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Consanguinity in the Azores Islands 1979-85

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RESUMO

Neste estudo, que faz parte dum projecto biodemográfico sobre os Açores, é feita uma análise da evolução do coeficiente aparente de consanguinidade no Arquipélago dos Açores, nos últimos 7 anos (1979-1985).

A ilha que é simultaneamente a maior e a mais populosa, é a que apresenta uma consanguinidade mais constante e elevada. No entanto, os maiores valorès do $\alpha \times 10^5$ em termos absolutos, registaram-se nas Flores.

O casamento entre primos direitos é o tipo de união consanguínea mais frequente.

Palavra-chave: Casamentos consanguíneos; Açores; Consanguinidade aparente.

ABSTRACT

The present study, which is part of a biodemografhic project about the Azores Archipelago, analyses the evolution of apparent consanguinity in the Azores Islands for the last 7 years (1979-1985).

The bigest island, which is the most populated as well, is the most consanguineous. However, the highest values, in absolute terms, occur in Flores Island, one of the smallest ones. Marriage between first cousins is the most frequent one.

Key-words: Consanguineous marriages; Azores; Apparent consanguinity.

INTRODUCTION

Some findings of a study that is being carried about consanguinity, in the Azores Archipelago, are examined in this paper. This data concernes the present consanguinity (1979-1985), but other results are referred as term of comparision.

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The Azores is located in the North Atlantic Ocean, between 36° 55' and 39° 43' lat. and 24° 46' and 31° 16' W long., with a marithm surface of 3500 Km^2 and a population of 250 000 inhabitants (1981, I.N. Statistics).

The Azores is made up of 9 islands distributed in 3 groups: oriental group: S. Miguel and Santa Maria; centrál group: Graciosa, Terceira, S. Jorge, Pico and Faial, and the occidental one with Flores and Corvo.

The number of inhabitants per island and the demographic density, are stated in the maps.

After 20 years of continuous and great demographic fall, mainly caused by the strong emigration movement, the Azores population has been more or less stable after the last Census (1981), but showing a trend to decrease.

The strong natality rate, which was superior to 26% in 1965-69, decreased continuously during the last decade and now it can be estimed on about 20%.

The mortality rate, has been varying between 1970-83, in spite of the population trend of getting old.

But the determinant factor in the demographic evolution is the migration movement. Emigration and other migration to the national space, were responsable for the exit from the Region, between 1960-80, of about 2.8% of their inhabitants. This rate overtakes widely a lot the difference between the natality and mortality rates. (População e emprego).

The emigrational phenomenon has reached his maximal intensity between 1966 and 1975 (População e emprego). In the quinquenium 1976-80, the yearly emigration rate decreased to 9.3% and between 1981-83 decreased again to a value inferior to 7%, the smallest value ever reached.

The majority of the islands has vulcanic origin, consequently they suffer from time to time from sismic activity. The wheather instability is also a constant of the Archipelago.

The biggest island, S. Miguel, is also the most important, and that's where the capital is located (Ponta Delgada). The smallest one is Corvo.

The population spreads out in small villages and this kind of demographic distribution, reflects the main economic activity of the Archipelago: agriculture.

The high proportion of consanguineous marriages in the first 50 years of this century, were mainly caused by the isolation: the Azores are 1500 km far from Europe and 3500 km far from North America. But the emigration must not be subestimed as it is an important factor contributing to the consanguinity. The Azores are the Portuguese area that has most contributed, proportionaly, to the Portuguese emigration phenomena, about 1/4 of the total (AGUIAR, 1976).

MATERIAL AND METHODS

The data concerning consanguineous marriages has been obtained from the Episcopal Archives, at Angra do Heroísmo (Terceira Is.), and computarized. There, we can find all the registers concerning marriages between relatives

for all the parishes of the Archipelago. Although the majority of Azores population is catholic, a certain error caused by studying only the catholic marriages, has to be taken into account.

The data which refers the total number of marriages per island and also the one that refers the number of inhabitants per island, were obtained also at Angra do Heroísmo. Other population data were taken from the Provincial Statistics Offices (INE).

The consanguinity coefficient — the apparent consanguinity — has been calculated after the methodology followed by Brandão (1980).

All together there were 12456 marriages during the period studied, 1979--85, of which 366 were between relatives (according to the Roman Catholic usage). Corvo Is. hadn't registed any consanguineous marriage (there were only 5 marriages during these 7 years). So the distribution of the consanguineous marriages is not homogeneous.

We are aware that the inbreeding coefficient values obtained in this work, are under estimate of the real ones.

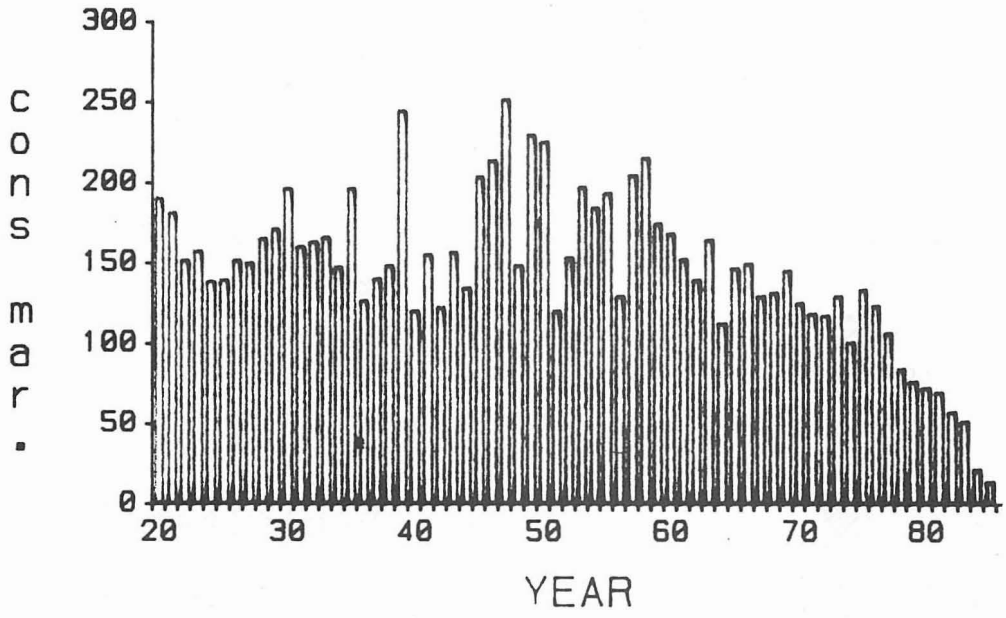


Fig. 1 — Variation of the number of consanguineous marriages for each year from 1920-1985 in Azores Archipelago

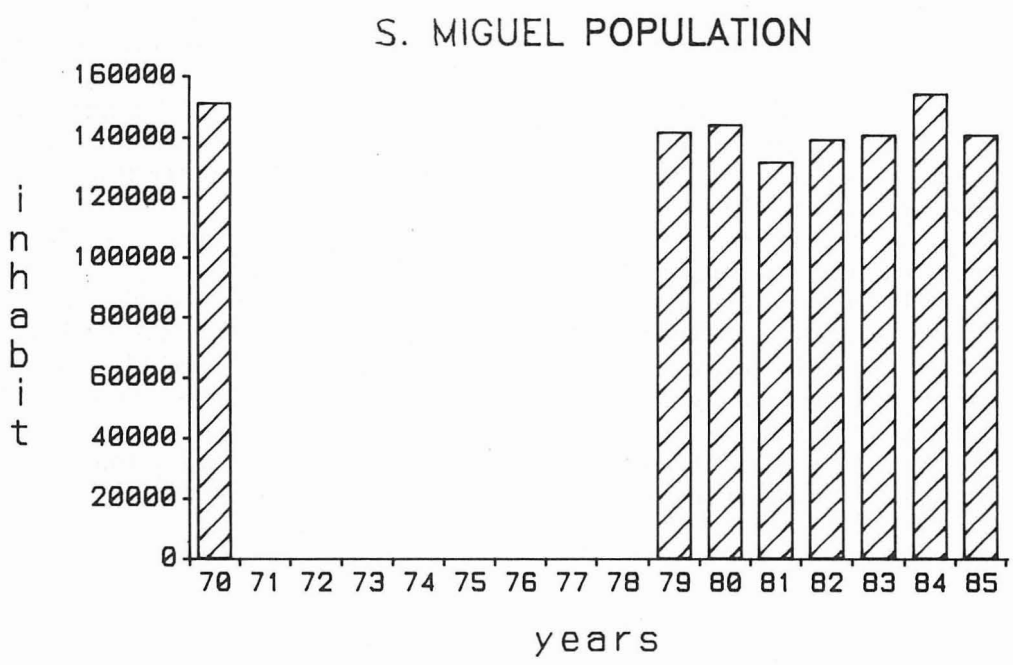


Fig. 2 — Evolution of the population at S. Miguel Is. from 1979 to 1985 and also in 1970

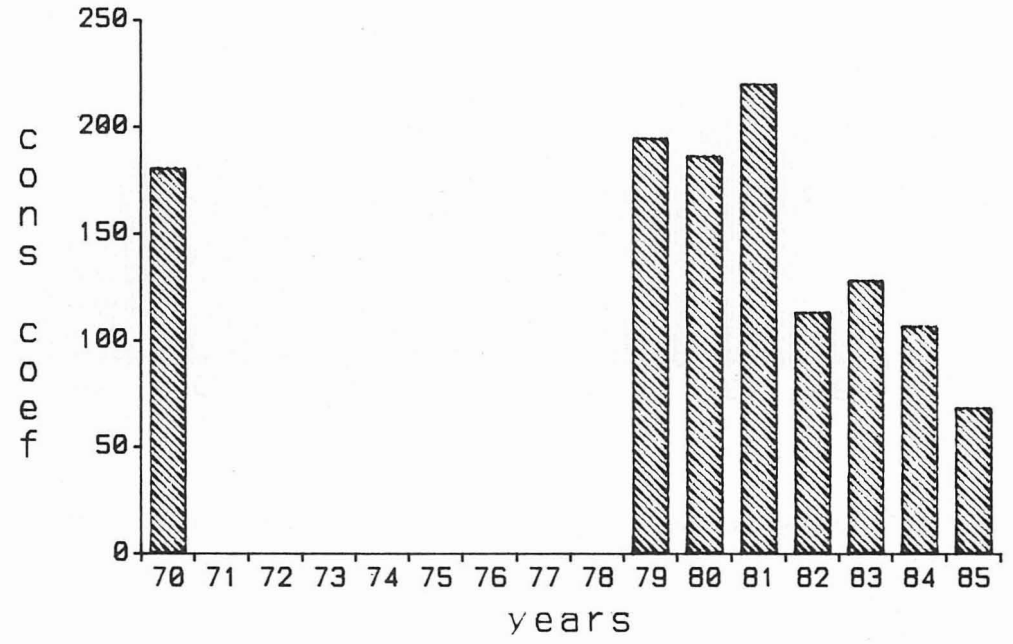


Fig. 3 — Evolution of the inbreeding coefficient in S. Miguel Is., from 1979 to 1985 and also in 1970

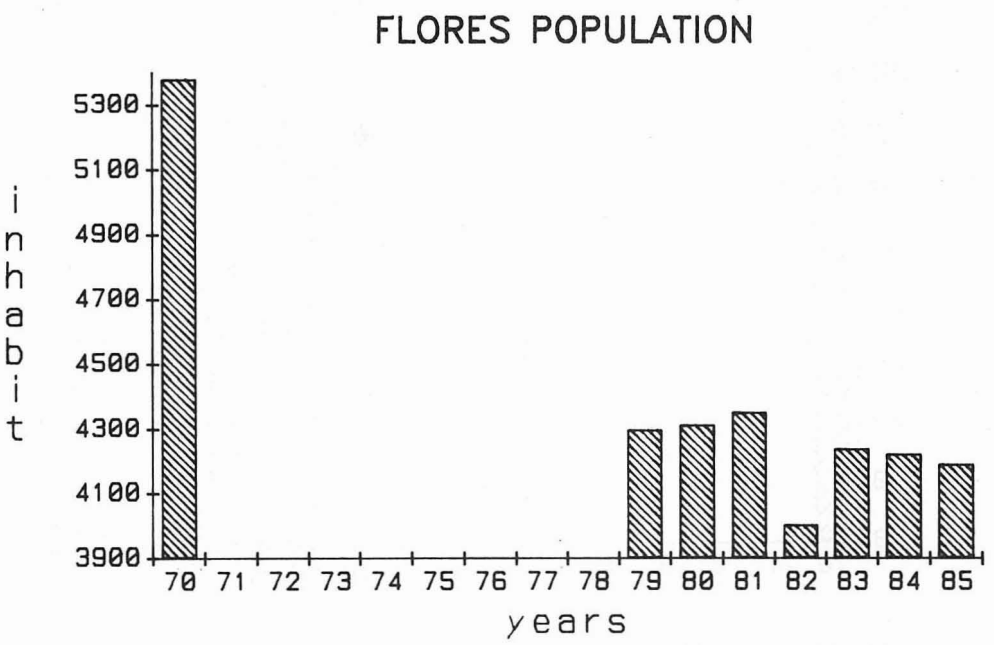


Fig. 4 — Population evolution in Flores Is. from 1979 to 1985 and also in 1970

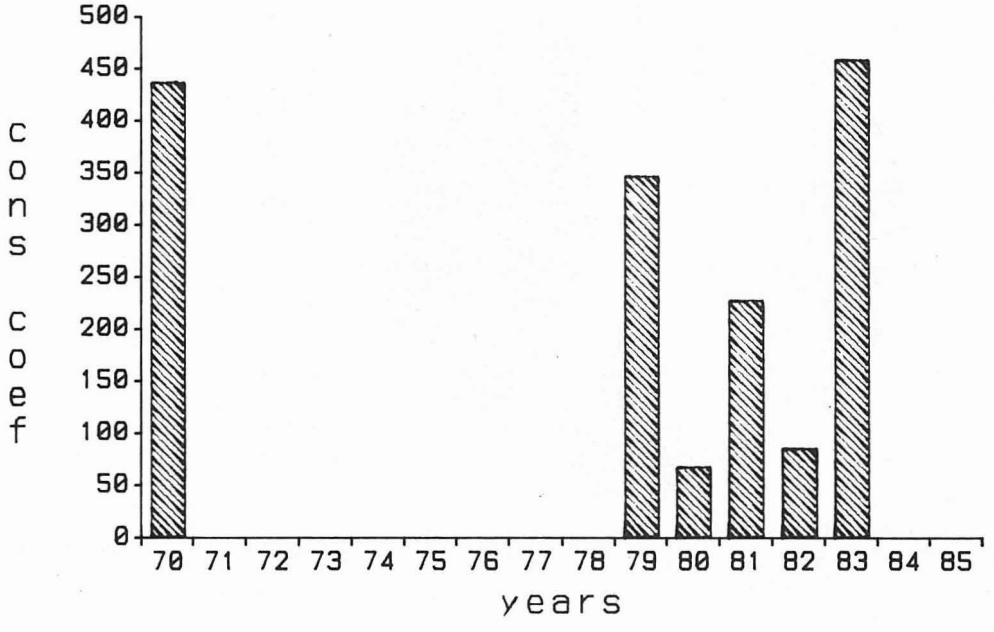


Fig. 5 — Evolution of the inbreeding coefficient in Flores Is., from 1979 to 1985 and also in 1970

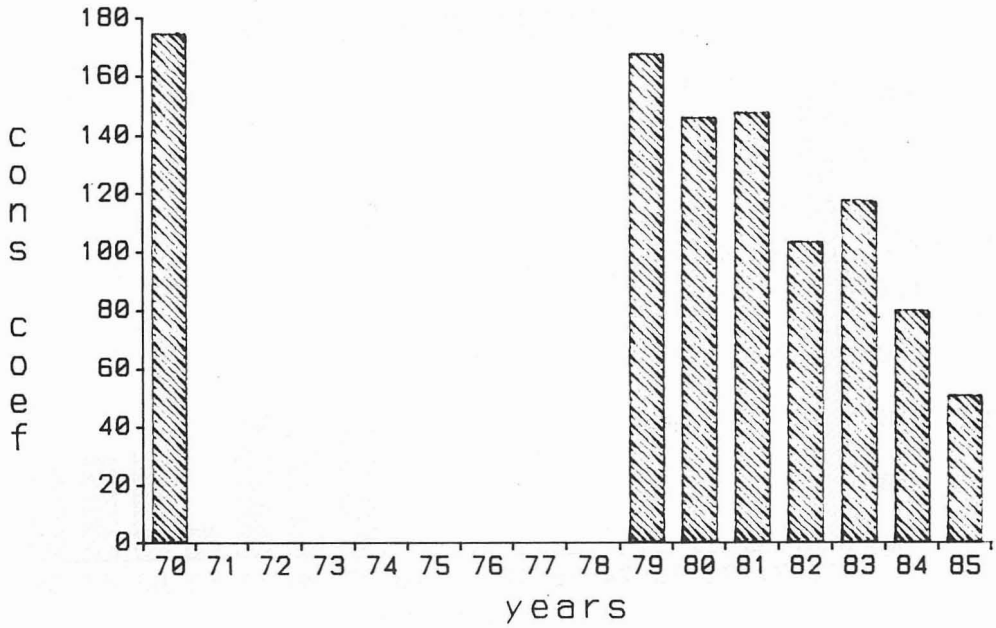
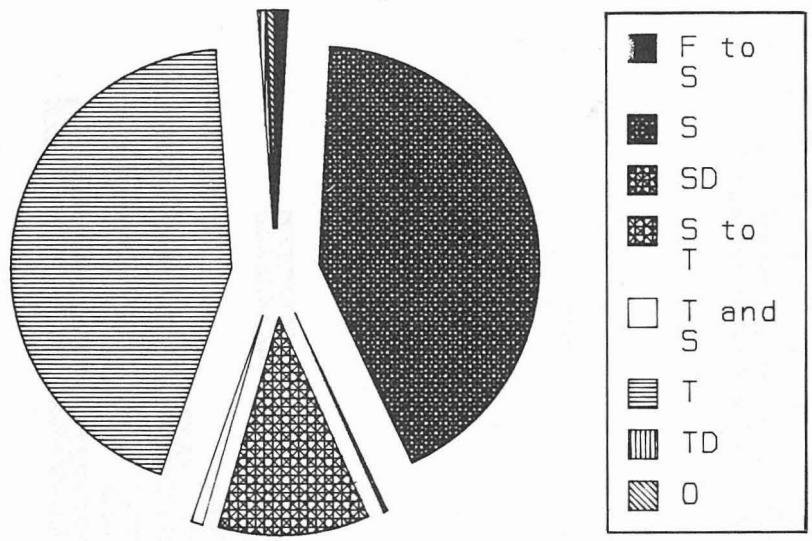


Fig. 6 — Evolution of the inbreeding coefficient in the Azores Archipelago from 1979 to 1985 and also in 1970. ($\propto \times 10^5$ is the mean of the values of the all islands)



Legend: FtoT — first to second consanguinity degree; S — second degree; SD — double second degree; S to T — Second to third degree; Tand S — Third and second degree; T — third degree; TD — double third degree; O — others degrees of consanguinity

Fig. 7 — Frequency of the different types of consanguineous marriages in the last 65 years in the Azores Archipelago

RESULTS AND DISCUSSION

In the last 65 years, there were 4512 marriages between relatives at the Azores. Distribution of these marriages by years is given in Fig. 1. 34.5% of these took place in the last 17 years. The relative frequencies expressed on percentages from 1969 to 1985 are given in Table 5. There we can see that the percentage decreased from the quinquenium 70-74 until 81-84.

8.1% of the consanguineous matings, since 1921 until 1985, happenned in the last 7 years, which is the period focussed in this study.

Analysis of the distribution of consanguineous marriages

The distribution of the consanguineous marriages by islands and years are given in Table 2.

Analysing the time variability of the number of this kind of union, which shows a mean of $\bar{x} = 52.3$ consanguineous marriages per year and a standard deviation of 25.1, results give $X^2_{(5)} = 0.83$ with $P < 0.01$.

According to this, we can deduce that time may have an influence on the number of the unions between relatives. The correlation coefficient between time and consanguineous marriages $r = -0{,}91$ with $P < 0.01$, shows an inverse type of correlation.

There is no relation between total number of marriages and consanguineous ones, as the correlation found, $r = -0.67$ with $P < 0.05$ is no significant.

More than half of the unions between relatives took place at S. Miguel, which can be justified by the fact that S. Miguel represents 54% of the Azores population. Anyway 60.9% is a significant value and it shows a certain consanguinity comproved by the yearly mean percentage (cons. marr./total of marr.) varying from 1.2% to 4.8%.

The second island in terms of population, Terceira, doesn't show the same similarity between the percentages of consanguineous marriages (to the Archipelago) 16.9%, and the percentage of population 22%. This is in agreement with the relative frequencies, expressed in percentages, of the consanguineous marriages, that is inferior from those from S. Miguel.

The relative frequencies are not very heterogeneous in Pico, Faial, S. Jorge and St. Maria, where they vary from 0 to 6.9.

Flores shows a higher heterogeinity, reaching the highest percentages (in absolute value).

The fact of the most populated islands are those with more consanguineous marriages, agrees with the correlation found between $\propto$ and population, that will be refer later.

Analysis of the different types of consanguineous marriages

Percentages of the different types of consanguineous marriages are given in Table 3.

The most frequent type is the marriage between first cousins (2.°), followed by the one between second cousins (3.°) and by 2.°-3.° degree of consanguinity.

The results obtained to the present period, are not much different from the ones found to the last 65 years (Fig. 7), where the 3rd degree of consanguinity overtook the 2nd degree only by 1.3% (43.6%-3.° 43.3%-2°). Although the marriage between 2nd cousins is more frequent than the 2nd degree of consanguinity at all islands except S. Miguel, the percentages of marriages between first cousins (45.8%) overtakes the one shown by marriages between 2nd cousins (42.6%). This must be due to the inexistance of the marriage type 3 during the last 2 years.

Analysis of the inbreeding coefficient

The different values of the apparent consanguinity coefficients, for each island and year, are given in Table 4. A graphic representation for the evolution of the values (Archipelago) is given in Fig. 6. There we can see that $\propto$ shows its highest value in 1979, decreasing since then until 1985, with an interruption in 1981. Values from 1970 are given to comparisons (consanguinity was higher in the 70 decade).

The highest $\propto$, in absolute values, are shown by Flores Is. 459.4 to 1983. As Flores is one of the smallest Is. (Population evolution is given in Fig. 4) these values are significant (evolution is given in Fig. 5).

The other island of the occidental group, Corvo, doesn't show any consanguinity at all, there was less than a marriage per year, in the last 5 years, and now it has about 370 inhabitants. Nevertheless, consanguinity at Corvo had reached some significant values in preceding years.

Graciosa is the second island with the smallest values of $\propto \times 10^5$ with 3 years without consanguinity. The other islands of central group, except Terceira, show an heterogeneous consanguinity.

The oriental islands with Terceira, are the only ones with consanguineous marriages in all the years studied.

The higher homogeinity and the higher values, are reached at S. Miguel. (Fig. 3).

So, the order of islands with regard to their inbreeding coefficient is: Flores, S. Miguel, Santa Maria, S. Jorge, Terceira, Faial, Pico, Graciosa and Corvo. The apparent consanguinity coefficient is very correlated with the number of inhabitants. The correlation found $r = -0.93$ with $P < 0.01$ shows that as the number of inhabitants increases, $\propto \times 10^5$ decreases.

TABLE 1: *Number and percentage of consanguineous marriages for each island and year*

YEARS	CONSANGUINEOUS MARRIAGES																	
	S. Miguel		St. Maria		Terceira		Graciosa		S. Jorge		Pico		Faial		Flores		Corvo	
	N.º	%	N.º	%	N.º	%	N.º	%	N.º	%	N.º	%	N.º	%	N.º	%	N.º	%
1979	48	4.2	1	1.6	15	3.5	2	5.1	3	4.2	4	3.5	3	2.9	1	5.6	0	0
1980	44	4.6	2	3.3	15	3.8	1	2.4	3	5.7	3	3.4	4	3.8	1	5.9	0	0
1981	43	4.8	2	4.1	10	2.1	1	2.4	3	4.6	7	6.1	1	2.2	3	13.0	0	0
1982	31	3.9	5	6.9	10	2.3	0	0	3	3.6	2	1.1	6	6.9	1	5.6	0	0
1983	31	3.3	3	4.9	9	2.1	1	2.0	2	2.7	2	2.1	2	2.3	2	11.8	0	0
1984	16	1.7	2	4.0	2	0.5	0	0	0	0	1	1.1	1	1.2	0	0	0	0
1985	10	1.2	1	1.5	1	0.3	0	0	2	2.1	0	0	0	0	0	0	0	0

TABLE 2. *Number of marriages (total) for the all Archipelago (Arc.) and for each island and year*

Total Mar.	AR.	SM	SIM	TER	GRA	SJ	PI	FA	FL	CO	YEAR
	2848	1952	94	370	71	87	115	129	25	5	1970
	1911	1054	61	452	39	71	113	104	18	2	1979
	1713	954	60	393	41	53	88	107	17	0	1980
	1750	941	61	422	49	75	96	89	17	0	1981
	1888	1002	72	472	41	83	95	101	18	4	1982
	1775	912	49	477	41	65	115	92	23	1	1983
	1706	933	50	385	42	88	91	90	27	0	1984
	1717	909	68	396	32	92	111	85	24	0	1985

TABLE 3. *Different types of consanguineous marriages expressed as percentages for each island 1979-1985*

	TYPES OF CONSANGUINEOUS MARRIAGES						
ISLANDS	$1^o \rightarrow 2^o$	2^o	$2^o \rightarrow 3^o$	3^o	$3^o\,3^o$	$2^o\,2^o$	$2^o\,2^o$ and $2^o \rightarrow 3^o$
S. Miguel	0	55.0	7.7	36	0	0.9	0.4
St. Maria	5.9	35.3	11.8	47	0	0	0
Terceira	3.1	35.9	12.5	48.4	0	0	0
Graciosa	0	0	20	80	0	0	0
S. Jorge	0	37.5	18.8	43.7	0	0	0
Pico	0	22.2	0	72.2	5.6	0	0
Faial	6.7	26.7	13.3	53.3	0	0	0
Flores	0	25	12.5	62.5	0	0	0
Corvo	0	0	0	0	0	0	0
TOTAL	1.1	45.8	9.3	42.7	0.27	0.56	0.27

TABLE 4. $\propto \times 10^5$ *values grouped by years and islands*

	$\propto \times 10^5$								
YEARS	S. Miguel	St. Maria	Graciosa	Terceira	S. Jorge	Pico	Faial	Flores	Corvo
1979	194.9	25.6	80.2	120.9	220.1	138.3	105.2	347.2	0
1980	186.7	130.1	76.2	123.2	89.1	53.3	145.7	68.0	0
1981	220.2	63.8	38.1	193.2	96.3	95.2	33.9	227.7	0
1982	113.7	195.3	0	59.6	131.8	65.5	201.1	85.9	0
1983	128.6	179.4	31.9	81.5	105.5	31.9	35.2	459.4	0
1984	107.2	223.2	0	32.5	0	61.3	72.7	0	0
1985	68.8	92.0	0	15.8	135.6	0	0	0	0

TABLE 5. *Number and frequency, expressed in percentages, of consanguineous marriages for the Azores Arch. from 1969 to 1985*

YEAR	N.º MARRIAGES	% CONSANGUINEOUS MARRIAGES	
1969	2727	5.4	Quinquenial mean
1970	2700	4.7	
1971	3010	4.0	
1972	2695	4.4	4.3
1973	2718	4.8	
1974	2645	3.8	
1975	3182	4.2	
1976	2991	4.2	4
1977	2651	4.0	
1978	2364	3.6	
1979	1911	4.0	
1980-84			3.3

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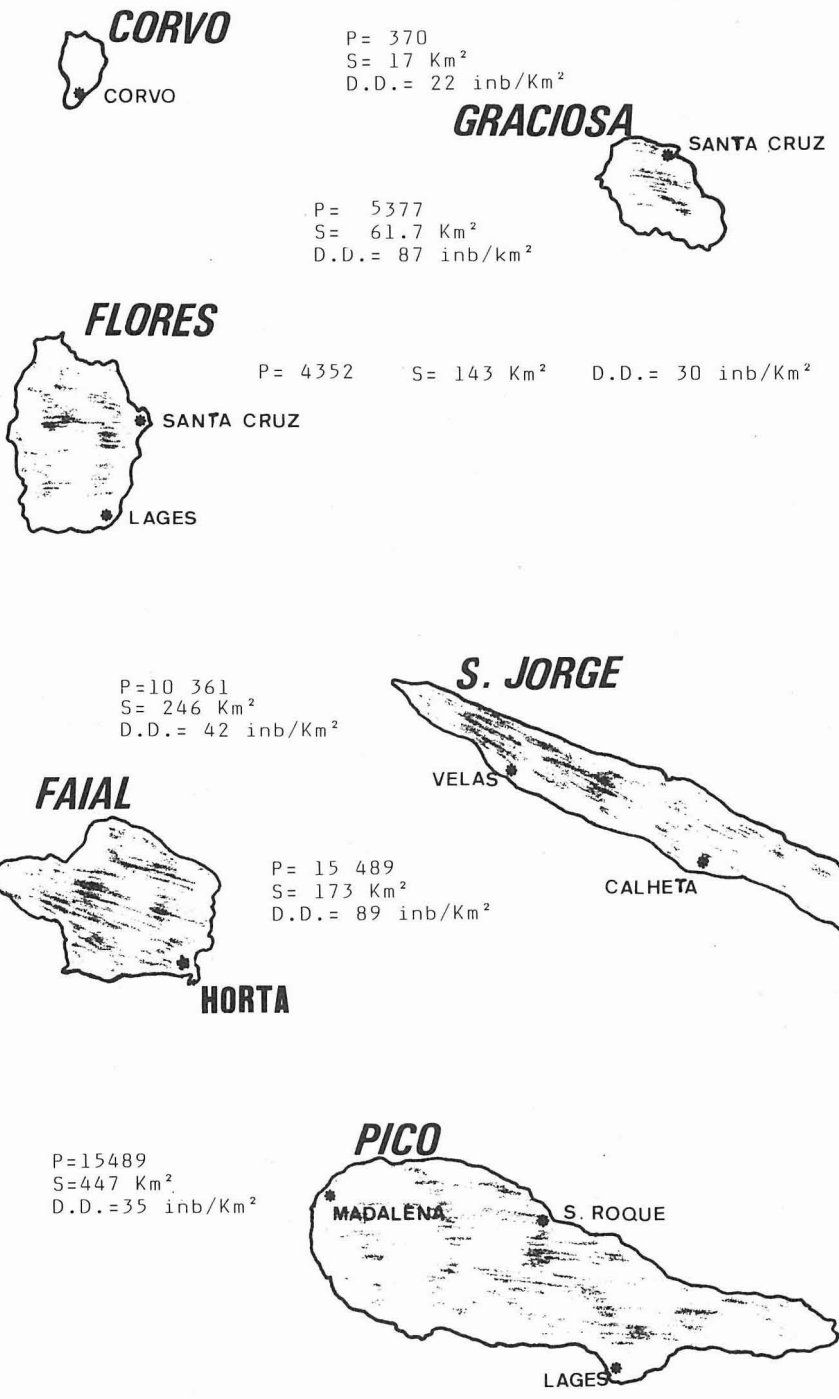
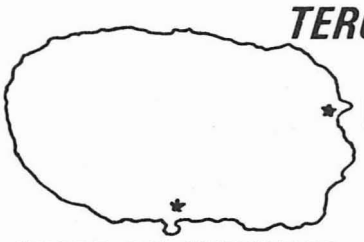


Figure 8- Maps of the 9 Azoreen Islands.

P=population (inhabitants) S=Surface D.D.= Demographic density

P= 132 326 S=757 Km² D.D.=174 inb/Km²



P= 53 570 S= 402 Km² D.D.=133 inb/Km²

P= 6500
S=97Km²
D.D.=97 inb/Km²