



**UNITED NATIONS
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E/CN.14/POP/94
10 July 1973

Original: ENGLISH

ECONOMIC COMMISSION FOR AFRICA

Seminar on Techniques of Evaluation
of Basic Demographic Data

Accra, Ghana, 16-28 July 1973

ATTEMPT AT ADJUSTMENT OF SEVERELY INACCURATE AGE
STATISTICS: COUNTRIES OF TROPICAL AFRICA

M73-1641

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Cautionary Remark

In this paper a very hazardous assumption is made in an attempt to derive more detailed information from severely inaccurate age statistics than has been tried so far. It is assumed that age misstatements have similar effects on the population statistics of all countries in Tropical Africa. The extent to which the assumption may be justified remains undetermined, hence one essential step in scientific reasoning is lacking. The calculated results will have to be regarded as highly speculative.

2. It must be admitted on the other hand, that the current practice of substituting the model of a stable population for severely inaccurate age statistics likewise rests on an unproven assumption. It has not been demonstrated whether past fertility levels in African populations have been so nearly constant that the assumption of a stable population can be fully justified. It is also possible that a country's age distribution has been significantly affected by migration.

3. As a further consideration, severely inaccurate age statistics remain of very little use indeed unless methods for their adjustment can be found. The circumstances of the case, therefore, seem to necessitate the present attempt, and the exercise should be viewed from such a standpoint.

I. Introduction

4. A population's true sex and age structure - if that can be known - reflects past levels and trends in fertility, mortality and migration, the most decisive influence being usually the past trend in the crude birth rate. Where age statistics are fairly accurate - and where international migration is of minor importance or negligible - a simple method permits the calculation of the approximate trend of the birth rate over several decades of the past.^{1/} This may remain true also if the statistics are moderately inaccurate,

^{1/} United Nations, "Estimation of Fertility Trends by Indirect Methods using Data on Age Structure", paper presented at the Technical Meeting on Methods of Analysing Fertility Data for Developing Countries (United Nations document E/CN.9/AC.12/R.3, 28 April 1971), Budapest, 14-25 June 1971.

such as those generally obtained in Latin America, because a significant part of the errors introduced by moderate age misstatements can be removed by data smoothing.

5. But in most of Africa and South Asia age statistics are so severely inaccurate that data smoothing can produce only very dubious results. For here there occur massive transfers of numbers reported in any 5-year age group from adjacent age groups and beyond. The irregularities due to age misstatement are greater than any which might have been caused by fluctuations in the birth rate. Such fluctuations as may really have occurred are probably completely obliterated when the data are smoothed. Yet for most of these populations there is such a dearth of alternative statistics that the possibility of exploiting the severely inaccurate age statistics should be explored more carefully than has been done up to now.

6. In the use of severely inaccurate age statistics, it has become a common practice to substitute for the actual data a mathematical population model, usually the model of a stable population having constant levels of fertility and mortality.^{1/} In relation to the available statistics, a model is selected in which the proportion of population below some selected age limit (age 30, 35 or 40) is the same. The age limit is so selected as to make it likely that the balance of over-statements and under-statements of age, about that limit, is rather small. The model fitted in this way has its own age structure, which is then substituted for the original data, as well as its own levels of fertility and mortality. By this method, the average level of fertility of the past 30 to 40 years may be estimated with a reasonable degree of approximation, but a fair estimate of the mortality level depends on additional data, such as the rate of growth of the population, or a sample of its age distribution of deaths.

7. With special reference to Tropical Africa, additional methods have been designed, to exploit the results of sample investigations more fully.^{2/} Thus, estimates of fertility level can be refined somewhat by the corroborative use of data on number of children ever born alive, and number of children born alive in the past 12 months, according to age of woman. Estimates of mortality level

^{1/} Ansley J. Coale and Paul Demeny, Regional Model Life Tables and Stable Populations, Princeton, New Jersey, 1966; Manual IV, Methods of Estimating Basic Demographic Measures from Incomplete Data (United Nations publication, Sales No. 67.XIII.2)

^{2/} William Brass, et al., The Demography of Tropical Africa, Princeton, New Jersey, 1968.

can be improved by the joint use of data on numbers of children born alive and numbers of children still living. But again the assumption is implicit that the level of fertility has remained constant. Thus, no matter how the severely inaccurate age statistics, sometimes in conjunction with additional statistics for the same populations, have been used, the unverified (and perhaps unverifiable) assumption of constant fertility is implied. For purposes of population estimates and projections, the original age data are then rejected and substituted by a stable population model representing the population which might have resulted, if (which we do not know) fertility had been constant.

8. Perhaps the most systematic examination of Tropical African age reporting undertaken so far is that by Van de Walle.^{1/} Errors in single year age statements were found to be rather similar in most of the censuses and surveys, except that in the surveys conducted under French auspices, owing to special instructions given, there has been a relative avoidance of ages which are exact multiples of ten. As for irregularities in reporting affecting five-year age groups, the data of each of several individual countries (or portions of countries) were compared with stable population models also calculated separately for each of those countries. Implicitly, the dubious assumption that the true age distribution of each country is of a stable type could not be avoided in that context.

9. But it is possible to put this awkward shoe on the other foot, and this is what the present paper is trying to accomplish. The past trend in birth rates may have undergone fluctuations, but it is possible that there has been some constancy in the manner in which ages are misstated. If so, then a method exists for the adjustment of severely inaccurate age statistics and consequent discovery of past birth-rate fluctuations, but we do not know to what extent the assumption (constancy in the manner of age misstatement) is true. Implied in this new approach is the substitution of one unverified assumption by another.

10. Partly favouring the latter assumption, namely, similarity in pattern of age errors, a few facts of

^{1/} Etienne Van de Walle, "Characteristics of African Demographic Data", in William Brass, et al., op. cit., especially pages 13-50.

experience may be cited, namely:

- (1) Mere superficial inspection of the data for countries with severely inaccurate age statistics shows the recurrence of a major irregularity caused, apparently, by a reluctance to report adolescent ages. At somewhat earlier ages for women (roughly between ages of 10 and 19) than for men (roughly from 15 to 24) almost invariably smaller numbers are reported than in subsequent age groups. The observation is so wide-spread as to suggest that at least part of the age misstatements in most of these countries may have much in common.
- (2) In the case of moderately inaccurate age statistics, an exhaustive study has shown that preferred and avoided age statements (in terms of single years of age) are generally the same among populations differing widely in language and customs.^{1/} For instance, even though a final age digit of 5 is preferred in all those populations, there is always markedly less preference for stating the age of 55.
- (3) A ground-breaking study which unfortunately has not attained the deserved publicity has shown the use of severely inaccurate age statistics for the detection of past fluctuations in the birth rate in the case of one single country, namely Burma, where censuses had been taken at intervals of ten years.^{2/} It was found that, relative to the average of the successive census age distributions, the size of individual age groups fluctuated, and that these fluctuations recurred in the same cohorts at successive censuses. Implicit in this calculation is the quite plausible and seemingly proven, assumption that at successive Burmese censuses the age errors were similar.
- (4) Benefitting by that discovery, an attempt has also been made to utilize the severely inaccurate age statistics of the numerous Turkish censuses

^{1/} R. Bachi, "The Tendency to Round Off Age Returns: Measurement and Corrections," Bulletin of the International Statistical Institute, vol. XXXIII, Part IV, India, December 1951, pp. 195-200.

^{2/} H. Bernardelli, "Population Waves", Journal of the Burma Research Society, vol. XXI, Part I, (April 1941).

taken at intervals of five years.^{1/} Again it was found that fluctuations of similar amplitude recurred in identical cohorts at all censuses, pointing at fluctuations in the birth rate during past periods, while age errors evidently remained similar.

11. Whereas the above-cited results of experience seem to be encouraging, it must be pointed out that in the present paper the underlying assumption is much more hazardous. In the foregoing studies^{1/} it was implied, and in fact demonstrated, that age errors tended to remain similar in the course of time within the same country (Burma, Turkey). But in the following it will have to be assumed that age errors tend to be similar among a number of countries as diverse as those of Tropical Africa. It must be borne in mind that these countries differ in customs, taboos, attitudes towards birth and death, and the geographic and administrative conditions of census-taking. If in spite of the varying circumstances errors of age reporting are similar, it may have to be supposed that they are related to some basic conditions which, nevertheless, these countries have in common. In particular, the biases in the reporting of ages of adolescents, perhaps related to what might be considered the "normal" ages for as yet unmarried, marriageable, and already married young persons, would have to be similar despite a wide variety of other conditions. It is evident that the basic assumption - similarity of age errors - remains unverified.

12. This paper is thus concerned primarily with presenting a procedure, using the average percentage age distribution by sex obtained from as many censuses or demographic surveys as possible, for countries in sub-Saharan Africa. The aim is to eliminate, if possible, the greater part of the errors and irregularities reflected in the reported age distributions. The main objective of this paper is not only to outline the basic principle and assumptions of this method but also to illustrate its application by using information of individual countries and at the same time to examine and evaluate critically the results thus obtained.

^{1/} United Nations, "Estimation of Fertility Trends by Indirect Methods using Data on Age Structure", paper presented at the Technical Meeting on Methods of Analysing Fertility Data for Developing Countries (United Nations document, E/CN.9/AC.12/R.3, 28 April 1971), Budapest, 14-25 June 1971.

^{2/} The studies referred to in footnotes 2, page 4, and 1 above.

II. Description of the method

13. The percentage age distribution by sex taken from 30 sets of census or survey data of various African countries have been averaged with the results shown in Table-1.^{1/} The average percentage distribution for the female population was then fitted into a stable population model^{2/} on the basis of proportions cumulated up to age 40, together with an average median age (\bar{m}) of the fertility schedule. On the basis of the estimated female fertility level just described, the selection of a model age distribution for males was then made.

^{1/} Thirty-eight sets of sex-age data by five-year groups for Tropical African countries were originally at hand. Upon closer examination it was found, however, that for eight countries the data had already been smoothed before publication. The eight countries are Botswana 1971, Ethiopia 1970, Kenya 1969, Lesotho 1966, Madagascar 1966, Southern Rhodesia 1969, Uganda 1969 and Zambia 1969. For this reason, those eight sets of data were not included in the present calculations.

^{2/} At this point the reader may question why a stable population model was assumed in relation to the average of the 30 sets of age data while, on the other hand, the assumption that each of these populations is stable had to be avoided. First of all, there seemed to be no alternative since the basis for any other assumption is lacking. It will be recognized, however, that the assumption of a stable population model is more pertinent to an average of numerous age distributions than to any one age distribution taken individually. The censuses and surveys which yielded the data had been taken at various dates. In some countries, perhaps, birth rates have risen at times in the past while in others, perhaps, they have fallen. In some countries the age structures are further affected by net ~~immigration~~ while in others they are affected by emigration. In the combined average, therefore, some of the divergent population trends of individual countries tend to be compensated by those of other countries, hence a more regular trend, and consequently a more regular age distribution, is to be expected for the average than for each individual age distribution. If the average is likened to a stable population model, individual age distributions can nevertheless diverge widely from that model.

Table-1: Average Percentage Distribution for Tropical Africa taken from various Censuses and Demographic Surveys

	Percent	
	Males	Females
0- 4	17.749	17.246
5- 9	15.795	14.320
10-14	10.494	8.575
15-19	7.659	7.954
20-24	7.068	9.121
25-29	7.948	9.694
30-34	6.637	7.617
35-39	6.477	6.659
40-44	4.989	4.907
45-49	4.466	4.011
50-54	3.140	2.895
55-59	2.287	2.031
60-64	1.900	1.820
65-69	1.346	1.260
70 and over	2.044	1.890
All ages	99.999	100.000

14. The next step was to divide the average percentage of each age group by the corresponding percentages of each group in the selected stable population distribution; in this manner, a series of correction factors by sex and age were obtained. These correction factors were then applied to the reported percentage distribution of each individual country with the aim of eliminating the greater part of the errors of age reporting as found in the original country data. As demonstrated by the results given in the Annex, this method of adjustment does not, in fact, eliminate in all the cases the irregularities of age structure due to faulty age statements. For this reason, it appeared useful to apply a still further smoothing by means of a simple formula^{1/} in order to reduce these residual irregularities.

^{1/} See p.12 of United Nations, Manual III, Methods for Population Projection by Sex and Age (ST/SOA/Ser.A, Population Studies, No.25)

15. In determining what model stable population would best fit the average age distribution of the population in question, several experimental calculations have been carried out. As a first step, the female age distribution given in Table-1 has been cumulated to proportions under age thirty or C(30), thirty-five or C(35) and forty or C(40). Comparison of the female age distribution with the model stable population with the same C(30), C(35) and C(40) showed that the selection of a female stable population with C(40) would give the best result. Next, on the basis of the average female percentage age distribution cumulated to proportion under age forty or C(40) = 81.186% and the estimated mean age of the fertility schedule (\bar{m}) of 28.2 years, a female model stable population corresponding to female mortality with $e_0 = 37.5$ and $GRR = 3.1$ was appropriately selected as a closest approximation of the female average age distribution under consideration. As for the male model stable population, the choice is made on the estimated fertility level of the female population corresponding to $GRR = 3.1$ and with the male mortality equivalent to $e_0 = 36.91$. The selected model stable population by sex was then divided, age group by age group, by corresponding average percentage distribution for Tropical Africa in order to obtain the estimated series of correction factors, as shown in Table-2.

16. The comparison between the average percentage age distribution and the selected stable model distribution becomes still more evident in Figure-1. The familiar characteristics of patterns of age misstatement, in severely inaccurate age data, which have already been noted by various scholars, once more come clearly to light.^{2/}

^{1/} The appropriateness of this model may also be judged from the averages of fertility and mortality levels previously estimated (mainly by the stable population technique) separately for each of the 30 sets of age data. According to those previous estimates, GRR should have averaged 3.0, and e_0 for both sexes should have averaged 37.4 years, but it is possible that these averages are slightly biased.

^{2/} See Etienne Van de Walle, "Characteristics of African Demographic Data", in William Brass, et al., The Demography of Tropical Africa, Princeton, New Jersey, 1968, pp.12-87; Manual IV, Methods of Estimating Basic Demographic Measures from Incomplete Data (United Nations publication, Sales No. 67.XIII,2).

Table-2 : Correction Factors estimated on the basis of Average Percentage Age Distribution by Sex for Tropical Africa

Age	Males			Females		
	Average Percentage Distribution	Interpolated Age Distribution at GRR (28.2) corresponding to 3.1 and 36.899	Correction Factor (2) ÷ (1)	Average Percentage Distribution	Interpolated Age Distribution at exact level of fertility corresponding to GRR (28.2) 3.1 and 37.5	Correction Factor (5) ÷ (4)
	(1)	(2)	(3)	(4)	(5)	(6)
0-4	17.749	17.208	96.952	17.246	17.215	99.820
5-9	15.795	15.634	86.318	14.320	13.536	94.525
10-14	10.494	11.779	111.864	8.575	11.595	135.219
15-19	7.659	13.245	153.764	7.954	10.094	126.905
20-24	7.068	8.860	125.354	9.121	8.760	96.042
25-29	7.948	7.600	95.622	9.694	7.553	77.914
30-34	6.637	6.497	97.891	7.617	6.462	84.837
35-39	6.477	5.519	85.209	6.659	5.484	82.355
40-44	4.989	4.645	93.105	4.907	4.620	94.151
45-49	4.466	3.853	86.274	4.011	3.868	96.435
50-54	3.140	3.126	99.554	2.895	3.199	110.501
55-59	2.287	2.470	108.002	2.031	2.582	127.129
60-64	1.900	1.865	98.158	1.820	1.987	109.176
65-69	1.346	1.303	96.805	1.260	1.424	113.016
70 and over	2.044	1.425	69.716	1.890	1.616	85.503
All ages	99.999			100.000		
$\frac{C(40)}{m}$				81.186		
Birth rate		46.870		28.2	46.449	
Death rate		26.370			25.994	
Growth rate		20.500			20.455	

...contd.

	(1)	(2)	(3)	(4)	(5)	(6)
Mortality level		9			8	
‰		36.899			37.5	
CRR (28.2)					3.1	

But the direct application of the implied correction factors to individual age data does not always lead to smooth results, evidently as errors in the individual data are not always precisely the same. A "saw tooth" effect, i.e., recurrent fluctuations among successive five-year age groups, often remains, requiring additional smoothing.

III. General Findings

17. Comparison of the reported average age distribution of women in the age group 15-44 with the selected stable population model suggests some overstatement for this combined group (See Figure-1). The deficiencies in the proportions at ages 10 to 19 years is balanced by excesses both at under 10 and in the middle of the reproductive period. It seems likely that more of the deficiency is due to age misstatements than to the differential omission of females in the 10-19 age group.^{1/} In other words, this may be a consequence of the enumerators' preference to consider a girl either as a child or as a marriageable adult rather than as an adolescent.^{2/} As a consequence, it seems that there is an excess of observed over fitted percentages of women in the most fertile years of age, but the extent to which this is compensated in the whole reproductive age range of 15-44 years cannot be ascertained. These characteristics of age reporting could lead to underestimation of total fertility if current births were accurately reported.

18. Little can be said about the adult male age distribution in detail because of the complications of migration, particularly temporary movements of labour. It is believed that censuses and sample surveys in Tropical Africa often omit some migrant male labourers not in places of permanent residence. The percentages of both males and females at the higher ages, are probably much affected by the patterns of mortality of the elderly and the demographic history of the distant past so that little comment can be made. It is probable that old persons often exaggerate their ages when asked at a census.

^{1/} In African censuses and surveys it often appears that some young men, perhaps migratory labourers, are omitted, but it has nowhere been suggested that young women were missed in any significant numbers.

^{2/} In the case of boys the same phenomenon is noted but here it seems to be concentrated at a somewhat higher age, presumably because marriageable young men are ordinarily a few years older than marriageable young women.

19. The age distribution reported for each country in the region of Tropical Africa, as well as the adjusted and smoothed distributions in percentage form, are tabulated and graphed in the Annex.

IV. How Particular Findings May Be Interpreted

20. To give one example, the reported, adjusted and smoothed percentage age distributions of Zaire are also shown in this text, Table-3; in Figure-2A, the reported and adjusted distributions are compared, and in Figure-2B the reported and the finally smoothed. It can be seen that the results of the adjustment procedure still leave some irregularities in the data which lack plausibility, and that these residual irregularities virtually disappear after smoothing. However, even then the population pyramid does not resemble that of a stable population very closely.

21. To bring out this latter fact, Figure-2C has been drawn, comparing the finally smoothed data with a stable population especially calculated from the original data for Zaire. The following facts come to light. Relative to the stable model, the adjusted and smoothed distributions have deficits around the age of 20 years and around the age of 60 years, whereas around the ages of 30 years and 50 years the adjusted and smoothed percentages are relatively in excess. The finding suggests possible alternative interpretations which, however, will have to be considered very guardedly.

22. On the other hand, it is quite possible that the direction or intensity of age misstatements in Zaire differed significantly from that found on the average of all 30 sets of observations. On this assumption the true population may conceivably - though not demonstrably - have closely resembled a stable population, with the implication that in Zaire, as compared with other African countries, there is a stronger preference to state ages in the thirties rather than the twenties, and in the fifties rather than the sixties.

23. On the one hand, it is equally possible - though again not demonstrable - that age errors in Zaire were quite similar to those in the other countries considered, with the implication that Zaire's population could not have been stable. Birth rates may have been comparatively low some sixty years, and again some twenty years, prior to the date of observation, and comparatively high some fifty and some thirty years before that date. This is the interpretation which interests us in the present context, and it can be stated that it is no more hypo-

Table-3: Percentage Distribution of Population by Sex and Age for Zaire, 1955-1958

Age	Reported percentage Distribution		Adjusted Percentage Distribution		Smoothed Percentage Distribution	
	Males	Females	Males	Females	Males	Females
0- 4	16.998	16.777	16.506	16.891	16.342	16.768
5- 9	12.996	12.790	11.235	12.194	12.702	13.027
10-14	11.018	8.219	12.344	11.209	11.009	10.718
15-19	6.515	7.188	8.728	9.200	9.454	9.276
20-24	7.074	8.285	8.881	8.025	8.424	7.802
25-29	8.529	9.211	8.168	7.238	8.298	7.767
30-34	8.072	10.577	7.914	9.050	7.535	8.122
35-39	7.064	7.578	6.029	6.294	6.189	6.850
40-44	5.650	6.018	5.269	5.715	5.183	5.376
45-49	5.593	4.485	4.833	4.362	4.897	4.621
50-54	4.472	3.671	4.459	4.091	4.051	3.683
55-59	1.916	1.610	2.073	2.064	2.391	2.352
60-64	1.495	1.409	1.470	1.552	1.455	1.541
65-69	0.994	0.839	0.964	0.956	0.954	0.949
70 and over	1.614	1.342	1.127	1.157	1.116	1.148
All ages	100.000	99.999	100.000	99.998	100.000	100.000

thetical than the alternative assumption that the population was nearly stable.

24. The argument does not preclude other possible interpretations. The population may have been neither stable, nor need the errors of age statement have been similar everywhere, leaving a wide latitude for possible true circumstances. Among these, however, we do not wish to dismiss too lightly our assumption of similarity in age errors, for otherwise the detailed age data would be practically worthless. Certainly, our assumption cannot be very precise, as witnessed by a certain lack of symmetry between the smoothed age distributions for either sex.

V. Other Apparent Findings

25. Provided that the assumption of similarity of age errors deserves some credence, close inspection of the results graphed in the Annex permits various tentative observations. In those graphs, a comparison is made only between reported and finally smoothed age distributions. To show further comparisons of the smoothed distributions with stable population models, calculated separately in relation to each original set of data, would have taken up too much space. It would perhaps also have led too far while the accuracy of the basic assumption remains in doubt. But the general shape of a stable population at high or fairly high levels of fertility is sufficiently well known (see Figure-2C with respect to Zaire) to permit the detection of apparent irregularities of the smoothed age pyramids by mere inspection of the graphs shown in the Annex.

26. There are a number of countries for which the smoothed age pyramid indeed resembles a stable population fairly closely. Among these may be listed at least Cameroon (1960), Dahomey (1961), Liberia (1959-60), Mali (1960-61), Niger (1959-60), Tanzania (1967) and Upper Volta (1960-61). If our method has some validity, one may conclude that in those countries the levels of the birth rate may indeed have been fairly constant over several decades. Note may be taken also of the result for Ghana, known to have had an influx of international migrants, most of them probably young men: the smoothed data for Ghana, in fact, show a slight bulge for young adult males while otherwise they resemble a stable population. The fact that in a number of instances a resemblance to a stable population is found may seem somewhat encouraging but it does not prove that the method is accurate.

27. In most of the remaining countries, the final results evidently deviate significantly from stable population models. Inspection of the graphs seems to lead to various tentative suggestions. There may have been rises, or temporarily rather high levels of fertility, for instance, in Malawi around 1950, in Namibia about 1945-50, in Nigeria around 1940, and in Togo since 1945, those being the time periods when members of relatively enlarged age groups seem to have been born. Large birth deficits are suggested, on the other hand, in the Central African Republic about 1935-45, in Chad during 1940-45, in Congo during 1920-40, in the Ivory Coast during 1935-45, or in Sierra Leone around 1950. Comparatively low fertility appears to have prevailed in Gabon since about 1920, as compared with previously higher fertility.

28. These and other conclusions, of course, are invalidated if the underlying assumption of a sufficient similarity in the patterns of age misstatement proves to be untenable.

VI. Concluding note

29. We seem to be left with two alternative approaches to an assessment of African population trends in past decades. If we assume that fertility has been constant (which cannot be proven) we can substitute a stable-population model for the actual data, implying that the detailed effects of age misstatements remain unfathomable and variable. If we assume that the pattern of age misstatements is constant (which also cannot be proven) we can calculate a partly "corrected" age distribution from inaccurate though detailed data, implying that population trends, and especially birth rates, in Tropical Africa have been variable not only among countries but also within some of these countries in the course of time.

30. Which of the two approaches has greater validity cannot now be determined, and perhaps it never will be. Too little is known about Africa's demographic past to permit an assessment whether the fertility rises, declines, or temporary deficits, suggested here, are in fact likely to have occurred.

31. At least the possibility should be admitted that in many African countries birth rates could have varied significantly in the course of time. This admission would have some implications for probable future trends. The

rates may also vary in the course of the future, and need not conform to any uniform trend pattern as is now often suggested in the relevant population projections.

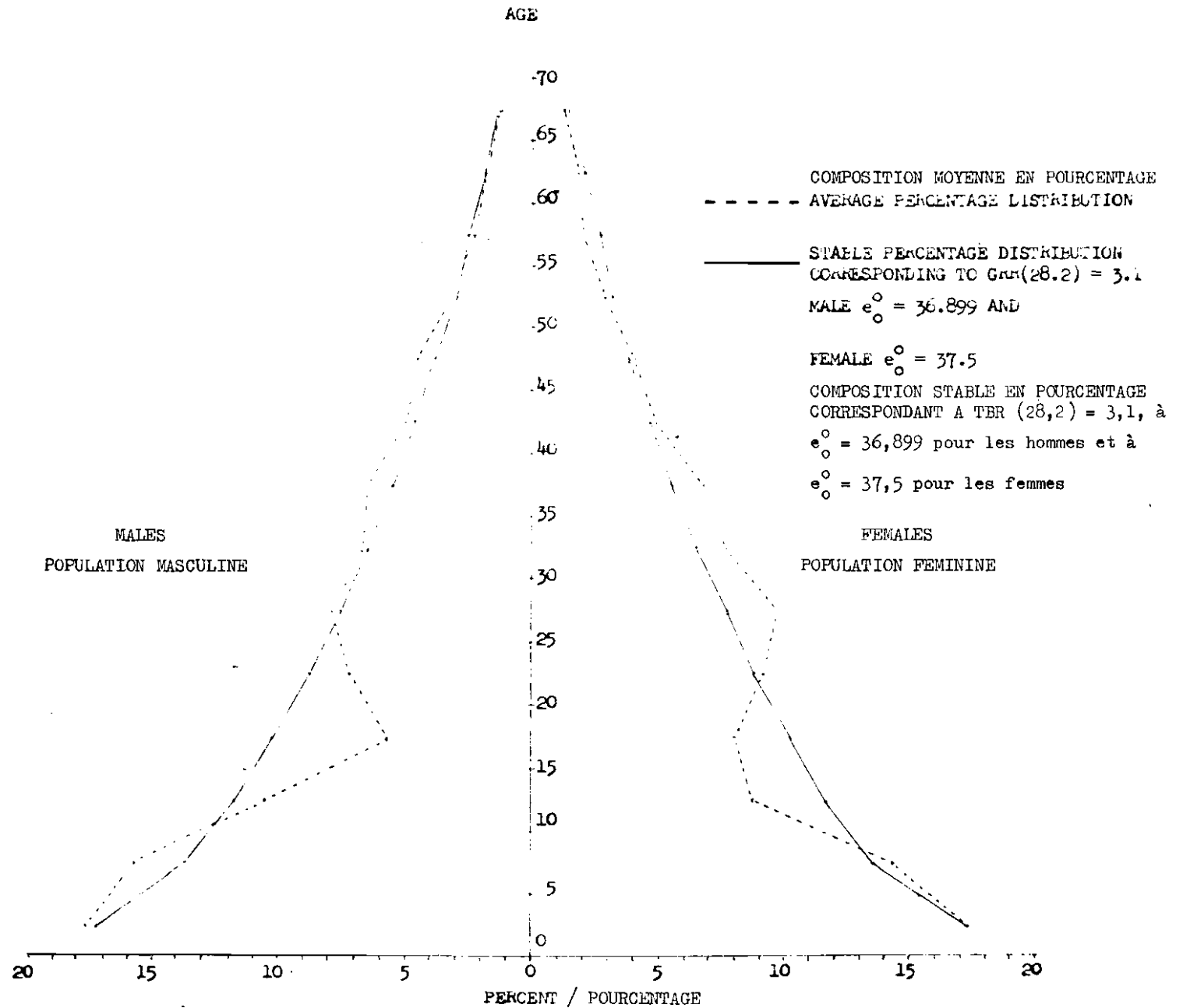


Figure 1 : AVERAGE PERCENTAGE DISTRIBUTIONS BY SEX AND AGE FOR TROPICAL AFRICA AND ESTIMATED STABLE DISTRIBUTION
COMPOSITIONS MOYENNES EN POURCENTAGE, PAR SEXE ET PAR AGE, POUR L'AFRIQUE TROPICALE ET COMPOSITION STABLE ESTIMEE

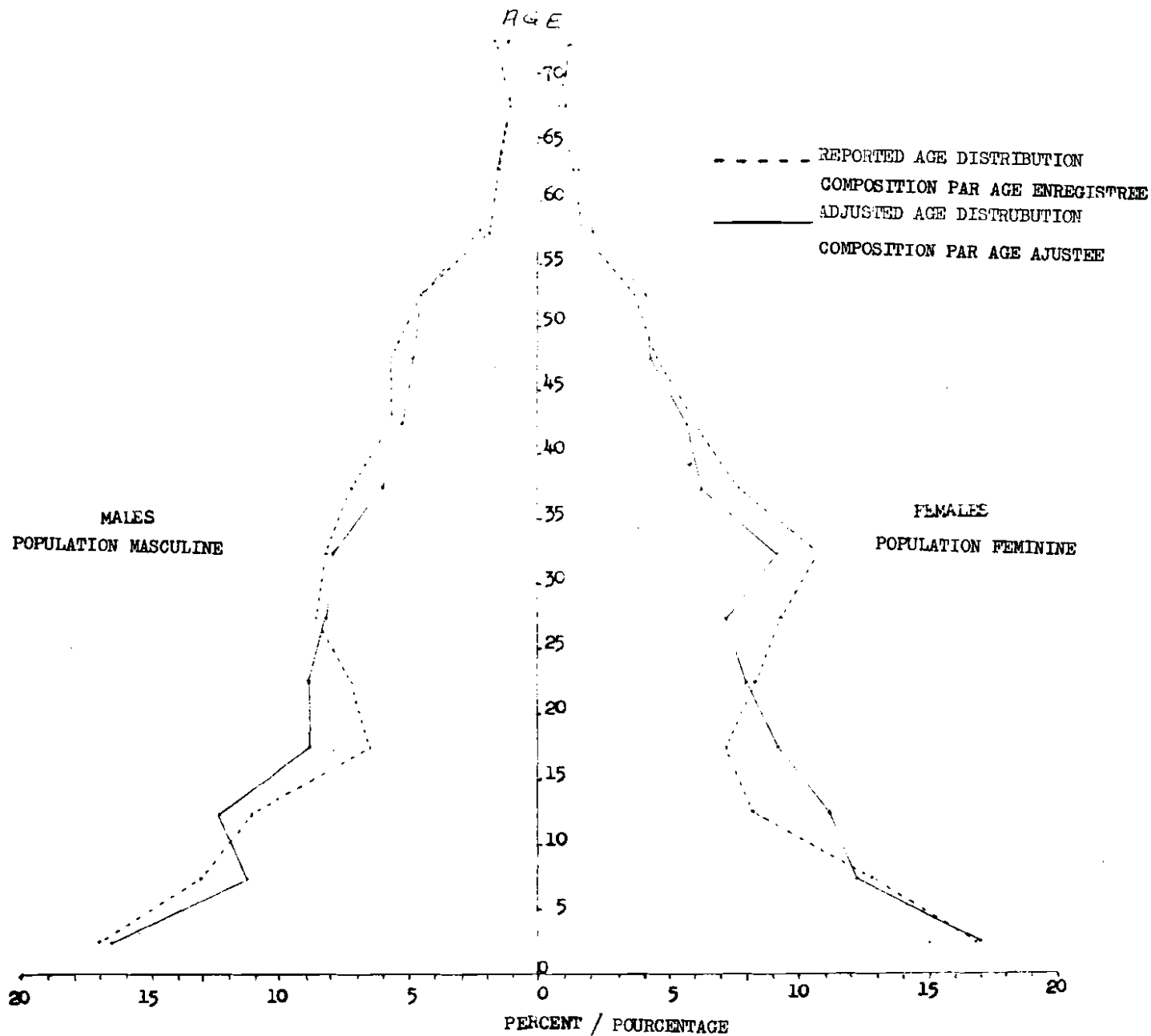


Figure 2A: REPORTED AND ADJUSTED AGE DISTRIBUTIONS BY SEX FOR ZAIRE, 1955-58

COMPOSITIONS PAR AGE ET PAR SEXE ENREGISTREE ET AJUSTEE POUR LE ZAIRE (1955-1958)

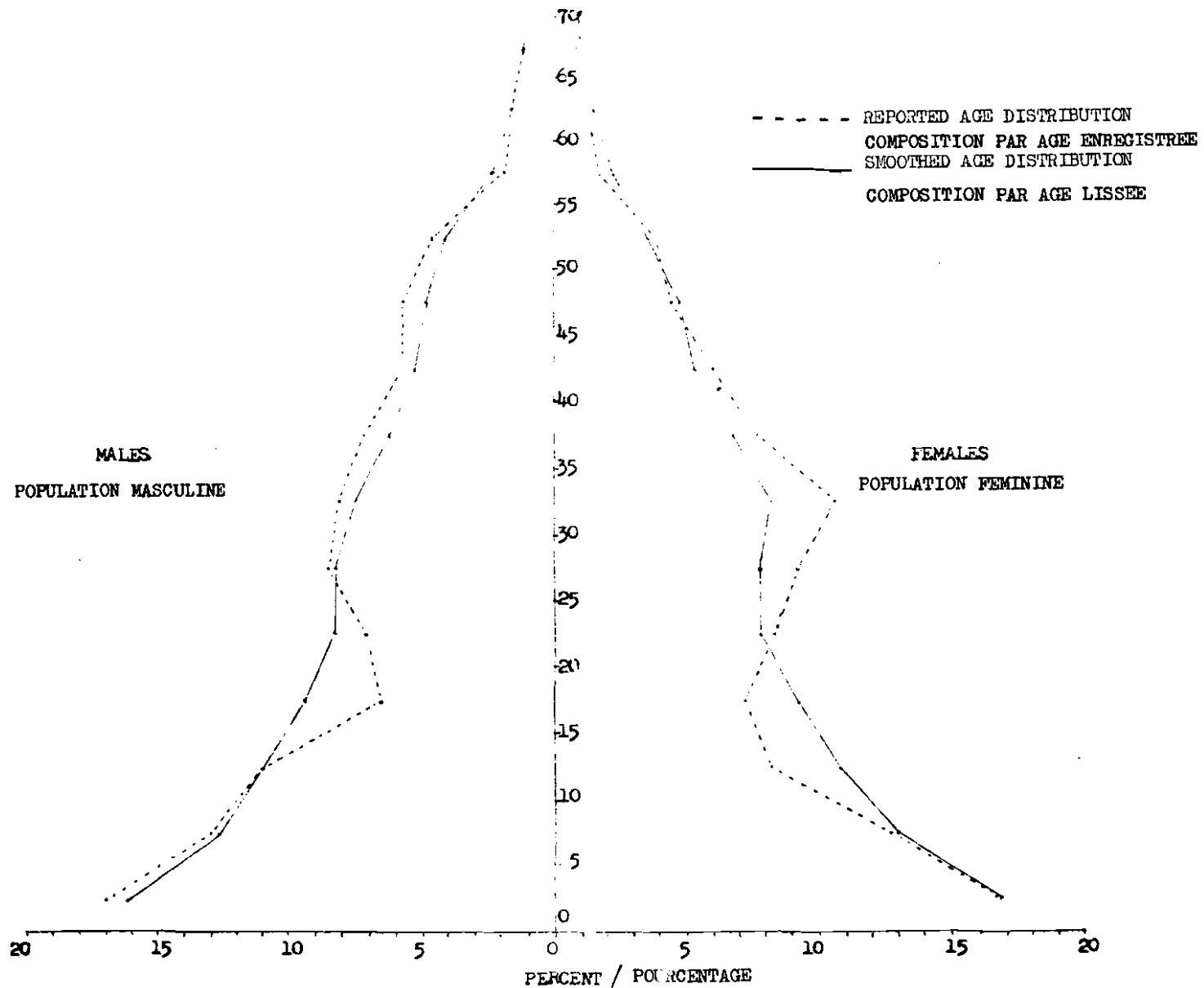


Figure 2B: REPORTED AND SMOOTHED AGE DISTRIBUTIONS BY SEX FOR ZAIRE, 1955-58

COMPOSITIONS PAR AGE ET PAR SEXE ENREGISTREE ET LISSEE POUR LE ZAIRE (1955-1958)

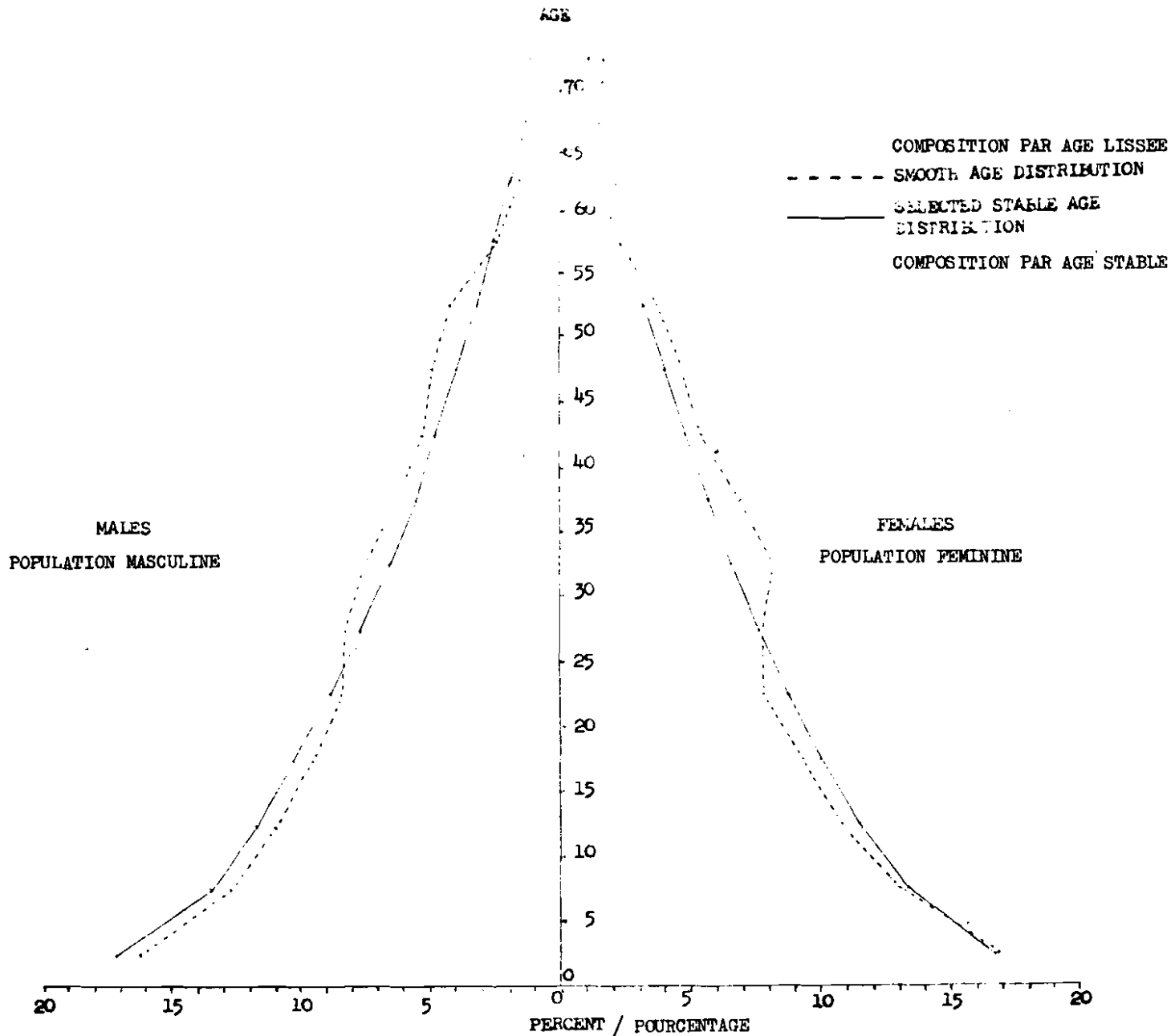


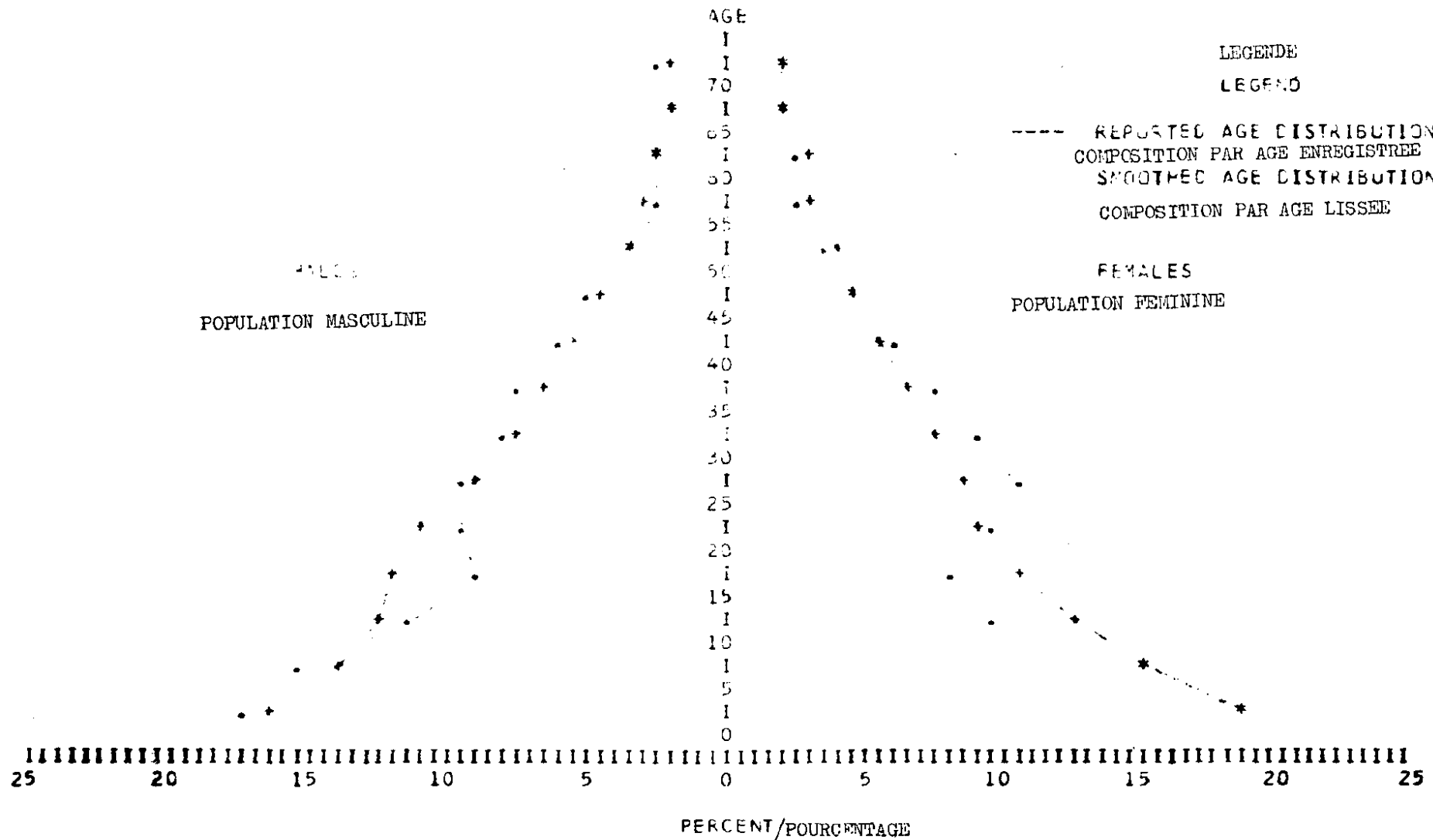
Figure 2C:

SMOOTHED AND SELECTED STABLE AGE DISTRIBUTIONS BY SEX FOR ZAIRE

COMPOSITION LISSEE ET COMPOSITION STABLE CHOISIE, PAR AGE ET PAR SEXE, POUR LE ZAIRE

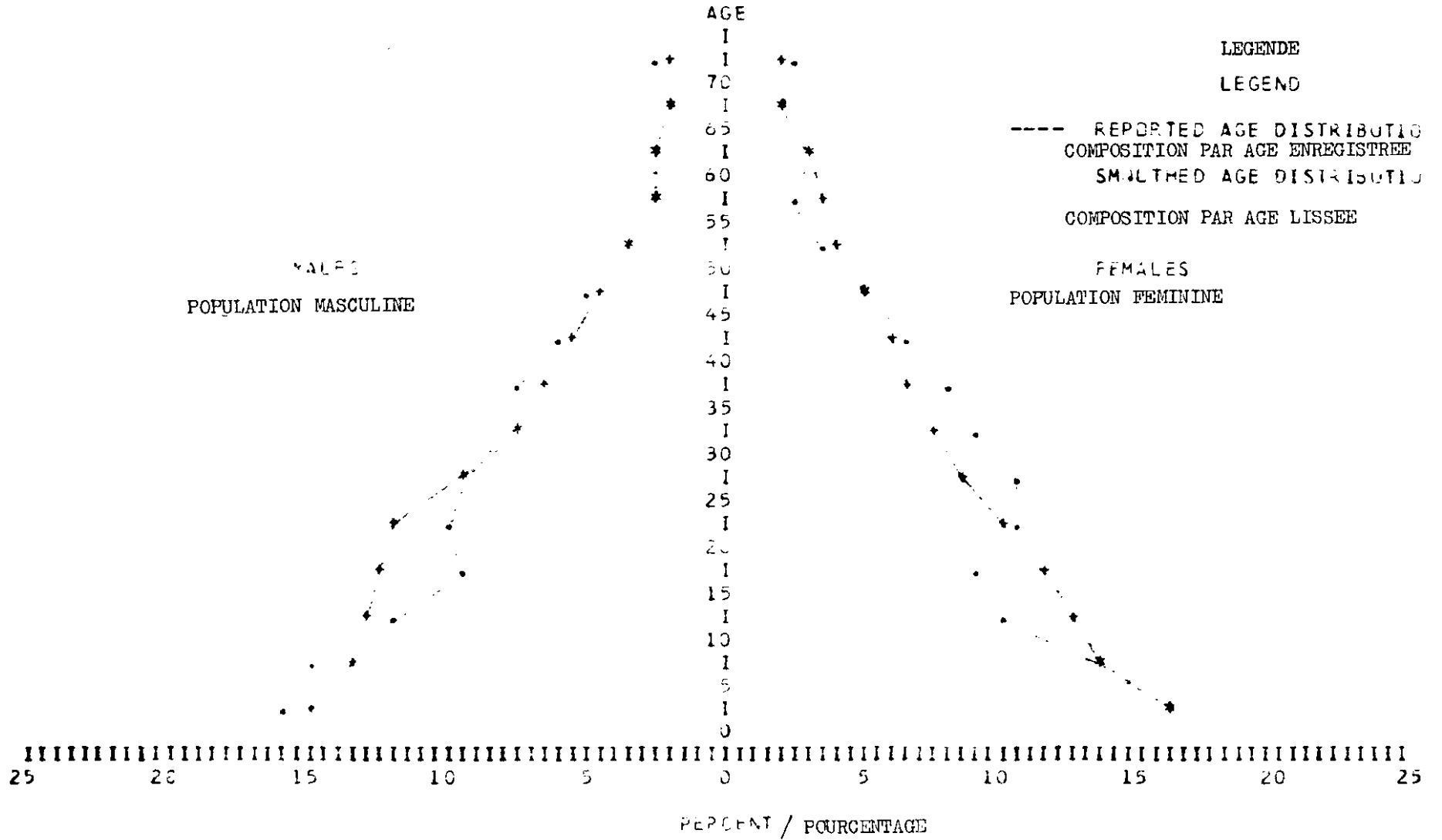
ANGOLA

0 - 1960



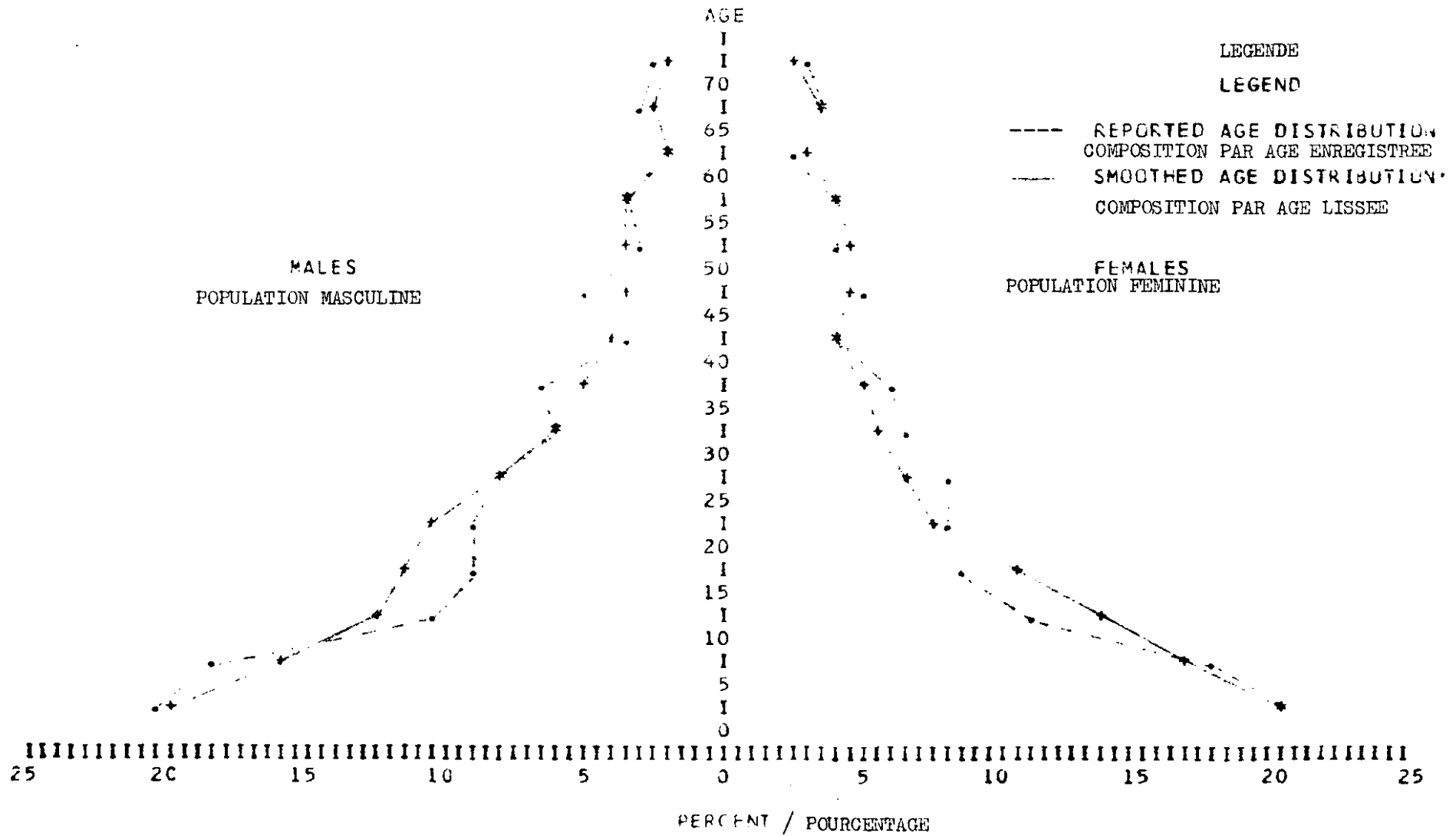
ANGOLA

1950 - 1951



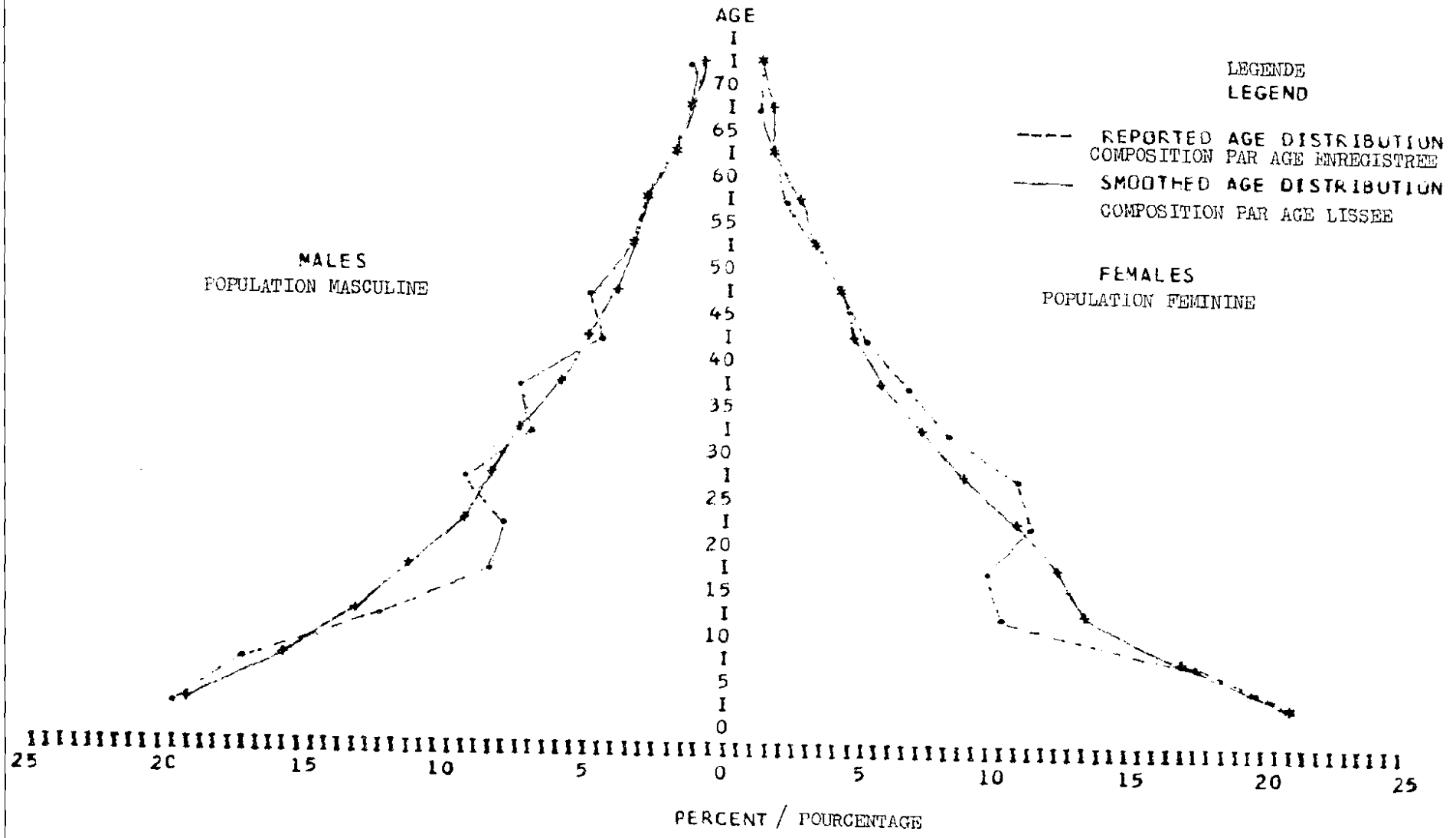
BURUNDI

0 - 1965



CAMEROON, WEST.

0 - 1960



LEGENDE
LEGENDE

--- REPORTED AGE DISTRIBUTION
COMPOSITION PAR AGE ENREGISTREE
— SMOOTHED AGE DISTRIBUTION
COMPOSITION PAR AGE LISSEE

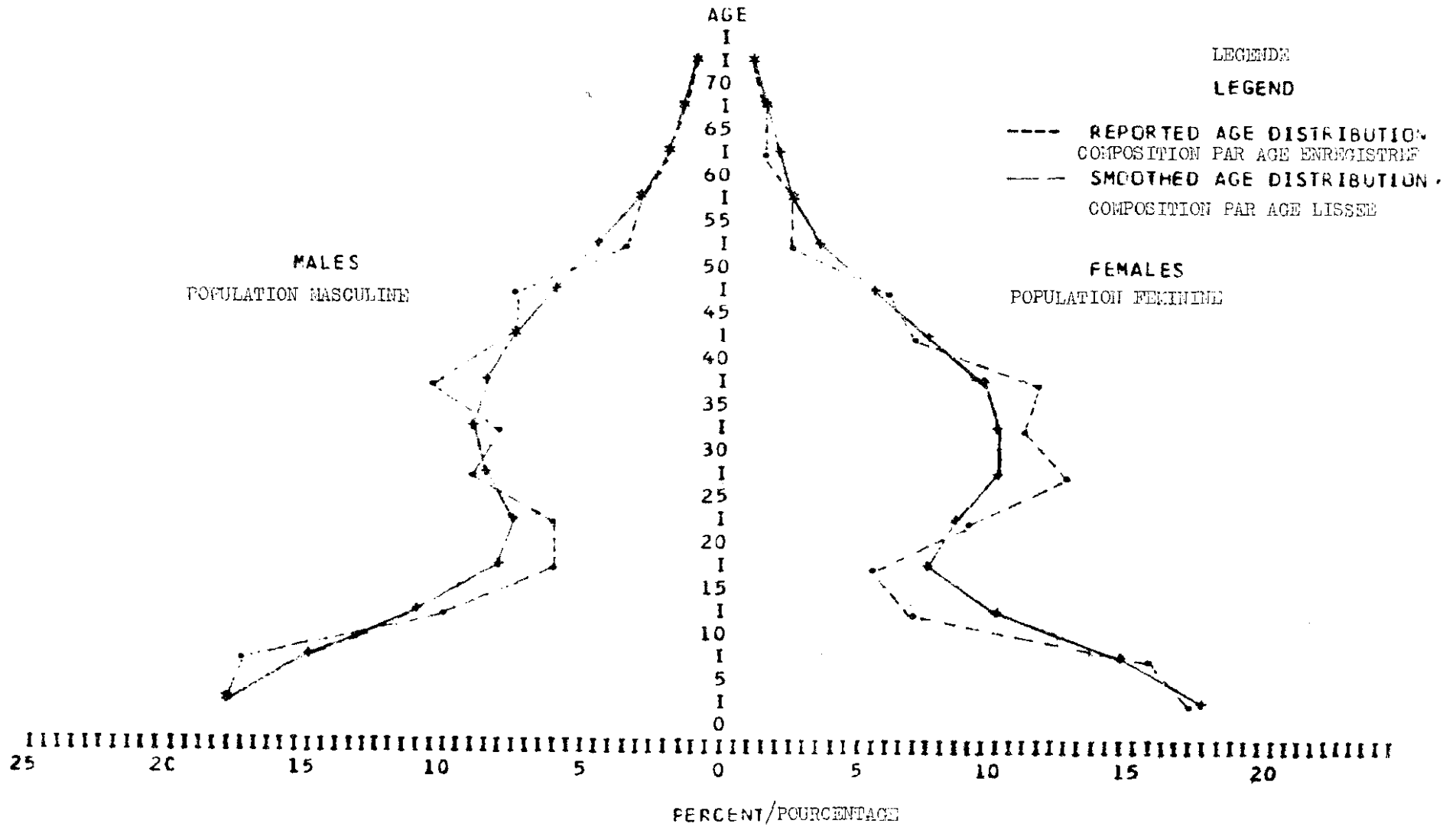
MALES
POPULATION MASCULINE

FEMALES
POPULATION FEMININE

PERCENT / POURCENTAGE

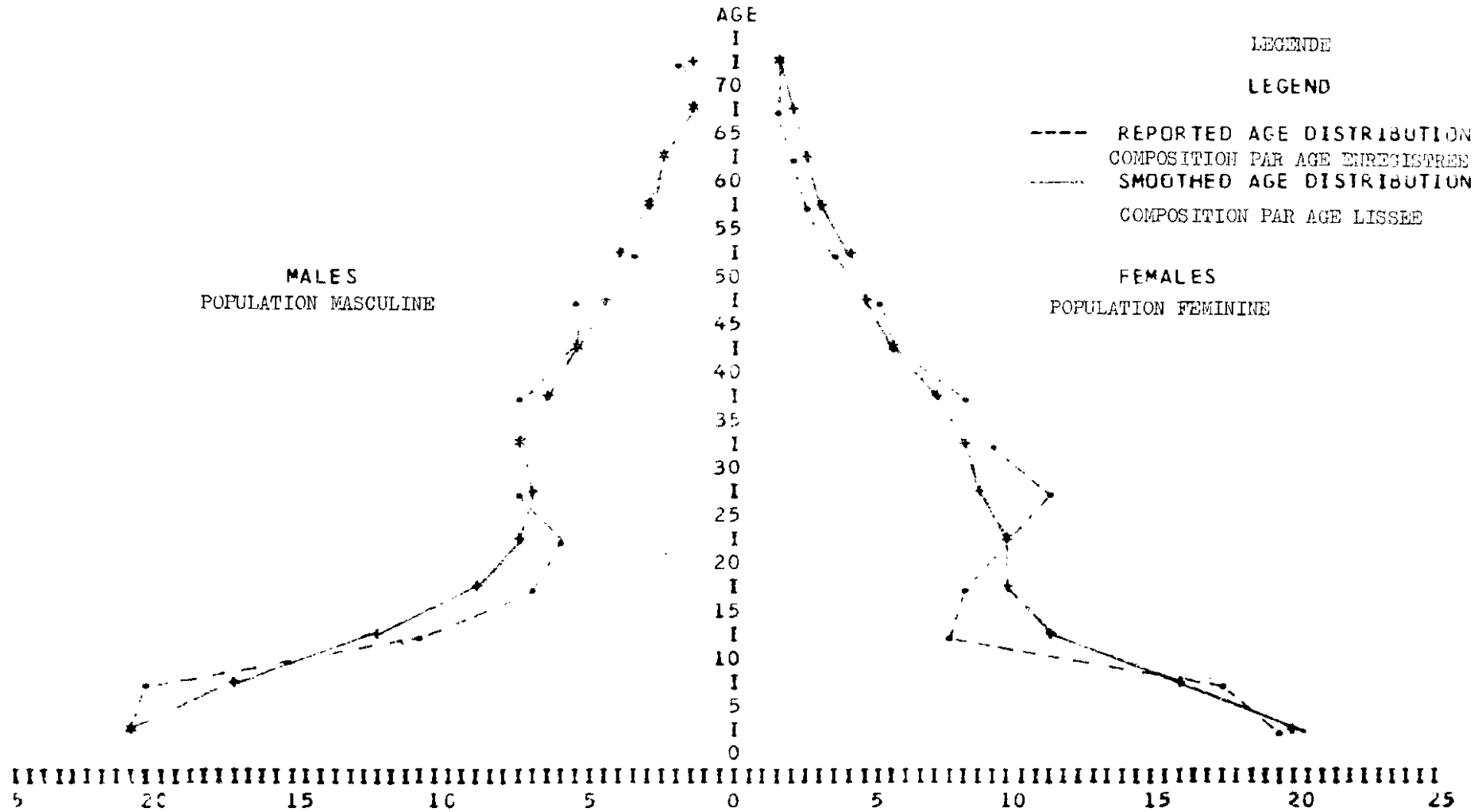
CENT.AFR.REP.
REPUBLIQUE CENTREAFRICAINNE

1959 - 1960



CHAD / TCHAD

1963 - 1964



COMORO ISLANDS
ILES COMORES

0 - 1958

MALES
POPULATION MASCULINE

FEMALES
POPULATION FEMININE

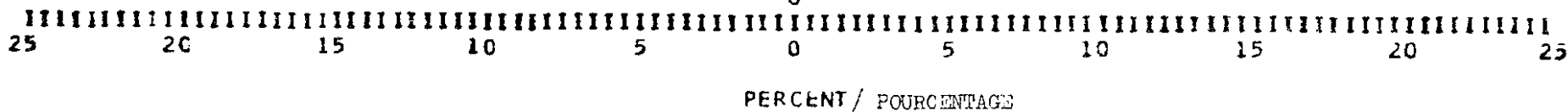
AGE

1
1
70
1
65
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60
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LEGENDE

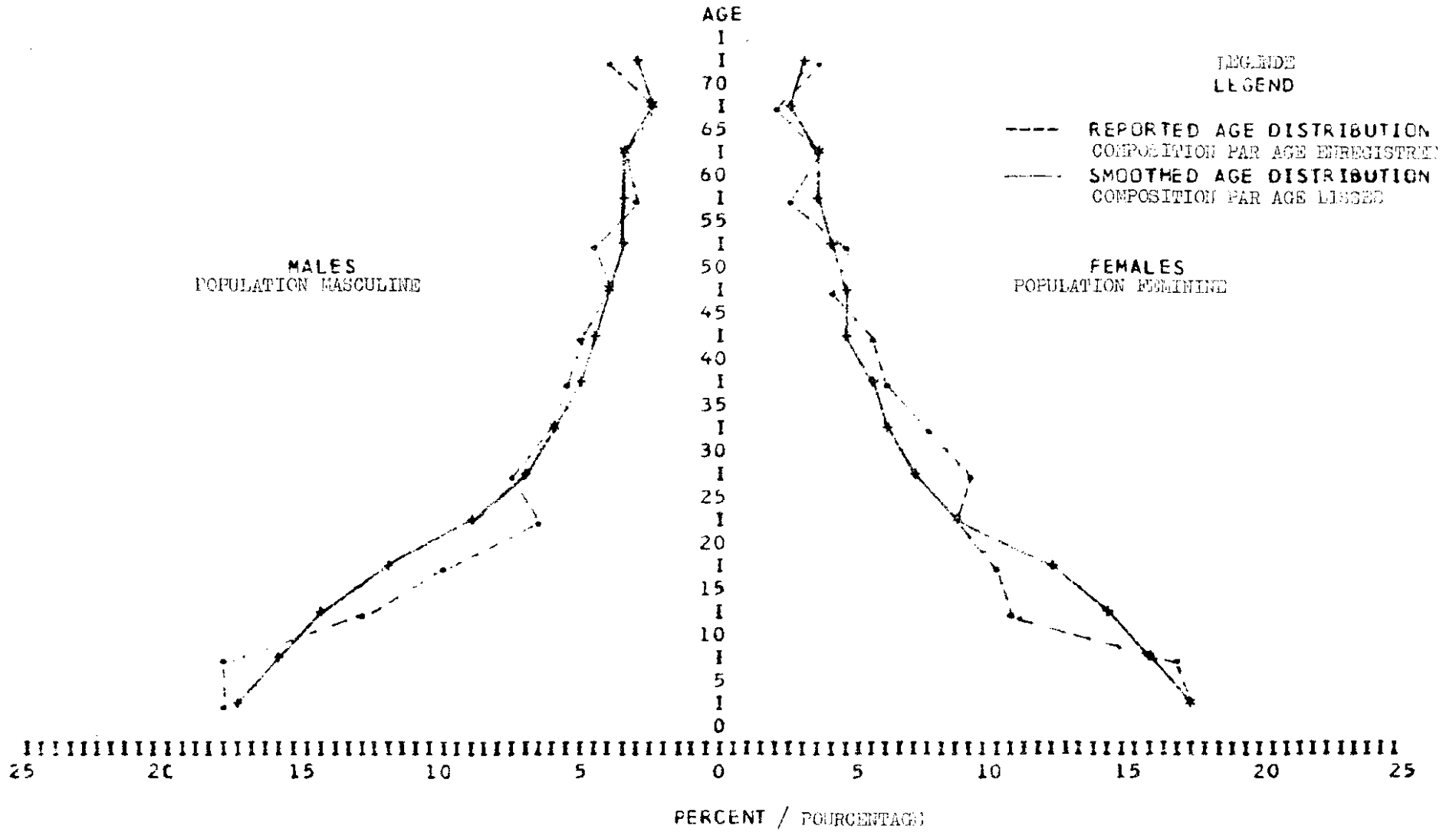
LEGENDE

- REPORTED AGE DISTRIBUTION
COMPOSITION PAR AGE ENREGISTREE
- SMOOTHED AGE DISTRIBUTION
COMPOSITION PAR AGE LISSEE



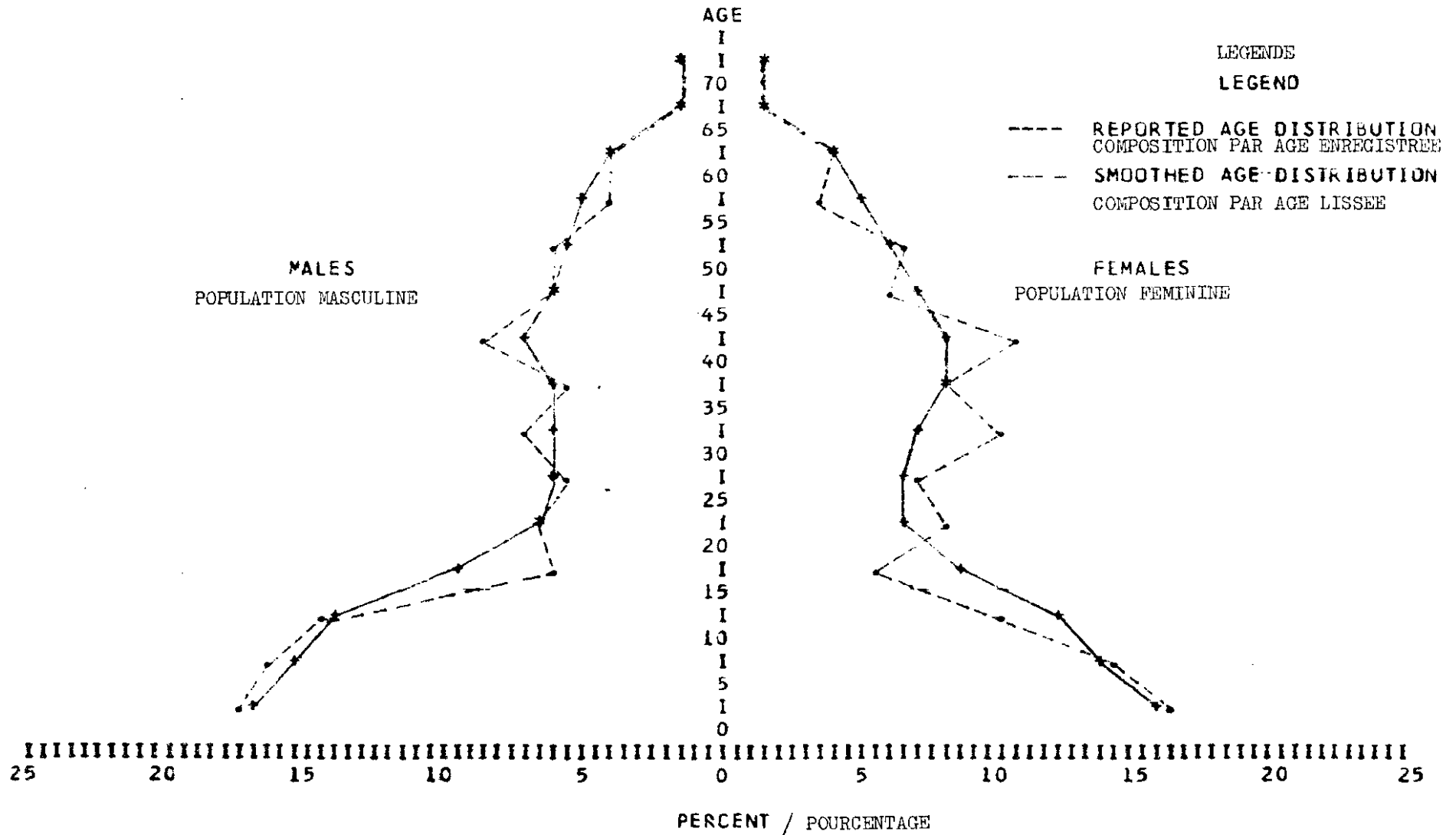
COMORO ISLANDS
ILES COMORES

0 - 1966



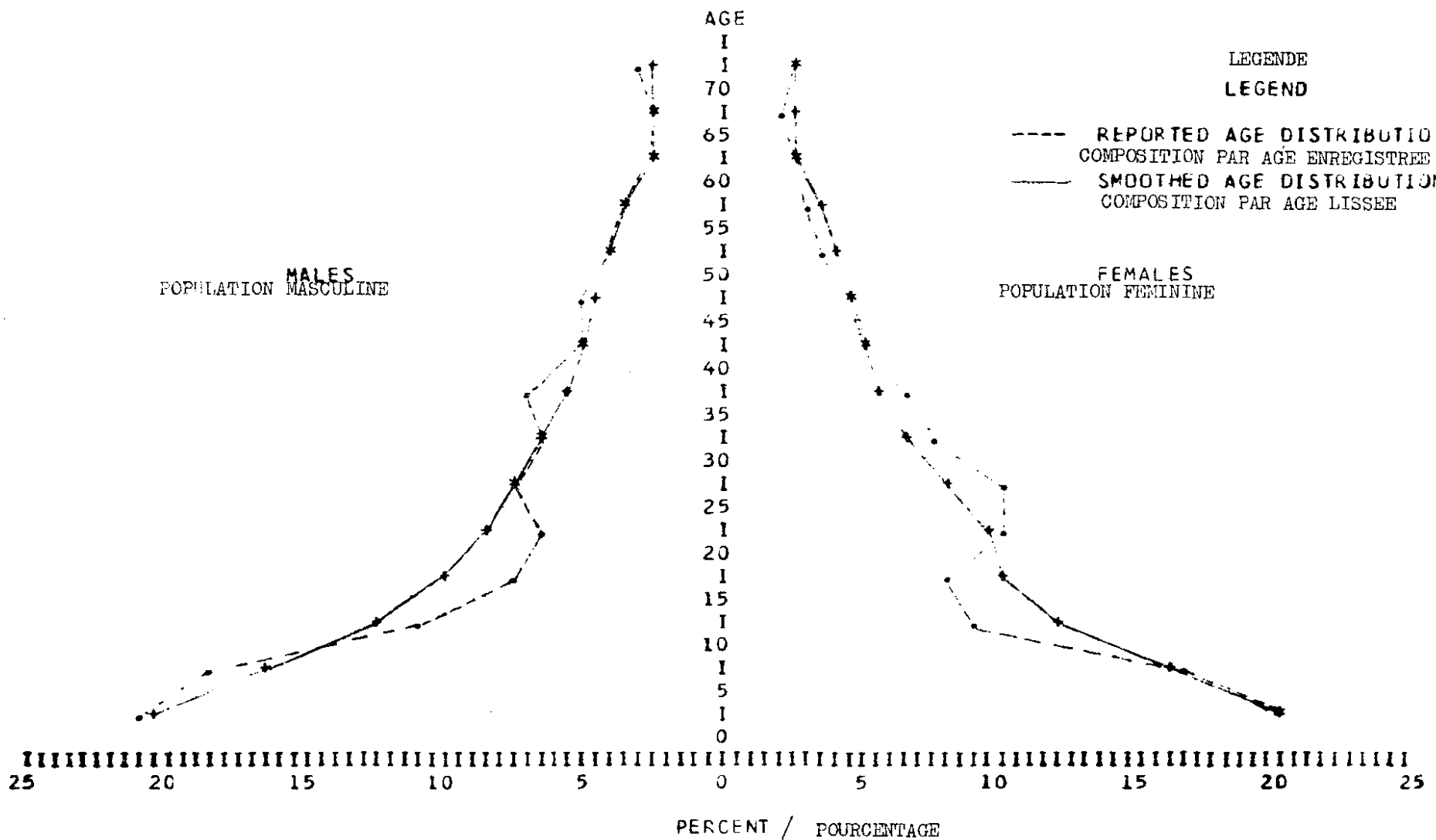
CONGO

1960 - 1961



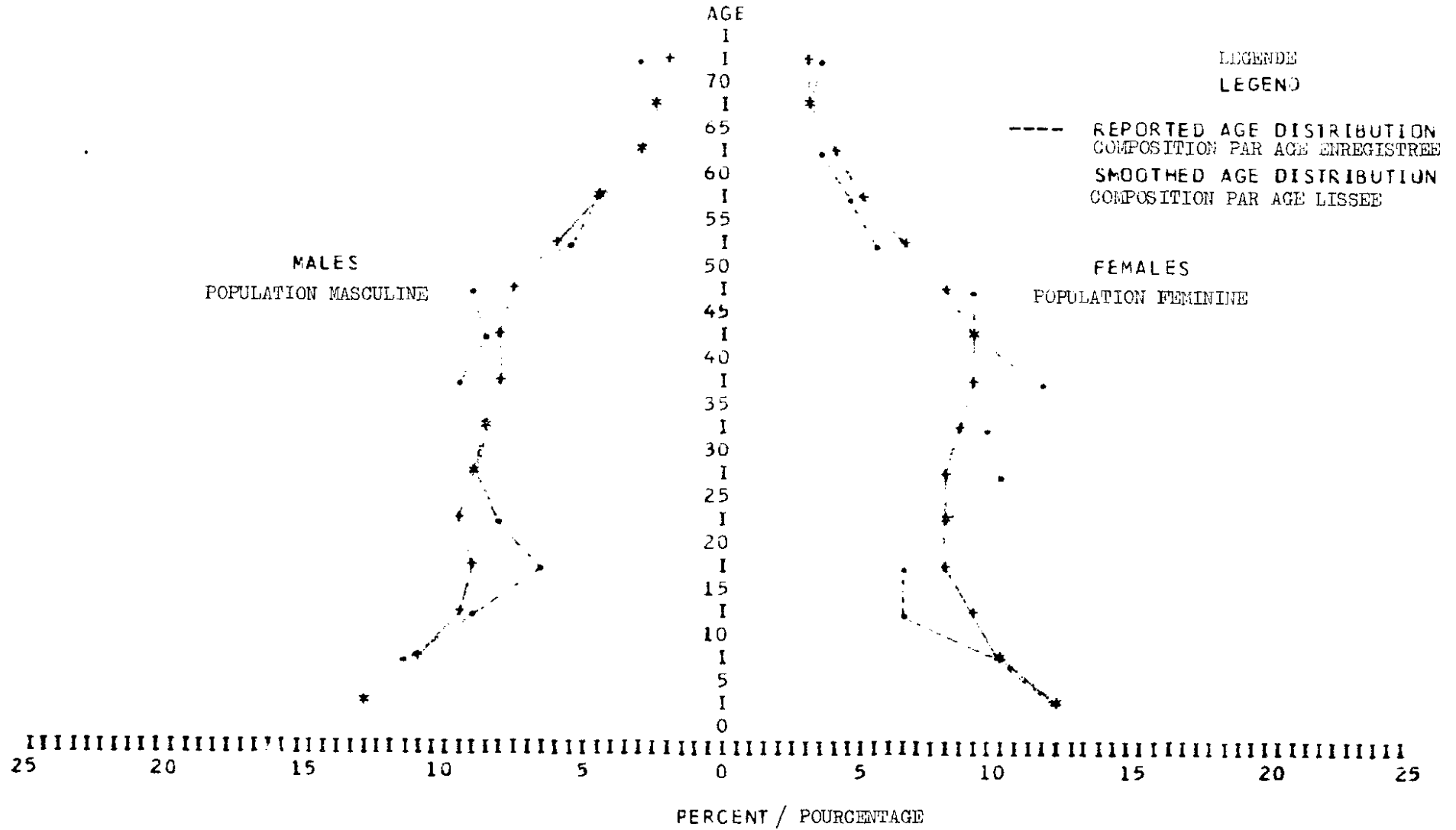
DAHMEY

0 - 1961



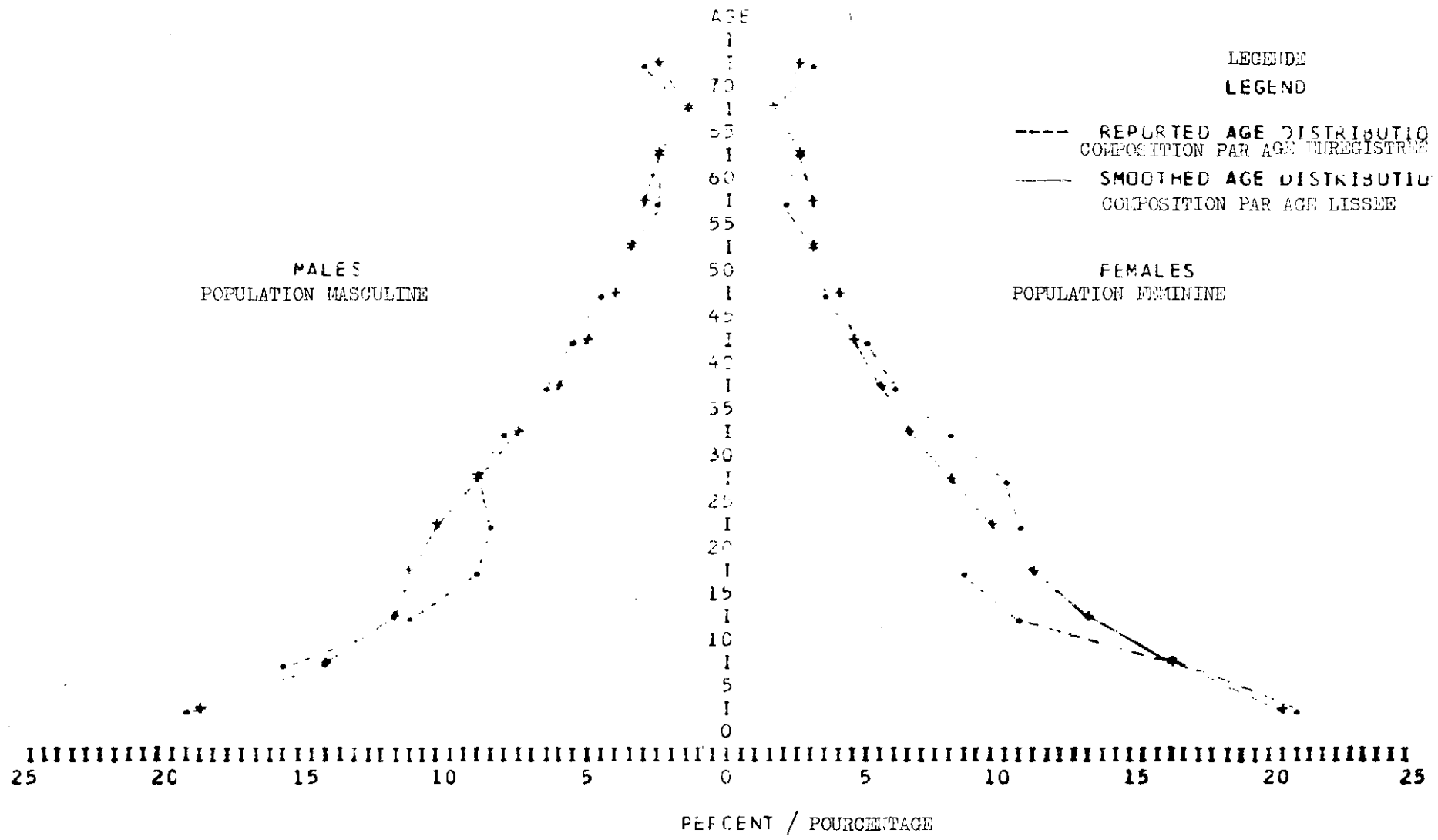
GABON

1960 - 1961



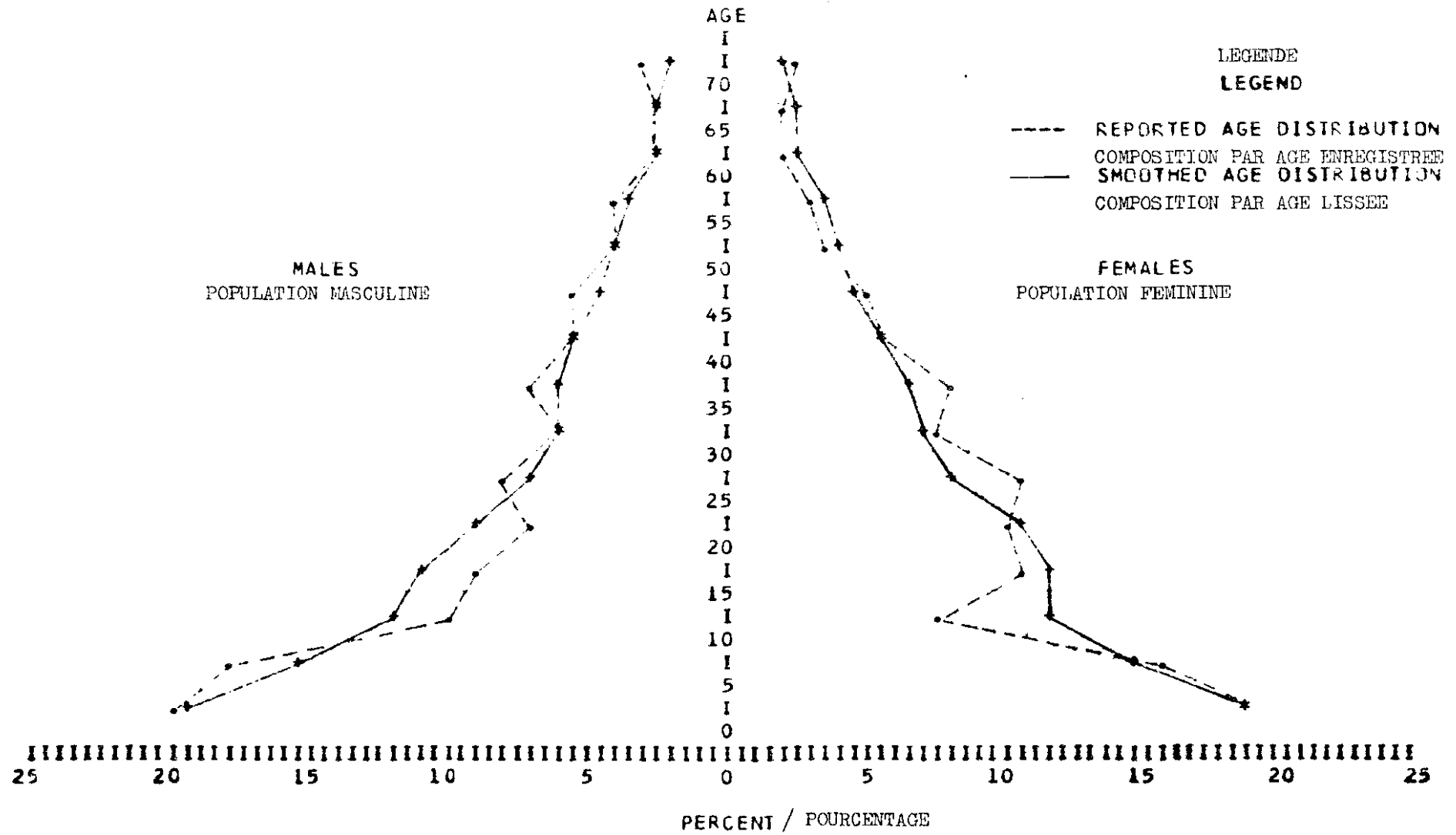
GHANA

0 - 1960



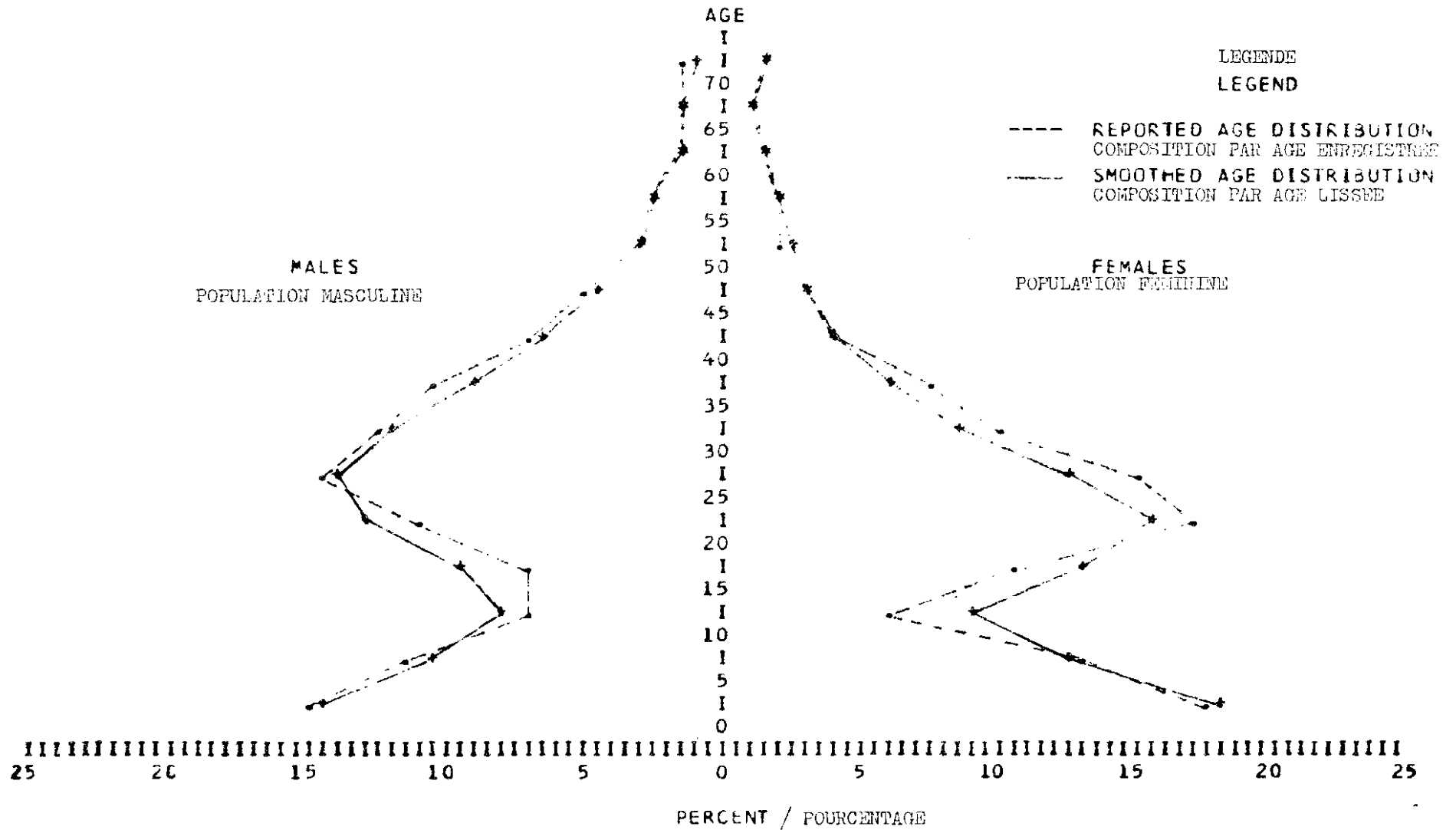
GUINEA
GUINEE

1954 - 1955



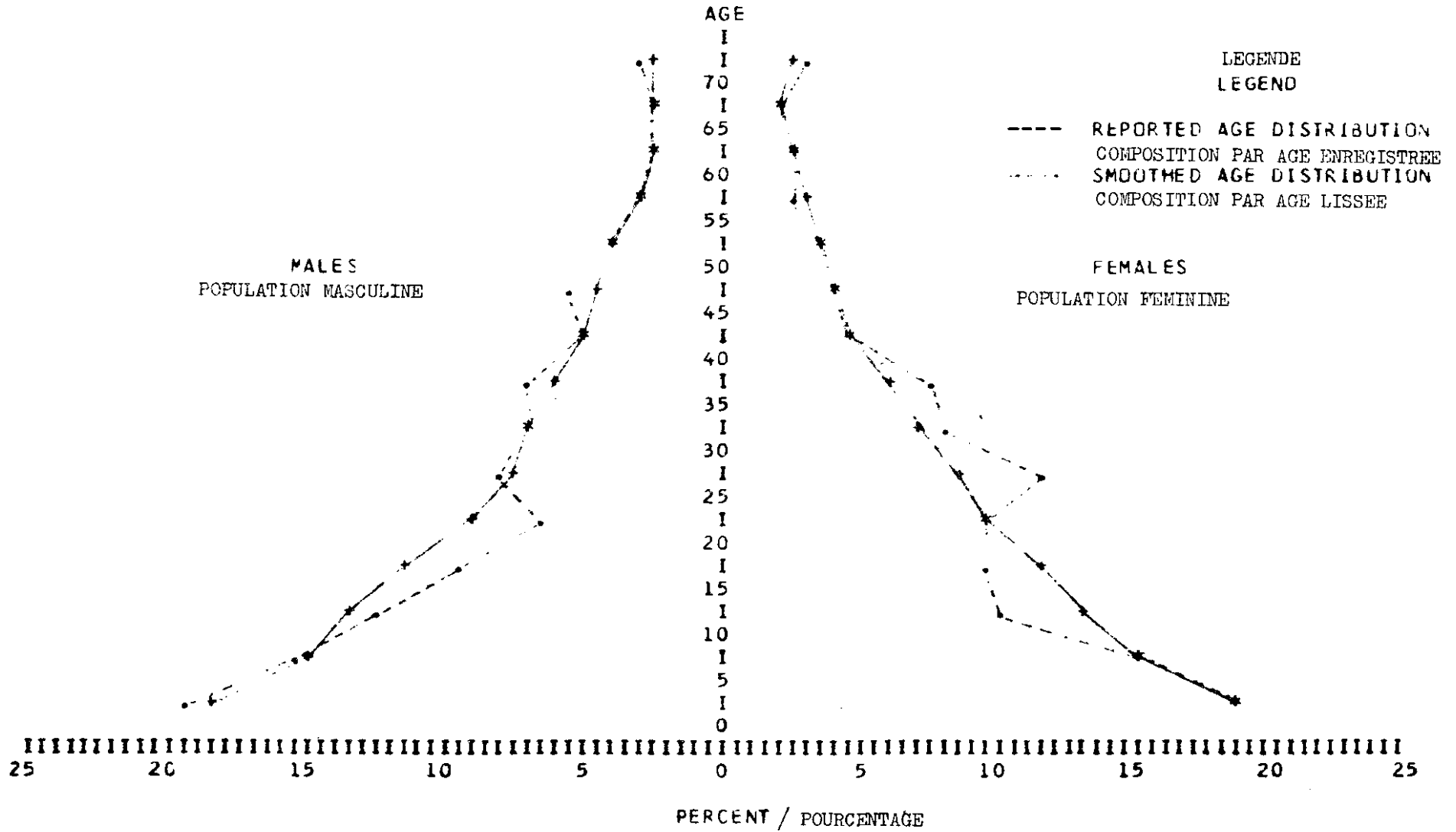
IVORY COAST
COTE D'IVOIRE

1957 - 1958



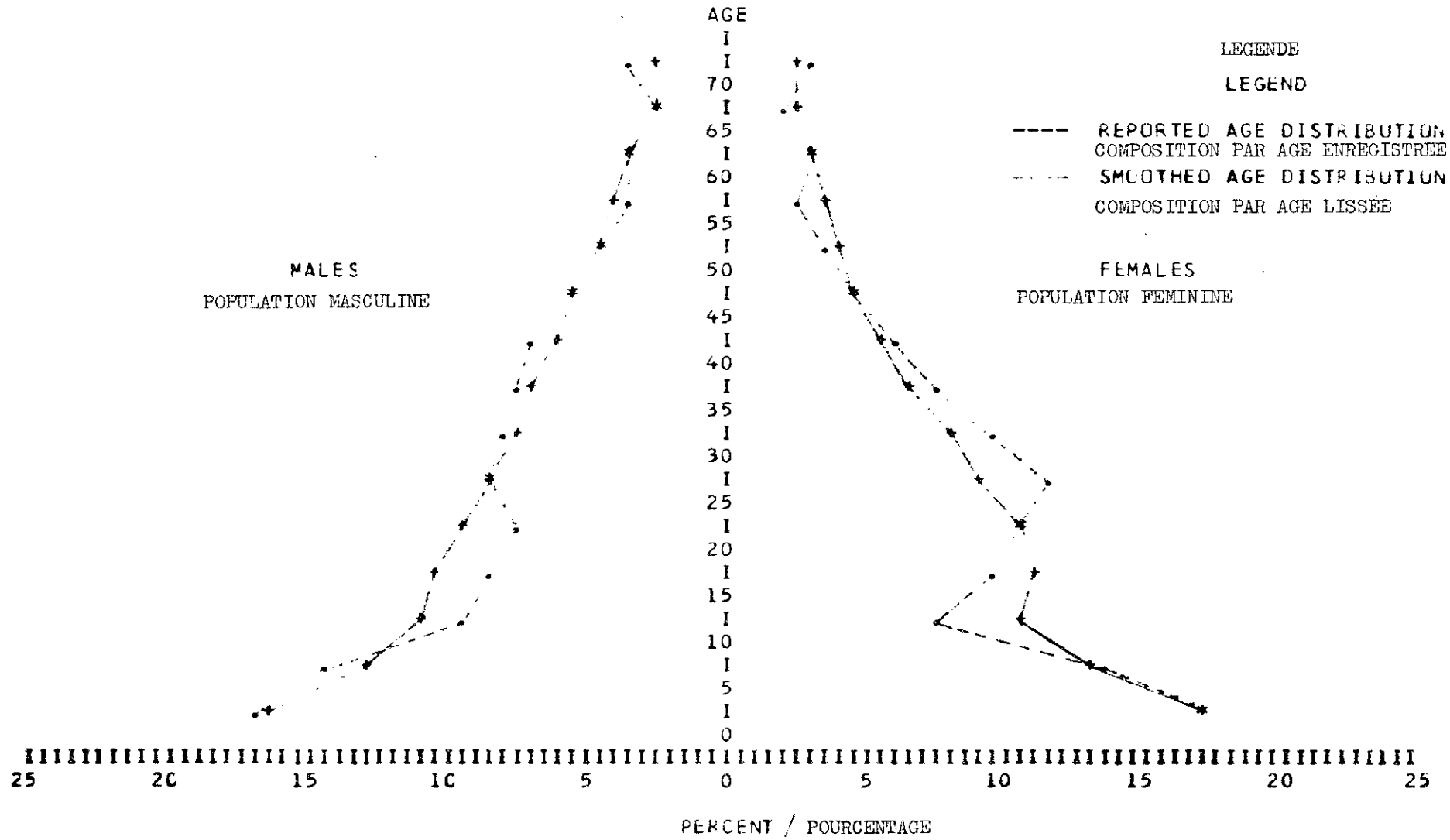
LIBERIA

1969 - 1970



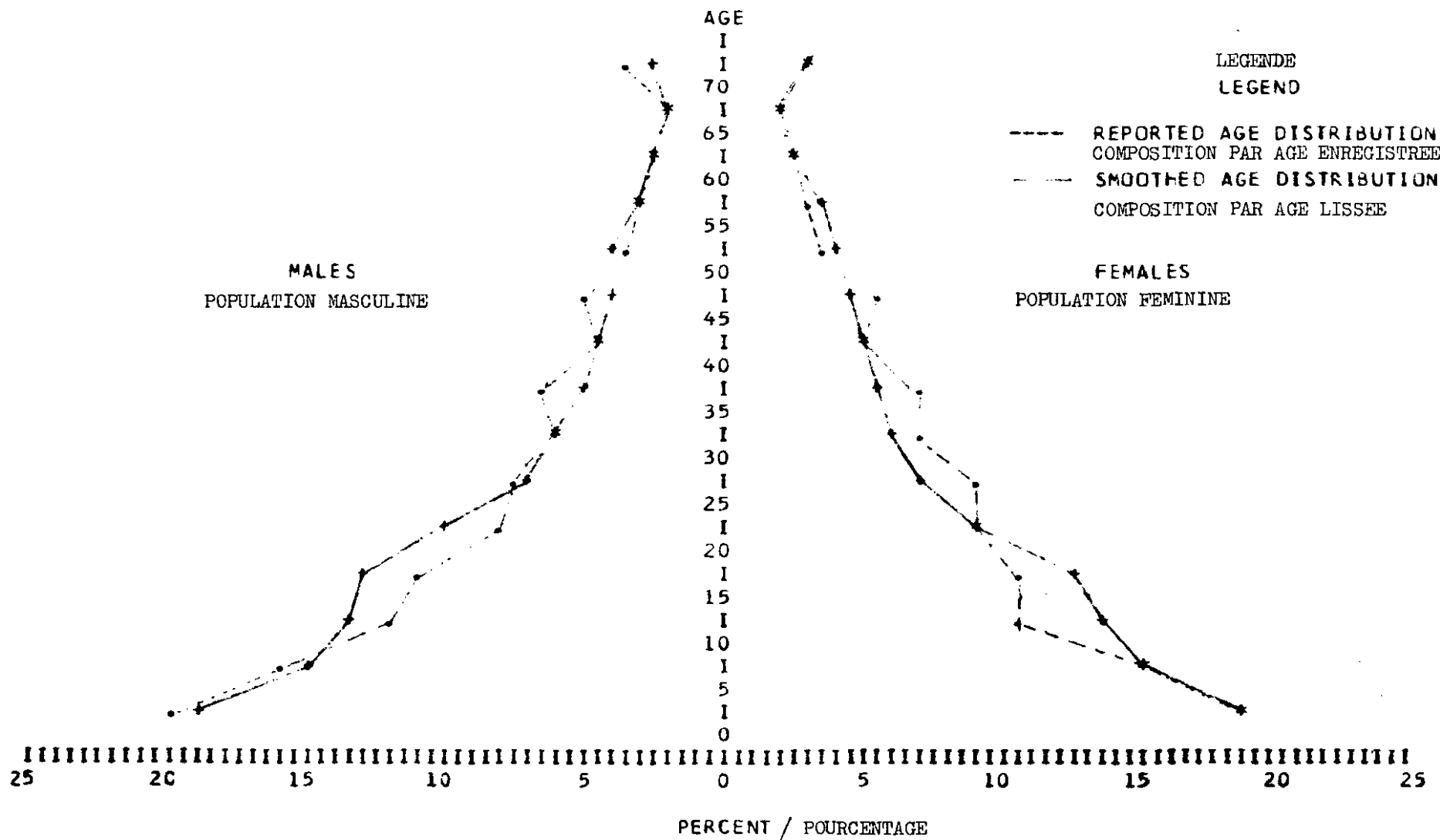
LIBERIA

0 - 1962



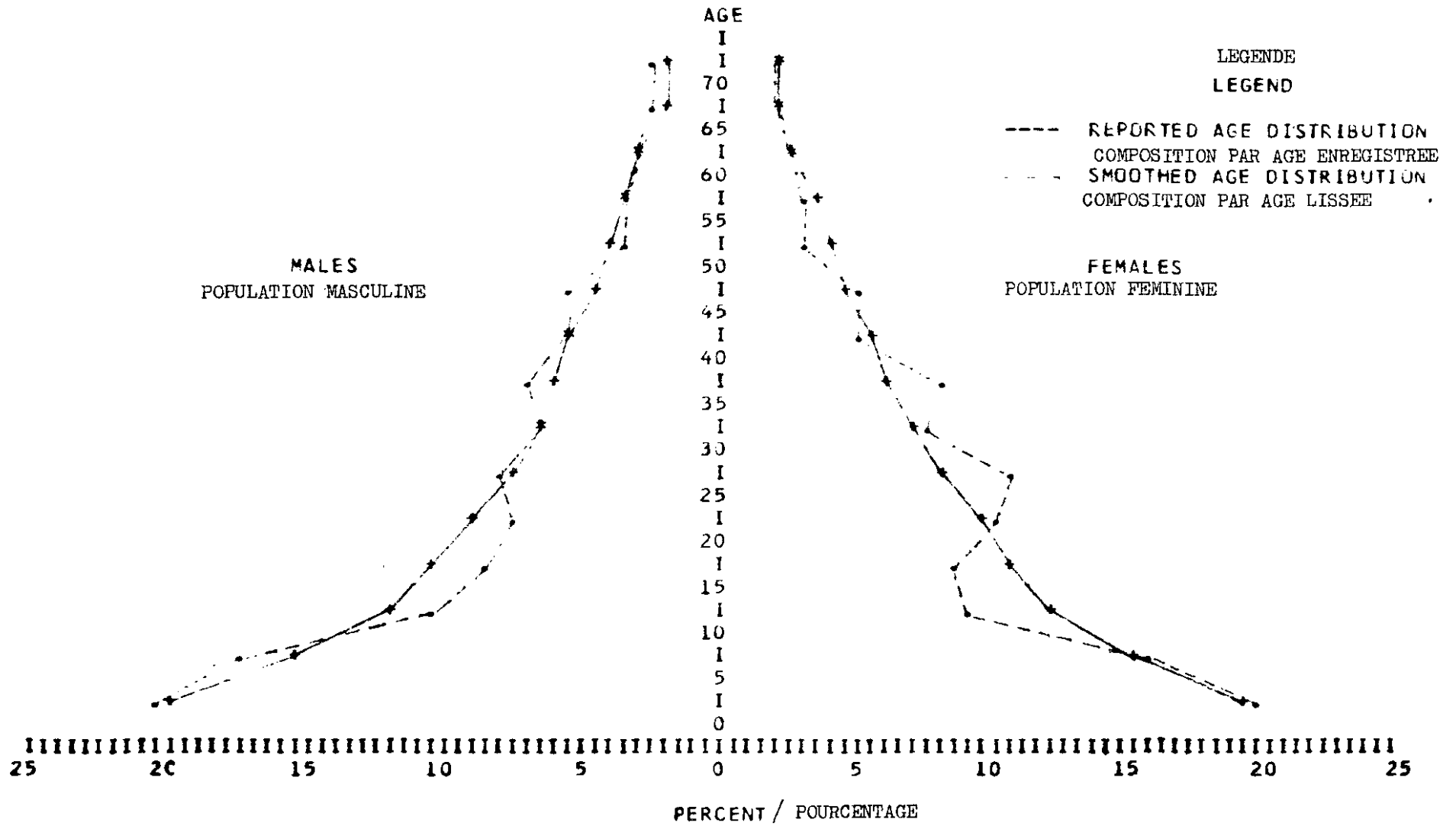
MALAWI

0 - 1966



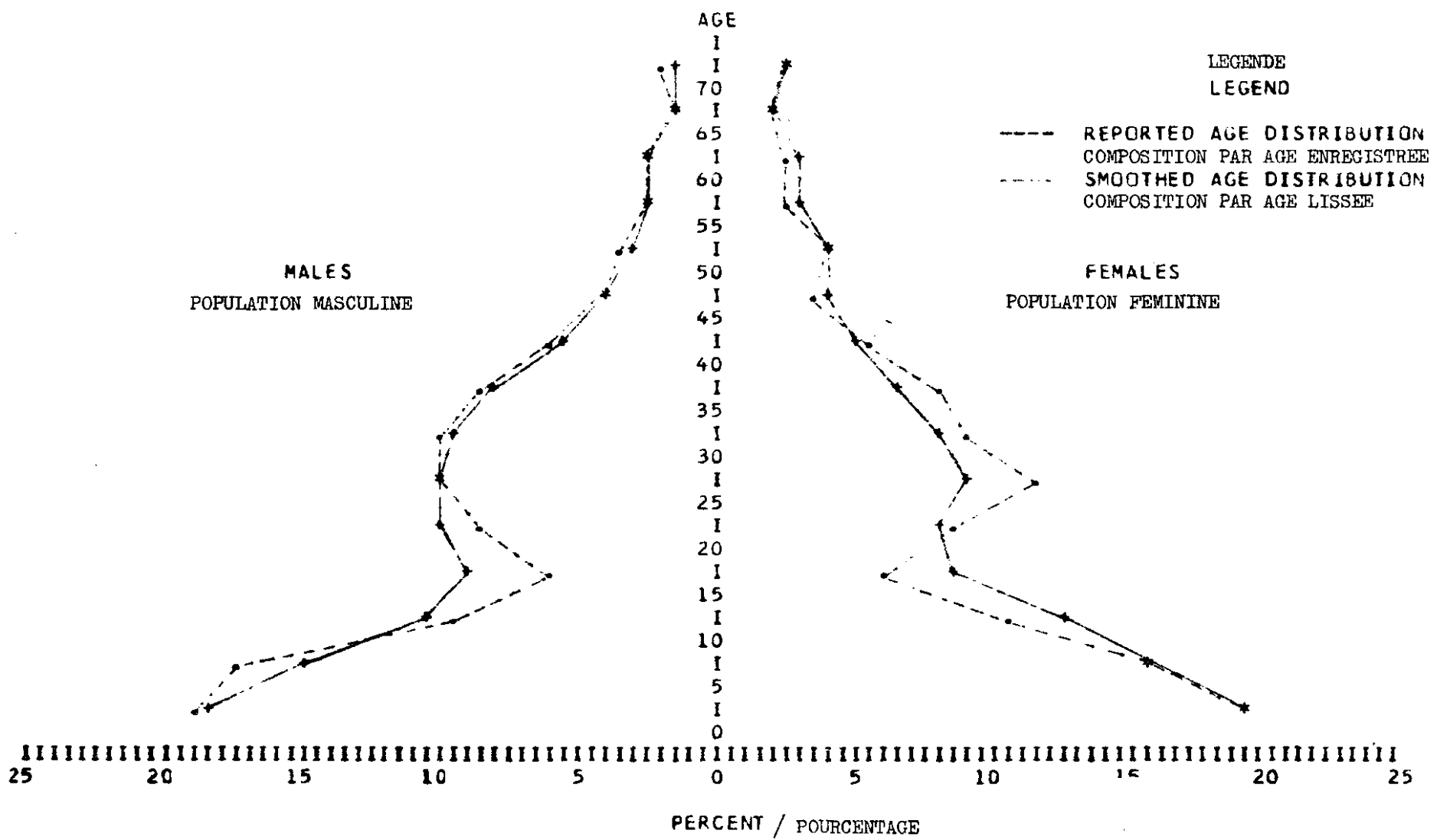
MALI

1960 - 1961



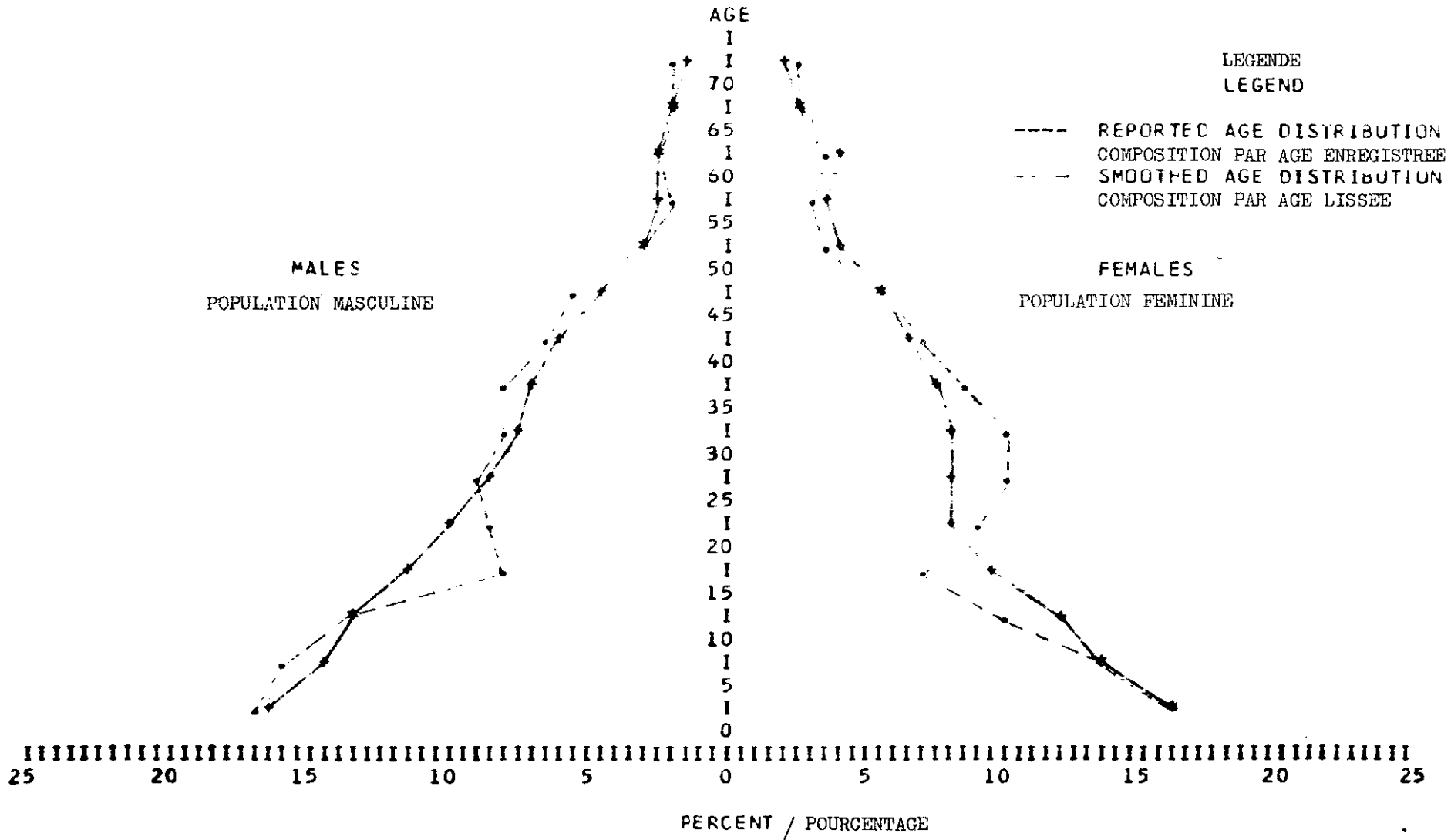
MAURITANIA
MAURITANIE

1961 - 1962



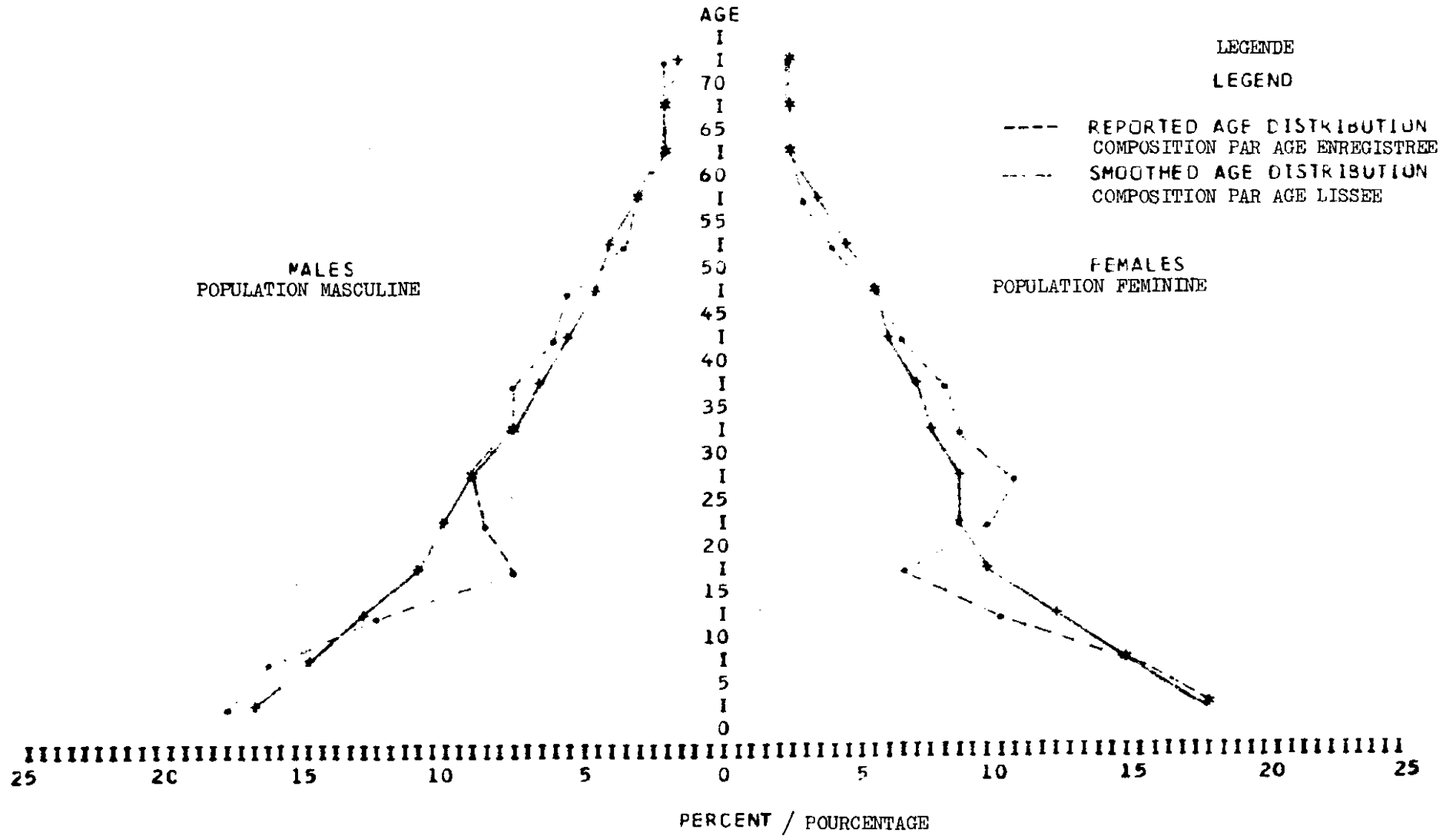
MOZAMBIQUE

0 - 1950



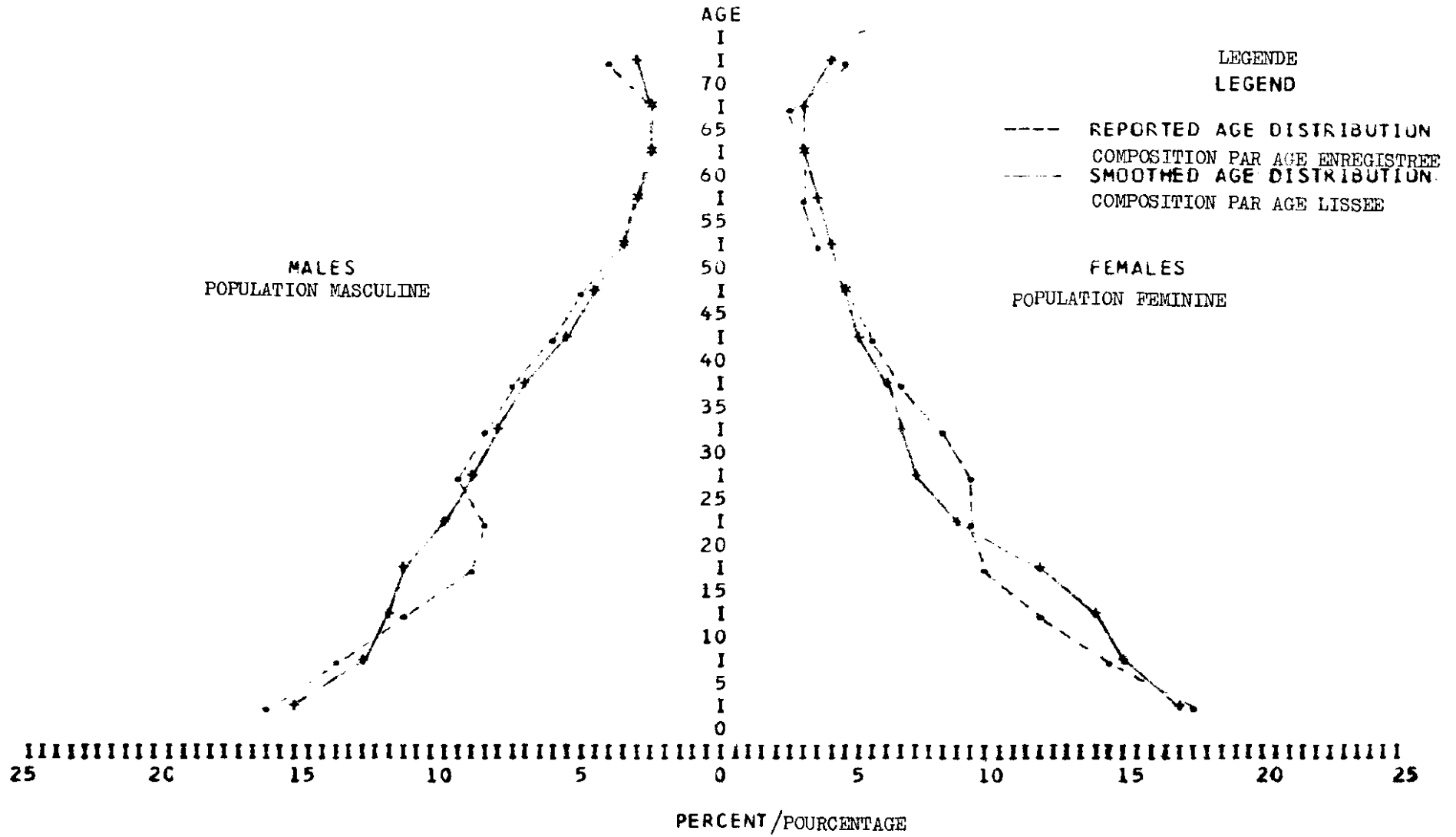
MOZAMBIQUE

0 - 1960



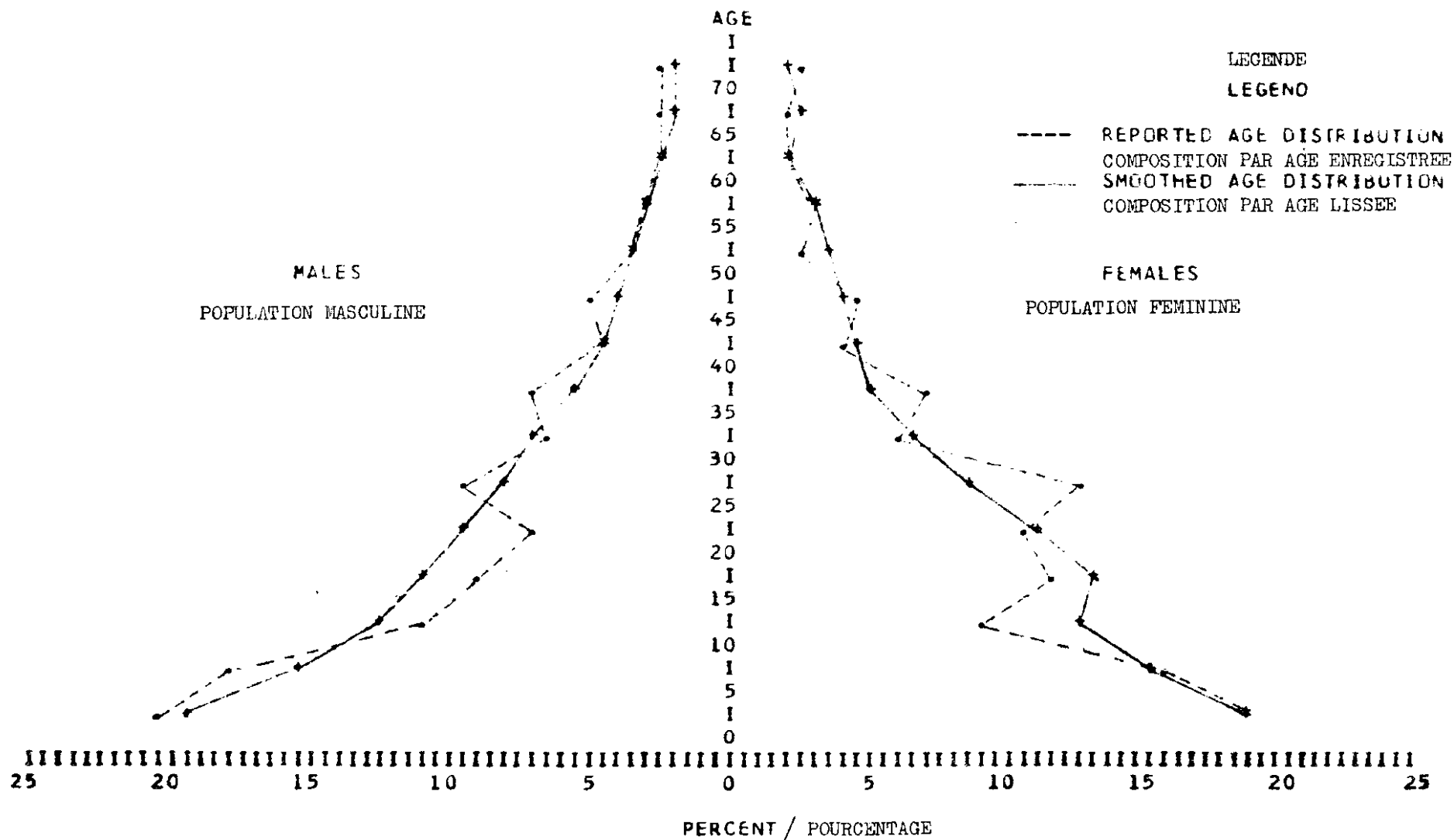
NAMIBIA
NAMIBIE

0 - 1960



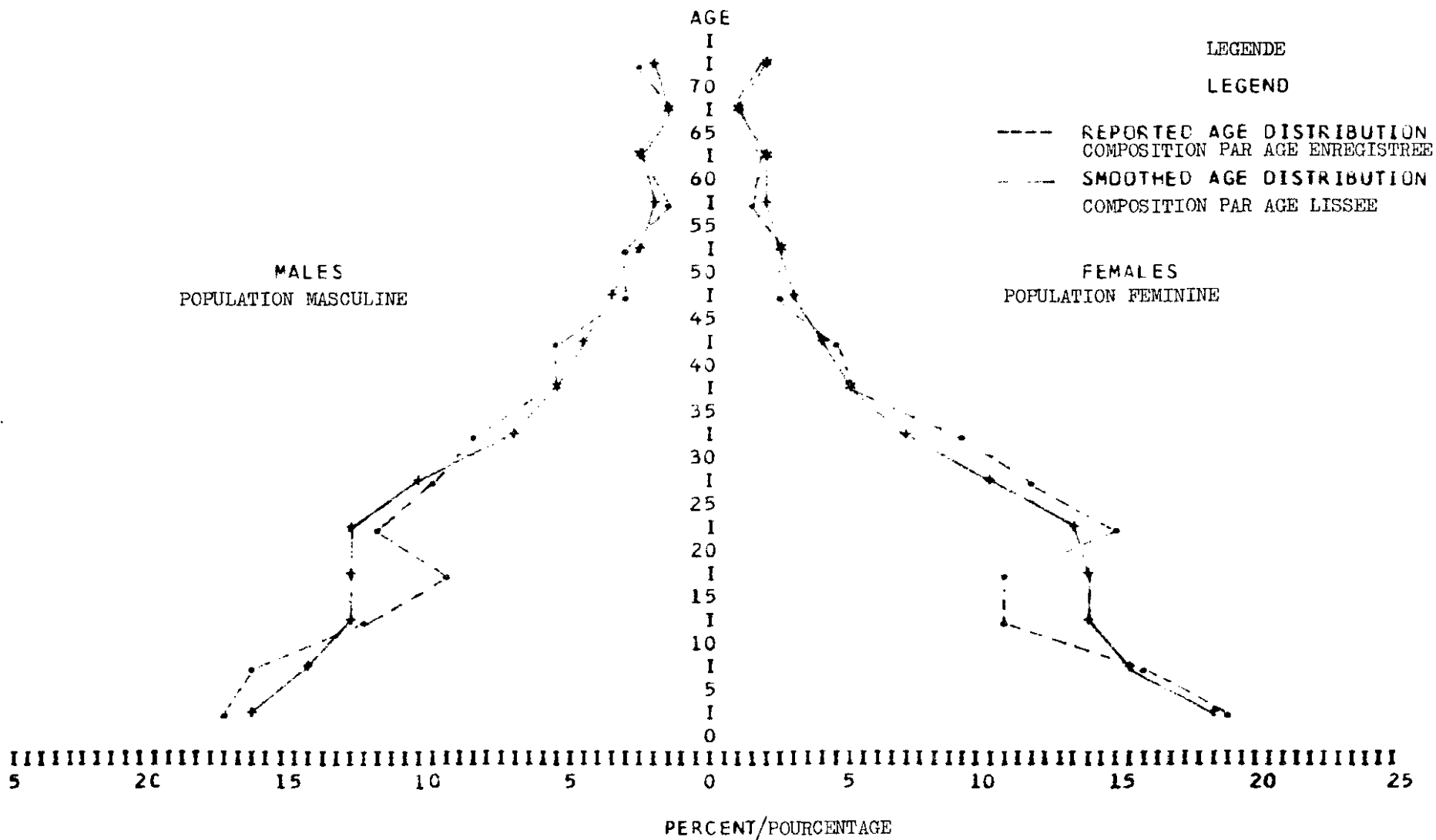
NIGER

1959 - 1960



NIGERIA

0 - 1963



PORTUGUES GUINEA

0 - 1950

GUINEE BISSAU

MALES
POPULATION MASCULINE

FEMALES
POPULATION FEMININE

AGE

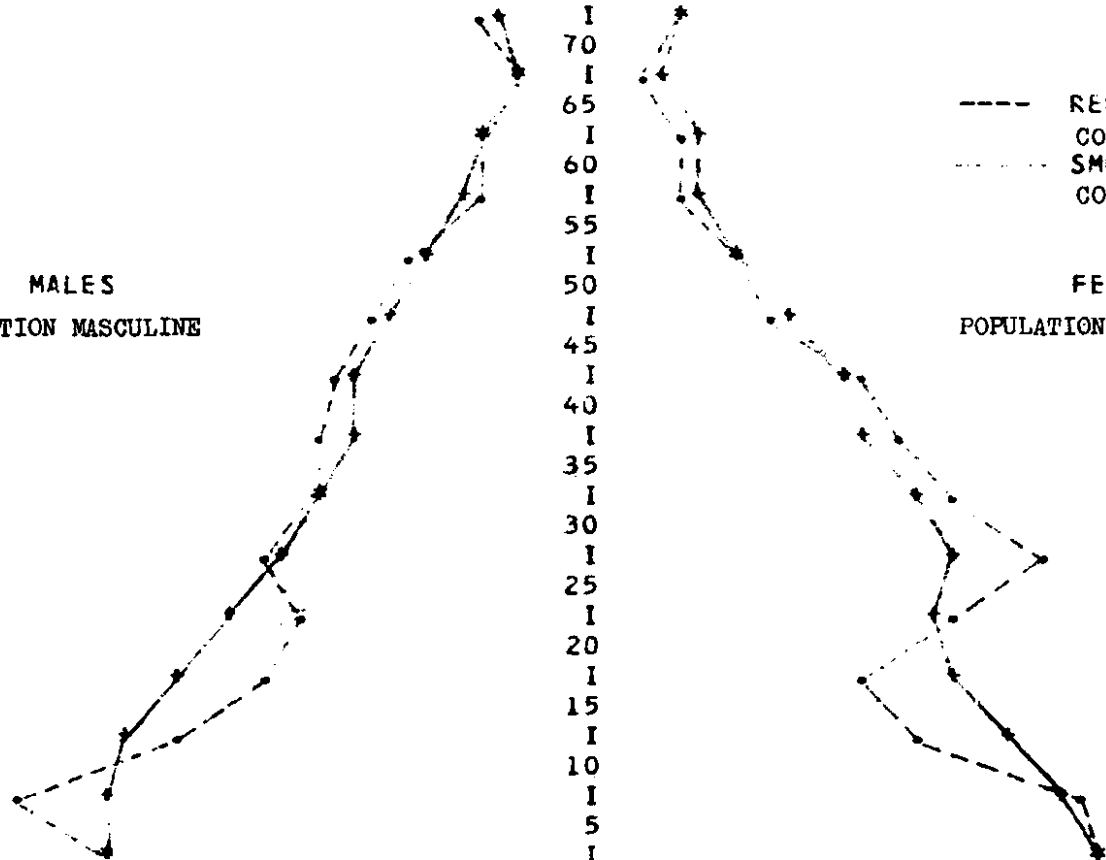
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LEGENDE
LEGEND

- REPORTED AGE DISTRIBUTION
- COMPOSITION PAR AGE ENREGISTREE
- SMOOTHED AGE DISTRIBUTION
- COMPOSITION PAR AGE LISSEE

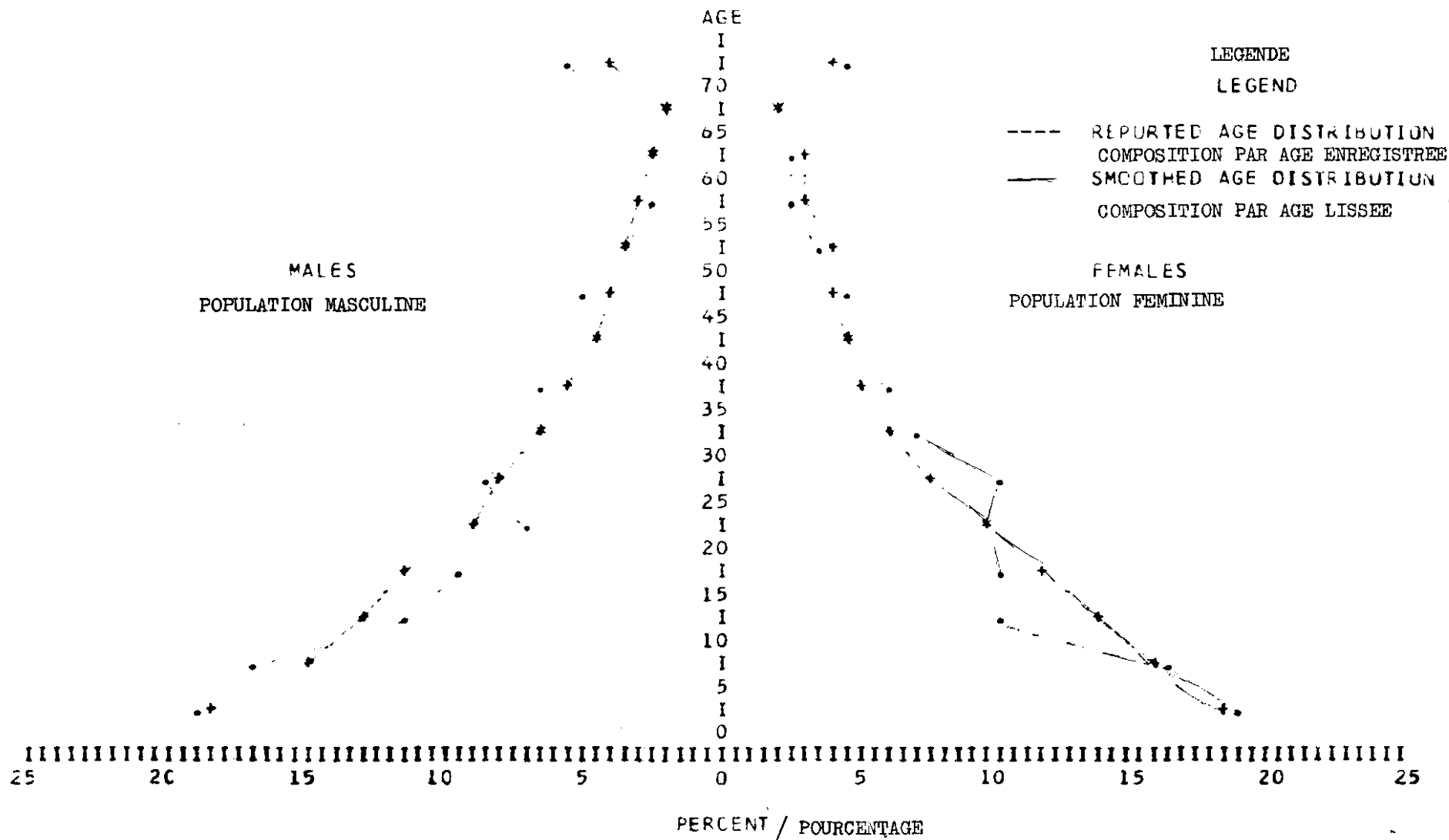
25 20 15 10 5 0 5 10 15 20 25

PERCENT / POURCENTAGE



REP. OF TANZANIA
 REPUBLIQUE-UNIE DE TANZANIE

0 - 1967



MALES
 POPULATION MASCULINE

FEMALES
 POPULATION FEMININE

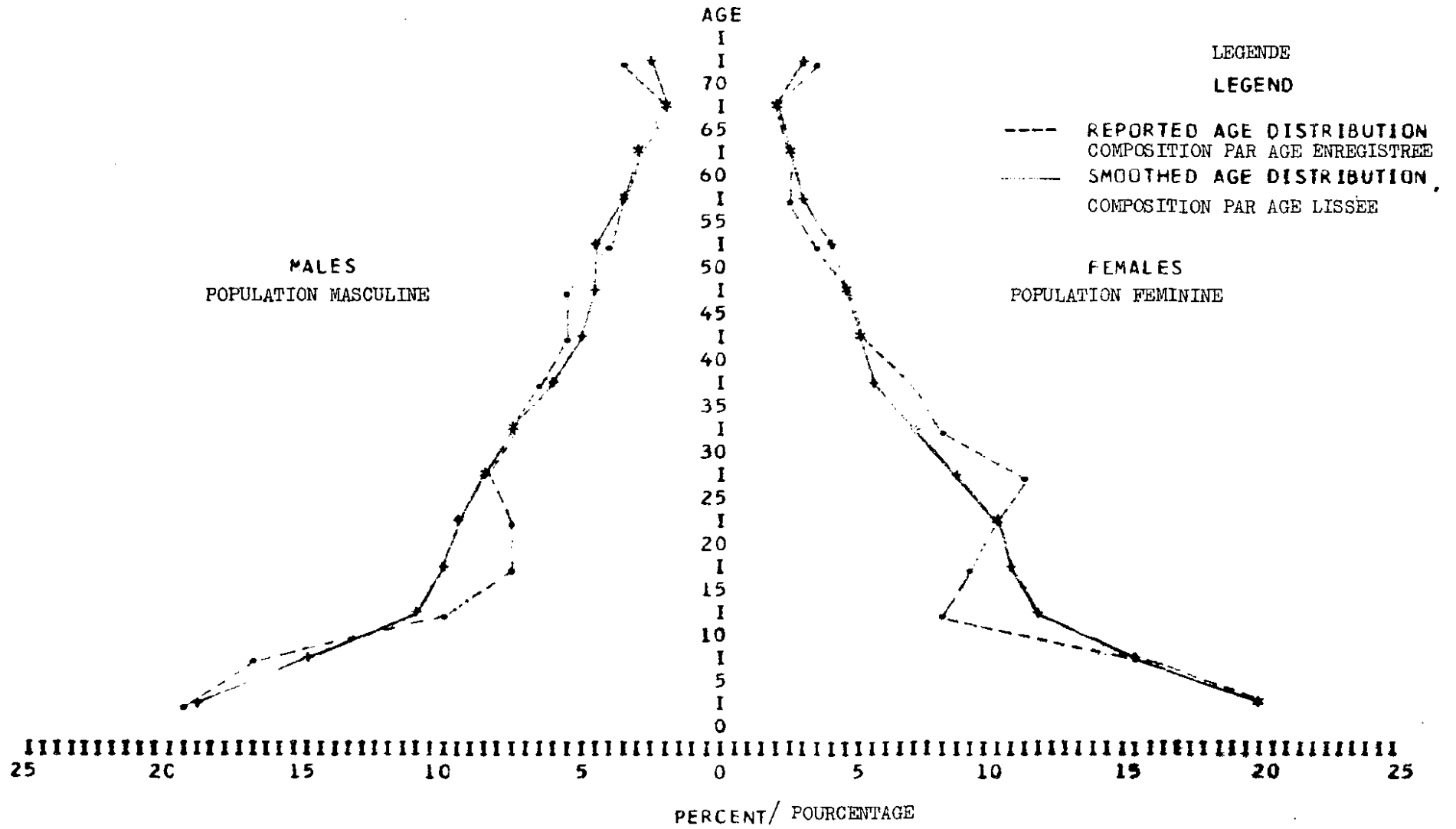
LEGENDE
 LEGEND

- REPORTED AGE DISTRIBUTION
 COMPOSITION PAR AGE ENREGISTREE
- SMOOTHED AGE DISTRIBUTION
 COMPOSITION PAR AGE LISSEE

PERCENT / POURCENTAGE

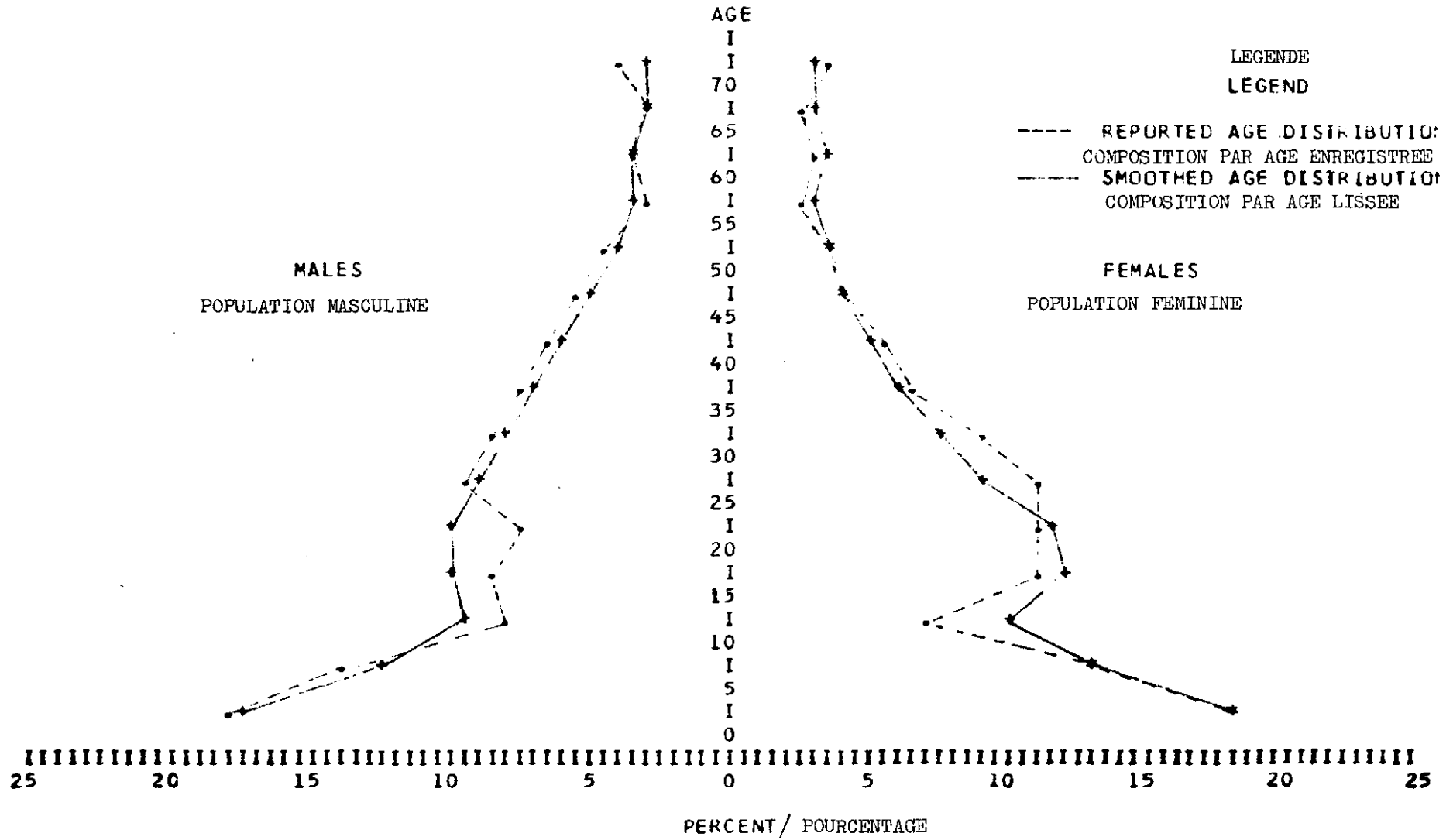
SENEGAL

1960 - 1961



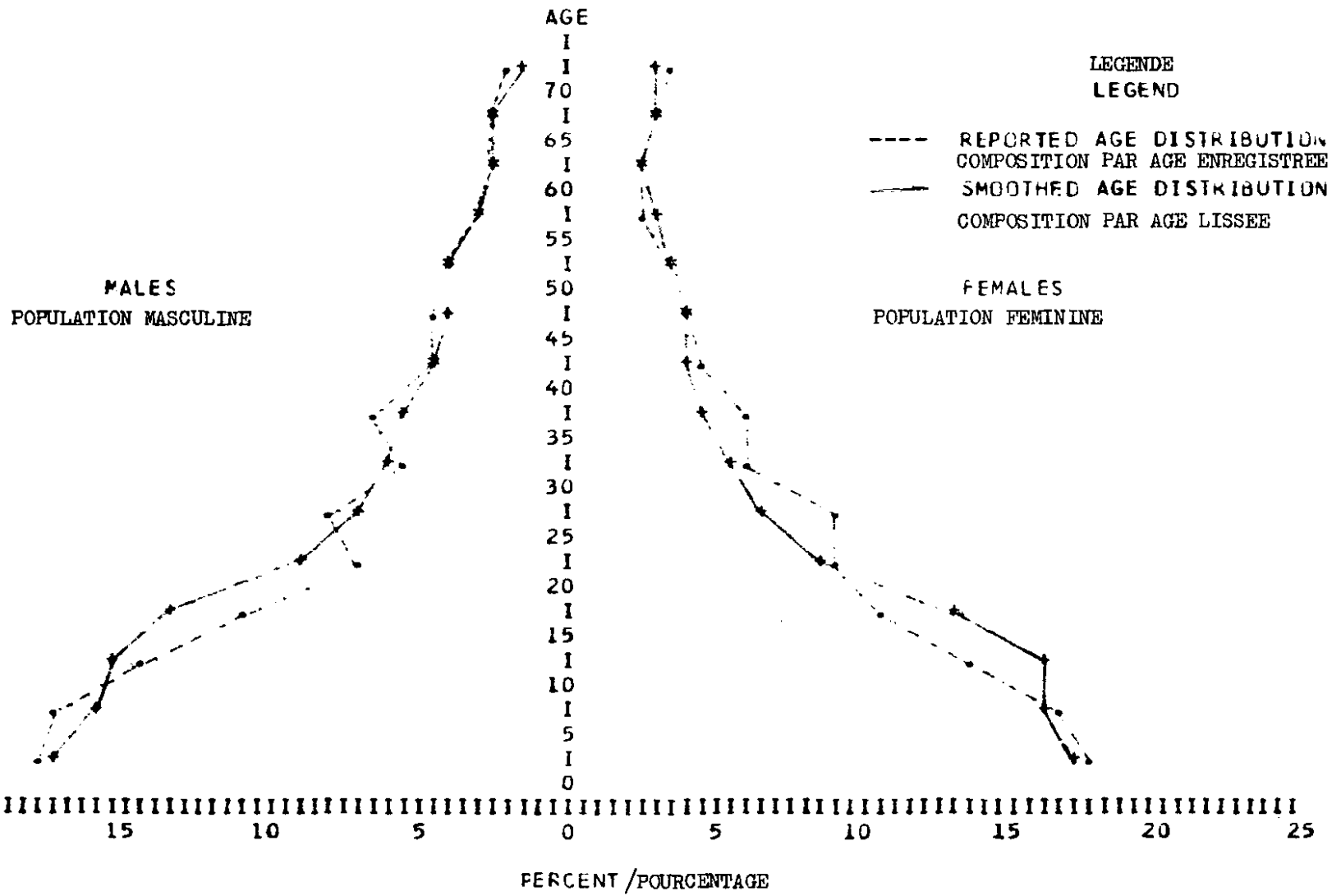
SIERRA LECNE

0 - 1963



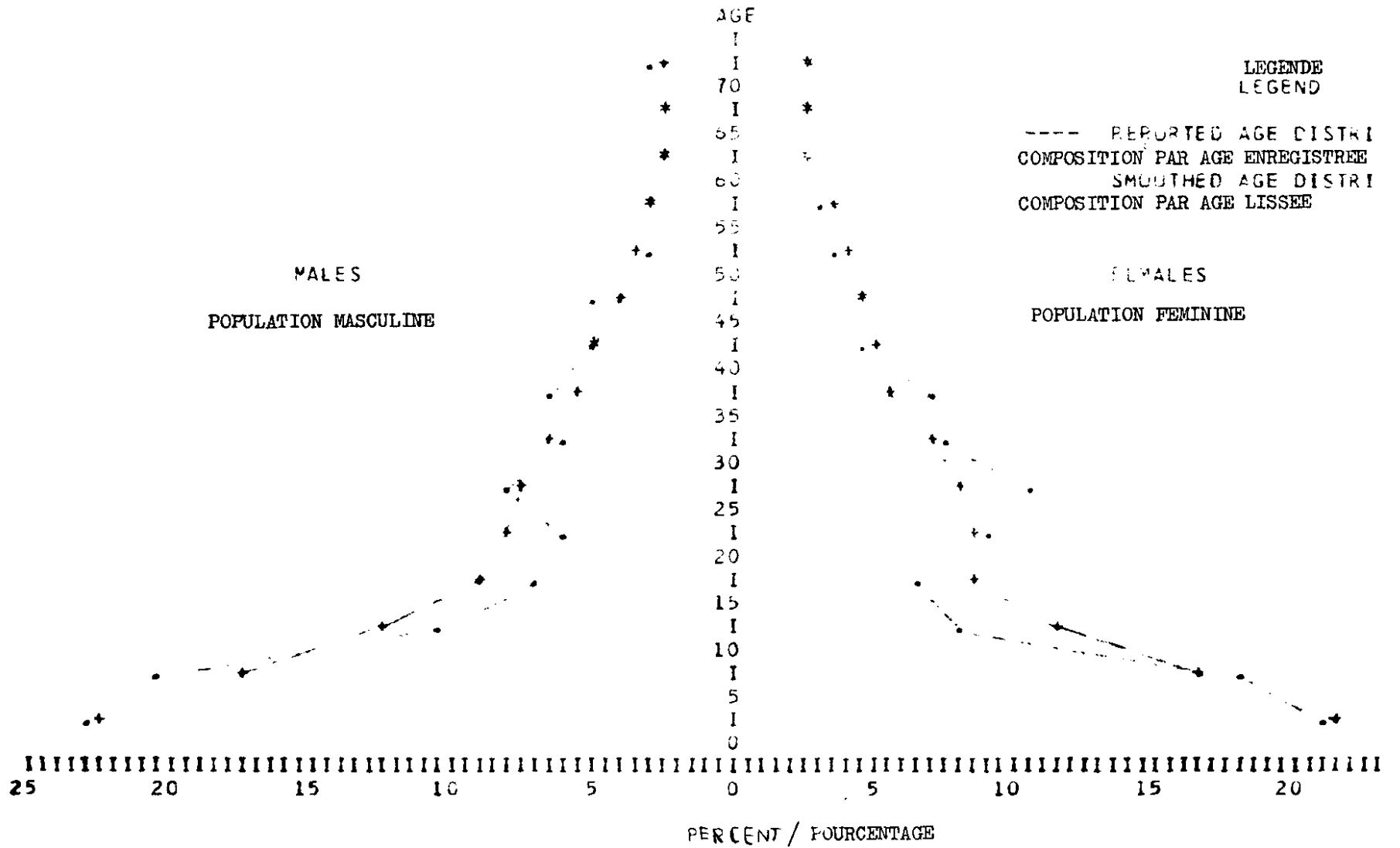
SWAZILAND
SOUAZILAND

0 - 1966



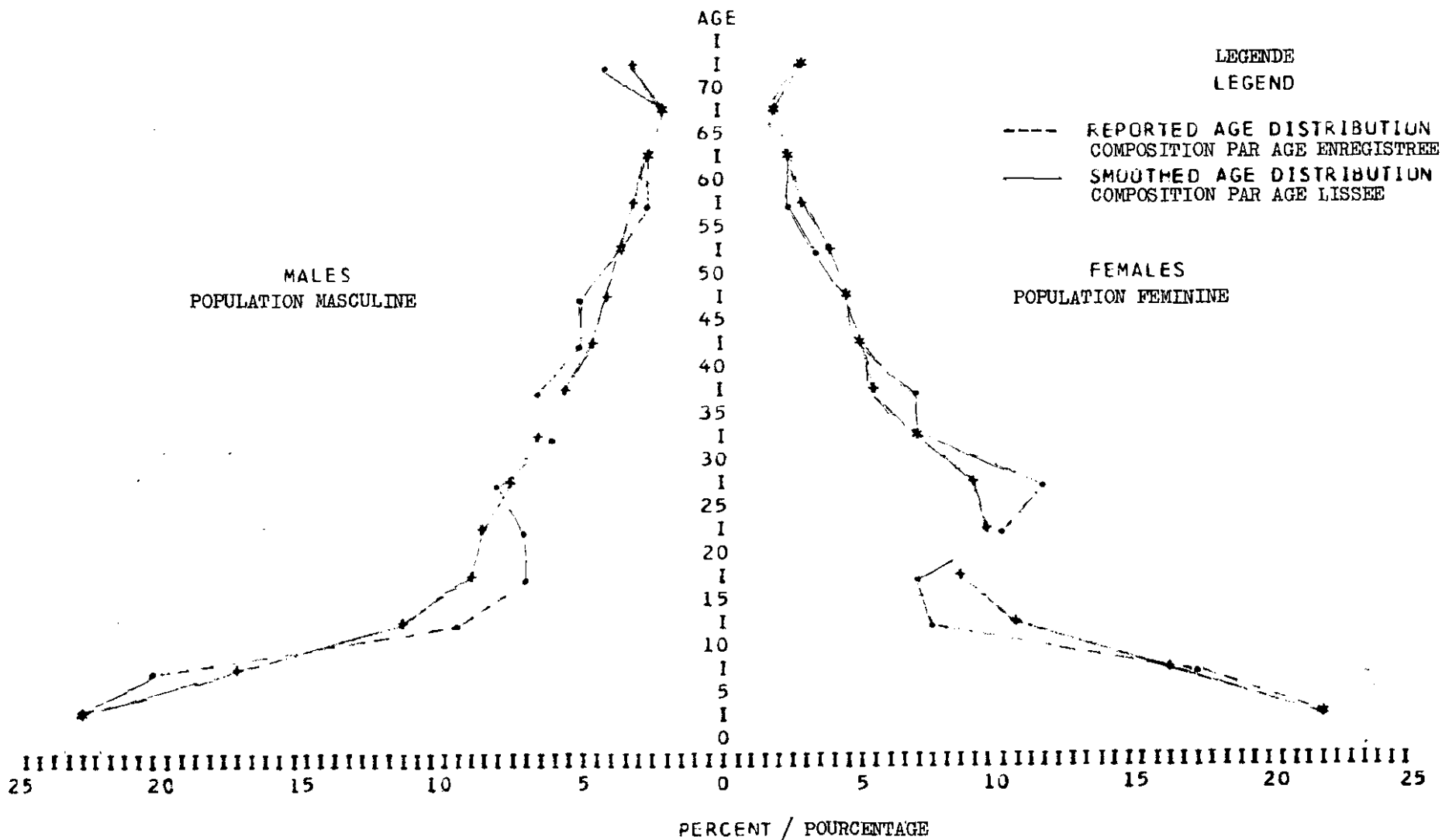
TOGO

0 - 1961



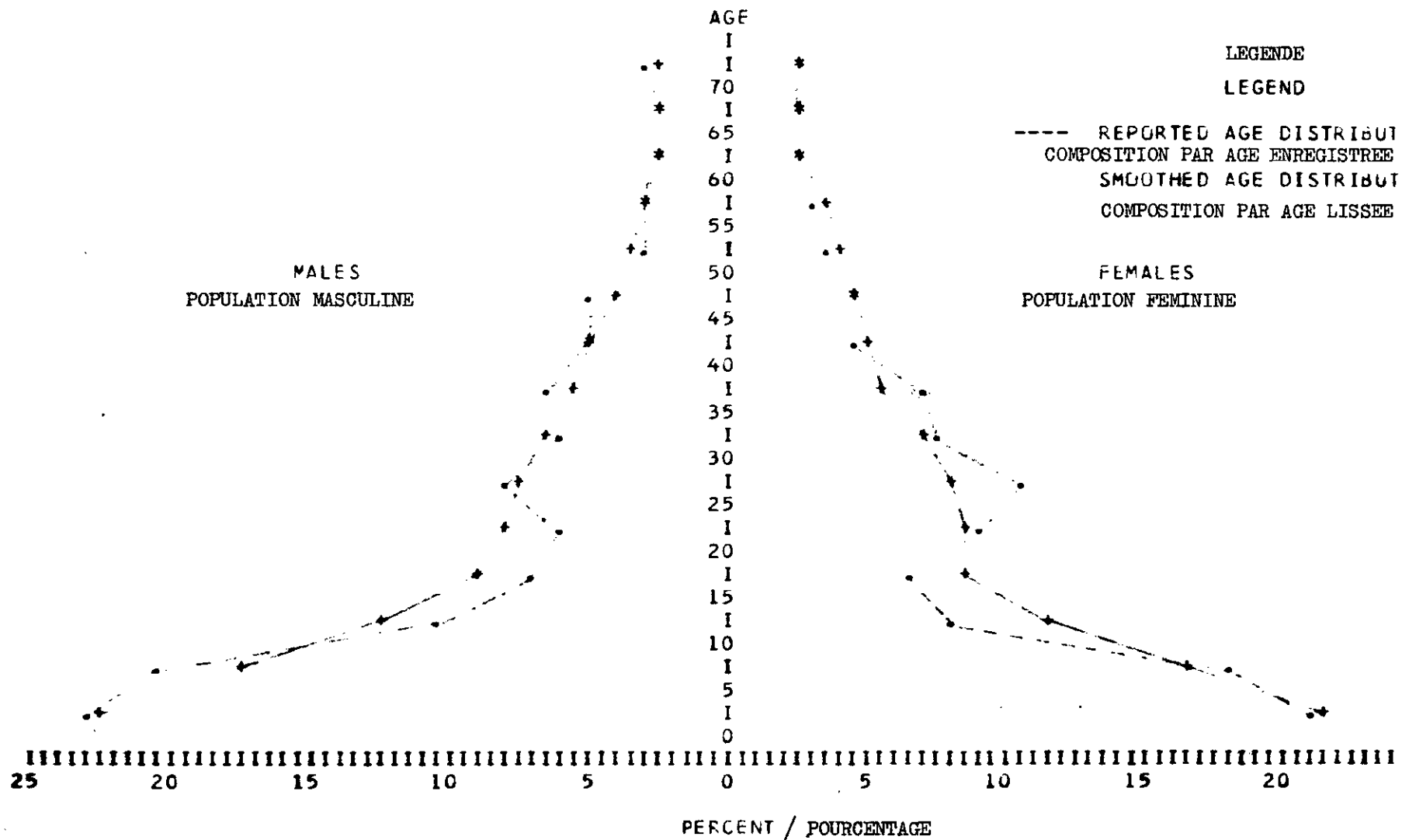
TOGO

1958 - 1960



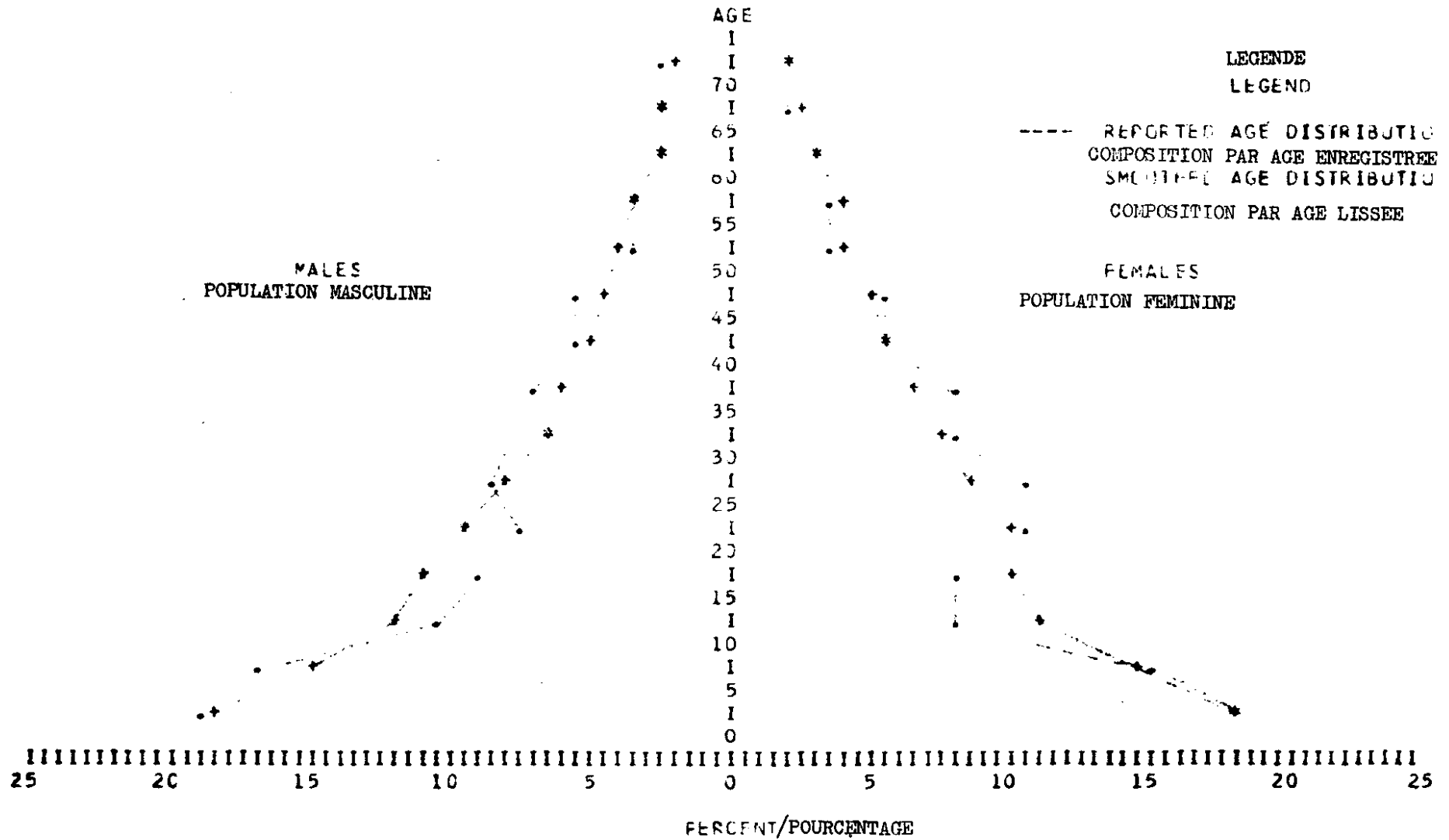
TOGO

0 - 1961



UPPER VOLTA
HAUTE-VOLTA

1960 - 1961



ZAIRE

1955 - 1958

