cabilas. In municipal areas, the civil registration records were updated. For nomads and semi-nomads, the counting was done by the public authority in charge of their administration.

At the 1936 census, cities were divided into sectors, communities into wards, and the rest of the territory into districts corresponding to the localities inhabited by the various tribes. Each division was assigned to the local administrative authority for conducting the census.

4) The First National Census, 1954

The first national census was carried out on a 'de jure' basis with midnight of July 31st 1954 as reference date. It was a bold attempt, particularly in view of the vast scatter of the nomadic tribes, the wide expanse of territory to be covered, inadequate means of transport and communications etc. The usual features of census-taking - organizational network, training of enumerators, publicity, census questionnaire adapted to local conditions, etc - were present in the census operations.

In settled areas, the two census days were declared public holidays and persons were required to remain indoors until their enumeration was completed. All possible steps were taken to enumerate the nomadic and semi-nomadic populations through specially constituted committees. Enumeration for this sector was spread over one to five months. Institutional households were covered separately.

5) The 1964 Census

This census used the experience of the 1954 census and was much improved compared with the latter. The enumeration was on a 'de jure' basis

and covered all residents - Libyans and non-Libyans. It however excluded foreign military personnel and members of diplomatic and Consular corps.

A curfew was imposed throughout Libya from midnight on July 31st to 5 p.m. on August 1st to facilitate enumeration. At the houselisting stage, an exploratory census of establishments was conducted. The contents of the census questionnaire were better than in 1954. More detailed tables on economic activity and educational status were obtained.

The 1964 census had better resources for organization and supervision. Through publicity, the inhabitants were made aware of the importance of the census. Also there was a feeling among the population that the results of the census would be used for delimiting electoral boundaries and for the number of seats in the country's legislature. This might have ensured coverage but also have led to overestimation.

6) The 1973 census

Originally the census was scheduled for July 31st 1974, but since the government needed the population and other data urgently for planning and policy making, it was decided to carry out the census one year ahead of schedule.

The 1973 census, like the previous two censuses, adopted the 'de jure' method and some over or underenumeration could have resulted. Further analyses to investigate this indicated that the count was acceptable [4].

Before we go into the analyses and appraisal of the data, it is important to consider the data collection procedure - the pre-censal, census-time and post-censal activities which might throw light on the quality of the data expected.

Compared with the earlier censuses, it seems that the 1973 count was much better organized and controlled at every stage. The plans and procedures followed in the 1973 census, as summed up below, indicate that all possible steps were taken to ensure an accurate counting of the population of the country as on census night.

For example, the 1973 enumeration was carried out by enumerators trained by the Department of Census and Statistics with appropriate supervisory controls. Special care was taken to include persons temporarily absent and those with no settled home. At the same time, in order to avoid duplication, the enumerator was asked to put a mark on the identity card of each adult counted in his area. Moreover, the census was carried out at the end of July when schools were closed, which eliminated the possibility of children being away from home at school and thus perhaps omitted or counted twice. Also, the census data was chosen so that other migratory movements were at a minimum.

Enumeration areas were clearly delimited and sketch maps showing boundaries etc were provided to the enumerators. The involvement of local personnel in houselisting operations and the preliminary head count could have reduced possibilities for omission of houses and persons in the final count. These pre-censal estimates were used for checking completeness of population coverage but there was no post-enumeration survey. There are however possibilities that some remote and inaccessible areas with very low population densities could have been omitted. Fortunately, most of the

population are now settled and nomadism is virtually vanishing from the country, thanks to settlement and housing schemes initiated by the Government. For example, as of 1973 only less than 4% of the population are either nomadic or semi-nomadic, as compared with 28% in 1954 and 22% in 1964.

The household census questionnaire contained information on name, relationship to head of household, sex, age, method of determining age, marital status (for those aged 10 years and above), number of children ever born and number of children surviving to ever-married women; religion, nationality or citizenship, educational status (for those 6 years and above), economic activity, main occupation and employment status (for those aged 10 years or more), place of birth and place of previous residence (for Libyans only), duration of residence in place of enumeration, physical handicaps and cause of handicap or disability and whether the persons included were present or temporarily absent on census night. In addition, all the above details were collected for visitors temporarily present in the household on the census night, noting down their usual place of residence.

The household questionnaire also included questions on the numbers of live births by sex and deaths by age and sex occurring in the household over the past year, in addition to information on geographic location of the household and other identification characteristics: the questionnaires were finalized after very extensive discussion with the users and were modified where necessary after some pre-tests.

The enumeration unit was the person or individual but information was normally collected from the head or any other senior or knowledgeable persons in the household on all members of the household.

Institutional populations were enumerated in the institutions of usual residence using the household questionnaire, and people with no settled abode were counted where they were found on midnight of the census day, using one form per individual.

In addition to the training of enumerators and pre-testing of the questionnaires, supervisors who were more mature than the enumerators were employed and trained to oversee the field operations. Enumeration manuals and written instructions were prepared in which not only definitions of terms and terminologies used in the questionnaire were given, but also instructions for the proper conduct and completion of the questionnaire forms. Some illustrative examples dealing with situations commonly found in the field were also provided.

Publicity and propaganda started in May 1973 and continued up to the enumeration period, using all media.

Several detailed tables have been published from this census [1, 6]. Unfortunately, the questions on number of children ever born and those surviving do not seem to have been given much importance when designing the form. The sex of the children, their present location, whether they are still alive etc. should have been included in the questionnaire. The questions on births and deaths in the household over the past year were not taken seriously by the enumerators and not checked by the supervisors, so much so that the data were virtually useless and were discarded.

7) Vital Statistics

A vital statistics system has existed in Libya for many years. Considerable improvements have been made over time in coverage as well as quality of data. Registration of births and deaths in the 1960's apparently covered only the Eastern and Western Divisions of the country, comprising about 95% of the population. In 1972 the Census and Statistics Department (CSD) started consolidating the available data on births, deaths, marriages and divorces.

Statistics on births and deaths are compiled from the monthly returns sent to the Department directly by the municipal civil records offices located throughout the country. These offices are entrusted with the responsibility of registering all vital events. Registration has been re-organized to ensure greater accuracy and more complete coverage.

The source of marriage and divorce statistics is the religious law courts, which supply the information to the civil records offices which in turn forward them to the CSD.

Statistics of births, deaths and marriages are published annually by the CSD. Births by sex, nationality of parents and age group of parents, deaths by sex, age group and nationality, and numbers of marriages and divorces are published, in addition to several socio-economic classifications of births and deaths.

Whereas the birth registration seems to be complete, death registration is not. But there are several drawbacks in both data requiring attention.

For example, births are not tabulated by age of mothers for Libyans and non-Libyans separately, the first and last age groups are too broad, and there are several women whose ages are not stated. Deaths are presented in ten-year age groups and there are also cases of age not stated. The marriage statistics would be more meaningful if age at first marriage of men and women could be tabulated.

8) International Migration Statistics

Statistics on international migration are inadequate. First of all, it is not sure whether the statistics cover all movements by land, air and sea - and whether movements across such large borders are recorded sufficiently accurately. Age and sex characteristics and nationality would be useful.

Workers registration data, however, seem to be quite comprehensive, but since children, non-workers etc. are not covered this source has only limited interest.

9) Educational Statistics

The Ministry of Education collects and compiles statistics on school children which are published annually in its statistical digest [10].

10) Establishment, Agricultural and Other Censuses

In the 1970's the country conducted a series of establishment, agricultural and other censuses from which valuable data are now available for planning and policy-making.

III. POPULATION ESTIMATES FROM THESE VARIOUS SOURCES

1) The 1931 and 1936 Censuses

The 1931 census was taken on a 'de facto' basis. In 1936, however, the enumeration was conducted on a 'de jure' basis. In addition, estimates of the 'de facto' population were also given in the 1936 report.

The native population as found in these censuses is given in Table 63:

TABLE 63 - LIBYA - NATIVE POPULATION, 1931 & 1936

CENSUS DATE	REFERENCE POPULATION	MALES	FEMALES	TOTAL	SEX RATIO
21 April 1931	De facto	341 984	312 732	654 716	109.4
21 April 1936	De facto	377 416	355 557	732 973	100.1
	De jure	388 948	361 903	750 851	107.5

Source: [5], p. 119

The analysis of the enumerations showed that "they are subject to different types of errors, but on the whole, the results of the 1936 census are considered more satisfactory than those of the 1931 census" [5].

There is greater underenumeration of females in 1931 than in 1936. Also there is a possibility that sizeable groups of nomads and semi-nomads were omitted from both enumerations.

The growth rate of the national population between 1931 and 1936 came out at around 2.3% per annum. This growth rate is high for the period and may be due to coverage and other errors. It is mentioned, regarding these censuses, that, "as the natives had only first names, identification was difficult and it was not possible to check efficiently for underenumeration or repeated counting of the same individual even where records of individuals were obtained" [13].

TABLE 64 - LIBYA - POPULATION BY AGE GROUP, SEX AND NATIONALITY, 1954

AGE GROUP	TOTAL POPULATION		NATIONALS		NON-NATIONALS	
	M	F	M	F	M	F
0-4	79 163	79 623	76 518	77 116	2 645	2 507
5-9	71 745	69 835	69 640	67 797	2 105	2 038
10-14	61 760	51 616	59 947	49 837	1 813	1 779
15-19	49 314	44 058	47 564	42 326	1 750	1 732
20-24	48 430	42 288	46 215	40 274	2 215	2 014
25-29	48 033	44 622	45 622	42 271	2 411	2 351
30-34	37 022	35 364	34 428	33 363	2 594	2 001
35-39	28 683	26 064	27 091	24 801	1 592	1 263
40-44	25 919	28 152	24 014	26 768	1 905	1 384
45-49	21 261	17 889	19 807	16 777	1 454	1 112
50-54	25 270	24 070	24 152	23 013	1 118	1 057
55-59	14 857	9 781	13 911	8 814	946	967
60-64	18 862	18 109	17 954	17 186	908	923
65-69	10 030	7 281	9 467	6 758	563	523
70 +	24 451	24 510	23 753	23 854	698	656
Unknown	475	336	281	280	194	56
All ages	565 275	523 598	540 364	501 235	24 911	22 363

Source: [2], Table 4

2) The 1954 Census

According to the census, there were 1,088,873 inhabitants, 47,274 of whom were aliens. The census provided tables regarding distribution of population by sex, age, marital status, literacy, occupation and industry.

The growth rate between the 1936 and 1954 censuses was less than 2%. Although this rate is reasonably high, the fact that there was some

underenumeration in 1936 would reduce this. Hence it is suspected that the 1954 enumeration also suffered from underenumeration [2, 11].

Table 64 gives the age-sex composition of the population as obtained in the 1954 census.

3) The 1964 Census

The 1964 enumeration produced a total population of 1,564,367, with aliens comprising 48,866 persons. The growth rate between 1954 and 1964 was 3.8% per year which is rather high. Part of this could be due to the underenumeration in 1954, but as mentioned earlier there was overenumeration in 1964 due to an impending election [14, 3, 7, 9, 12].

The publications were quite detailed and national and non-national populations were tabulated by age group, sex, Muqataa, place of birth, as well as by educational, economic activity and household characteristics.

A thorough analysis and evaluation of the 1954 and 1964 data showed that the 1954 Libyan population should be increased to more than 1,100,000 instead of the enumerated 1,040,000 and that the 1964 census population should be decreased to 1,480,000, which gives an intercensal growth rate of 2.6 - 2.7% per year [7, 8].

Table 65 presents the age-sex distribution of the population as of July 31st 1964.

4) The 1973 Census

The 1973 enumeration resulted in a total 'de jure' household population of 2,249,237 of which 196,865 were non-Libyans. An additional 3,000 male Libyans were enumerated in institutions. It is not known whether there were any non-Libyans in institutions.

Table 66 gives the age-sex distribution of the population enumerated in 1973. The growth rates of the native population between 1954-73 and 1964-73 are 3.6% and 3.4% respectively. Whereas the first rate is too high, the second one looks reasonable. The high value for 1954-73 is due to underenumeration in 1954.

During 1964-73 an estimated 33,000 Libyans returned from other countries, whereas those reported as having returned during 1954-73 amounted to 51,000. With these figures, and keeping in mind the possible overenumeration in 1964 and underenumeration in 1954, the total population counted in 1973 looks acceptable.

TABLE 65 - LIBYA - POPULATION BY AGE GROUP, SEX AND NATIONALITY, 1964

AGE GROUP	TOTAL POPULATION		NATIONALS		NON-NATIONALS	
	M	F	M	F	M	F
0-4	144 268	139 987	141 062	136 987	3 206	3 000
5-9	121 106	115 918	118 224	113 245	2 882	2 673
10-14	87 113	75 039	84 962	72 966	2 151	2 073
15-19	62 021	59 805	60 424	58 104	1 597	1 701
20-24	63 920	59 239	62 405	56 994	1 515	2 245
25-29	64 321	63 974	62 314	61 472	2 007	2 502
30-34	51 394	48 453	49 200	46 244	2 194	2 209
35-39	47 042	40 574	44 948	38 612	2 094	1 962
40-44	35 937	33 699	34 013	32 148	1 924	1 551
45-54	53 067	46 839	50 487	44 950	2 580	1 889
55-64	38 842	30 909	37 357	29 769	1 485	1 140
65-74	25 555	21 589	24 954	20 903	601	686
75 +	18 115	14 244	17 822	13 916	293	328
Unknown	685	714	485	534	200	180
All ages	813 386	750 983	788 657	726 844	24 729	24 139

Source: [3], Tables 4, 5, 7, 8, 10 and 11.

TABLE 66 - LIBYA - POPULATION BY AGE GROUP, SEX AND NATIONALITY, 1973

AGE GROUP	TOTAL POPULATION		NATIONALS		NON-NATIONALS	
	M	F	M	F	M	F
0-4	225 300	218 919	215 924	209 956	9 376	8 963
5-9	192 681	187 780	185 501	180 906	7 180	6 874
10-14	142 141	129 942	137 608	125 714	4 533	4 228
15-19	96 112	87 811	88 793	80 524	7 319	7 287
20-24	85 974	76 514	70 468	65 406	15 506	11 108
25-29	82 429	70 072	60 820	60 682	21 609	9 390
30-34	70 745	52 760	51 218	47 030	19 527	5 730
35-39	67 172	54 233	51 207	50 608	15 965	3 625
40-44	59 393	40 880	44 618	38 688	14 775	2 192
45-49	48 007	35 810	39 109	34 416	8 898	1 394
50-54	33 587	25 899	28 077	24 937	5 510	962
55-59	22 836	17 813	20 783	17 415	2 053	398
60-64	19 024	17 596	17 977	17 256	1 047	340
65-69	15 022	12 552	14 701	12 363	321	189
70-74	12 517	12 269	12 368	12 130	149	139
75 +	18 832	16 520	18 685	16 410	147	110
Unknown	81	14	62	12	19	2
All ages	1 191 853	1 057 384	1 057 919	994 453	133 934	62 931

Source: [1], Tables 23, 24, and 26.

Also the external checks of the 1973 population count with school statistics, registration of workers with permits, entry and exist statistics and vital statistics showed consistency. Details are given in 'An evaluation of the 1973 census data of Libya' by K.V. RAMACHANDRAN [7].

The estimated birth rate was around 52 per 1,000 and the expectation of life at birth during 1963-73 was slightly over 46 years. The infant mortality rate in 1973 was around 122 per 1,000. The life table showed that even though female life expectancy was higher than male, the gap observed was less than in other countries [4, 8]. Also there seems to have been a drastic fall in mortality after the 1960's which is explainable by the prosperity consequent on the discovery of oil. The male - female mortality differential is closing for the younger cohorts, but the older ones who have experienced high mortality in the past still show large differentials. Such male - female differentials have been reported for Egypt, Morocco, Tunisia, Sudan and other countries.

The growth rate of the population is very high and was estimated at around 3.6% in 1974. The estimated Libyan population on January 1st 1975 is 2,160,000. There was a sizeable alien population of around 200,000 in 1973 and it has been growing very fast through immigration. An average net of 40,000 persons are added every year as per migration statistics. This would imply that the alien population on January 1st 1975 would be around 280,000, taking the total population of the country as of January 1st 1975 to 2,440,000.

Table 67 shows the estimated age-sex distribution of the population as of January 1st 1975.

IV. CONCLUSION

The population of Libya has been growing at a relatively high rate, but it is still small in size, not yet exceeding 3,000,000 inhabitants. A sizeable number of aliens have come into the country and their number has been increasing, especially for skilled and semi-skilled workers, to meet the demands consequent on planned expansions of industries, social services, agriculture etc.

Mortality, which showed a dramatic fall during the 1960's and early 1970's, is expected to improve with normal tempo, but the mortality level gap between the cohorts born before and after 1964 is expected to continue.

Fertility is rather high and may continue to be so in a society where family planning and other birth control measures are not widespread. Moreover, there is a preference for large families and the prosperity of the country assures health, education, housing and other socio-economic amenities to a rapidly growing population. Again, the size of the population

TABLE 67 - LIBYA - ESTIMATED POPULATION BY AGE GROUP, SEX AND NATIONALITY,
JANUARY 1 1975

(hundreds)

AGE GROUP	TOTAL POPULATION		NATIONALS		NON NATIONALS	
	M	F	M	F	M	F
0-4	2 263	2 190	131	128	2 394	2 318
5-9	1 791	1 719	100	98	1 891	1 817
10-14	1 367	1 294	63	60	1 430	1 354
15-19	1 101	1 027	102	103	1 203	1 130
20-24	933	861	216	159	1 149	1 020
25-29	780	717	302	134	1 082	851
30-34	650	592	273	82	923	674
35-39	538	488	223	52	761	540
40-44	443	400	206	31	649	431
45-49	361	326	124	20	485	346
50-54	290	265	77	14	367	279
55-59	227	211	29	6	256	217
60-64	171	162	15	5	186	167
65-69	120	118	4	3	124	121
70-74	76	76	2	2	78	78
75 +	60	65	2	2	62	67
All ages	11 171	10 511	1 869	899	13 040	11 410

is small and a larger population could be absorbed by the economy, enabling it to replace some of the non-nationals. However, there are indications of reduced fertility among the educated and urban white-collar workers. As education is rapidly becoming universal, especially female education, it is anticipated that this will result in a fall in fertility.

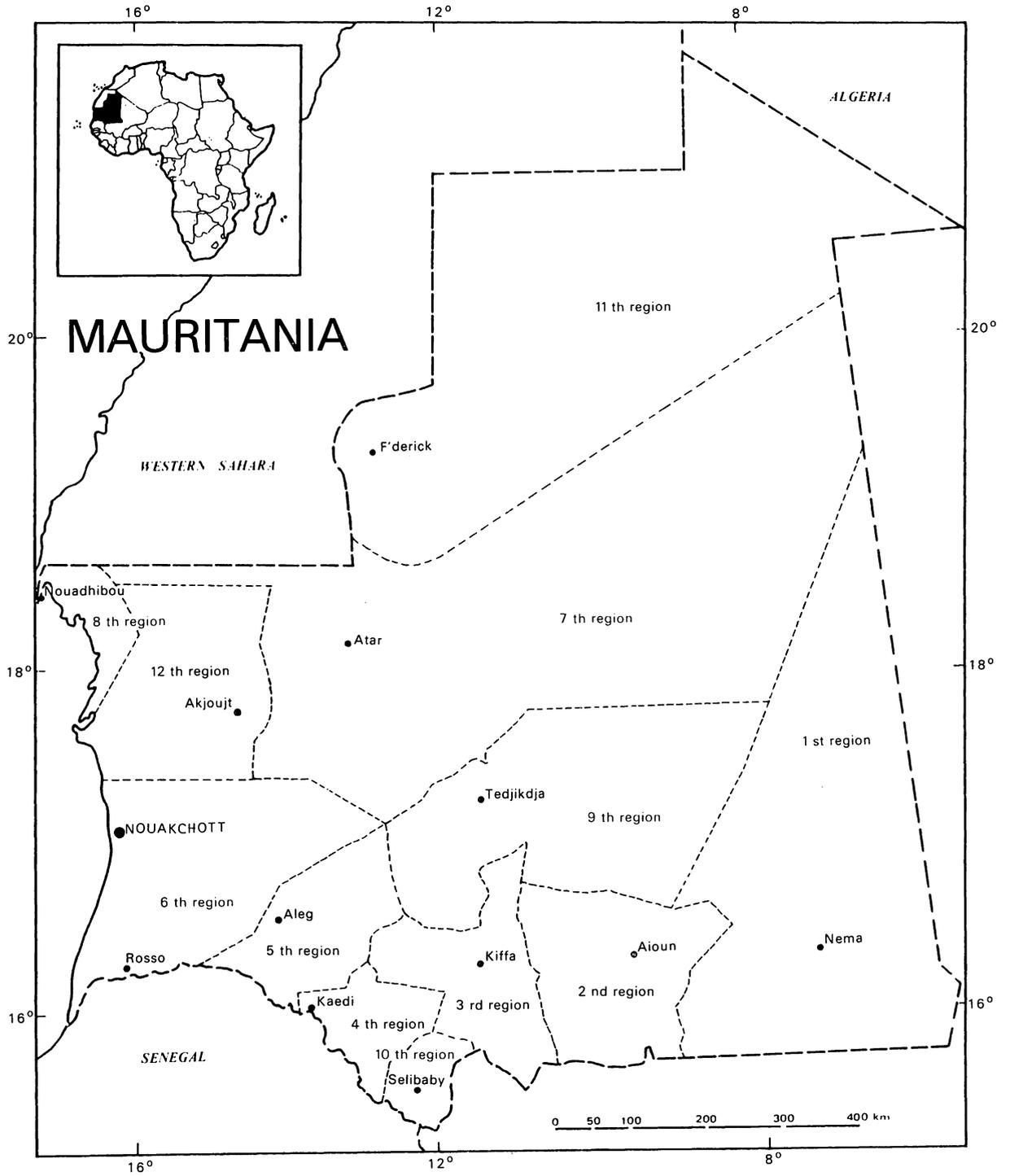
Because of the geographic and climatological situation of the country, the majority of the population is concentrated in the coastal areas and migration to Tripoli and Benghazi from the southern provinces continues. An estimated 17% of the population of the country in 1973 was enumerated in a Mohafada (province) other than that of birth. The decentralization and regional development planned in recent years might reduce the tempo of migration. However, the proportion of the population living in urban localities, which was 60% in 1973, is expected to continue to increase, but slowly.

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MAURITANIA

GERARD NOEL



MAURITANIA

I. INTRODUCTION

Mauritania occupies the western part of the Sahara bordering on the Sahel. To the south lie countries peopled with Blacks (Senegal, Mali), to the north, with Berber-Arabs: it is a land of transition. With a population estimated at 1,420,000 inhabitants, the population density of 1.4 inhabitants per sq. km. is one of the lowest in the world, the consequence of the very low rainfall: 600 mm/year in the southern tip and only 50mm/year in the north-eastern half of the country. The south-western part of Mauritania is sometimes called "exploitable Mauritania"; that is where the minimum conditions exist for practising extensive nomadic livestock farming. The cultivable land area is much more limited: 200,000 hectares are farmed along the Senegal river and in certain favourable zones, behind a dam or in a basin (low water cultivation). More generalized, rainfall cultivation is also practiced, always with uncertain yields.

These difficult conditions account for the coexistence of nomads, who are mainly livestock farmers, of semi-nomadic livestock or crop farmers, and of sedentary populations. The first two categories have appropriated the land in a very different way to the sedentary peasants: pastures, wells, cultivable land and dams belong to the tribe and may be very scattered. The sedentary peasants have been settled for centuries, mostly on the banks of the Senegal; they consist of African Negroes related to the Senegalese living on the opposite bank of the river and Moors, who are also found throughout southern Marutiania. For the latter, however, tribal ties prevail over land ones.

The colonial, then national administrations have taken these traditional structures into account. The Moors are represented by heads of communities, the African Negroes by village headmen. The case of the Peuhls is particular: they are semi-nomads very badly covered by the administration (resistance to the authorities, dispersion of the populations). According to the duration of settlement, they are administered as nomadic or sedentary.

This relatively simple situation proved increasingly ill-adapted from the 1960's with the creation of a capital, the development of the port of Nouadhibou due to the exploiting of an iron mine at Zouerate, the opening of a copper mine at Akjoujt, and a little later the construction of a tarmac road linking Saint Louis du Senegal to Akjoujt via Nouakchott and of a railway line linking Nouadhibou to Zouerate. To the traditional population movements - transhumance and migration with neighbouring countries - was added an essentially male rural migration towards the new towns, made easier by the fact that animal transport was progressively replaced by motor transport.

Finally, in the early 1970s, a catastrophic drought attracted a large part of the population to the towns. The population of the towns of at least 5,000 inhabitants grew from 3.5% in 1962 to 22% in 1977, while the nomadic population, in the literal sense, decreased from 53% to 30% of the

total population. The method used traditionally for enumerating the nomadic communities thus became totally ineffective; it was not until the 1977 census that a reasonably accurate picture of the new population distribution could be obtained.

II. DATA SOURCES

The oldest available data concern the 1944 administrative census, which provides the population by regions. For earlier periods, only monographs exist. It should be noted that the "end of the pacification" of Mauritania took place around 1930.

1) Administrative Censuses, 1944-1970

Table 72 presents the population by regions derived from the successive administrative censuses. These were carried out in 20% of the prefectures each year, which explains certain step-wise patterns. The long-term trend shows a mean annual rate of growth of 28 per 1,000; this reflects the progress in coverage which began in 1950 and subsequently accelerated.

Adding to the common sources of omissions in administrative censuses (under - 15s, women) is the fact that taxes were not paid per capita, but per head of cattle (for livestock farmers); thus the shepherds who were not taxed were often neglected. A recent example may illustrate the incompleteness of these censuses: during the preparation of the 1977 survey on nomads, the interviewers had to draw up lists of the community members under conditions similar to those of the administrative censuses, that is, by convoking the community representatives. An a posteriori comparison with the lists of the household members interviewed revealed, for the population aged 20 and over, both a 30% undercount and at the same time a 20% overcount of people wrongly included, who were in reality dead or living abroad.

2) The Survey of the Socio-Economic Mission for Senegal (MISOES), 1957

This survey covered a sample of the population living on both banks of the river Senegal; we could find no trace of it locally.

3) Census of the Main Population Centres, 1962

At this time, the exceptional development of several population centres (Nouackchott, Nouadhibou, Zouerate) made it necessary to take a census of their population. 27 localities considered as the most important in the country were covered. The field operations, which lasted 13 months, enumerated 88,000 inhabitants. Demographic and economic questions on place of birth and ethnic group were included, providing the first table of this kind for Mauritania.

4) Rural Demographic Survey, 1965

Designed to complement the population centre census, this survey covered a sample of 145,000 inhabitants, 105,000 of whom were actually interviewed, that is, roughly 1/10 of the population. The sample was obtained by a random selection of villages and nomad communities from the lists of the administrative censuses, after stratification according to size and geographical zone for the nomads and size and ethnic group for the

sedentary population. The questionnaire focussed on demographic questions. The divergence between the results of this survey and those provided by the last administrative census is strong (28.3% of omissions). The data permitted projections to be made.

5) The General Population Census, 1977

This operation, the most important so far in Mauritania, was conducted in the framework of the African census program; it is the first demographic investigation to cover the whole population. The data yielded are very instructive with regard to the redistribution of population following the drought, but for this same reason they cannot be extrapolated (regional population forecasts).

The rate of coverage, although it cannot be termed "complete", is a definite improvement on the 1965 survey (deficient sampling frame). Indeed, the rate of growth indicated (27.5 per 1,000) can only be explained by a strong underestimation of the preceding operation; this will be discussed later. The census operations also required a cartographic listing of all villages; computerized, this list provides a good sampling frame for future surveys and is a tool much sought-after by administrations and projects concerned with the rural world. The fact remains that this census operation is also seemingly the most expensive in the whole of Africa, when compared with the size of the population.

6) The National Fertility Survey, 1980

The questionnaire and the methodology used are those of the World Fertility Survey. For financial reasons, investigations were limited to the sedentary population (2/3), which was divided into three strata: urban, river and other areas. The primary sample consisted of roughly 100,000 inhabitants; a second sample was drawn among married women. The results are not yet available, but an extrapolation of the survey population apparently leads to an estimate lower than the one provided by the census of the sedentary population.

7) Civil Registration

Civil registration, which is in the hands of the Ministry of the Interior, is still at the embryonic stage. However, in certain towns 70% of births are registered, against 5 to 10% in rural areas. Marriage generally remains within the competence of the traditional authorities. Deaths are very rarely reported. No data have been published.

8) Maternity Registers

Families have for some time become very keen on childbirth in maternity hospitals. Certain of these attract mothers from far and wide, which creates problems, as births are not recorded at the home address. In the town of Rosso, for instance, the coverage rate is such that the apparent birth rate reaches 70 per 1,000! On the other hand, women traditionally go back to mother's for childbirth, which works in the opposite direction. The data for the capital seem exploitable: 90 to 95% of mothers give birth in a maternity hospital, a proportion which largely exceeds birth-reporting in the civil registers (70%). The sex ratio varies a great deal from year to year: over a period of 10 years, the mean is 104.5.

9) Other Administrative Sources

The Ministry of Education publishes an annual report on school enrolment by level, which provides a source of comparison with the census data for testing its coverage.

The Ministry of Health publishes an annual report on the causes of mortality and morbidity: these data are unfortunately not representative.

III. CRITICAL STUDY OF DATA SOURCES

1) The 1965 Population Estimate

The first 'serious' estimate of the population of Mauritania was based on the census of the main population centres and the rural demographic survey. The aggregated figures gave a total population ranging between 990,504 and 1,094,138 inhabitants for mid-year 1965; the intermediate figure of 1,028,900 was taken as the population estimate. The difference with the 1962-1963 administrative census is high (+ 38%); yet the results of these two operations are strongly suspected of under-estimation.

In 1962, an option was chosen which subsequently proved very prejudicial: "the census population corresponds to a 'de jure' population. Indeed, in the absence of a precise geographical demarcation of the population centres, the respondents were those dependent on a head of the family who was considered by the local authorities as belonging to the village". This definition is not as restrictive as it might appear, since it includes relatives of the head of the family who may be covered by an administrative census elsewhere; this must be frequent in the centres which exert a strong population attraction. On the other hand, it excludes a large part of the population made up of new residents (we have seen that the towns expanded rapidly: Nouakchott grew from 500 inhabitants in 1958 to 5,807 at the 1962 census). The 'de facto' population was 120,000 inhabitants; 88,000 were enumerated as resident or 'de jure' population. Of the 32,000 excluded from the census, many may also have been omitted during the 1965 survey.

The updating of the population of the main centres took into account only the natural increase observed in 1962 (21 per 1,000). However, if we consider the actual population growth in three towns, Nouakchott, Nouadhibou and Zouerate, and apply to the other centres the 1962 rate of natural increase, we obtain a 'de jure' population of 105,000 inhabitants in 1965 instead of 93,000.

The sex ratio for the rural population was reduced from 108 to 100 by increasing the number of females. It might have been further reduced, to 98 or 97 for instance, to take into account the traditional, mainly male patterns of migration with other countries and the migration of workers to the new towns, where the sex ratio was already very high in 1962 (Nouakchott: 124.2; Nouadhibou: 259; Zouerate: 163); this would mean adding a further 10 to 15,000 females.

The most important source of omission concerns the Peuhl livestock farmers, who are very ill known of the administrative authorities because of the instability and great dispersal of their villages. Introduced into

the sample according to the procedure applied to the sedentary population, these villages are under-represented. The 1977 census data point to a 54% underestimation of Peuhls in 1965 (44,000 inhabitants).

In view of these different remarks, and taking into account the regional populations in 1965 estimated from the 1977 census data (population and inter-regional 'lifetime' migration), we obtain an estimate of roughly 1,108,000 inhabitants for the population of Mauritania in 1965. Compared with the population on January 1st 1977, this gives a more plausible growth rate of 2.17%.

The main difficulties encountered during these two operations lay in population movements, because of their intensity and variety (nomadism, semi-nomadism, rural-urban migration, expatriation, external transhumance).

For population structure (age/sex) and natural increase alike, the quality of the data is fairly poor, despite the efforts made with regard to the questionnaire.

Comparisons with the census are no easy task. The classing of Moors with nomads, which was justified at the time for operational reasons, is in particular a problem for studying settling. An effort should have been made during processing to distinguish the true nomads, those who move around.

The population forecasts calculated with varying mortality gave a population of 1,295,000 in 1975, that is, a mean annual rate of growth of 23.3 per 1,000, which is much too high for a natural increase estimated at 16 per 1,000 in 1965.

These two operations nonetheless opened up a wide field of experience which was put to use by the general population census held in 1977.

2) The 1977 Population Census

In 1972, a request was made to the UNFPA for financing a complete census of the nomadic and sedentary populations of Mauritania. It was subsequently shown [6] that complete coverage of the nomadic population was impossible for reasons of both cost and difficulty of checking the coverage. It was therefore decided to conduct a complete census of the sedentary population and a sample survey of the nomadic population. As the relative importance of the latter category had decreased a great deal, this option was less prejudicial. Moreover, an effort was made to distinguish more clearly between the nomadic and sedentary populations, which led to the following two definitions:

- a village is an inhabited site where at least one dwelling-place is permanent;
- a nomad is a person who spends more than six months per year outside the villages.

These definitions, while inevitably imperfect, have the advantage of providing straightforward instructions for the fieldworkers.

It proved impossible to hold both operations simultaneously for reasons of lack of personnel and material. The date of December 22 to January 7 was set for the census of the sedentary population to use personnel available

during the school holidays, while the survey of the nomadic population was carried out between January and April using employees recruited specifically for that purpose.

As a 'de jure' population was necessary for the nomadic survey, for rectifying the sample, the nomads encountered in the sedentary areas during the census were enumerated. On the other hand, as the census was conducted on a 'de facto' population, people absent from the households and living 'in camp' were counted because they would not be included in the nomadic survey. The total population is therefore neither a 'de jure' nor a 'de facto' population. This ambiguity is the counterpart of the methodological progress made with regard to the nomadic population since the 1965 survey.

The improved procedure used for this population was the following:

- A list of male over-20's was established using the nomadic community lists and a sample was drawn from it: these were the 'pilot respondents'.
- The search for these respondents led the fieldworkers to the camps, the populations of which were then enumerated completely.
- The probabilities of enumerating these camps were determined a posteriori by comparing the over-20's interviewed with those on the nomadic community lists.

The proportion of the sample encountered in 1965 was 75%; in 1977, the pilot respondents encountered represent 88% of the total sample and 90% of those still living as nomads in Mauritania. Furthermore, an estimated 67,000 nomads had at the time left the country during transhumance (chiefly to Mali); for this population, it is very difficult to find a suitable survey date other than December, as certain tracks are more or less inaccessible between August and November, and after December the nomads start their descent towards the southern pasture lands.

The decision which was taken to include both visitors from abroad (7,457) and people who were absent, living abroad (15,085), remains a mystery, in view of the fact that theoretically it had been decided to cover the 'de facto' population.

In reality, it is very difficult to distinguish between nomads and sedentary population, as so many intermediate situations exist: people classified as 'temporary inhabitants', others 'absent, in camp' or 'residents of temporary villages' (villages uninhabited part of the year).

Farming camps are a real problem as there is a latent confusion between these and the true nomad camps. Given the definition adopted for the village, the fieldworker is completely free to judge how permanent he considers sites consisting of mere huts. If they are covered by the census, there may be double counting if the individuals have already been counted in their household of origin as 'absent, in camp'. If they are not covered, there may be omission if whole households have come out to the farming land. The problem is eclipsed if the farming land is located outside the national boundaries, as is frequently the case in the southern part of the Assaba and Hodh Gharbi regions, where the census findings were well below the cartographic estimates made at another time of year.

The fact that the villages have no precise boundaries means that stable camps situated nearby may be included, as respondents declare that they live there most of the year, and the villages themselves often consist mostly of tents. Similarly, a nomad who has come to stay with a member of his family living in the village may be considered by him as part of the household, because of household-family confusion. Despite the instructions given to the fieldworkers, 35,000 nomads (rectified equivalent) were thus counted in both operations, perhaps due to a food distribution in the villages at the time. This was corrected by deducting 35,000 people from the livestock farming families in the sedentary population.

The question on residence status was split into two:

- The situation as regards residence: to solve the problem of whether or not the respondent belongs to the locality;
- The situation as regards presence within the household.

It should be noted that there is no theoretical equality between 'absent, living in a village/town' on the one hand and 'visitors' plus 'temporary inhabitants' on the other hand (the case of people absent from a household and counted in another household in the same locality). A means of checking the coverage of the census is thus lost.

Table 69 presents the population size of each of these categories (sedentary population census).

TABLE 68 - MAURITANIA - DEFINITION OF RESIDENCE STATUS, 1977 POPULATION CENSUS

SITUATION AS REGARDS PRESENCE WITHIN THE HOUSEHOLD	RESIDENT INHABITANT	TEMPORARY INHABITANT	VISITOR	TRANSIENT NOMAD
Present	x	x	x	
Absent, in camp	x			
Absent, abroad	x			
Absent, in a town/village	x			
Transient nomad				x

TABLE 69 - MAURITANIA - SEDENTARY POPULATION BY SEX AND RESIDENCE STATUS,
1977 POPULATION CENSUS

SITUATION AS REGARDS RESIDENCE	POPULATION			SEX RATIO
	Male	Female	Total	
Resident, present	386 690	411 656	798 346	93.9
Resident, absent in camp	23 459	19 060	42 519	123.1
Resident, absent in town/village	29 664	13 253	42 917	223.8
Resident, absent abroad	11 895	3 190	15 085	372.9
Temporary inhabitant	14 412	8 558	22 970	168.4
Visitor (a)	9 956	5 241	15 197	190.0
Transient nomad (b)	...	...	46 126	...

(a) including 7,457 from abroad.

(b) including 35,000 wrongly enumerated as sedentary.

All these remarks show that it is extremely difficult to assess the coverage of the 1977 census because of the constant population movement, aggravated at the time by drought.

A comparison of the 1977 and 1965 figures led us to correct the regional estimates of 1965 for underenumeration. The 1977 and the rectified 1965 figures are however certainly still too low, as certain causes of underestimation remain in 1977: omission of young females, whose number we increased by 13,282, omission of whole households who had moved to farming lands which were not enumerated, Peuhl nomad communities which could not be included in the sampling frame. The lack of information on emigration limits the possibility of rectifying the female population. The sex ratio observed in 1977 was 96.7, compared with 106 for rural areas in 1965 and 101 for the main population centres in 1962 (the latter would no doubt be higher if the 'floating population' of 32,000 had been included). Such a variation in the sex ratio cannot be attributed solely to better reporting of females: emigration is no doubt part of the explanation. Assuming emigration of females to be nil, we estimated the number of migrants at 31,875 males. Underreporting of females would lead to a larger estimate of emigrants and vice versa.

The population does not seem to have been particularly uncooperative with regard to the census: there is no per capita tax in Mauritania and the livestock tax was abolished during the drought. On the other hand, the

confusion of the population census with a distribution of food supplies led to the enumeration of non-residents (for instance the 35,000 nomads).

The main difficulties were in the field operations, because of the inadequate road network and the extensiveness of many census areas. The rural cartographic work seems to have been satisfactory, and there were very few cases of overlapping of villages. Certain sites shown as 'permanent camps' on the maps had become villages, but on the whole the recently settled villages proved fairly stable. The use of amateur aerial photographs for delimiting the boundaries of the urban census districts was an initiative which helped the fieldworkers considerably. For the survey of the nomadic population, there seem to have been no major problems which could not be resolved, although the estimation of the number of nomads who had left the country during transhumance was somewhat uncertain.

The handbooks issued to the fieldworkers were much too voluminous: 86 full-size pages. Few enumerators must have read it outside the week's training course: that would have required a motivation which could hardly be expected of fourth-formers for a fortnight's spare-time job. Similarly, the use of historical calendars seems to have deterred a good number of these adolescents (very strong attraction for round numbers). The use of two very different questionnaires for the nomadic and sedentary populations caused complications at all levels (twice the printing for the questionnaires and handbooks and, more importantly, much heavier computer processing). Initially, 120 Tables were planned; only 72 have been obtained.

The handbooks were voluminous because designed to make up for a lack of supervision of fieldwork: they were intended to provide a precise answer for any of the fieldworkers' questions; but the natural tendency to find solutions more rapidly by guesswork was not taken into account. The most difficult questions are unfortunately those concerning 'situation as regards residence', 'situation as regards presence within the household' and 'type of village'. These are so complicated that the author of the present paper took several months to evaluate all their ins and outs.

A greater effort should have been made, on the other hand, for the notebooks issued to the fieldworkers (for summing up the figures by sex and household and generally noting down remarks on the reception and difficulties encountered): these were nothing more attractive than ordinary school notebooks.

IV. CONCLUSION

As we have seen, the administrative censuses have improved over time, and the ongoing one should profit from the results of the 1977 population census.

The present trend towards greater settling will prove beneficial, at least for demographic studies. A survey conducted by the Department of Hydraulics on the villages of 180 inhabitants and over located by the census has revealed a five-year geographical stability.

Many methodological improvements have been introduced, in particular with regard to the nomadic populations; however, the problem of farming lands still requires clarification.

Adjustment of the population pyramid led us to assume, for 1962 a population with a mortality level of 7.5 and a gross reproduction rate of 3.1 for a mean age of mothers at childbirth of 29.6 years, giving a growth rate of 19 per 1,000 for that date.

By assuming an exponential variation of this growth rate, we obtained a very rough evaluation of population size since 1900, based on the growth rate in 1962 and the population in 1977. Two simple equations provide the growth rate and the population at the different dates (1).

Two remarks confirm the validity of this assumption:

- the very good fit observed for the population and the rates after 1962;
- the regular progression of the coverage rate for the administrative censuses.

(1) Annual rate of growth:

$$r = e^{0,0003036 (t - 1900)} - 1$$

Population on January 1st:

$$P = 583\,290 e^{0,0001518 (t - 1901) (t - 1900)}$$

TABLE 70 - MAURITANIA - SUPPOSED EVOLUTION OF THE POPULATION, 1920-1977

DATE	RATE OF GROWTH (%/ ₀₀)	POPULATION	ADMINISTRATIVE CENSUS	RATE OF COVERAGE AT THE ADMINIS- TRATIVE CENSUSES (%)
1/1/77	23.65	1 419 079 (1)		
1/1/75	23.0	1 355 945		
1/1/70	21.5	1 215 557	1 021 000	84.0
1/1/65	20.5	1 108 853		
1/1/63	19.3	1 056 477	747 000	70.7
1/1/62	19.0 (a)	1 036 776		
1/1/50	15.3	846 977		
1/1/46	14.1	799 503	494 000	61.8
1/1/40	12.2	739 942		
1/1/30	9.1	666 360		
1/1/20	6.1	618 593		

(a) base assumption.

TABLE 71 - MAURITANIA - COMPARISON OF THE 1965 ESTIMATES WITH THE 1977
POPULATION CENSUS

REGIONS	DE JURE POPULATION ESTIMATED ON 1.1.1977	ESTIMATE MADE IN 1965	GROWTH RATE (%)	PROBABLE POPULATION 1965	GROWTH RATE (%)	DIFFERENCE BETWEEN ESTIMATE AND POPULATION 1965
Nouakchott	134 762	17 500	19,4	17 500	19,42	-
Hodh Charki	214 317	168 900	2,1	171 000	1,98	+ 2 100
Hodh Gharbi	117 456	87 400	2,6	96 000	1,77	+ 8 600
Assabq	134 826	101 100	2,5	111 000	1,71	+ 9 900
Gorgol	148 698	74 800	6,2	117 000	2,11	+ 42 200
Brahna	152 025	123 900	1,8	133 000	1,17	+ 9 100
Trarza	223 193	194 300	1,2	200 000	0,95	+ 5 700
Adrar	65 532	64 700	0,1	65 000	0,07	+ 300
D. Nouadhibou	23 949	10 800	7,2	11 200	6,83	+ 400
Tagent	71 420	81 700	-1,2	75 000	-0,46	- 6 700
Guidimaha	87 117	63 400	2,8	69 000	2,05	+ 5 600
Tiris Zemmour	23 225	15 800	3,4	17 400	2,54	+ 1 600
Inchiri	22 559	24 600	0,8	24 800	-0,08	+ 200
TOTAL	1 419 079	1 028 900	2,8	1 107 900	2,18	+ 79 000

TABLE 72 - MAURITANIA - POPULATION ACCORDING TO THE ADMINISTRATIVE CENSUSES, 1944-1970 (a)

(thousands)

REGIONS	1944	1945-1946	1948	1950-1951	1955	1959	1962-1963	1970	GROWTH BETWEEN 1.1.46 and 1.1.70
Hodh Charki	} 136	{ 80	84	} 139	{ 98	117	119	156	95 %
Hodh Gharbi		{ 54	54		{ 64	66	73	98	81 %
Assabq	63	63	65	69	70	76	(c) 88	(c) 104	65 %
Gorgol	40	40	42	38	43	56	56	(c) 96	140 %
Brahna	54	55	56	60	72	76	80	127	131 %
Irarza	72	72	74	85	92	104	122	197	174 %
Adrar	(b) 38	35	35	(b) 42	38	48	57	74	111 %
D. Nouadhibou	4	4	4	5	5	4	10	6	50 %
Tagant	41	39	40	40	42	47	60	66	69 %
Guidimaka	38	39	39	38	42	46	(c) 52	64	64 %
Iris Zemmour	(b)	4	4	(b)	7	3	14	15	275 %
Inchiri	10	9	9	9	10	11	16	18	106 %
MAURITANIA	496	494	506	525	583	654	747	1 021	107 %
Annual rate of growth (%)	///	- 0.27	0.96	1.48	2.36	2.91	3.87	4.25	2.83

(a) No administrative census strictly speaking has been conducted in Nouakchott.

(b) This figure covers both regions.

(c) New administrative divisions.

TABLE 73 - MAURITANIA - POPULATION ACCORDING TO ENVIRONMENT IN 1965 AND 1977

ENVIRONMENT	POPULATION ON		ANNUAL RATE OF GROWTH (%)
	1/1/1977	1/1/1965	
Urban	306 682	110 000	9,3 %
Rural sedentary	616 735	374 550	4,4 %
Nomads + transhumants	428 699 66 963	623 350	- 2,0 %
Total	1 419 079	1 107 900	2,17 %
Total rural	1 112 397	997 900	0,9 %

N.B. The definitions of environments are the same at both dates.

TABLE 74 - MAURITANIA - POPULATION OF THE MAIN TOWNS IN 1962 AND 1977

TOWNS	POPULATION	
	1977	1962
Nouakchott	134 762	5 807
Nouadhibou	21 930	5 283
Kaedi	20 707	9 197
Zouérate	17 401	4 659
Rosso	16 510	4 811
Attar	16 180	9 528
Kiffa	10 266	4 359

TABLE 75 - MAURITANIA - POPULATION BY BROAD AGE GROUPS IN 1977 (a)

Sex \ Age	0-14 YEARS	15-59 YEARS	60 YEARS AND+	TOTAL
Males	22.25	24.38	2.06	48.69
Females	21.95	26.82	2.54	51.31
TOTAL	44.20	51.20	4.60	100.00

(a) Adjusted population , excluding transhumants.

TABLE 76 - MAURITANIA - FOREIGN NATIONALS PRESENT ON JANUARY 1ST 1977

NATIONALITY	POPULATION
Senegalese	17 624
Maliens	3 461
French	2 922
Guineans	1 555
Others	4 161

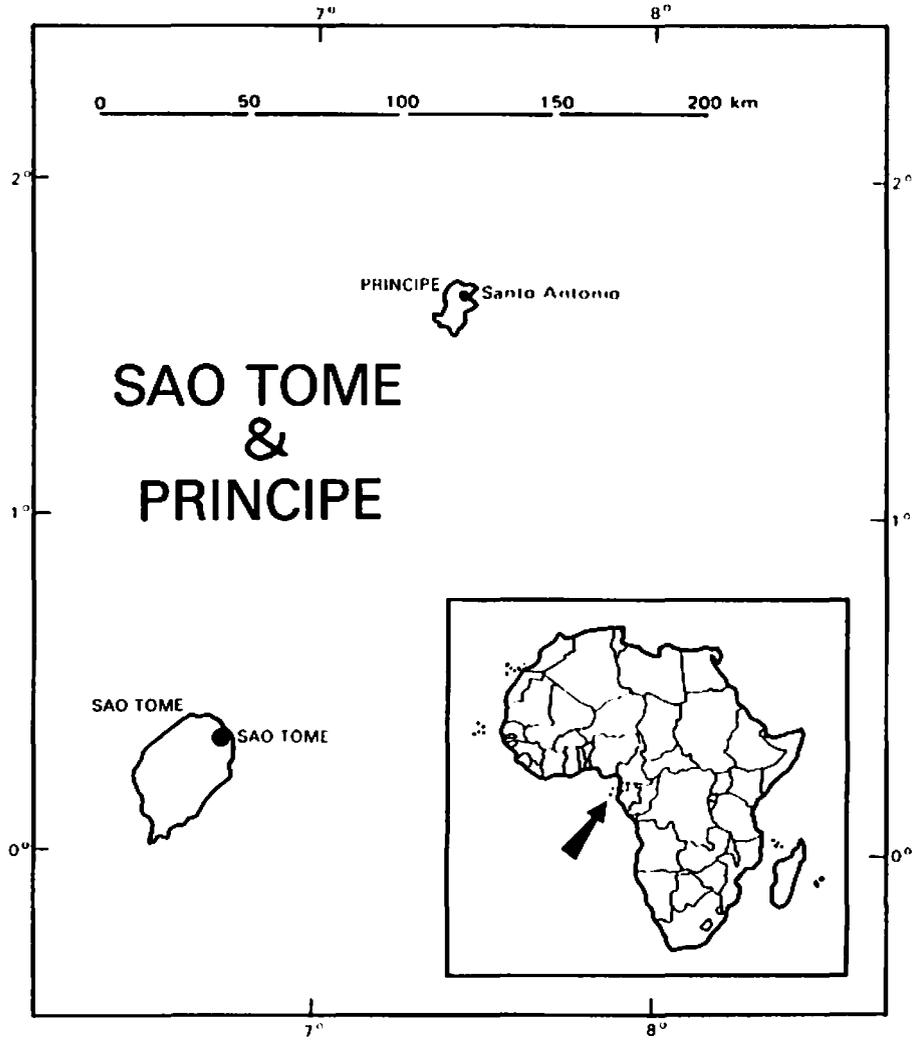
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SAO TOME AND PRINCIPE

NUNO ALVEZ MORGADO

MARCH 1980



S A O T O M E A N D P R I N C I P E

I. INTRODUCTION

The first inhabitants of this archipelago, which was deserted before the arrival of the Portuguese in 1470, were Portuguese natives; these were of Jewish or Christian descent, deportees or artisans, and a certain number of noblemen who occupied leading positions.

The introduction of slaves from Angola and also from the coast of Guinea began with the development of sugar plantations; recourse to slave labour persisted until the abolition of the slave trade and slavery; this inflow continued at a varied rate according to economic conditions.

The collapse of the sugar industry, the production level of which had rapidly reached a rate of 2,000 tons per year, provoked by disruptions on an internal and external level at the end of the 16th century when Portuguese sugar interests were transferred to Brazil, marked the beginning of a period of economic and demographic stagnation which ended with the introduction of coffee plantations in 1799 and cocoa plantations in 1822.

A new period of economic prosperity began, which reached its peak during the 1909-1919 decade with intensified immigration of the labour force in the form of workers from Angola and, more recently, from Cape Verde.

Serious problems linked to investment in world cocoa production, and competition with certain countries offering lower production costs, dramatically affected S. Tomé and Príncipe; they destroyed the basic Creole structure of agricultural production in the thirties, replaced by capitalist type firms controlled by Portuguese banks and interests, which drastically reduced imported labour requirements.

Independence of this former Portuguese colony, now the Republic of S. Tomé and Príncipe, was obtained peaceably, relations between this new country and the former colonial power being excellent.

II. DATA SOURCES1) Estimates

The first estimate available dates back to 1510 [10]. It was based on the number of existing dwellings (600-700), with a corresponding population of approximately 7,000 inhabitants.

Although there is no information concerning the evolution of this population in the three centuries which followed, it is supposed, from other documents, that this was characterized by severe fluctuations which revealed, on the one hand, the vicissitudes of the sugar plantations (which reached their peak around 1550 with 3,000 implements), and on the other hand, the effect of health conditions which were clearly unfavourable.

**** SAO TOME AND PRINCIPE ****

In 1821 [11], the population estimated by enumeration was set at 7,612 people, that is, the same size as that of three centuries previously.

In 1832, another source [12] estimated the population to be 7,060 individuals, distributed as follows:

TABLE 77 - SAO TOME - POPULATION DISTRIBUTION BY SEX AND STATUS IN 1932

STATUS	MEN	WOMEN	TOTAL
Free	2 142	2 831	4 973
Slaves	879	1 208	2 087
Total	3 021	4 039	7 060

Between 1832 and the end of the century, estimates or simple counts for the years, 1844, 1878 and 1895 indicate that the values increased remarkably, a direct reflection of the expansion of the coffee and cocoa plantations.

The evolution of the different immigrant components (Europeans, as persons in charge, and Blacks, from other territories under Portuguese administration, as unskilled workers) clearly shows the influence of the economic factor (Table 78).

TABLE 78 - SAO TOME - POPULATION TRENDS FROM 1844 TO 1895

	TOTAL	EUROPEANS	NATIVES	OTHER RACES	NON-NATIVES
1844	12 753	185	7 054		5 514
1878	20 928	572		20 356	
1895	30 000	1 500	12 500		16 000

2) Administrative Censuses

In 1900, a series of censuses began, which can be considered as administrative in the sense that the administrative authorities were entirely responsible for them without the intervention of any specialized statistical bodies.

Besides the 1900 census [13], there were the censuses of 1904, 1914, 1921 and 1926 [6] which together give quite an accurate view of the

evolution of the population of S. Tomé and Príncipe during the period of its cocoa exportation peak.

3) Statistical Censuses

The 1940 census was, strictly speaking, the beginning of a series of statistical censuses, that is to say, censal operations which took place every decade, complying as far as possible with the principles of universality and instantaneousness.

Both the 1940 census and those which followed were technically orientated by the Portuguese N.I.S, a central statistical authority for all territories under Portuguese administration. This orientation was conveyed by the dispatching of detailed instructions including the plan for the data processing, by technical support and by the publication of the principal tables.

Such censuses were carried out in 1940, 1950, 1960 and 1970. A new operation was planned for 1979, but never took place.

III. CRITICAL STUDY OF SOURCES

1) Reference Population

As from at least 1900, the data collected only concern the 'de facto' population. This circumstance does not preclude an objective view of demographic realities, as no considerable number of native departures was observed and immigrant workers always stayed several years.

The population thus determined corresponds to the population which genuinely participated in the economic and social life of the archipelago, since there was no significant difference between the 'de facto' population and the resident population.

2) Field

The censuses, as well as earlier enumerations, always covered the whole of the country and were facilitated by its exiguity and perfect geographical definition.

Data was exploited at the 'concelho' level, with information available at the 'freguesia' level. It is possible to distinguish between urban and rural population due to the fact that the only significant urban zone corresponds to one 'freguesia', that of the country's capital.

3) Factors Likely to Have Influenced the Quality of Data Collection

Factors which influenced the quality of data collection are comparable to those found in certain southern European or South American countries rather than those found in African countries.

Since S. Tomé and Príncipe is a limited territory with the population concentrated in small groups (villages or farming concerns) and with a social and cultural level above the average standard of Black Africa, the problems which arose when these censal operations were carried out were, on

the one hand, due to the enumerators (a problem of recruiting, in number and quality) and, on the other hand, due to the respondents for whom it was difficult to procure correct replies concerning age, kinship and fertility etc.

As regards the accuracy of the population enumerated - both total and by sex -, the censuses carried out in S. Tomé and Príncipe may be considered to be of an extremely good quality, with an exceptional degree of precision for a country in the African continent.

4) Results of the Post-Censal Surveys

No post-censal survey has been carried out in the demographic field. The elaboration by the Statistical Services of inter-censal population estimates for the middle and end of each year should, however, be noted. These estimates appeared, moreover, in the demographic and statistical publications of the UNO; the method followed was that of the demographic equation, that is to say, using population growth statistics.

5) Consistency between the Different Sources

Comparison of the various sources enables us to conclude, that, in general, the resulting data are compatible with one another and that the elements available on the evolution of the population size of S. Tomé and Príncipe are consistent.

As from 1940, there are only slight differences between the results of successive censuses and those from the series of estimates made using the method indicated above. For example, between 1940 and 1950, the overall error was + 1.2%, + 2.4% for males and + 0.6% for females. This error can be attributed to occasional failings in the noting of migrations, and more particularly to greater movement of workers employed during this period.

IV CONCLUSION

1) Results

The estimate obtained from the application of the demographic equation gives, for January 1st 1975, a total population of 72.711 - 35.673 males and 37.038 females.

The evolution of the migratory flows after 1971, characterized by the progressive accentuation of a negative balance which reached a considerable level between 1972-1974, is to be observed in a qualitative change in the population composition of S. Tomé and Príncipe. Thus:

- A new decrease in the masculinity proportion is recorded. From 50.3% in 1970, it fell to 49.8% in 1974, continuing the decline which started at the end of the 1920s (72% in 1921, 62% in 1940, 59.9% in 1950 and 55.5% in 1960);
- A relative decrease in the proportion of non-natives within the total population can be noticed, although at this time it is not possible to quantify it. This decrease became more pronounced as from 1974 for the sub-component of European origin, now 10% less than that recorded in the 1970 census.

2) Sources

Improvement of available data on population sizes, necessarily involves the introduction of statistics on population growth, in particular, concerning births and migration. Given the small size of the territory and the concentration of the population in a relatively limited area, and the fact that we are dealing with islands with few exit points, the obtaining of statistics almost exact in terms of quantity and of a quality comparable to European models, remains a perfectly accessible objective.

Thus, the outline for a system of intercensal estimates of good quality and adequate for administrative requirements and demographic research (by island, sex and age group) presents no difficulty from a technical point of view.

TABLE 79 - SAO TOME - POPULATION TRENDS FROM 1900 TO 1970

YEAR	TOTAL		EUROPEANS	NON-NATIVES	NATIVES
	M + F	M	M + F	M + F	M + F
1900	42 130	23 248	1 187	21 510	19 433
1914	58 834	37 998	1 659	36 887	20 288
1921	59 055	42 537	1 115	38 697	19 243
1940	60 490	37 593	995	28 459	31 036
1950	60 159	36 045	1 152	24 060	34 947
1960	64 230	35 687	2 013	21 270	40 947
1970	73 594	37 017	1 876	10 330	61 388

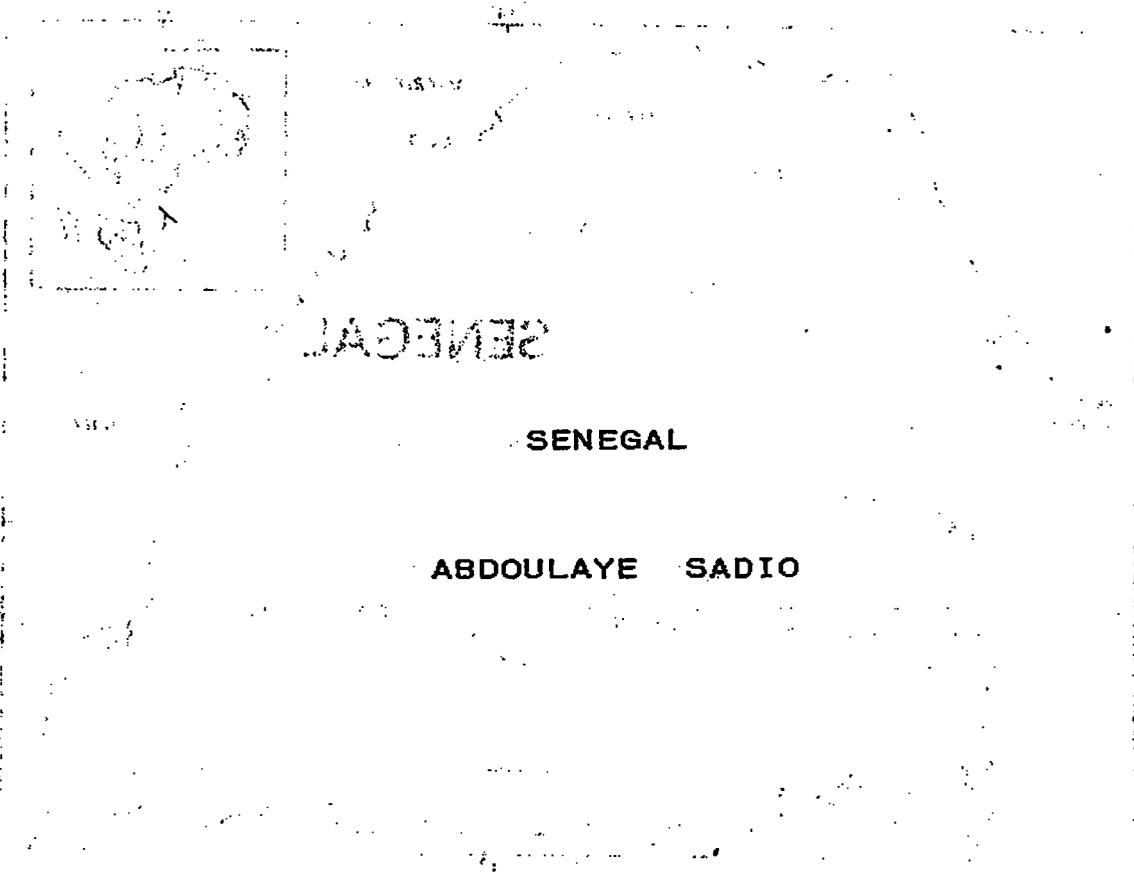
TABLE 80 - SAO TOME - STATISTICS OF POPULATION GROWTH 1970-1974

YEAR	1970		1971		1972		1973		1974	
	MF	M	MF	M	MF	M	MF	F	MF	F
Natural Movement										
Births	3 274	1 638	3 275	1 626	3 392	1 768	3 033	1 552	3 065	1 537
Deaths	921	472	859	448	840	439	993	514	1 056	573
Natural Increase	2 353	1 166	2 416	1 178	2 552	1 329	2 040	1 038	2 009	964
Migration										
Arrivals	5 145	3 153	3 055	1 971	4 146	2 803	4 234	2 627	2 808	2 410
Departures	4 991	3 218	3 843	2 543	6 483	4 388	7 976	4 883	5 888	3 900
Migration Balance	154	- 65	- 788	- 572	-2 337	-1 585	-3742	-2 256	-3 080	-1 490
Total Increase	2 507	1 101	1 688	606	225	- 256	1 702	-1 218	-1 071	- 526

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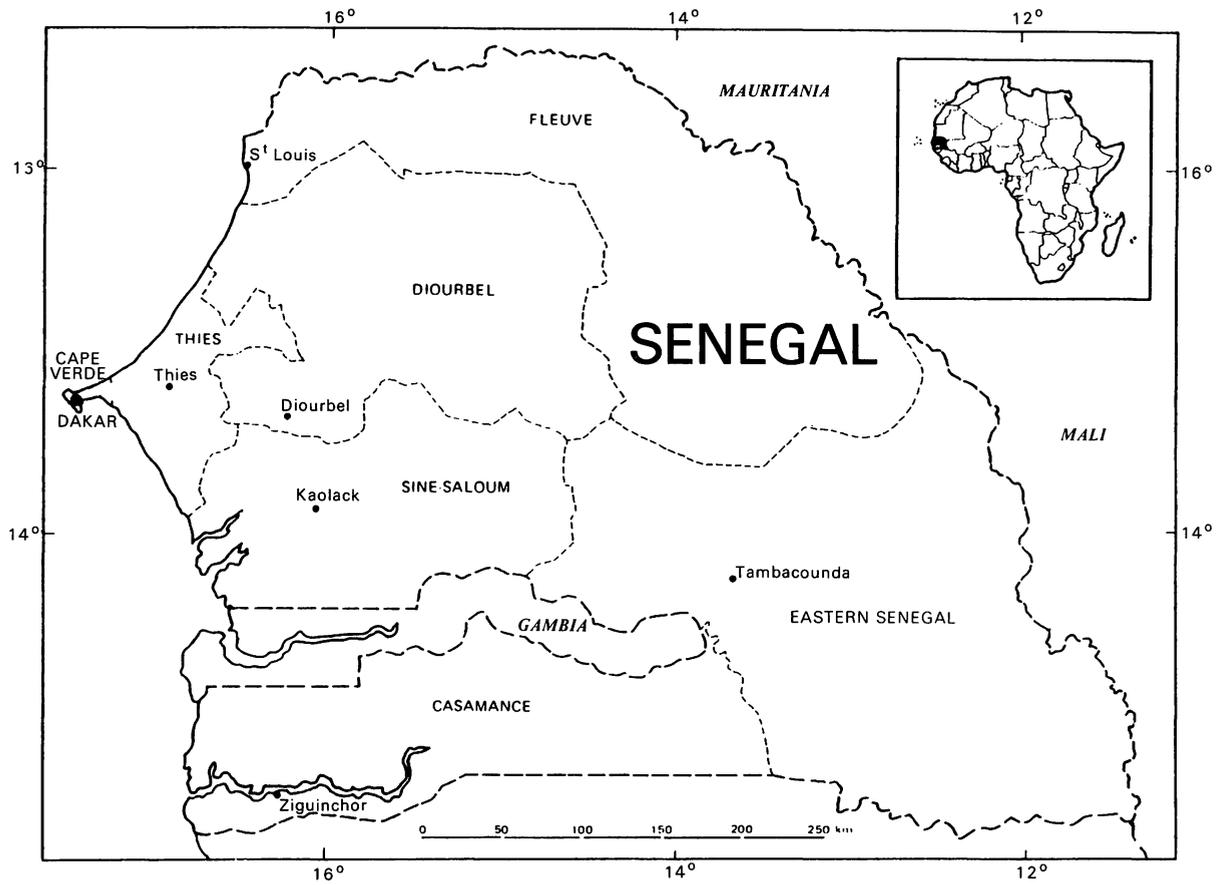
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SENEGAL

ABDOULAYE SADIO



 S E N E G A L
I. DATA SOURCES1) The Administrative Censuses

The first sources of data on the population of Senegal date back to the beginning of the century. These were simple counts of certain categories of the population carried out for essentially fiscal purposes.

It was in 1907 that the first administrative census was carried out. This census covered the four communes of Saint-Louis, Gorée, Dakar and Rufisque, the ports of call along the rivers and the small strip of land on both sides of the railway linking Dakar to Saint-Louis, a total area of 1,135 sq. km.

These administrative censuses were at first organized every four years, and then every year. They still take place at the present time but only cover the population residing outside the communes (contrary to what was formerly practised).

Due to their objectives, the administrative censuses did not give results which accurately reflect the demographic situation of the country at the periods considered.

2) Population Censuses of the Communes

Population censuses of certain communes were also carried out by the colonial government. These were the following, in chronological order:

Diourbel in December	1951
Ziguinchor in December	1951
Thiès in March-April	1954
Saint Louis in April	1954
and Dakar in April	1955

These censuses only covered the African population, apart from the Dakar one which also enumerated the non-African population.

For the whole of French West Africa, some censuses of non-natives were also carried out in 1946, 1951 and 1956.

3) Statistical Population Surveys

Several demographic or pluridisciplinary surveys have also been conducted in Senegal.

a) The Survey on the Mid-Valley of the Senegal

The main objective of this interdisciplinary study carried out in 1957 was to analyse the development problems in the mid-valley of the river Senegal. The actual population survey was carried out in the field from May 1st to June 30th on a sample population of 42,000 people. The sampling fraction was 1/5th in the urban zone and 1/10th in the sedentary rural zone.

The survey in the mid-valley was the first of its kind, with a fairly high coverage, to be conducted in Senegal during the colonial period.

b) The 1960-1961 National Population Survey

This was a classic single-round population survey, where the sampling ratio was 1/10th in urban areas and varied from 1/100th to 1/20th in rural areas. The sample size was 200,000 inhabitants. The sampling frame was constituted from a list of the villages and communes to which were attributed the latest known estimates of their overall population size.

The data collection operations were carried out in the field from April to June 1960 for the rural areas. However, for the urban areas they continued until August 1961.

This survey was one of the first attempts to be carried out on a scientific basis with a view to improving demographic knowledge of Senegal. Unfortunately, the only available results are those recorded in the thesis of Louis VERRIERE.

c) The 1970-1971 National Population Survey

This lies within the framework of the 1970 world census recommended by the United Nations.

It was a three-round sample survey, each round taking six months. The territory was divided into three strata:

- The urban stratum, which included all the localities of 10,000 inhabitants or more;
- The semi-urban stratum, consisting of the localities from 9,999 to 1,000 inhabitants;
- The rural stratum, grouping the localities of less than 1,000 inhabitants.

The sampling frame for the rural stratum was constituted from the results of the most recent administrative census, which provided a list of all the villages and their respective population size. As regards the communes, the last available estimate was used. The sample concerned 150,000 individuals. The sampling fraction varied from 1/10th to 1/20th according to whether the stratum was urban, semi-urban or rural.

The first round took place from May 15th to November 5th 1970; the second from December 30th to May 15th 1971 and, finally, the third from May 30th to December 5th 1971.

It was not possible to fully exploit this survey. Data processing has now been resumed.

d) The General Population Census

The above-mentioned surveys were not able to supply demographic data right down to the lowest level of the administrative districts. Thus it became essential for a general population census to be carried out. Field collection took place from April 15th-30th 1976. The questionnaire which was used for this purpose was deliberately simplified; stress was put in particular on the age and sex distribution of the population, as well as on its geographical distribution. The following characteristics were studied: residence status, place of birth, ethnic group, educational status and type of activity. The study of national population growth was not included.

e) The Senegalese Fertility Survey

This lies within the framework of both the world fertility survey and a vast demographic research programme set up by the Department of Statistics in order to complete the census data and to obtain a better knowledge of the population.

This survey was composed of two operations carried out simultaneously: the first, known as the household survey, consisted of a standard demographic survey which aimed at supplying data on the socio-economic characteristics of the population studied. This concerned a sample of 180,000 individuals. The second operation, known as the individual survey, consisted of a specific survey on fertility. This was conducted on 5,000 women of reproductive age taken from the household survey sample.

Field operations took place from April 24th to October 30th 1978.

f) The Labour Force Population Survey

This constituted the second stage of the demographic research programme mentioned above. It also consisted of two operations, the first of which was the second round of the household survey mentioned above. As for the second operation, it consisted of a specific survey on the labour force covering 65,000 people of working age; it was conducted from August to December 1979.

The size of the sample was sufficiently large to enable population size to be estimated after each of these two "household" surveys.

Due to lack of finances, it was not possible to carry out the third stage of the demographic research programme, which was to study migration

II. CRITICAL STUDY OF SOURCES

1) The Administrative Censuses

According to L. VERRIERE, the results available from the administrative censuses conducted before independence are the following:

TABLE 81 - SENEGAL - POPULATION TRENDS FROM 1907 TO 1956

YEAR	POPULATION (thousands)	YEAR	POPULATION (thousands)
1907	1 130,9	1936	1 793,0
1908	1 172,1	...	...
1909	1 209,7	1948	1 992,0
1910	1 249,3	...	...
1911	1 247,3	1952	2 137,1
...
1921	1 207,9	1955	2 222,0
...	...	1956	2 259,6
1933	1 663,0		

Source: [8]

These figures include both the African population and the non-African population. Table 81 shows a slow but steady increase in the population, with the exception of the period from 1911 to 1921. From these results, the annual growth rate calculated over the period 1907-1960 is 1.9%. According to L. VERRIERE, it seems acceptable that these administrative counts give, failing a correct estimate of the population size, a valid approximation of the growth rate.

2) The Demographic Surveys

The three main surveys with national coverage conducted in Senegal gave the following results:

TABLE 82 - SENEGAL - RESULTS OF THE 1960-1961, 1970-1971 AND 1976 SURVEYS

DATE	POPULATION (inhabitants)
1.07.1960	3 109 800
30.12.1970	3 956 616
15.04.1976	5 068 741

These figures include both the Senegalese population and the foreign population living in Senegal, as well as the institutional population. The Senegalese living abroad were excluded. They were enumerated in 1976; their population came to 48,097. It is most likely that some expatriated

Senegalese nationals living in an irregular situation or in countries where Senegal has no diplomatic representation were not enumerated.

3) Consistency of the Different Sources

The total populations for 1960 and 1970, given to the nearest unit, are not as exact as one might think. In fact, they were obtained by calculating the sum total of the population estimates for areas where surveys were conducted at sometimes very different times. Moreover, due to the small size of the sample for both the 1960 and the 1970 surveys, to the difficulties met during the updating of the sampling frame, especially in peripheral areas, and finally, to the mobility of the population in the forest-pastoral area, there is reason to suppose that these results were underestimated in certain areas more than in others.

As for the census, various reasons lead to suppose that its results are more plausible and homogenous if the different geographical units are considered. Among these reasons the following may be mentioned: the simplicity of the questionnaire which made data collection easier and reduced the length of the field operations to just fifteen days; a complete and detailed cartographic coverage of the national territory; valuable experience acquired during the previous operations by the persons in charge and some of the enumerators, etc. In general, the census results were extremely satisfactory and have moreover been confirmed both by those of the post-censal survey carried out shortly after the data collection, and by those of the "household" surveys conducted on the occasion of the Senegalese fertility survey and the labour force population survey.

These results also revealed an underestimation of the 1960 and 1970 population survey data. Thus, the annual growth rates for the total population and the regional sub-populations calculated from all these results prove to be barely significant.

III. CONCLUSION

Population trends since 1960 should therefore be corrected, taking the above into account. In the light of the results of the most recent surveys, the annual growth rate can be estimated at 2.3% for the period 1960 to 1970, 2.6% for the period 1971 to 1976 and 2.8% as from 1978. This increase can be explained by a birth rate which has hardly varied over the last 20 years, according to the results of the Senegalese fertility survey, and a death rate which has steadily decreased. By means of retrojections of the census results using the above rates, the most likely evolution of the population of Senegal since 1960 can be taken as the following:

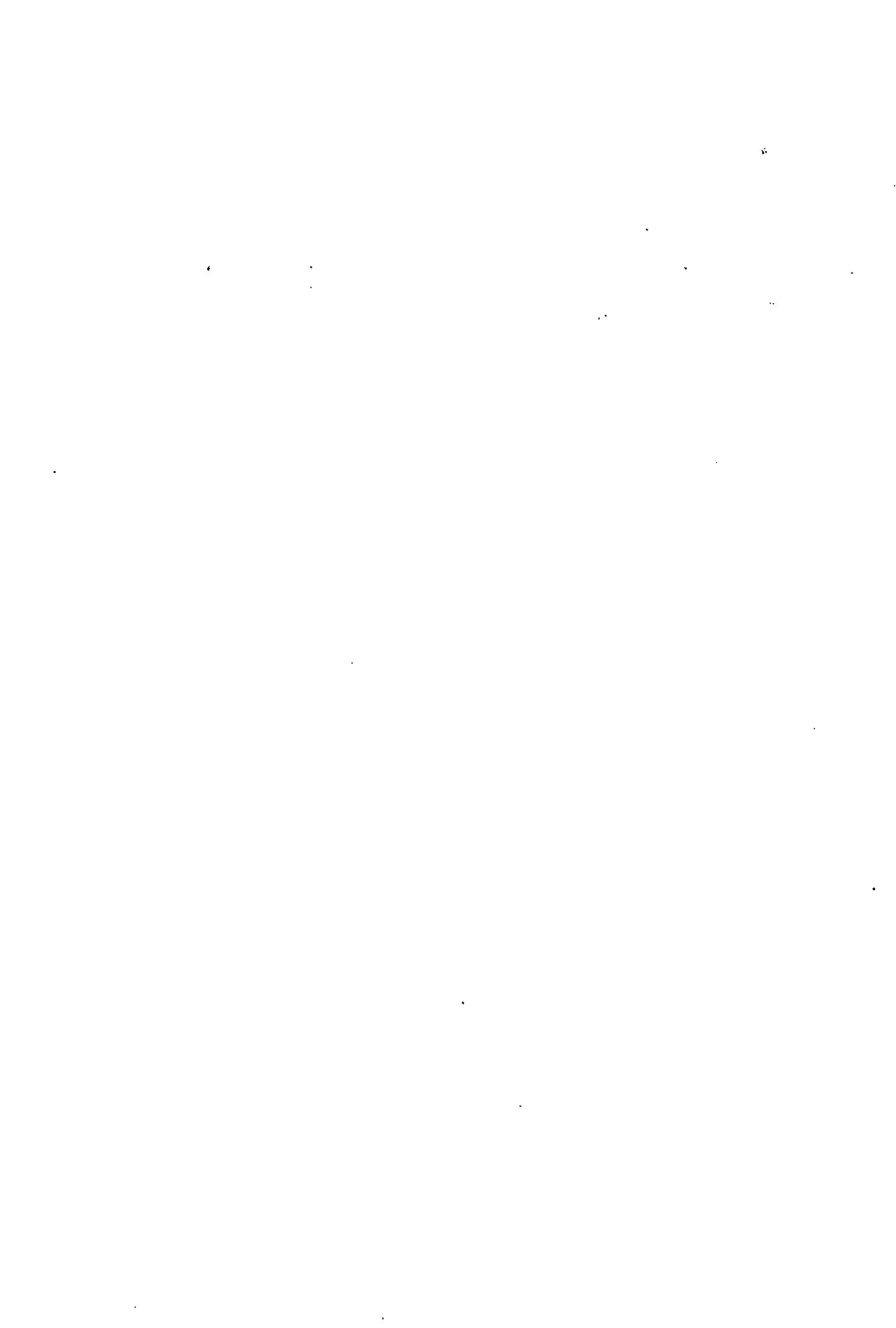
TABLE 83 - SENEGAL - CORRECTED POPULATION TRENDS FROM 1960
TO 1969

ON JUNE 30 th OF EACH YEAR	POPULATION	ON JUNE 30 th OF EACH YEAR	POPULATION
1960	3 497 546	1970	4 390 558
1961	3 577 989	1971	4 491 541
1962	3 660 283	1972	4 508 321
1963	3 744 470	1973	4 728 138
1964	3 830 592	1974	4 851 069
1965	3 918 696	1975	4 997 197
1966	4 008 826	1976	5 106 604
1967	4 101 029	1977	5 249 589
1968	4 195 353	1978	5 396 577
1969	4 291 846	1979	5 547 682
		1980	5 703 017

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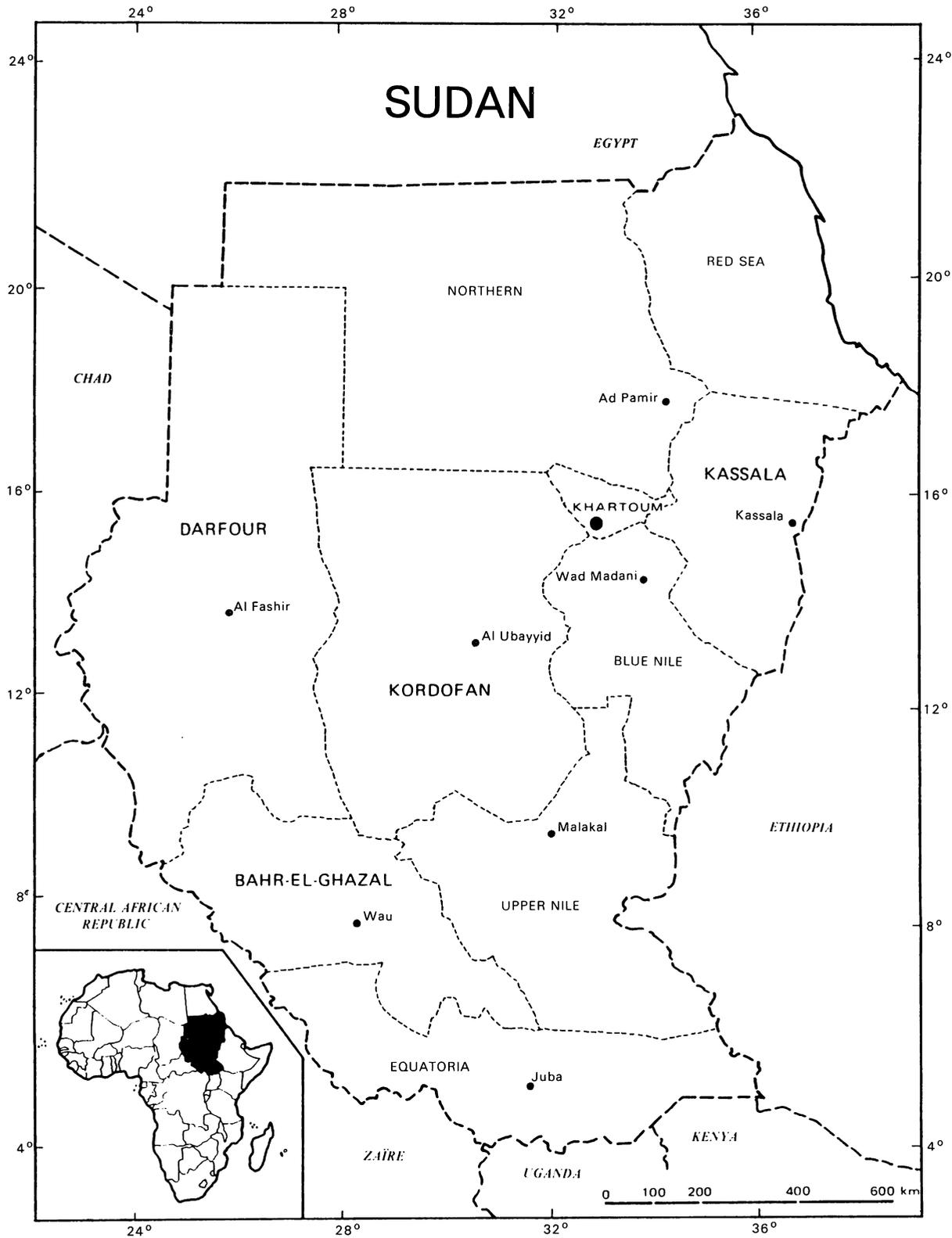


1982

SUDAN

K.V. RAMACHANDRAN

JANUARY 1982



S U D A N

I. INTRODUCTION

Sudan is a vast country (area: 967,500 square miles) with considerable variations in climate, geographic, ethnic and other characteristics. From the southern-most point at latitude 3°30' N to latitude 23° N, the country stretches some 1,300 miles and 1,100 miles separate its western (21°45' E) and eastern (39°30' E) borders. The country shares borders with 8 countries - Egypt and Libya in the north, Chad and Central African Republic to the west, Uganda and Kenya in the south and Ethiopia in the east.

For long periods the country was under foreign rule and independence was attained on January 1st 1956. The economy is primarily agricultural but potentialities for minerals and metals are there. Another resource which has not been fully exploited is the vast forest area. Industry is in its early stages. Although education is spreading rapidly, there is still a sizeable number of illiterates.

The population of Sudan is very diverse and according to the 1955-56 census there were 597 tribes speaking some 115 languages. The vast size of the territory, dispersal of the population and lack of transportation and communication have tended to keep the groups apart. The railways serve only a small part of the country around the Nile and were mainly meant for the colonial administration and external trade. The road network connects only the major towns and cities and is insufficient, especially in the West and South. Water transport alleviates some of the bottlenecks but is slow and covers only a restricted region around the Nile. The only port in the country-Port Sudan - is far from most parts of the country and is not well connected with the South and West.

One of the major needs of the country is to develop transportation and communication so that the agricultural produce of the hinterland and the forest and mineral wealth can be better exploited and the people can move more easily from one part of the country to the other.

II. DATA SOURCES

1) Historical Perspective

There were no scientifically based population estimates for the country prior to the 1955-56 sample census. Mostly the estimates were either travellers impressions or administrative counts of no demographic importance. During the colonial period, especially between 1896 and 1903, some population estimates were made, mainly for taxation purposes.

2) The 1955-56 Sample Census

In the late forties, plans were afoot for carrying out a census. For this purpose, practically all districts were visited and the feasibility of taking a population census was assessed.

In 1953, a pilot survey was conducted to test the feasibility of a sampling frame obtained from the various districts and provinces; this indicated that the frame was acceptable and that a census-type questionnaire could be used. This encouraged the administrators to go ahead with a census.

In view of the vastness of the country, the varying climate and ecological conditions, the modes of life (urban, rural, nomadic, transhumance, seasonal migrants, etc) and lack of trained manpower, logistical support, etc, it was decided that the sample census would cover a period of 12 months (actually it took 14 months). A 'de jure' method was adopted and the count covered all sedentary people who had spent 6 months or more in the country during the 12 months preceding the enumeration date. For nomads, only those who owed allegiance to a nomadic 'Shiekh' of Sudan were included.

A multi-stage sampling method was used and the sample size was such that it would permit estimation of the total population within a 5% sampling error. In addition to population by age groups and sex, information on fertility, mortality, migration, economic activity, etc were also collected [5, 6, 7].

3) The 1964-66 Household Budget Survey

This covered only the urban areas in the North and was designed to obtain demographic and household data. A 10% simple cluster sample was used and the cluster usually had one to three households. In addition to basic population data such as age, sex, marital status, migration etc, information on housing was collected [11, 12].

4) The 1973 Census

The country's first real population census was carried out in April 1973. The preparations for this census started with the issue of a Decree by the President and involved mapping, pre-testing and printing of forms, publicity, training of enumerators and supervisors, houselisting, enumeration, scrutiny, checking and editing of the questionnaires, data processing and analysis of the data.

The 'de facto' method was used for counting and enumeration was carried out by trained enumerators. The enumeration unit was the individual but, except for the institutional population, the household formed the basic unit of data collection.

Two types of questionnaires were used - the long and short forms. Whereas the short form contained only four questions - name, age, sex and relationship - the long form also had questions on marital status, nationality, place of birth, school attendance and highest level of education completed, main occupation, sector, activity and employment status, orphanhood data, number of children ever born and those surviving, information on last birth and whether the child was alive or not, housing information, i.e. type of wall and roof material, number of rooms and tenure status etc.

The long questionnaire was canvassed in the urban areas and 10% of sample rural areas and nomads. The basic information, viz, name, age, sex and relationship, was obtained for the entire population [14, 15, 16, 17].

5) Post-Enumeration Surveys

There was no PES in the true sense, but check surveys and re-surveys were carried out to verify the quality of the enumeration. Check surveys were carried out in Kordofan, Northern and Equatoria provinces in February 1975, but no appreciable difference between the estimates based on this and the 1973 census that could not be explained by natural increase and migration was noted.

A survey of the settled population in the Blue Nile province in November/December 1973, excluding the principal towns, indicated that only 22 out of a total of 4,180 villages covered had been omitted from the 1973 census. However, it was found that cotton fields were not visited during the census enumeration and a sizeable number of persons (more than 600,000) had been omitted.

The census had also shown some peculiarities in regard to the total size of the nomadic population. A comprehensive re-survey after up-dating the list of Shiekhs produced a total nomadic population of more than 1,600,000.

6) Vital Statistics

Vital registration in the country is carried out jointly by the Ministry of Health and the Department of Statistics. Although the system has been in operation since the 1930's and there are registration offices in different parts of the country, the record of registration is very poor. This is due to the fact that it is confined to the urban areas and hospitalized cases only. According to HARVIE [9], "only about one birth in five are registered, perhaps less, and about the same proportion of deaths".

The situation today is not much different. It is also important to state that the few data that are collected are not tabulated, analysed or published.

7) Household Budget Surveys etc.

As part of the activities of the Department of Statistics, household surveys focussing on consumption, production etc are carried out from time to time.

8) World Fertility Survey

This survey was carried out on a cluster sample basis in the seven northern provinces recently (1979). It is scheduled to be conducted in the south soon. The survey, which naturally focusses on fertility, covers both rural and urban areas but not the nomadic population.

Two questionnaires were used - a household questionnaire covered all members of the selected households and contained demographic and socio-economic information, whereas the second questionnaire with detailed questions on fertility was addressed only to ever-married women aged 12-50 years who slept the night before the inquiry in the household. Approximately 6,000 women were canvassed. The results are still not available.

9) Regional Development Study (MEFIT Survey)

The Regional Development Study of Southern Sudan is part of a nationwide Development Study carried out by the MEFIT, an Italian Consulting and Engineering Firm. The study started (in Southern Sudan) in 1976 and ended in 1978-79. Carried out on a sample basis in urban and semi-urban areas and villages, it was meant to be a master plan for Planning and Development in the country. Aspects covered in the study are socio-ethnographic, economic and physical (the physical aspect encompasses geological and geochemical ones, mineral explorations etc).

10) 1975 Household Survey in Equatoria Province

In his report. 'Population and Manpower in the Southern Sudan' [10], Robin MILLS mentions a Household Survey undertaken within Equatoria Province in 1975 by the Department of Statistics. The survey is said to have been carried out on a random sample of settlements taken throughout the seven rural districts, as well as the area administered by Juba Town Council.

11) Other Administrative Sources

As part of their routine activities, the Ministry of Health collects and publishes statistics annually on causes of death, numbers by age and sex of cases admitted, births occurring in maternity wards, morbidity, immunizations etc. But since these are mostly based on hospital or health centres, they reflect conditions pertaining only to a specific population [3].

The Ministry of Education collects and compiles information on enrolment, classrooms, teachers, infrastructure, school health etc. every year and these are published in their annual reports.

At the sea, air and land borders, forms are filled in by travellers into and out of the country. There has apparently been very little systematic utilization of the data and moreover, since the land borders are vast and the terrain difficult, it may not be possible to monitor all movements. The High Commission for Refugees in Sudan and neighbouring countries collect data on refugee movements and these are published by the UNHCR. How far these figures reflect the true situation is difficult to assess.

III. POPULATION ESTIMATES FROM THESE VARIOUS SOURCES

1) Historical Perspective

As indicated earlier, prior to 1955-56 population estimates were based on impressions, administrative counts mainly for taxation purposes etc. One cannot put much reliance on these figures, but all the same they have some value in indicating the possible range of population and growth rates.

BARBOUR [4] has pieced together some of the available information and Table 84 summarizes the findings.

Thus at the turn of the century the population of the country was estimated at around 2,500,000. In 1903-1910 there was an apparent decline,

then the population grew more or less regularly to around 7,000,000 in 1948. The average annual growth rate between 1903 and 1948 was around 2.3%. This growth rate is large for that period but there could have been an under-estimation in 1903, an overestimation in 1948 or substantial immigration into the country during the period. There is nothing to indicate the relative importance of these factors.

TABLE 84 - SUDAN - POPULATION ESTIMATES BY PROVINCE, 1903 TO 1948

PROVINCE	(thousands)				
	1903	1910	1920	1932	1948
Northern	240	260	354	376	616
Khartoum	90	110	185	262	329
Kassala	140	135	191	378	718
Blue Nile	300	400	552	1 235	1 465
Kordofan	550	590	780	1 047	1 518
Darfun	270	300	490	876	883
Bahar El Ghazal	400	315	1 000	666	174
Upper Nile	210	200	323	608	712
Equatoria	350	150	229	349	591
Sudan	2 550	2 460	4 104	5 797	7 006

Source: [4]

2) The 1955-56 Sample Census

This census enumerated a total of 10,262,536 persons (5,186,126 male and 5,076,410 female) of whom 247,067 were born abroad. The foreign nationals constituted 206,517 persons. Thus the estimated growth rate between 1948 and 1955-56 is around 4.7%.

The provinces showed varying growth rates. For example Bahar El Ghazal increased more than fivefold between 1948 and 1955-56, whereas Kordofan grew by only 16%.

The sex ratio of the population was 102 and varied between 91 in Darfur and 118 in Khartoum. Migration could be a factor behind this variation.

The urban population was around 8% of the total population, but represented more than half the population of Khartoum; it was lowest in the southern provinces. More than 1,400,000 persons were reported as nomadic in the northern provinces, while there were sizeable numbers of semi-nomads and transhumants in the south.

Although it is difficult to assess the quality of the 1955-56 enumeration, a post-enumeration survey showed that in the towns and sample

rural areas there was some underenumeration of females, young children, nomads and the population of Equatoria province, and the results were accordingly revised. It has also been noted that the urban population enumerated by the 'de jure' method is lower than the 'de facto' one. In the rural areas where only the 'de jure' method was used, it is supposed that there could have been some overestimation due to the extended family system which is prevalent there.

TABLE 85 - SUDAN - POPULATION ESTIMATES BY PROVINCE, 1955-56

(thousands)

PROVINCE	POPULATION
Northern	873
Khartoum	505
Kassala	941
Blue Nile	2 070
Kordofan	1 762
Darfun	1 329
Bahar El Ghazal	991
Upper Nile	889
Equatoria	904
Sudan	10 263

Source: [5]

3) The 1973 Census

As mentioned earlier, the 1973 census was the first real census carried out in the country. Although the preparation time between the Presidential Decree and the actual enumeration was short, all efforts were made to achieve complete coverage and acceptable data.

The 'de facto' method was employed and a total population of 12,265,028 was obtained. This implies a growth rate of 1% between 1955-56 and 1973, which looks small. For some segments of the population and some areas it was unacceptable. For example the nomadic population was found to be only 400,000 as against the 1,400,000 of 1955-56. Even though some of the nomads are known to have settled during the period, still the figure is too low. Omissions and incompleteness in the listing and actual enumeration were noted and a re-survey was conducted, which gave a nomadic population of 1,629,710.

In the Blue Nile province, it was suspected that the cotton pickers had not been covered because the enumerators assumed that at census time they would have returned to their homes. A check survey was accordingly carried out and it turned out that in fact there was omission. The total number of cotton pickers omitted was 673,492, of whom 353,572 were males.

After including the cotton pickers and those nomads who were not covered by the census, the total population of the country was given as 14,113,590, of whom 7,137,964 were males. Still, a look at the growth of some of the southern provinces indicates that either the 1955-56 enumeration was on the high side, the 1973 enumeration was on the low side, or there was strong outmigration between the censuses or excess mortality with low fertility.

As indicated earlier, it is suspected that there was overenumeration in rural areas in 1955-56. The intercensal period was marked by political instability and part of the population of the southern provinces left the country. Also in the south because of the unsettled conditions, family life was disturbed and fertility could have fallen. Again mortality could have been high because of disruption of food production, destruction of infrastructure and also due to casualties. There was an influx from rural to urban areas and many persons were still in hiding in the bush. There was also some outmigration of northerners to the oil-rich and developed countries. However, all these factors cannot explain the intercensal growth rate observed in some of the provinces: very low in the rural areas both in the north and the south, it was only 1.7% in the rural north and was actually negative in the rural south, -0.5%.

Even with the adjustment of the nomadic population after re-enumeration, the growth rate of this population was only 0.9%. This is very low but part of this could be due to settlement of former nomads. It is known that a sizeable number of them from Kassala province had settled in the intercensal period. If we exclude Kassala, the growth rate comes to 1.7%. Although this is low, when we keep in mind that the nomads have lower fertility and higher mortality due to their movements, socio-economic conditions, way of life, etc, this growth rate is acceptable. Hence the corrected nomadic population can be considered more or less satisfactory.

Birth and death rates were derived from the fertility - mortality data (children ever born, children surviving and survival of parents) supplied by the census. Unfortunately this information was tabulated only for the settled population. However, as mentioned before, the nomads have a higher mortality and lower fertility. The cotton pickers are also characterized by low fertility and their mortality could also be higher than that of the settled population. Thus the derived fertility values would be the upper limit and the mortality values the lower limit (Table 87).

TABLE 86 - SUDAN - POPULATION, SEX RATIO AND SEX-SPECIFIC GROWTH RATE 1955-56 - 1973, BY PROVINCE

PROVINCE	POPULATION (thousands)	GROWTH RATE (%) 1955/1973		SEX RATIO %
		M	F	
Northern	917	0.1	0.4	89
Khartoum	1 095	4.7	4.5	120
Kassala	1 497	2.7	2.8	114
Blue Nile	3 623	3.3	3.3	107
Kordafan	2 098	0.9	1.2	97
Darfur	2 077	2.6	2.7	90
Bahar El Ghazal	1 322	1.7	1.6	105
upper Nile	760	- 0.8	- 1.0	108
Equatoria	723	- 1.3	- 1.3	95
Sudan	14 112	1.9	1.9	102

Source: [14]

TABLE 87 - SUDAN - ESTIMATED BIRTH AND DEATH RATES ACCORDING TO PLACE OF RESIDENCE

REGION	BIRTH RATE ‰			DEATH RATE ‰		
	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
North	49.0	48.0	51.3	17.5	15.4	17.5
South	52.9	48.5	53.5	27.0	25.0	27.3
Sudan	51.5	48.0	52.4	19.4	16.9	20.9

Source: [2]

From this table, we note that the south has a slightly higher birth and death rate than the north and that the overall growth rate is more than 3%. However, this growth rate, computed for the five year period preceding the census, is for the settled population only, which constitutes 80% of the population. The other 20% (nomads and seasonal migrants) might have a much lower growth rate. Assuming a growth rate of 2% for them for the period 1968-73, we would obtain a growth rate of 2.8% for the whole country during this period. During the intercensal interval, mortality would have been much higher and fertility lower due to the various factors already alluded

to. It is estimated that during the period 1955-73 the growth rate could have been around 2.2%.

In the 1955-56 census a total of 206,517 foreigners with non-Sudanese status were enumerated. The foreign-born were slightly more - 247,067 - and this could be due to the fact that some Sudanese and foreigners with Sudanese status could have been born outside Sudan.

In 1973 the foreigners enumerated represented 1.96% of the total population, i.e. 276,626. Mainly sedentary (276,105), they were also found among the nomads and cotton pickers. The total foreign-born population was 248,159.

A look at the composition of the latter reveals certain anomalies. For example, whereas in 1955-56 in the South there were 6,062 males and 6,860 females born abroad, in 1973 these increased to 25,579 and 26,672. This increase is quite feasible when we keep in mind the unsettled conditions around Sudan during the period. In the North, on the other hand, from 1955-56 to 1973, both the male and female foreign-born populations decreased, from 127,056 males and 107,089 females in 1955-56 to 100,770 males and 96,346 females in 1973. This seems highly suspicious in view of the evidence. In Kassala adjoining Ethiopia and Darfur adjoining Chad, massive immigration had occurred during this period, yet the Ethiopian population enumerated in 1973 increased only from 5,000 in 1955-56 to 20,348. The West Africans were 208,000 in 1973 (around 110,000 aged 17 years and over) as against 165,000 in 1955-56. These increases do not reflect the true immigration picture. As a matter of fact, if we take mortality into account, then there is no increase at all.

The overall survival ratios of those born in Darfur and Kassala for the intercensal period were:

Darfur	:	-	Male	.881	Female	.902
Kassala	:	-	Male	.855	Female	.828

These ratios are even higher than those in Khartoum, which is known to have better medical and health facilities and is better developed, and hence is expected to have lower mortality and higher survival ratios. The higher ratio for males in Kassala also looks suspicious. Assuming an average survival ratio, it is estimated that around 250,000 foreigners aged 17 and over were reported as Sudanese. The growth rates also indicate similar results. For example, the observed growth rates of the native populations of 3.1% and 2.8% in Darfur and Kassala respectively are too high. An average growth rate of 2.4% would result in about 400,000 foreigners being reported as Sudanese. Thus it looks as if more than 300,000 foreign nationals were reported as Sudanese in the 1973 census.

Because of the unsettled conditions in the south during the intercensal period, an estimated 250,000 - 500,000 persons left the country. By October 1973 about 154,000 had returned, according to the Relief Resettlement and Repatriation Commission. However, MILLS [10] estimated the number still out of the country as on census day at 175,000.

There was also an exodus of persons from the North to the oil rich and developed countries. According to GELAL EL DEEN [8], in 1977 about 231,000 Sudanese, mostly from the North, were outside in the oil-rich and developed

countries which he surveyed. It is estimated that in 1973 about 150,000 Sudanese, mostly from the North, had emigrated to these rich countries, in addition to the Southerners who had left because of the events.

Thus in 1973 a total of 175,000 - 275,000 Sudanese who had left the country after the 1955-56 census were still living abroad. If we take the intermediate figure of 225,000 and add it to the enumerated population, we get a total population for Sudan of 14,338,590, of whom 580,000 would be foreigners, leaving a national population in 1973 of 13,758,590 as compared with a national population of 10,056,019 in 1955-56. This would give a growth rate of less than 1.9% per annum.

A detailed analysis of the basic population data yielded by the 1955-56 and 1973 censuses (age, sex, births, deaths) points to an overall underenumeration of 5% in 1973. This would be a lower limit to the underenumeration and the actual underenumeration could have been slightly higher.

Adjusted populations by age group, sex and region derived from this detailed analysis are presented in Table 88 with the corresponding census data. It can be noted that the adjustment affects females more than males and the South more than the North. Most of the underenumeration is thought to have occurred in the rural areas [2, 13, 18].

Such considerable underenumeration is not surprising in view of the fact that the preparations for the census were not adequate, especially in regard to mapping, transportation, logistics etc. If we include the already indicated omissions among the nomads, the cotton pickers and others, the total underenumeration was very large.

TABLE 88 - SUDAN - ENUMERATED AND ADJUSTED POPULATIONS IN 1973 BY AGE, SEX AND REGION

(thousands)

AGE GROUP	CENSUS POPULATION						ADJUSTED POPULATION					
	Sudan		North		South		Sudan		North		South	
	M	F	M	F	M	F	M	F	M	F	M	F
0-4	1 249	1 191	983	956	265	236	1 295	1 252	1 029	995	266	257
5-9	1 278	1 187	1 023	969	254	217	1 035	1 000	822	794	213	206
10-14	824	736	675	609	149	127	892	863	703	680	189	183
15-19	603	614	479	488	125	126	777	751	605	583	172	168
20-24	453	547	357	419	96	128	614	640	461	492	153	148
25-29	540	673	424	517	115	157	547	552	418	426	129	126
30-34	429	475	342	370	88	105	458	467	350	362	108	105
35-39	472	448	367	353	104	95	407	396	317	309	90	87
40-44	334	307	269	252	65	55	342	337	264	259	78	78
45-49	267	220	206	173	62	47	288	283	218	213	70	70
50-54	209	184	174	155	35	30	238	239	176	175	62	64
55-59	117	92	95	74	22	18	187	192	139	141	48	51
60-64	131	111	113	96	17	15	147	154	107	109	40	45
65-69	72	55	62	46	10	9	104	112	75	79	29	33
70-74	144	124	128	111	16	13	63	72	45	51	18	21
75-79							35	41	25	29	10	12
80 and +							17	22	12	16	5	6
Unknown	16	11	15	10	1	1	-	-	-	-	-	-
All ages	7 138	6 976	5 713	5 596	1 425	1 380	7 446	7 373	5 766	5 713	1 680	1 660

Source: [18]

IV. CONCLUSION

On the basis of the available information, it is very difficult to assess the evolution of the population prior to the 1955-56 census. The population of the country must have fluctuated due to excess mortality at periods of epidemics, famines, civil commotions, unsettled conditions etc and to varying migration into and out of the country. During the intercensal interval 1955-56 - 1973, the evolution of the population was influenced by a civil war in the South, unsettled conditions in Ethiopia and drought in the Sahel, as well as by out-migration for economic reasons to oil-rich and developed countries. The estimated growth rate of the population during the intercensal period is around 2.2%. Because of improved mortality and perhaps some increase in fertility, in 1973 the growth rate of the population could be around 2.8%. Since 1973, some of the Southern Sudanese who had left the country earlier have returned, but there has also been an out-migration among the Northerners. Also in the period since the census, many Ethiopians and West Africans have entered the country. Their numbers are not precisely known, but estimates vary between 500,000 and 800,000. Thus all told, some 300,000 to 600,000 persons might have increased the total population of Sudan between the 1973 census and 1975.

Assuming a growth rate of 2.8% and a net immigration of 450,000, the estimated population as of January 1st 1975 in Sudan would be around 16,000,000.

As mentioned earlier, the 1973 census encountered several problems which affected its quality. Proper planning at every stage would have been necessary, especially for mapping, demarcation of enumeration areas, training of enumerators and supervisors, data collection and supervision, transportation, communication and general logistical support, editing, checking, scrutiny of data, coding, punching and data processing. Details about some of these problems and how to avoid them are given in the Administrative Report of the Sudan Census 1973 scheduled to be published soon [1].

The vital statistics system should be better exploited. As a starting point, the compilation and publication of the existing data should be undertaken, to pinpoint lacunae. The coverage of the system should also be looked into. It seems that a sample type of registration system would be useful in the country. Alternatively, nationwide representative sample surveys could be planned to collect some of the much needed demographic and socio-economic information. This should be on a continuous basis, like the Philippines household survey, so that not only the stock data but also some flow data would be available.

The data collected through other administrative procedures, such as those collected at the borders, should be compiled and published regularly. Even though the health statistics data are published annually, the coverage and types of information are not adequate. The same is true of the educational statistics. These departments require strengthening of their statistical means to ensure that the data are exploited fully.

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1974-1975

TANZANIA

MARIE-PAULE THIRIAT

T A N Z A N I A

I. INTRODUCTION

Until the end of the XIXth century, only the islands of Zanzibar and Pemba and the coastal areas of Tanganyika were known to the western world, which kept commercial relations with them.

Inland Tanganyika remained unexplored, but was probably the scene of considerable migration among African tribes, which explains the present distribution of the Bantou-speaking groups. There is nothing to indicate the size of the population at this time.

Towards 1885, Arabs and Europeans started to explore the hinterland, and a German colonizer company acquired territories for Germany.

In 1891, German protectorate was officially instituted over "Deutsch Ost Afrika". A taxation system was set up, on which population estimates were subsequently based.

II. DATA SOURCES1) Historical Estimates

The exact form of this system of taxation is ill known. It seems to have consisted of a combination of hut tax and capitation. Tax was due by every African who owned a hut; in the case of polygamy, a supplementary tax was due per wife, as each wife normally lived in a separate hut.

Independently, each male adult was subjected to capitation after the age of 16 (increased to 18 in 1934).

Using a multiplying factor based on the mean number of dependents, this tax data provided an evaluation of the total population. The factor seems to have been 5 under the German protectorate, then 3.5 under British rule.

Population estimates by district and province were made regularly using the tax data and mentioned annually in the "Blue Books" or colonial reports.

Although the tax rolls were revised periodically in each region, they are far from indicating the male adult population actually present in a given geographical area.

The German report on the 1913 population estimate mentions the complete lack of registration in certain regions or substantial deficiencies in others. Furthermore, every hut owner was to pay tax, even if he did not live in the region or elsewhere in Tanganyika, whereas immigrants were only taxed after six months residence in the territory. A considerable number of people were apparently exempt from taxation (the invalid, disabled, blind), whereas women living alone were taxed.

The estimates made by the colonial government concern data collected over a long period, without any correction for natural increase.

In 1919, Article 22 of the Treaty of Versailles placed Tanganyika and Zanzibar under British mandate.

The British government conducted three population censuses in the territory before World War II.

The exact nature of the African population censuses is difficult to tell. It is certain that no special administrative structure was set up, no financial arrangements made, and no questionnaire made compulsory or, even less, printed. Everything was left to the initiative and charge of the local government.

The census results were apparently based, in some cases, on estimates drawn from the number of taxed adults and, in other cases, on counts by group of huts or by assembling the inhabitants in a central place.

As the censuses were principally intended to provide a closer check of the fiscal estimates for most regions, the population concerned would have been the 'de jure' one.

In 1921, the African population was estimated at 4,107,000 inhabitants, whereas the German government gave the figure of 4,063,000 or 4,145,000 for 1913.

The British report did not question the results obtained in 1921, but explained the stagnation of the population by a variety of reasons: the military operations and punitive expeditions conducted by the Germans against the Africans resisting colonial penetration, the spread of epidemics favoured by movements of soldiers, in particular from the highly infested areas of the Belgian Congo, the 1919-1920 famine, the disruption of tribal economy in certain regions, the extension of venereal diseases, particularly in coastal areas, or simply an overly high multiplying factor applied by the Germans.

No administrative report on the 1928 African population census has been found to date; some figures were included in the 1931 report.

The 1931 census gave a total African population of 5,022,640. The administrative report immediately concluded that there had been a population growth of at least 22% in 10 years. The results obtained were contested only for regions where they indicated a population decline, never where there was an improbable increase. A comparison of the number of enumerated male adults with those on the tax rolls strengthened official optimism, the difference being only 0.3% at the territorial level. However, at the provincial level, the worthlessness of such a comparison becomes apparent: in the 'Southern Highlands', for instance, the number of enumerated male adults is 16% higher than the one provided by the tax rolls, while it is 11.7% lower in the central province.

Furthermore, in certain regions, the census operations lasted so long (up to 6 months) that comparison of the results with the tax rolls proved impossible.

The similarity of the results at the territorial level is a mere coincidence.

In Zanzibar and Pemba, a census of the total population was conducted in 1910. Ten years later, the non-native population was enumerated on April 30th 1921, then the native population (Africans, Arabs, Somalians, Swahilis, Comorians, Madagascans) from March 11th to May 23rd 1924. This was the first individual enumeration of natives. Fifty employees visited each hut in their district and noted the data in registers. A metal disk fixed at the entrance of the huts visited by the enumerators made the supervisor's work easier. A new method adopted for the 1931 population census yielded poor results.

2) Colonial Censuses: 1948 and 1957/58

It was only in 1948, when the Statistical Department of East Africa was created in Nairobi, that the initiative of conducting real general population censuses in East Africa was taken. This Department had the responsibility of preparing the questionnaires, defining the methods of enumeration and supervising the analysis of the results.

a) The 1948 African Population Census

One of the main objectives of the 1948 census was to reduce as much as possible the length of the operations, in order to limit the number of omissions or double counts caused by the mobility of the population and by the fact that an individual may rapidly forget the number of people living in his hut at a given date.

This called for the recruitment of a large number of enumerators, but at the same time reduced their educational requirements.

It was decided, after a pilot survey, to conduct:

- on the one hand, a rapid census of the 'de facto' African population using a very short questionnaire, easy to fill in, concerning age group (5 broad age groups), sex, marital status and tribe. All available administrative employees were called on, as well as school-teachers and missionaries.
- on the other hand, a post-enumeration survey of 10% of the population, using a more detailed questionnaire and the better-educated fieldworkers.

The population census was preceded by an enumeration of dwelling units. For the first time, the African population was counted hut by hut. The fieldworker made a preliminary visit to enumerate all those who would supposedly spend the census night in the hut. This information was checked immediately after the reference night and modified as necessary.

The operations lasted between 1 and 8 days. The data were analyzed by tribe.

b) The 1957 African Population Census

The procedure and the questionnaires were identical to those used in 1948, but the survey population sample was reduced to 5%

The territory was divided into 563 census areas, the names of which appeared on the questionnaires. Analysis was conducted at this census area level, to provide information for a map of population density.

The census was apparently conducted under less favourable conditions than in 1948: "It is possible that a rise in nationalism and growing political awareness of the populations made them less willing to cooperate. And, perhaps for the same reason, the colonial government did not seem to embark on the operation with the same enthusiasm and the same resources as ten years earlier" (5).

c) The Non-African Population Censuses of 1948, 1952 and 1957

The questionnaire used for enumerating the non-African population in 1948 and 1957 was more complete than for the African population.

However, it was extended to certain Africans, such as servants and their families living in the outhouses of non-African homes, so as to avoid administrative complications and cause less trouble to non-African householders.

The method generally adopted was 'self-enumeration': the schedules were distributed 2 or 3 days before the census, filled in by the head of the household and collected immediately after the reference night. In certain cases, the assistance of an enumerator was necessary, particularly in rural Asian communities. The postal method was apparently successfully used for certain Europeans living isolated in rural areas.

In 1948 and for all subsequent censuses, the population enumerated was the 'de facto' one. Thus in 1948, 5,397 Polish refugees living in camps were enumerated, but they were not taken into account in the analysis.

Non-Africans represented 0.94% of the population of Tanganyika in 1948 and 1.41% in 1957.

d) For Zanzibar and Pemba, the small area of the islands, their high population density, a relatively high educational status, a good local government, the use of schoolchildren as enumerators after training by their teachers, all made it possible to use a detailed questionnaire for the general population census. The major problem was ignorance of age among the native population.

The census operations were conducted in 3 or 4 stages, following the schedule presented in Table 89.

TABLE 89 - TANZANIA - SCHEDULE OF THE CENSUS OPERATIONS IN 1948 AND 1957/58

POPULATION ENUMERATED	1948	1957/58
Non-African population of Tanganyika	February	February 57
Total population of Zanzibar	February	March 58
African population of Tanganyika	August	August 57
African sample census (Tanganyika)	Sept./oct.	Sept./oct. 57

It was judged preferable to enumerate the African population in August, during harvesting, when it was more stable, and to choose February/March for the non-African population of continental Tanzania and for the whole population of Zanzibar, to avoid the period when a large proportion of Europeans left on holiday and when many Africans living in Zanzibar left for other islands.

It was therefore only in Zanzibar that the three criteria of given territory, universality and simultaneousness were met. In Tanganyika, several months separated the African and non-African census operations.

TABLE 90 - TANZANIA - RESULTS OF THE 1948 AND 1957/58 POPULATION CENSUSES

POPULATION	1948	1957/58
African population of Tanganyika	7 408 000	8 665 000
Total population of Tanganyika	7 640 000	8 789 000
Zanzibar	264 162	299 111

3) The 1967 and 1968 Population Censuses

The 1967 population census was the first one to be conducted in the United Republic of Tanzania, which was founded on April 27th 1964 when Zanzibar was united to former Tanganyika.

It answered the need for reliable demographic, economic and social statistics which were essential for precise and well-adapted development planning.

It reflected a new state of mind, very different from the rigid social stratification introduced by colonial policy. Consequently, certain of the methods used in 1948 and 1957/58 were revised. It was decided that all

individuals living in Tanzania would be treated in exactly the same way, independent of race or citizenship; this meant abandoning the system previously adopted, based on 2 or 3 enumerations with different questionnaires.

The 1967 census therefore consisted of a single enumeration of the 'de facto' population for the whole country. It was preceded by an important cartographic operation covering the whole territory, when 1,750 administrative districts and 18,500 census areas were geographically defined; the latter were also situated in terms of localities and local chiefs. Lack of time and resources ruled out the possibility of a pilot census.

A very detailed questionnaire was used in all urban and a 1/5th sample of rural districts, a more simple questionnaire being used for the remaining 4/5th. In 1967, the sample was an integral part of the general population census instead of constituting a post-enumeration survey.

To obtain the cooperation of the population, the relationship between the census and the building of a new nation was stressed in public meetings and radio broadcasts. A role in educating the population was given to the members of the TANU (Tanganyika African National Union), in particular to the sector leaders ('ten-cell-leaders'), who were given the responsibility of assisting the enumerators.

The census operations lasted between 1 and 5 days, depending on factors such as the number of fieldworkers available and the state of the means of communication.

At the present time, we only have a first estimate of the results of the census conducted in January 1978: the total population of Tanzania would be 17,551,925. Such a population size supposes a growth rate of around 4% per year, which is unlikely. Until the final results for 1978 become available, it seems premature to evaluate a possible underenumeration at the 1967 census.

1) Vital Registration and Demographic Sample Surveys

a) An Embryonic Vital Registration

No vital statistics are available for the whole of the territory. In 1966, a decree made birth and death registration compulsory in the urban areas. This reveals the lack of progress made since the German edict of 1894 making death registration compulsory in the coastal towns and the very limited success of the British edicts of 1922, 1923, 1925 and 1926, which repeatedly exhorted the local authorities to encourage the population to register births and deaths.

b) The First Surveys

To make up for this deficiency, from the beginning of the century the government resorted to various fertility and mortality surveys on small groups of Bantu women: in 1910, a survey was conducted in the missions on 572 women, in 1928 another survey covered 450 women in the district of Kahama, while the annual medical report of 1921 mentioned the fertility of 285 wives of 34 tribal chiefs.

Until 1948, neither the size of the samples nor the sampling method used permitted conclusions to be drawn which could be considered valid for the whole of the African population of Tanganyika. No information made it possible to determine whether mortality increased or decreased. However, the results of these surveys contributed to spreading a fear of depopulation, as they gave a number of surviving children lower than the number necessary for population replacement. An attempt at continuous observation was made in 1928/29 in the district of Kahama. The mother of every liveborn child was given a metal disk, with instructions to send it back if the child died before its first birthday. At the same time, a fieldworker recorded births, deaths and migration and drew up monthly reports.

The lack of cooperation among the population rapidly brought the experience to an end.

c) The Sample Surveys of 1948, 1957 and 1967

From 1948 on, the census operations were accompanied by sample surveys. Their objective was to collect additional information on occupation, mortality and fertility and provide data adequate for calculating demographic rates.

For all three operations, standard questions on the number of births and deaths occurring during the 12 months before the survey were asked. Information was obtained on fertility to date by asking each woman the total number of her liveborn children. More detailed questions enabled a distinction to be made between those still alive and those who had died, with their age at death.

- In 1948, this detailed questionnaire was submitted to 10% of the African population of Tanganyika. The sample was obtained by two-stage sampling: in the first stage, a selection of census areas was made; then in the second stage, a sample of small traditional zones (chiefdoms, mines, missions...) was selected from a frame independent of the one used for the census. The survey began two weeks after the general census and lasted 3 months. The data were analyzed by district.

- In 1957, the same sampling procedure as in 1948 was used. The 563 newly delimited census areas, vast territorial zones, served as primary units. However, lack of financial resources limited the sample to 5% of the African population. The data were analyzed by province.

- In 1967, there was a new modification of the sampling frame. A wide-scale cartographic operation prior to the 1967 census enabled census areas of roughly 500 inhabitants to be delimited within the administrative zones.

This time, the sample was obtained by randomly selecting, along a sinuous line drawn all over the administrative district from north to south, one of the first five census areas, then every following fifth one. This corresponds more or less to a method of systematic random sampling.

The detailed questionnaire was also used for special census areas (hospitals, prisons...) and all urban zones.

d) The National Demographic Survey of 1973

The 1973 survey was conducted to meet the growing demand for new and reliable demographic data required for preparing the third five-year plan, for which regional and local factors were to be taken into account more than in the previous plans. It was also an opportunity to interrupt the long intercensal period of 1967-1977 and to test new methods of collection.

The Central Bureau of Statistics was entrusted with the operation, assisted by the Demography Department of the University of Dar es Salaam.

The main objective of the survey was to study mortality and fertility differences according to way of life (subsistence or modern farming; herdsmen or sedentary) and region. It was to reveal behavioural changes following upon the economic and social evolution and indicate future fertility trends. It covered only continental Tanzania.

As well as the questions asked in the previous surveys, additional information was collected for all women on marital history, education, religion, activity, childbearing history, along with information on the husband (age, number of wives, education, occupation...).

To permit a comparative study of data, and for the purpose of sampling, 3 types of region were delimited:

- the main urban zones: they include Dar es Salaam and the 10 towns with a population of 20,000 or more in 1967. The survey covered 5% of the estimated number of households, that is, 13,259.
- the small urban zones: they are represented by 16 towns which had a population of less than 20,000 inhabitants in 1967. 10% of the households were interviewed, that is, 3,942.
- the rural regions: they were stratified into administrative districts and household clusters as follows:
 - 10 districts were divided into clusters of approximately 450 households. 4 clusters were selected per district and all their households interviewed, which gave a sample adequate for calculating mortality and fertility levels.
 - 8 districts were divided into clusters of 900 households. These 8 districts were chosen for their specific socio-economic characteristics (Arusha for its population of herdsmen, Mwanza for its mixed agriculture, the coast for its relatively low level of development, despite a good transport network and the proximity of Dar es Salaam...). The sample drawn, 3,600 households per district, seemed to correspond to the minimum required for studying mortality and fertility differences and trends.

III. CRITICAL STUDY OF SOURCES

1) Geographical Coverage

For an enumeration to be exhaustive, the fieldworker must know the location of all the dwelling sites and the boundaries of his census areas.

In most cases, however, he only had a mere list of localities to be enumerated, generally drawn up from the tax rolls sent by the traditional chiefs or local government officials. Successive censuses gradually improved this situation. The information remained all the more inexact and incomplete as it concerned regions which were difficult of access, with scattered populations, and where names of localities were given to vast areas. Mapwork was very limited up to 1967. In 1948, there was no map showing all the districts in the country. Only the area and population density of a few chiefdoms or small administrative sectors were known. In 1957, the 563 new territorial census areas were mapped out roughly by hand, but the statistics department produced no general map showing their location. There was no map on a large enough scale to clearly define the boundaries of small districts (in particular in highly populated areas) and indicate precisely the position and number of the dwelling sites. As for the sectors of traditional chiefs, they do not seem to have been shown on any map. Difficulties were encountered during the 1957 survey because of errors concerning the size of the sectors.

In 1967, for the first time, a pre-censal survey was conducted to study the geographical distribution of the population before deciding on the size and boundaries of the census areas.

Fieldworkers were sent out to evaluate the number of localities in the census area and the approximate number of households and inhabitants in each locality. In collaboration with local government officials, they chose and described the boundaries of the census areas. These boundaries were marked on a large-scale map and a sketch map completed the written description.

To define with greater precision the contact and enumeration units, the fieldworkers then drew up a list of village names and of TANU sector leaders.

However, because of the limited time available for such a lengthy procedure, the 1967 mapping operation was of very irregular quality, even completely inexistent in certain regions.

The fieldworkers were sent out a month before the beginning of the census, to get in contact with the local authorities and supervisors and locate the boundaries of their census area.

2) Enumeration Difficulties

The extent of the territory and the poor means of communication, the extreme dispersal of the population living on the vast, arid plateau of the hinterland broken up by steep slopes, the destruction of bridges swept away during the rainy season, the difficulties of access to isolated huts, all complicated the task of the fieldworkers and account for the longer enumeration time in certain areas.

Other problems lay in the inhospitality of certain sectors infested with tsetse flies and subjected to endemic malaria or devoid of vegetation; in addition, incidents due to the presence of wild animals outside the national parks and to snake bites, which obliged the enumerators to ask for an armed person to accompany them, are mentioned in the 1957 report.

Although Kiswahili is the official language, many Bantu dialects are still used in isolated rural areas; the presence of an interpreter or bilingual "TANU ten-cell-leader" was therefore required.

Finally, the enumeration of the Masai nomads meant that the fieldworkers had to cover huge distances. Their board and lodging depended on the generosity of the local government.

3) Motivation of Respondents

A traditional cultural reluctance towards enumeration exists in Tanganyika, linked to superstition and taboos: the fact of counting individuals or mentioning their death could attract the attention of evil spirits upon them. Furthermore, enumeration remains associated with tax-collecting, conscription and other administrative activities which are not necessarily in the interest of the individual or the tribe.

From 1948 on, attempts were made to gain the cooperation of the population by explaining the objectives and use of the census during public meetings and, above all, through the schoolchildren. The radio played an increasingly important role, as well as the TANU, whose members began in 1967 to inform the population about the problem.

4) Problems Related to Training of Enumerators or Fieldworkers

Until 1948, all organization and conducting of operations was the responsibility of local government employees, on top of their routine work and with no extra salary.

In 1928, in the district of Kahama, the lack of educated staff meant that the method used for enumerating the African population consisted of tying knots in ropes of four different colours, corresponding to each sex and two age groups.

In 1948, in Zanzibar, the government called on teachers, pupils and missionaries. The results proved satisfactory and in 1957 this practice was extended to the whole of the territory. At the same period, the "train chain" solution was adopted: in the administrative structure of the census, each official was in charge of training the official who was on the grade immediately below his own. When teachers served as supervisors and the majority of enumerators were pupils, the census training programme was seen as an extension of the school curriculum. The census was held in August, during the school holidays.

For the surveys, the recruitment of more qualified personnel was a problem. It should be mentioned that, when it acquired Independence, Tanganyika had one of the lowest school enrolment rates in Africa; 15,000 teachers, 80% of whom were non-nationals, educated 40% of the school-age population, only 8% of which continued after the first four years of primary schooling. In the poorest regions, where no secondary schools

existed, the fieldworkers were students from other areas, which complicated their task. Some females were recruited for the 1973 survey.

5) Results of the Demographic Surveys

a) Mortality

The information on mortality provided by the surveys is of the standard type, consisting of data on surviving children and children born.

The proportions of surviving children recorded are all the higher as the surveys are more recent, but irregularities are observed, particularly for the higher age groups; these might just as well be due to random errors as to other kinds. The most common sources of error are ignorance of age, incorrect definition of the 12-month period and the border effects, with omission of children who did not live long, omission of children who have grown up and left the family home.

The data collected are therefore too incomplete to provide reliable indexes, in spite of the adjustment techniques developed for calculating mortality estimates (Brass).

The alternative solution consists of using the model life tables to evaluate adult mortality from estimates of infant and child mortality.

b) Fertility

A lack of accurate data is also to be deplored in this field, with deviations in the age structures, omissions due to misreporting of retrospective fertility, overestimation of the reference period for period fertility. However, there is a greater quantity of data to be analyzed and compared. Plausible and consistent estimates of the birth rate using the stable population models were obtained for 1957 (46 per 1,000), 1967 (46-48 per 1,000) and 1973 (47-48 per 1,000).

These estimates mask important regional variations in mortality and fertility levels, for both continental Tanzania and Zanzibar.

IV. CONSISTENCY BETWEEN THE DIFFERENT SOURCES AND PROPOSED EVOLUTION OF POPULATION SIZE

This study involves a comparison of the results of the different censuses, on the one hand, and a comparison of the intercensal growth rates with the rates of natural increase estimated from the sample survey data, on the other hand. Three periods can be distinguished:

a) 1913-1931

TABLE 91 - TANZANIA - AFRICAN POPULATION OF TANGANYIKA, 1913 TO 1931

YEAR	POPULATION SIZE
1913	4 063 000
1921	4 107 000
1928	4 740 000
1931	5 022 000

The census conducted in 1921 gave a total African population of 4,107,000 very similar to the figure for 1913.

Between 1921 and 1931, a relatively rapid growth is observed, from 4,107,000 to 5,022,640 Africans. It is difficult, even impossible, to say to what extent this progression reflects actual population growth and what is due to improvements in the quality of the census data. The administrative documents and health reports of the time reveal a similar hesitation.

Based on the census figures, intercensal growth between 1921 and 1931 would be 22%, or a mean annual growth rate of 2%. However KUCZYNSKI (12), taking into account the administrative and health reports which all mention very high infant mortality and the generally poor state of the population, estimates intercensal growth for 1921-1931 at no more than 8%. Growth was probably almost nil up to 1925, then low between 1925 and 1931. The annual growth rate would have varied between 0.5% and 1.5%, being low in certain areas of central Tanganyika which are arid and exposed to famine, and higher in the areas with regular rainfall and a healthier climate.

b) 1931-1948

TABLE 92 - TANZANIA - AFRICAN POPULATION OF TANGANYIKA, 1931 TO 1948

DATE	POPULATION SIZE
Population census, 1931	5 022 640
Administrative estimate, 31.12.1947	5 838 000
Population census, August 1948	7 410 000

Based on the 1931 census and the tax rolls, the official estimate of the African population as of 31.12.1947 was 5,838,000. If the figures for 1931 and 1947 were accurate, the mean annual growth between the two dates would be 1.1%

The birth and death rates estimated from the 1948 sample survey data (46-48 and 35-37 per 1,000 respectively) imply a natural increase of roughly 1.1% per year for the African population, similar to the mean annual growth rate calculated above.

However, on the one hand, these rates can only be considered as rough estimates and on the other hand, the 1948 census data gave an African population of 7,408,000, or 1.5 million more than the estimate for 31.12.1947. This clearly indicates that previous censuses and estimates provided figures which were much too low, and consequently cannot be taken as a basis for studying population trends.

In a retrospective study (1965) of census results, D.A. LURY (13) calculated the estimates of population size presented in Table 93 by taking rates of natural increase close to those proposed by KUCZYNSKI (12) for the pre-1948 period and consistent with the 1948 and 1957 census data.

Without claiming to present strictly accurate data, he has constructed a consistent time series eliminating the break between 1947 and 1948. The resulting underenumeration would be 16% in 1931 and 30% in 1921.

TABLE 93 - TANZANIA - AFRICAN POPULATION OF TANGANYIKA, ESTIMATES, 1921 TO 1948

1948	ANNUAL RATE OF GROWTH 1939-1948	1939	ANNUAL RATE OF GROWTH 1931-1939	1931	ANNUAL RATE OF GROWTH 1921-1931	1921
7 410 000	1,5 %	6 468 000	1,1 %	5 990 000	0,6 %	5 887 000

Source : (13)

c) 1948-1973

TABLE 94 - TANZANIA - POPULATION OF TANGANYIKA AND ZANZIBAR, 1948 TO 1967

YEAR	AFRICAN POPULATION OF TANGANYIKA	TOTAL POPULATION OF TANGANYIKA	ZANZIBAR
1948	7 410 000	7 480 000	264 000
1957	8 665 000	8 789 000	299 111
1967		11 958 654	354 815

The census results give a mean annual growth rate of 1.75% between 1948 and 1957 and 3.1% between 1957 and 1967 for the population of continental Tanzania. Such a large difference between the two periods is unlikely and would, according to BLACKER (1963), reflect underenumeration in 1957 rather than an underestimation of mortality. This argument is backed up by:

- The unacceptable difference between the mean annual growth rates observed for the two intercensal periods in many small administrative districts, which cannot be accounted for by migration alone.
- The lowness of the population growth recorded between 1948 and 1957, which is well below the estimated natural increase, while the opposite occurs in 1967.

The difference between the estimated crude birth and death rates gives a rate of natural increase around 2.1% to 2.2% per year in 1948-1957 and around 2.4% to 2.5% in 1957-1967.

From these estimates, EGERO and HERNIN (6) propose the series of rates presented in Table 95.

TABLE 95 - TANZANIA - ESTIMATED RATES OF NATURAL INCREASE AND OF UNDERENUMERATION

ESTIMATED MEAN RATE OF NATURAL INCREASE		IMPLIED RATE OF UNDER ENUMERATION	
1948-1957	1957-1967	1948	1957
2.1	2.4	4.6	7.3
2.2	2.4	3.7	7.3
2.1	2.5	3.6	6.3
2.2	2.5	2.7	6.3

Source : (6)

Assuming underenumeration to be nil in 1967 and that there are no migratory events, EGERO suggests that "a rate not too high in 1957, barely more than 6%, is the figure which would make the population of this year fit in best with the figures for 1948 and 1967, as well as with the estimates of natural increase".

However, between 1957 and 1967, important migratory events occurred which modify these mean rates of increase.

The stopping of emigration of Tanzanian workers to South Africa and the arrival of many immigrants from neighbouring countries (Uganda, Kenya, Belgian Congo) leads to an estimated gain of 400,000.

This net immigration would bring the rate of underenumeration in 1957 down to 2.7%, while the 1948 rate would be nil. Such results are difficult to accept. The assumption that coverage was complete at the 1967 census, as well as the estimates of net immigration or natural increase, may consequently be questioned.

However, for want of additional information, we will confine ourselves to the results and estimates proposed in Table 96. The rates of natural increase are those estimated by EGERO and HENIN (6). We have considered only the rates obtained with the "low" assumption, as they are close to the indexes estimated from the 1973 demographic survey in continental Tanzania.

Zanzibar represents only a small proportion (roughly 3%) of the population of Tanzania. The migration component in population growth in the islands and fertility differences between ethnic groups, unequally affected by migration (2), make the situation very complicated. We therefore contented ourselves with proposing population estimates for different dates, based on the "low" assumption of natural increase (6). The rates (2.3% in 1967-70 and 2.4% in 1970-75) are lower than those of continental Tanzania, in particular because of a lower level of fertility.

TABLE 96 - TANZANIA - EVALUATION OF TOTAL POPULATION SIZE, 1948 TO 1975

YEAR	CENSUS POPULATION OF CONTINENTAL TANZANIA	MEAN ANNUAL RATE OF GROWTH (%)	ESTIMATED RATE OF NATURAL INCREASE (%)	MEAN RATE OF NET MIGRATION (%)	REAL MEAN RATE OF GROWTH (%)	ESTIMATED POPULATION OF CONTINENTAL TANZANIA	ZANZIBAR	TOTAL POPULATION OF TANZANIA
1948	7 480 000					7 480 000	264 000	7 744 000
		1.75	2.1-2.2	0	2.1-2.2			
1957-1958	8 789 000					9 030 000	299 000	9 329 000
		3.1	2.4-2.5	0.4	2.8-2.9			
1967	11 960 000					11 960 000	355 000	12 315 000
			2.6	0	2.5			
1970						12 980 000	378 000	13 358 000
			2.9	0	2.7			
1975						14 830 000	426 000	15 256 000

It should be borne in mind that the overall results mask strong regional variations in the factors of population growth (fertility, net migration, mortality).

The 1973 survey contributed towards revealing the importance of regional analysis of demographic data in a country like Tanzania. The regions which exert attraction and already have high population densities show above-average rates of natural increase. However, the urbanization rate of Tanzania remains one of the lowest in Africa (7.5% in 1975).

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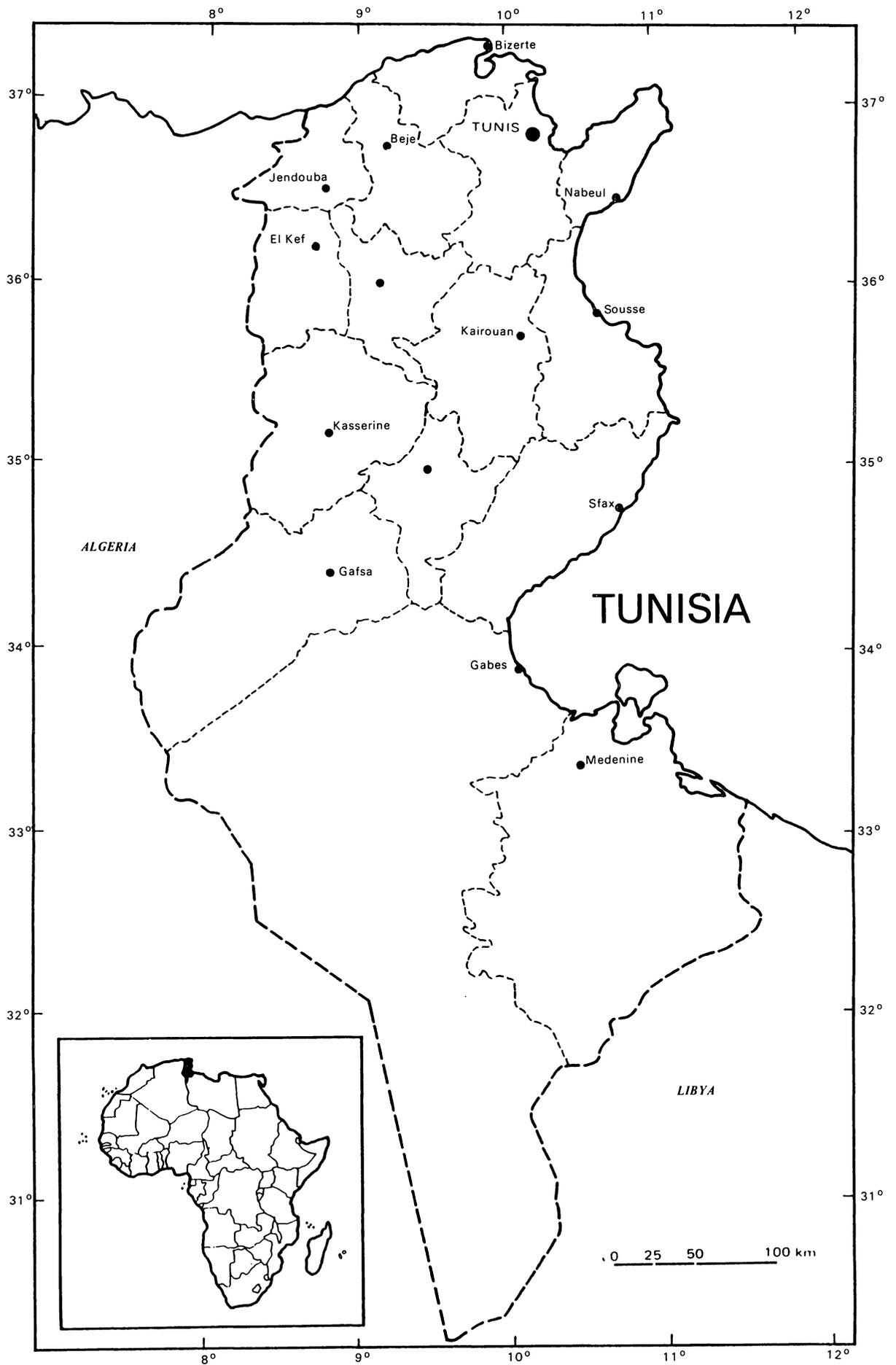
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TUNISIA

CHADLI TARIFA

FEBRUARY 1983



T U N I S I A

I. INTRODUCTION

Tunisia, situated in the north of Africa between longitudes 8° and 11° east and latitudes 30° and 37° north and bounded to the North and the East by the Mediterranean, forms, due to its geographical situation in the heart of the Mediterranean Basin, a melting pot where several civilizations succeeded one another and mixed, from Phoenicians in the ninth century B.C. to Turks, via Carthaginians and Romans, until Islamization in the seventh century.

Tunisia thus constitutes a junction between Europe and Africa; moreover, it is to Tunisia, a meeting land which was formerly known as "Ifriquya", that our continent owes its present name.

With a limited surface area - 154,000 km², - compared with the two immense neighbouring countries (Algeria to the West with 2.4 million km² and Libya to the South with 1.8 million km²), Tunisia shows, in its relief and climatology, contrasts which have had repercussions on its population:

- Climatic differences, in particular pluviometric between the North and the South; the higher rainfall in the North explains the strong concentration of cultivated land (cereals, vineyards, citrus fruits, arboriculture) and the breeding of cattle. The South, with a much lower rainfall, is predominantly desert;
- The contrast in relief between the East and the West also constitutes another determining factor for the geographical distribution of the Tunisian population: the relief of the hilly and mountainous western region of Tunisia making means of communication more difficult, led to a serious disequilibrium in the distribution of the population and a stronger concentration on the coast. In fact, over 50% of the Tunisian population is grouped along the coast, over an area which hardly exceeds 14% of the total area of the country. The population of Tunisia is today estimated at approximately 6,647,000 inhabitants.

II. THE CENSUSES

To our knowledge, there was no population count prior to the establishment of the protectorate in Tunisia (1881).

The number of 1,500,000 inhabitants is the estimate generally accepted for the Tunisian population, although this was not based on any enumeration operation.

The history of enumerations and censuses in Tunisia began with the advent of colonial administration. More concerned with setting up colonization, it limited the first censuses to the French population (1891, 1896 and 1901), but due to political requirements the following two censuses (1906 and 1911) also covered the European population who, through

naturalization, were supposed to attain French nationality. It was only after the First World War that the authorities decided to extend the census to the total population of the country.

The first general census dates back to March 6th 1921.

However, it should be pointed out that, although these were true censuses for the European population in that different information on each individual was collected (sex, nationality - French, Italian, Maltese etc.

- age, marital status, professional activity), the censuses carried out during the inter-war period on the Muslim and Israelite populations were merely simple counts. Only after the Second World War were censuses carried out in Tunisia of a size and scale comparable to those of the present day.

It can therefore be said that the history of the censuses conducted in Tunisia is in three stages:

- The first (1891-1911) where the censuses only concerned the French then the European population, which in fact only represented 7.6% of the total population of the country (1921);
- The second (1921-1936) where the operations were limited to simple counts;
- The third, after the Second World War, where the censuses were conducted using the methods, principles and norms recognized today.

1) The Censuses from 1891 to 1911

There were five censuses during this period at regular five year intervals. These were carried out on almost the same dates as those in France.

The first three, in 1891, 1896 and 1901, were limited to the French population and the last two were extended to the total European population (Italians, Maltese...) residing in Tunisia.

These censuses were conducted by the former Department of Agriculture, Commerce and Colonization. Table 97 gives the results according to nationality.

From the reports on these operations, it can be deduced that, considering the operations only covered a small part of the population, there were many omissions and gaps. The Italian colony, in particular, living in Tunisia well before the establishment of the protectorate, showed a certain reluctance to submit to these censuses.

TABLE 97 - TUNISIA - RESULTS OF THE CENSUSES FROM 1891 TO 1911 BY NATIONALITY

NATIONALITY	1891	1896	1901	1906	1911
French	9 973	16 207	24 201	34 610	46 044
Italian	81 156	88 082
Maltese	10 330	11 300
Other Europeans	2 799	3 050
Total European Population	128 895	148 476

2) The Enumerations of the Total Population from 1921 to 1936

The idea of conducting a census on the total population was launched in 1906, but it was not until 1921 that the first general census on the whole territory was carried out.

Four censuses were conducted during the period between the two world wars (1918-1939). The first took place on March 6th 1921 and the remaining three followed at regular five-year intervals on April 20th 1926, May 22nd 1931 and May 12th 1936.

The fact remains that the European population and the Tunisian and assimilated population (Algerians, Libyans, Israelites) continued to be treated differently in the procedures. For the European population, various information was collected concerning their sex, age, nationality, marital status, and occupation, following the example of the previous censuses. On the other hand, for the Tunisian and assimilated population, it was limited to a simple enumeration by nominal list of the "male adult population over 18 years, indicating the number of wives and children under eighteen according to sex. If the adult is single, widowed or divorced, it is to be mentioned in the column reserved for the number of wives; women living apart in separate homes, alone or with children are to be recorded in the same way as married women".

The quality of these operations was somewhat affected by this. Besides the fact that the regional and local authorities (kaid and sheikhs) had no particular competence in the matter and that the population was not familiar with this kind of procedure, the following remarks should be added:

- Instructions, it seems, were not very precise.
- Operations were not preceded by training courses.
- The very conception of the nominal list did not favour spontaneous participation of the Tunisian population. In fact, it was a nominal list

'of male adults aged 18 and over' (mobilization age). No more was needed to revive the painful losses provoked by a war (the First World War) which did not concern the population in any way, but in which it was forced to participate. It was consequently easy to put the two together and link the enumeration procedure with possible mobilization.

3) Censuses since the Second World War

Since the Second World War, four general population censuses have been conducted in the country at regular ten-year intervals. The first took place on November 1st 1946, the second in 1956 (February 1st 1956, a few weeks before accession of the country to Independence), followed by the 1966 census (May 3rd 1966). The last to date took place on May 8th 1975.

a) The 1946 Census

It is almost entirely unknown how the census was organized, conducted and exploited. However, it is known to be the only census conducted up until now which used individual schedules, unlike the censuses carried out after this date which used household schedules. Questions concerned sex, nationality, age, marital status and place of residence.

b) The 1956 Census

The 1956 census was carried out to apply the decrees of June 16th 1952 and December 17th 1955.

The operations took place in February with a reference date of February 1st 1956.

The organization of the census and its execution were conceived in the same way as censuses conducted in France.

The Tunisian Department of Statistics at that time was responsible for the conception and the technical aspect (questionnaires, instructions, processing...) of the census. Its execution was entrusted to the regional and local authorities.

The operations lasted longer than intended. Besides bad atmospheric conditions (rain, impassable roads and tracks; it had even snowed in and around Tunis), the enumerators were also obliged to fill in the questionnaires themselves, whereas only a simple verification had been planned, which was somewhat optimistic in a country where the percentage of illiteracy was extremely high at the time (85% in 1956).

Other problems arose:

- Lack of sufficient technical personnel sent to second the regional authorities in the realization of the census;
- Lack of cartographic documents;
- Poor interpretation of instructions indicating how the territory was to be divided into census areas;
- Poor interpretation of the instructions indicated in the questionnaire for understanding the questions.

c) The 1966 and 1975 Censuses

The two censuses of 1966 and 1975 were conducted in a similar way.

Greater importance was given to their organization, cartographic documentation, instructions, definitions and concepts.

The census was conducted in four principal stages, each with its specific tasks and preoccupations.

- Preparatory stage (lasting approximately two years) : Definition of the census objectives; elaboration of the questionnaires and instructions; cartographic documentation; pilot census;
- Pre-enumeration (six months before census day) : Identification of constructions and pre-enumeration of households; division into census areas; pro-paganda;
- Execution (approximately two months) : Recruitment and training of enumerators; execution; preliminary results;
- Processing.

It should be mentioned that the two operations of 1966 and 1975 were carried out to provide a data base for the preparation of the economic and social development plans. This shows the interest that the authorities attached to such operations.

The propaganda campaign, on the one hand, and a greater familiarization of the population with statistical surveys, on the other hand, ensured the success of these censuses.

Unfortunately, there was no post-enumeration survey to verify the coverage of the census. However, comparison of the results with other statistics (school attendance, employment in certain sectors...) enabled the omission rate to be estimated at 3 to 4% in 1966 and 1.5 to 2% in 1975.

d) The 1980 Population Employment Survey

This review cannot be concluded without mentioning the 1980 population employment survey, which is considered as a sort of mini-census.

It was, in fact, a sample survey on approximately 60,000 households, 1/20th of the population. Programmed within the framework of the preparation of the VIth development plan (1982-1986), its fundamental objective was to give updated information on the population of Tunisia, its structures and characteristics, and on employment and its evolution since 1975.

The survey was conducted from April to June 1980.

4) Results

Table 98 shows population trends in Tunisia according to the censuses conducted in the country.

In the last columns the mean annual growth rates between censuses have been calculated, on the one hand, for the total population, and, on the other hand, for the Tunisian population only, because of the numerous departures of the foreign population after the country's accession to Independence. On the eve of Independence, the foreign population represented 9.3% of the country's population. It now stands at barely 0.7%

Fig. 4 shows population trends in Tunisia since 1921.

In general, the mean annual growth rate showed an upward trend until 1956, rising from 1.4% during the 1920s to 3.1% between 1956 and 1966, then falling to 2.7% between 1975 and 1980. Between 1966 and 1975, the rate was only 2.4% due to emigration of the Tunisian population and the placing of workers abroad. This factor was less important between 1975 and 1980.

Fig. 4

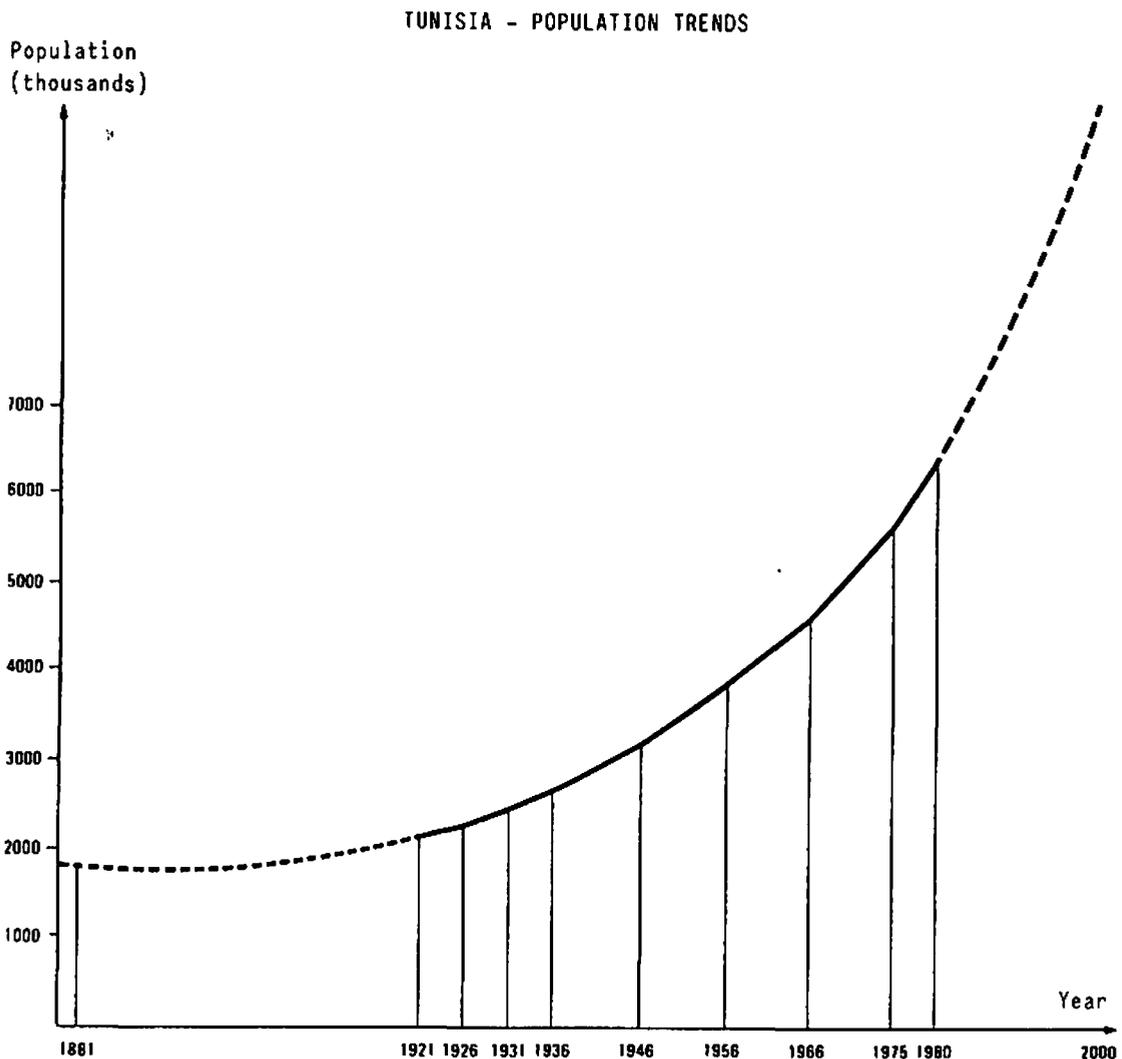


TABLE 98 - TUNISIA - POPULATION ACCORDING TO THE DIFFERENT CENSUSES

CENSUSES	POPULATION			MEAN ANNUAL GROWTH RATE	
	Total	Of which Tunisians	%	Total Population	Tunisian Population
March 6th 1921	2 093 939	1 874 256	89.5	0.6 } 2.2 }	1.5 } 2.2 }
April 20th 1926	2 159 708	1 917 930	88.8		
March 22nd 1931	2 410 692	2 142 002	88.9		
March 12th 1936	2 608 331	2 324 972	89.1	1.6	1.7
November 1st 1946	3 230 952	2 905 949	89.9	1.4	2.0
February 1st 1956	3 783 169	3 441 596	91.0	1.7	1.9
May 3rd 1966	4 533 351	4 488 517	99.0	1.8	3.1
May 8th 1975	5 588 209	5 550 299	99.3	2.3	2.4
May 1980 (a)	6 369 000	6 334 000	99.5	2.7	2.7

a) Population Employment Survey

It should be pointed out that there were significant differences in the quality of the enumerations of the inter-war period; all other things being equal, the 1926 census appears to have been the least accurate. This is why it seemed preferable to give the value of the mean annual growth rate for 1921-1931, i.e. 1.4%

5) Quality of the 1966 and 1975 Censuses

This involves two points: firstly, their coverage and secondly, the quality of the individual information collected.

a) Coverage of the 1966 and 1975 censuses

There was unfortunately no post-enumeration survey to control the coverage of the two censuses.

However, cross-checking between the results of the censuses and statistics from other sources (number of homes, school statistics, statistics on activity in modern industrial sectors, such as mines and energy) indicates a rate of omission around 3 to 4% for 1966 and 1.5 to 2% for 1975.

b) Quality of the Information

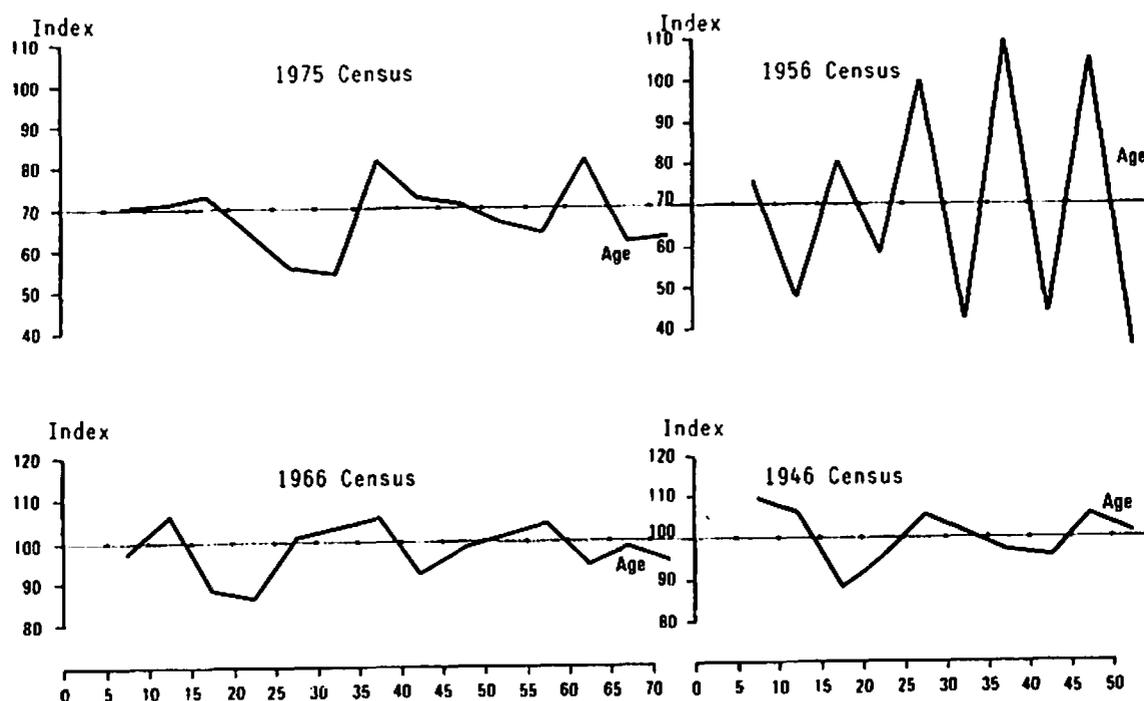
Only information of a demographic kind is considered here and, in particular, the age distribution of the population.

* Ratio of Age Regularity

To this end, the ratios of age regularity are examined first.

Fig. 5

TUNISIA - INDEX OF REGULARITY OF AGES (%)



In Fig. 5, the ratios of regularity for the last four censuses, in 1975, 1966, 1956 and 1946, are presented to show the improvement in the quality of information on the age of the population.

The 1956 census seems to have been the least accurate from the point of view of the quality of information on age. Observation errors were made worse by processing errors (coding and data entry), as checking of the coding and, in particular the data entry, was not systematic.

*** Whipple Index**

Other indexes are proposed to measure the degree of precision of the age distribution of the population and, in particular, the age distribution by individual years. It is a known fact that in countries where there is no tradition of civil registration or even in those where the system is still recent or poorly respected, age distribution suffers from the phenomenon commonly known as 'the preference for round numbers' (multiples of five).

The Whipple index measures this phenomenon: it should simply be noted that it is equal to a maximum of five (1).

Table 99 shows a comparison of the values of the Whipple index in 1975 and 1966 by sex and environment.

TABLE 99 - TUNISIA - WHIPPLE INDEX FOR THE 1966 AND 1975 CENSUSES

AREA	1975			1966		
	Male	Female	Both Sexes	Male	Female	Both Sexes
Whole country	1.3	1.5	1.4	1.2	1.4	1.3
Urban	1.2	1.4	1.3	1.2	1.4	1.3
Rural	1.3	1.6	1.5	1.2	1.5	1.3

The first comment to be made is that the phenomenon of preference for multiples of five did not play a large role in the age distribution of the population, since the index was below 1.5.

It can also be added that age was known better among the male population than the female population (1.2 as opposed to 1.4), and better in the urban environment than the rural one (1.2 as opposed to 1.5).

As for its evolution between 1966 and 1975, it cannot be concluded that the situation deteriorated. The lower index in 1966 than in 1975 is explained by the fact that in 1966 there was a systematic control of the information collected before it was coded.

*** Bachi Index**

This has the advantage of comparing the preference for all numbers (ages ending in 0, 1, 2, ... 8 and 9).

(1) The index is equal to five if the whole of the population states that their age is a multiple of five (15,20,25,30...).

The following table presents the values of the difference between each number and 10%, by sex and environment according to the data of the 1975 census.

TABLE 100 - TUNISIA - BACHI INDEX BY SEX AND ENVIRONMENT IN 1975

AGE GROUP	URBAN			RURAL			TOTAL		
	M	F	TOTAL	M	F	TOTAL	M	F	TOTAL
0	+ 3	+ 6	+ 4	+ 3	+ 7	+ 5	+ 3	+ 7	+ 5
1	- 1	- 2	- 1	- 1	- 2	- 1	- 1	- 1	- 1
2	- 1	- 2	- 1	- 1	- 2	- 2	- 1	- 2	- 1
3	0	- 1	0	0	- 1	- 1	0	- 1	- 1
4	- 1	- 2	- 2	- 2	- 3	- 2	- 1	- 3	- 2
5	+ 3	+ 5	+ 4	+ 5	+ 8	+ 6	+ 4	+ 6	+ 5
6	- 1	- 1	- 1	- 1	- 1	- 1	- 1	- 1	- 1
7	0	0	0	0	- 1	0	0	- 1	0
8	- 1	- 1	- 1	- 1	- 2	- 2	- 1	- 2	- 2
9	- 1	- 2	- 2	- 2	- 3	- 2	- 2	- 2	- 2
Bachi Index	6	11	8	8	15	11	7	13	10

The Bachi index for the whole of the country barely exceeds 10, which signifies that the information given on age, without being perfect, was not so inaccurate.

Preference for ages ending in 0 or 5 existed, the value of the difference for these two figures being +5. On the other hand, there was an 'aversion' for ages ending in 4, 8 and 9 (value equal to -2).

III. POPULATION GROWTH - CIVIL REGISTRATION IN TUNISIA

The history of the civil registration system in Tunisia dates back to 1908, when the first legal document controlling civil registration was published, making the declaration of all births and deaths compulsory in the country. (1)

(1) Earlier texts existed, but these only covered the French and in some cases, the European population.

Immediately after the accession of the country to Independence (March 20th 1956), the entire system was reviewed. The law of August 13th 1956 bearing promulgation of the Code of Individual Status and the law of August 1st 1957 on civil status constitute the legal foundations which govern the present system.

To summarize, it can therefore be said that the civil registration system experienced two stages: before and after promulgation of the 1957 law.

1) Civil Registration before 1957

Until 1957, it was essentially the decree of December 28th 1908 which governed the civil registration system in Tunisia for the Tunisian and assimilated population (Algerian, Libyan...); moreover, it only considered two components, births and deaths.

As regards marriages, no legal measures made registration compulsory or provided for transcription onto appropriate registers. Until then, marriages were solemnized in one of two ways:

- After formalities with the solicitors, who recorded the marriage contracts in their register, in the same way as any other deed of sale, inheritance or divorce ... with no difference being made. It was thus difficult to obtain any sort of marriage statistics, all the more so as no measures had been taken to keep separate registers. This procedure was, moreover, only common in large towns.
- On the other hand, in rural areas, marriage was solemnized and consummated without any material formality; this was the customary marriage which was standard practice.

As for births and deaths, there was a significant underregistration. The sex ratio at birth in 1956 was 125 boys for 100 girls which shows, even in the hypothesis of a fairly accurate recording of births of boys, a clear underregistration of births of girls (at least 20%). No motivation could incite the population to declare a birth, especially in rural areas: school enrolment was extremely limited (the enrolment rate in 1956 did not exceed 25%), and there was fear of future mobilization of the newborn child.

2) Civil Registration after 1957

The Code of Individual Status promulgated on August 13th 1956, constituted, in certain aspects, a turning point in Tunisian Arab-Muslim society. The new provisions introduced can be considered as reforming measures; abolition of polygamy; banning of divorce which could henceforth only be passed by a court.

The law of August 1st 1957 controlling civil registration completed the Code of Individual Status.

Without going into too much detail, the most important measures introduced for each event are stated simply below:

- Births: these are to be reported in the place where they occurred, within 10 to 15 days, depending on whether they took place in urban or rural areas.

- Deaths: these must also be declared in the place where they occurred, but within 3 days, whatever the environment.
- Marriages: polygamy is forbidden. The legal minimum age at marriage is set at 15 complete years for girls and 18 for boys. These ages were increased to 17 and 20 years respectively in 1964. The contracts are to be drawn up by a registrar or by a solicitor who transmits them in turn to the registrar who records them in the registers (marriage and birth registers).

A circular of June 1958 from the Ministry of the Interior presents, on the one hand, practical instructions for keeping the three civil registration registers (marriages, births and deaths) and, on the other hand, directs the registrars to transmit the statistical reports corresponding to the different events recorded to the National Institute of Statistics.

It can therefore be said that since 1960, the National Institute of Statistics has kept regular statistics on the different events which arose concerning population growth.

What comments can be made?

a) Births: until the beginning of the 1970's, the underregistration of births was estimated to be no more than 5% (1).

Nowadays, almost all births in the country are recorded. The events which escape reporting are in particular deaths occurring in the first few days following birth.

Another point worth mentioning is that certain births are reported after the legal time limit (15 days in rural areas). In order to avoid any court action to solicit a declaratory judgement, the informants simply change the date of the event; however, such cases, although they exist, must not be frequent (perhaps 5% of cases).

The sex ratio at birth among the events reported are within an acceptable range (1974: 1,047; 1975: 1,088; 1976: 1,046; 1977: 1,054; 1978: 1,064). There are many factors which have favoured good registration coverage:

- The promulgation of the Code of Individual Status and the public information campaign which followed;
- The so-called 'patronymic name' operation of 1958;
- Law n° 71 of July 1958 which obliged all those who had not been recorded on birth registers to do so; this law authorized the registrars to record the non-reported births without a declaratory judgement;
- Development of the schooling system - the school enrolment rate is assessed at more than 80% of children of six to fourteen years of age;

(1) The 1968-1969 National Population Survey showed that it was below 5% and predominant in rural areas.

-
- Cards for free health care given to the under-privileged of the population, who, as a rule, are those who report births etc. the least;
 - New legal measures for marriage: presentation of a birth certificate is compulsory in order to justify that the applicant has reached the minimum legal age for marriage or that he/she is free from all matrimonial ties (widowhood, divorce).

b) Deaths: Underregistration of deaths remains the only major problem in the present system. Nowadays, it is estimated that civil registration only covers 73% (1) of all the deaths which actually occur in the country.

It can be said that, in general, the population does not see the importance of declaring a death, especially if it concerns a very young child. Underregistration of deaths characterizes the rural environment, where conditions hardly favour good coverage:

- Firstly, the very limited time factor, since deaths have to be declared within three days;
- The extreme dispersal of the population in Tunisia; 2/3 of the rural population live in isolated conditions. This situation has engendered a proliferation of family cemeteries (unguarded) adjoining these isolated homes.

It may also be added that underregistration is greater in the centre-west and north-west areas, which constitute the least urbanized and most dispersed regions.

3) Evolution of the Components of Natural Population Increase since 1966

Fig. 6 gives a graphic representation of the evolution of the different rates between 1966 and 1981.

A clear downward trend is observed for the birth rate since 1966, falling from 45 per 1,000 in 1966 to 34-35 per 1,000 at the beginning of the 1980s.

This decrease is due, on the one hand, to the effects of the family planning policy adopted by the country, and, on the other hand, to the effects of the development of schooling, later marriage as a result of longer schooling and, in general, the improvement in the standard of living of the population.

However, a decrease in the death rate was simultaneously recorded in Tunisia over this period, falling from 15 per 1,000 to 8 per 1,000 so that the rate of natural increase also shows a decrease, but slower, the fertility decline being compensated to a large extent by the mortality decline.

(1) According to the 1968-1969 Population Survey, the coverage rate was 70%. A slight improvement is supposed to take the development of urbanization into account.

4) Comparison of the Results of the 1966 and 1975 Censuses and of Civil Registration

A comparison of the census results with data on population growth provided by civil registration (corrected data) and on migration is now proposed.

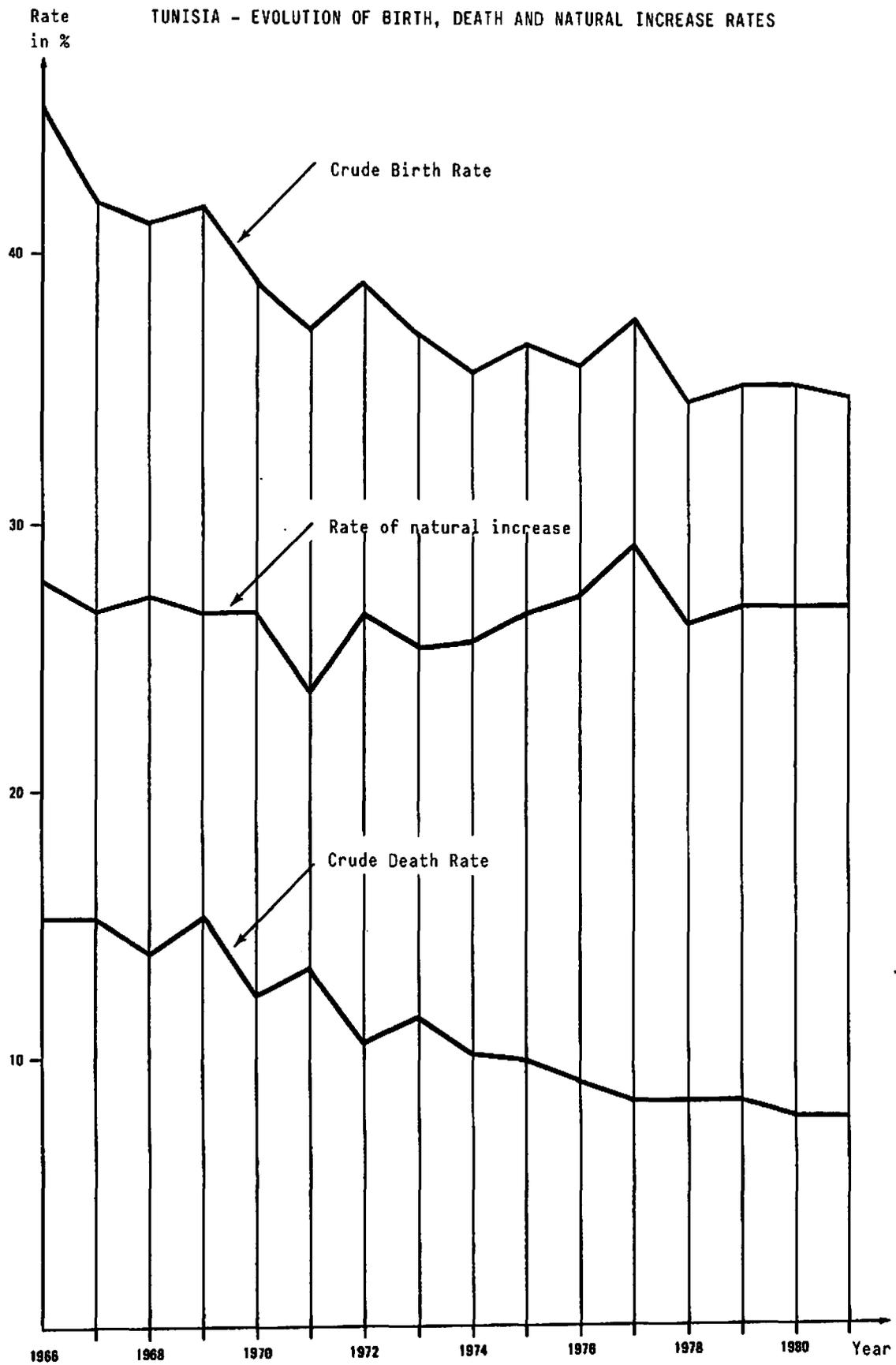
Firstly, it should be stressed that the 1966 census was a 'de facto' census which enumerated 4,533,351 people. The census of May 8th 1975 was both a 'de jure' census, and a 'de facto' census. The resident population was 5,588,209 according to this census, while the 'de facto' population (population present) was 5,572,193, a difference of 16,000 (0.2%).

There is every indication that the 1975 census was of a better quality than that of 1966; and hence the reason why it is taken as a reference.

TABLE 101 - TUNISIA - EVOLUTION OF THE NUMBER OF BIRTHS AND DEATHS AND THE RATES OF NATALITY, MORTALITY AND NATURAL INCREASE SINCE 1966

YEAR	BIRTHS (thousands)		DEATHS (thousands)		NATURAL INCREASE (thousands) (corrected)	RATE IN %		
	Observed	Corrected	Observed	Corrected		Birth	Death	Natural increase
1966	206.7	206.7	48.3	70.1	136.6	45.1	15.3	29.6
1967	187.3	197.2	49.4	71.1	126.1	42.0	15.2	26.8
1968	188.2	198.1	94.7	66.6	131.5	41.3	13.9	27.4
1969	194.9	205.2	52.9	74.8	130.4	41.9	15.3	22.6
1970	185.8	194.1	45.6	63.9	130.2	38.8	12.3	26.5
1971	183.3	188.0	48.6	67.6	120.4	36.8	13.2	23.6
1972	199.1	203.1	39.4	54.5	148.6	39.0	10.5	28.5
1973	194.7	196.7	44.4	60.8	135.9	36.9	11.4	25.5
1974	194.6	194.6	40.3	54.7	139.9	35.6	10.0	25.6
1975	205.4	205.4	41.3	55.5	149.9	36.6	9.9	26.7
1976	208.1	208.1	36.9	50.2	157.9	36.0	8.7	27.3
1977	220.5	220.5	35.5	47.7	172.8	37.2	8.0	29.2
1978	207.1	207.1	35.4	48.6	158.5	34.1	8.0	26.1
1979	217.3	217.1	37.1	50.3	166.8	34.9	8.1	26.8
1980	223.3	223.3	36.5	49.0	174.3	34.9	7.7	27.2
1981	225.7	225.7	37.0	50.2	175.5	34.3	7.6	26.7

Fig. 6



Population growth statistics for the first four months of 1975 enable the population of Tunisia to be assessed as 5,537,800 at the beginning of 1975.

With 1,783,700 births and 584,100 deaths, the period 1966-1974 shows a natural increase of 1,199,600.

Moreover, the statistics on the movement of civilian travellers at the borders during the years 1966 to 1974 give a balance of migration (net departures) of 186,200.

On the basis of this data, the population of Tunisia would have been 4,524,400 at the beginning of 1966.

Population growth statistics for 1966 enable growth over the period January 1st to May 2nd 1966 to be assessed at 39,400; so that, based on the results of the 1975 census and population growth statistics, the population would have been 4,563,800 on May 3rd 1966, as against the enumerated population of 4,533,300. It can therefore be said that, all other things being equal, underenumeration at the 1966 census would be 0.7% higher than at the 1975 census.

IV. DATA ON THE TUNISIAN POPULATION

1) Evolution of Population Size Since 1966

Results of the censuses and population growth statistics enable a permanent updating of the total population of the country. Table 102 gives this data.

2) Age-Sex Distribution

Table 103 gives an estimate for the Tunisian population by age and sex for mid 1981, established using the distribution provided by the 1980 population employment survey.

The age pyramid for the Tunisian population is characteristic of young populations, in the form of a very broad-based triangle, reflecting a relatively high level of fertility and mortality.

The pyramid presents a deficit at the level of the 35-39 years age group and thus reflects the generations whose numbers are low, since they were born during the first half of the 1940s and experienced the time of great losses due to epidemics of typhus and typhoid.

The median age of the Tunisian population was 18.6 years in 1981. This shows the weight the young population represents for the economy of the country as far as health, schooling, employment etc. are concerned.

The older age-groups only represented 6.68% (ie. 1/15th) of the total population of the country.

3) Evolution of the Age Structure

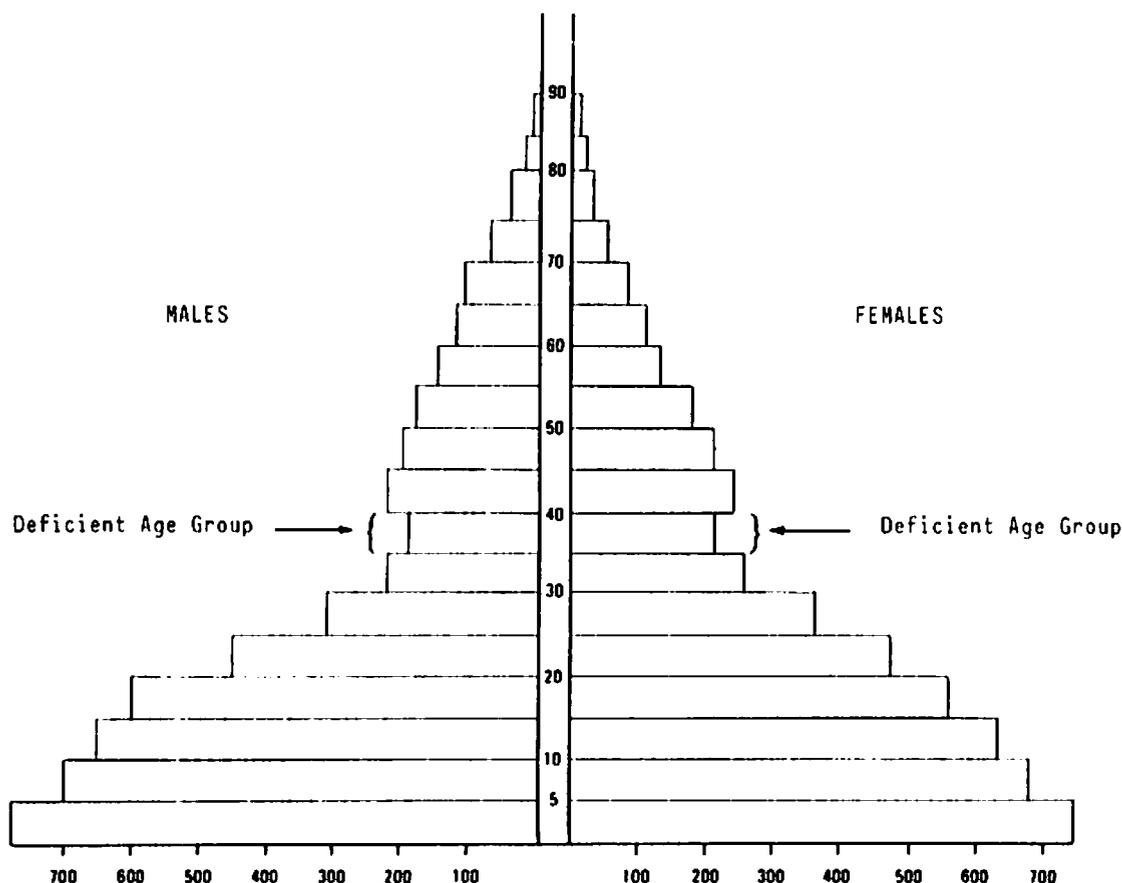
It has already been mentioned that fertility and mortality trends are declining. It is therefore interesting to note the effect on the age

composition of the population over a number of years. However, it should be stressed beforehand that this composition - data which determines and defines the population - cannot be suddenly modified.

The evolution of the age structure since 1946 is given in Table 104.

Fig. 7

TUNISIA - AGE PYRAMID IN 1981



This data clearly reflects a trend towards a slight ageing of the Tunisian population.

Setting aside the situation which prevailed in 1946 (the smaller generations born between 1940 and 1946 being then less than five years old), the percentage of under-fives compared with the total population of the country is increasingly low. It now represents 15.2% of the total population as against 18.6% in 1966. This trend can be explained by the fertility decline recorded over the last fifteen years.

TABLE 102 - TUNISIA - UPDATING OF THE POPULATION FROM 1966 TO 1981

(population in thousands)

YEAR	BIRTHS	DEATHS	MIGRATIONS	MEAN POPULATION
1966	26,7	70,1	- 19,0	4 583,2
1967	197,2	71,1	- 21,8	4 694,1
1968	198,1	66,6	- 21,4	4 801,3
1969	205,2	74,8	- 36,3	4 903,4
1970	194,1	63,9	- 19,6	5 005,4
1971	188,0	67,6	- 33,2	5 104,7
1972	203,1	54,5	- 24,6	5 210,3
1973	196,7	60,8	- 12,7	5 333,9
1974	194,6	54,7	+ 2,4	5 466,7
1975	205,4	55,5	- 2,0	5 611,7
1976	208,1	50,2	+ 15,4	5 772,3
1977	220,5	47,7	- 36,1	5 927,3
1978	207,1	48,6	- 15,6	6 067,1
1979	217,3	50,3	- 4,6	6 219,8
1980	223,3	49,0	+ 8,4	6 392,3
1981	225,7	50,2	- 12,0	6 565,5

TABLE 103 - TUNISIA - POPULATION BY AGE AND SEX - MID 1981

A G E	MALE	FEMALE	TOTAL	%
0 - 4 years	507 200	490 000	997 200	15.19
5 - 9 years	460 000	443 600	903 600	13.76
10 - 14 years	430 600	411 000	841 600	12.82
15 - 19 years	388 500	367 500	756 000	11.52
20 - 24 years	291 500	306 400	597 900	9.11
25 - 29 years	297 100	239 500	446 600	6.80
30 - 34 years	145 100	169 600	314 700	4.79
35 - 39 years	128 100	140 300	268 400	4.09
40 - 44 years	146 300	158 100	304 400	4.64
45 - 49 years	131 700	140 900	272 600	4.15
50 - 54 years	120 100	118 200	238 300	3.63
55 - 59 years	96 100	89 300	185 400	2.82
60 - 64 years	83 400	69 600	153 000	2.33
65 - 69 years	70 800	53 200	124 000	1.89
70 - 74 years	44 700	35 400	80 100	1.22
75 - 79 years	23 000	15 100	38 100	0.58
80 years and +	23 200	20 400	43 600	0.66
TOTAL	3 297 400	3 268 100	6 565 500	100.0

TABLE 104 - TUNISIA - EVOLUTION OF THE AGE STRUCTURE OF THE POPULATION

AGE GROUP	1946	1956	1966	1975	1981
0 - 4 years	14.29	18.28	18.61	16.01	15.19
5 - 9 years	27.19	24.20	27.88	27.79	26.58
15 - 59 years	51.81	52.44	48.04	50.36	51.55
60 years and +	6.71	5.08	5.47	5.84	6.68
T O T A L	100.00	100.00	100.00	100.00	100.00

As for the increase in the proportion of under-fives between 1956 and 1966, this reflects, to a large extent, a decrease in infant mortality, fertility being until 1966 a more or less natural fertility.

V. CONCLUSION

Without being as long-established as it is in many other countries, the practice of census-taking in Tunisia offers a relatively good source of knowledge on the population, its structures, distributions and characteristics.

The civil registration system covers the whole country and now enables fertility (and even nuptiality) trends to be followed.

However, statistics on mortality taken from the civil registration records, are deficient. Improved registration is needed so as to have better knowledge of this phenomenon.

The actions to be undertaken should concern both the legal and the administrative frameworks, and the population itself.

- Legal framework: Revision of the existing time limits for reporting events, extension of these limits, provision of legal measures to facilitate the recording of events reported after the statutory limits...
- Administrative framework: Appropriate training for the personnel in charge of civil registration. A more active role of the registrar, particularly in the rural environment; in fact, in the eye of the law, and in practice, it is up to the population to present themselves at the civil registration offices to declare a birth or death. The role of the registrar is, in this context, totally passive. Experience shows that in rural areas, which are characterized by underregistration, the registrar is often aware of the event, but cannot proceed with registration unless a member of the family concerned comes to report it.

-
- Population: Undertake actions to inform the population of demographic matters and of the civil registration system. These campaigns should be sustained and backed up by in-depth actions on a more long-term basis. To this end, more attention should be paid, in the school programmes, to population matters and to the civil registration system.

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UGANDA

MARIE-PAULE THIRIAT



U G A N D A

Uganda owes its existence to the fact that the United Kingdom wished to maintain control over the sources of the Nile. Egypt and the Suez Canal commanded the shortest route from Europe to India, and the possession of Egypt implied that no hostile nation was to settle on the Upper Nile.

Discovered in 1862 by the English explorer J.H. Speke, this land of great lakes, after being dominated in the XIXth century by the Bugunda dynasty, became a British protectorate between 1894 and 1962. It was declared an Independent Republic on October 9th 1962.

I. DATA SOURCES AND CRITICISM

1) Historical Estimates

a) Explorers

The first estimates of the size of the Ugandan population are those made by explorers. They are fanciful and vary considerably from one to another; moreover, they do not cover the same territory.

In 1878, Stanley estimated the population living along the communication routes at 750,000. The following year, Reverend C.T. Wilson forwarded the figure of 5 million inhabitants, 1.4 million men and 3.6 million women! In 1893, the population was assessed at 2.5 million by Captain Lugard and, the same year, at 500,000 inhabitants by Sir G. Portal.

In a letter to the Marquis of Salisbury, Sir Harry Johnson spoke of 4 million inhabitants within the Protectorate boundaries in 1900.

In 1902, the eastern province was annexed to Uganda and the colonial government estimated at 3.5 million the population of the territory administered.

b) The First Population Censuses (1911-1921-1931)

The first count, in 1911, yielded a population of 2,840,469 Africans, of whom 378,000 in the non-administered districts.

The first population estimates given by the colonial government do not seem to have been as systematically based on taxation rolls as in other east African territories.

In 1911, each tribal chief was asked to draw up a list of all the natives living permanently in his county some months before the count. This list was then updated in the two or three days the population count lasted, by crossing off people who died and adding those who had been omitted or

were temporarily present. A distinction was to be made between the different races. Lists of 50,000 inhabitants were not rare.

The same procedure was apparently employed in 1921.

In 1931, the method was refined and conducted at the level of the smallest administrative unit, called 'butongole' or 'muluka' according to the region. These units could count up to 500 inhabitants, but they were generally very similar in size. No map delimiting them is available.

For each butongole, an untrained and probably unpaid field worker enumerated the inhabitants assembled in some central place, helped in this by the headman who was supposed to know the approximate number of people living in his district. The questionnaire contained information by household on tribe, sex, broad age group (children and adults), marital status, occupation, handicaps and religion.

The Medical Department of Kampala showed a great deal of scepticism about the results of this population census. In certain regions, the annual growth rate was found to be roughly 5.6%, "a figure which, in the absence of strong immigration, implies a crude annual birth rate of 70 per 1,000" [12].

The administration considered the total 1931 figure too high. Between 1921 and 1931, the number of Africans increased from 2,847,735 to 3,523,014, or an annual growth rate of 2.1%, while birth and death registration indicated a crude rate of natural increase of 0.9%. The possibilities of under-enumeration in 1921 or shortcomings in vital registration do not seem to have been considered. No report was published nor information made available on the non-African populations in 1911 and 1921. In 1931, self-enumeration was employed.

c) Vital Registration

The edict of May 13th 1904 made birth and death registration compulsory in the Kingdom of Bugunda. In 1920 this measure was extended to the whole of the territory.

The numbers of live births and child deaths are available from 1926 on for the whole of the country except the district of Karamoja, whose population was nomadic.

In 1930, a special form worded in English, Luganda and Kiswahili was printed for easier extraction of statistical data at the 'gombolola' or sub-county level. The records were then sent every three months to the 'saza' or county chiefs, then to the district commissioners and examined by the Head of the Medical Department.

The same year, the gombolola chiefs were invested with administrative and judicial powers in order to improve monitoring of birth and death registration.

Despite all these measures, the results remain irregular and disappointing. For instance, the excess of births over deaths falls from 35,249 in 1933 to 19,456 in 1934 for no apparent reason. The death rates are too low: 13.42 per 1,000 at Kigezi, 10.79 in the West Nile province. Kuczynski implicates the lack of interest shown by the colonial government.

The records containing flagrant errors are not returned with a demand for explanation; local officials feel no encouragement. This is aggravated by a reluctance towards registration due to taboos.

C.J. MARTIN [16] is very sceptical about the efficiency of the vital registration system, which even appears to have progressively worsened over time: around 1960, no more than half the births and deaths were seemingly recorded.

The population estimates published every year were obtained by using vital statistics to update the results of the periodic population censuses; migration was not taken into account.

TABLE 105 - UGANDA - ESTIMATES OF THE AFRICAN POPULATION BASED ON VITAL STATISTICS

Date	POPULATION	Date	POPULATION	Date	POPULATION
31.3.1913	2 889 561	1923	3 119 645	1934	3 623 591
1914	2 904 454	1924	3 136 769	1935	3 644 245
1915	2 933 031	1925	3 137 602	1936	3 668 793
1916	2 883 382	1926	3 123 581	1937	3 692 127
1917	2 950 504	1927	3 135 985	1938	3 725 798
1918	3 357 080	1928	3 241 543	1939	3 769 758
1919	3 313 908	1929	3 396 323	1940	3 809 178
1920	3 057 075	1930	3 497 650	1941	3 844 981
1921	3 064 735	28.5.1931	3 536 267	1942	3 868 714
31.12.1921	3 059 583	31.12.1932	3 568 886	1943	3 901 440
1922	3 125 522	1933	3 604 135	1944	3 926 528

Source: [12]

These estimates reveal variations which are largely inexplicable: there is, for instance, nothing to justify the rapid increase observed in 1918 and 1919.

The impressive difference between the official population estimate for 1947 (3,987,500) and the results of the 1948 census (4,920,000) - a million inhabitants - attests the deficiency of the vital registration system.

2) The 1948 and 1959 Censuses and Post-Enumeration Surveys

With the creation in 1946 of the Statistical Department for Eastern Africa, real population censuses were organized from Nairobi, with an almost identical methodology for all three of the British territories in Eastern Africa (Kenya, Tanganyika, Uganda).

The detailed explanations given elsewhere for Tanganyika therefore also apply to Uganda. We will merely recall the broad lines of the different operations and give certain details specific to Uganda.

The 'de facto' population censuses were conducted in three stages:

- Firstly, the non-African population was enumerated in February (1948) or March (1959); this represents less than 1% of the total population.
- Secondly, a complete census of the African population, hut by hut, was carried out in August.
- Thirdly, roughly 10% of the African population in 1948 and 5% in 1959 were re-enumerated by a 'sample census' conducted immediately after the general African population census, in September, October and November.

Three types of questionnaire were used:

- One for the complete African population census written in the national tongue and containing only elementary questions (sex, five broad age groups, marital status for 1948 only, tribe).

This questionnaire provided one line per household, when all the members belonged to the same tribe.

- One for the sample survey, more complete, with questions on age (in 1948, 16% of women gave their age in complete years, the others by age group), place of birth, religion, educational level, fertility, events occurring over the last 12 months.

This questionnaire allowed one line per person.

- One very similar to the latter, used for the non-African population and extended to Africans living in the outbuildings of non-African houses.

The actual census operations lasted between 1 and 7 days, depending on remoteness and the number of fieldworkers available (government employees, missionaries, students).

According to information obtained in 1969, in certain regions of North Uganda the 1959 census was still conducted by the population assembly method.

In 1948, the census schedules were not sent directly to Nairobi. A first estimate was obtained on the spot from a 1/10 systematic sample of schedules; this gave a total population of 4,953,000 inhabitants, very close to the final figure of 4,958,520.

A report on the census of the non-African population was published in 1953.

The only publication existing on the census of the African population provides the number of males and females by tribe and locality. In certain cases, a distinction is made between children and adults [1]. No official report or other information is available on the post-enumeration survey.

In an article published in 1953 [16], C.J. MARTIN, at the time Head of the Statistical Department of Nairobi, gave an estimate of the crude birth rate (42 per 1,000) and the crude death rate (25-30 per 1,000) based on the results of the 1948 post-enumeration survey.

The 1959 census provided two substantial reports, one on the African [23] and the other on the non-African [24] populations, as well as a huge quantity of data, some beyond the county level, published in six volumes of 'Tribal Analyses' and two maps, one representing population density by gombolola (sub-county) and the other, the distribution of ethnic groups within each county for the 'Atlas of Uganda'.

The demographic data provided by the 1959 'sample census' were used for various studies by J.G.C. BLACKER, who was also in charge of writing the official report: these studies can therefore be considered as the almost-official results of the post-enumeration survey. In 1972 [5], he estimated the crude birth rate in 1959 as being once more 42 per 1,000, while the crude death rate was put at 20-21 per 1,000, with strong local variations. For the same period, the crude birth rate was estimated at 44 per 1,000 by the University of Princeton group of specialists on Africa [6].

The most interesting finding was the low fertility rate observed for Bugandan women. Their overall fertility rate was 150 per 1,000 compared with 241 in the district of Ankole and 230 in Kigezi.

3) The 1969 Population Census

Uganda attained Independence on October 9th 1962 and the first census it organized alone was held on August 18/19th 1969, exactly ten years after the 1959 census.

As was the case for the 1967 census in Tanzania, certain of the methods used in 1948 and 1959 were reconsidered. It was decided that the 1969 census would consist of a single enumeration for every person staying in the country, regardless of race and nationality. "This was considered more simple and economical, and at the same time more in keeping with the spirit of independent Africa" [10]. The existence of separate census operations was all the less justified as non-Africans then represented barely 1.1% of the total population.

Two forms were used for collecting data:

- For roughly 90% of rural zones, a very simple questionnaire was used asking name, kinship with the head of the household or with any other members, sex, age in complete years, race and nationality.
- A more detailed questionnaire was used for the rural zones selected for the sample and for all urban areas. It contained additional questions on place of birth, educational level, marital status, mortality and fertility. The latter questions were presented in a way similar to the one used in Ghana in 1960, for reducing the usual omissions. For instance, the questionnaire distinguished the number of children living at home from those living elsewhere and those who were dead. The results seem more satisfactory inasmuch as the mean number of children per woman aged 50 and over decreased less with the age of the woman than at the earlier censuses. The question on deaths occurring over the last twelve months was replaced by questions on surviving parents.

a) The Sample

Instead of forming a post-enumeration survey, as was the case previously, the sample was in 1969 an integral part of the general population census. It consisted of 10% of rural communes, the commune serving as sampling unit in each district. This gave a mean number of 17

units per district, which was a little too low for keeping sampling errors at a reasonable level.

However, "the additional complications and probable inaccuracies which adopting the census area as main sampling unit would have caused - problems of enumeration of the sampling frames and delimitation of boundaries, as well as complications stemming from the training and supervision of fieldworkers undertaking a complex operation in the sample zones - outweighed the gain in precision for the sample, except for two very small districts, Madi and Sebei, where it proved necessary to use the census area or sub-commune" [13].

b) Mapwork

For the 1969 census, the Cadastral Department drew up a series of 1/50,000 scale maps indicating roughly 2,600 communes; the commune boundaries were added on 300 of them. The Geography Department of the University College of Makerere then remapped on a 1/250,000 scale the ones indicating the commune boundaries, while the Department of the Census drew up rough maps of the census areas based on the 1/50,000 scale maps. These maps were only hand-drawn approximations to be used during the fieldwork.

In view of the difficulties encountered during the pilot census held in August 1968, the number of households per commune was estimated and local historical calendars were established.

c) Advertising

The census was preceded by a vast advertising campaign to encourage the population to cooperate. The census was presented as an operation contributing to the economic and social development of the country. To avoid all ambiguity, local authorities were forbidden to collect taxes or arrest anyone for outstanding taxes for the duration of the census.

A national advertising committee was formed with representatives of the different ministries involved in the census: the Ministry of Education, because most of the supervisors and fieldworkers were teachers or students; the Ministry of Regional Administration, because the support of the local authorities and traditional chiefs was essential for gaining the cooperation of the inhabitants in their sector; the Ministry of Information, in charge of contacting the population through the media; and the Ministry of the Interior. In addition, posters were distributed in several languages and discussions were held in schools and various organizations.

The population participated enthusiastically: letters appeared in the press asking the government to forward the date of the census so that Pope Paul VI, who was then visiting Uganda, could be included in the 'big count'.

Finally, the afternoon of the census day was declared a public holiday and a curfew was called for the night of August 18-19: all public entertainment places were closed and special passes were delivered to fieldworkers and other persons needing to go out that night.

The census could therefore be carried out in a single night in all the urban zones and in the districts situated along Lake Victoria, where the population was dense and particularly mobile.

The whole of the census operation was completed within four days, which was faster than expected.

II. CONSISTENCY BETWEEN THE DIFFERENT SOURCES AND PROPOSED ESTIMATES OF POPULATION SIZE SINCE THE BEGINNING OF THE CENTURY

1) 1911-1948

TABLE 106 - UGANDA - RESULTS OF THE POPULATION CENSUSES, 1911-1948

YEAR	AFRICANS	CRUDE ANNUAL RATE OF GROWTH	NON-AFRICANS	TOTAL	% NON- AFRICANS
1911	2 463 469	1.5 %	2 856	2 466 325	0.12
1921	2 847 735	2.1 %	6 873	2 854 608	0.24
1931	3 525 014	2 %	17 267	3 542 281	0.49
1948	4 917 555		40 965	4 958 520	0.93

The administrative estimate of the African population as of 31.12.1947 was 3,987,500 inhabitants.

These results suggest two remarks:

- The difference between the 1947 administrative estimate and the 1948 census data is roughly a million inhabitants, a figure which, as we have seen, indicates the inadequacy of the vital registration system.
- The mean annual rates of intercensal growth seem too high, despite the importance of immigration after 1921.

According to R.R. KUCZYNSKI [12] then C.J. MARTIN [17], the population of Uganda must have stagnated up to the end of World War I. Any upward or downward trends were related to climatic factors affecting crops, to migrations or epidemics. Until 1920, the extension of the railway network was limited and health services practically inexistent. Between 1900 and 1906, the government estimated at 10% the proportion of the population which died of sleeping sickness.

After 1920, communication routes were developed, and railways and roads enabled food to reach the deprived zones. The populations of areas infested with tsetse flies were moved elsewhere and subjected to a first medical control. Mortality declined, in particular because of the disappearance of famines and great epidemics.

It seems reasonable to estimate the rate of natural increase at 1% per year after 1920, reaching 1.5% before World War II.

Starting in 1923-24, immigration to Uganda became high, in particular from Rwanda-Urundi and the Belgian Congo. In 1931, 76,844 immigrants were enumerated. The movement did not slow down until 1939-45.

In a retrospective study in 1965 [14] which took as a starting point the natural increase estimated for the 1948-1959 intercensal period (2.2% per year), D.A LURY proposed the following rates of natural increase and population estimates:

TABLE 107 - UGANDA - ESTIMATED RATES OF NATURAL INCREASE AND POPULATION SIZE, AFRICAN POPULATION, 1921-1948

1948	ANNUAL RATE OF NATURAL INCREASE 1939-1948	1939	ANNUAL RATE OF NATURAL INCREASE 1931-1939	1931	ANNUAL RATE OF NATURAL INCREASE 1921-1931	1921
4 918 000	1.8 %	4 176 000	1.4 %	3 602 000	0.9 %	3 363 000

Source: [14]

These figures take into account territorial changes (Rudolf Province was annexed to Kenya in 1926) and migration (+ 80,000 in 1931 and + 20,000 in 1921).

The population size given for 1948 is the census figure, coverage being considered complete.

Underenumeration is estimated at 2.2% in 1931, which seems low, and 15% in 1921.

2) 1948-1975

Our observations are based on the one hand, on the analysis of the 1969 census [20 vol. IV] and on the other hand, on the assumptions and interpretations drawn by S.R. TABER from the provisional results of this census [22], as they are very close to the final ones.

a) 1948-1959

The census data indicate an annual rate of population growth of 2.5% between 1948 and 1959 and 3.9% between 1959 and 1969.

Such a large difference between the two periods seems unlikely. However, it cannot be attributed as clearly as in the case of Tanzania to strong underenumeration in 1959.

The crude rate of natural increase obtained by subtracting the crude death rate from the crude birth rate, estimated at 20 and 42 per 1,000 respectively in 1948-1949, is 2.2% per year, which is very close to the real annual rate of intercensal growth. The difference of 0.3% between the two figures could easily be explained by net immigration, estimated at 155,000 between 1948 and 1959. This estimate was obtained by counting the people who stated in 1948 and 1959 that they belonged to tribes alien to

Uganda and by supposing a rate of natural increase of 2.2% per year for those already living in this country in 1948. However, as most of the migration during this period was labour migration, the supposed rate of natural increase for the immigrant population already living in Uganda is probably too high, and the number of immigrants may well have exceeded 200,000 [22]. It is also highly probable that the figures for the whole of the country are underestimated.

TABLE 108 - UGANDA - RESULTS OF THE 1948, 1959, AND 1969 CENSUSES AND COMPOSITION OF THE POPULATION

YEAR	AFRICANS	ANNUAL RATE OF GROWTH	NON-AFRICANS	TOTAL	% NON-AFRICANS
1948	4 917 555	2.5 %	40 965	4 958 520	0.93
1959	6 449 558		87 058	6 536 616	1.33
1969	9 456 466	3.9 %	92 381	9 548 847	0.97

TABER specifies: "the range of rates proposed for the estimates would have been compatible with higher rates of real growth"; the consistency observed between 1948 and 1959 does not therefore exclude omissions. These are probable in the northern and western regions (Acholi, Bunyoro, Karwoja, Madi, Toro and Western Nile districts) for a variety of reasons. In certain cases, as we have mentioned, the population was counted by the public assembly method; August is a rainy month in the north; and large groups of the population are nomadic.

It seems reasonable to suppose that the crude rate of population growth was around 2.7% per year on average between 1948 and 1959, reaching 2.8% or 2.9% in 1959.

b) 1959-1969

Various reasons suggest that this rate must have continued to progress: improved communications and means of transport and better health coverage no doubt contributed to a mortality decline, in particular for infant and child mortality.

At the same time, health and social changes, the transition from polygamy to monogamy, the relaxing of sexual taboos during breastfeeding, earlier weaning and a reduction in venereal diseases will have contributed to a rise in the birth rate.

Furthermore, if there is a natural reluctance to recall the birth of a child who died in the first weeks of life, a decline in infant mortality leads to a higher evaluation of the birth rate, even if this does not correspond to a real increase. In 1969, the crude death rate was estimated at 16-17 per 1,000 and the birth rate at 45-46 per 1,000, giving a mean annual rate of increase of 2.9 to 3.0%.

Migration represents another important element of population growth in Uganda, the pressure of which became stronger during the 1959-1969 decade.

In 1969, the number of refugees officially recognized as such by the High Commissioner for Refugees and the Ugandan Government was estimated at 176,000.

According to TABER: "Among these refugees, there may naturally be some Congolese, Rwandans, or Sudanese already living in Uganda in 1959. However, I tend to think that most of them are newcomers with somewhat different motivations, the fact that they consider themselves as refugees implying that they give more importance to the forces expelling them than to those attracting them."

Added to these refugee migrations are labour migrations from Burundi, Tanzania and Kenya, attracting new inhabitants more particularly to the western provinces. The structure of the immigrant population shows changes: the sex ratio is lower in 1969 than in 1959, and the rate of natural increase may be higher because of the arrival of young couples who settle and start raising families.

In 1969, 750,000 people stated that they were born outside Uganda, against 200,000 in 1959, while over a third of the African employees enumerated were non-Ugandans. As for emigration of Ugandans, it remains low: in 1967, 13,868 people born in Uganda were enumerated in Tanzania and in 1969, 33,472 in Kenya.

The non-African population represents a very small proportion of the total population: 0.93% in 1948, 1.33% in 1959 and 0.97% in 1969. The Africanization policy adopted in 1962 led many Asians to emigrate from Uganda.

c) 1969-1975

TABLE 109 - UGANDA - COMPOSITION OF THE POPULATION BY RACE AND NATIONALITY
IN 1969

Race \ NATIONALITY	NATIONALITY		TOTAL
	UGANDAN	NON-UGANDAN	
African	8 970 292	486 174	9 456 466
Asian	25 657	48 651	74 308
European and other	6 502	11 571	18 073

In 1972, under the reign of Amin Dada, terror became a system of government in Uganda. Amnesty International estimated the number of victims at between 50,000 and 300,000 in 1971-1976. Repression focussed on the Christian tribes living in the south and the Acholis and Langis who were traditionally favourable to Milton Obote.

A series of nationalizations in 1972-1974 led 50,000 Asians to be dispossessed and expelled from the country.

British nationals were subjected to a repression exerted in the framework of the Anglo-Ugandan relations. In 1972 the British population of Uganda fell from 10,000 to 5,000.

For Ugandan nationals, the authorization to leave the country depended on the pleasure of the government services. Emigration became clandestine and immigration practically non-existent.

In 1975, according to official sources, 112,631 refugees were still living in Ugandan camps.

All these elements have led us to suppose that the rate of population growth in Uganda must have slowed down in comparison with 1959-1969.

In the absence of precise data, we estimated the rate of natural increase at around 3.2% per year, which seems reasonable, and net migration as being nil.

Table 110 presents the various assumptions and estimates we made. Fuller information on the quality of the data collected, on migration and on the dark period of 1972-1975 could obviously lead us to mollify them.

TABLE 110 - UGANDA - PROPOSED EVALUATION OF POPULATION SIZE, 1948-1975

YEAR	CENSUS POPULATION (thousands)	MEAN ANNUAL RATE OF GROWTH (%)	ESTIMATED RATE OF NATURAL INCREASE (%)	ANNUAL RATE OF NET MIGRATION (%)	PROPOSED REAL ANNUAL RATE OF GROWTH (%)	POPULATION ESTIMATE (thousands)	UNDER-ENUMERATION COMPARED WITH THE CENSUS POPULATION (%)
1948	4 959					5 099	
		2.5	2.2 - 2.4	0.3 - 0.4	2.7		2.7
1959	6 537					6 835	
		3.9	2.9 - 3.0	0.5 - 0.6 (or 400 000-450 000 net immigrants)	3.4		4.3
1969	9 549					9 549	
			3.2		3.2		0 (assuption)
1975						11 535	

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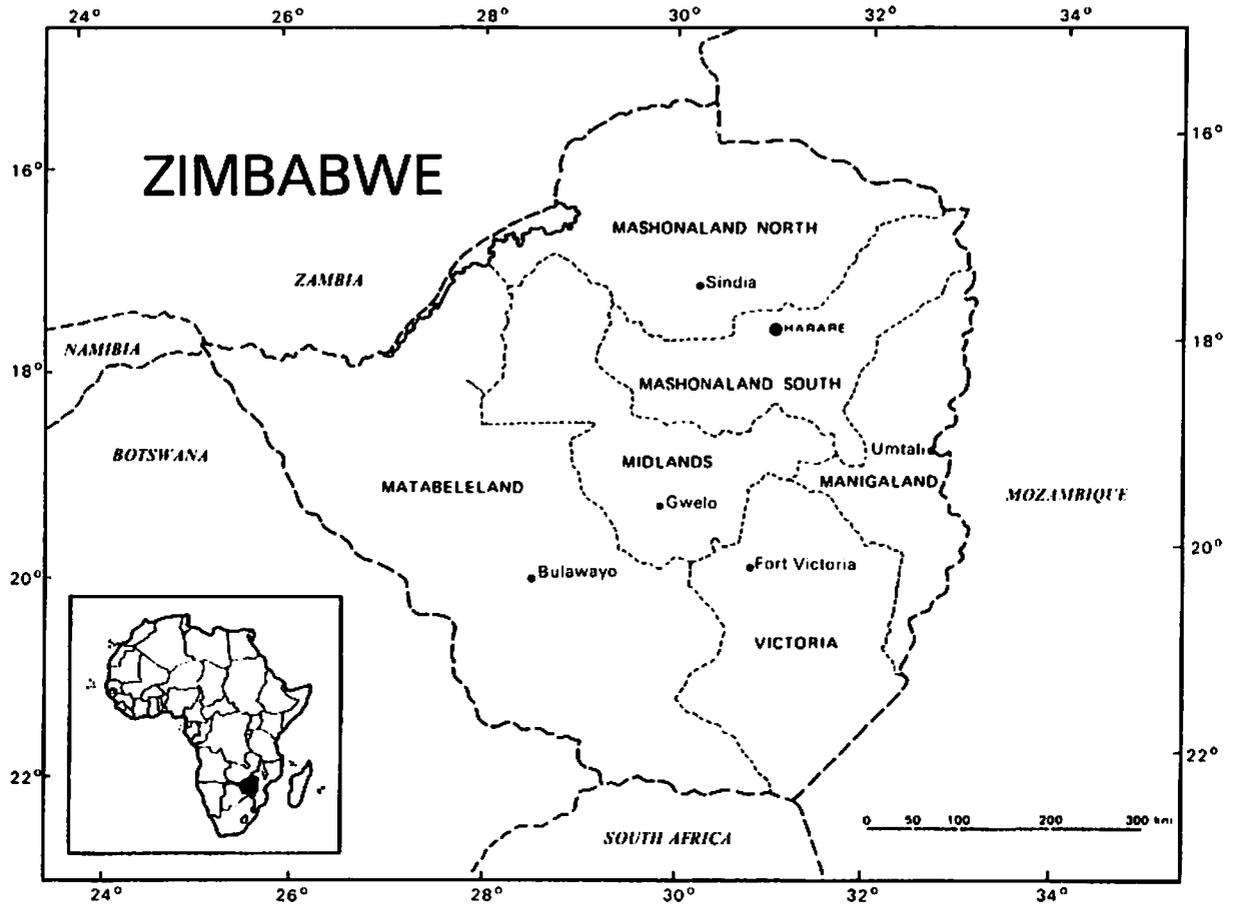
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ZIMBABWE

LUC GOARNISSON

APRIL 1980



Z I M B A B W E***I. INTRODUCTION**

Demographic studies in Zimbabwe have been confronted, as in many other African areas, with the low educational level of the population. This characteristic has affected demographic studies in two ways. Firstly, up until the 1962 census, it was impossible to find a sufficient number of people with an adequate educational level to enable them to work as enumerators, even for a simple enumeration of the total population. Secondly, when it became possible for a general census to be conducted, the questions put to the majority of individuals had to be limited to subjects which were easily understood.

For the non-African population however, after 1901, a sufficient number of relatively well educated enumerators was found to carry out quite sophisticated censuses. Such censuses were conducted in 1901, 1904, 1907, 1911, then, at five-year intervals from 1921 to 1961 and, finally, in 1969.

For enumeration requirements, the African population was separated into two components: the population born abroad (or non-native) and the population born in Southern Rhodesia (native). In the beginning, the population born abroad was mainly constituted of male adults entering the country for a temporary job in the non-agricultural sector, which was rapidly expanding, or in the growing areas of commercial agriculture. The number of these 'employees' born abroad (but not including their dependents or the unemployed) was obtained, from 1921 until 1961, by enumerations of employees carried out simultaneously with the non-African censuses. The operation was conducted using information obtained from the employers concerned.

Until 1948, the native population as a whole was roughly estimated by the District Commissioners using tax rolls.

With the exception of a relatively low but growing number of so-called 'detrribalized' Africans, these tax rolls concerned the population situated in the 'Tribal Trust Lands' or the 'Native Purchase Areas'. The district commissioners however, had to include the number of native people situated outside these areas in their estimates. This number was determined using the hypothesis that the data concerning these individuals could be established from the observed absences of registered taxpayers and the information obtained from ascendants and household heads about people living outside the native areas and unregistered as regards taxation.

* This monography, which was conducted under the supervision of Francis GENDREAU, profited from useful comments by C.A.L. MYBURGH, Director of the Census and Statistics, at the Central Statistical Office in Salisbury. Any inaccuracies which may subsist remain the author's responsibility.

These grounds were also used in the sample surveys of the native African population conducted in the native areas in 1948 and 1953-1955. These surveys supplied estimates for the 'de facto' population and the 'de jure' population (administratively domiciled) of these areas.

However, for the 1962 and 1969 censuses, a strict approach of the 'de facto' population was adopted for the whole of the country.

II. DATA SOURCES

1) Estimates by Native Commissioners

In 1894, a decree established a tax in all administrative districts on the basis of the number of huts. The native commissioners of each district then conducted estimates of the population they governed by multiplying the number of taxable huts by a coefficient of the order of 3.5.

TABLE 111 - ZIMBABWE - POPULATION ESTIMATE AND ANNUAL GROWTH RATE, 1901 TO 1961

YEAR	ACTIVE POPULATION	ANNUAL GROWTH RATE %	YEAR	NATIVE POPULATION	ANNUAL GROWTH RATE %
1901	489 600	-	1941	1 257 800	2.9
1911	692 921	3.5	1946	1 546 800	4.2
1921	778 089	1.2	1951	1 838 300	3.5
1926	850 181	1.8	1956	2 219 900	3.8
1931	986 850	3.0	1961	2 557 300	2.9
1936	1 088 700	2.0			

Source: [6]

In 1901, tax became based on the number of male adults instead of the number of huts. The multiplying factor used varied according to the year and the district. It was 3.75 in 1911 and 3.6 in 1921.

2) Sample Surveys of Native Africans: 1948 and 1953-55

The population covered by these surveys was the native African population of the rural villages and African farms registered for taxation. Certain remote and ungoverned tribes were thus excluded from the field of the survey. The survey population was situated in the 'Native Purchase Areas' and the 'Tribal Trust Lands' and included as a general rule, all individuals living as Africans. Thus, half-castes or immigrants working for Africans were included in the native African population results.

The surveys determined the 'de jure' and the 'de facto' population of the native areas. The 'de facto' population enumerated included the residents and the visitors who were present on the night preceding the

enumerator's visit. The 'de jure' population was the sum of the number of residents present and the absentees. The absentees were of two types: those living in other native areas and those in the European economy. The number of the first was equal to that of the visitors.

The native population within the European economy (outside the native areas) was thus obtained by subtracting the number of visitors from the number of absentees. It is, however, highly probable that the number of absentees obtained from the information provided by the residents was underestimated. Both surveys gave rise to a systematic sampling of villages taken from a list of villages drawn from the tax registers.

In 1948, the size of the sample was determined by reference to the accepted standard error relative to the total population of each district. The accepted error for this total, for a confidence level of 95%, was $\pm 5\%$. Its accuracy was seen to be slightly less after the survey had been carried out. It was equal to $\pm 1.4\%$ for the total population .

In 1953-1955, stress was put on obtaining a birth and death rate of satisfactory accuracy. The sample size rose from 2,600 villages in 1948 to 3,500 villages.

In 1948, 25 Europeans were recruited for the fieldwork, mainly among civil servants who were experienced in the native administration. Africans were judged preferable in 1953-1955, for this made it easier to overcome the suspicion and superstition of respondents. 42 Africans and 5 Europeans were employed for field collection.

After their training, the field workers had guides, messengers and maps at their disposal; European enumerators had interpreters.

In order to gain time, the inhabitants of the villages and farms were warned in advance of the enumerator's visit and they were asked to stay at home on the given day. On his arrival, the enumerator explained the nature and the objectives of the survey, then visited the different households.

The first survey started at the beginning of August 1948 and continued until October. August 31st 1948 represents the mean date to which all results can be referred.

The second survey took three years: 17 of the 38 districts were examined from August to September 1953. A survey was conducted in the remaining 21 districts in 1954 and 1955. The division of the survey into three parts and its lengthy duration can be explained both by the shortage of qualified personnel and the advent of forced migrations of a part of the population (migrations linked in particular to the construction of a hydro-electric dam). A year passed after these migrations before the survey was completed in the districts concerned. The results are referred to the month of September 1954.

Monitoring of the field work for the 1948 survey was carried out with the aid of a system of interpenetrating samples which enabled each enumerator's results to be compared with those of at least three others.

This control procedure, which was costly and inefficient due to the considerable sampling error, was abandoned in 1953-1955. In the latter survey the village of residence of the individual was taken to be the one

where he or his family was registered on the tax rolls and not, as in 1948, the one where he normally lived. This modification enabled the list of registered taxpayers to be used for each village as a means of checking the people who were to be enumerated and as an auxiliary variable for the total population estimate.

In 1948, the total population was estimated by multiplying the average population of the villages where the survey was conducted, by the total number of villages (mean estimate). In 1953-1955, the total population was estimated by this quotient, using the number of registered tax payers as auxiliary variable.

The Central Statistical Office, furthermore, conducted sample surveys of the African population in the towns of Salisbury in 1958 and of Bulawayo, Umtali and Gwelo in 1959. The information collected concern the sex, year and place of birth, relation to the head of the family, education, profession, salary and housing characteristics of the respondents.

TABLE 112 - ZIMBABWE - TOTAL NATIVE 'DE FACTO' POPULATION IN 1948 AND 1954

DATE	TOTAL NATIVE DE FACTO POPULATION	MEAN ANNUAL GROWTH RATE %
August 31st 1948	1 587 100	-
September 1954	2 014 000	4.0

3) African Population Censuses, 1962 and 1969

The 1962 census was the first complete enumeration of the African population.

The preparatory work was led by the permanent personnel of the Central Statistical Office.

62 census districts were distinguished in 1962 and 50 in 1969. The civilian commissioners (in the towns) and the native commissioners were employed as district supervisors. Their job was to divide the districts into enumeration areas, to estimate the requirements in personnel and vehicles, to recruit, train, control and pay the team leaders and enumerators and, finally, to summarize the demographic characteristics of the Africans in the district.

Demarcation of the enumeration areas was made using the administrative subdivisions of the district. Obtaining an enumeration area of a convenient size for the work of an enumerator, or a team of enumerators, required the regrouping or dividing of certain segments.

Each enumerator received a detailed description of his area and a map. In the rural areas, the team leaders had lists of the names of the villages situated in each enumeration area.

3,260 enumerators were employed in 1962, including many teachers and 229 team leaders, generally European, with at least four years secondary education. The enumerators went from house to house to complete the questionnaires. Each individual was recorded on one line of a schedule corresponding to a household or home.

The work was carried out on a full-time basis in the rural areas and during the evening in the towns.

In 1962 and 1969, the enumeration lasted three weeks. Due to the difficulty in obtaining reliable replies for a fixed date, the people recorded in the census were all those who had slept in the house on the night preceding the enumerator's visit, including those who had already been enumerated. Thus, the number of omissions was theoretically equal to the number of double counts.

The reference date, the average enumeration date, was April 24th in 1962 and April 29th in 1969.

Besides the usual means of publicity for the censuses such as radio, television and the press, information brochures were distributed and films were shown for the 1969 census. However, it is always difficult to explain to a suspicious or sceptic public, in particular in the more remote areas, the usefulness and the confidential character of the information collected [7].

Better training and closer supervision of the field personnel would doubtless have improved the quality of the collection. Opposition in certain areas, in particular in the urban districts, led to an underenumeration [3].

For the Central Statistical Office, there is no doubt that the 1969 census gave the best results of the whole series of censuses and surveys, for it did not have the security problems encountered in 1962 and it was undertaken by a larger number of better trained enumerators [4].

4) Censuses of Europeans, Asians and Half-Castes

The first official yearbook of Southern Rhodesia, published in 1924, indicates that the European population was estimated at 1,500 people in 1891.

Censuses undertaken in 1901, 1904, 1907 and 1911, followed by five-year censuses from 1921 to 1961 and the 1969 census, show a remarkable continuity in the methods used and the precision obtained.

They employed the division into native districts, which were subdivided into enumerator's districts. The district commissioners controlled the operations in their respective districts.

Enumerators were recruited among teachers, civil servants, volunteers and occasionally members of the police.

The questionnaire was completed by the head of the family, or in certain cases, by the enumerator.

TABLE 113 - ZIMBABWE - 'DE FACTO' POPULATION, ACCORDING TO RACE, ON THE DATES OF THE CENSUSES AND SURVEYS

DATE	EUROPEANS	ASIANS	MIXED BLOODS	AFRICANS (a)
1901, May 31st	11 032	1 093	...	...
1904, April 17th	12 596	1944 (b)		...
1907, September 29th	14 007	...	...	...
1911, May 7th	23 606	870	2 042	...
1921, May 3rd	33 620	1 250	1 998	...
1926, May 4th	39 174	1 454	2 158	...
1931, May 5th	49 910	1 700	2 402	...
1936, May 5th	55 408	2 180	3 187	...
1941, May 6th	68 954	2 547	3 974	...
1946, May 7th	82 386	2 911	4 559	...
1948, August 31st	...	...	...	1 817 000 (c)
1951, May 8th	135 596	4 292	5 991	...
1954, September	...	...	...	2 304 000 (d)
1956, May 8th	177 124	5 127	8 079	...
1961, September 26th	221 504	7 253	10 559	...
1962, April 24th	...	...	...	3 618 150
1969, March 20th	228 296	8 965	15 153	...
April 29th	...	...	...	4 846 930

...not enumerated

- a) Before the 1948 sample survey, the only data available on the African population was: (i) estimates of the native population based on the tax rolls and (ii) as from 1921, the population of African employees, with a distinction made between the native and non-native employees.
- b) Asians and half-castes.
- c) Sample survey on 1,587,100 native Africans and a population of non-native African employees estimated at 230,000.
- d) Sample survey on 2,014,000 native Africans and a population of non-native African employees estimated at 290,000.

Source: [4]

5) Censuses of Employees

As from 1921, censuses of employees were carried out simultaneously with the censuses of non-Africans. All employers, with the exception of the African employers in rural areas, had to present a form bearing a list of their employees classified according to sex, race and place of birth, and which included employees who were temporarily absent.

Before the 1962 census, these procedures represented the only source for estimating the number of non-native Africans. This was obtained by applying a coefficient to the number of non-native African employees, to take their dependents into account. Furthermore, the censuses of employees also offered a good source of knowledge on the distribution by branch of activity of the total labour force, with the exception of those working in the traditional subsistence economy.

The 1969 census report compared the population of employees obtained from the household census to that obtained from the census of employees. Analysis showed an underestimation of approximately 2.4% in the census of employees for non-Africans and an underestimation which was not determined, but was of the same order, for Africans.

III. CONSISTENCY BETWEEN THE DIFFERENT SOURCES AND ESTIMATE ON JANUARY 1ST 1975

1) Civil Registration Data

Birth and death registration for non-Africans was made compulsory on April 1st 1904.

Satisfactory results were obtained for the Europeans as from 1906, and later for Asians. At present, they still remain incomplete for half-castes.

Birth and death registration for Africans, which is now compulsory in certain areas, is incomplete.

The birth and death rates of the Europeans and Asians provided by the civil registration data are the following, for recent years:

2) Population Growth Data Drawn from the Censuses and Surveys

This data concerns the African population. The 1948 and 1953-1955 surveys established birth and death rates from questions concerning births and deaths over the twelve months preceding the survey.

The birth rate obtained was 46 per 1,000 in 1948 and 45 per 1,000 in 1954.

The death rate was 18 per 1,000 in 1948 and 15 per 1,000 in 1954.

TABLE 114 - ZIMBABWE - BIRTH AND DEATH RATES FOR EUROPEANS AND ASIANS FROM 1973 TO 1977 (PER 1,000)

YEAR	EUROPEANS		ASIANS *	
	Birth Rate	Death Rate	Birth Rate	Death Rate
1973	16	7.6	} 20	} 6
1974	17	7.8		
1975	16	7.3		
1976	15	7.5		
1977	13	8.2		

* Annual rates are subject to random variations.

A study of the age structure at the 1962 census gave a birth rate of 48 per 1,000 and a death rate of 14 per 1,000 in 1962 [3].

In 1969, birth and death rates were estimated using the method of C.A.L. MYBURG (1) (1956). The rates obtained were 52 per 1,000 and 16 per 1,000 respectively.

These estimates gave the growth rates presented in table 115.

3) Revision of Early Estimates of the Native Population Carried Out by the District Commissioners

R.W.M. JOHNSON [6] endeavoured to compare the early estimates of the native population, made by the native commissioners, with the results of the 1962 census.

The series of estimates from 1921 to 1951 revealed certain inconsistencies due to the attention paid, (which varied according to the period), to the completeness of the tax rolls. The highest population numbers in relation to trends, obtained for certain years, should therefore represent the best estimates. These concern the years 1921, 1931 and 1946.

(1) "Estimating the fertility and mortality of African population by the total number of children ever born and the number of these still living" "Population studies", vol.X, no.2, November 1956.

**TABLE 115 - ZIMBABWE - RATES OF NATALITY, MORTALITY AND NATURAL INCREASE
OF THE AFRICAN POPULATION FROM 1948-1969**

DATE	BIRTH RATE ‰	DEATH RATE ‰	NATURAL INCREASE RATE %
1948	46	18	2.8
1954	45	15	3.0
1962	48	14	3.4
1969	52	16	3.6

R.W.M. JOHNSON observed that the estimate made in 1962 for the native population in 1948 (the year of the first sample survey) exceeded the estimate made by the native commissioners by 25%. He thus applied this rate of underestimation to the results obtained in 1921, 1931 and 1946 and adjusted the results for the intermediate years according to the trends observed between these three dates.

The 1969 census showed a greater underestimation of the population size obtained in 1948, using the sample survey. The coefficient of underestimation applicable to the results of 1921, 1931 and 1946 is therefore closer to 30%.

The data presented in Table 116 are the result of the application of the method developed by R.W.M. JOHNSON and this new coefficient.

4) Consistency and Evolution of the Population from the Beginning of the Century

With each census, the Central Statistical Office estimated the past population trends distinguishing between the natural and migratory movements.

The estimates published in the report of the 1969 census and since published in the 'Supplement to the Monthly Digest of Statistics' are summarized here.

TABLE 116 - ZIMBABWE - RATE OF NATURAL INCREASE OF THE NATIVE POPULATION FROM 1921 TO 1946

YEAR	NATIVE AFRICANS	ANNUAL GROWTH RATE %
1921	1 021 000	-
1926	1 139 000	2.4
1931	1 283 000	2.4
1936	1 490 000	3.0
1941	1 731 000	3.0
1946	2 011 000	3.0

a) The African Population

Taking into account the natural and migratory growth, the 1962 census revealed that the results previously obtained underestimated the actual population by almost 22%

The 1969 census showed an additional underestimation of the previous estimates of more than 6%. The retrospective study, which was based on the population size given by the 1969 census, most certainly the best of the series, enabled the report [4] to estimate the growth factors of the African population using the following hypotheses:

- 1 - Immigration of male adults born abroad remained at a constant level from 1901 to 1921 and reached a total of 92,300 provided by the 1921 census of employees. Subsequent changes in the migration of male adults born abroad were revealed by means of successive censuses of employees and the population census of 1969.
- 2 - Immigration of women and children born abroad was based on the following increase in the dependency ratio (inactive/active):
 - (i) Nil in 1901, it rose to 25% in 1921;
 - (ii) It reached 55% in 1948 and remained at this level until 1969. (This percentage is a rounded mean of the rates obtained by the 1962 and 1969 censuses).
- 3 - The rate of natural increase for the population as a whole was nil for the year following the influenza epidemic in 1918, but increased for the other years in the following manner: from 1.5% in 1901 to 2.8% in 1948 (results of the 1948 survey), from 3% in 1954 to 3.4% in 1962 and 3.6% in 1969 (results of the 1954 survey and the 1962 and 1969 censuses).

TABLE 117 - ZIMBABWE - ESTIMATE OF THE GROWTH FACTORS OF THE AFRICAN POPULATION

PERIOD	POPULATION GROWTH			MEAN ANNUAL GROWTH RATE (%)
	Natural increase	Migration balance	Total	
1901-1911	130 000	50 000	180 000	2.3
1911-1921	170 000	60 000	230 000	2.4
1921-1931	275 000	25 000	300 000	2.4
1931-1941	410 000	110 000	520 000	3.1
1941-1951	620 000	140 000	760 000	3.3
1951-1956	430 000	70 000	500 000	3.5
1956-1961	575 000	- 35 000	540 000	3.1
1961-1969	1 220 000	- 70 000	1 150 000	3.3

Source: [4-15]

The Table was accompanied by the following comments:

"The mean growth rate implied by the first estimates of the native population which were carried out for the period from 1901 to 1948, was not less than 2.5% per year. With a rate of 2.8% for the end of the period in 1948, the mean of 2.5% suggests that the rate of natural increase was approximately 2.2% in 1901. However, taking into account the lack of medical care available at the time, this rate seems improbable. Due to the minimal coverage of the administrative services at the beginning of the century, it is extremely probable that the errors in the estimate made in 1901 were greater than those made in the 1948 sample survey, which are at present estimated at 33%. The present hypothesis of an initial rate of natural increase of 1.5% implies that the population in 1901 was approximately 700,000, which is 40% higher than the first estimate. If the error in the estimate made in 1901 is taken to be to 50%, giving a population size of 750,000, it can be supposed that the rate of natural increase rapidly increased from 1.25% to the 2.8% given by the 1948 survey".

b) The European Population

TABLE 118 - ZIMBABWE - GROWTH FACTORS OF THE EUROPEAN POPULATION

PERIOD	COMPOSITION OF THE INTERCENSAL GROWTH			MEAN ANNUAL GROWTH RATE (%)
	Natural increase	Migration balance	Total	
1901-1911	1 491 *	11 083	12 574	7,9
1911-1921	4 179	5 835	10 014	3,6
1921-1931	6 145	10 145	16 290	4,0
1931-1941	8 019	11 025	19 044	3,3
1941-1951	16 576	50 066	66 642	7,0
1951-1961	38 811	47 097	85 908	4,3
1961-1969	20 706	- 13 914	6 792	0,3

* Assumes a rate of natural increase for the years 1901-1905 equal to the rate recorded by civil registration in 1906.

Source: [4-15]

Before 1936, annual estimates (given in the table above) were based on the growth rates established by successive censuses. After 1936, the annual estimates were based on civil registration and immigration data and on emigration estimates corrected using the census results.

c) The Asian Population

Before 1956, estimates between the census dates (given below) were based on the hypothesis of a constant growth rate. Since 1956, they have been worked out in the same way as for the Europeans.

d) The Mixed-Blood Population

Migration records show that international migration of people of mixed-blood (half-castes) is very low. Due to the definition of the mixed-blood, the growth of this population reflects both natural increase, greater "mixedness" of the population, and internal migration of the rural African areas towards other parts of the country. The results of the censuses do not permit these components to be separated.

TABLE 119 - ZIMBABWE - GROWTH FACTORS OF THE ASIAN POPULATION

PERIOD	COMPOSITION OF THE INTERCENSAL GROWTH			MEAN ANNUAL GROWTH RATE (%)
	Natural increase	Migration balance	Total	
1901-1911	...	...	- 223	- 2.3
1911-1921	...	...	380	3.7
1921-1931	...	...	450	3.1
1931-1941	763	84	847	4.1
1941-1951	987	758	1 745	5.3
1951-1961	1 834	1 127	2 961	5.2
1961-1969	1 363	349	1 712	2.9

Source: [4-15]

4) Estimate on January 1st 1975

The estimate made by the Census Office adopted the following hypotheses for the 1969-1975 period:

- The rate of natural increase of the African population has remained identical to that found during the 1969 census: 3.6%
- The global growth rate of the mixed-blood population is equal to the intercensal growth rate calculated for the 1961-1969 period.

Amongst other sources, the estimate used civil registration data for the European and Asian populations (see II, I) and data on migration of the different sub-populations provided by the Department of Immigration and the Ministry of Internal Affairs.

The population of Zimbabwe thus estimated for January 1st 1975 was 6,180,000.

TABLE 120 - ZIMBABWE - INTERCENSAL GROWTH RATE OF THE MIXED-BLOOD POPULATION

PERIOD	INTERCENSAL GROWTH	MEAN ANNUAL GROWTH RATE
1911-1921	- 44	- 0.2
1921-1931	404	1.9
1931-1941	1 572	5.2
1941-1951	2 017	4.2
1951-1961	4 568	5.6
1961-1969	4 594	4.9

Source: [4-15]

TABLE 121 - ZIMBABWE - ANNUAL POPULATION ESTIMATES FROM 1901 TO 1979

(thousands)

JUNE 30th	AFRICANS	EUROPEANS	ASIANS	MIXED BLOODS	TOTAL
1901	700	11,1		1.5 *	710
1902	720	11.6		1.7 *	730
1903	730	12.1		1.8 *	740
1904	750	12.7		1.9 *	760
1905	770	13.1		2.1 *	790
1906	780	13.5		2.2 *	800
1907	800	13,9		2.4 *	820
1908	820	15.6		2.5 *	840
1909	840	18,1		2,6 *	860
1910	860	20.9		2.8 *	880
1911	880	23,7	0.9	2.0	910
1912	900	24.6	0.9	2.0	930
1913	930	25.5	0.9	2.0	960
1914	950	26,4	1.0	2,0	980
1915	970	27,3	1.0	2.0	1 000
1916	1 000	28.3	1.1	2.0	1 030
1917	1 020	29.3	1.1	2,0	1 050
1918	1 050	30.4	1.1	2.0	1 080
1919	1 060	31.5	1.2	2.0	1 090
1920	1 090	32.6	1.2	2.0	1 130
1921	1 110	33.8	1.3	2.0	1 150
1922	1 140	34.8	1.3	2.0	1 180
1923	1 160	35,9	1.3	2.1	1 200
1924	1 190	37.0	1.4	2.1	1 230
1925	1 220	38.2	1.4	2.1	1 260
1926	1 250	39.5	1.5	2.2	1 290
1927	1 280	41.4	1.5	2.2	1 330
1928	1 310	43.5	1.6	2.3	1 360
1929	1 340	45.7	1.5	2,3	1 390
1930	1 380	48.0	1.7	2.4	1 430
1931	1 410	50.1	1.7	2,4	1 460
1932	1 460	51.1	1.8	2.6	1 520
1933	1 510	52.2	1.9	2.7	1 570
1934	1 560	53.3	2.0	2.8	1 620
1935	1 610	54,4	2.1	3.0	1 670
1936	1 660	55.6	2,2	3.2	1 720
1937	1 710	58.0	2,3	3,3	1 770
1938	1 760	61.0	2.3	3.5	1 830
1939	1 820	64.0	2.4	3.6	1 890
1940	1 870	65.0	2.5	3.9	1 940
1941	1 930	69.3	2.6	4.0	2 010
1942	1 990	78.6	2.6	4.1	2 080
1943	2 060	81.5	2.7	4.2	2 150
1944	2 120	82.7	2.8	4.3	2 210
1945	2 200	80.5	2.9	4.5	2 290

1946	2 270	83.5	2.9	4.6	2 360
1947	2 350	88.0	3.2	4.9	2 450
1948	2 430	101.0	3.4	5.1	2 540
1949	2 510	114.0	3.7	5.4	2 630
1950	2 600	125.0	4.0	5.7	2 730
1951	2 680	138.0	4.4	6.0	2 830
1952	2 790	152.0	4.5	6.4	2 950
1953	2 890	157.0	4.5	6.8	3 060
1954	3 000	158.0	4.9	7.2	3 170
1955	3 090	165.0	4.9	7.6	3 270
1956	3 190	180.0	5.2	8.1	3 380
1957	3 290	191.0	5.5	8.5	3 500
1958	3 390	203.0	5.9	9.0	3 610
1959	3 500	210.0	6.3	9.4	3 730
1960	3 610	218.0	6.7	9.9	3 840
1961	3 730	221.0	7.1	10.4	3 970
1962	3 860	220.0	7.4	10.9	4 100
1963	3 990	220.0	7.7	11.5	4 230
1964	4 120	209.0	7.8	12.1	4 350
1965	4 260	210.0	8.0	12.6	4 490
1966	4 400	213.0	8.3	13.3	4 630
1967	4 550	215.0	8.5	13.9	4 790
1968	4 710	223.0	8.8	14.6	4 960
1969	4 880	230.0	9.0	15.3	5 130
1970	5 050	239.0	9.2	16.1	5 310
1971	5 220	249.0	9.3	16.9	5 500
1972	5 400	262.0	9.6	17.7	5 690
1973	5 590	270.0	9.7	18.6	5 890
1974	5 780	273.0	9.8	19.5	6 080
1975	5 980	277.0	10.0	20.4	6 290
1976	6 190	277.0	10.1	21.4	6 500
1977	6 410	268.0	10.3	22.5	6 710
1978	6 630	260.0	10.5	23.6	6 920
1979	6 860	244.0	10.6	24.7	7 140
December 31st					
1970	5 130	243.0	9.2	16.5	5 400
1971	5 310	255.0	9.4	17.3	5 590
1972	5 490	267.0	9.6	18.1	5 780
1973	5 680	271.0	9.7	19.0	5 980
1974	5 880	274.0	9.9	19.9	6 180
1975	6 080	278.0	10.0	20.9	6 390
1976	6 300	273.0	10.2	22.0	6 610
1977	6 520	263.0	10.3	23.0	6 820
1978	6 750	251.0	10.6	24.0	7 040
1979	6 980	242	10.8	25.3	7 260

* Asians and mixed-blood combined Sources: [4-15]

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CONCLUSION

FRANCIS GENDREAU

LUC GOARNISSON

C O N C L U S I O N *

INTRODUCTION

In these two volumes - 'Population Size in African Countries: An Evaluation' - a collection of monographs on 44 countries will provide the reader who wishes to study these topics in greater depth, with a document which should, we hope, prove useful.

Working on a given country, the reader will find an assessment of population figures shown on a national basis. In order to further his understanding, he is advised to refer to the findings described in the other monographs.

In this conclusion we have attempted to go further and offer a synthesis of these findings. Indeed, here is a set of descriptions, results and propositions of immense wealth, relating to 44 out of the 55 countries of the African continent (1), representing 86% of the Continent's population.

We have also attempted, in this conclusion, to put the contents of these 44 monographs into perspective. This is not a question of giving a critical analysis, but rather of extracting from their contents some sort of conclusions with regard to the improvement of the methods of collection and analysis.

We shall follow more or less the guidelines which were suggested to the authors of the monographs (1).

In Part I we will assess the data sources referred to, which will be studied under the following headings:

1) Historical estimates

* The authors wish to thank their colleagues who carried out critical revisions of this text, and in particular Françoise BINET, Ahmed BHARI, Rémy CLAIRIN and Michel FRANCOIS.

(1) It has not been possible to include the following countries in this study. Their population on January 1st 1975 (United Nations estimate) is given in brackets - in millions:

South Africa	(25,501)	Western Sahara	(0,117)
Guinea	(4,416)	Sainte Hélène	(0,005)
Guinea Bissau	(0,527)	Seychelles	(0,058)
Equatorial Guinea	(0,323)	Somalia	(3,126)
Malawi	(5,250)	Swaziland	(0,483)
Morocco	(17,305)		
		Total	(57,111)

(1) cf. Volume 1, p.VII.

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- 2) Administrative censuses
 - 3) Other administrative sources
 - 4) Statistical censuses
 - 5) Post-enumeration surveys
 - 6) Sample surveys.

In Part II we will conduct a critical analysis of the sources by studying in turn:

- 1) The geographical scope
- 2) The reference population
- 3) The problems raised by particular population groups.
- 4) The determinants thought to have an impact on the quality of the data collection.

Part III will be dedicated to the analysis of data consistency, according to the type and quality of data available.

Finally, in the conclusion, the population size of the countries on January 1st 1975 as suggested in the monographs will be given, and suggestions for the improvement of data sources will be made.

We conclude this introduction with two comments.

- 1) Firstly, we have done our utmost to respect the objectives of this study, namely to review the state of the art, reach operational conclusions, and relate collection problems to those concerning analysis.
- 2) On some points we have not limited ourselves to the monographs alone, but also mention other countries. For certain countries, we have introduced elements not discussed by our contributors when we thought this was necessary.

I. DATA SOURCES

1) Historical Estimates

With the exception of some islands, where an assessment of population size goes back to the beginnings of population in the 16th to 18th centuries (Mauritius, Reunion, Sao Tome and Principe), or to a very early era (Madagascar, 1650; Cape Verde, 1773), the first estimates date from the middle or the end of the 19th century. These were made by travellers from Europe (explorers, missionaries...) and colonial governments.

a) Historical Estimates by Foreign Travellers

These estimates are often very erratic and fanciful. They are sometimes the result of 'impressions', or they are based on population reports which

are badly, or very crudely, assessed (urban/rural population ratios; composition by broad age groups; number of tribes; number of able men available for war; etc.). Moreover, the aim of these estimates was rarely scientific. They were intended, as is highlighted in the monograph on Madagascar, which assembles 24 estimates from 1650 to 1900, to obtain from the users (Imperial State, Papacy, Board of governors of a colonial company) various political, economic and social interventions. The role that these 'visiting demographers' wanted the figures to play was to prove a determining factor in the estimates provided. To give an idea of the fanciful nature of some of these estimates we have only to quote the case of Uganda, where in 1879 the Reverend C.T. WILSON estimated the population at 5 million, (1.4 million men - and 3.6 million women), then four years later, G. PORTAL gave an estimate of 500,000. However the significance and plausibility or even the accuracy of some other estimates is also to be noted, such as that given to a French diplomat by Mohamed ALI in 1833 for Egypt, where he declared a figure of 870,000 men of over 17 years, or that of FOURNIER for Madagascar in 1900, of 2,260,000 inhabitants.

b) The Population Density Method

Estimates conducted by visiting demographers are sometimes based on the population density method. Using a crude estimate of the population living in a given surface area, corresponding to areas visited, the density index obtained is applied to the whole of the national territory. As emphasized in a United Nations study [17], this technique often leads to an overestimation of the total population. The areas visited were, more often than not, the areas with the best means of communication and, as a result, were found to be the most populated - or the most favorable to the settlement of a large population. CZEKANOWSKI's estimates for Rwanda in 1907 (1,710,000 inhabitants) and STANLEY's for Uganda in 1878 (2,775,000 inhabitants) and for Zaïre in 1880 (29 million!), H. BARTH's for Nigeria in 1857 (between 30 and 50 million!) and J. LABORDE's for Madagascar in 1870 (8 million!) are examples.

c) Colonial Administration Estimates

These are frequently the result of combining information collected within the administrative territorial divisions and, as a result of cancelling out of errors, are often nearer the truth, although sometimes they are underestimated (1). In general, only male adults are counted (for the purpose of taxation and conscription) or huts. A multiplier is then applied to the total number of individuals or huts counted, in order to determine the total population. Examples of such counts are provided by the English Colonial Administration for the Gold Coast between 1846 and 1891; Southern Rhodesia from 1894 on; Kenya between 1897 and 1948; and Southern Nigeria at the beginning of the century. In 1913 the German Government made a similar count of the Tanzanian population and from 1922 to 1928 the Belgian Government did likewise for the population of Rwanda-Urundi.

Finally, an example of an estimate recently conducted but concerning a former period is provided by Gabon. It is based on a comparison between the many descriptions of the hinterland which give an idea of the population at

(1) The reasons for this underestimation are the same as for the administrative censuses. These are studied further on in the corresponding paragraph.

the end of the 19th century and the observation of these same countries in the 1960's. This is a particularly interesting example of historical research, as it enables a better understanding of the present situation through knowledge of the past.

2) Administrative Censuses

a) History

The administrative censuses, carried out as much by the English or French colonial governments as by the Portuguese, German, Belgian or Italian governments, represent the first relatively reliable sources of population size assessment for the majority of the African countries. If modern history is to be believed - there is evidence of censuses dating back to the Pharaonic period in Egypt - the first censuses in Continental Africa date from the middle or the end of the 19th century (Algeria, Gambia, Ghana, Lesotho) or the beginning of the 20th century. For Chad the population survey of 1964 still represents the major source of information on the population size of the country. The only African countries among those which form the subject of a monograph in this work, to escape this type of operation are Liberia (Independent State since 1847); Zambia where, for the African population, only huts were counted (before the sample surveys of 1948 and 1953-55 and the statistical census of 1962); and Sudan, which appears to have only been subject to limited administrative counts before the sample survey of 1955-56 and the statistical census of 1973.

In the non French-speaking countries, the periodicity of administrative censuses is quinquennial or decennial and their disappearance coincides, with some exceptions, with decolonialization and attempts by the United Nations to promote operations in the nature of 'statistical censuses'. In the French-speaking countries the results of administrative censuses are in most cases provided annually, although the enumeration operations are usually conducted every few years. These censuses are still carried out mainly for taxation purposes.

b) Methodology

Traditionally, procedures take the following pattern: each village chief, having been told in advance, assembles the inhabitants on the appointed day. They then form family groups in the village square. The census agent (who, according to the size of the district, is often the administrator), or native agents under his control, questions the heads of families in turn about the composition of their family. Results are then centralized via the administrative hierarchy. The means used, and the extent of attention to detail in the results, can be very varied. Thus, at the time of the 1891 census in Ghana, and at the Governor's suggestion to the village chiefs, the heads of households were to put into an urn a grain of cereal which corresponded to the sex of each individual in the household. They were then counted by the district Commissioners who filled in a form, allowing one line per village, and passed this on to the district chief, who in turn made a summary, and commented on the data, which was then sent to Accra. For the 1948 census in this same country, the Government set up an official Temporary Census Department. The 19 administrative districts were divided in such a way as to make 39 census districts, themselves divided into sub-districts and overseen by the Inspectors. These covered the districts allotted to the census agents which were generally established at 1,000 people. A list of places for which he

**** CONCLUSION ****

was responsible was given to the agent, and a census then taken of the population, hut by hut, with the help of a questionnaire of one line per person (with the exception of some rural areas where the questionnaire only allowed one line per dwelling).

The administrative censuses, theoretically per annum, which are still made in some francophone African countries, are a different version of this type of operation.

The description of the annual administrative censuses carried out in Madagascar up to 1972, corresponds to a standard example of this type of census. "There are no specific instructions as to collection procedures. These vary according to the urban or rural environment. In urban areas, information is drawn from enumeration schedules organized by the Tax office... The head of each household is given a specific time limit in which to return the completed questionnaire to the district chief. In rural areas, the village chief has a notebook in which he has a nominative list of all the inhabitants under his jurisdiction. Individual information (usually contributed by the chief of each hamlet) is entered on one line and grouped by household... Theoretically, the village chief updates his village notebook once a year. To do this, he scores out the list of deaths and emigrants and registers the newborn and the immigrants... In neither the urban nor the rural environments is there a systematic interviewing of household members". The data collected is processed manually by the district or village chief. Results obtained are sent to the deputy mayor or to the head of the canton who, once having inspected, checked and possibly corrected the statistics, submits them to the sub-prefectorial office. The sub-prefect, assisted by his deputies, assembles the data and presents it - in table form together with a commentary - in a report which constitutes the sub-prefecture's monograph. Once this has been made official by the Minister of the Interior, the documents are sent to the National Institute of Statistics for processing and publication of results.

Very often, even if these administrative assessments are published annually, the updating of the village notebooks is not annual, but is done during the district chief's rounds. The frequency of these rounds generally varies from 3 to 5 years, but can vary from as much as 10 to 13 years. The annual results thus provide only a sum of the most recent census results for the different villages in the area (dating back to 5 or 10 years in certain cases). This phenomenon is clearly demonstrated by J.P. DUCHEMIN for the Ivory Coast [9] and in the monograph on Chad; but it also affects Cameroon, Central African Republic, Gabon, Burkina Faso, Niger and Togo.

c) Improved Administrative Censuses

It is in relation to this type of operation, that what are known as 'improved administrative censuses' were carried out in some francophone African countries (Central African Republic, 1961-1963, 1965 and 1968; Cameroon 1967; Chad 1968; Zaire 1970). These are comparable, from the point of view of the methods used, to the last administrative censuses of countries under British rule.

It must be said that these operations have rarely given satisfactory results, which means that very little information is available on the methods used. The 1967 Cameroon census was never finished and there was no concluding report. In the Central African Republic the 1961-1963 census was not concluded either. As for those of 1965 and 1968, which were supposedly

'instantaneous', it is impossible from the monographs to find even the slightest methodological information - apart from the fact that there is nothing instantaneous about them! The 1970 Zaire administrative census, which gives a clearly overestimated total number, is challengeable in various districts and on several grounds, notably 'political'. However, for a number of towns and areas it seems that the 1970 census was quite accurate. Because of the lack of alternative sources, the Chad improved administrative census was, despite its incomplete coverage (a census was taken of only 70% of the population), able to provide results which were genuinely useful in the assessment of the population size of the country.

Improvements made to these administrative censuses appear to be largely based on the desire to reduce the duration of field operations (to one month in Chad, 3 to 5 months in Central African Republic and several months in Zaire), the recruiting of census agents to carry out inspections (compound by compound (Chad) or hut by hut (Central African Republic) and the allocation of specific resources. In Central African Republic, the census notebook was replaced by individual schedules gathered into compound lists which, in turn, were combined into a village file. The administrative nature of these censuses is indicated by the use of territorial divisions and administrative networks and the exploitation of particular results for tax assessment.

d) Sources of Error

One of the main criticisms of the administrative census is its underestimation of the real population size: this is the general rule. In the two exceptions to this rule, the administrative censuses in Madagascar from 1962-1966 and the 1970 one for Zaire, the origin of this underestimation is quite clear. The results relate to the allocation of economic infrastructures in the first case and to 'political manipulations' in the second. There are three causes for this underestimation:

- the most obvious one results from the population's distrust of the authorities carrying out the collection operations and their desire to avoid paying taxes. The reports of the colonial administrators provide statements which bear witness to this phenomenon. In the 'Annual French Government Report to the League of Nations on the Territorial Administration of Togo,' of 1924, quoted in the monograph on this country, this description of the interviews is given: "discussions often arise over declarations which are in all evidence inexact; a tighter interrogation is then needed to induce the respondent to give the exact composition of his family. The natives are often against providing this information, either due to a natural nonchalance, or with an ulterior motive of avoiding payment of personal taxes".
- A second cause of underestimation, to be found in particular in the earliest administrative censuses of colonial governments, is that, at times, the administrative census seems to be aimed not at assessing the total number of inhabitants of a given area, but at those individuals who are of particular interest to the Government and who can be reached via such an operation (for taxation, circonscription, etc). Quoted by J.Y. MARCHAL [5], the 1928 annual report by a civil administrator in Burkina Faso, where the census figure amounted to 371,972 inhabitants, illustrates this: "if the enumeration had been carried out with more accuracy and diplomacy, an increase of approximately 40,000 people would have been attained, and this would still be an underestimation". Those in

charge of the census, however, sometimes 'added' to the crude results in order to take any underestimation into account. Thus at the time of the 1891 census in Ghana, described earlier on, some 705,000 people were added to the 764,613 people counted in the census. In the Central African Republic administrative censuses were organized in the pacified areas which, as a result, were subject to taxation, whereas in the areas where the French authorities had a certain influence, indirect assessment was made. The non-pacified areas were subject to "quite arbitrary estimations".

The third cause of underestimation is a result of the practice, already evoked in the censuses of the French Colonial Administration, of the staggering, over several years, of the population enumeration and of the choice of the date of completion as reference date. It is easy to calculate that, for enumeration operations carried out at one-year intervals in each of five equal divisions of a district, and with a population growth of 2%, the underestimation reaches 4% (1).

e) Assessment

Many monographs give, or make it possible to calculate, the rate of underestimation of the administrative censuses by comparing the crude results of these censuses with an assessment of the real population size proposed by the authors. These rates are sometimes high (an underestimation rate of 10% of the real size means that the ratio of the total population given by the administrative census to the real population is 0.90):

- Botswana: 32% (1956)
- Burkina Faso: 23% (1960)
- Congo: 14% (1957)
- Ghana: between 9% and 20% (1921)
- Ivory Coast: 14% (1936), 18% (1946), 16% (1970)
- Madagascar: 25% (1900), 12% (1950)
- Mauritania: 38% (1946), 29% (1963), 16% (1970)
- Tanzania: 30% (1921), 16% (1931)
- Togo: 18% (1957)
- Uganda: 15% (1921)
- Zaire: 24% (1925), 13% (1930)

They remain, however, for certain dates, within reasonable limits or are even low for many countries:

- Central African Republic: 1.3% (1959)
- Chad: 9% (1963), 9% (1968 for the census districts)
- Ghana: between 1% and 6% (1921), 10% (1948)
- Madagascar: 5.9% (1925), 8.1% (1955), 3.2% (1960), 0.4% (1962)
- Niger: 4.8% (1940), 1.6% (1945), 3.4% (1950)
- Zaire: 3.4% (1935), 0.7% (1940), 3.4% (1947), 2% (1950), 1.1% (1955), 0.6% (1959).

(1) If 'p', is taken to mean the 'real' population of the district, 'p' the sum of the populations enumerated at one-year intervals in each part 'n' of the district (having equal populations), and 'r' the growth rate of the population, then the underestimation

$$\frac{(p - \hat{p})}{p} \text{ is approximately equal to } \frac{(n - 1) r}{2}$$

The latter results show that despite their fiscal aspect, the administrative censuses can be a significant source of population size assessment. These results are all the more remarkable since, in many of the countries mentioned, the administrative censuses were more or less abandoned to make way for the preparation of sample surveys and then for population censuses; and that a part of this underestimation results simply from the fact that the data were not updated prior to adding the results of partial censuses conducted one or several years before the reference date.

The results confirm the relevance of the proposal to reinstate this type of operation made 10 years ago in 'Sources and Analysis of Demographic Data' [29]. The chapter on administrative censuses observes: "contrary to a commonly held opinion, the administrative census copes honorably with the coverage checks to which it can be subjected, especially in rural areas". The administrative censuses carried out in Niger, Congo, the Ivory Coast and Central Africa are given as examples. One advantage over the statistical census, for the collection of data on population change, is also highlighted: the reference period for birth and death registration is known exactly (it is the interval since the last census).

The importance of this data source, where it exists, is thus to be emphasized for the demographer, who must exploit it, assess it, and reflect on ways to improve it.

3) Other Administrative Sources

In this section other administrative sources are studied, that is, those which are not usually conceived with population statistics in mind and which can be used to assess the population size of a country. Indeed, in the monographs, three main sources of this type are mentioned:

- Electoral rolls,
- Health statistics,
- Administrative sources of data on population change.

a) Electoral Rolls

The disadvantages of this data source for population assessment are well known:

- On the one hand, these lists only deal with part of the population, namely those who are over a certain age and who fulfill certain administrative conditions (place of residence...);
- On the other hand, registration is not usually compulsory, and a more or less significant part of the population is thus excluded.

Nevertheless, in the absence of other data, this source can be exploited, as is the case for Ethiopia, where the electoral rolls, established in September 1972 to January 1973, in view of the legislative elections of June 1973, were studied. These rolls included 7,326,356 registered people, distributed in the following manner:

- According to sex: 74% men, 26% women;

-
- According to age: 66% of 21-35 years, 25% of 36-50 years, 9% of 51 years and over.

It must be remembered that those registered were Ethiopian citizens aged at least 21 years and usual residents of the enrolment area. Hypotheses could thus be formed on the registration rate according to sex and age group, and estimates of the total population be made using the estimates available on the structure of the population. According to the hypotheses used, the population of Ethiopia on January 1st 1973, was estimated at between 24.3 million and 32 million.

In Djibouti, the monograph points out the consistency between the population estimate proposed for 1976 and the total number on the electoral roll: 250,000 people on the one hand, and 110,000 adults of 18 years and over of both sexes, on the other.

But the use of this type of source requires caution, due to the problems commonly encountered during the compilation of the lists. Thus, in Sierra-Leona - where all citizens aged 21 or over, sound in mind and with no police record, have the right to be on the electoral roll - the comparison of the lists established in 1975-1976 with the population estimated for the year 1975, based on the 1974 census, reveals serious inconsistency. For example, whereas the population of 21 years and over was approximately 45% of the total population in 1974, the proportion of those registered on the lists, in comparison to the estimated total population of 1975, was 80%, this proportion reaching as much as 117% in one district... The monograph moreover, points out the "somewhat fanciful procedures used for registering voters, with an evident tendency to exaggerate", and concludes by "the very bad quality of the electoral rolls".

Finally, only the greatest prudence can be advised in using this type of data source.

b) Health Statistics

This does not refer to examining standard Department of Health statistics in order to study the action of health interventions, or to have information on causes of mortality or morbidity. The source considered here deals with some enumeration operations carried out by the Department of Health during vaccination campaigns. Such operations are quoted for several countries, such as:

- Comoros in 1973-1974,
- Chad in 1975-1978,
- Togo from 1965 to 1967 (2 or 3 districts per year).

If the results for Comoros appear to be consistent with those of other available sources, for Chad, the total population obtained from this source seems to be extremely underestimated, by approximately 16%. As for Togo, the monograph does not take into account the information drawn from this source, even if figures seem relatively similar to those of the 1970 census.

Other monographs draw attention to this collection of demographic data by the Department of Health (Cape Verde, the Central African Republic, the

Ivory Coast, Gabon) but without going into detail. However, in the case of the Ivory Coast, J.P. DUCHEMIN, in the paper already quoted [9], describes the campaign for the eradication of smallpox, conducted between 1960 and 1963: the whole of the population (Ivorians and foreigners) was warned in advance and assembled, including men staying on 'farming camps' who were called back to the village. Even if this operation encountered various problems (seasonal workers, voluntary omissions...), a study of the results shows consistency to the nearest 5% in two thirds of the districts, between the administrative census and the smallpox eradication campaign.

If data of this type have not been used more, it is for two basic reasons:

- Either they were not compiled and published;
- Or the results were full of errors.

This will perhaps provoke thought for the demographer, for these are all operations carried out by people familiar with the field (mobile teams), where risks of voluntary omissions seem lower than in other types of operations. Collaboration between the Department of Statistics and the Department of Health could doubtless be usefully instituted to improve collection methods and for publishing results.

c) Administrative Sources of Data on Population Change

These sources are used for the assessment of the total population on a given date by the updating of an earlier result.

The first of these sources, which provides information on natural population increase, is civil registration. The civil registration system is described in detail in several monographs (Algeria, Burundi, Congo, Egypt, Ghana, Libya, Madagascar, Uganda, Rwanda, Tunisia), but most do not refer to it at all; between these two extremes, the most commonly used adjectives to describe this system are very revealing: incomplete, inexistant, embryonic, unreliable, defective...

It is not our place here to deal with civil registration operations in Africa, or the necessary improvements (1). We have simply constructed a table on the coverage rates from the information provided in the monographs (Table 27).

Civil registration data can either: be used as they stand (for example in Reunion); be corrected (for example in Egypt or in Tunisia); or not be used at all, which is the most common case.

(1) The reader can refer to the publications [24, 28] listed in the bibliography.

TABLE 122 - CIVIL REGISTRATION RATE IN SOME COUNTRIES

COUNTRY	PERIOD	BIRTHS	DEATHS
Algeria	1977	93 %	64 %
Egypt	1964-1969	93 %	73 %
Ghana	1970	20 %	-
Libya	At present	100 %	-
Mauritius	At present	100 %	100 %
Mauritania	At present	(70 % in some towns) (5 à 10 % in urban areas)	100 %
La Reunion	At present	100 %	100 %
Rwanda	At present	100 %	70 %
Tunisia	1980	100 %	73 %

Note : - : not indicated

As for external migration, the situation seems to be even more precarious: the majority of monographs discuss the great difficulty of implementing a registration system on international migration. Only a few countries presently appear capable of using such a source: some insular countries (Cape Verde, Madagascar, Mauritius, Reunion); and two continental countries (Algeria, Tunisia), even if the statistics drawn from them are not perfect. Such a system necessitates the collaboration of several services (border police, Department of Statistics...), a collaboration which, as experience shows, is not always easy to put into practice.

4) Statistical Censuses (1)

On the morrow of the Second World War, two groups of countries organized census operations which can be qualified as statistical. These are on the one hand the Tunisian, Egyptian and Algerian censuses of 1946, 1947 and 1948 respectively, and on the other hand the censuses organized in 1948, by the East African Department of Statistics, covering the current territories of Kenya, Uganda and Tanzania.

In Tunisia and Algeria, the privileged relations of the French Colonial Government with these countries (it was supposed that later on the Algerians would attain French nationality) and the established tradition of periodical censuses (since 1856 in Algeria) are proof of France's efforts in carrying out these censuses and of the quality of the results obtained. As for Egypt, several factors explain the exceptional quality of the censuses conducted at ten-year intervals since 1897: a longstanding

(1) The methodology of the statistical censuses of the 1970's was recently the subject of a publication by G.D.A. [22]. Thus we have only included here some explanations on the first African statistical censuses, and an overall picture of the situation in this field concerning the set of African countries.

tradition of state control and centralization, an almost entirely sedentary and ethnically homogeneous population, negligible emigration and a very high population density for the inhabited surface area.

In the second group of countries, the creation in 1946 of the East African Department of Statistics, made it possible for the British Government to conduct real statistical censuses in 1948. The concepts of simultaneity (1), reference population (de facto population), and enumeration zones are clearly established. The actual census operations, conducted hut by hut, were preceded by a pilot census (in Tanzania) and by an informative campaign on their objectives, and followed by a complementary survey.

For the other countries of Continental Africa, real statistical and exhaustive knowledge of the population only begins with the 1960 or 1970 decade, often within the framework of the United Nations African Census Programme. The 1960 Ghana census, directly inspired by UN recommendations, was thus considered by some as being the first modern census conducted in Africa. For many countries, this was the first census conducted since independence. Often this has remained the only one carried out until the present day (Benin, Burkina Faso, Burundi, Cameroon, the Central African Republic, Congo, Ivory Coast, Madagascar, Mali, Mauritania, Niger, Ruanda, Senegal, Somalia). Four countries are exempt of any such data: Ethiopia and Djibouti where no censuses have been carried out at all; Chad and Zaire for which the sole recent enumeration sources are the improved administrative censuses already described, carried out in 1968 and 1970 respectively. Finally, in two countries, the exploitation of the statistical censuses does not offer acceptably accurate knowledge of the current population size:

- Nigeria, where the official census results of 1962 were cancelled; those of the 1963 census, which provoked a serious constitutional crisis, represented an overestimation of approximately 23%; and those of the 1973 census, which overestimated the real total population by approximately 34%, were cancelled.
- Gabon, where "the desire to give the impression of a population greater than it really was without distinguishing natives from foreigners" led to an overshadowing of the real results of the 1970 and 1980 censuses.

Such practices of cancellation and occultation are obviously to be regretted.

(1) Censuses of Africans and non-Africans were undertaken at different dates. Moreover, in Kenya, the census of the African population in the Northern Province was conducted later than for the rest of the population. However the only people included in the census were those, and all of those, who were present in each hut on a given date (the reference date) and the duration of the operations was very short (1 to 7 or 8 days in Tanzania and in Uganda).

5) Post-Enumeration Surveys

a) Aims

The interest and necessity of studying and carefully assessing the accuracy of census results are generally acknowledged. This 'assessment' is, moreover, according to the United Nations, one of the procedures which constitute an integral part of the census plan. The basic method recommended for carrying out this assessment is the conducting of a post-enumeration survey, in particular in Africa, where "it appears that in the present state of statistical development in the majority of African countries, an 'ad hoc' post-enumeration survey aimed at evaluating the census results must be accepted as being the most satisfactory procedure" [26].

In fact, these general principles need comment:

- Firstly, we can note that even in the countries with a longstanding tradition of censuses, post-enumeration surveys are rare. Examples can be quoted here of the United States, where post-enumeration surveys were only conducted at the time of the 1950, 1960 and 1980 censuses; Great Britain (1961 and 1971); and France (1962) [26].
- This situation can be explained, independently of the practical problems mentioned earlier, by the difficulty of conducting a post-enumeration survey of a quality good enough to warrant the drawing of conclusions on the quality of the census results. In practice, post-enumeration surveys can have several aims:
 - . To estimate the omissions and double counts of the census;
 - . To give the characteristics of populations either omitted or counted twice;
 - . To assess the accuracy of the information (monitoring of contents).

Only the first aim is to be considered here. This can be reached in two ways:

- . Either by achieving a survey of excellent quality which can be used for 'reference' purposes and with which the census results can be compared. It is from this comparison that information on the census coverage rate is drawn;
 - . Or by using the method of double collection with, on the one hand, the census, and on the other hand a post-enumeration survey to be conducted respecting the hypothetical independence of the two operations.
- The last comment needs defining: in a certain number of censuses, a different aim was assigned to the post-enumeration survey: namely, it was to provide complementary information to that obtained during the census, by introducing into the survey questions on subjects not dealt with in the census - notably because they were considered delicate or difficult (fertility, mortality, migration...). A distinction must then be made

between the following:

- . Post-enumeration tests;
- . Complementary surveys.

It is the former which is of interest here. It is worth noting that a post-enumeration survey can sometimes be both monitoring and complementing, but when it comes to results, the monitoring can not be turned to account, and it must be considered as purely complementary.

b) Post-enumeration Tests of the African Censuses

The African censuses (1) can be grouped into three categories:

- Those for which no post-enumeration survey was planned. This is the largest category:
 - Benin (1978)
 - Botswana (1964 and 1971)
 - Central African Rep. (1975)
 - Congo (1974)
 - Egypt (1976)
 - Gabon (1970 and 1980)
 - Gambia (1963 and 1973)
 - Guinea (1972)
 - Lesotho (1966)
 - Libya (1973)
 - Mali (1942)
 - Mauritania (1976)
 - Mauritius (1972)
 - Mayotte (1966)
 - Nigeria (1952/53, 1962, 1963)
 - Sao Tome and Principe (1970)
 - Sudan (1973)
 - Swaziland (1966)
 - Tanzania (1967)
 - Togo (1970)
 - Tunisia (1975)
 - Uganda (1969)
 - Zambia (1969)

This list must nevertheless be qualified, for at the time of some of these operations assessment procedures had been implemented - more often than not unsuccessfully. Three examples can be given here:

- . Botswana, where in 1971, "there was no post-enumeration test as it was thought too costly. Only a system of random double counts, by supervisors or census agents, carried out on 2,100 people, was conducted. This method, all the more since it deals with a very limited sample, does not make a conclusion possible".
- . Sudan, where in 1973 "no actual post-enumeration test was carried out, but several limited surveys to test the quality of the data and, where necessary, to correct it"... "For some population groups and some areas, the results are considered unacceptable". These surveys thus resulted in an estimated total number of nomads of 1,630,000 instead of 400,000 counted in the census, and an estimated number of omissions in the Blue Nile province of 673,500.
- . Tanzania, where in 1967 no real post-enumeration survey took place, but where a regional study was carried out [12].

Those for which a post-enumeration survey was planned, but which was not carried out for various reasons, or which was accomplished but the

(1) In this paragraph we have used not only the monographs, but also the work 'African Censuses' by the African Population Group (G.D.A.) [22].

**** CONCLUSION ****

results of which proved to be unexploitable, at least as monitoring data:

- | | |
|-------------------------|---------------------|
| - Algeria (1966) | Niger (1977) |
| - Gabon (1960-1961) | Nigeria (1973) |
| - Ghana (1960 and 1970) | Reunion (1974) |
| - Ivory Coast (1975) | Sierra Leona (1974) |
| - Kenya (1979) | Somalia (1975) |
| - Morocco (1971) | Tunisia (1966) |

The first case - a survey planned but not accomplished - applies to Nigeria (1973) (although it is not absolutely certain whether there were not the beginnings of this survey in some areas), Reunion (1974) and Somalia (1975). In the latter example, the reasons which led to the cancellation of the survey seem, on the one hand, to be the drought, which caused significant population movement and the settling of a large number of nomads, and on the other hand, the dispersal of the census staff very rapidly assigned to other tasks.

Amongst the surveys carried out, from which the results were not found to be of any real use, the following can be quoted:

. The Ivory Coast, where "it is to be regretted that the post-enumeration test which followed the 1975 census took place in such bad conditions and was not able to be exploited, thus making any evaluation of census results impossible." This survey, carried out one and a half months after the census, seems to have encountered the following problems:

- The rainy season made some areas inaccessible [22];
- There was a lack of clarity in the objectives assigned to the operations [7];
- Differences in definition of concepts used at the time of the census and the time of the survey made comparison of results difficult [22];
- The registration of persons under different names in the census and in the survey [12].

Ghana (1960), where the survey results seemed to indicate better coverage in the census than in the survey, or an overestimation of the total population found in the census. This survey, conducted two and a half to four months after the census and which affected 5% of the census population, was not organized as well as it should have been because of different definitions used for the household and compound, too much time between the survey and the census, and general staff apathy. The same kind of problems and the same kind of results were found in the post-enumeration test of the 1970 census. This was however only a simple monitoring of coverage (not of contents), conducted three weeks after the census on 5% of the census areas. The organizers do not seem to have found the results conclusive [14].

. Kenya, where in 1979 the survey was unable to provide an assessment of the census coverage rate because it took place too long afterwards. It was impossible to compare the population of the census with that of the survey [31].

. Niger (1977), where "a post-enumeration survey test was conducted approximately one month after the census: this test was carried out in 1% of all census areas...It was impossible to draw a clear cut conclusion from this survey, because the size of the survey areas was seen to be very unequal, and their number inadequate".

This second group of censuses must doubtless be complemented by those for which a post-enumeration test appears to have been conducted, but for which no mention of results is made, namely Cape Verde (1980) [6], Madagascar (1975), Reunion (1954 and 1967).

- Finally, the censuses for which a post-enumeration survey test was actually carried out and which provided results on census coverage:

- | | |
|-----------------------|-------------------------|
| - Algeria (1977) | Liberia (1962 and 1974) |
| - Burkina Faso (1975) | Malawi (1965) |
| - Burundi (1979) | Reunion (1961) |
| - Cameroon (1976) | Senegal (1976) [23] |
| - Kenya (1969) | Sierra Leone (1963) |

First and foremost, this list involves some censuses for which the post-enumeration survey results are summarized in very brief commentaries, seemingly indicating the high quality of the census:

- . Burundi (1979) - ("primary information seems to reveal good census coverage") [22];
- . Burkina Faso (1975) - (there is no significant coverage error);
- . Reunion (1961) - (on the whole the total number of people enumerated is satisfactory).

For the other operations the coverage error (through omission) is given and seems to be more significant:

- . Algeria (1977): 4.3%
- . Cameroon (1976): 6.9% [22]
- . Kenya (1969): 5% [12]
- . Liberia (1962): 5%, (1974): 11%
- . Malawi (1965): 2.6% [12]
- . Senegal (1976): 2% [12]
- . Sierra Leone (1963): from 2 to 5%

Comments on these results do not always give them their due rights. Thus, for Sierre Leone the survey over-estimated census omissions [22], and for Liberia (1974), where the double collection method was used, conclusions regarding coverage are considered as relatively unreliable [7].

c) Assessment

Analysis of the African experience leads to the following conclusions:

- A post-enumeration test is recommended at the close of each census, in spite of failures, and without overestimating the advantages of this kind of operation. It seems that even though the results of the post-enumeration test must, in turn, be analysed and commented on, they do throw light on the quality of the census and in all cases they constitute an additional element to those already available for estimating population size.
- The many difficulties which the majority of the post-enumeration tests encountered must nevertheless be borne in mind [12]:
 - . Inadequate preparation and a lack of interest on the part of those in charge;
 - . Population movement between the census and the survey, making comparison of the two operations difficult;
 - . During field work, difficulties in locating area borders (cartography problems), dwelling units (problem of addresses), and individuals (problem of names: people with several names, names common to several people...);
 - . An inadequate calendar: if the census is conducted just before the rainy season, this will interfere with the survey;
 - . General staff apathy.

These difficulties are far from being insurmountable and should be removed as long as the post-enumeration test has been conceived from the start as being an integral part of the census, and prepared with the same care as the other stages of the operation.

- Even if the survey is very carefully prepared, and even if it is carried out by very good interviewers (chosen, for example, from the census team leaders), it would be illusory to hope that it could provide a faultless reference by which to compare the census. This presumes a preference for the use of the 'double collection' method, which appears to have given good results in Cameroon in 1976 [18].
- Finally, three recommendations seem to be fundamental:
 - . The post-enumeration test must be a truly integral part of the census plan: that is, it must be planned a long time in advance, its schedule defined and financial resources assigned...;
 - . The time limit between the census and the survey must be as short as possible in order to facilitate matching of the results of the two operations;
 - . Preparation of the survey must be very meticulous and the questionnaire, in particular, must be suitably formulated. The interviewers must be of a high standard and the cartography must be such that the enumeration area boundaries are easily located.

-
- In all cases, the post-enumeration test must not neglect the fact that the census should be the subject of a critical methodological report, where the persons in charge can openly describe the difficulties which they have encountered. This report is essential for assessing the quality of the census results.

6) Sample Surveys

Studied in this chapter are national-scale sample surveys (as opposed to the censuses, which are exhaustive), with totally or partially demographic objectives.

a) Links between Surveys and Censuses

Sample surveys conducted within the framework of the census operations, and which are an integral part of it, will not be discussed here. These include:

- Sample surveys conducted at the same time as the census, with a view to collecting information from only part of the population (example of Sudan in 1973);
- Sample surveys conducted on the completed census questionnaires at the processing stage, in order to provide quick results (Algeria 1977, Ivory Coast 1975, Liberia 1974, Tunisia 1975...);
- Finally, sample surveys aimed at assessing the quality of the results. These are the post-enumeration tests previously studied.

On the other hand, the following operations are studied in this chapter:

- Sample surveys carried out independently of all censuses (such is the case with the majority of surveys conducted in the African countries, before censuses were even considered);
- Sample surveys aimed at complementing the census on certain points which were considered significant, difficult and not in need of an exhaustive approach. These are complementary surveys conducted after the census, within a varying time limit (from a few months to several years), the census serving as a sampling frame. In some countries a programme of 'specific' surveys is thus developed, in order to extend or update the census results.

b) Geographical Scope

This will be developed in the second part of the conclusion. It must, nevertheless, be pointed out that the so-called 'national' surveys have, on occasions, excluded certain population groups (nomads, Europeans...) or areas (urban ...). This is the case, for example, in the Ethiopian surveys in 1964-1967 and 1968-1971 (the nomadic population, Erythrea and some urban centres are excluded). In the Niger survey of 1959-1960, a survey was made only of the settled population; a survey of the nomadic population, which was to follow, did not take place or at least was reduced to the Tahoua area and its immediate surroundings and was unable to provide an assessment of the nomadic population. Finally, although technically only a 'regional' survey, the population survey on Western Zaire must be included in these

'national' surveys because of its national import, and in the absence of further data for this country).

It may happen that part of the territory is 'symbolically' included. This is the case of the 'Sahara' stratum, in the Algerian survey of 1969-71, which was only the subject of a single count...and of a minimum of monitoring. Politically, it was impossible to exclude the far south from the survey field, although it was materially impossible to carry out a proper survey there, hence the compromise which did not much imperil the operation as a whole.

Special cases must furthermore be pointed out: the countries in which a set of successive regional studies were carried out, in all covering almost the entire country. These are, namely:

- Cameroon, where a set of surveys and censuses carried out mostly between 1960 and 1965 made it possible to provide results on a national level [31];
- The Ivory Coast, where two series of operations were conducted, the first from 1955 to 1958 (four regional surveys and seven urban censuses), and the second from 1962 to 1967 (six regional surveys and eight urban censuses) [27].

c) Objectives

As regards objectives, the surveys reviewed can be grouped into four categories:

- First of all, the general population surveys. These are the most classic and they aim at providing information on population size, composition and change. All the surveys conducted in the countries of francophone Black Africa from 1954 to 1966 [1], for example, belong to this kind of survey.
- Secondly, population surveys with limited aims. Surveys on migration and fertility in particular come within this category.
- Thirdly, surveys which do not have a directly demographic purpose, but where the demographic section has been sufficiently developed for the results in this field to be used. Thus the monographs mention, for example, agricultural surveys providing estimates of the rural population (Ethiopia 1976-1977); continuous agricultural surveys (Botswana, Central African Republic, Mali) or budget-consumption surveys (Madagascar 1962, Central Africa 1975-1977). The case of Madagascar, in particular, is interesting since the budget-consumption survey of 1962 only considered the agglomerations of less than 2,000 inhabitants; but the results can be complemented by those of the censuses of the urban centres of over 5,000 inhabitants conducted from 1959 to 1964, and by those of the administrative censuses for centres of 2,000 to 5,000 inhabitants. The aggregation of these results provided an estimate of the total population towards mid-1962 [21].
- Finally, multiple aim surveys are considered, where demography is one particular aspect of the surveys. Such is the case of the surveys previously mentioned: Ethiopia (1964-1967 and 1968-1971), Ivory Coast (1955-1958 and 1962-1967).

d) Operations and Observation Methods

Some of the surveys are described in great detail in the monographs. It is considered advisable here to refer the reader to the specialized manuals [1, 10, 15, 19, 29] and simply recall here that an 'operation' uses one or several 'observation' methods. The main techniques used are:

- Retrospective observation, which can either refer to a given period of time (the last 12 months, for example, where the length of the period is the same for all respondents, but the period is mobile), or to a period which varies in length for each person: in the latter case, the date at the start of the period can be the same for everyone (e.g.: January 1st; the date of Independence; Aïd es Seghir;...) or differ from one individual to the next (for example, when questioning women on childbearing).
- Continuous observation, which is a specific kind of 'retrospective observation,' the original situation being known from a previous round.
- In both cases, either a single observation can be used, or two observations can be combined (double collection).

The combination of these different techniques leads to a great variety of operations. The following examples have been taken from among the surveys considered in the monographs:

- The Algerian survey of 1969-1971 used both the 'retrospective observation' and the 'continuous observation methods'; there are even signs of a discarded attempt at 'double collection' in the first round.
- The Ghana survey of 1968-1969 used the same techniques, and combined them with continuous registration of births and deaths, applying the 'double collection method'.
- The Togolese survey of 1971 constituted a second round, one year after the 1970 census.

e) Accuracy of Population Size Assessment

It is surprising that the monographs seldom tackle the question of the accuracy of the 'population size assessment' provided by the surveys. These surveys, all conducted according to the method of random sampling, do, however, permit the measurement of the sampling error. Some survey reports include this calculation, but the only indications provided by the monographs concern:

- Burundi (1965) - for which the survey data is thought to have a "possible error of 5 to 10%";
- Madagascar (1966) - where "the results observed provide a total population size in mid-1966 of 6,200,000 inhabitants, with a confidence interval of 95% - equal to approximately 200,000 inhabitants";
- Togo - where "according to the 1971 survey, the population is about 2,017,000 inhabitants, or more precisely, contained within an error of 0.05, that is, between 1,967,000 and 2,066,000 inhabitants";

- Zimbabwe (1948) - where "the error, for a confidence interval of 95% is approximately 1.4% for the total population".

f) Reference Date for Population Size Assessment

The majority of the surveys considered are 'field surveys' which took place over several months, the situation recorded by the interviewer being that of the night before his arrival. The average date for the assessment of the population size must then be determined. This is most often done by the authors of the survey, but not always. Thus, for the Central African Republic survey of 1959-1960, successively carried out in two regions, July 6th - October 30th 1959 in the first and April - July 30th 1960 in the second, it seems that the total population provided results from the simple addition of the total populations found in each of the two regions; and that the reference date for the population size is approximately January 1st 1960. In the case of the aggregation of several surveys or censuses, the authors must, of course, decide on a reference date. For the Cameroon surveys of 1960-1965, this date is August 1st 1964 [31]; and for the aggregation of partial data in Madagascar, it is July 1st 1962 [21].

II. CRITICAL STUDY OF SOURCES

1) Geographical Scope

In assessing the population size of a country, attention must be paid to the geographic coverage of the different operations. Two difficulties are encountered here:

- a) Firstly, the problem of frontiers: in many cases the national frontiers are ill defined and are the object of much controversy.

This is especially so in the earlier periods. In fact the first estimates often dealt with areas known by the colonisers as 'pacified'. The 'pacification' of the entire territory often only ended in the period between the two world wars. In Angola "the territory under Portuguese control has not ceased to expand, which makes any attempts to analyse time trends impossible"; and this situation continued until 1920.

Moreover, there were often many successive border changes. The monograph on Chad illustrates this very well. The history of the country's frontiers, which is outlined in the paper, indicates that no less than 17 modifications, conventions or other treaties were necessary (from 1894 to 1936) in order for Chad to acquire her present frontiers. In the same way, in the Central African Republic "the well-known failings of the administrative censuses were made even worse by the endless modifications to the countries' administrative borders, both external and internal".

Changes in territorial status are also observed. For example, up to 1961 Sierra Leone was divided into the "Crown Colony" (Freetown and its immediate surroundings), established in 1808, and the "Protectorate" (the rest of the country), established in 1896. Until this date, figures only dealt with the Colony. A very extreme, but well known, case is that of Burkina Faso, a territory created in 1919. It was suppressed in 1932 and distributed between Mali (then French Sudan), the Ivory Coast and Niger, and then reconstituted within its former boundaries in 1947.

**** CONCLUSION ****

Even now, although the Charter of the United African Organization had declared as 'inviolable' the frontiers inherited through colonization, problems raised by the accurate definition of these frontiers remain commonplace.

- b) The geography of each operation and, in many cases, the exclusion of some areas, also creates problems. There are two reasons for such exclusion:
- Either there had recently been a survey or a census in the areas excluded (for example in the capital city or other urban centres), or they were included amongst areas surveyed during special operations (development schemes, or the like);
 - Or specific areas were excluded because of the problems they would have caused had they been included in the survey field (due to the dispersal of the population or its nomadism; or to difficulties of access and lack of means of transport in the area; or to security problems).

When the area covered by the operation is clearly defined in the survey or census reports, the reader is informed; but it must be noted that these areas are not always specified correctly. Thus the publications quoting the official figures for Mauritius "often fail to specify whether these figures concern the State of Mauritius or only the Island of Mauritius, without its 'dependencies'. This is a common source of confusion, and sometimes goes as far as to create artificial inconsistencies".

The above mentioned information is thus essential, especially since the excluded regions can represent a significant proportion of the population:

TABLE 123 - CHAD - COVERAGE OF THE IMPROVED ADMINISTRATIVE CENSUS OF 1968

CHARACTERISTICS	NUMBER OF PREFECTURES	POPULATION RECORDED	ESTIMATED POPULATION
Completely excluded	4	0	813 000
Partially enumerated	7	1 698 000	1 940 000
Completely enumerated	3	739 000	739 000
TOTAL	14	2 437 000	3 492 000

- In Central Africa, Bangui, the Eastern region and some nomadic groups (pygmies, Bororo livestock farmers), representing 15% of the population, were excluded from the 1959-1960 survey;
- In Namibia, "it was impossible to include the population of the Northern part of the country in the 1951 or earlier censuses... In the 1960 census, the population of this area represented 49% of the total population";

-
- In Chad the 1964 survey excluded 22% of the population. The table provided in the monograph concerning the improved administrative census of 1968 can be presented as in Table 123. This shows that 30% of the population was excluded from the operation.

These comments should incite the user to undertake a detailed study of the figures and observations before using the results. It should be noted, however, that for the most recent operations, and in particular the last censuses, an attempt appears to have been made to ensure complete geographical coverage of the operations.

2) The Reference Population

Reference population is taken to mean the type of population that is given priority for the publication of results.

a) The 'De Facto' Population, The 'De Jure' Population (1)

In the administrative censuses, the reference population is rarely specified. It seems, however, that although there are some exceptions (Ghana, censuses from 1911 to 1931; Libya, 1931 census; ...), it is the 'de jure' population which is generally considered.

For the most recent operations, contrary to the report in the methodological synthesis on African censuses [22], the present review of African countries shows that the 'de facto' population is just as often given priority for the publication of results (Table 124). It is true that the sample (2) given here involves a greater number of English-speaking and Portuguese-speaking countries, where the 'de facto' population concept is preferred (with the exception of Cape Verde, Guinea Bissau and Liberia). In the French-speaking countries (excepting Benin, Central African Republic and Mauritania), it is the 'de jure' population which is given priority.

The situation has not always been so. Several countries abandoned, to varying degrees, the concept of the 'de jure' population in favour of the 'de facto' population (Botswana, Central African Republic, Ghana, Mauritania, Sudan, Tanzania, Zambia, Zimbabwe), whilst few countries did the reverse (Cape Verde from 1960; Libya between 1931 and 1936; Tunisia between 1966 and 1975).

(1) With reference to this subject, cf. the work of the African Population Group 'Data Sources' [29].

(2) This sample includes not only the countries mentioned in the work quoted (which has helped to clear up many uncertainties), but also the countries forming the subject of a monograph within the present study, for which the information provided makes the distinction possible.

TABLE 124 - TYPE OF REFERENCE POPULATION GIVEN PRIORITY IN THE
LAST CENSUSES

COUNTRY	YEAR	POPULATION		COUNTRY	YEAR	POPULATION	
		de facto	de jure			de facto	de jure
ALGERIA	1977		X	MALI	1976		X
ANGOLA	1970	X		MAURITANIA	1980	X	
BENIN	1979	X		MAURITIUS	1982		X
BOTSWANA	1981	X		MAYOTTE	1978		X
BURKINA FASO	1975		X	MOROCCO	1982		X
BURUNDI	1979		X	MOZAMBIQUE	1978	X	
CAMEROON	1976		X	NAMIBIA	1970	X	
CAPE VERDE	1980		X	NIGER	1977		X
CENTRAL AFRICAN REP.	1975	X		SAO TOME AND PRINC.	1970	X	
CONGO	1974		X	SENEGAL	1976		X
EGYPT	1976	X		SIERRA LEONE	1974	X	
GABON	1980		X	SOMALIA	1975	X	
GAMBIA	1973	X		SUDAN	1976	X	
GHANA	1980	X		TANZANIA	1978	X	
GUINEA BISSAU	1979		X	TOGO	1981		X
IVORY COAST	1975		X	TUNISIA	1975		X
KENYA	1979	X		UGANDA	1969	X	
LIBERIA	1974		X	ZAIRE	1970		X
LIBYA	1973		X	ZAMBIA	1980	X	
MADAGASCAR	1975		X	ZIMBABWE	1969	X	
				TOTAL		20	20

Source : [22] and monographs from the present work.

The recording of the 'de facto' population is seemingly easier, since all that is needed is for the person interviewed to say where he spent the 'reference' night. However this situation may have been only temporary, or totally exceptional. Moreover, if the field operation lasts more than a certain length of time, the concept of the 'de facto' population can only be used with difficulty. To conclude, it must be emphasized that if the 'de facto' population concept is used in the countries where internal migration is high, the spatial distribution of the population is then considerably modified (this depends on the season of the collection).

The 'de jure' population concept should be considered for recording situations of a more permanent nature. It presents several advantages:

- The stability of the spatial distribution of population (independence from the season of collection);
- Information is provided on internal and international migration;
- The usefulness of knowledge on the distribution of the 'de jure' population according to administrative districts.

The two major disadvantages of using the 'de jure' population concept are, on the one hand, the difficulty of giving a clear definition of the 'place of usual residence', and on the other hand, the problems caused by the collection of information on absent residents (in particular in the case of an entire household being absent).

In both cases, the interviewer must be aware of the significance for the operation of his decision as to whether or not to include someone in the questionnaire. This is not always an easy decision to take, especially because of the solidarity of the family group in a traditional society. This means that the head of the household frequently quotes all his children as residents. But some of these children could be absent and should therefore not be counted if it is the 'de facto' population which is considered, or should be recorded as absent residents if the population in question is the 'de jure' population. In neither case should children who have left the family home to settle elsewhere be included.

Finally, there are two population concepts which deserve a particular mention. The 'administrative population' of the 1960-1961 survey and the 1975 census in Burkina Faso, which comprises the 'de jure' population (residents present, or absent for less than 6 months) and emigrants (persons abroad for more than 6 months). And the 'legal' population, a concept used in Mauritania in 1962, where the relatives of the head of the household, who could well be living elsewhere, were included and many new residents excluded, and in Reunion where, from 1961 on, it includes school boarders and conscripts living in barracks who were away from Reunion at the time of the census, but where the household to which they normally belonged was in Reunion.

b) The National Population Living Abroad

This is often totally or partially enumerated in countries retaining the 'de jure' population as reference population. These are Algeria, Burundi, Cape Verde, Gabon, Burkina Faso, Liberia, Libya, Madagascar, Mali, Morocco, Senegal and Tunisia. It is also sometimes enumerated in countries where the reference population is the 'de facto' one: Botswana, Lesotho,

Namibia. Added to the 'de facto' population, this then constitutes the so-called 'de jure' population which, in the case of Botswana, Namibia and probably Lesotho, remains unknown within the administrative districts.

In general, this population is obtained by using information collected from the residents present, but sometimes diplomatic data are used as well (Madagascar, Morocco, Senegal), or census statistics from the country of destination (Algerian emigrants in France in 1975 for the 1977 Algerian census). The first collection method leads to a notable underestimation of the national population living abroad. The same is no doubt true of the second (due to the presence of unregistered emigrants in the consulates) and to a lesser degree of the third (due to false statements of nationality). Thus, according to information collected on the residents present at the time of the 1975 census in Burkina Faso, the total number of national emigrants was established at 334,715. But if the censuses of the countries of destination are consulted, a probable estimate of their number is one million, 700,000 of whom were in the Ivory Coast. In the same way, the first collection method led to a census population figure, in 1966, of 275,000 emigrants - whereas the French Minister of the Interior put the number, at the same time, at 493,352.

Nationals living abroad are often only included in the census and in the 'de jure' population figures if their departure takes place during a particular period before the 'reference date' of the operation. The limit of this pre-reference date period is 5 years for the 1964 Botswana census, the 1966 Lesotho census, and the 1960-1961 Mali survey and administrative censuses; it is 3 years for the Niger administrative censuses. The more recent operations tend to reduce this limit. The idea is, then, to exclude a large number of long-term emigrants from the census, while at the same time trying not to exclude temporary emigrants (even though this might mean losing information - somewhat unreliable - on past emigration). Thus in Mali the censuses only included the emigrants in the 'de jure' population (1976 census) if their departure took place during the six months before the census reference date; in Cape Verde, only if their 'usual residence' was in the country; in Liberia (1962 and 1975 censuses) if they "do not have a permanent abode" abroad; and in Namibia (1970 census) only if their return took place within the three months following the census.

When a census is conducted of the entire national population living abroad, as in Algeria, Botswana (1971), Burkina Faso (1960-1961 and 1975), and Senegal (1976), the population figure is either totally excluded from the reference population (as with Algeria, Botswana, Senegal) or, as in the case of Burkina Faso, included in it only if the departure of the national took place during the past six months. It is however included in the 'de jure' population in Botswana and in the 'administrative' population of Burkina Faso.

c) The Foreign Population Resident in the Area

This population is generally enumerated. Where the reference population is the 'de jure' population, the criteria for nationals to be registered as residents (6 months presence in the abode, concept of usual residence, etc.) are also applicable to foreigners, so that some of them are excluded from the reference population. However, in Libya and in Senegal the majority of the tables published deal only with nationals. In Gabon, fluctuations in the total number of foreigners are such that it is necessary to conduct a separate study of them. In the Ivory Coast, the time

limit of 5 years stay in the country fixed for foreigners before they could be included in the resident population greatly reduced the number of foreigners during the regional surveys of 1962-1966. The time limit of six months adopted for the 1975 census is more easily justified since it allows the exclusion of temporary immigrants. But from this point of view, the criterion used in the multiround survey of 1978-1979, namely, the inclusion of everybody living in the area for the last six months, or intending to stay for a period of at least six months in the area, is even better as it only excludes temporary immigrants.

On the whole, if the criteria determining inclusion or exclusion of the national population living abroad or the foreigners present in the area now seem more homogeneous and in keeping with the goals set by the censuses, it must be remembered that it was not always the case. In some countries, like Botswana, the Ivory Coast, Lesotho, Mali, and Niger, where international migration is very extensive, it proves impossible to compare results concerning the 'de jure' population at different dates.

Foreigners are never an easy population to assess, either because they occupy an illegal position, or because, feeling themselves to be unwelcome, they have no wish to be enumerated.

3) Problems Raised by Some Population Groups

The assessment of the total population of a country cannot be achieved without considering the composition of that population. Indeed, some sources of errors affect particular population groups more than others. The monographs tackle this problem with regard to male and female populations, children, urban and rural populations, populations of certain areas, nomads, and refugees.

a) The Male and Female Populations

The most common causes of error seem to involve undercounts of the female population, namely:

- In the 1966 Algerian census, an "underestimation of children under one year of age, more serious for girls than for boys", and the "regular under-reporting of girls married under age", as well as of emigrant women;
- Underestimation of women in the Libyan censuses of 1931 and 1936;
- In Mauritania, omission of women (especially young girls) both in the 1965 survey and in the 1977 census;
- Dissimulation of women in the 1977 Niger census;
- Underestimation of women in Sudan, both in the 1955-1956 survey and the 1973 census.

Only one case of underestimation of males is recorded in the monographs, and this is in the Madagascan survey of 1966: whereas the sex ratios for 1962 and 1975 were respectively 98.6 and 97.9, that given for 1966 was 96.8. The analysis of consistency between the female populations and the growth rate according to sex, gave a proposed underestimation of 52,000 men (or 1.7%). This underestimation is put down to the sampling plan

used in 1966 where the urban areas which attract male immigration were under-represented.

Another case also deserves mention: that of the Senegalese survey of 1970-1971. The analysis of results using the stable population method shows a deficit of 38,000 men, or 2.0% of the total population. This deficit mainly affects the 15-19 year age group, that is, the young working population which generally experiences high mobility [32].

Polygamy can lead to particular enumeration problems. In some areas, notably in central Africa, the co-spouses live together with the husband and the rest of the family in the family compound. In this instance, the count is not a problem. In other areas, in particular in the horn of Africa, the co-spouses do not live together; they are separately housed. The polygamist is thus head of as many households as he has wives, hence the risk of him being either omitted or counted twice.

b) Children

With the exception of the 1970 Zaire administrative census, where the number of children (under 18 years) seems to be exaggerated, all cases of enumeration errors indicated in the monographs are underestimations: Algeria 1966 (children of under one year, especially girls), Egypt (children of under 10 years), Mauritius 1952 (children of under 7 years - disputed underestimation), Mauritania (administrative censuses), Namibia, Nigeria 1952-1953, Reunion (children of under 5 years), Sudan 1955-1956.

In Egypt, omissions of children of under 10 years have been estimated for each census by N. FERGANY: 3.3% in 1917; 2.4% in 1927; 3.2% in 1937; 0.8% in 1960; and 3.2% in 1966. For 1947, an "extremely controversial" census, El BADRY suggests, on the contrary, an overestimation of 3.9%.

In Reunion, the comparison of "the number of children of under 5 years enumerated in 1954, 1961 and 1967, with the population of the same age group calculated using civil registration data" gives an underestimation of 2.9% in 1954; 3.3% in 1961; and 6.4% in 1967. This is an "increase in the percentage of underestimated children (a doubling between 1961 and 1967), which is not very encouraging, but represents a global underestimation of only 1% in 1967".

c) Urban Population, Rural Population

The comparison through time of populations living in urban zones raises familiar problems that are related to changes in the urban environment with the progress of urbanization. This point, mentioned in several monographs, is not directly relevant to the subject dealt with here.

Specific errors related to investigations in urban areas are barely outlined in the monographs. The most significant conclusion is to be drawn from the results of the post-enumeration surveys of Algeria (1977) and Cameroon (1976).

- In Algeria, although underestimation for the whole of the country is 4.3%, it reaches 6.5% to 10.5% in Greater Algiers.

- In Cameroon, the stratification of the post-enumeration survey sample made it possible to give the following underestimation rates:

- .13.7% in Douala
- . 7.2% in Yaoundé
- . 6.7% in the other urban centres
- . 6.4% in rural areas.

These two examples confirm the greater difficulty of conducting censuses in the urban environment, especially in the cities.

d) The Population of Particular Areas

The monographs rarely indicate variations in the quality of the collection operations from one region to another, although these are frequent. The only cases shown concern:

- An example of population underestimation in the province of Equatoria in Sudan, during the 1955-1956 survey;
- An example of 'manifest' overestimation in the two Kasai regions, in Zaire, during the administrative census of 1970, where "there was definite political manipulation of data".

The pygmies are an example that could also be quoted, a population which it is difficult to have access to, and whose populations in the countries concerned (Cameroon, Central African Republic, ...) are little known; another example is that of the border populations, especially where the frontier cuts across a region which is ethnically homogeneous.

e) Nomads

The predominant feature of the monographs concerning the nomadic populations, is the tendency to exclude the latter from the various collection operations. This was notable in the following operations: Botswana 1964, Central African Republic 1959-1960, Ethiopia 1964-1967, 1968-1971 and 1976-1977 (agricultural survey), Mali 1960-1961, Niger 1959-1960, Chad 1964. There is an explanation for this exclusion in the many difficulties encountered by surveying in the nomadic environment [11, 30]. Nevertheless, several operations have tried to include the nomadic populations in their field of observation, even if this meant using a different approach:

- The Algerian censuses provided the following results:
 - 1948 : 80,435
 - 1954 : 96,363
 - 1966 : 56,281
 - 1977 : 311,592 (nomads and semi-settled persons)

The definitions and methods used in these various operations are probably the basic cause of the differences observed in the results.

TABLE 125 - MAURITANIA - NOMADIC POPULATION TRENDS

DATE	NOMADS	SEDENTARY	TOTAL
1.1.1965	623 000	485 000	1 108 000
1.1.1977	496 000	923 000	1 419 000
Mean annual Growth Rate (%)	- 1.9	5.5	2.1

- In Libya, for the 1954 census, "special committees are formed to carry out a census of the nomadic and semi-nomadic populations - an operation which lasts from 1 to 5 months". If this population represented 28% of the total in 1954, it was estimated at no more than 22% in 1964 and less than 4% in 1973.
- In Mauritania, the two national operations - 1965 and 1977 surveys - used different approaches [4, 20], but their results seem to be comparable and the above table (Table 125) can be extracted from the monograph. The nomads, who represented 56% of the total population in 1965, represented no more than 35% in 1977.
- In Sudan, the population of 1.4 million nomads estimated during the 1955-1956 survey was considered an underestimation. However in 1973 only 400,000 nomads were enumerated; the census was taken again for this population, and a population of 1.63 million nomads was reached.

In conclusion, it is to be hoped that the nomads will be treated with particular attention in future collection operations, in order to avoid the frequent underestimation of their populations.

Moreover, the problem of the choice of country to which a nomad belongs must not be ignored, for often their territory may stretch over several countries.

f) Refugees

It is to be regretted that the monographs do not pay enough attention to the problem of refugee statistics. The only reference made to these are the following:

- For the country of origin of the refugees:
 - . Angola, where it was estimated in 1971 that there were more than 415,000 nationals living as refugees abroad (of whom 400,000 were living in Zaire),
 - . Mozambique, where the nationals who had taken refuge abroad were estimated at over 60,000 in 1971.

TABLE 126 - REFUGEES IN AFRICA AROUND 1980

COUNTRY	NUMBER OF REFUGEES	ORIGIN
Algeria	52 000 to 167 000	Western Sahara
Angola	61 000 to 73 000	South Africa, Namibia, Zaïre
Botswana	3 000 to 23 000	South Africa, Angola, Namibia, Zimbabwe
Burundi	50 000 to 235 000	Rwanda
Cameroon	30 000 to 266 000	Equatorial Guinea, Chad
Central African Republic	7 000	
Djibouti	20 000 to 42 000	Ethiopia, Somalia
Egypt	5 000	
Ethiopia	11 000 to 12 000	
Gabon	30 000 to 60 000	Equatorial Guinea
Kenya	3 000 to 7 000	Ethiopia, Uganda
Lesotho	1 000 to 10 000	South Africa
Mozambique	0 to 150 000	Zimbabwe
Nigeria	100 000 to 110 000	
Rwanda	8 000 to 10 000	Burundi
Senegal	5 000	
Somalia	500 000 to 1 540 000	Ethiopia
Sudan	330 000 to 500 000	Ethiopia, Uganda, Zaïre
Swaziland	4 000 to 10 000	South Africa
Tanzania	140 000 to 167 000	Burundi, Uganda, Rwanda
Uganda	100 000 to 112 000	Rwanda, Zaïre
Zaïre	288 000 to 530 000	Angola, Burundi, Uganda, Rwanda, Zambia
Zambia	33 000 to 80 000	Angola, Namibia, Zaïre, Zimbabwe
T O T A L	1 781 000 to 4 121 000	

Notes :

- Estimates for the years 1979 or 1980
- Sources are either the governments of the countries of arrival, or the United Nations High Commissioner for Refugees [3, 25]

- For the country of arrival of the refugees: Djibouti, where the number of refugees (from Ogaden) was to reach 50,000 in 1977.

Yet, during the last century Africa has experienced a perceptible increase in refugees (from 400,000 in 1964 to 750,000 in 1967-1970, 3,000,000 at the end of 1976, 3,700,000 at the end of 1977, 4,000,000 at the end of 1978 and 5,000,000 in 1980). So much so that today one refugee out of every two in the world is an African; and Africa is spoken of as 'the refugee continent'.

If it is in Somalia, a country for which we were unable to obtain a monograph, that the problem is seen to take on the most serious proportions, the following table shows that other countries were not spared. Twenty-three countries have received a significant number of refugees, which some estimates put at the double of others: in all their number exceeds 4,000,000 (while the figure of 5,000,000 is often quoted, as shown above). In collaboration with the United Nations High Commissioner for Refugees, governments should attempt through their census operations to enumerate refugee numbers correctly; this is a primary condition for any real commitment to their problems.

4) Factors Likely to Have an Influence on the Quality of Data Collection

The study of factors likely to influence the quality of collection procedures provides an explanation for the traditional evaluation of African population data: poor and deficient. Many factors combine to render the results of a collection operation in Africa far from reliable, and many such factors are often found in the same country.

a) Firstly there are the political factors; the discord linked to the period of pacification at the end of the 19th century and the beginning of the 20th; then the discord linked to the period approaching independence; and finally the instability in some countries as a result of independence. The following are indicated in the monographs as having influenced the quality of the collection: the pacification of Ashanti (Ghana, 1901 census); the emergence of nationalism under colonial rule in Ghana (censuses of 1931 and 1948), in Algeria (1954 census) and in Tanzania (1957 census); the wars of Liberation in Angola, Mozambique (1970 censuses) and Algeria (1960 census); independence at the time of the census in Kenya (1962) and in Cape Verde (1970). Political problems since decolonization are manifest in the total lack of censuses since 1970 in several countries (Angola, Djibouti, Ethiopia, Namibia, Western Sahara, Chad, Zaire, Zimbabwe) or the cancellation of results and lack of processing (Nigeria, 1962 and 1973). Finally in two countries, political intentions led either to the majority of the results being concealed (Gabon, 1969-1970 and 1980) or to absurd results being produced (in the Kasai region of Zaire in 1970).

b) Secondly, administrative problems in many countries were the cause of bad data collection. It must be emphasized that, as far as administrative censuses were concerned, most countries did not have a central statistical organization, but possessed only a crude administrative system with bad coverage of some of their regions. Changes in the administrative division of national territories were also responsible for the low quality of the collection. They ruled out the possibility of long series for various sub-populations, and were the cause of errors in the demarcation of census zones. Such administrative changes were made in

Cameroon and Madagascar and were common in Central African Republic, Sierra Leone and Zaire. Finally, when the census results directly determined the number of seats in Parliament for the electoral units (Libya, 1954 census), the attribution of economic infrastructures (Madagascar, administrative census) or the redistribution of provisions (Mauritania, 1977 census), this encouraged overestimation.

c) The geography of Africa also presents a serious handicap to collection operations: the size of the territories, dispersal of the population, the bad means of communication in the Sahel countries and also in Zaire, Angola, Mozambique, Botswana, the geographical layout of Cape Verde, the physical factors in Lesotho, inaccessibility of certain areas in the rainy season (Central African Republic, Ivory Coast, Kenya), areas infested by the tse-tse fly (Tanzania): all adversely affect the collection operations.

d) Added to these collection difficulties are problems related to the distrust, mobility and illiteracy of the population and a diversity of dialects. Popular distrust of the collection operations seems to be a common characteristic: it is indicated in 14 monographs. This is often because the people see a link between the censuses and taxation or conscription. It is true that, at the time of the administrative censuses, fear of taxation as a result of the census operation was justifiable. In some cases (Ghana, Uganda, Tanzania) the existence of taboos or superstition is given as an explanation for the reticence with which death registration, or even enumeration, was regarded. Even if these obstacles still exist in many countries, the dissociation between the censuses and taxation, the information campaigns on collection objectives led during the last censuses, and the decline of animist religions, tend to diminish them.

Illiteracy, which rules out the less costly practice of self-enumeration and extends the period of interviews, and its corollaries, the multitude of languages spoken (115 in Sudan and 60 on the Ivory Coast) and ethnic diversity (43 in Gabon), are handicaps much quoted in the monographs. However, although the school enrolment rates are well below those of Latin America or Southern Asia, their increase (51% of the population in the 6-11 years age group enrolled in 1975 as against 33% in 1960 - UNESCO) indicates a perceptible improvement of the situation.

e) Finally, problems related to the collection operations themselves are not the least source of data imperfection. These are partly due to the inadequacy of the financial resources available, which are to be related to the low level of economic development and the many difficulties already mentioned. If the modesty of these resources is rarely mentioned explicitly (apart from the examples of Cape Verde and Lesotho), it is often revealed through staff shortage, notably census agents, and lack of adequate training.

The shortage of census agents is quoted by several countries as being one of the determinants responsible for prejudicing the quality of data collection (Angola, Botswana, Cameroon, Ghana, Lesotho, Niger, Sao Tome and Principe, Sierre Leone, Tanzania, Zimbabwe). This is not only caused by insufficient financial means but also, as is indicated in half of the cases quoted, especially in earlier operations, by the difficulty in finding a sufficient number of people with the educational requirements needed to become census agents. The bad training of census agents seems to be just as widespread: it is mentioned in eight monographs (Cape Verde, Ivory Coast,

Kenya, Lesotho, Madagascar, Mali, Chad, Zimbabwe). There is also a certain amount of hostility on the part of some interviewers towards particular population groups (pygmies, nomads...). It is not always possible to recruit interviewers 'on the spot', and it does not help matters when they 'live off the inhabitants'.

Added to the recruitment problem is the frequent inadequacy of field training, combined with an insufficient knowledge of the environment on the part of those in charge of the operation (not always natives of the country). This is demonstrated in the preparation of questionnaires and instructions to enumerators, where some concepts, such as the father (biological father), single person (neither widow, nor divorcee) or live-born child, are not always properly translated into the local languages.

Other sources of data imperfection of a more technical nature can be found: the bad quality of the sampling frame (Congo, 1960-1961 survey, Ivory Coast, all surveys); the absence of an effective pre-census survey (Ghana, censuses of 1960 and 1970) or any other study (Tanzania, 1967 census); population information campaigns which are insufficient (Congo, 1960-1961 census), or ill-adapted (Nigeria, censuses of 1952-1953 and 1963); non-respect of the principle of 'simultaneity' (administrative censuses in general, the 1955-1956 survey in Sudan, regional surveys in Cameroon, Madagascar census in 1975).

The question of the timing of the collection is also to be considered.

For the census operations, it would be judicious to choose a time when the whole of the territory can be covered. Thus, for Congo the census should logically take place in June:

- Dry season in the South - tracks are passable;
- Rainy season in the semi-lake region - enough water in the rivers to make canoeing possible.

Instead, the time chosen to carry out the main part of the census throughout most of the land was in February, March and April when serious difficulties were encountered due to the rainy season in Southern parts. Conversely, it was necessary to wait until the rainy season was well underway in the North (June), and the rivers were sufficiently navigable, to conduct a survey in the Likouala region.

Finally, care must be taken when comparing the results from collection operations which have not been conducted at the same time of year: the number of absentees, visitors, foreigners, nomads, can vary considerably according to the season.

III. CONSISTENCY BETWEEN THE DIFFERENT SOURCES

After the presentation of different data sources and their critical appraisal, this last section deals with the consistency between them. This should be shown by the equation of concordance expressing that the algebraic difference in the size of a country's population on two given dates, is equal to the sum of the natural and migratory increases which have occurred in the population between these two dates.

$$P_1 - P_0 = N - D + I - E \quad (1)$$

where P_0 is the population observed during the first operation

P_1 is the population observed during the second operation

N	represents births	| during the period | separating the two | operations
D	represents deaths	
I	represents immigration	
E	represents emigration.	

But it is generally observed that:

$$P_1 - P_0 \neq N - D + I - E \quad (2)$$

This equation can only be written using 'corrected' data:

$$\hat{P}_1 - \hat{P}_0 = \hat{N} - \hat{D} + \hat{I} - \hat{E} \quad (3)$$

since the observed data are marred by mistakes which affect both population size and population growth.

Indeed, as has been seen in part one, in many African countries registration of data on population growth is not of sufficient quality to encourage its use. The following equation should therefore frequently be employed:

$$\hat{P}_1 = \hat{P}_0 (1 + \hat{r})^t \quad (4)$$

where \hat{r} represents the estimate of the mean annual growth rate during the interval t separating the two operations; in this section, we will use the values of r provided in the monographs, without going back to the methods which enabled these to be determined, as this would fall outside the framework of our study.

Not all of the forty four monographs allow the problem formulated here to be resolved: the weakness of the data in some cases (Djibouti, Chad) excludes all analysis of this kind; on the contrary, "all the commentators agree on the excellent quality of the population statistics of Mauritius, which has no reason to envy the more advanced countries in this field"; between these two extremes, the elements necessary for the study of the consistency of sources are missing in a dozen or so monographs. Finally, this section will study the cases of twenty five countries. The varying degree of demographic knowledge of this sample is, nevertheless, the source of much diversity concerning the forms of consistency analysis which can be conducted.

These types of analysis can be grouped into four categories, classified from the most simple to the most complex.

1) Type I: Simple Evidence of Consistency or Inconsistency between a Series of Operations and the Registration of Population Growth Data

This is the straightforward observation of equality (1) or inequality (2), mentioned in three monographs:

a) In Cape Verde, even in restricting the study to the last five censuses, there are significant differences between the intercensal variations and the results of the natural and migratory increases registered for the same periods.

TABLE 127 - CAPE VERDE - INTERCENSAL VARIATIONS AND BALANCES RECORDED

DATE	POPULATION	INTERCENSAL VARIATION	NATURAL INCREASE	NET MIGRATION	TOTAL INCREASE
1940	181 740	- 31 769	- 29 134	- 23 424	- 52 558
1950	149 971	+ 49 931	+ 58 071	- 20 273	+ 37 798
1960	199 902	+ 72 669	+ 68 328	- 27 290	+ 41 038
1970	272 571	+ 23 041	+ 57 541	- 52 084	+ 5 457

In view of the possible, if not probable, mistakes in the census results and the inadequate quality of the registration of population growth data, it is impossible to formulate a conclusion on the population estimates.

b) In Madagascar, the set of results from the administrative censuses can be compared with civil registration data and with international migration statistics. The monograph gives a table (Volume I, page 156) which only considers the Madagascan population for the administrative censuses, and which neglects the slight international migration. However, it is possible to study the total population, introducing international migration: this has been done in Table 128.

Even if a correlation can be observed between the intercensal variation and the total balance (1), such data can not be validly used. If the migration balance, earlier indicated as being low, is probably more or less well apprehended, the administrative censuses and civil registration provide results marred by errors which are discussed in the monographs. Fortunately for this country, statistical operations make it possible to proceed with a consistency analysis, as described further on.

c) Tunisia is an interesting case, possessing quite good registration of natural increase and external migration (births are practically all declared, as are 73% of deaths), and where there is sufficient knowledge of methods and data quality for the results to be corrected. Thus from January 1st 1966 to December 31st 1974, the following estimates were given:

(1) An adjustment by the method of least squares provides the following result, where P represents the intercensal variation and S the total balance: $S = 0.217 P + 78$. The coefficient of linear correlation is 0.82.

**** CONCLUSION ****

- Births: 1,783,700
 - Deaths: 584,100
 - Net Emigration: 186,200

TABLE 128 - MADAGASCAR - INTERCENSAL VARIATIONS (administrative censuses) AND BALANCES RECORDED

DATE 1st January	POPULATION	INTERCENSAL VARIATION	NATURAL INCREASE	NET MIGRATION	TOTAL INCREASE
1953	4 464				
1954	4 540	76	91	+ 2	93
1955	4 667	127	96	...	96
1956	4 776	109	105	...	105
1957	4 934	158	118	+ 2	120
1958	5 071	137	104	...	104
1959	5 191	120	110	...	110
1960	5 298	107	101	- 1	100
1961	5 487	189	111	- 7	104
1962	5 658	171	123	- 5	118
1963	5 862	204	121	- 6	115
1964	6 104	242	127	- 4	123
1965	6 336	232	134	- 4	130
1966	6 562	226	141	- 4	137
1967	6 754	192	135	- 3	132

Note: Migration balance nil

Units: thousands

Source: [13]

This gives a population growth of 1,013,400 people. From January 1st 1966 to May 2nd 1966 (census reference date) population growth is estimated at + 39,400 and from January 1st 1975 to May 8th 1975 (census reference date), at + 34,400. The resulting intercensal growth is therefore estimated at

$$1,013,400 - 39,400 + 34,400 = 1,008,400$$

The difference between the census populations is

$$5,572,193 - 4,533,351 = 1,038,842$$

These two independent estimates are very similar and differ by only 3%. If the estimate of population growth is accepted as correct, the 1966

**** CONCLUSION ****

census results are seen to be slightly more underestimated than those of the 1975 census. If the latter is accepted as being correct, then the 1966 census results are underestimated by 0.7% - almost negligible. Consistency between the censuses and population growth data (corrected) is therefore excellent.

2) Type II: Simple Evidence of Consistency or Inconsistency between Populations Observed on Two Given Dates and the Estimate of the Mean Annual Growth Rate between these Two Dates

In this case, it is the application of equation (4) to the observed data P_0 and P_1 which cannot be corrected.

a) In Benin the only consistency analysis which can be attempted is a comparison of the results of the 1961 survey and the 1979 census, for which a lack of relevant data rules out any possible corrections.

TABLE 129 - BENIN - TRENDS 1961-1979

OPERATION	DATE	POPULATION OBSERVED (thousands)	MEAN ANNUAL GROWTH RATE OBSERVED (%)
Survey	01.08.1961	2 106.0	2.6
Census	20.03.1979	2 338.2	

The mean annual rate of growth thus calculated seems to be consistent with the estimate of population growth data.

b) In Burundi the three statistical operations provided the following results:

It would seem that the 1970-71 survey underestimated the population size. The comparison between the populations observed in 1965 and 1979 reveals a growth rate of 1.6% - a rate which could seem a little low, but which can doubtless be explained by the large emigration figures and the demographic impact of the 1972 unrest.

TABLE 130 - BURUNDI - TRENDS 1965-1979

OPERATION	DATE	POPULATION OBSERVED (thousands)	MEAN ANNUAL GROWTH RATE OBSERVED (%)
Survey	15.05.1965	3 210	1,0 } 1,6 2,0 }
Survey	01.01.1971	3 400	
Census	15.08.1979	4 022	

c) In Ethiopia the problem is viewed in the monograph in a different way, the following data being available:

- Three estimates of the total population in January 1973, obtained from the electoral rolls and three hypotheses for obtaining the total population from the number of electors registered.
- Three results of sample surveys in 1964-67, 1968-71 and 1976-78, which did not affect the whole of the country. The author estimated the non-surveyed populations.

The six estimates were compared by converting them all to January 1st 1975 with the help of an hypothesis on the growth rate (2.2% in 1960-69, 2.3% in 1970-74). After eliminating the first estimate, based on the hypothesis that the number of men registered on the electoral rolls was correct, there were five estimates ranging between 27.2 and 33.5 million. The final value retained by the author (30.1 million), which comes from an unspecified 'population estimate by region', is a figure very similar to the average of these five estimates (29.8 million).

d) In Burkina Faso the question of migration seems to have been well integrated into the population estimates, a distinction having been made between:

- The 'de jure' population (present and absent)
- And the administrative population which consists of the 'de jure' population and the 'emigrants'; that is, the people who have lived in the compound visited but have been settled abroad for more than six months.

Between 1960 and 1975, it is possible to compare the sizes of these different populations:

TABLE 131 - BURKINA FASO - TRENDS 1960-1975

OPERATION	DATE	POPULATION OBSERVED (thousands)		MEAN ANNUAL GROWTH RATE OBSERVED (%)	
		Resident Population	Administrative Population	Resident Population	Administrative Population
Survey	1960	4 350	4 460	1.7	2.0
Census	1975	5 638	5 973		

These growth rates are considered acceptable.

e) In Namibia a series of six censuses giving the 'de facto' population is available:

TABLE 132 - NAMIBIA - TRENDS 1921-1970

DATE	POPULATION OBSERVED	MEAN ANNUAL GROWTH RATE OBSERVED (%)
3.5.1921	228 916	2.3
5.5.1936	320 457	1.2
7.5.1946	362 464	3.7
8.5.1951	434 081	2.1
6.9.1960	526 004	3.9
6.5.1970	761 562	

These results appear consistent, with two exceptions:

- In 1946 "the population of the northern part of the country was, without doubt, severely underestimated"; the rate calculated for the period 1936-1951 seems plausible.
 - The 1970 census is considered as "the most complete of the six", which implies that the first five provided underestimated results. This explains the high value of the rate calculated for the last period.
- 3) Type III: Acceptance of the Total Population Observed on a Given Date, then Correction of the Other Figures Using an Estimate of the Growth Rate between Operations

With this method, the result of an operation - generally the most recent one - is considered acceptable; then the other operation(s) are corrected, using a hypothesis on the growth rate.

This kind of analysis, which is an improvement on the former (Type II), is not always successful, however, because if it is decided not to correct the population obtained through an operation, it is usually because there are not enough elements available to attempt correction. This is in particular the case for the censuses not followed up by a post-enumeration test.

Table 133 gives the results of the analysis conducted according to this pattern in the monographs. It calls for the following comments:

- In the Central African Republic, the comparison of total populations concerns the 'de facto' population. The population retained for the 1975 census does not include the 'non-enumerated' population added later to the results.
- For Kenya, the 1969 population provided by the monograph appears to be already corrected [15].

TABLE 133 - TYPE III CONSISTENCY ANALYSIS

COUNTRY	OPERATION	DATE	POPULATION OBSERVED (thousands)	POPULATION CORRECTED (thousands)	RATE OF ERROR (%)	MEAN ANNUAL GROWTH RATE (%)		OBSERVATION
						Observed	Corrected	
CENTRAL AFRICAN REPUBLIC	Survey Census	31.12.59	1 154.9	1 270.0	- 9.1	2.9	2.3	De facto population
		15.12.75	1 817.8	1 817.8	-			
CONGO	Ad.cens.	1957	782.4	914.0	- 14.4	0.8 } 3.8 } 3.1	1.8 2.3	
	Survey	1961	808.8	981.0	- 17.6			
	Census	1974	1 319.7	1 319.7	-			
KENYA	Census	8.48	5 407.6	5 867.0	- 7.8	3.4 3.4	2.8 3.4	
	Census	8.62	8 636.3	8 636.3	-			
	Census	8.69	10 942.7	10 942.7	-			
LIBYA	Census	31.07.54	1 041.6	1 100.0	- 5.3	3.8 3.4	3.0 3.7	Libyans only
	Census	31.07.64	1 515.5	1 480.0	+ 2.4			
	Census	31.07.73	2 052.4	2 052.4	-			
MADAGASCAR	Survey	30.06.62	5 783.0	5 783.0	-	1.8 2.2	2.0 2.1	
	Survey	30.06.66	6 200.0	6 252.0	- 0.8			
	Census	30.06.75	7 569.0	7 569.0	-			
MAURITANIA	Survey	1.01.65	1 028.9	1 107.9	- 7.1	2.7	2.1	
	Census	1.01.77	1 419.1	1 419.1	-			
NIGER	Survey	1.01.60	2 876.0	3 120.0	- 7.8	3.3	2.8	
	Census	20.11.77	5 098.4	5 098.4	-			
UGANDA	Census	1948	4 959.0	5 099.0	- 2.7	2.5 3.9	2.7 3.4	
	Census	1959	6 537.0	6 835.0	- 4.4			
	Census	1969	9 549.0	9 549.0	-			
SENEGAL	Survey	1.07.60	3 109.8	3 500.0	- 11.1	2.3 4.8	2.3 2.5	
	Survey	1.01.71	3 956.6	4 400.0	- 10.9			
	Census	15.04.76	5 068.7	5 068.7	-			
TANZANIA	Census	1948	7 734.0	7 734.0	-	1.8 3.1	2.1 2.8	
	Census	1957	9 088.0	9 329.0	- 2.6			
	Census	1967	12 315.0	12 315.0	-			
TOGO	Census	1.01.60	1 440.0	1 440.0	-	4.1 2.8 3.5	2.6 } 3.1 } 3.0 2.6	
	Survey	1.10.61	1 544.0	1 506.2	+ 2.5			
	Census	1.04.70	1 950.6	1 950.6	-			
	Survey	1.04.71	2 018.7	2 001.3	+ 0.9			
ZAIRE	Survey	1.07.56	12 760.4	12 760.4	-	2.4 4.1	2.6 3.1	
	Ad.census	31.12.59	13 864.4	13 951.0	- 0.6			
	Ad.census	31.12.70	21 637.9	19 427.0	+ 11.4			
ZIMBABWE	Survey	31.08.48	1 812.0	2 443.0	- 25.6	4.0 6.1 4.3	3.6 3.7 3.4	Zimbabwe only
	Survey	30.09.54	2 304.0	3 015.0	- 23.6			
	Census	24.04.62	3 618.2	3 836.0	- 5.7			
	Census	29.04.69	4 846.9	4 846.9	-			

TABLE 134 - MADAGASCAR - EVALUATION OF THE QUALITY OF THE ADMINISTRATIVE CENSUSES

DATE (June 30th)	POPULATION ACCORDING TO THE ADMINISTRATIVE CENSUSES (a)	PROPOSED POPULATION	RATE OF ERROR (%)	MEAN ANNUAL GROWTH RATE (%)	
				According to the adminis- trative censuses	Corrected
1900	2 200	2 941	- 25.2	1.9	1.0
1925	3 549	3 772	- 5.9	0.7	1.0
1950	4 255	4 837	- 12.0	2.1	1.2
1955	4 722	5 140	- 8.1	2.7	1.6
1960	5 392	5 569	- 3.2	3.4	1.9
1962	5 760	5 783	- 0.4	3.8	1.9
1965	6 449	6 123	+ 5.3	3.4	2.1
1966	6 669	6 252	+ 6.7		

(a) : Source [13]

- In Libya, the comparison only deals with the Libyan population, the foreign population having increased greatly since 1964, as a result of the increase in oil production. The high values of the corrected growth rate are due to high natality, rapid mortality decline, and to Libyans living abroad returning to the country.
- Madagascar is a rather special case where the results observed seem to be remarkably consistent. Once the results of the 1966 survey are corrected for an underestimation of women (cf. above in II.3 a), the 1962 survey and 1975 census provide a set of results which is perfectly consistent with the estimates of the growth rate. Moreover, the analysis can be completed with the help of an hypothesis on growth rate trends since the beginning of the century, which reveals an underestimation at the administrative censuses up to 1962, and a subsequent overestimation.
- For Mauritania the population size in 1965 is corrected by analysing the causes of underestimation during the survey: 79,000 people are thus added in order to account for the differences in the definition of the 'legal' population with the census, a corrected updating of the population of the urban centres enumerated in 1962, and an underestimation of females and Peuhl livestock farmers. The mean annual rate of growth obtained for 1967-77 is 2.1%, which is considered plausible.
- For Uganda the corrected growth rate is divided into natural increase and net migration, 2.3% and 0.4% respectively for the period 1948-1959 and 2.9% and 0.5% respectively for the period 1959-69.

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Likewise for Tanzania: 2.1% and 0% for the period 1948-1957, and 2.4% and 0.4% for the period 1957-1967.

- For Togo the analysis is based on the results of the two censuses which are considered correct; the high value of the mean annual intercensal growth rate (3.0%) comes from a natural growth rate estimated at 2.6%, and the return in 1969 of the Togolese expelled from Ghana. The populations provided by the 1961 and 1971 surveys are corrected with the rate of 2.6%. With the 1960 census, a retrojection can be made using a growth rate of 2.5% up to 1957, to obtain an assessment of the quality of the administrative census, which was found to be underestimated by 17.7%.
- For Zaire the oldest operation, namely the 1955-1957 survey, was used as the starting point for the consistency analysis. The population size on December 31st 1959 was inferred from the population size on July 1st 1956, using the growth rate provided by the survey (2.6%). Then, for the period 1960-1970, a rate of 3.06% was taken. This kind of analysis is regarded as tentative because the population provided by the survey is very uncertain (the results of the majority of the surveys are underestimated). Moreover, a rate of 3.06% for the period 1960-1970 could seem a little high.
- Finally, for Zimbabwe the comparison only deals with the African population, as the European, Asian and mixed-blood populations are perfectly well-known.
- In all, Table 133 presents 38 operations conducted in 13 countries. If the 13 operations that served as a basis for the analysis are set aside, then 25 operations remain for which the analysis revealed either an overestimation, an underestimation, or a correct estimation (rate of error between -1% and +1%). The distribution of these 25 operations is as follows:

TABLE 135 - TYPE III ANALYSIS: KIND OF ERROR AND TYPE OF OPERATION

TYPE OF OPERATION	UNDERESTIMATION	CORRECT ESTIMATE	OVERESTIMATION
Survey	8	3	1
Census	6	3	1
Adm. Census	1	1	1
TOTAL	15	7	3

An underestimation was found in 60% of cases, in surveys and censuses alike, while the three administrative censuses covered the three categories.

The three cases of overestimation concern the 1964 Libyan census (impending elections), the 1961 Togolese survey (inexplicable overestimation) and the 1970 administrative census in Zaire (which may have been 'manipulated' to meet political ends).

Together, the 25 operations reveal an average underestimation of 5.6% (simple arithmetic mean). The 15 operations with underestimated results show a mean underestimation of 10.4%.

4) Type IV: A More Complete Consistency Analysis

This deals with the countries where the data (survey, census and population growth data) are relatively well known and can be rectified.

This type of analysis can only be conducted for five countries (Table 136), moreover with significant differences in the correction procedures:

TABLE 136 - TYPE IV CONSISTENCY ANALYSIS

COUNTRY	OPERATION	DATE	POPULATION OBSERVED (thousands)	POPULATION CORRECTED (thousands)	RATE OF ERROR (%)	MEAN ANNUAL GROWTH RATE (%)		OBSERVATION
						Observed	Corrected	
BOTSWANA	Adm. Cen	1956	309.2	454.9	- 32.0			De facto population
	Census	01.04.64	502.7	526.8	- 4.4	6.3	1.9	
	Census	31.08.71	574.1	601.7	- 4.6	1.8	1.9	
CAMEROON	Survey	01.08.64	5 400.0	{ 5 738.0	{ - 5.9	2.4	{ 2.0	
	Census	17.04.76	7 131.8	{ 6 077.0 7 663.2	{ - 11.1 - 6.9				{ 2.5
GHANA	Adm. Cen	1971	2 298.4	{ 2 526.0	{ - 9.0	3.2	{ 2.4	
				{ 2 873.0	{ - 20.0				{ 1.6
	Adm. Cen	1931	3 163.6	{ 3 196.0	{ - 1.0	1.6	{ 2.1	
	Census	1948	4 118.5	{ 4 576.0	{ - 10.0				4.2	{ 1.8
	Census	1960	6 726.8	{ 6 221.0	{ + 1.6	2.4	{ 3.1	
Census	1970	8 559.3	{ 8 508.0	{ + 0.6				{ 2.5
REUNION	Census	01.07.41	221.0	208.8	+ 5.8	1.7	1.6	
	Census	26.10.46	241.7	226.7	+ 6.6	1.7	2.6	
	Census	01.07.54	274.4	277.7	- 0.9	3.3	3.3	
	Census	09.10.61	{ 347.5	{ 349.7	- 0.6	3.0	3.1	
			{ 349.3	{ 351.4				
	Census	16.10.67	416.5	421.4	- 1.2	1.9	2.0	
Census	16.10.74	476.7	482.6	- 1.2				
ZAMBIA	Census	1963	315.5	382.0	- 17.4	4.6	2.6	De facto population
	Census	22.04.73	483.5	496.0	- 0.5			

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- In Botswana the starting point of the analysis is the 1971 census. First of all, the 'de facto' population is corrected for the omissions estimated by those in charge of the operation (according to the difficulties encountered in the field); then the population pyramid is smoothed above 10 years and the total number of under 10 year olds is corrected, using a hypothesis on fertility during the 10 years preceding the census. The percentage of underestimation obtained is applied to the 1964 results. Finally, the growth rate being presumed constant between 1956 and 1971, the results of the 1956 administrative census can be corrected.
- In Cameroon, consistency analysis proves delicate. The census data is corrected using the post-enumeration survey results; then the population on August 1st 1964 (result of the 1960 and 1965 surveys) is corrected according to the estimated intercensal growth rate of between 2.0 and 2.5%.
- In Gambia, the 1973 census figures are slightly corrected, then the 1963 population is 'reconstructed' on the basis of the number of survivors at the 1973 census.

TABLE 137 - REUNION - CONSISTENCY ANALYSIS

DATE	CENSUS POPULATION (1)		UNDER-ENUMERATION CHILDREN 0-4 YEARS	NATURAL INCREASE	NET MIGRATION	NEW CORRECTION	CORRECTED POPULATION (1)	
	a	b					a	b
1941	220 955		...			-12 132	208 823	
1946	241 667		...	17 386	-	-15 008	226 659	
1954	274 370		1 348	50 300	-	1 241	276 959	
1961	347 510	349 282	2 149	74 300	- 1 600	0	349 659	351 431
1967		416 525	4 855	75 379	- 5 430	0		421 380
1974		476 675	6 125	75 153	-13 180	- 247		482 553

(1) a = former definition of the 'legal' population.

b = definition of the 'legal' population introduced in 1961.

- Ghana provides an example of long-term analysis (50 years). The starting point is taken from the last two censuses of 1960 and 1970 where the results, according to the postcensal surveys, are respectively overestimated by 1.6% and 0.6%. The intercensal growth rate is 2.5%, consisting of a rate of natural increase of 3.0% "compatible with the birth and death rates generally acknowledged for the period", and a net emigration rate of 0.5%, corresponding to a net emigration of 400,000 people (notably the foreigners who left the country in the six months following November 18th 1969, the date of the 'Alien Compliance Order'). Then, on the basis of a mean annual rate of growth of 3.1%, the figure for 1948 is re-estimated. Finally, a margin

**** CONCLUSION ****

is given for the 1921 and 1931 results; during the period 1921-1931, the mean annual rate of natural increase is estimated at 1.4%, whereas net immigration can only be estimated as being between 200,000 and 300,000 people.

- Lastly, Reunion gives an example of a very precise consistency analysis for the period 1941-1974. The reference population is the 'legal' population, the definition of which changed in the 1961 census: we thus have two successive series, linked up in 1961, an operation for which the 'legal' population was calculated according to the two definitions. The results of the 1954 and 1967 censuses are firstly corrected for an underestimation of children under 5 years (cf. supra, II 3 a). Then, going from the corrected 1961 results:
 - . For 1954 the natural increase, the migration balance, and the underestimation of children, are known; hence a new correction can be made.
 - . The same applies for 1946 and 1941, where the under-estimation of children is unknown. These two censuses provide overestimated results.
 - . For 1967 the natural balance is known; for the migration balance, two estimates are given: -5,095 and -6,700. If -5,430 is used, consistency is ensured without any further corrections.
 - . For 1974, the full data are not yet available; the underestimation of children is presumed to be the same as in 1967.

The results of these calculations are presented in Table 137.

Finally, the 18 operations concerning the five countries studied give the following results:

TABLE 138 - TYPE IV ANALYSIS: KIND OF ERROR AND TYPE OF OPERATION

TYPE OF OPERATION	UNDERESTIMATION	CORRECT ESTIMATE	OVERESTIMATION
Survey	1	-	-
Census	7	4	3
Administrat. Census	3	-	-
TOTAL	11	4	3

The single survey (Cameroon 1960-1965) and the three administrative censuses give underestimated results. The censuses divide equally into underestimation, on the one hand, and correct or overestimation, on the other.

It is interesting to note that underestimation is shown in 61% of cases, whereas type III analysis revealed this in 60%! The average underestimation for the 18 operations was 5.1% (type III: 5.6%). For the 11 operations showing underestimation, the average was 9.5% (type III: 10.4%).

5) By Way of Conclusion

The preceding examples show just how much can be drawn from available data, and efforts must no doubt be pursued in this direction. But caution must be taken not to place too great a credibility on the corrections made; rather they should be seen in a dynamic research perspective, with new operations, or new analyses of old operations open to challenging them in the future. An illustration of how useful these corrections can however be, is given in Table 139, where the corrections applied by the United States Bureau of the Census to some African operations are presented.

This table calls for two further comments:

a) For two countries (Gambia and the Seychelles), the results are apparently those of a type III analysis, whereas for the other seven countries, it is a type IV analysis which has been conducted. The operations considered are all censuses. The error revealed is always an underestimation (on average 4.2%).

b) The results concerning Botswana, Gambia and Ghana can be compared with those previously provided.

- For Botswana the results are quite similar, but the two analyses are not independent since they are given by the same authors.
- For Gambia the results are also very similar.
- For Ghana, on the other hand, where the monograph found an overestimation in the 1960 and 1970 censuses, the table reveals an underestimation. It is true, however, that in both cases the corrections made to the observed populations are minimal.

IV. CONCLUSIONS**1) Population Size on January 1st 1975**

Table 140 makes it possible to compare the population sizes on January 1st 1975, suggested by the authors of the monographs (or calculated using the information given in them), with those published by the United Nations and the United States Bureau of the Census. The footnotes to the table specify the field of observation for some of the estimates and, in the case of significant differences being expressed, explain the possible origin of any discrepancies.

TABLE 139 - CORRECTIONS OF RESULTS OF OPERATIONS PROPOSED BY THE UNITED STATES BUREAU OF THE CENSUS

COUNTRY	DATE	OBSERVED POPULATION	CORRECTED POPULATION	RATE OF ERROR (%)
ALGERIA	31.10.1948	8 625.8	8 626.0	-
	31.10.1954	9 367.5	9 691.0	- 3.3
	04.04.1966	11 827.3	12 235.0	- 3.3
	12.02.1977	16 260.5	16 948.0	- 4.1
BOTSWANA	01.04.1964	543.1	572.0	- 5.1
	31.08.1971	608.7	641.0	- 5.0
EGYPT	20.09.1960	26 085.3	26 478.0	- 1.5
	22.11.1976	36 626.2	38 036.0	- 3.7
GAMBIA	17/18.04.1963	315.5	382.2	-17.5
	22.04.1973	493.5	493.5	-
GHANA	20.03.1960	6 726.8	6 903.0	- 2.6
	01.03.1970	8 559.3	8 697.0	- 1.6
MAROCCO	18.06.1960	11 626.5	12 415.0	- 6.4
	20.07.1971	15 379.3	16 335.0	- 5.9
SEYCHELLES	04.05.1960	41.4	41.4	-
	01.08.1977	61.3	61.9	- 1.0
SOUTH AFRICA	08.05.1951	12 671.5	13 835.0	- 8.4
	06.09.1960	15 994.2	17 206.0	- 7.0
	06.05.1970	21 794.3	22 376.0	- 2.6
TUNISIA	01.02.1956	3 783.2	3 886.0	- 2.6
	03.05.1966	4 533.4	4 657.0	- 2.7
	08.05.1975	5 572.2	5 660.0	- 1.6
ZAMBIA	22/30.08.1969	4 057.0	4 144.0	- 2.1
	26.08/07.09.1974	4 695.0	4 854.0	- 3.3

Sources: [8], [15] and [33]

TABLE 140 - THE POPULATION OF THE AFRICAN COUNTRIES IN THE STUDY ACCORDING TO VARIOUS SOURCES ON JANUARY 1ST 1975

COUNTRY	BUREAU OF CENSUS	UNO	GDA	COUNTRY	BUREAU OF CENSUS	UNO	GDA
ALGERIA	15 898	16 261	15 585	LIBYA	2 439	2 380	2 440
ANGOLA	5 986	6 185	6 100 (2)	MADAGASCAR	7 498	7 585	7 487
BENIN	2 988	3 070	2 991	MALI	5 734 (13)	5 992	6 038
BOTSWANA	681 (3)	670 (3)	674 (4)	MAURITIUS	877	875	882
BURKINA FASO	6 020 (12)	6 000 (12)	5 549	MAURITANIA	1 357	1 400	1 356
BURUNDI	3 769	3 895	3 557 (5)	MOZAMBIQUE	10 522	9 090	9 357 (2)
CAMEROON	7 434	7 450	7 424	NAMIBIA	870		863
CAPE VERDE	299 (6)	295	270 (7)	NIGER	4 693	4 540	4 698
CENTRAL AFRICAN REPUBLIC	2 038 (8)	1 965	1 782	NIGERIA	64 655	64 655	
CHAD	4 089	3 990	3 990	REUNION	476	475	484
COMOROS	304	295	297	RWANDA	4 305	4 160	4 200
CONGO	1 331	1 335	1 351	SAO TOME AND PRINCIPE	78	80 (14)	73
DJIBOUTI	241	105 (9)	230	SENEGAL	4 920	4 910	4 924
EGYPT	36 353	36 715	35 105 (10)	SIERRA LEONE	3 006	3 010	2 739 (15)
ETHIOPIA	27 910 (11)	27 125 (11)	30 060	SUDAN	15 779	15 535	16 000
GABON	532	520	530	TANZANIA	15 601	15 035	16 207 (16)
GAMBIA	517	515	524	TOGO	2 228	2 200	2 204
GHANA	10 143	9 740	9 843	TUNISIA	5 617	5 535	5 539
IVORY COAST	6 625	6 570	6 702	UGANDA	10 934	11 360	11 355
KENYA	13 232	13 155	13 413	ZAIRE	24 668 (17)	24 560 (17)	22 246
LESOTHO	1 179	1 175	1 180	ZAMBIA	4 905	4 905	4 747
LIBERIA	1 548	1 545	1 550	ZIMBABWE	6 454	6 185	6 180

Sources : - Bureau of the Census : (8) for the countries of more than 10 million inhabitants (33) for the other countries

- UNO:2

- GDA: Monographs from the present work

- Notes :
- (1) Calculated according to the 1966 census
 - (2) Black population only
 - (3) De jure population
 - (4) De facto population
 - (5) Obtained after exploitation of the 1979 census results
 - (6) Obtained after exploitation of sources on natural increase alone between 1970 (census date) and 1975
 - (7) Obtained after exploitation of sources on natural increase and migration between 1970 (census date) and 1975
 - (8) Based on the official results of the 1975 census, probably overestimated
 - (9) This population can only relate to Dibouti-town
 - (10) Calculated according to the crude census results of 1976, probably underestimated
 - (11) Based on the official estimate of 1970, probably underestimated
 - (12) Corresponds to the estimate of the administrative population (including nationals having lived abroad for more than 6 months)
 - (13) Obtained using the crude results of the 1976 census probably underestimated
 - (14) Rounded to the nearest ten thousand
 - (15) In the absence of a post-enumeration survey, this estimate does not retain the under-registration of the 1974 census estimated at 10 %
 - (16) Obtained using the official results of the administrative census of 1970, very probably overestimated
 - (17) Calculated according to the official results of the 1970 administrative census, probably overestimated

Apart from the discrepancies arising from the field of observation, the other differences observed arise from the exclusion from the estimates made by the Bureau of the Census or the United Nations, of recent censuses (Burundi, Mali, Tanzania) or statistics on migratory and natural increase (Cape Verde, Sao Tome and Principe); and from discrepancies between the official estimates reproduced by the United Nations or sometimes by the Bureau of the Census (Algeria, Central African Republic, Ethiopia, Zaire) and the assessments made in the monographs; or from differences in the evaluation of the crude census results (Sierra Leone).

2) Proposals for Improving Data Sources

a) Suggestions made in the monographs for attaining better information on population size are primarily directed at the organization of operations or the improvement of existing sources. They include:

- The conducting of population censuses and sample surveys;
- The setting up, or the reorganization, of civil registration;
- The improvement of administrative censuses;
- The organization of a system for observing international migration.

b) Particular aspects of the methodology of data collection are shown to require special efforts:

- definition of the concepts used;
- cartography;
- recruitment, training and supervision of enumerators;
- organization of post-enumeration surveys;
- observation of nomadic populations;
- collaboration with local authorities.

c) Finally, three more general suggestions are made:

- collection methods which are better adapted to existing socio-economic situations should be instigated; these can no doubt be achieved through ad-hoc methodological studies;
- the operations (and notably the censuses) must be integrally conceived, in a global programme to cover all the various stages from initial collection to final analysis;
- two basic conditions for improving demographic data are formulated: economic and social development, and a favorable political context.

d) These suggestions, to which we fully subscribe, will not be taken any further here, some of them having already been discussed in the previous paragraphs. We will merely add three remarks:

**** CONCLUSION ****

-
- The improvement of data sources must be carefully thought out in every country by the various persons in charge (demographers, statisticians, planners and other users) who should define a strategy for data collection taking many criteria into account: economic and social conditions, quality of existing sources, traditions of data collection, priority objectives... One of the lessons which can be effectively drawn from this study on population size is the necessarily complementary nature of the different sources and data; for in order to have a better understanding of the population size on a national level, a better understanding of all the population characteristics is needed, and this goal can only be reached using several sources (successive censuses and surveys, surveys on population growth, civil registration, registration of international migration...).
 - Every source is significant, but emphasis must be laid on two sources in particular, for the simple reason that they are all too often neglected:
 - . Historical operations and all kinds of archives, notably administrative archives, for all research must have a historic dimension and past information is significant for present evaluations and adjustments.
 - . Methodological monographs, with emphasis on multiround surveys in the same regions in order to detect errors (and, particularly relevant to the subject in hand, omissions and double counts), comprehend the causes and accordingly refine data collection methods.
 - Furthermore, assessment of population size is a task which must be constantly reviewed, not so much because of population change, but because due to new operations, to new analyses of past data or to new methods of analysis, knowledge is continually progressing: this is the fundamental significance of all research, especially when such research is the fruit of a comparison of experiences as diverse as those constituting this work.

APPENDIX

NATIONAL POPULATION SAMPLE SURVEYS AND CENSUSES FROM 1946 TO 1982

Algeria	1948 - 1954 - 1960 - 1966 - 1969/71* - 1977
Angola	1950 - 1960 - 1970
Benin	1961* - 1979
Botswana	1946 - 1956 - 1964 - 1971 - 1981
Burkina Faso	1960/61* - 1974/75* - 1975 - 1976*
Burundi	1965* - 1970/71* - 1979
Cameroon	1960/65* - 1967° - 1976 - 1978*
Cape Verde	1950 - 1960 - 1970 - 1980
Central African Republic	1959/60* - 1975
Chad	1964* - 1968°
Comoros	1958 - 1966 - 1980
Congo	1960/61* - 1974
Djibouti	
Egypt	1947 - 1960 - 1966* - 1976
Ethiopia	1964/67* - 1968/71*
Equatorial Guinea	1950" - 1960 - 1971
Gabon	1960/61 - 1960/61* - 1969/70 - 1980
Gambia	1963 - 1973
Ghana	1948 - 1960 - 1960* - 1968/69* - 1970 - 1971* - 1980
Guinea	1954/55* - 1972 - 1977
Guinea Bissau	1950 - 1960- 1970 - 1979
Ivory Coast	1955/58* - 1962/66* - 1975 - 1978/79*

Kenya	1948 -1962 - 1962* - 1969 - 1972* - 1979
Lesotho	1946 - 1956 - 1966 - 1976
Liberia	1962 - 1969/71* - 1974 - 1977/79*
Libya	1954 - 1964 - 1973
Madagascar	1962* - 1966* - 1975
Malawi	1956" - 1961" - 1966 - 1970/72* - 1977
Mali	1960/61* - 1976
Morocco	1951/52 - 1960 - 1961/63* - 1971 -1982
Mauritius	1952 - 1962 - 1972
Mauritania	1965* - 1976 - 1980
Mayotte	1958 - 1966 - 1978
Mozambique	1950 - 1960 - 1970 - 1980
Namibia	1946 - 1951 - 1960 - 1970
Niger	1959/60* - 1977
Nigeria	1952/53 - 1962 - 1963 - 1965/66* - 1971/73 - 1973
Reunion	1946 - 1954 - 1961 - 1967 - 1974
Rwanda	1952* - 1970* - 1978
St Thomas & Prince	1950 - 1960 - 1970
Sainte Hélène	1946 - 1956 - 1966
Senegal	1960/61* - 1970/71* - 1976 - 1978/79*
Seychelles	1960 - 1971 - 1977
Sierre Leona	1963 - 1974
Somalia	1975
South Africa	1951 - 1960 - 1970 - 1980
Sudan	1955/56* - 1973
Tanzania	1948 - 1948* - 1957* - 1957/58 - 1967 - 1973* - 1978

Togo	1958/60 - 1961* - 1971* - 1981
Tunisia	1946 - 1956 - 1966 - 1968/69* - 1975
Uganda	1948 - 1948* - 1959 - 1959* - 1969
Western Sahara	1950 - 1960 - 1970
Zaire	1955/57* - 1970° - 1975/76*
Zambia	1950* - 1963 - 1969 - 1974* - 1980
Zimbabwe	1948* - 1953/55* - 1962 - 1969

* National sample survey

° Administrative census

" Doubtful information

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THE AUTHORS

THE AUTHORS

- **Codjo ADJAHOUTONON** (Benin), Director of the Central Bureau of the Census, National Institute of Statistics and Economic Analysis (Cotonou, Benin).
- **Sylvestre BARANDEREKA** (Burundi), Demographer, Department of Demography (Bujumbura, Burundi).
- **Aurel BERCIU** (Romania), United Nations Census Expert (Bujumbura, Burundi).
- **Custodio CONIM** (Portugal), Demographer at the Centre for Population Studies, National Institute of Statistics (Lisbon, Portugal).
- **Noumassi M. DAKUYO** (Burkina Faso), Demographer at the National Institute of Statistics and Demography (Ouagadougou, Burkina Faso).
- **Glenda S. FINCH** (United States), Demographer at the Bureau of the Census (Washington, United States).
- **Michel D. FRANCOIS** (France), Statistician-Demographer at the National Ministry of Education (Paris, France).
- **Francis GENDREAU** (France), Demographer, Office of Overseas Scientific and Technical Research (ORSTOM, Paris, France).
- **Luc GOARNISSON** (France), Expert demographer.
- **Erik JORGENSEN** (France), Expert demographer.
- **Hamadou LOUGUE** (Burkina Faso), Demographer at the National Institute of Statistics and Demography (Ougadougou, Burkina Faso).
- **Mohammed MAZOUZ** (Algeria), United Nations Expert at the UNO Demographic Centre- Romania (Bucarest, Romania).
- **Raphaël MPOULOU** (Congo), Demographer at the Institute of Demographic Training and Research (Yaoundé, Cameroon).
- **Nuno Alves MORGADO** (Portugal), Demographer at the Centre for Population Studies, National Institute of Statistics (Lisbon, Portugal).
- **Gérard NOEL** (France), Demographer at the Department of Statistics (Nouakchott, Mauritania).
- **Daniel PANTOBE** (France), Lecturer at the Centre for the Development of Economic and Technical Cooperation (Paris, France).
- **K.V. RAMACHANDRAN** (India), Regional Adviser at the Population Division, Economic Commission for Africa (Addis-Abeba, Ethiopia).
- **Abdoulaye SADIO** (Senegal), Demographer at the Department of Statistics (Dakar, Senegal).

- **Dominique TABUTIN** (France), Assistant at the Department of Demography, Catholic University of Louvain (Belgium).
- **Fabrice TALLON** (France), Demographer.
- **Marie Paule THIRIAT** (France), Demographer.
- **Joseph TOVIESSI** (Benin), Demographer at the Central Bureau of the Census (Cotonou, Benin).
- **Chadli TARIFA** (Tunisia), Director, Department of Demographic and Social Statistics, National Institute of Statistics (Tunis; Tunisia).
- **Eric VILQUIN** (France), Assistant at the Department of Demography, Catholic University of Louvain (Belgium).
- **Peter O. WAY** (United States), Demographer at the Bureau of the Census (Washington, United States).

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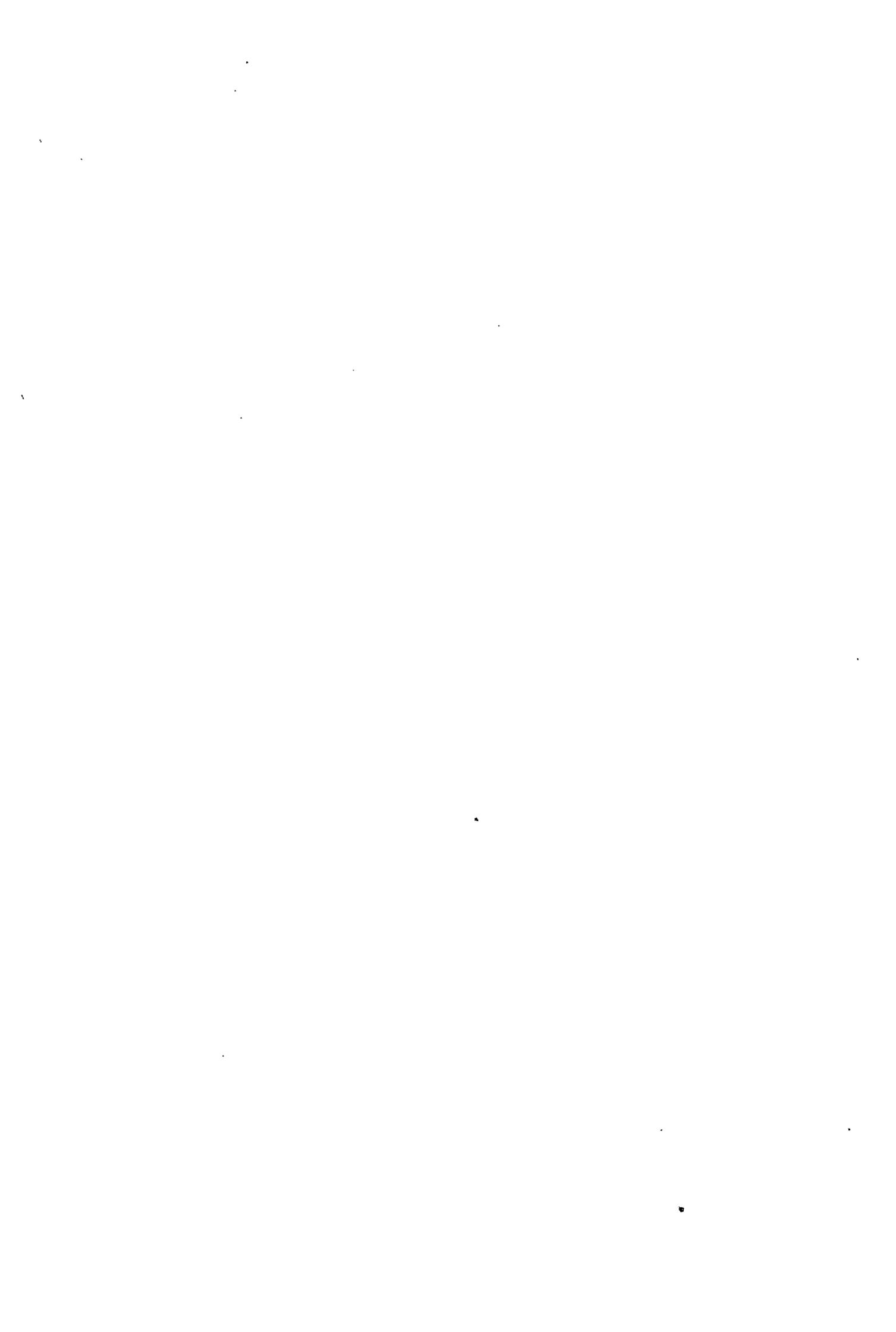
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The Groupe de Démographie Africaine [African Demography Group] IDP-INED-INSEE-MINCOOP-ORSTOM is an informal structure founded to establish liaison and coordination between French specialists interested in African population questions.

The Groupe undertakes methodological studies or reviews from data collected and techniques used in African countries; the Groupe reports on works and projects in the fields of African demography and gives information of interest to African demographers or to demographers interested in African demography.

PUBLICATIONS OF THE GROUP

- La démographie en Afrique d'expression française, bulletin de liaison [Demography in French speaking Africa, newsletter]. 29 issues of n° 0 (1971) to n° 28 (1978), Publication now undertaken by IFORD, Yaoundé; and 13 special numbers.
- Studies and Documents Series, started in 1979.
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A new institution has been created, called CEPED (Centre Français sur la Population et le Développement), to encourage closer cooperation among institutions involved in population studies in France.

CEPED is the successor to previous initiatives, starting with the « Groupe de Démographie Africaine » which evolved into the « Groupe de Démographie du Développement ».

CEPED involves the following participating bodies :

- * EHESS (High-Level Research and Training Establishment in Social Sciences)*
- * INED (National Institute for Demographic Studies)*
- * INSEE (National Institute for Statistics and Economic Studies)*
- * ORSTOM (French Institute for Cooperative Scientific Development Research)*
- * Pierre and Marie Curie University (Paris VI).*



CENTRE FRANCAIS SUR LA POPULATION ET LE DEVELOPPEMENT

15 rue de l'École de Médecine
75270 Paris Cedex 06
Tél. (1) 46 33 99 41

- ORSTOM,** Institut français de recherche scientifique
pour le développement en coopération
213, rue La Fayette, 75480 Paris Cedex 10
- IDP,** Institut de Démographie de Paris
22, rue Vauquelin, 75005 Paris
- INED,** Institut National d'Études Démographiques
27, rue du Commandeur, 75675 Paris Cedex 14
- INSEE,** Institut National de la Statistique et des Études Économiques
18 bd Adolphe Pinard, 75675 Paris Cedex 14
- MINCOOP,** Ministère de la Coopération et du Développement
20, rue Monsieur, 75007 Paris