

Demographic studies on Indians from Santa Catarina, Brazil

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On the last three years a large amount of data has been accumulated concerning the Indian groups living in the State of Rio Grande do Sul, Brazil (Tondo and Salzano, 1960; Salzano, 1961*a, b, c, d*, 1963*a*; Salzano et al. 1962; Salzano and Sutton, 1963). The present study extends these investigations to the Indian populations of the neighboring State of Santa Catarina. Demographic variables important for the understanding of the distribution of genetic traits shall be discussed here. Genetic information which included blood groups, secretion, color blindness, hemoglobin, haptoglobin, transferrin and Gm types shall be published elsewhere.

Material and methods

The Indians of Santa Catarina live in two State reservations set aside for them (Fig. 1). Details about these places and their populations can be summarized as follows: 1. *Duque de Caxias*: Located 44 Kms from the village of Ibirama (1,101 inhabitants in 1950). The Post of the Federal Service of Indian Protection (SPI) is situated on an island of the river Itajai do Norte. The majority of the Indians living there are Aweikoma, possibly a Caingang subgroup (Guérios, 1945); there are also some Caingangs and Guaranis (Tab. 1). The Aweikoma remained hostile to Neo-Brazilians until relatively recent times. They were pacified in 1914. By 1930 there were about 106 individuals in the reservation (Métraux, 1946). The 1946 census of the Federal Service of Indian Protection, however, listed almost three times as many individuals (Tab. 1). The collection of data was undertaken during three visits of two days each in March and December, 1961 and March, 1962. 2. *Xapecó*: Located 24 Km from the village of Xanxerê (1,311 inhabitants in 1950). The Post is situated near the river Xapecosinho. The majority of the Indians living there are Caingang but there are also Guaranis (Tab. 1). The present Caingang group migrated from the State of Paraná, having arrived at this place about one hundred years ago. The Post of the Federal Service of Indian Protection was established only in 1940. Before the Caingang arrived the region was inhabited by Aweikoma Indians (personal communication of the Indian Post agent). By 1946 there were 765 Caingang

and 58 Guarani in the area (Tab. 1). Data were collected during four visits of three days each in June 1961, January and June, 1962 and February, 1963.

The Guarani, in both places, are relatively recent migrants from the States of Paraná and Rio Grande do Sul, plus Argentina and Paraguay.

The methods for the collection of the demographic data were essentially the same as described in Salzano (1961a). Some additional information was obtained, however, concerning the spouse's sibs and the occurrence of stillbirths. The sib information made possible the linking of practically all sibships in a single pedigree, thus allowing more complete information about biological relationships.

Results

Racial characterization of the populations. Table 1 and Figure 1 show information concerning the ethnic groups living in the two localities and compares the results obtained with those from a previous independent census. As is shown there the frequency of Indians without signs of hybridization varies significantly in the two localities (65.6% of the population in Duque de Caxias and only 32.7% in Xapecó). In addition there are indications of Negro admixture in Xapecó but not in Duque de Caxias (results confirmed by genetic data). The survey probably included almost all persons living in Duque de Caxias, but only 80% of those living in Xapecó (two last columns of Tab. 1).

Age and sex distribution (Tables 2 and 3). Age stratification is not very different in the four subgroups of the two populations. The frequency of adults is somewhat higher in Xapecó but is within limits observed in Caingang groups from Rio Grande do Sul (Salzano, 1961a). They do not differ in a significant way from the age structure of the Brazilian population in general either. The sex-ratio is unexpectedly lower in the younger than 15 group in three of the four ethnic subgroups. In two of them there was a compensation through higher values among the adults.

Inter-racial marriages (Tab. 4). Inter-ethnic unions are occurring intensively among the Caingang of Xapecó as compared with the Aweikoma/Caingang of Duque de Caxias (only 17.2% of marriages between two Indian partners in the former against 70.4% in the latter). The direction of the gene flow may be different in the two populations since there is a marked asymmetry in the reciprocal matings between Indians and Mestizos there. But due to the low numbers observed in Duque de Caxias, the deviation is just within the limit of statistical significance. No such difference is observed in the Indian \times Neo-Brazilian marriages. The number of childless inter-racial marriages is similar to those observed among intra-ethnic unions.

Isolation (Tab. 5 and Fig. 2). Although the frequency of marriages involving partners from the same locality is not very dissimilar, there is a significant difference in the admixture rates of the Caingang populations of Duque de Caxias and Xapecó ($\chi^2 = 5.5$; 1 d.f.; $p < 0.02$). This is probably due to the larger number of marriages of both partners coming from outside, as it occurs among the latter. The Guarani are recent migrants in both places and there are no marriages involving both partners

Tab. 1. Frequencies in per cent of Indians, Mestizos and Neo-Brazilians living in Indian communities of Santa Catarina

Localities	Aweikoma	Caingang	Guarani	A/C	Mestizos				Neo-Brazilians	Total	Previous independent census ¹
					A/NB	C/NB	A/C/NB	G/NB			
1. Duque de Caxias	55.4	1.0	2.7	6.5	10.6	6.1	3.4	11.6	2.7	294	258 ²
2. Xapecó	—	23.2	9.4	0.1	—	65.8	—	0.6	0.9	652	821 ³

¹ Census taken by the Federal Service of Indian Protection in 1946; ² Lists Aweikoma persons only; ³ Of which 765 Caingang and 58 Guarani.

A/C = Aweikoma/Caingang; A/NB = Aweikoma/Neo-Brazilian; C/NB = Caingang/Neo-Brazilian; A/C/NB = Aweikoma Caingang/Neo-Brazilian; G/NB = Guarani/Neo-Brazilian. In Duque de Caxias all Neo-Brazilians whose racial status could be established are White. In Xapecó Negroes and Whites are represented (4 Negroids, 1 White and 1 not determined).

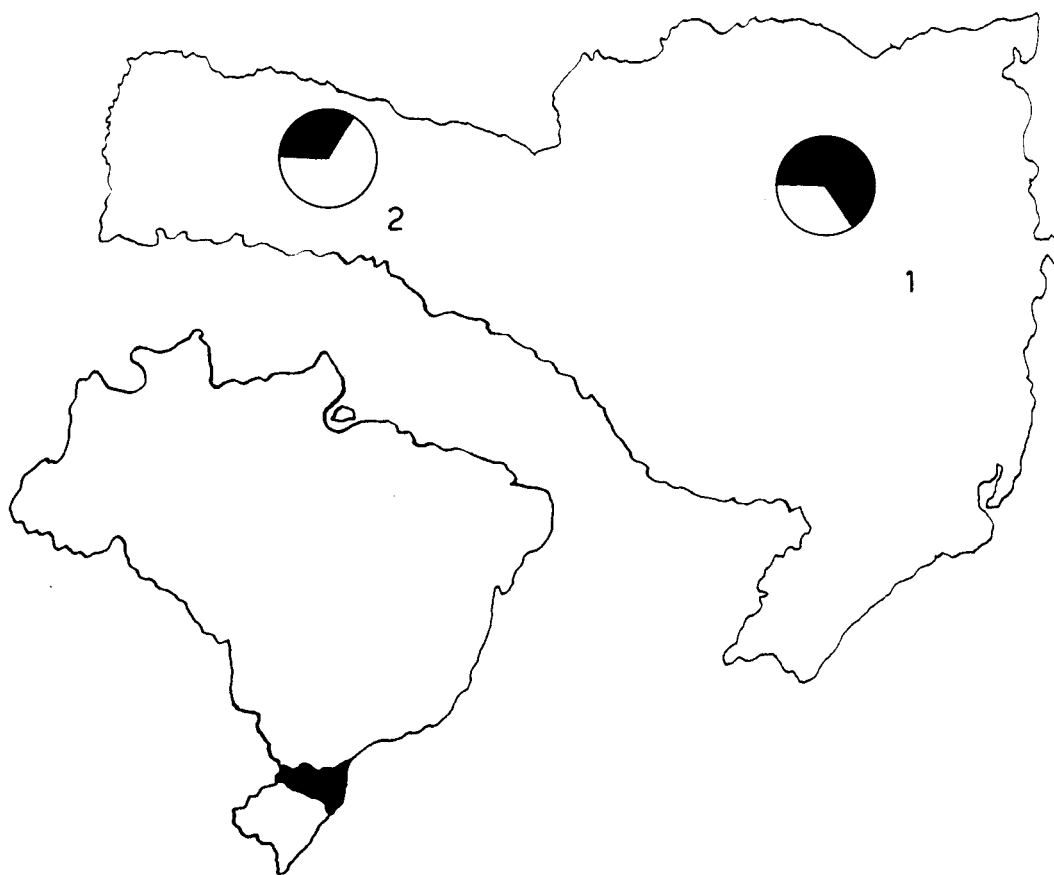


Fig. 1. Small map of Brazil (lower left) and enlarged map of the State of Santa Catarina showing the localities studied (numbers correspond to those used in Tab. 1). The circles' darkened areas indicate the frequency of Indians without signs of hybridization observed

Tab. 2. Age and sex of individuals studied

Localities	Adults				Younger than 15				Total population			
	♂	♀	Sex-ratio	Total	♂	♀	Sex-ratio	Total	♂	♀	Sex-ratio	Total
Duque de Caxias: Aweikoma/Caingang	32.1	27.4	117.4	59.5	17.9	22.6	79.0	40.5	50.0	50.0	100.0	252
Duque de Caxias: Guarani	26.2	28.6	91.7	54.8	21.4	23.8	90.0	45.2	47.6	52.4	91.0	42
Xapecó: Caingang	37.3	32.9	113.5	70.2	14.5	15.3	94.4	29.8	51.8	48.2	107.4	587
Xapecó: Guarani	32.3	36.9	87.5	69.2	21.5	9.2	233.3	30.7	53.9	46.1	116.7	65

Tab. 3. Age structure of the populations

Localities	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70 and more	Un-known	Total
Duque de Caxias: Aweikoma/Caingang	34.2	15.6	14.7	11.1	8.0	3.5	4.9	2.7	5.3	225
Duque de Caxias: Guarani	35.0	20.0	20.0	7.5	5.0	5.0	5.0	2.5	—	40
Xapecó: Caingang	27.0	18.3	24.7	8.0	9.6	3.9	2.7	0.5	5.3	437
Xapecó: Guarani	25.8	11.3	24.2	4.8	11.3	6.5	3.2	—	12.9	62

* Counting only individuals ascertained through direct information from married couples in order to get unbiased estimates.

born locally in their groups. Fig. 2 shows that the main contribution of outside genes to Xapecó comes from groups living in the State of Paraná. Duque de Caxias is more isolated and the main contribution of outside genes comes from populations living in Santa Catarina. This indicates that the groups under study should show more resemblance with populations from Paraná than to those of Rio Grande do Sul.

Immigration and emigration (Tables 6 and 7). Additional information about migrants can be obtained from inspection of these tables. The majority of immigrants to the

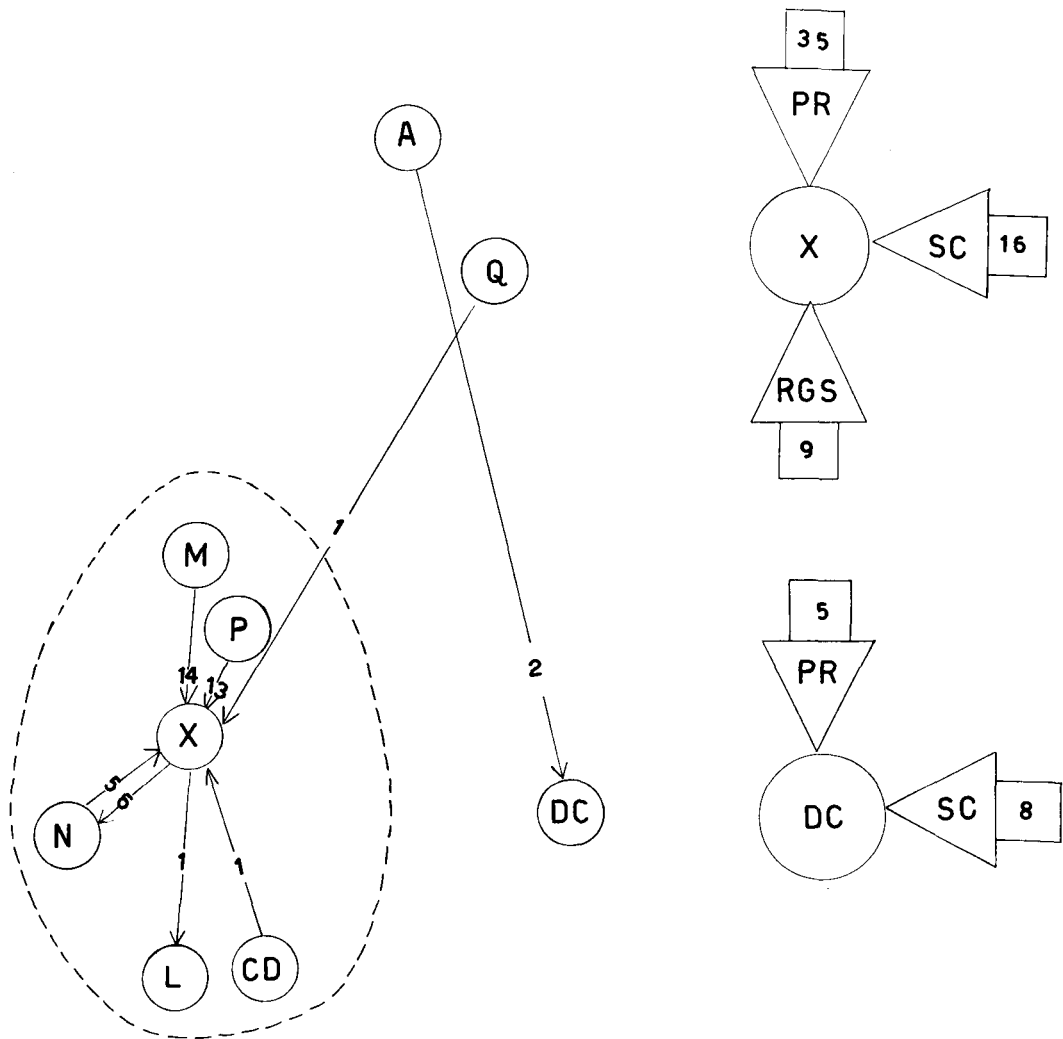


Fig. 2. Birthplaces of persons who married in Caingang populations of Xapecó (X) and Duque de Caxias (DC). Persons born in Xapecó and married in Nonoai are also included. A = Apucarana, Pr.; Q = Queimada, Pr.; M = Mangueirinha, Pr.; P = Palmas, Pr.; N = Nonoai, RGS.; L = Ligeiro, RGS.; CD = Cacique Doble, RGS; PR = Paraná; SC = Santa Catarina; RGS = Rio Grande do Sul

Aweikoma/Caingang community of Duque de Caxias is composed by Neo-Brazilians while 70% of the immigrants to the Caingang group of Xapecó are Mestizos. The large frequencies of immigrants and emigrants in the Guarani groups point to the nomadic nature of these populations.

Tab. 4. Frequencies in per cent of inter-racial marriages

Type of cross	Duque de Caxias Aweikoma/Caingang		Xaçecó Caingang	
	no.	%	no.	%
I × I	38	70.4 ¹	27	17.2
I × M	5	9.2 ²	43	27.4
I × NB	9	16.7 ³	9	5.7
M × NB	2	3.7 ⁴	19	12.1
M × M	—	—	59	35.6
Total	54 ⁵	—	157 ⁵	—

Type of cross	Guarani		Guarani	
	no.	%	no.	%
I × I	1	9.0	12	85.7
I × M	9	9.0	1	7.2
M × M	1	82.0	1	7.2
Total	11	—	14 ⁵	—

Direction of the gene flow	Duque de Caxias Aweikoma/Caingang		Xaçecó Caingang	
	no.	%	no.	%
♂I × ♀M	4	80.0	15	34.9
♂M × ♀I	1	20.0	28	65.1
Total	5	—	43	—
♂I × ♀NB	3	33.3	1	11.1
♂NB × ♀I	6	66.7	8	88.9
Total	9	—	9	—
Childless interracial marriages	1 ⁶	3.8	17 ⁷	12.9
Total	26	—	132	—

¹ 32 A × A; 3 A × C; 2 A × A/C; 1 A/C × A/C; ² 3 A × A/NB; 2 A × C/NB; ³ 5 A × NB; 1 A/C × NB; 3 C × NB; ⁴ All C/NB × NB; ⁵ Part of the data also obtained through questions about the parents of Mestizo persons. ⁶ Sterile; ⁷ Two married recently, 10 children died, 5 sterile.

I = Indian; A = Aweikoma; C = Caingang; M = Mestizo; In Duque de Caxias the intermixture seems to have occurred with Whites only. In Xaçecó data about this point was obtained for 48 Mestizos. Nineteen of those had Negro ancestry, seventeen White and twelve Negro and White admixture. NB = Neo-Brazilian. In Duque de Caxias all those whose racial status could be established were found to be White. In Xaçecó the racial status of sixteen Neo-Brazilians could be obtained; of these eleven were Negroids and five White.

Tab. 5. Frequencies in per cent of endogamous and exogamous marriages, admixture rate and immigration in the localities under study

Localities	Both partners from same locality	One partner from another locality	Both from outside	Total	Main source of immigration	No. of immigrants	No. of localities which gave immigrants	Admixture rate ¹
Duque de Caxias: Aweikoma/Caingang	76.6	21.3	2.1	47	Apucarana, Pr. 2/13 = 15.4	13	9	11.2
Duque da Caxias: Guarani	—	—	100.0	11	Mangueirinha, Pr. 28/36 = 77.8	36	7	—
Xapeçó: Caingang	63.3	25.7	11.0	109	Mangueirinha, Pr. 14/60 = 23.3	60	17	23.5
Xapeçó: Guarani	—	16.7	83.3	12	Votoró, RGS 3/27 = 11.1	27	12	—

¹ Ratio of the number of immigrants to the total breeding population.

Tab. 6. Racial characterization of the immigrants (in per cent)

Localities	Indians			Mestizos			Neo-Brazilians			Total	% of total population	Immigrants who contributed to the next generation (%)
	♂	♀	T	♂	♀	T	♂	♀	T			
Duque de Caxias: Aweikoma/Caingang	7.7	15.4	23.1	15.4	—	15.4	53.8	7.7	61.5	13	5.2	76.9
Duque de Caxias: Guarani	8.3	11.1	19.4	38.9	41.7	80.6	—	—	—	36	85.7	44.4
Xapeçó: Caingang	6.7	13.3	20.0	35.0	35.0	70.0	1.7	8.3	10.0	60	10.2	61.7
Xapeçó: Guarani	51.9	44.4	96.3	3.7	—	3.7	—	—	—	27	41.5	66.7

Family sizes (Tab. 8). The average number of children per family is larger than those obtained in Rio Grande do Sul populations (Salzano, 1961a). The difference between the averages of Duque de Caxias and Xaçecó (Caingang groups) is not significant. The Guarani populations show similar values. The Duque de Caxias groups probably are at the replacement level while the Xaçecó ethnic subgroups may be a little below this level. With the observed mortality (table 11) a rough esti-

Tab. 7. Emigration *

Localities	No. of emigrants	% of the total population	Birthplace		Contribution to the total gene pool	
			in the reservation	Out	+	-
Duque de Caxias: Aweikoma/Caingang	4	1.6	4	—	—	4
Duque de Caxias: Guarani	9	21.4	—	9	2	7
Xaçecó: Caingang	14	2.4	4	10	2	12
Xaçecó: Guarani	1	1.5	—	1	—	1

* Due to the way the data were collected, no numbers could be obtained regarding the migration of whole families.

Tab. 8. Family sizes (in per cent)

Localities	No. of children										No. of families	Average no. of children
	0	1	2	3	4	5	6	7	8	10		
Duque de Caxias: Aweikoma/Caingang	6.0	12.0	20.0	22.0	18.0	10.0	2.0	8.0	2.0	—	50	3.2 ± 0.3
Duque de Caxias: Guarani	—	9.1	36.3	18.2	9.1	18.2	—	9.1	—	—	11	3.3
Xaçecó: Caingang	20.0	17.4	13.9	20.9	12.2	4.3	2.6	5.2	2.6	0.9	115	2.6 ± 0.2
Xaçecó: Guarani	23.1	30.7	15.4	15.4	7.7	—	—	—	—	7.7	13	2.2

mate of the replacement level in Xapecó gives the values of 3.4 children per family for the Caingang and 2.8 for the Guarani.

Fertility and survival (Tables 9, 10 and 11). The average number of livebirths among the Aweikoma/Caingang women of Duque de Caxias is 5.5 ± 0.4 while the corre-

Tab. 9. Average number of livebirths per woman in the specified age groups

Maternal age	No. of females	Average no. of livebirths
Duque de Caxias:		
Aweikoma/Caingang		
20-29	15	2.9
30-39	13	6.3
40-49	9	8.2
50-59	4	3.7
60 and more	7	7.4
All ages	48	5.5 ± 0.4
Guarani		
All ages	11	4.4
Xapecó: Caingang		
18-19	5	1.0
20-29	43	2.7
30-39	15	4.3
40-49	24	7.1
50-59	13	7.5
60 and more	2	6.0
All ages	102	4.5 ± 0.3
Guarani		
All ages	12	3.2

Average age per mother: Duque de Caxias — Aweikoma/Caingang: 39.3 ± 2.1 years; Guarani: 40.5 years; Xapecó — Caingang: 34.3 ± 1.2 years; Guarani: 31.4 years.

sponding value for Caingang women of Xapecó is 4.5 ± 0.3 . This difference is significant at the 5% level but reflects just the younger ages of Xapecó's married women. As shown in table 9 the average age per mother is higher in Duque de Caxias (39.3 ± 2.1 years) than in Xapecó (34.3 ± 1.2 years). This difference is also signi-

Tab. 10. Average number of surviving offspring per woman in the specified age groups

Maternal age	No. of females	Average no. of surviving offspring	Decrease in relation to average no. of livebirths (%)
Duque de Caxias:			
Aweikoma/Caingang			
20-29	14	2.4	17.2
30-39	13	3.8	39.7
40-49	9	4.9	40.2
50-59	3	2.7	27.0
60 and more	7	3.7	50.0
All ages	46	3.5 ± 0.3	36.4
Duque de Caxias:			
Guarani			
All ages	11	3.3	25.0
Xapecó: Caingang			
19	4	1.3	—
20-29	40	1.7	37.0
30-39	12	3.7	14.0
40-49	25	4.2	40.8
50-59	13	5.2	30.7
60 and more	3	3.7	38.3
All ages	97	3.1 ± 0.2	31.1
Xapecó: Guarani			
All ages	10	2.8	12.5

Tab. 11. Mortality before the age of reproduction and frequency of stillbirths

Localities	No. of births	Deaths before the age of 15 (%)	Stillbirths (%)
Duque de Caxias:			
Aweikoma/Caingang			
Guarani	274	39.1	2.9
Xapecó:			
Caingang			
Guarani	500	41.8	7.2
Guarani			
	40	30.0	2.5

ficant at the 5% level. The effect of mortality in family size is about the same in the Caingang groups of the two communities (Tab. 10). The frequency of deaths before the age of 15 is also practically the same in the two populations (Tab. 11) but there is a curious difference in the frequency of stillbirths. It is difficult to decide if this is a real biological difference or simply a problem of reporting. The Xaçecó Aweikoma/Caingang women could have included abortions as stillbirths, thus explaining the increased incidence among them. It is also interesting to note that the two small samples of Guarani births show differences of the same order of magnitude between the two localities, but in the opposite direction (higher frequency in Duque de Caxias).

Childless marriages (Tab. 12). The small difference in childless marriages between the Caingang communities of Duque de Caxias and Xaçecó is not statistically significant. The values are similar to the average found for Rio Grande do Sul populations (5.2% - Salzano, 1961a).

Tab. 12. Childless marriages by generation *

Localities	Generations					Total
	3 rd	2 nd	1 st	2 nd /3 rd	1 st /2 nd	
Duque de Caxias:						
Aweikoma/Caingang						
Number of marriages	18	14	9	4	5	50
Childless	1	—	1	—	—	2 (4.0)
Guarani						
Number of marriages	4	4	1	—	2	11
Childless	—	—	—	—	—	—
Xaçecó:						
Caingang						
Number of marriages	48	43	9	4	7	111
Childless	3	3	1	—	—	7 (6.3)
Guarani						
Number of marriages	5	4	1	2	—	12
Childless	1	1	—	—	—	2 (16.7)

* The length of a generation was estimated as being 21 years in these populations.

Inbreeding (Tab. 13). The high frequency of second cousin marriages in the Caingang group of Xaçepó is somewhat surprising but the inbreeding coefficient calculated for this population and for the Aweikoma/Caingang of Duque de Caxias is within the limits previously found in populations from Rio Grande do Sul (Salzano, 1961a). The fact that the values based on the total number of marriages may be an underestimate is implied by the higher inbreeding coefficients obtained, once only marriages where the spouse's parents are known are included.

Effective population sizes and selection intensity (Tab. 14). Breeding sizes constitute from 29.8% to 35.3% of the total populations in the Caingang communities of Duque de Caxias and Xaçepó. The corresponding values for effective sizes are 17.0% to

Tab. 13. Frequencies of consanguineous marriages in the localities under study

	Duque de Caxias								Xaçepó									
	Aweikoma-Caingang				Guarani				Caingang				Guarani					
	GPK	PK	I	Total		PK	I	Total		GPK	PK	I	Total		PK	I	Total	
				no.	%			no.	%				no.	%			no.	%
1st cousins	—	3	—	3	6.0	1	—	1	9.1	—	2	—	2	1.7	—	1	1	7.7
1st cousins once removed	—	—	—	—	—	—	—	—	—	1	—	1	0.9	—	—	—	—	—
2nd cousins	—	1	—	1	2.0	—	—	—	—	2	14	—	16	13.9	1	—	1	7.7
Semi-double 2nd cousins	—	1	—	1	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
2nd cousins once removed	—	—	—	—	—	—	—	—	—	1	—	—	1	0.9	—	—	—	—
3rd cousins	—	—	—	—	—	—	—	—	—	1	—	—	1	0.9	—	—	—	—
Total	—	5	—	5	10.0	1	—	1	9.1	4	17	—	21	18.3	1	1	2	15.4
No. of marriages	2	35	13	50	—	6	5	11	—	6	74	35	115	—	3	10	13	—
Inbreeding coefficient	—	0.007	—	0.005	—	—	—	—	—	0.005	—	0.004	—	—	—	—	—	—

GPK = Grandparents known; PK = Parents known; I = incomplete information about the spouse's parents.

Tab. 14. Effective population size and selection intensity in the Caingang subgroups

	Duque de Caxias Aweikoma/Caingang		Xapecó Caingang	
	No. individ.	% of total population	No. individ.	% of total population
1st generation	19	21.3	22	12.6
2nd generation	33	37.1	82	46.8
3rd generation	37	41.6	71	40.6
Breeding size	89	35.3	175	29.8
Total population	252	100.0	587	100.0
Effective size	62	24.6	100	17.0
σ^2dq ($q = 0.50$)	0.002	—	0.001	—
Nem (coefficient of breeding isolation)	7	—	24	—
Selection intensity				
Im	0.642	—	0.718	—
If	0.153	—	0.247	—
If/ps	0.251	—	0.424	—
I	0.9	—	1.1	—

24.6%. Conditions for the action of genetic drift are more likely to exist in Duque de Caxias than in Xapecó (Nem equal to 7 and 24, respectively). On the other hand, the index of total selection intensity (I - cf. Crow, 1958) is practically the same in the two localities.

Discussion

Since Lasker (1952) called attention to the potential usefulness of the study of some demographic variables for the study of ongoing human evolution, a series of papers appeared related to the subject. I have recently reviewed the literature dealing with American Indian populations (Salzano, 1963b). But in other areas significant studies are being made as well. To cite just a few more recent ones: in Africa there are the papers of Roberts (1956 and 1956/57); in Europe, those of Cavalli-Sforza (1958 and 1963), Dolinar (1960), Dodinval and Klein (1962), Alcobé and Prevosti

(1963), Basabe (1963); in India, Gould (1960), Berreman (1962), Ray (1963), Dronamraju and Meerakhan (1963); Japan: Schull, Yanase and Nemoto (1962); Middle East, Bonné (1963); and Andaman islands, Cappieri (1963).

The importance of obtaining such information for the comparison of groups living at different stages of cultural development was stressed by Neel et al. (1964). This approach was followed by Spuhler (1962) who reviewed the problem of total selection intensity in a number of human populations ranging from small tribes to large nations.

Concerning the Aweikoma and Caingang groups studied here, the findings can be summarized as follows:

Differences in:

Racial composition
(Xapecó should be considered a tri-racial isolate)
Frequency of inter-racial marriages
Direction of gene flow
Racial composition of immigrants
Average age of mothers
Frequency of stillbirths
Coefficient of breeding isolation (*Nem*)

Similarities in:

Age distribution
Sex-ratio
Average number of children per couple
Mortality
Frequency of childless marriages
Inbreeding level
Index of total selection intensity (*I*)

There have been some discussions in the past whether the Aweikoma should be considered a Caingang subgroup. Guérios (1945) studied their language and decided for the affirmative. It is important to note, however, that the Caingang of Xapecó informed me that they have great difficulties in understanding the Aweikoma dialect. Despite this there are no barriers to interbreeding between the Caingang and Aweikoma living in Duque de Caxias. The situation is completely different in relation to the Guarani groups. They are completely isolated reproductively from the Aweikoma or Caingang and should be considered apart.

Further discussion about the genetic structure and composition of the Duque de Caxias and Xapecó populations should await the genetic data which I hope to present in the near future.

Summary

The Indian populations of the State of Santa Catarina, Brazil, are found in two places, Duque de Caxias and Xapecó. In the former live Aweikoma (possibly a Caingang subgroup), Caingang and Guarani; in the latter, Caingang and Guarani. The Aweikoma intercross freely with the Caingang, and the Aweikoma/Caingang group thus formed can be compared with the Caingang of Xapecó. The Guarani, on the other hand, are reproductively isolated from both populations. The Awei-

koma/Caingang of Duque de Caxias and the Caingang of Xapecó differ from each other in characteristics related to racial composition (degree and amount of non-Indian genes), gene flow, average age of mothers and frequency of stillbirths. On the other hand, they show similarities in a series of demographic variables related to fertility, mortality and inbreeding levels. The index of total selection intensity is practically the same in the two localities.

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RIASSUNTO

Le popolazioni indigene dello Stato di Santa Catarina vivono in due località, Duque de Caxias e Xapecó. Nella prima, incontriamo Aweikoma (che potrebbe essere un sottogruppo Caingang), Caingang e Guarani; nell'ultima, Caingang e Guarani. Gli Aweikoma s'incrociano liberamente con i Caingang, e il gruppo Aweikoma/Caingang, così formato, può essere paragonato con i Caingang di Xapecó. I Guarani, d'altronde, riguardo alla riproduzione sono isolati da entrambe le popolazioni. Gli Aweikoma/Caingang di Duque de Caxias e i Caingang di Xapecó differiscono gli uni dagli altri per caratteristiche riguardanti la composizione razziale (grado e quantità di geni non indigeni), il flusso genico, l'età media delle madri e la frequenza dei nati-morti. D'altro canto, essi si somigliano per una serie di variazioni demografiche riguardanti la fertilità, la mortalità ed i livelli di endogamia. L'indice d'intensità di selezione totale è praticamente lo stesso nelle due località.

RÉSUMÉ

Les populations indigènes de l'État de Santa Catarina vivent dans deux localités: Duque de Caxias et Xapecó. Dans la première, nous trouvons des Aweikoma (probablement un sous-groupe Caingang), des Caingang et des Guarani; dans la seconde, des Caingang et des Guarani. Les Aweikoma se croisent librement avec les Caingang, et le groupe Aweikoma/Caingang ainsi formé peut être comparé aux Caingang de Xapecó. Les Guarani, d'autre part, sont, au point de vue de la reproduction, isolés de ces deux populations. Les Aweikoma/Caingang de Duque de Caxias et les Caingang de Xapecó diffèrent les uns des autres par des caractéristiques qui tiennent à la composition raciale (degré et quantité de gènes non indigènes), au flux génique, à l'âge moyen des mères et à la proportion des morts-nés. D'autre part, ils se ressemblent par une série de variables démographiques, en relation avec la fécondité, la mortalité et les niveaux d'endogamie. L'indice d'intensité de sélection totale est pratiquement le même dans les deux localités.

ZUSAMMENFASSUNG

Die Eingeborenenpopulationen des Staates Santa Catarina leben in 2 Ortschaften, Duque de Caxias und Xapecó. In der ersten finden wir die Aweikoma (wahrscheinlich eine Untergruppe der Caingang), Caingang und Guarani; in der anderen Caingang und Guarani. Die Aweikoma und Caingang vermischten sich uneingeschränkt und die derart entstandene Gruppe von Aweikoma/Caingang kann mit den Caingang aus Xapecó verglichen werden. Die Guarani jedoch sind hinsichtlich der Fortpflanzung von den beiden anderen Populationen getrennt.

Die Aweikoma/Caingang aus Duque de Caxias und die Caingang aus Xapecó unterscheiden sich durch Merkmale, die durch ihre Rassen-Zusammensetzung (Grad und Anzahl nicht indianischen Gene), durch die genetische Strömung, das Durchschnittsalter der Mütter und die Zahl der Totgeburten bedingt sind. Andererseits sind sie sich in einer Reihe demographischer Variationen hinsichtlich Fruchtbarkeit, Sterblichkeit und Endogamieverhältnisse ähnlich. Der Grad der Intensität der totalen Selektion ist praktisch in beiden Ortschaften der gleiche.