THIRD POPULATION AND HOUSING CENSUS
ARUBA - OCTOBER 6, 1991

THE POPULATION OF ARUBA: A DEMOGRAPHIC PROFILE.

Frank C.H.Eelens

CENTRAL BUREAU OF STATISTICS
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Preface

The current publication is the outcome of a cooperation project between the Central Bureau of Statistics Aruba and the Netherlands Interdisciplinary Demographic Institute (NIDI) in The Hague. The technical assistance which the NIDI provided for the Population and Housing Census was financed by the Dutch government. Dr.F.C.H.Eelens from the NIDI acted as the resident census advisor.

In recent years Aruba's economy has changed rapidly. Therefore it is necessary to have an insight into the demographic consequences of these changes. The present study tries to fill this gap and provide an insight in the population dynamics of the last years in Aruba. Through a clear understanding of the population dynamics of Aruba it becomes possible for the policy makers to make the right decisions for the future of the people living on Aruba. The study is based on the results from the 1991 Population and Housing Census.

The Director of the Central Bureau of Statistics

Drs.E.A.Jacopucci

Oranjestad, December, 1993.

Contents

Introduction

To every citizen in Aruba it is clear that important changes are currently taking place in their community[1]. The economic boom, carried by the development of the tourist industry, has brought higher prosperity to large segments of the Aruban population. However, the growth of the local economy has also created some serious side effects. These effects are currently the subject of a broad public debate. Tensions have risen on the labor and housing markets. The existing infrastructure of roads, water supply and communication has been under serious pressure. The topic of illegal migrants is almost daily news in the local papers. To have a clear vision of where the population of Aruba is going to, it is necessary to have an idea where Aruba stands now. In the present volume, we hope to shed some light on the demographic characteristics of the population currently living on Aruba.

In the first chapter we will discuss the size and structure of the population. An attempt will be made to link the evolution of the population to the dramatic economic events of the last decade. Marriage and the family are the subject of the second chapter. Here, we will deal with such topics as formation of first marriage, divorce, consensual unions and household structure. The components of population growth (fertility, mortality and migration) are the topics of the next chapters. In the chapter on fertility, current trends in the intensity and timing of human fertility will be looked at more closely. Attention will be paid to the fertility transition in Aruba and levels of legitimate and illegitimate fertility. Levels of mortality are an important indicator of the health conditions in a country, and a primary measure of social and economic development. Chapter four addresses the evolution of mortality in Aruba. The situation of the disabled in Aruba will also be dealt with in this chapter. Chapter five addresses the phenomena of migration from and to Aruba. During the last few years, migration has played a primordial role in the country's economic development. Some characteristics of Aruba's foreign-born population and their position on the labor market will be discussed in this chapter. Finally, some social characteristics of the Aruban population will be dealt with in the last chapter.

Most of the definitions we use in this volume were already presented in the first census publication 'Third Population and Housing Census, October 6, 1991. Selected Tables.' Obviously, many figures we use in the description of the various phenomena are adopted from this volume.

The reader should know that an increment factor of four percent has been incorporated in all tables related to the 1991 Population and Housing Census. This was done to compensate for a slight undercount during the census. The census user should be aware, however, of the drawback of using an increment factor for the presentation of tables based on the census data. Applying an increment factor

[1] **We would like to thank M.Marques and R.van der Biezen for assisting with the computer work, R.Croes for help with the lay out, H.Beukenboom and E.a.Jacopucci for his suggestions and A.Pleit-Kuyper for checking the original text.**

leads to rounded figures in the tables. As a result, sometimes the detailed items in the tables do not add up to the totals. However, to prevent inconsistencies among the totals in different census tables, these apparent miscomputations were not corrected.

A. Size and structure of the Aruban population

Population size

According to the population census of October 6, 1991, the total population of Aruba amounted to 66,687 persons[2] living in 19276 households. Table 1, shows the population figures for the last four consecutive censuses for both sexes.

Table 1.Number of persons living on Aruba at the various census moments by sex.

	Male	Female	Total
1960	26,127	27,072	53,199
1972	28,401	29,504	57,905
1981	29,340	30,972	60,312
1991	32,821	33,866	66,687

Source: Population censuses 1960, 1972, 1981, 1991.

During the period 1960-1972, the population of Aruba grew by 8.8 percent. During the next intercensal period (1972-1981), the growth diminished to 4.2 percent. However, the growth rate has picked up again and, compared to the last census, the Aruban population has increased by 10.57 percent. The population growth during the last intercensal period has been far from smooth. Hereunder we will briefly discuss the dramatic events of the 1980s that caused a period of important demographic changes.

[2] **The population census in Aruba was a 'de jure' enumeration. Only persons having their usual residence in Aruba were counted. The population mentioned in the census tables is thus a 'de jure' population. 'Persons with usual residence in Aruba' was operationalized as: persons who, at the time of the census, had been living on Aruba for one year or longer and persons who, at the time of the census, had been living on Aruba for less than one year, but who had the intention to remain on the island for one year or more. This definition was exactly the same as the one used in the 1981 population census.**

Demographic turbulence during the period 1981-1991

During the period 1981-1991, Aruba witnessed some major economic, social and political changes. In a period of less than ten years, Aruba experienced both its worst economic crisis and greatest boom of the last sixty years. In March 1985, the LAGO oil refinery stopped its operations, which greatly affected the national economy and the public finances. From 1927 onwards, LAGO had been the principal pillar of the economic activities on the island. Due to the closure, some 1300 employees of the LAGO lost their job. The downward spiral of the economy caused a loss of 6000 to 8000 jobs in a minimum of time. Unemployment soared from a level of about 5 percent to an estimated 27 percent[3].

In a bid to counteract the devastating effects of the closure of the LAGO the government took firm actions. The government decided to fully develop the potentials of Aruba as a prime tourist destination. It was planned to increase the hotel room capacity from 2318 in 1985 to 7702 in 1992 (Department of Economic Affairs, 1990). To achieve this goal, several new hotels were constructed. Existing hotels expanded their capacity. Consequently, the construction sector on the island experienced an enormous boom. The completion of hotel rooms has fallen a little short of the amount originally planned. However, by the end of 1992 5804 rooms were in operation[4]. Due to the increased capacity of the Aruban hotels, the tourist sector attracted a large group of service workers. In the meantime, the government was able to find a new operating firm for the abandoned oil refinery. In April 1990, the Coastal Oil Corporation started its operations on Aruba. A large group of contractors and workers, from within and from outside Aruba, were hired for the renovation and the operation of the plant.

Besides the economic developments, a major constitutional change took place during the intercensal period. At the beginning of 1986, Aruba gained its Status Aparte within the Kingdom of the Netherlands.

The demographic transformations that have taken place during the last decade clearly reflect the economic and social changes. In the following sections, we will take a closer look at the components of demographic change during the last twenty years. The period from 1972 till around 1984 shows a high degree of demographic stability. As such, we can use it as a reference for the turbulent demographic events of the past few years. An attempt to depict the evolution of Aruba's population size for the last 30 or 40 years was abandoned. The poor quality of the transition data from the Population Register before 1972 does not allow for such estimates.

Figure 1 depicts the evolution of Aruba's population during the period 1972-1992. We used stock data from the last three censuses, with flow data from the Population Register. The figures in Table 2 clearly

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[3] **The effect of the shutdown of the LAGO refinery was so enormous that, according to Cole et al. (1992), the economic effect could be compared to a major natural disaster. As a matter of fact, the authors considered the closure of the LAGO a valuable scenario against which to test the performance of a specific modeling technique for assessing the economic damage caused by a natural disaster.**

[4] **Information provided to the Central Bureau of Statistics by the Department of Economic Affairs, Commerce and Industry.**

show that the economic turmoil during the last decade has had some clear consequences on the population dynamics during this period. After a period of relative demographic stability during the 1970s and early 1980s, the closure of the LAGO triggered an important population exodus. Whereas the population amounted to 62228 in mid-1983,

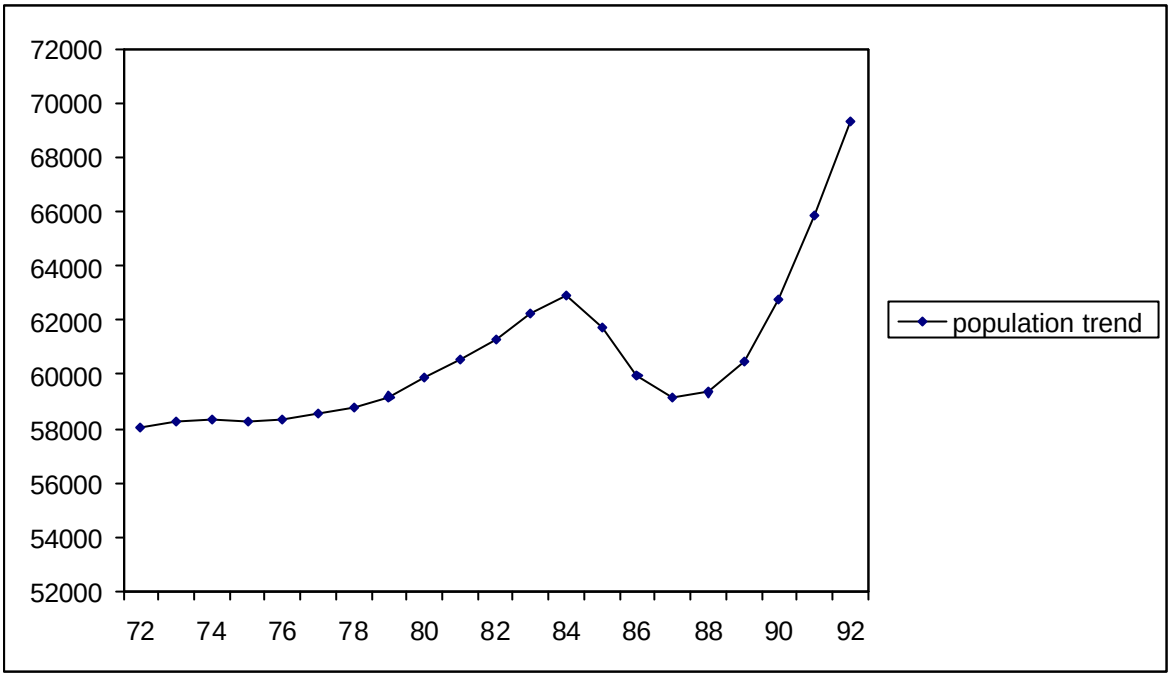
Table 2. Population Aruba, annual changes since 1972

Year	Population Aruba		Deaths		Livebirths		Natural growth		Emigration		Immigration		Net migration		Net growth	
	mid year[1]	end of year	absolute	death rate	absolute	birth rate	absolute	n.g. rate	absolute[1]	em. rate	absolute	im. rate	absolute	n.m. rate	absolute	growth rate
1972	58047	58189	275	4.74	1201	20.69	926	15.95	2584	44.51	1942	33.46	-642	-11.06	284	4.89
1973	58299	58409	287	4.92	1003	17.20	716	12.28	2667	45.75	2171	37.24	-496	-8.51	220	3.77
1974	58349	58290	298	5.11	962	16.49	664	11.38	2479	42.48	1696	29.07	-783	-13.42	-119	-2.04
1975	58295	58299	286	4.91	968	16.61	682	11.70	2414	41.41	1741	29.87	-673	-11.54	9	0.16
1976	58368	58437	300	5.14	941	16.12	641	10.98	2194	37.59	1691	28.97	-503	-8.62	138	2.36
1977	58580	58722	320	5.46	993	16.95	673	11.49	2376	40.56	1988	33.94	-388	-6.62	285	4.87
1978	58776	58829	284	4.83	1058	18.00	774	13.17	2445	41.60	1778	30.25	-667	-11.35	107	1.82
1979	59191	59553	318	5.37	1065	17.99	747	12.62	2063	34.85	2040	34.46	-23	-0.39	724	12.23
1980	59909	60264	288	4.81	1125	18.78	837	13.97	2023	33.77	1897	31.66	-126	-2.10	711	11.87
1981	60563	60866	317	5.23	1051	17.35	734	12.12	2082	34.39	1950	32.20	-132	-2.19	602	9.93
1982	61276	61690	313	5.11	1036	16.91	723	11.80	2281	37.22	2382	38.87	101	1.65	824	13.45
1983	62228	62770	339	5.45	1133	18.21	794	12.76	2275	36.57	2562	41.17	287	4.61	1081	17.36
1984	62901	63037	323	5.14	1169	18.58	846	13.45	2325	36.96	1745	27.74	-580	-9.21	266	4.24
1985	61726	60419	334	5.41	1109	17.97	775	12.56	4726	76.56	1333	21.60	-3393	-54.97	-2618	-42.41
1986	59929	59444	377	6.29	1014	16.92	637	10.63	3059	51.05	1447	24.15	-1612	-26.90	-975	-16.27
1987	59156	58873	370	6.25	992	16.77	622	10.51	2779	46.98	1587	26.83	-1192	-20.16	-570	-9.64
1988	59329	59789	335	5.65	949	16.00	614	10.35	1909	32.18	2211	37.27	302	5.09	916	15.44
1989	60441	61096	372	6.15	1141	18.88	769	12.72	2205	36.48	2743	45.38	538	8.90	1307	21.63
1990	62751	64410	419	6.68	1140	18.17	721	11.49	1843	29.37	4436	70.69	2593	41.32	3314	52.81
1991	65895	67480	429	6.51	1157	17.56	728	11.05	1887 [2]	28.64	4229	64.18	2342	35.54	3070	46.59
1992[3]	69345	71162	200	5.77	621	17.91	421	12.14	652	18.80	2072	59.76	1420	40.95	1841	53.10

Notes : 1. The emigration figures are adjusted figures.
2. The emigrations of 1991 are only adjusted for the period of 1/1/1991 to 1/10/1991, for the rest of the period no adjustments are computed but registration figures are used.
3. The mid year population for 1992 is based on the last census - Oct. 6th 1991 - and adjusted according to the mutations in the population register until 1/7/91.
To estimate the end of year population and the rates for 1992, it is assumed that the flow data will be the same during the second half of 1992.

Sources: Population Census 1971, 1981,1991, and Population Register.

Figure 1. The evolution of the population living on Aruba, 1972-1992



Source: Population censuses 1972, 1981 and 1991 and Population Register.

it had dropped to 59156 by 1987. In 1985, the emigration rate amounted to 76.56 per thousand. During the same year Aruba had become far less attractive as a migration destination. The immigration rate had dropped to 21.60 per thousand, the lowest level in the whole period[5].

Since then, with the boom in the tourist, construction and oil industry, an enormous growth of the population has taken place. Between the end of 1989 and the end of 1992, the population has increased by more than 10000 persons. In 1990, the population growth rate was no less than 5.3 percent. A comparison with data from the Demographic Yearbook (United Nations, 1990) reveals that, during 1990, Aruba was most probably the fastest growing country on earth. During the last two years, the level of demographic growth has remained consistently high. A closer look at the components of this extremely high growth shows that changes in fertility and mortality only play a marginal role. During the last two decades, fertility and mortality levels have remained fairly constant. Fluctuations in the size and

[5] **Migration rates are based on registered migrations. The past records of migration are not completely reliable for two reasons: first, the steady stream of illegal migrants to and from the island is not captured in the official statistics and second, in the past, some residents have preferred to leave unnoticed. As such both groups are not captured in the official statistics.**

composition of the population living on Aruba are predominantly caused by variations in the levels of immigration and emigration.

Age distribution and sex ratios

The age distribution of the population residing in Aruba at the time of the last four population censuses is depicted in the population pyramids in Figure 2. The population pyramid of 1991 is characterized by an overrepresentation of persons in the age groups 25 to 39. This overrepresentation is due to two factors: a) high levels of immigration that tend to concentrate in those age-groups of high economic activity and b) a fast decline in levels of fertility that has happened in the past and led to a distortion in the age structure of the population (see pyramids from the previous censuses).

A detailed overview of the pattern of aging is seen in Table 3. In this table, the proportion of persons in three broad age groups in the total population is displayed for the last four consecutive censuses. The proportion of persons less than 15 years old has decreased dramatically during the last 30 years. In 1960, no less than 41.3 percent of all persons living on Aruba was less than 15 years old. By 1991 this percentage had gradually decreased to 24.4. The largest reduction in the proportion of young persons took place during the period 1972-1981. During this time, the percentage of persons under the age of 15 decreased from 36.3 to 25.8. In the last ten years the proportion of young people only decreased from 25.8 to 24.4 percent.

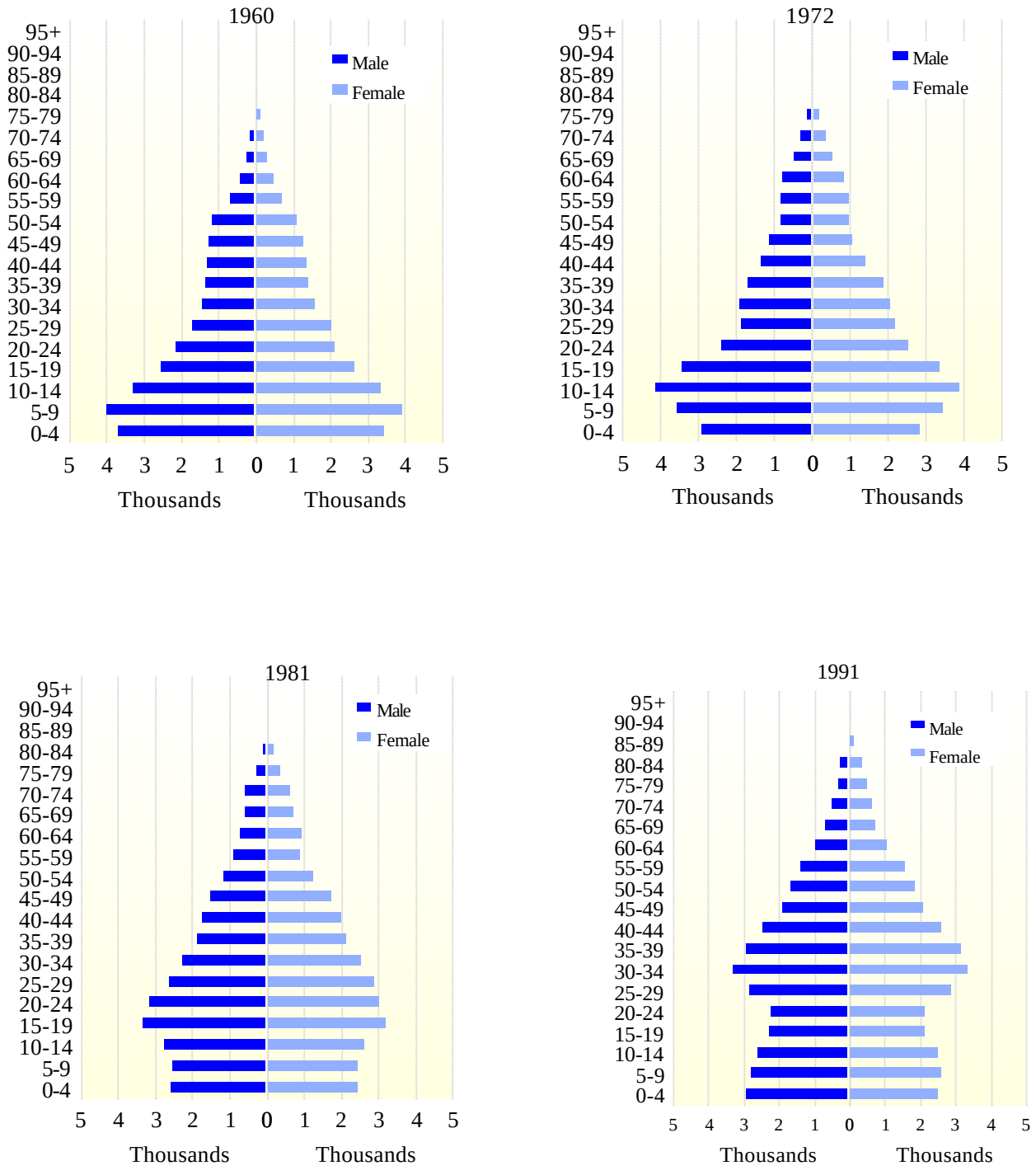
Table 3 Relative population by abridged age groups in 1960, 1972, 1981 and 1991 (%)

	1960			1972			1981			1991		
Age	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-14	20.8	20.5	41.3	18.5	17.8	36.3	13.2	12.6	25.8	12.6	11.8	24.4
15-64	27.0	28.6	55.6	28.6	30.7	59.3	32.6	34.9	67.5	33.3	34.9	68.2
65+	1.3	1.8	3.1	1.9	2.5	4.4	2.8	3.9	6.7	3.0	4.0	7.0
Mean	23.3	24.8	23.9	25.4	26.7	26.1	28.9	30.7	29.9	31.5	33.6	32.6

Source: Population censuses 1960, 1972, 1981, 1991.

The proportion of persons above the age of 65 has only moderately increased during the last 30 years. In 1991, 7 percent of the Aruban population was above the age of 65. Compared, for instance, to the Netherlands - where aging is considered to become a serious problem in the near future- the proportion of elderly persons is quite moderate. In 1990, 13 percent of Dutch persons were in the age groups above 65 (Beets et al., 1991, p.177). These figures would suggest that the aging of the Aruban population is still quite moderate. However, one

Figure 2. Population pyramids for Aruba 1960-1991.



Source: Population censuses 1960, 1972, 1981 and 1991.

should be aware of the fact that the process of aging will manifest itself at a much higher pace than for instance, in most of the West European countries. This is due to the sharp decline in fertility levels that occurred during the sixties and early seventies. According to Van Leusden (1985, p.28), the total fertility rate in Aruba dropped from as high as 5.0 in 1957 to 1.9 in 1973.

The population pyramids show that the proportion of elderly persons will likely rise slightly in the next two decades. However, it will increase dramatically in the years after 2010. A clear effect of the gradual process of the aging of the population is illustrated by the evolution of the mean age of the population. During the last three decades, the mean age of the Aruban population has increased from 23.9 to 32.6 years. In each decade since 1960, the mean age has risen by approximately three years. In each census shown in Table 1, the number of females is higher than the number of males. In 1991, the sex ratio[6] in the total population equaled 96.9. This means that for every 100 females in Aruba, there are 96.9 males. In 1981 the sex ratio was 94.7. It is interesting to note that in the last census more native males than native females are present (sex ratio=101.9). Many more females than males were counted among foreign born persons. Only 82.4 males are present for every 100 females born outside the island.

A closer look at the age-specific sex ratios for the total population reveals that the total number of females at older ages is significantly higher than the number of males. Above the age of 65, the sex ratio only equals 75.7, with 2686 females against 2033 males. The reason for this low sex ratio in the more advanced age groups can be found in the differences in the probabilities of dying. At practically all ages, male mortality is higher than female mortality. In the past, the mortality differentials between the sexes have been quite significant. For the year 1972, Koningstein (1985, p.25) found the life expectancy for females to be much higher than for males (73.5 against 66.7 years). In the chapter on mortality (see p.33) we will deal further with this sex-specific differential mortality.

On the other hand, we can also see, that in the native Aruban population[7], at younger ages, the number of males is much higher than the number of females. For instance, between the ages of 15 and 34, 106.4 men are present per 100 women. There is evidence that this distortion may be partly due to the very high sex ratios at birth in the Aruban population. During the period 1987-1991, the Bureau of Civil Registration recorded a total of 2785 male live births, against 2594 female live births. This implies a sex ratio at birth of no less than 107.3. We will go deeper into this phenomenon in the chapter on fertility.

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6 **We calculated the sex ratio as the number of males divided by the number of females times 100.**

7 **By Aruban, we mean those persons who are born on Aruba and who have the Dutch nationality.**

Population density

With a population of 66687 persons and a total area of 188 km^2, Aruba has a population density of 354.7 persons per square kilometer. In this way Aruba is just slightly less densely populated than the Netherlands, where there are 369 persons per square kilometer. According to the Demographic Yearbook of the United Nations (1991), the most densely populated country on earth in 1991 was Macao, where there are 31063 persons per square kilometer. Among all the countries in North and South America and in the Caribbean, Aruba is the fourth most densely populated after Bermuda (1155 per km^2), Barbados (593 per km^2) and Puerto Rico (405 per km^2).

B. Nuptiality and the family

Population by marital status

Table 4 presents the percentage of the population by marital status at the time of the census. We only include data for the last three censuses because a different definition of 'marital status' was used in the population census of 1960. In this census, a separate category for 'consensual union' was introduced, which obviously had an effect on the distribution within the other legal marital statuses. In the censuses of 1972 and 1981, no category 'legally separated' [8] was presented. As the number of separated people proved to be quite small in the census of 1991, it can be accepted that the bias introduced by the omission of the fifth 'legal' marital status will be insignificant.

Table 4. Percentage of population by marital status at the time of the census in 1972, 1981 and 1991.

Marital status	1972			1981			1991		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Never-married	31.9	32.1	64.0	28.6	28.6	57.2	26.7	25.7	52.4
Married	15.9	16.0	31.9	17.9	18.2	36.1	19.1	18.6	37.7
Divorced	.6	1.0	1.6	1.4	1.9	3.3	2.3	3.3	5.6
Widowed	.6	1.9	2.5	.7	1.7	3.4	.8	2.9	3.7
Leg.separated	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	.3	.3	.6

Source: Population censuses 1972, 1981, 1991.

Since 1972, the proportion of persons in the never-married state has steadily decreased. In 1972, 64 percent of the population could be found in the never-married state. By 1991 this percentage had

[8] **According to the Civil code (art. 154, par.1), married persons are compelled to live together. If, for one reason or the other, the couple may no longer be able to live together, they can request the court of law for either a formal divorce, or a legal separation. By a legal separation, the spouses are exempted from their obligation to live together. However, the legal bond between the spouses remains unaltered.**

decreased to 52.4. This reduction has more to do with the changes in the age structure of the population, which have taken place during the last two decades, than with alterations in the patterns of marriage formation. For, in 1972 no less than 41.3 percent of the population belonged to the age groups 0-14, against 24.4 percent at the last census. In the same way, the proportion of the population in the married state has risen from 31.9 in 1972 to 37.7 in 1991.

During the last twenty years, the proportion of divorced people in the population has more than tripled. In the population census, one sees that 5.6 percent of all persons living on Aruba were divorced or legally separated. Furthermore, if we limit our base population to the ever-married population in the age groups 15-49, we can see that 12.4 percent is divorced. Marriage disruption has some important demographic and social consequences. Therefore, we will dedicate a separate section to this phenomenon (see page 14).

As the Aruban population is slowly aging, it is normal that the percentage of the population in the widowed state is rising. In 1991, 3.7 percent of all persons living on Aruba were widowed. The proportion of females who are alone after losing their spouse is considerably higher than the proportion of males who went through a similar experience. The number of widows is more than three times higher than the number of widowers. The main explanation for this unbalanced widowhood can be found in differences in mortality between the sexes.

Aruba's nuptiality table

The nuptiality table, presented in Table 5, summarizes the first marriage experience of the Aruban population between the ages of 15 and 50. As this population is limited in size and small number variability can easily occur, the nuptiality table was drawn up for abridged age groups. The nuptiality table[9] deals with the first marriage experience of a fictitious birth-cohort[10] in the 'pure state', i.e. when intervening events as migration and mortality are controlled for. We used data on the number of first marriages from the Civil Register for the period of six months before and after the population census.

The numbers in the columns M(x,x+5) and C(x) give a clear indication of the timing and intensity of the process of first marriage on Aruba. Given the age-specific probabilities of first marriage, one can assume that a fictitious cohort, without disturbances of mortality or migration, is subjected to these risks during its lifetime. If we assume that this hypothetical cohort starts at the exact age of 15 with 10000 never-married males and females, it is easy to calculate the number of never-married persons at the exact ages of 20, 25, 30, etc., and consequently the number of marriages in the nuptiality table in each of the five

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9 **During a certain year, one can compute age-specific marriage rates for all persons between the exact ages of 15 and 50. These rates in fact resemble the experience of specific age segments of all the birth cohorts between both age limits. By using a fictitious cohort we actually consider all these age segments of different birth cohort as belonging to one cohort. In this way we are able to estimate various measures of the timing and the intensity of first marriage.**

10 **A birth cohort refers to all persons in a population who were born in a given year.**

year age-groups.[11]

Table 5. First marriage table Aruba 1991, for males and females.

	Female				Male			
Exact Age (x)	t(x,x+5)	m(x,x+5)	M(x,x+5)	C(x)	t(x,x+5)	m(x,x+5)	M(x,x+5)	C(x)
15	0.024	0.111	1115	10000	0.006	0.030	299	10000
20	0.085	0.351	3118	8885	0.060	0.260	2520	9701
25	0.105	0.415	2394	5767	0.078	0.326	2337	7180
30	0.079	0.330	1111	3373	0.089	0.366	1770	4843
35	0.066	0.284	642	2262	0.086	0.356	1092	3073
40	0.042	0.191	310	1620	0.078	0.326	646	1980
45	0.029	0.135	177	1310	0.058	0.252	336	1334
50				1133				998

where,
- t(x,x+5) = the age-specific nuptiality rate.
- m(x,x+5) = the probability of experiencing a first marriage between ages x and x+5.
- M(x,x+5) = the expected number of marriages between ages x and x of the fictitious cohort of 10000 persons at age 15
- C(x) = the number of persons never-married at the exact age of x.

The nuptiality table shows that first marriage in Aruba is late and far from universal. For instance, a little more than 48 percent of all males are still single at age 30. One third of the females are still unmarried at the same age. The mean age at first marriage for women is 26.2 years. On average, men are more than 3.5 years older than their brides at their first marriage (29.8 years). If a cohort would be subject to the

[11] **A nuptiality table is a standard technique in demography to provide an insight into the timing and intensity of first marriage. The nuptiality table is based on three assumptions: a) linearity of first marriage between the ages x and x+5, ; b) independence, i.e. never married persons who died or emigrated would have the disturbing events of mortality and migration identically occur among those married and never-married. The number of marriages between ages x and x+5, (Mx,x+5) is simply the number of single persons at age x (Cx) multiplied by the probability that these persons will marry between the ages x and x+5. The number of unmarried persons at age x+5 (Cx+5) is then calculated as the number of unmarried persons at age x (Cx) minus the number of marriages between ages x and x+5, (Mx,x+5).**

marriage regime of Aruba at the time of the census, 11.3 percent of all females and 10.0 percent of all males would still be unmarried at the exact age of 50.

There is evidence, that during the last twenty years, the age at first marriage has steadily increased. Unfortunately, it is impossible to calculate nuptiality tables for 1972 and 1981 due to a lack of adequate data from the population register. To be able to make some comparison over time, we estimated the mean age at first marriage using Hajnal's method[12]. In 1972 and 1981, the mean ages at marriage were respectively 24.3 and 25.5 years for females and 27.1 and 27.4 years for males. These results indicate that the increase in the age at first marriage was earlier and more pronounced for women than for men. This may be due to the growing levels of higher education and of female participation rates in the labor market during the last two decades.

Dissolution of marriage

The data from the Bureau of Civil Registration show that the degree of marital dissolution by divorce is very high in Aruba. Figure 3 displays the number of marriages and the number of divorces during the last ten years. Previously we described the effect of the closure of the LAGOrefinery on the growth of the Aruban population. Figure 3 suggests that the formation of marriages was also affected by the closure of LAGO and the exodus that followed this economic crisis. A total of 526 marriages were contracted in 1984. In 1985 this number had dropped to 357 (Statistical Year-book 1992, p.9). The number of marriages picked up again in 1989, following the rise in the population size. At the moment, it is unclear to what extent the decline in the number of marriages in the period 1985-1988 was the result of the postponement of marriage because of the bleak economic conditions or merely the result of the extremely high out-migration rates.

In one way or another, the economic crisis of the mid-1980s did not affect the number of divorces. On the contrary, although 1984 is the start of a slight increase in the number of divorces, the process continued up to 1991. As a result, during the period 1986-1988, the number of divorces per 100 marriages in a given year was more than 50 percent.

In the same way as the nuptiality table was constructed, an attrition table was drawn up to summarize the intensity and the tempo of divorce in Aruba. Because the number of divorces was only available by age, no marriage duration specific divorce table could be constructed. We derived data on divorces from the population register for a period of six months before and after the population census.
The results in Table 6 should be interpreted in a similar way as those of the nuptiality table. The table describes the experience of a fictitious cohort toward divorce, of an initial group of 10000 married persons at exact age 15, when no intervening disturbances such as mortality or migration were taking place. As can be seen, between the ages of 15 and 20, no divorces took place during the period under observation. However, divorce becomes quite considerable among females between the age of 20 and 30. Of an initial group of 10000 married women at age 20, no less than 2889 would be divorced by the time they reach 30, if they would be subjected to the same age-specific probabilities of divorce as in 1991 in Aruba. By the age of 50, more than half the women would be divorced. For males this proportion is slightly lower. Although the intensity of divorce is about the same for males and females, we can see that, on average, men who experience a divorce do so at a slightly older age. The mean age of divorce for women is 30.9 years. For men this mean age is 32.3 years.

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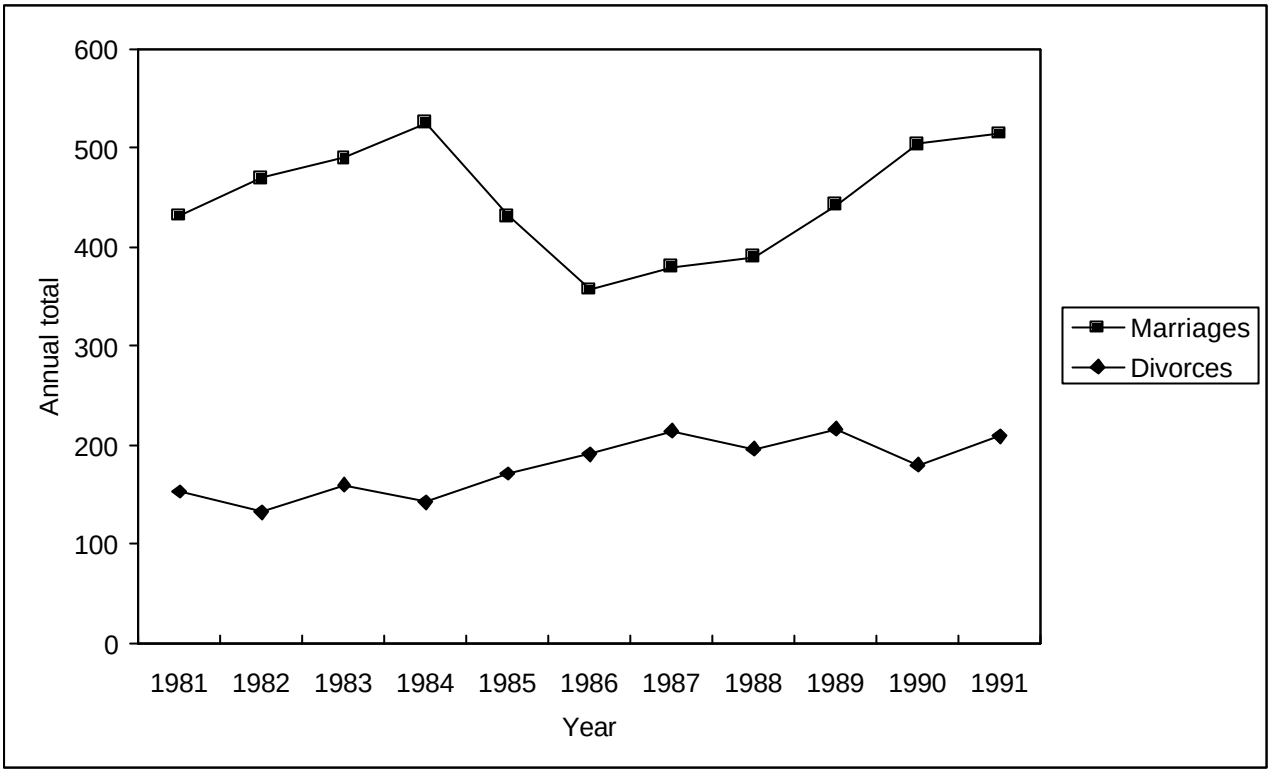
[12] **A discussion of Hajnal's method to calculate the mean age at first marriage can be found in Wunch and Termote (1978, p.134). Though widely used, this estimate provides a rough estimate of the mean age at marriage. Strictly speaking, the estimate is only valid if the cohorts observed at the census have experienced the same tempo and intensity of first marriage. In comparison with the mean ages of the nuptiality table, the SMAM values using Hajnal's method for the 1991 census are 26.2 and 28.8 years for females and males, respectively.**

Figure 3. Marriages and divorces in Aruba, 1981-1991



Source: Population register

The Aruban marriage market

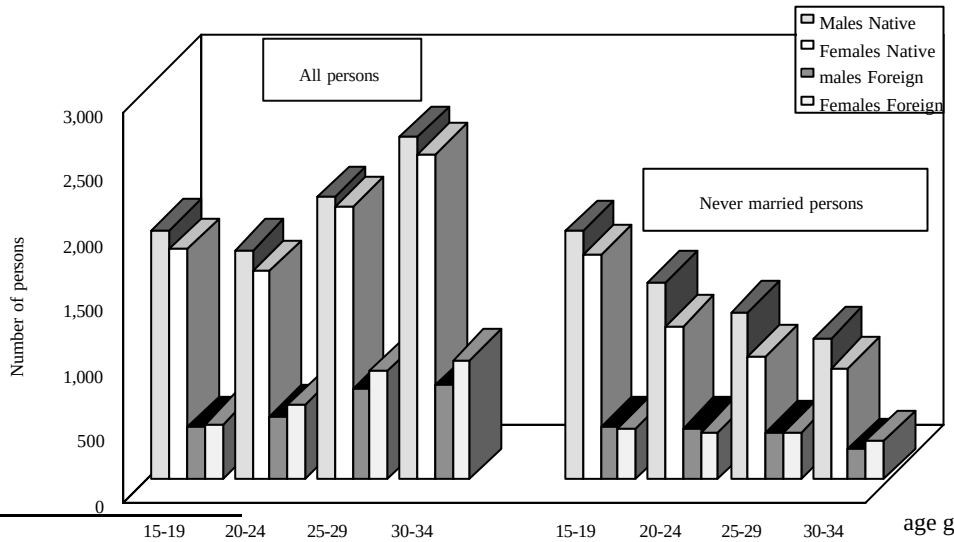
In his search for a suitable partner the young Aruban male who wants to marry has to deal with a demographic problem. By 'Aruban male' we mean, throughout this study, a man who is born on Aruba and is holder of the Dutch nationality. Figure 4 shows at the left side the number of native and foreign-born persons by sex for the age groups between 15 and 35. These age groups were selected because the pattern of marriage formation is most intense within these categories. For each of the five-year age groups, the number of native males is significantly higher than the number of females. In total, between the ages of 15 and 35, we find 94 native women per 100 men. On the other hand, among the foreign-born, more women than men are present in each age interval.

Table 6 Divorce table for males and females, Aruba 1991

	Females				Males			
Exact age	s(x,x+5)	d(x,x+5)	D(x,x+5)	M(x)	s(x,x+5)	d(x,x+5)	D(x,x+5)	M(x)
15	.000	.000	-	10000	.000	.000	-	10000
20	.030	.141	1411	10000	.018	.088	877	10000
25	.038	.172	1478	8589	.033	.152	1388	9123
30	.021	.100	709	7111	.033	.153	1187	7734
35	.026	.121	775	6403	.017	.081	533	6547
40	.022	.103	578	5628	.021	.100	600	6014
45	.010	.049	245	5050	.015	.074	399	5414
50	.008	.039		4805	.012	.059		5015

Where, s(x,x+5) = the age-specific divorce rate.[13]
d(x,x+5) = the probability of experiencing a divorce between ages x and x+5.
D(x,x+5) = the number of divorces between ages x and x +5 of the fictitious cohort of 10000 married persons at age 15
M(x) = the number of persons still married at exact age x.

Figure 4. Native and Foreign Population by sex for various age groups for all persons and never-married persons



[13] **It is possible that a small bias is introduced in the divorce table because we did not restrict the analysis to first marriages and divorces to these marriages. Implicitly, we are assuming in this table that the pattern of dissolution of the marriage through divorce is identical for first and later marriages.**

Table 7. Spouses married to Aruban persons by country of birth and period of marriage

Country of birth		Period of marriage							
		before '70	70-74	75-79	80-84	85-89	90-91	Not rep.	Total
Females married to Aruban men									
Aruba	1								
Dutch Nationality		2638	944	1045	1058	1152	372	109	7320
Other Nationality		1	1	2	3	1	1	0	9
Bonaire	2	29	6	10	4	3	5	1	59
Curaçao	3	53	28	18	27	30	11	1	168
St. Maarten	4	14	6	3	1	3	1	0	28
St. Eustatius	5	3	2	1	2	1	2	0	11
Saba	6	2	0	0	1	3	0	0	6
North America		4	3	4	6	9	8	2	37
Central America	19	5	2	3	3	3	2	0	18
Suriname	20	4	7	5	4	3	3	0	27
Venezuela	21	25	18	8	18	37	33	1	140
Colombia	22	56	28	56	74	76	46	1	337
South America other	29	6	3	1	6	6	5	0	27
Dominician Republic	30	18	14	25	73	129	135	4	397
Haiti	31	4	0	0	1	7	8	0	21
Grenada	40	6	1	2	6	5	3	0	24
Caribbean Other	49	14	4	6	15	8	8	2	57
Netherlands	50	41	18	14	19	24	22	4	140
Europe other	59	6	3	6	2	8	8	1	34
Asia	69	5	1	2	1	2	3	1	15
Africa	70	0	0	0	1	1	0	0	2
Oceania	80	0	0	0	0	1	0	0	1
Total		2936	1090	1213	1326	1516	679	128	8888
Percentage married to Aruban female		89.9	86.6	86.2	79.8	76.0	54.8	85.5	82.4
Males married to Aruban females									
Aruba	1								
Dutch Nationality		2638	944	1045	1058	1152	372	109	7320
Other Nationality		1	2	3	4	5	3	0	19
Bonaire	2	53	9	11	7	7	3	5	97
Curaçao	3	110	30	30	33	51	26	7	288
St. Maarten	4	21	3	5	0	2	1	0	32
St. Eustatius	5	4	0	1	0	1	0	0	6
Saba	6	8	0	0	0	0	1	0	9
North America		1	2	1	3	5	3	0	16
Central America	19	0	0	0	0	1	2	0	3
Suriname	20	32	4	7	6	4	6	1	61
Venezuela	21	36	3	9	11	16	17	1	94
Colombia	22	25	14	12	12	14	9	3	89
South America other		2	2	3	0	10	3	0	20
Dominician Republic	30	10	4	3	14	21	23	1	76
Haiti	31	1	1	1	0	0	0	0	3
Grenada	40	3	1	0	1	1	1	0	7
Caribbean Other	49	20	3	4	3	3	1	1	35
Netherlands	50	37	16	17	20	30	12	2	134
Europe other	59	9	2	5	5	10	7	2	41
Asia	69	6	7	4	6	3	3	0	31
Africa	70	1	0	0	1	1	0	0	3
Oceania	82	0	0	2	1	0	0	0	3
Total		3023	1048	1166	1187	1341	495	133	8393
Percentage married to Aruban man		87.3	90.1	89.6	89.1	85.9	75.2	82.1	87.2

When we consider irregularities on the marriage market, it is obviously necessary to look at the number of never-married persons in those age groups with the highest nuptiality rates. The right side of Figure 4 displays sex differentials between native and foreign-born males and females. Among the foreign-born, the number of never-married persons of either sex is almost equal. However, it is clear that the number of native, single men is much higher than the number of such women. The sex ratio for native, never married persons in the age group 15-34 years is only .84. This means that for about every five unmarried native men, only four eligible native female marriage candidates are available. Obviously, this disequilibrium is bound to create certain tensions on the marriage market.

There is evidence that some of this tension is relieved by the marriage of a number of Aruban men to foreign women. Table 7 shows, both for Aruban men and women, the country of birth of their spouses and the period of marriage. The table is restricted to spouses who were still living together and were residing on the island at the moment of the census. This was done because of the limitations of the data. In recent years, the proportion of Aruban males who have married non-Aruban females has increased significantly. Of all Aruban men -still living with their spouse at the time of the 1991 census- who married during the period 1970-1974, only 10.1 percent were married to non-Aruban women. This proportion increased steadily to 24 percent during the period 1985-1989. It seems that, during the last two years before the census, an enormous rise has taken place in the number of Aruban men marrying foreign women. Out of a total of 679 marriages which took place during this period, and where the husband was Aruban, only 372 had Aruban wives. Especially, women from the Dominican Republic appear quite popular among Aruban men. No less than 135 of such marriages were counted between Aruban men and Dominican women in the period 1990-1991. This means that for every three Aruban men who marry an Aruban woman, one is marrying a Dominican. Other important countries from which foreign brides originate are Venezuela, Colombia, Curaçao and the Netherlands.

Aruban females are less likely to marry a foreign spouse than Aruban males. This confirms our idea that, because of a shortage of Aruban females, men are more likely to find a bride from outside Aruba. Nevertheless, also for Aruban women, we can observe a clear trend toward increased marriage to foreign partners. As such, it seems that with the internationalization of the local labor market, the 'marriage market' has also become more international.

Living together on Aruba

During the population census of 1991 the enumerators informed whether the person was living together on a durable basis with another person. A similar question had been asked during the previous census[14]. The comparison of the information from both censuses shows that, during the last decade, living together without a formal marriage bond has significantly increased (see Table 8). More than twice as many people are now living together outside wedlock than in 1981.

Living together on a durable basis in Aruba is not confined to the younger age groups. The largest group

[14] **Unfortunately, this question had not been asked during the population census of 1972. Some information is available for 1960. A comparison between the figures of 1960 and 1991 is however not possible because the data only refer to never-married persons.**

of persons (731) living together can be found in the age group 30-34 (Selected Tables, p. 115). For those living together on a durable basis, the mean age is higher for males (39.4 years) than for females (36.5 years). The reason more people have a tendency to live together without a legal marital bond is not completely clear. The fact is that if both partners have a steady job, 'living together'as certain financial benefits. The most important benefit is that salaries for both partners are not cumulated to calculate income tax. As Aruba has a progressive tax system, living together without a legal bond leads to significantly lower tax bills. Since the seventies, informal living arrangements have also become more socially acceptable than before. This, together with the financial benefits of an unmarried partnership, may be the underlying reason why more people opt to live together without being married.

Table 8. Persons living together on a durable basis by marital status and sex.

Marital status	1981		1991	
	Male	Female	Male	Female
Never-married	533	563	1049	1100
Married	77	34	74	34
Widowed	22	43	32	59
Divorced	200	192	511	513
Legally Separated	n.a.	n.a.	55	17
Not reported	-	-	3	1
Total	832	832	1724	1724

Source: Population censuses 1981 and 1991. n.a. not available.

Household types

During the population and housing census of 1991, 19276 households were counted[15]. This implies that, on average, 3.46 persons were present in every household in Aruba. During the last ten years, the household size has significantly diminished. In the population census of 1981, the average number of persons per household was still 4.04, which in its turn was already lower than 4.89 persons per household unit in 1960. Obviously, the reduction in the number of children per family has played a major role in the development of smaller household units.

[15] **Because of the obvious social importance of the living arrangements of people in households, the CBS plans to issue a separate report on household types in Aruba. Among other things, topics such as living arrangements for the elderly and the handicapped will be discussed in this report.**

The head of the household in the population census is the person who was either the legal owner of the housing unit or the person responsible for paying the rent. If -on the basis of these criteria- more than one head could be determined in a household, the oldest among all candidates was assigned[16]. Of all the 19257 non-collective households in Aruba, 13828 are headed by men and 5429 (28.2 percent) by women. Table 9 shows the number of households by type and the number of persons residing in each type of household. The table displays the legal status of the partners. This implies that two persons living together in a consensual union were considered as two single persons.

During the previous censuses, a deviant definition of family nucleus was used, which makes comparisons impossible over time[17]. Slightly more than half the households in Aruba consist of a single nuclear family; 15.3 percent of households are formed by a single person. It is important to note that 270 disabled persons are living in a one-person household. Extended and composite households[18] are quite common in Aruba. Respectively 17037 and 12381 persons are living within such households. Often elderly persons live with their married children, or vice versa.

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16 **For collective households, no head of the household was assigned. As most persons in collective households are not related, there was no need to establish a reference person within the household.**

17 **In the previous censuses, other persons, such as housemaids and distant relatives were included in the family nucleus. Therefore, no distinction could be made between a nuclear family and some forms of extended and composite households as defined by the United Nations. During the preparation of the 1991 census, the census team has opted for following the "Principles and Recommendations for Population and Housing Censuses' by the United Nations (1980).**

18 **An extended household consists of persons who are all related to each other, but not comprising a family nucleus. A composite household contains persons who are not all related to each other.**

Table 9. Households and persons, by sex living, in households, by type of household.

Type of household	Households		Persons		
	Absolute	Percentage	Male	Female	Total
All collective households	20	.1	605	242	848
All non-collect. households	19257	99.9	32216	33623	65839
One-person households	2950	15.30	1516	1434	2950
Nuclear households					
Married couple, no children	1730	8.98	1730	1730	3460
Married couple with children	6289	32.63	12981	12119	25100
Mother with children	1582	8.20	1577	2807	4384
Father with children	199	1.03	396	129	525
Total nuclear households	9800	50.84	16684	16785	33470
Extended household					
1 nucleus & other persons	1540	7.99	3193	3487	6680
2 /more nuclei & other pers.	347	1.80	1218	1311	2529
2 /more nuclei, no other pers.	1093	5.67	3070	3564	6634
Persons with no nuclei	512	2.66	534	660	1194
Total extended households	3492	18.12	8014	9023	17037
Composite household					
1 nucleus & other persons	1806	9.37	3718	4153	7871
2 or more nuclei & other persons	234	1.22	841	953	1794
2 or more nuclei, no other persons		.57	316	346	662
Persons not belonging to any	863	4.48	1125	929	2054
Total composite household	3014	15.64	6001	6380	12381

C. Fertility

Aruba's fertility transition

In his report on fertility trends in Aruba and Curaçao, Van Leusden (1985) made an estimate of the total fertility rates (TFR) in Aruba from 1900 until 1979. His estimates are partly based on an indirect estimation technique developed by Bogue and Palmore (1964). In this technique the crude birth rate and the general fertility rate are mathematically linked to the total fertility rate. Van Leusden and Moors (1985) give a detailed description of the levels and trends of fertility in Aruba, and go deeper into the causes that triggered the very steep decline in fertility levels after 1960. Hereunder, we will briefly elaborate on their analysis, and then discuss current measures of fertility.

Figure 5 shows the course of the total fertility rates between 1900 and 1991. The figures up to 1979 are taken from van Leusden (1985); the figures of 1981 and 1991 are a combination of official birth registration and the subsequent population censuses. Although the figures before 1930 are rough estimates of the levels of fertility, they indicate that the total fertility rates were most probably around 4.00 during the first 25 years of this century. Around 1930 an increase in fertility levels took place. Throughout the 1930s, the 1940s and for the greater part of the 1950s fertility in Aruba was very high. During the period 1935-1954, the total fertility rate averaged 5.3. The rate during this period was highest in 1950, with a TFR of 5.68. Between 1950 and 1957, the TFR decreased gradually to a level of 5.26. From 1958 till 1967, Aruba experienced a very rapid fertility decline. During this time, the TFR fell to a level of 2.58 children per woman, which is less than half the level of only ten years before. After 1967, the decline became less rapid. A level of 1.7 children per woman was reached in 1979.

The rapid fertility decline during the late 1950s and the 1960s is the result of a modernization process that started to change Aruban society since the beginning of the century. During the first decades of this century the LAGO oil company developed its refining facilities on Aruba. This resulted in the establishment of an impressive industrial and transport sector. These developments caused a strong reduction in the primary sector and the virtual disappearance of traditional Aruban society. In this new, modern, urban-industrial segment of society, increased opportunities for social mobility and material progress became available to large segments of the population. Education was the key factor to achieve a higher social and economic status. Consequently, parents were motivated to invest in a good education for their children. For instance, in 1957, no less than 11812 children were following primary or extended primary education (Statistisch Jaarboek, 1958); in 1960, around 90 percent of all

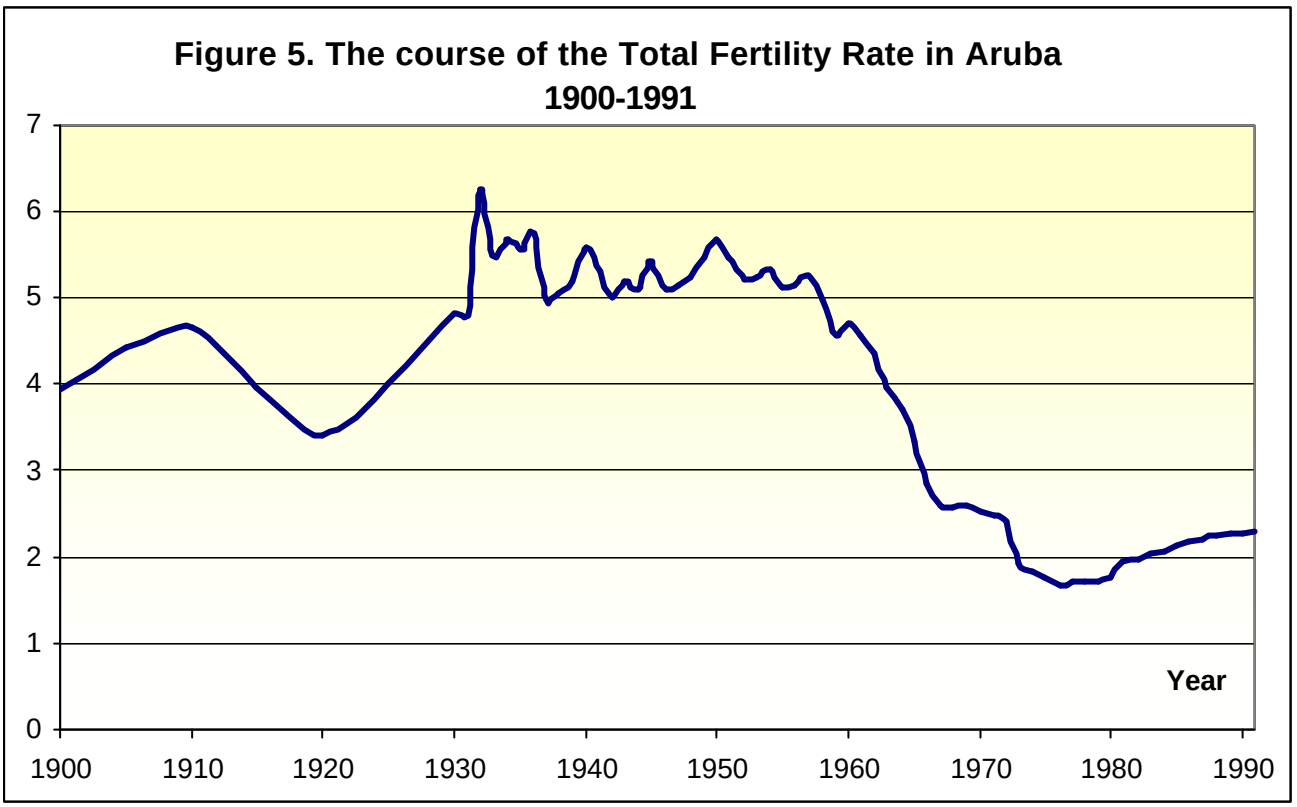
Figure 5. The course of the Total Fertility Rate in Aruba
1900-1991
7
6
5
4
3
2
1
0
Year
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990

children in the age group 10-14 years were still at school (Van Leusden & Moors, 1985). The investment in education entailed that the children's contribution to the family income and production decreased drastically, and that the flow of wealth from children to parents gradually reversed. Each additional child became an extra burden to the family's finances. The process of changing cost-benefit ratios of having additional children was accelerated during the 1950s. During this period, due to a recession in the United States, the oil industries started to rationalize and to automate their production. This led to large-scale dismissals in the oil industry that had important economic consequences in all sectors of the local economy.

Most probably these drastic economic changes during the 1950s prompted the fast decline in fertility. During the next two decades, the higher participation of women in the economic process may also have played an important role in the fertility transition. To overcome the economic problems caused by the automation of the oil industry, the government started to develop the tertiary sector. It took actions to promote tourism, develop the financial sector and expand the insular and national government sectors. This led to a sharp increase in the participation rates of females. When in 1960, 27 percent of females in the age group 15 to 59 years were economically active, this figure had risen to 36 percent by 1972 and 46 percent by 1981 (Population censuses of 1960, 1972 and 1981).

Current levels of fertility

Fertility indices were calculated for the period April 1991-March 1992. This period was chosen in such a way that the population census at the beginning of October 1991 falls exactly in the middle of this 12-month period. During this time, a total of 1237 children were born in Aruba: 779 were legitimate and 458 illegitimate births[19]. Given a population of 66687 persons, this implies a crude birth rate of 18.5 per thousand.

Table 10 presents the number of women (and married women) by five-year age groups at the time of the census, with the number of children born during the period April 1991-March 1992. Based on these data, the fertility table was constructed (see Table 11). Age-specific marital fertility rates, illegitimate fertility rates and total fertility rates[20] were computed, together with the total marital fertility rate (TMFR), the total illegitimate fertility rate (TIFR) and the overall fertility rate (TFR)[21]. The mean ages of

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19 **Figures on number of children born during the period April 1991 through March 1992 were taken from the population register.**

20 **Age-specific fertility rates are computed by dividing the number of births born to women in a particular age group by the number of women in that age group. The marital age-specific fertility rate is calculated by dividing the number of children born to married women in a particular age group, by the number of married women in that age group. In a similar way, the illegitimate age-specific fertility rates are calculated.**

21 **The Total Fertility Rate (TFR) gives the average number of children that would be born per woman if all women lived to the end of their childbearing years and bore children according to the given set of 'age-specific fertility rates'. The measure is also referred to as total fertility. It is frequently, as in our case,**

each of the three fertility schedules were also calculated.

Table 10. Number of women (married and all) by age and number of children they have born

Age groups	All women	Married women	Unmarried women	Legitimate births	Illegitimate births	All births
14	493	0	493	0	5	5
15-19	2188	70	2118	36	89	125
20-24	2168	593	1575	167	131	298
25-29	2921	1434	1487	282	100	382
30-34	3404	1907	1497	198	94	292
35-39	3216	1902	1314	87	32	119
40-44	2627	1525	1102	9	7	16
45-49	2137	1305	832	0	0	0
Total	18661	8736	10388	779	458	1237

Source: Population census 1991 and civil registration

Table 11. Fertility schedule for total, legitimate and illegitimate natality

Age group	Age-specific marital fertility rates	Age-specific illegitimate fertility rates	Age-specific fertility rates
14	.0000	.0101	.0101
15-19	.5143	.0420	.0571
20-24	.2816	.0832	.1375
25-29	.1967	.0672	.1308
30-34	.1038	.0628	.0858
35-39	.0457	.0244	.0370
40-44	.0059	.0064	.0061
45-49	.0000	.0000	.0000
Total fertility rates	5.74	1.44	2.28
Mean age fert.schedul	22.72	26.77	26.64

Source: Population census 1991 and civil registration

used to compute the consequence of childbearing at the rates currently observed. The total fertility for married women and unmarried women (illegitimate fertility) indicate the same, but are only restricted to the women in the indicated marital state.The total fertility rate is calculated as five times the sum of the age-specific fertility rates. The factor five has to be applied as the age-specific fertility rate is a standardized measure and refers to single-year age groups.

With a total fertility rate of 2.28, it is clear that fertility levels in Aruba remain low. However, compared to the previous census, levels of fertility have increased slightly. In 1981 the total fertility rate, estimated by Koningstein, was 1.94 (Koningstein, p.35). This is about 0.35 lower than the current fertility level. A mean age of fertility at 26.6 years shows that women tend to have their children at a somewhat more advanced age.

The total marital fertility rate expresses the total number of children a woman would have born -given the fertility experience of married women in 1991/1992- if she was already married at age 14 and remained married, and survived, up to the age of 50. The TMFR of 5.74 is remarkably high, compared to the TFR. This high level is mainly the result of the very high levels of fertility among young married women in the age category 15-24. This early pattern is reflected in the much lower mean age of the marital fertility schedule than of the total fertility schedule. Given the current fertility level of young married women, a young woman who is married at age 14 would already have 4 children by the age of 25. The high level of marital fertility at young ages in Aruba can be explained quite simply. Because most marriages take place at a more advanced age (see chapter 2), those young females who are married at very young ages are exceptional. Most of them probably married exactly because they were already pregnant.

Illegitimate fertility

Table 11 shows that illegitimate fertility in Aruba is high. The total illegitimate fertility rate is 1.44 children per unmarried woman in the age group 14-50. Another way to look at illegitimate fertility is through component fertility rates, i.e. by dividing the age-specific general fertility rates into its constituent parts: legitimate and illegitimate fertility[22]. Table 12 presents these componential fertility rates for the last censuses.

It is clear from Table 12 that, over the last 30 years, the proportion of children born out of wedlock is on the rise. Out of the 1237 children born in Aruba during the period April 1991-March 1992, 458 were illegitimate (37.0 percent). In 1960, illegitimate fertility constituted 17.3 percent of the total fertility rate. In 1972 this was 20 percent. In 1981, 26.3 percent of children were born outside marriage. Compared to 1981, the legitimate component of the total fertility rate in 1991 decreased from 1.43 to 1.39. However, illegitimate fertility sharply increased from .51 to .93. As a result, the proportion of illegitimate fertility as part of the total fertility rate increased to 39.0 percent.

Compared to most European countries, Aruba's illegitimate fertility, of 370 per thousand live births is quite high. In the Netherlands, 93 children per thousand were born out of wedlock. Only some North European countries, such as Sweden and Denmark, have higher rates of illegitimate births; respectively, 499 and 445. France and the United Kingdom have almost similar
proportions of children born outside marriage, with 221 and 219 illegitimate births per thousand live births (Moors & van Nimwegen, p.36)[23].

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22 The legitimate and illegitimate fertility rates in this case are calculated by dividing the number of legitimate and illegitimate births of women in a particular age group, by the total number of women in that age group. In the fertility schedule in Table 12 we divided these births, respectively, by the married and the unmarried female population in the specified age group.

23 Figures for the European countries refer to the following years: the Netherlands (1987), Denmark (1987), Germany (1986), Sweden (1987).

In 1991, 57.9 percent of illegitimate fertility was below the age of 25. In 1981, 1972 and 1960 this was respectively 57.4, 45.5 and 38.0 percent. At the moment, it is unclear whether the trend since 1960 suggests that, compared to the past, consensual unions at younger ages are more and more taking over the role of formal marriage as a reproductive unit, or whether premarital childbirth is more and more the norm among certain strata of the Aruban society.

Sex ratios at birth

In the first chapter we already mentioned that, during the period 1987-1991, the Bureau of Civil Registration recorded a total of 2785 live male births, against 2594 female live births. In the census, a total of 2604 male and 2242 female native children under the age of five were counted. The difference between the figures from the census and the civil registration is probably due to a) infant and child mortality among those children born in the period 1987-1991 and b) the emigration of children born in Aruba during the period 1987-1991 which took place before the census.

The sex ratio at birth[24] during the last years seems to be very high in Aruba. During the period 1987-1991, the sex ratio at birth was as high as 107.4. During the period 1982-1986, 2735 baby boys were born against 2726 baby girls, implying a sex ratio at birth of 100.3. At the moment it is unclear whether this peculiarity is due to a changing pattern in fertility, small number variability or defective data from the available sources.

Replacement level

By replacement level we mean the way in which a (fictitious) cohort of women is 'replaced' by their daughters. Replacement is measured by the gross reproduction rate (GRR) and the net reproduction rate (NRR). The gross reproduction rate is similar to the total fertility rate, except that it refers only to female births[25]. The net reproductive rate introduces a further refinement, namely, the notion that not all women survive up to the end of their reproductive life span[26]. As such, it is the ratio of daughters to mothers, assuming continuation of the

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24 The sex ratio at birth indicates the number of male live births per 100 female live births and is calculated as: (male live births)/(female live births)*100

25 The gross reproduction rate may be calculated as GRR=TFR*(proportion of female births)

26 The net reproduction rate indicates the average number of female children born per woman in a (fictitious) cohort subject to a given set of 'age-specific fertility rates', a given set of 'age-specific mortality rates' and a given 'sex ratio at birth' (Manual X, DIESA, p.303).

The net reproduction rate is
calculated as the sum of the products of the fertility rates between ages x and x+5 and the survivorship robability of women from birth up to age x+2.5.

Table 12. Componential fertility rates for 1960, 1972, 1981 and 1991

	Legitimate fertility				Illegitimate fertility				Total fertility			
Age group	1960	1972	1981	1991	1960	1972	1981	1991	1960	1972	1981	1991
14	-	-	-	-	-	-	-	.010	-	-	-	.010
15-19	.024	.021	.018	.017	.017	.019	.021	.041	.041	.040	.039	.057
20-24	.159	.104	.081	.077	.040	.027	.037	.060	.199	.131	.118	.138
25-29	.205	.127	.095	.097	.038	.021	.023	.034	.243	.148	.118	.131
30-34	.166	.090	.062	.058	.032	.017	.013	.028	.198	.107	.075	.086
35-39	.110	.044	.023	.027	.014	.010	.007	.010	.124	.054	.030	.037
40-44	.050	.017	.005	.003	.007	.006	.001	.003	.057	.023	.006	.006
45-49	.004	.001	.001	.000	.002	.001	.000	.000	.006	.002	.001	.000
All ages	3.59	2.02	1.43	1.39	.75	.51	.51	.89	4.34	2.53	1.94	2.28

Source, Koningstein (1984), population census 1991, population register.

conditions of fertility and mortality of a given year.

Given the sex ratio at birth of 107.4, the gross reproduction rate was calculated as 1.10. Introducing the survival function of the female life table of 1991 (see chapter on mortality), a net reproduction rate of 1.08 was found. Because of Aruba's very favorable mortality regime, the values of NRR and GRR obviously are very close. Compared to 1981 we can see that the net reproduction rate became slightly higher, following the trend of moderately increasing fertility. In 1981, the values for GRR and NRR were respectively .97 and .94. At that time, Aruban fertility had dropped below replacement level, indicating that a cohort of women was no longer completely replaced by the generation of their daughters. With the small increase in fertility during the past decade, the NRR again has surpassed the replacement level.

Sterility

A couple's inability to have a live birth may be due to the impairment of the reproductive system of the wife, the husband, or both. Female factors are thought to cause infertility in 50 to 70 percent of all sterile couples. However, as most investigations about sterility have concentrated on females, it is well possible that the contribution of women might be overestimated (Larsen,U., 1989, p.168). In the discussion on infertility, one has to make a distinction between primary and secondary sterility. Primary sterility is the incapacity of a couple to have children from the beginning of the marriage (or sexual union). Primary sterility normally results in no more than five or six percent of all married women remaining childless. In the case of a woman who bears at least one child, but who becomes infertile (or her partner) , one speaks of secondary sterility.

The occurrence of infertility among couples is often a major problem for the individuals involved. Therefore, it is useful to make an estimate of levels of infertility in Aruba. The measurement of sterility poses some methodological problems that in fact require a detailed fertility study with specific questions on the couples ability to conceive.[27] With the limited data of the population census, it is only possible to make an estimate of levels of primary sterility. To do so, for each five-year age group, the proportion of married women above the age of 50 who have remained childless was taken for each five-year age group. At the time, women above the age of 50 were in their most fertile years, voluntary childlessness was practically unknown and contraceptive use limited. Therefore, in the case of married women over the age of 50, who did not conceive any children during their live, we can conclude that most probably the couple was primary sterile. Table 13 shows the proportions of childless, married women above the age of 50.

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[27] For an example of a set-up of such a study see for instance Leridon (1991).

Table 13 Percentage of married women above the age of 50 who have remained childless by five- year age groups.

Age group	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total
% childless	7.4	7.6	6.7	5.1	7.8	7.8	11.8	7.3

Source: Population Census Aruba ,1991

Except for the age groups 65-69 and 80+, where only very few cases are observed, the proportion childless remains fairly constant and fluctuates around a level of seven percent. The total percentage childless at the end of the reproductive period, and thus of primary sterility, was estimated as 7.3 percent. This estimate may be a slight overestimation because some women may have married for the first time after the end of their biological reproductive life span. A disadvantage of this estimate is that the estimate refers to couples who have already ended their reproductive capacities. In no way does it provide an insight into the levels of sterility and subfecundity of couples currently in their reproductive period.

D. Mortality and Health: trends and levels

General trends

Aruba has a history of very favorable mortality conditions. The healthy climate, combined with a well-organized system of public health and positive social indicators (such as high levels of literacy), have resulted in low levels of mortality throughout the second half of this century. Unfortunately, it is impossible to provide a complete picture of the mortality transition because registration data before the 1972 census are of a rather poor quality.

In Table 2 (see page 5), we demonstrated that the crude death rates during the period 1972-1991 have showed little variation and have remained consistently low. The death rate for 1992 is estimated to be 5.77 per thousand. Compared to the death rates during the 1970s, the death rates during the last ten years are slightly higher. This can be attributed to the aging of the population. As more people move into older age groups, where probabilities of dying are higher, evidently the crude death rates also increase. It is interesting that, during the economic crisis of 1985 to 1987, no serious rise in the death rate took place. This proves that despite the worsened financial situation during this period, the quality of Aruba's public health never really deteriorated. Also, the period of economic boom in recent years did not have any effect on the levels of general mortality.

The level and age pattern of mortality

To gain insight into the intensity and the age pattern of mortality of a country, it is common practice to construct life tables for both sexes. Through the use of life tables, some important mortality indices can be computed. The first important index is the probability of dying for each age group [Q(x,n)]. Besides the probabilities of dying, the life table also gives three other indices[28], directly derived from the probability of dying: the number of survivors of an initial population of 100000 at age 0 [l(x)], the number of deaths in each age interval [D(x,n)] and the expectation of life at the beginning of each age group [e(x)].

[28] The other indices are less important for the interpretation of the level and age pattern of mortality. They act more as technical indices to calculate the other indices to make projections.

Table 14.a.Life Table Males Aruba 1972

AGE	M(x,n)	Q(x,n)	l(x)	D(x,n)	L(x,n)	S(x,n)	T(x)	e(x)
0	.03795	.03676	100000.	3676.	96869.	.96180 (a)	6670148.	66.701
1	.00134	.00534	96324.	515.	384031.	.99461 (b)	6573280.	68.241
5	.00062	.00310	95809.	297.	478305.	.99681	6189249.	64.600
10	.00066	.00329	95513.	315.	476777.	.99530	5710944.	59.793
15	.00137	.00683	95198.	650.	474537.	.99052	5234167.	54.982
20	.00238	.01183	94548.	1119.	470036.	.98871	4759631.	50.341
25	.00209	.01040	93429.	971.	464729.	.98858	4289595.	45.913
30	.00257	.01277	92458.	1181.	459424.	.98626	3824866.	41.369
35	.00304	.01509	91277.	1377.	453110.	.98076	3365442.	36.871
40	.00475	.02348	89900.	2111.	444391.	.97704	2912332.	32.395
45	.00469	.02320	87789.	2036.	434188.	.96413	2467941.	28.112
50	.01095	.05345	85753.	4584.	418614.	.92347	2033753.	23.717
55	.02064	.09830	81169.	7979.	386577.	.90214	1615139.	19.899
60	.02027	.09659	73190.	7069.	348745.	.87609	1228562.	16.786
65	.03475	.16057	66121.	10617.	305532.	.80072	879817.	13.306
70	.05581	.24600	55503.	13654.	244647.	.68737	574285.	10.347
75	.09468	.38045	41850.	15922.	168163.	.61900	329638.	7.877
80	.09773	.39235	25928.	10173.	104093.	.45366	161476.	6.228
85	.23828	.71420	15755.	11252.	47223.	.17706 (c)	57383.	3.642
90	.44319	.....	4503.	4503.	10160.	.....	10160.	2.256

(a) Value is given for survivorship of five cohorts of birth to age group 0-4 = L(0,5)/500000
(b) Value given is for S(0,5)=L(5,5)/L(0,5)
(c) Value given is S(95+,5)=T(100)/T(95)

Table 14.b.Life Table Females Aruba 1972

AGE	M(x,n)	Q(x,n)	l(x)	D(x,n)	L(x,n)	S(x,n)	T(x)	e(x)
0	.02100	.02063	100000.	2062.	98169.	.97706 (a)	7348888.	73.490
1	.00142	.00566	97938.	554.	390363.	.99528 (b)	7250719.	74.035
5	.00057	.00285	97384.	277.	486228.	.99651	6860467.	70.447
10	.00083	.00414	97107.	402.	484530.	.99738	6374239.	65.641
15	.00022	.00110	96705.	106.	483259.	.99745	5889710.	60.904
20	.00087	.00434	96599.	419.	482025.	.99630	5406450.	55.968
25	.00056	.00280	96179.	269.	480241.	.99590	4924425.	51.201
30	.00119	.00593	95910.	569.	478273.	.99221	4444185.	46.337
35	.00192	.00956	95341.	911.	474546.	.98959	3965912.	41.597
40	.00226	.01124	94430.	1061.	469605.	.98645	3491366.	36.973
45	.00321	.01593	93369.	1487.	463241.	.98390	3021761.	32.364
50	.00339	.01682	91882.	1545.	455782.	.97570	2558520.	27.846
55	.00692	.03407	90337.	3077.	444708.	.95672	2102738.	23.277
60	.01114	.05432	87259.	4740.	425462.	.92429	1658031.	19.001
65	.02162	.10303	82520.	8502.	393250.	.86023	1232569.	14.937
70	.04059	.18551	74017.	13731.	338286.	.74687	839319.	11.339
75	.07845	.32878	60286.	19821.	252657.	.63133	501034.	8.311
80	.10735	.42316	40466.	17123.	159509.	.44884	248377.	6.138
85	.22885	.70191	23342.	16384.	71594.	.19438 (c)	88868.	3.807
90	.40279	.....	6958.	6958.	17275.	.....	17275.	2.483

(a) Value given is for survivorship of five cohorts of birth to age group 0-4 year L(0,5)/500000
(b) Value given is for S(0,5)=L(5,5)/L(0,5)
(c) Value given is S(95+,5)=T(100)/T(95)

Table 15.a Life Table Males Aruba 1981

AGE	M(x,n)	Q(x,n)	l(x)	D(x,n)	L(x,n)	S(x,n)		T(x)	e(x)
0	.00886	.00879	100000.	879.	99181.	.98985	(a)	7154694.	71.547
1	.00079	.00315	99121.	313.	395743.	.99757	(b)	7055513.	71.181
5	.00026	.00130	98809.	128.	493722.	.99785		6659770.	67.401
10	.00060	.00300	98680.	296.	492662.	.99540		6166048.	62.485
15	.00139	.00693	98385.	682.	490394.	.99101		5673386.	57.665
20	.00208	.01035	97703.	1011.	485984.	.99131		5182992.	53.048
25	.00139	.00693	96692.	670.	481759.	.99243		4697009.	48.577
30	.00173	.00861	96023.	827.	478113.	.99075		4215250.	43.899
35	.00210	.01045	95195.	995.	473691.	.98395		3737137.	39.258
40	.00465	.02301	94201.	2167.	466087.	.97177		3263446.	34.644
45	.00669	.03292	92033.	3030.	452929.	.96309		2797359.	30.395
50	.00849	.04161	89003.	3703.	436213.	.94783		2344430.	26.341
55	.01314	.06369	85300.	5433.	413454.	.93175		1908217.	22.371
60	.01556	.07505	79867.	5994.	385235.	.89229		1494763.	18.716
65	.03119	.14513	73873.	10721.	343739.	.84438		1109528.	15.019
70	.03603	.16560	63152.	10458.	290247.	.79315		765789.	12.126
75	.05982	.26134	52694.	13771.	230210.	.68238		475542.	9.025
80	.09847	.39742	38923.	15469.	157090.	.46174		245332.	6.303
85	.22867	.70720	23454.	16587.	72536.	.17799	(c)	88242.	3.762
90	.43724	.....	6867.	6867.	15706.	.....		15706.	2.287

(a) Value is given for survivorship of five cohorts of birth to age group 0-4 = L(0,5)/500000
(b) Value given is for S(0,5)=L(5,5)/L(0,5)
(c) Value given is S(95+,5)=T(100)/T(95)

Table 15.b Life Table Females Aruba 1981

AGE	M(x,n)	Q(x,n)	l(x)	D(x,n)	L(x,n)	S(x,n)		T(x)	e(x)
0	.01624	.01601	100000.	1601.	98556.	.98364	(a)	7657787.	76.578
1	.00034	.00136	98399.	134.	393263.	.99733	(b)	7559231.	76.822
5	.00067	.00334	98266.	329.	490507.	.99800		7165968.	72.924
10	.00013	.00065	97937.	64.	489526.	.99945		6675461.	68.161
15	.00010	.00050	97873.	49.	489259.	.99866		6185934.	63.203
20	.00054	.00270	97825.	264.	488602.	.99524		5696675.	58.234
25	.00125	.00623	97561.	608.	486277.	.99554		5208073.	53.383
30	.00052	.00260	96953.	252.	484109.	.99703		4721796.	48.702
35	.00077	.00384	96701.	372.	482671.	.99390		4237687.	43.823
40	.00177	.00881	96329.	849.	479725.	.98929		3755016.	38.981
45	.00244	.01213	95480.	1158.	474589.	.98793		3275291.	34.303
50	.00255	.01268	94322.	1196.	468859.	.97906		2800702.	29.693
55	.00646	.03184	93127.	2965.	459039.	.95947		2331843.	25.039
60	.01024	.05002	90161.	4510.	440436.	.93190		1872804.	20.772
65	.01874	.08980	85651.	7692.	410444.	.88724		1432368.	16.723
70	.02990	.13967	77960.	10888.	364162.	.82009		1021924.	13.108
75	.05084	.22638	67071.	15183.	298647.	.74037		657761.	9.807
80	.07380	.31448	51888.	16318.	221110.	.50828		359114.	6.921
85	.21959	.69381	35570.	24679.	112385.	.18564	(c)	138004.	3.880
90	.42512	.....	10891.	10891.	25619.	.....		25619.	2.352

(a) Value given is for survivorship of five cohorts of birth to age group 0-4 year L(0,5)/500000
(b) Value given is for S(0,5)=L(5,5)/L(0,5)
(c) Value given is S(95+,5)=T(100)/T(95)

Table 16.a.Life Table Males Aruba October 1991

AGE	M(x,n)	Q(x,n)	l(x)	D(x,n)	L(x,n)	S(x,n)	T(x)	e(x)
0	.01083	.01071	100000.	1071.	99007.	.98819(a)	7109932.	71.100
1	.00067	.00266	98929.	263.	395090.	.99573(b)	7010925.	70.869
5	.00109	.00544	98666.	537.	491987.	.99686	6615895.	67.054
10	.00017	.00083	98129.	81.	490442.	.99881	6123908.	62.407
15	.00036	.00180	98048.	176.	489859.	.99708	5633466.	57.456
20	.00089	.00444	97871.	435.	488428.	.99236	5143607.	52.555
25	.00210	.01045	97437.	1018.	484695.	.99174	4655179.	47.776
30	.00119	.00593	96418.	572.	480692.	.99097	4170484.	43.254
35	.00271	.01347	95847.	1291.	476353.	.98194	3689792.	38.497
40	.00444	.02196	94556.	2076.	467749.	.97912	3213440.	33.985
45	.00412	.02040	92479.	1887.	457983.	.96654	2745691.	29.690
50	.01001	.04891	90593.	4431.	442657.	.94917	2287708.	25.253
55	.01050	.05120	86162.	4411.	420158.	.93627	1845051.	21.414
60	.01678	.08074	81750.	6601.	393380.	.89673	1424893.	17.430
65	.02825	.13261	75150.	9966.	352757.	.81484	1031513.	13.726
70	.05618	.24774	65184.	16149.	287442.	.70053	678756.	10.413
75	.08697	.35714	49035.	17513.	201362.	.58196	391314.	7.980
80	.13283	.49378	31523.	15565.	117184.	.38309 (c)	189952.	6.026
85	.21929		15958.	15958.	72768.		72768.	4.560

(a) Value is given for survivorship of five cohorts of birth to age group 0-4 = L(0,5)/500000
(b) Value given is for S(0,5)=L(5,5)/L(0,5)
(c) Value given is S(95+,5)=T(100)/T(95)

Table 16.b.Life Table Females Aruba October 1991

AGE	M(x,n)	Q(x,n)	l(x)	D(x,n)	L(x,n)	S(x,n)	T(x)	e(x)
0	.00724	.00713	100000.	719.	99332.	.99209 (a)	7712003.	77.120
1	.00042	.00167	99281.	166.	396712.	.99774 (b)	7612672.	76.678
5	.00053	.00264	99115.	262.	494922.	.99848	7215965.	72.804
10	.00008	.00039	98854.	39.	494171.	.99951	6721043.	67.990
15	.00014	.00069	98815.	68.	493930.	.99861	6226872.	63.015
20	.00046	.00230	98747.	227.	493241.	.99694	5732942.	58.057
25	.00068	.00339	98520.	334.	491731.	.99768	5239701.	53.184
30	.00029	.00145	98186.	142.	490590.	.99650	4747970.	48.357
35	.00124	.00618	98043.	606.	488873.	.99394	4257380.	43.423
40	.00114	.00569	97437.	554.	485912.	.98901	3768507.	38.676
45	.00328	.01627	96883.	1576.	480572.	.98793	3282595.	33.882
50	.00159	.00792	95307.	755.	474772.	.98068	2802022.	29.400
55	.00738	.03634	94552.	3436.	465597.	.94885	2327251.	24.613
60	.01258	.06099	91116.	5557.	441782.	.94831	1861653.	20.432
65	.00909	.04451	85559.	3808.	418945.	.91161	1419871.	16.595
70	.03212	.15005	81750.	12267.	381914.	.80036	1000927.	12.244
75	.05606	.24662	69484.	17136.	305670.	.71997	619012.	8.909
80	.07638	.32112	52348.	16810.	220073.	.29766 (c)	313342.	5.986
85	.38102		35538.	35538.	93269.		93269.	2.625

(a) Value given is for survivorship of five cohorts of birth to age group 0-4 year L(0,5)/500000
(b) Value given is for S(0,5)=L(5,5)/L(0,5)
(c) Value given is S(95+,5)=T(100)/T(95)

Table 14, 15 and 16 present the life tables for males and females for respectively 1972, 1981 and
1991[29]. The mortality rates for the life tables for 1972 and 1981 were obtained from Koningstein
1985). The construction of a life table for a country like Aruba poses certain particular problems. These problems are caused by the fact that Aruba has a small population size and is subject to a very low mortality regime. This leads to serious random fluctuations from year to year. To avoid these specific problems, the life tables for 1991 were constructed using a combination of direct and indirect estimation techniques. The methodology used is explained in Appendix 1.

In 1972, life expectancies for males and females were respectively, 66.7 and 73.5 years. During the period 1972-1981, an important increase in life expectancy took place. By 1981, the life expectancy for females had risen to 76.6 years, which is an increase of more than three years in just ten years
time. The rise in male life expectancy is even more spectacular. In a period of just ten years, the life expectancy for males increased by almost five years. From the available data, it is impossible to find out what exactly caused this important rise in life expectancies. Two factors may have played a primary role in the reduction of mortality, namely the significant rise in the standard of living of the Aruban population which took place during this period, and the opening of the new hospital that rovided the island with a modern, well-equipped treatment center. Especially among males, the reduction in infant mortality[30] was considerable. Male infant mortality rates declined from about 36 per thousand in 1972 to only 9 per thousand in 1981.

According to the data from the population register and the 1991 population census, little change took place in the mortality conditions in Aruba during the last intercensal period. Female life expectancy rose by about half a year to a level of 77.1, while male mortality decreased slightly to 71.1 years. Life expectancy for both sexes combined was found equal to 74.1 years. There is no doubt that levels of

[29] **The life table functions given in Tables 9 through 11 are the following:**

M(x,n)	**the age-specific mortality rate defined as the number of deaths in age group x to x+n, divided by the mid-year population in age group x to x+n.**
Q(x,n)	**the age-specific probability of dying between ages x and x+n.**
l(x)	**the function of survival, being the number of survivors in the life table at exact age x, out of an initial population of 100000 at age 0.**
D(x,n)	**the function of death, being the number of deaths in the life table between ages x and x+n.**
L(x,n)	**the total number of person years lived by the total population between ages x and x+n in the life table**
S(x,n)	**the survival rate S(x,n) is the probability of surviving between two groups of completed years. This survival rate is necessary for the construction of demographic projection models.**
T(x)	**the 'total after lifetime' T(x) is the total number of person-years lived by the cohort after exact age x.**
e(x)	**the expectation of life, or life expectancy represent the average after lifetime at exact age x.**

[30] **The infant mortality rate measures the risk of dying during the first year of life, i.e. from birth to exact age 1. Though the term 'rate' is used by almost everybody, the measure represents a probability and not a rate (Wunsch and Termote, 1978).**

infant and child mortality are extremely low in Aruba. Infant mortality for both sexes combined is only 9 per thousand, according to the life table. This is a level comparable to most countries in Western Europe and the United States, and far below levels encountered in most South American countries. Table 17 shows infant mortality rates and life expectancies for some selected countries. Even among the more developed nations, Aruba scores very high in terms of infant survival and life expectancy.

Table 17. Infant mortality rates and life expectancies for some selected countries

Country	Infant mortality rate	Life expectancy
Colombia	40	68
Venezuela	36	70
Brazil	63	65
Suriname	33	69
the Netherlands	9	77
USA	10	75
Somalia	132	45
More developed nations	15	74
Less developed nations	76	61
World total	68	63

Source: World Population Map 1992. United Nations Population Division.

Most impressive in Aruba's mortality regime are its very low levels of infant and child mortality. Based on the number of births and the number of deaths from the Population Register, levels of infant mortality were calculated from 1974 until 1991. The figures for the year of the censuses differ somewhat from the figures in the life table. First, the period of observation is somewhat different. Second, to avoid the problem of small number variability and possible underreporting of infant deaths, we used indirect techniques to estimate the levels of infant and child mortality from the census. The figures shown hereunder are indicative of the relative changes in mortality in early life.

Table 18 shows infant mortality levels which were typically between 20 and 30 per thousand during the 1970s. Around the beginning of the eighties, a further decrease in infant mortality levels took place[31]. Current levels of infant and child mortality in Aruba are extremely low. Undoubtedly, they are the result of the combination of very good gynecological and perinatal care, a healthy climate, an almost complete vaccination program, adequate economic and social positions of families, and a high degree of education of the female population. All factors are positively related to high rates of survival of infants and young children.

Table 18. Mortality trends in Aruba since 1972

Year	Crude Death Rate (per 1000 population)	Infant Mortality Rate (per 1000 live births)
1973	4.9	36.9
1974	5.1	21.8
1975	4.9	28.9
1976	5.1	26.6
1977	5.5	32.2
1978	4.8	27.4
1979	5.4	17.8
1980	4.8	9.8
1981	5.2	9.5
1982	5.1	7.7
1983	5.5	8.8
1984	5.1	16.2
1985	5.4	5.4
1986	6.3	9.8
1987	6.3	4.9
1988	5.7	6.3
1989	6.2	3.5
1990	6.7	3.5
1991	6.5	6.1

Sources: Population Register.

[31] **In his study on the demographic projections of Aruba, Koningstein shows trends in infant mortality from 1960 through 1981. The reader should, however, be aware that some of these figures are incorrect and give mortality rates which are far too high.**

Handicapped persons

According to the definition used in the population census, a handicapped person is a person with a physical or mental disorder. The handicap is formed by the limitations of the personal abilities due to the disorder[32]. In the population census 3701 persons indicated that they were handicap-ped in one way or another. This amounts to 5.5 percent of the total population living on the island. A study conducted by the Department of Public Health found that 4.7 percent of the population was handicapped (de Veer et al., p.15). Given the small sample size on which their study was conducted, it is good to see that the results show rather similar findings with the census. In comparison, the number of handicapped persons in Holland - as indicated by the Central Bureau of Statistics of the Netherlands- is far higher. No less than 11 percent of the Dutch population is limited in their personal abilities by a physical or mental handicap (Statistisch Jaarboek, 1992). It is not completely clear whether the Dutch population indeed counts more handicapped persons than the Aruban - perhaps due to the older age structure- or that we are dealing with a difference in the operationalisation of the definition of handicap.

Table 19 Number of persons handicapped by type of handicap

Type of handicap	Male	%	Female	%	Total	%
Motor handicap	354	9.6	327	8.8	681	18.4
Visual handicap	246	6.6	242	6.5	488	13.2
Auditory handicap	180	4.9	144	3.9	324	8.8
Organ handicap	477	12.9	587	15.9	1064	28.7
Multiple physical hand.	215	5.8	215	5.8	430	11.6
Idiocy / imbecility	58	1.6	34	0.9	92	2.5
Moronity	165	4.5	122	3.3	287	7.8
Mental & Physical hand	100	2.7	96	2.6	196	5.3
Not reported	66	1.8	73	2.0	139	3.8
Total	1861	50.3	1840	49.7	3701	100.0

Source: Population Census 1991.

Table 19 shows that the number of handicapped persons is about the same for both sexes. However, when we examine the various types of handicaps, we can observe some interesting differences. The number of mental handicaps appears far higher among males than among females. For 323 males, against 252 females, a more or less serious mental handicap was reported. On the other hand, organ handicaps are much more frequent among females (23 percent higher). In this group, handicaps caused by the malfunctioning of one or more organs are grouped. Typical examples of such handicaps are diabetes, stoma, chronic lung malfunctioning, etc.. According to the study of de Veer and Kock (1990),

[32] **A definition of the various types of physical and mental handicaps is given in the Selected Tables. Categories discerned were motor handicap, visual handicap, auditory handicap, organ handicap, multiple physical handicap, idiocy/imbecility and moronity.**

the prevalence of diabetes is quite high on the island. Four percent of the study population reported that they suffered from diabetes. In the age category 45-64, 11 percent said they were diabetic, in the age group 65-79, this was even as high as 21 percent. They also found that levels of diabetes and other ailments such as hypertension were higher among females than among men.

The most important causes of handicaps among the Aruban population are congenital abnormalities (see Table 20). More than 800 persons indicated their handicap was produced by a genetic anomalies. Handicaps due to birth defects occur about 25 percent more frequently among males than among females. This finding is in line with comparative data on disability presented by the United Nations (1990). Among all the countries on which data were available disabilities, caused by congenital conditions were significantly higher among males than among females. The second most important reason for handicaps in Aruba is geriatric illness. As the number of females at higher ages is higher than the number of males, it should come as no surprise that the number of disabilities caused by diseases connected with old ages is also higher among females. The data from the census also suggest that males lead a more dangerous life than females. A total of 330 men - against 137 women- indicated that they were disabled because of an accident.

Figure 6 clearly shows that the proportion of handicapped persons in the total population sharply increases with age. The number of handicapped persons per thousand is fairly constant up to the age of 40. After this age, the number of handicapped persons per 1000 rises moderately. In the age group 60 to 64, somewhat more than one in every ten citizens is handicapped. After the age of 65, the proportion of handicapped persons in the population increases sharply. By the age of 70, already one in every five persons is handicapped, while at the age of 80 about four out of every ten of the Aruban citizens are handicapped. With the aging of the population that is going to take place during the following decades, it can be expected that the number of disabled persons will rise drastically as well.

According to the figures of the population census, 225 handicapped persons were living in collective households. A total of 270 handicapped persons are living alone. It is important to note that most of these handicapped persons are at a more advanced age. Of all the handicapped persons living alone, 200 are above the age of 55. However, the vast majority of the handicapped persons on Aruba are living in normal households. Some 1459 handicapped persons are living in nuclear households, 1250 in extended and 496 in composite households [33].

[33] **For a definition of nuclear, extended and composite household, the reader is referred to the 'Selected Tables' of the 1991 Population and Housing Census.**

Figure 6. Handicapped persons per thousand population by age and sex

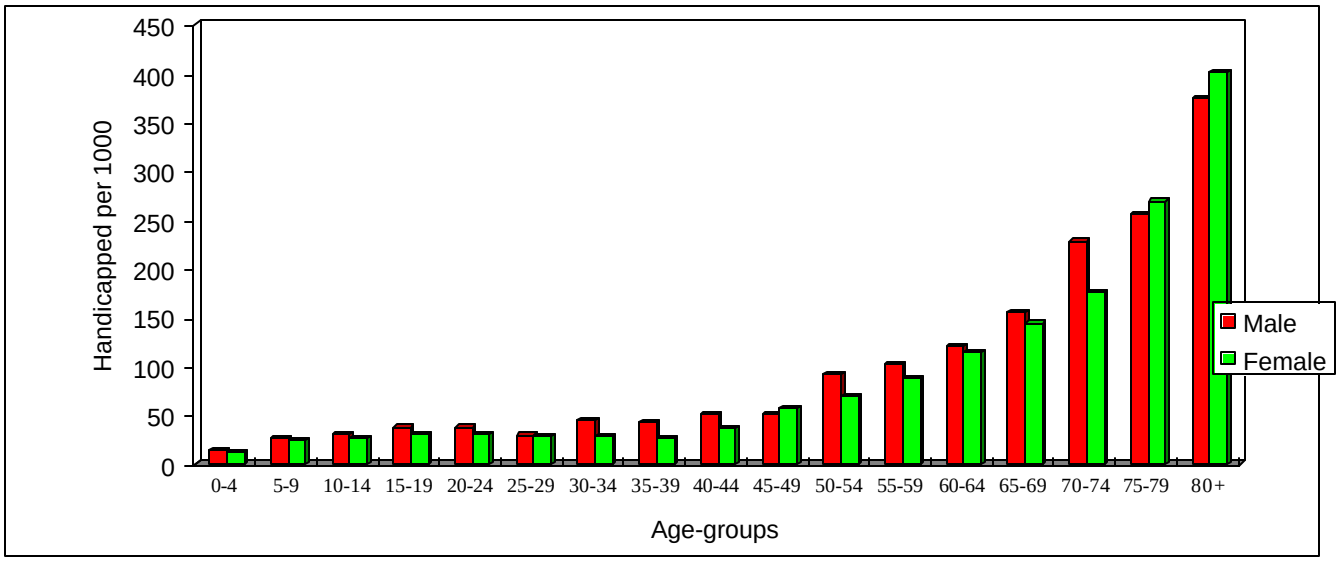

Table 20. Handicapped persons by type of handicap, cause of handicap and sex.

Type of Handicap	Congenital		Infection		Accident		Geriatric illness		Other illness		Other reason		Not reported		Total	
	Male	Fem.	Male	Fem.	Male	Fem.	Male	Fem.	Male	Fem.	Male	Fem.	Male	Fem.	Male	Fem.
Motor hand.	54	33	17	14	133	58	41	83	37	59	57	63	15	16	354	327
Visual	32	37	8	16	53	10	45	70	26	32	57	63	25	14	246	242
Auditory	60	51	16	17	20	9	25	17	6	5	41	30	12	15	180	144
Organ hand.	98	85	27	27	42	20	72	116	66	79	150	209	27	50	477	587
Multi phys.	35	19	11	5	52	26	37	97	46	36	21	25	12	7	215	215
Idiocy/Imb.	36	21	1	1	3	3	2	1	5	4	8	1	2	3	58	34
Moronity	90	70	3	2	9	6	1	4	12	8	35	24	14	7	165	122
Mental&Phys	47	45	2	1	10	2	7	15	12	12	18	15	3	6	100	96
Not report.	3	1	1		7	2	3	11	6	6	3	6	42	46	66	73
Total	453	362	86	82	330	137	233	414	217	243	390	437	152	163	1862	1839

Source: Population Census 1991.

E. Migration

Historically, Aruban society has been formed by the unique combination of migration streams from Europe, Africa, the Americas and Asia. The cultural uniqueness of Aruba is based on the contributions of the different ethnic groups and nationalities that have settled on the island during the past centuries. The data from the census show that this is an ongoing process and that migrants from many countries keep on contributing to Aruba's internatio nal character.

Native and foreign-born population

In October 1991, out of a population of 66687, 15910 persons were not born on the island. This means that about 23.9 percent of the population residing on Aruba immigrated to the island at a particular stage during their life. Figure 7 shows that the relative age distributions of the native and foreign-born population are quite different[34]. The age distribution of the native population is quite peculiar. Because of the very fast decline in fertility, a double bell- shaped structure can be observed. Persons who were born under the regime of high fertility have now reached (and gradually passed) age groups in which they are having children themselves. In the future, the first smaller-sized cohorts will reach ages in which they will have children themselves. If fertility remains at the current low level, this will lead to a reduction in the relative size of the youngest age groups. Eventually, in 25 to 30 years, it is possible that the population pyramid of the native population will have a triple bell-shaped structure. The peculiar structure of Aruba's age composition is bound to create some problems in the future. For instance, in recent years, the population at school-going ages in Aruba has again increased after many years of decrease. Certain actions, such as the creation of new classes, consequently had to be taken. However, with the current levels of fertility and the relative age structure, it can be expected that, in the future, the number of school children will again decrease (and perhaps increase later on again).

Looking at the relative age distribution of the foreign-born population, several characteristics immediately catch the eye. First, there is a predominance of persons in the age groups 25 to 45. Obviously, this has to do with the large contingent of foreign workers that have come to Aruba during the last few years to work in the tourist, construction and service sectors. Second, in these age groups, more women than men are present: 2651 men against 3469 women. Also, the proportion of foreign-born persons above the age of 65 is quite large (2090). Almost all these elderly persons came to Aruba many years ago. Among all the persons above 65, at the census only 73 have settled in Aruba since 1980, showing that the number of pensioners coming to Aruba has been quite limited.

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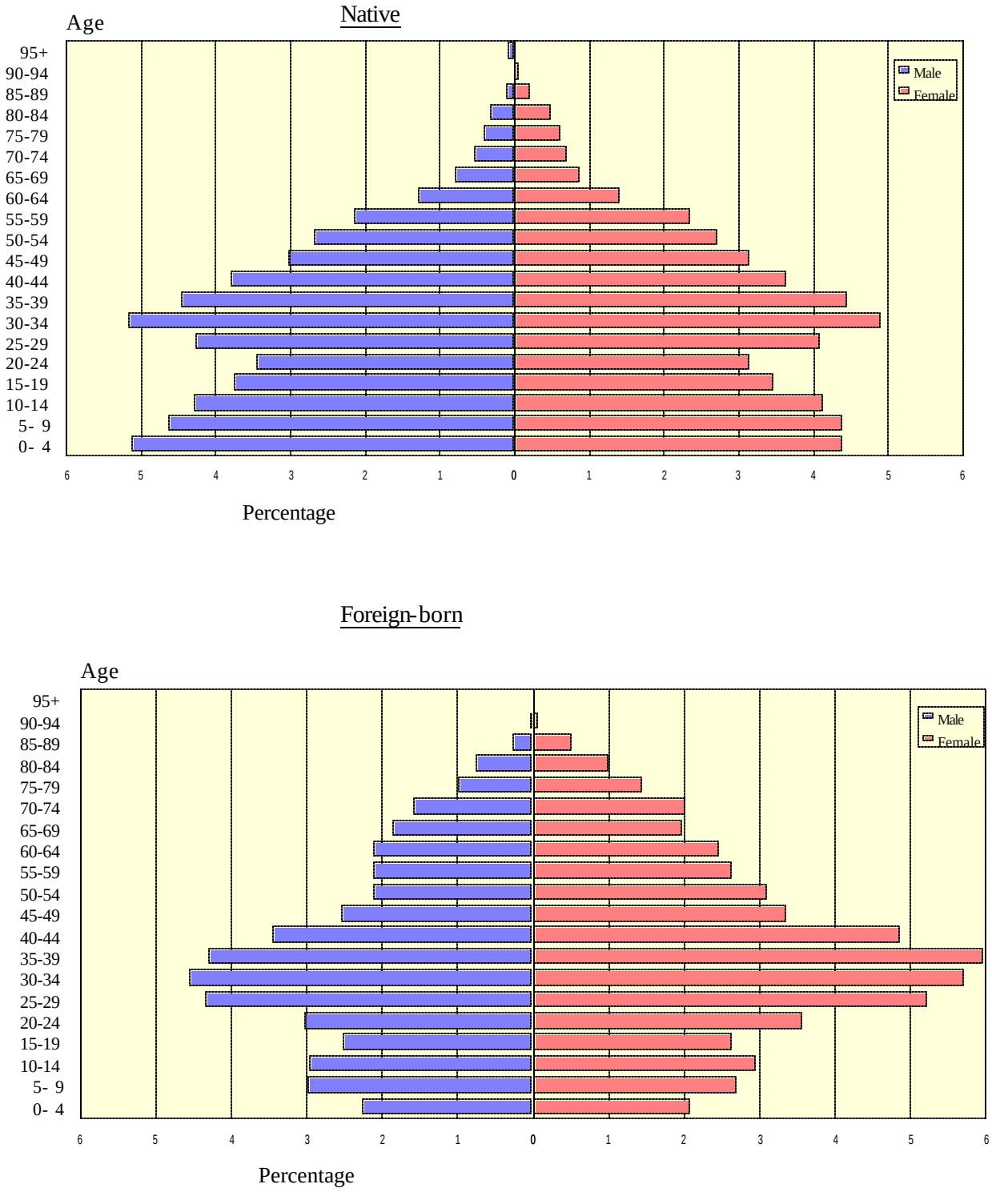
[34] **For the exact figure of native and foreign-born population by single years of age and sex the reader is referred to table P-C.1. on page 74 of the 'Selected Tables' of the Third Population and Housing Census.**

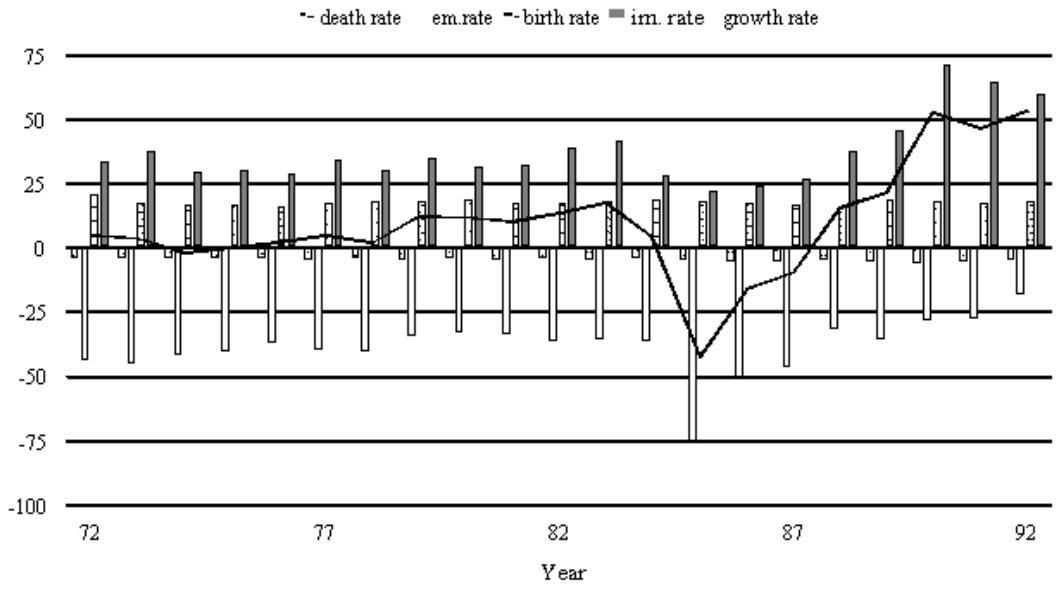
Figure 7. Population pyramid for native and foreign-born population



Compared to the census of 1981, the proportion of foreign-born persons has increased. In 1981, 18.5 percent of all persons residing on Aruba were foreign-born, against 23.9 in 1991, which means an increase of more than five percent. Unfortunately, no figures are available on native and foreign-born population from the census of 1972. According to Hawley (1960), 13 percent of the population in 1960 was born outside Aruba, which mostly meant born on one of the other islands of the Netherlands Antilles.

In the first chapter we already briefly mentioned the impact of the migration pattern on the course of the population size. Figure 8 clearly shows the importance of the effect of immigration and emigration rates on the total population growth rate. The birth rate and the mortality rate only show small variations during the period 1972-1991. Variations in the growth rate are almost completely determined by the immigration and emigration rate.

Figure 8. Population changes Aruba 1972-1992

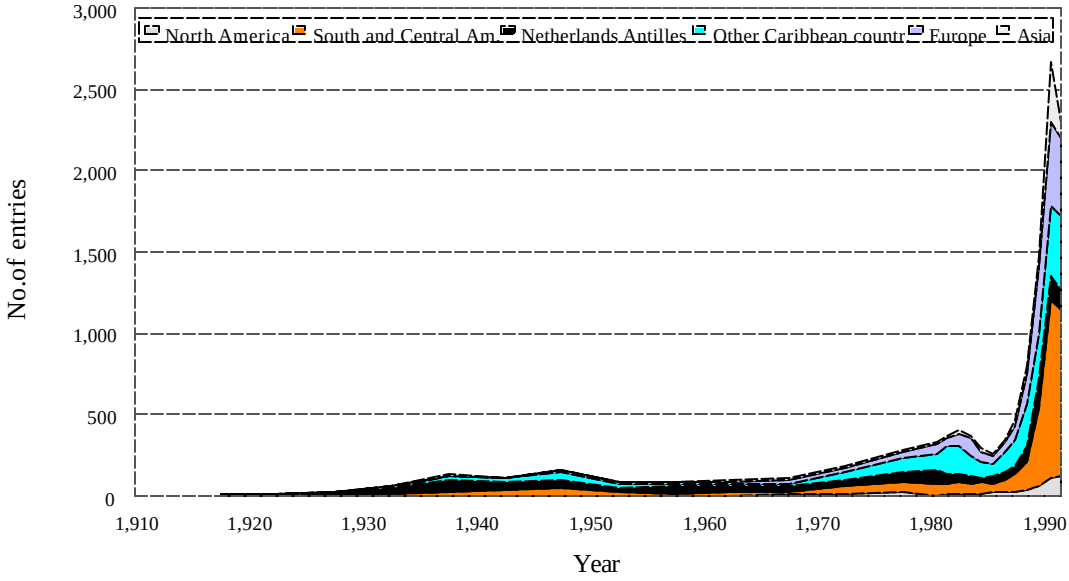


Origin of Aruba's foreign-born population

Aruba's population is formed by people from all corners of the earth. Figure 9 summarizes the migration experience of those persons who are foreign-born and currently reside on Aruba. The year of migration to Aruba with a broad indication of the region of birth is depicted. Some current residents came to the island as far back as the 1920s. During the 1930 and 1940s many people came to the island, primarily

to work in the oil industry. Current residents who arrived during this period came primarily from the Netherlands Antilles, South and Central America, and other Caribbean islands. The latter group settled itself in and around San Nicolas, giving the city its distinct black Caribbean identity. During the fifties and sixties, with the slump in the oil industry, fewer people came to the island to settle. From the end of the sixties on, the number of settlers again started to grow, reaching a height in the mid-eighties when -as we saw- large quantities of people started to leave the island after the closure of the LAGO refinery. After the economic problems during the mid-eighties, an enormous influx of foreign workers has taken place. According to the figures from the civil registration a total of 15691 foreigners settled on the island from the beginning of 1987 till the middle of 1992. In addition to these legal migrants, a large contingent of illegal workers has come to Aruba to fill some specific niches in the labor market. Illegal foreign construction workers are regularly caught and extradited. It is however not possible to make an estimate of the number of illegal workers on the island.

Figure 9. Region of birth of foreign-born population by year of entry in Aruba



Source: Population Census Aruba 1991.

During the last ten years, the region of origin of those settling in Aruba for work has changed considerably. Figure 9 clearly shows the enormous increase of people coming from South America. At the moment of the census, respectively 2027, 1254 and 788 persons on the island were born in Colombia, Venezuela and Surinam (see Table 21). In relative terms, the group of persons from Venezuela experienced the highest growth on Aruba. Now there are more than three times as many

Venezuelans on the island than ten years ago. The largest group of foreign-born persons originated from the Netherlands (2297). However, one should consider that this group includes some children who were born to Aruban parents who resided for some years in the Netherlands, and who came back to Aruba. During the census in 1981 a total of 1378 persons originated from the Netherlands. This means an increase of more than 900 Dutch-born persons during the last ten years. However, when we look at the number of such persons above the age of 15, the increase is less spectacular: 1372 in 1991 against 966 in 1981. The number of persons born in the Netherlands Antilles has decreased during the last decade. In 1960, a total of 4308 'Antilleans' were living on the island, in 1981 this was 4115, while in the last census 3289 persons reported coming from the Netherlands Antilles. It should come as no surprise that the largest segment of these people were born in Curaçao (1922). However, given the small size of the population of Saba and St Eustatius (879 and 1021 in 1981), it is remarkable that, respectively, 168 and 161 people from these islands are living on Aruba.

The largest group of foreign-born women originates from the Dominican Republic. A total of 1638 Dominican women was residing in Aruba at the time of the census, which is almost three times as much as the number of Dominican men. Of these women, 267 were working as housemaids. The number of persons from Asia has increased significantly during the past decade. A total of 904 Asians are now living in Aruba. As far back as the 1930s some Chinese have settled on Aruba. In 1990, a contingent of 191 Filipinos came to work on Aruba, mainly in the hotel industry. At the time of the census most of the 800 Turkish workers who were contracted in 1989 to reactivate the Coastal refinery had already left. A group of 123 was still at the refinery to finish the job.

Regional distribution of Aruba's foreign-born population

The census figures clearly show that the foreign-born population on Aruba prefers to live in the island's two urban centers: Oranjestad and San Nicolas. Figure 10 depicts[35] the high concentration of the foreign-born in some zones around these cities[36]. In the two regions that form Oranjestad (Oranjestad East and Oranjestad West), no less than 32.6 percent of the total population consists of foreign-born persons. In two zones, the native population is outnumbered by the foreign-born, namely 'Eagle/Paardenbaai' and 'Nassaustraat'. In San Nicolas (regions San Nicolas North and San Nicolas South), 32.1 percent have been born outside Aruba. Here four zones have more foreign-born than native persons: Seroe Colorado,

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35 **Figure 10 displays a regional map of Aruba without indications of the name of the various regions and zones. This was done for reasons of readability of the map. The reader is referred to Appendix 2 for an index of the geographical division used in the census. Further information about the geographical division can also be found in GAC -91 (1991).**

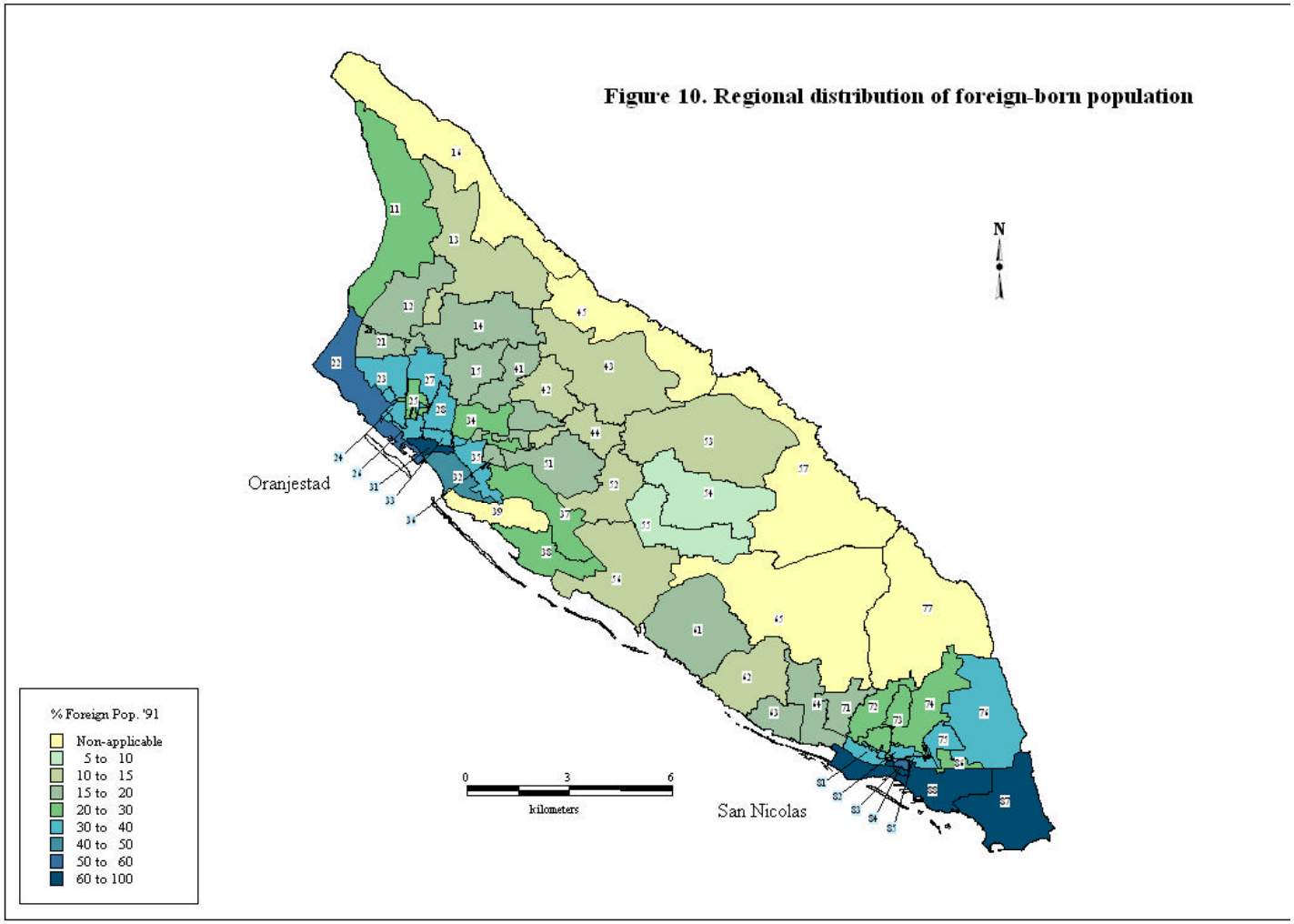
36 **The white areas on the map represent zones which are inhabited. The names of the zones corresponding to the numbers on the map can be found in appendix 2.**

Table 21. Foreign born population in 1981 and 1991 by sex and selected selected countries and regions of birth.

	1981			1991			% change in total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Caribbean									
Curaçao	1163	1032	2195	1055	867	1922	-9.3	-16.0	-12.4
Bonaire	349	346	695	292	251	543	-16.3	-27.5	-21.9
Sint Maarten	313	380	693	215	279	494	-31.3	-26.6	-28.7
Sint Eustatius	128	158	286	69	100	168	-46.1	-36.7	-41.3
Saba	101	145	246	61	100	161	-39.6	-31.0	-34.6
Neth.Antilles tot.	2054	2061	4115	1692	1597	3289	-17.6	-22.5	-20.1
Dom.republic	222	713	935	599	1638	2237	169.8	129.7	139.3
Haiti	22	198	220	47	308	355	113.6	55.6	61.4
Other Caribean	360	990	1350	349	885	1234	-3.1	-10.6	-8.6
Total Caribean	2658	3962	6620	2687	4428	7115	262.77648	11.8	7.5
South America									
Colombia	292	654	946	758	1269	2027	159.6	94.0	114.3
Venezuela	205	209	414	722	532	1254	252.2	154.5	202.9
Suriname	304	247	551	419	369	788	37.8	49.4	43.0
Other S.America	82	92	174	239	199	438	191.5	116.3	151.7
Total S.America	883	1202	2085	2138	2369	4507	142.1	97.1	116.2
North &Central America									
USA	148	159	307	230	239	469	55.4	50.3	52.8
Other N.&C.America	42	43	85	66	72	138	57.1	67.4	62.4
Total N.&C. America	190	202	392	296	311	607	55.8	54.0	54.8
Europe									
The Netherlands	700	678	1378	1189	1108	2297	69.9	63.4	66.7
Portugal/Madeira	93	77	170	102	97	199	9.7	26.0	17.1
Europe other	80	82	162	131	110	241	63.8	34.1	48.8
Total Europe	873	837	1710	1422	1315	2737	62.9	57.1	60.1
Asia									
Total Asia	198	135	333	620	284	904	213.1	110.4	171.5
Africa & Oceania									
Total Africa and Oceania	13	10	23	27	14	41	107.7	40.0	78.3

Source: Population censuses 1981 and 1991.

Figure 10. Regional distribution of foreign-born population



San Nicolas South other, Village and Van de Veen Zeppenfeldstraat. 'San Nicolas South other' is a bit of an exceptional case, since only the Turkish workers, who came to work at Coastal, are living in this zone.

Areas which are somewhat further away from the urban centers show a lower proportion of foreign-born. For instance, the area around Santa Cruz has less than 15 percent of foreign-born persons.

Economic activity of the Foreign-born Population

The foreign-born population makes an important contribution to the economic activities on Aruba. At the moment of the census, out of a total labor force of 31111, no less than 8097 (26.0 percent) was foreign-born[37]. Of the foreign labor force, slightly more than half is male (53.6 percent). The unemployment rate among the foreign-born population was about 5.6 percent, which is slightly less than the rate for the native population (6.2 percent). Figure 11 and 12 give more details on the economic activities of the employed foreign labor force. Figure 11 shows the native and foreign-born population for major occupational groups. To categorize the occupational groups, the International Standard Classification of Occupation (ISCO-88) (Geneva, 1990) was used. In Appendix 3, a brief explanation of the systematic classification of the ISCO-system is provided. The categories presented in the graph refer to the ten major groups in the system:

1. Legislators, senior officials, and managers;
2. Professionals;
3 Technicians and associate professionals;
4. Clerks;
5. Service workers and shop and market sales workers;
6. Skilled agricultural and fishery workers;
7. Craft and related trades workers;
8. Plant and machine operators and assemblers;
9. Elementary occupations;
0. Armed forces.

Figure 12 concentrates on the branch of industries in which native and foreign-born workers are active. In this case the International Standard Industrial Classification System of all Economic Activities (ISIC)

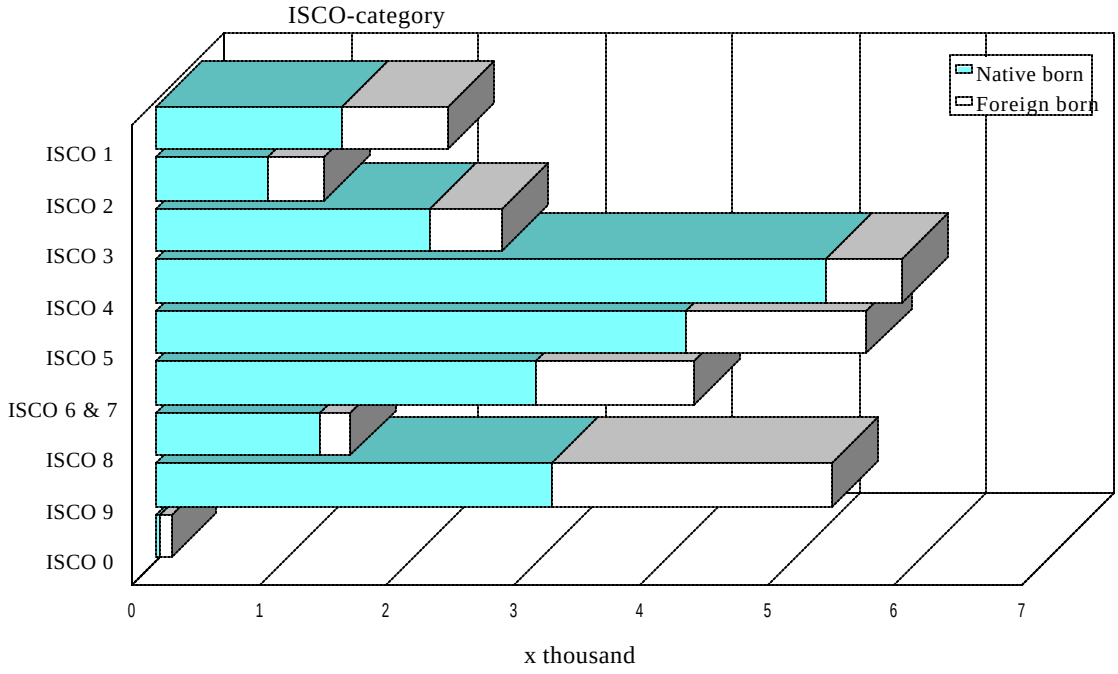
[37] **Unfortunately, it is impossible to make a comparison with the foreign-born population in the labor force from the 1981 population census. Only some data on the percentage of Antillians in certain occupational groups are presented (Centraal Bureau voor de Statistiek- Nederlandse Antillen, 1985-1).**

Revision 2 was used. A brief description is also given in Appendix 3 of this classification system. The major industrial groups used in Figure 12 are:

1. Agriculture and fishing;
2. Mining and quarrying;
3. Manufacturing;
4. Electricity, gas, and water;
5. Construction;
6. Wholesale, retail trade, hotels, and restaurant;
7. Transport, storage, and communication;
8. Financing, insurance, real estate, and business services;
9. Community, social, and personal services;
0. Activities not stated or not adequately defined.

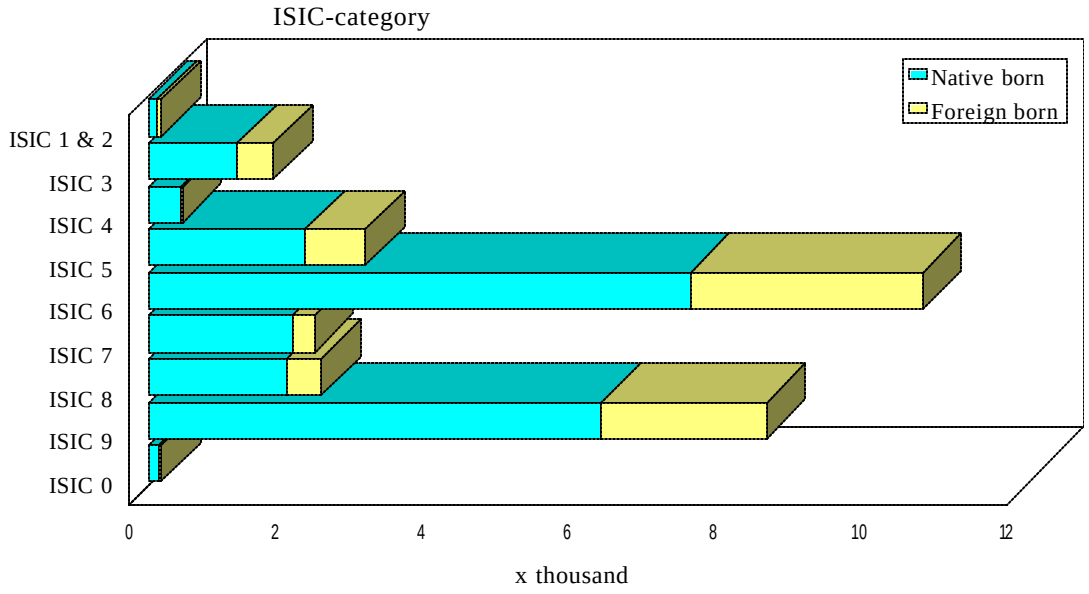
The percentages at the right side of the bars indicate the proportion of the specific ISCO or ISIC group which is foreign-born.

Figure 11 Employed population by major occupational group (ISCO) for native and foreign-born persons.



Source: Population Census 1991

Figure 12 Employed population by branch of industry (ISIC) for native and foreign-born persons.



Source: Population Census 1991

The proportion of foreign workers is highest among the elementary occupations (ISCO-9). More than 40 percent in this category is born outside Aruba. It is interesting that the number of women per 100 men in this category for native persons equals 66.2. However, among the foreign-born population we find 333.9 women for every 100 men. In Aruba, many more elementary jobs are performed by foreign-born than by native women (1700 against 1243). About a third of foreign women in elementary occupations (561) originate from the Dominican Republic. Other important sending countries for unskilled female workers are, respectively, Colombia (352), Haiti (215) Grenada(114) and Jamaica (111).

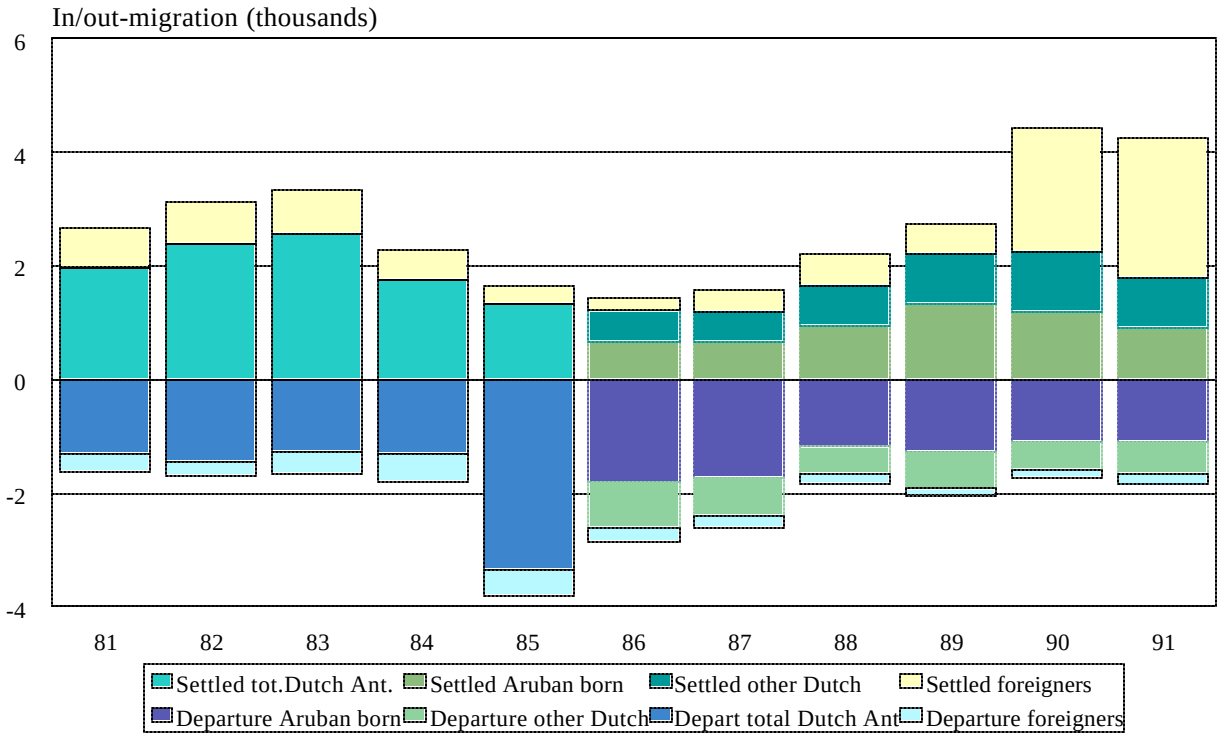
Besides to the elementary occupations, many foreign workers can be found at the other end of the occupational scale. Respectively, 36.5 and 33.8 percent of managers and professionals (ISCO 1 and 2) are foreign-born (see figure 11). In contrast to the elementary occupations,, many more male than female foreign managers and professionals are working in Aruba. In the ISCO groups 1 and 2, 71.8 percent of foreign workers are male.

Emigration

The population census obviously is unable to provide information on out-migration. Table 2 and Figure 8 provide information on emigration levels based on the civil registration of residents who are leaving the country.

Figure 13 shows the levels of in- and out-migration by year and region of birth. Unfortunately, up to 1986 among Dutch nationals, no distinction was made in the figures of the Bureau of Civil Registration between Aruban-born and those born in the Netherlands Antilles.

Figure 13 Levels of in- and out-migration by year and region of birth



Source: Bureau of Civil Registration.

During the year of the census, a total of 558 Arubans left the island to settle overseas. Given the economic boom, one would expect that in the last few years more Aruban people would have come back than would be leaving. However, during the year 1991, more Arubans left than returned. On the other hand, during 1989 and 1990, somewhat more Arubans returned to their homeland than departed[38]. The number of Arubans who returned home decreased in 1991 from 1200 in 1990 to 897 in 1991. This may suggest that those who left during the years of economic hardship - after the closure of

[38] **During the period 1987- 1991, 670, 933, 1320, 1200 and 897 respectively Arubans returned from overseas. During the same period 1728, 1189, 1264, 1093 and 1086 respectively Aruban born persons left the island to live abroad.**

the LAGO refinery- and were willing to come back, did so during the years before 1991. It is quite possible that the group of Arubans who are now living abroad has a much higher concentration of people who settled in such a way (house, arrangements for pension, growing children) that they are much less likely to return to the island before long.

Among those who leave Aruba, there is a small but not unimportant contingent of young Arubans who leave their island for further education overseas. According to the figures of the department of Education (Het onderwijs op Aruba, 1988, 1989, 1990, 1991), 199 youngsters were given a fellowship for study abroad at the beginning of the school year 1990-1991. At the beginning of the school years 1988 and 1989, 199 and 244 students respectively were given a fellowship or loan to study abroad.At the beginning of 1992, a total of 879 youngsters were studying abroad with a fellowship or loan. As very few young persons leave the island to study abroad without a scholarship or loan, these figures are fairly good estimates of Aruban students abroad. It is interesting that 57 percent of all fellowships/loans of 1990/1991 were given to young females. During the last years, the Netherlands has become even more popular as a country of further education than before. In 1989, 76.5 percent of all scholarship students abroad were studying in the Netherlands, in 1992 this percentage had risen to 87.0 percent. The United States of America is the second most popular destination for Aruban students: 77 young students on a scholarship are now in the USA.

Figure 13 clearly shows the large difference between the number of non-Arubans who settle on the island and those who depart. In 1991, 2455 foreigners came to live in Aruba, while only 208 left the island. These data suggest that most of the foreigners who come to Aruba intend to stay for an extended period, or plan to settle permanently. However, it is also possible that some foreigners who have worked on Aruba and who leave after their contract are not deleted from the Population Register. Some foreigners do not report their departure to the Bureau of Civil Registration. This negligence of departing foreigners to report their departure may be the reason that, in the past, the population estimates of the Bureau of Civil Registration differed significantly from the estimates of the census. At the end of September 1991, 72562 persons were registered as living on Aruba; the census showed 66687 were living on the island.

It is practically impossible to make an estimate of the total number of Arubans who are currently living abroad. The only way to have an idea about the migration destination of the native population is by looking at the country of previous settlement before the return to Aruba. Figure 13 shows the number of native persons who returned to Aruba, by year and country of previous residence. Clearly, the Netherlands is still the most important destination country for Arubans [39]. In 1989, the number of return migrants from the Netherlands increased significantly (682). This is probably due to the brighter economic prospects during this year. After the peak in 1989, the number of native persons who return home is gradually decreasing, and reached a level of about 495 in 1991. One has to consider that in this group some young persons are included who came back after a few years of studying in the Netherlands.

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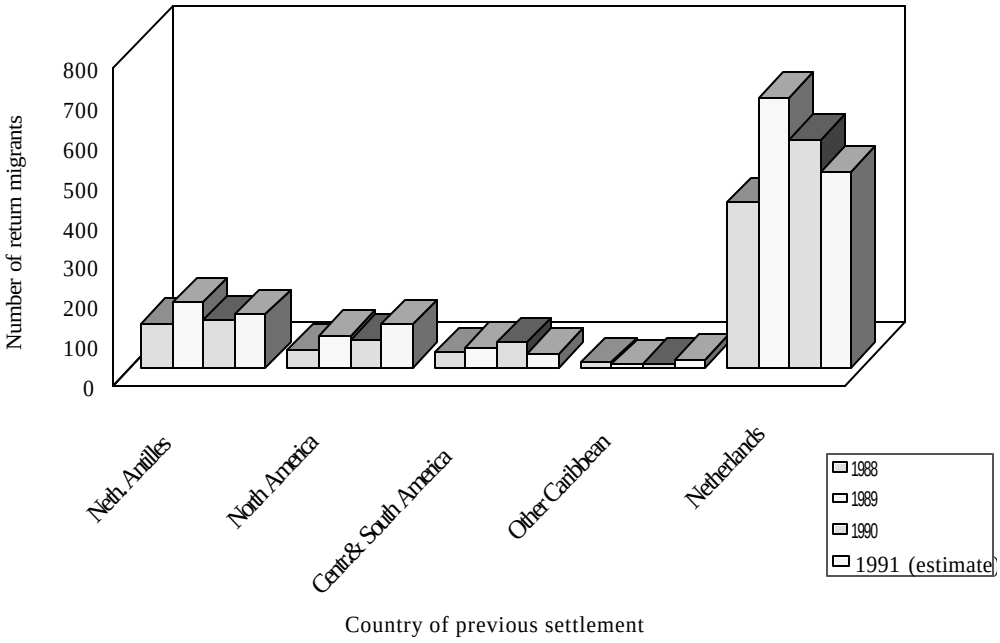
[39] **As the figures for 1991 only counted up to the census moment (6th October), an appropriate adjustment was used to make an estimate for the number of return migrants during the whole of 1991.**

Figure 14. Return migration of native persons by region of previous settlement and period of return.



Source: Population Census 1991.

Compared to the Netherlands, the return migration from other regions is quite limited. The Netherlands Antilles and the USA appear to be popular destination countries. Based on the return migration it seems that South and Central America and the other islands in the Caribbean are not important migration destinations for Arubans.

F. Some social characteristics of the population on Aruba

Based on the population and housing census, valuable information about some social characteristics of the population residing on Aruba can be provided. In this chapter, we will concentrate on three of these characteristics: religion, language and education.

Religion

Table 22 shows that the Roman Catholic faith remains by far the largest religion on the island. However, compared to the censuses of 1981 and 1972, a small reduction of somewhat more than two percent has taken place. Over the years the Methodist church seems to have lost much of its followers. Compared to 1972, the share of the Methodist faith has declined more than half. During the last ten years, the Evangelist church has gone up from .6 percent of the population to 2.0 percent. About 2.7 percent of the population reports having no religion at all. This is an increase of more than one percent compared to ten years ago.

Table 22 Percentage of population by religion 1960, 1972, 1981 and 1991.

Religion	1960	1972	1981	1991
Roman Catholic	79.7	88.2	88.5	86.2
Methodist	5.9	3.8	2.4	1.7
Anglican	1.9	1.1	.9	.7
Protestant	n.a.	3.8	2.9	2.7
Adventist	n.a.	.4	.6	.6
Evangelist	n.a.	n.a.	.6	2.0
Jehova's Witness	n.a.	n.a.	1.1	1.3
Muslim	n.a.	.0	.0	.3
Jewish	.4	.1	.1	.2
Other	10.4[40]	1.4	1.3	1.5
No religion	1.7	1.2	1.6	2.7
Not reported	-	-	-	.1

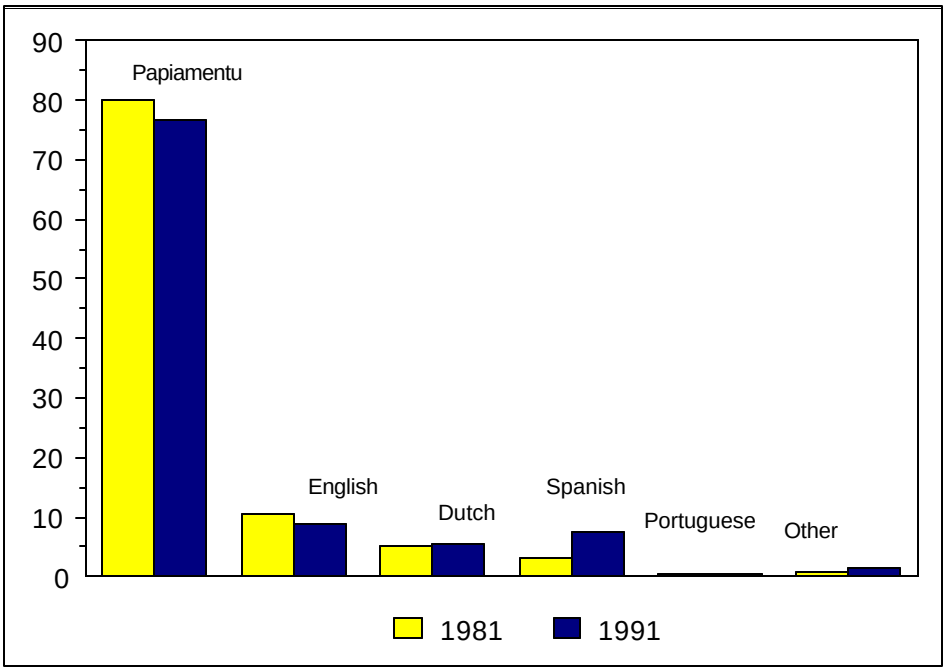
Source: Population censuses 1960, 1972, 1981 and 1991. (n.a. = not-available).

[40] **Includes not reported as well.**

Language

The recent stream of labor migrants has caused some changes in the relative distribution of the languages spoken on the island. During the last ten years the number of persons who speak Papiamentu as their first language has increased from 48335 in 1981 to 51061 in 1991. However, in relative terms, Papiamentu has decreased from 80.1 percent to 76.6 percent (see figure 15).

Figure 15 Percentage of various languages spoken on Aruba in 1981 and 1991



Source: Population censuses 1981 and 1991.

English is still the second language on the island; 8.9 percent of the total population speaks English as their first language. However, compared to the previous census, one can see that about 450 persons less are speaking English now, than did 10 years ago (6393 in 1981 against 5954 now). This means a reduction of 1.7 percent. During the past few years, the use of Spanish has increased considerably on the island. Compared with ten years ago, 2.6 times as many people report now that they are speaking Spanish as their first language (1891 against 4946). At the time of the census, 7.4 percent of the population of Aruba was speaking Spanish as their first language. In 1981, Spanish was the fourth mostly spoken language on the island. For sometime now, Spanish has passed Dutch as the third important language. Now, about 5.5 percent of the persons residing on the island communicate in Dutch. And, if current trends continue, it is well possible that Spanish will soon be the second language

on the island.
Given the high rate of foreign-born persons in Oranjestad and San Nicolas, it comes as no surprise that the percentage of the population that speaks Papiamentu as their first language is lowest in these regions. In Oranjestad (regions Oranjestad East and Oranjestad West), 71.7 percent use Papiamentu as their main vernacular. In San Nicolas (regions San Nicolas North and San Nicolas South), only 57.6 percent of the population actually speak Papiamentu. A total of 3854 citizens speak English in San Nicolas. The use of Papiamentu is highest in the regions of Paradera and Santa Cruz. In both regions, the percentage of persons who use Papiamentu as their first tongue is slightly higher than 90 percent.

Education

Aruba has an educational system that is largely based on the Dutch model. For an overview of the organization of Aruba's school system the reader can consult, for instance, the statistical report of the education department ('Het Onderwijs op Aruba, 1992). In our description of the educational levels of the Aruban population, we will concentrate on two subtopics: a) Aruba's school-attending population and b) the educational attainment of the population not currently attending school.

a) School-attending population

According to the population census, a total of 17220 young persons were attending school at the beginning of October 1991; 8806 were male and 8415 female [41]. Figure 16 shows the participation rates in formal education for the population 3-24 years of age. Although Aruba has no Education Act in which primary education is obligatory, it is striking how high the enrollment rates are for ages 6 to 16. From age 6 till age 12, enrollment rates fluctuate around 99 percent. School enrollment is virtually the same among boys and girls. Only after age 16, it seems as if slightly more females continue their study. When looking at the enrollment rates above the age of 18, one should take into account that many youngsters who go for higher education do so abroad. As our figures are based on the resident population at the time of the census, those who are studying abroad are not included. According to the statistics provided by the Department of Education, 199 new fellowships or study loans were given to young Arubans to continue their study abroad: 57 percent of these young persons were females.The total number of young scholarship students abroad was 879 on January 9th, 1992 (Het Onderwijs op Aruba, 1992). Table P-F.2. of the 'Selected Tables' (1992) shows that in fact very little differences exist in the degree of school attendance between the various regions on Aruba.

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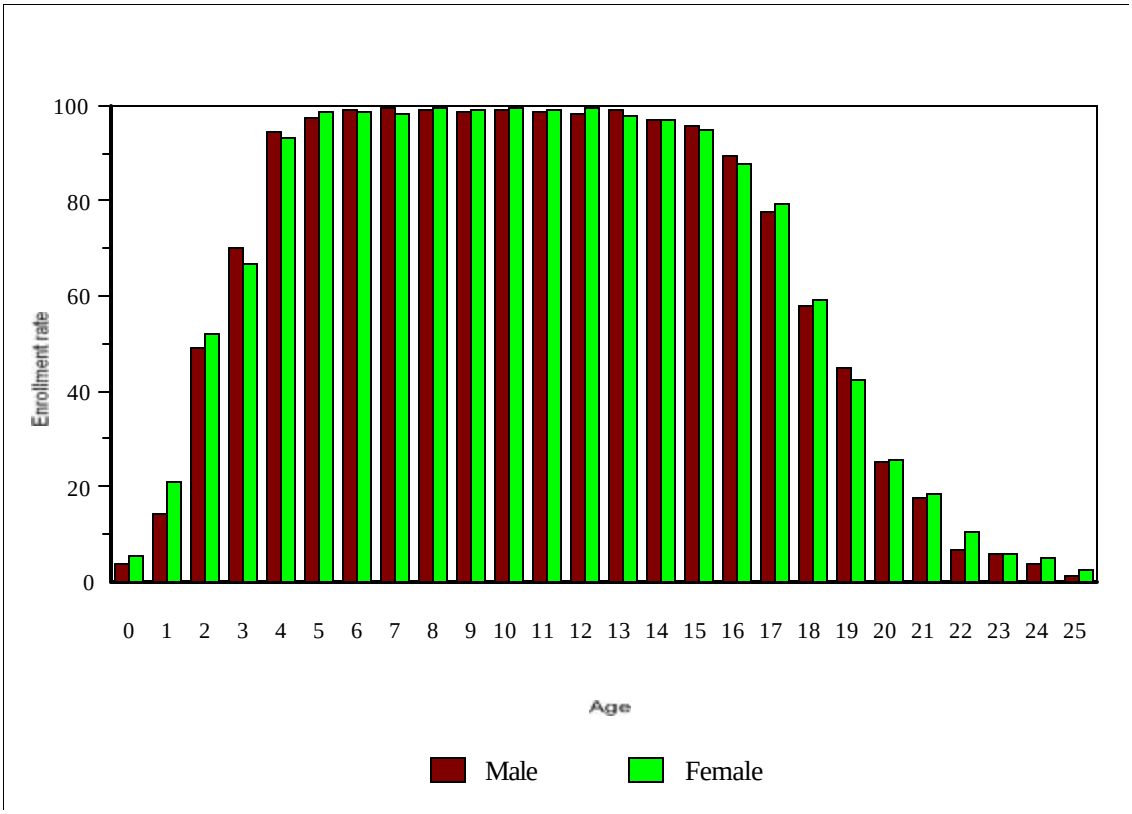
[41] **The school-attending population consists of those persons who were following a regular education program. A regular education program normally spans a period of more than one year and leads to an accredited diploma. The program can be followed during the day or in the evening hours. A regular program can normally be considered to be full-time education. A few examples of regular programs as they exist on Aruba are: primary school, ETAO, International School, VWO, IPA, LTO, MAO, University of Aruba, Police School, MOVAA,... Various census data users are interested in information about kindergartens, playschools and day nurseries. Therefore, children attending pre-primary school were also considered following regular education.**

Figure 16 School enrollment rates by age and sex.



Source: Population census 1991

Table 23 presents the school-attending population in 1981 and 1991, by type of program and sex. Compared to the previous population census, the total number of persons attending school has gone up from 16270 to 17220. The proportion of the total population attending school has dropped slightly from 27.0 percent in 1981 to 25.8 in 1991. One should however be aware that the figures from 1981 and 1991 are not completely comparable. Figures from 1981 are based only on day-school attendance, while the figures of 1991 also include 'regular' education in the evening hours. The decline in the proportion currently at school obviously has to do with the decrease in the proportion of the population in the younger age groups.

The total number of children in primary education in both censuses has remained almost equal. This does not mean that no fluctuations occured during the intercensal period. For instance, according to the figures from the department of education, in September 1986, only 5940 children were enrolled in primary education. This is about 17 percent less than in October 1991. The peculiarities of Aruba's age distribution (see p.7), the high level of emigration after the closure of the LAGO, and the recent boom in immigration are contributing factors to these huge fluctuations in the total enrollment of children in primary education.

It is striking that the number of children who are following special primary education has sharply decreased during the past decade. In 1991, more than twice as many boys than girls were enrolled in special primary education. Although evening courses are included in the figures of 1991, it can be seen that the number of youngsters following lower vocational training has dropped. On the other hand, for both sexes the number pursuing a general secondary education is increasing. Especially the MAVO training appears very popular among teenage girls. In September 1991, a total of 1163 girls were following MAVO, against 307 boys. Within the general education programs, HAVO/VWO has become more popular. In 1981, 30.5 percent of all students in the general programs were enrolled in HAVO/VWO. According to the Department of Education, which provides data on day-education, 36.5 percent were in HAVO/VWO.

Table 23 School-attending population by type of education and sex.

	1981		1991	
Type of educational program	Male	Female	Male	Female
Day nursery/playschool/kindergarten	1329	1214	1965	1734
Primary education	3644	3512	3644	3496
Special primary education	215	124	158	71
Vocational education (lower level)	1374	941	1170	635
MAVO, HAVO, VWO	1319	1939	1434	2069
Vocational education (intermed. level)	405	164	381	310
Higher education (university,IPA)	31	59	35	80
Not reported	-	-	20	20
Total	8317	7953	8806	8415

Source: Population censuses 1981 and 1991.

The important rise in the number of persons following higher education in Aruba is due to the commencement of a faculty of law at the University of Aruba, which drew quite a number of candidates.

The vast majority of young people, who go for higher education, are studying abroad. In the chapter on migration, we briefly described the population of Aruban students abroad. For a detailed description of the group of Aruban youngsters studying overseas, the reader could also consult 'Het Onderwijs op Aruba 1991-1992' (p.101).

b) Educational attainment of the population of Aruba

For those who were no longer following regular education, data was gathered in the census on their educational attainment. The attainment was measured by the highest diploma the respondent obtained from a regular educational program. The 'International Standard Classification of Education' (ISCED) was used to classify the educational attainment of Aruba's population. Appendix III contains a brief explanation of the ISCED system.

Table 24. Population not attending school, 14 years and over, by age, sex, and level of educational attainment

	Level of education					
	Absolute			Relative (%)		
ISCED level	Male	Female	Total	Male	Female	Total
No primary	2775	3696	6471	12.41	15.36	13.94
ISCED-1	7734	9325	17059	34.59	38.76	36.75
ISCED-2	7281	6697	13978	32.56	27.84	30.11
ISCED-3	916	1073	1990	4.10	4.46	4.28
ISCED-5	1308	1276	2584	5.85	5.30	5.57
ISCED-6	1163	1074	2237	5.20	4.46	4.82
ISCED-7	504	219	724	2.25	.91	1.56
ISCED-9	679	700	1379	3.04	2.91	2.97
TOTAL	22360	24060	46422	100.00	100.00	100.00

Source: Population Census 1991.

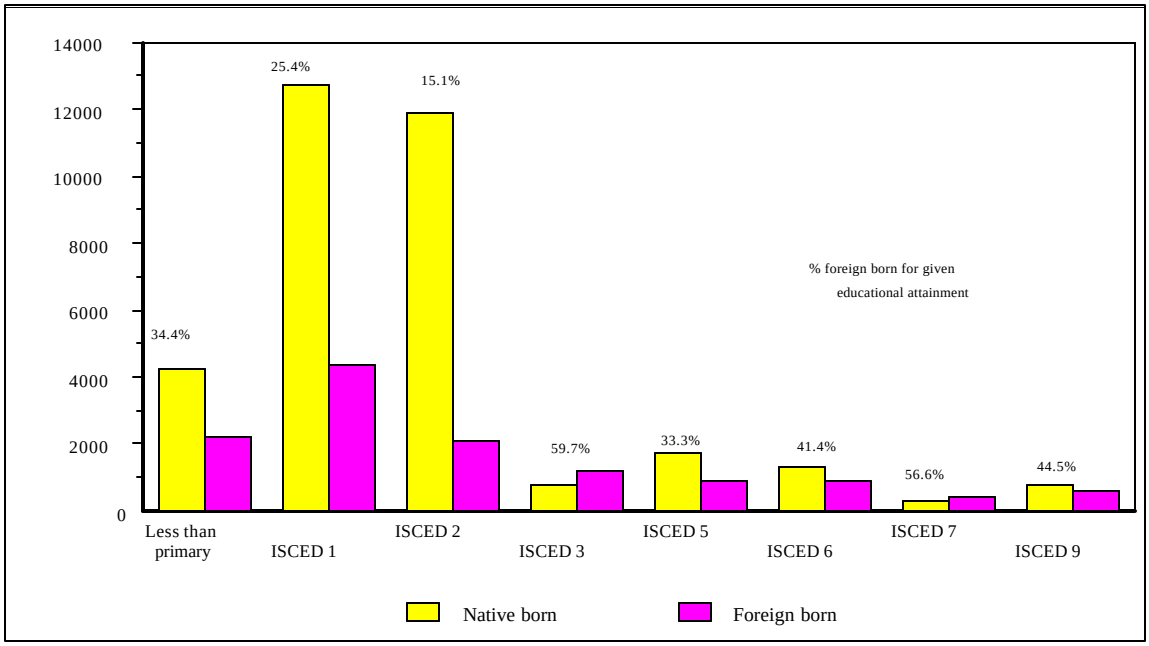
Table 24 gives the ISCED level of the highest obtained diploma of the population not attending school, of 14 years and over by sex. Of all persons living on Aruba, 13.94 percent never finished primary education. Compared to the 1981 population census, one can observe a decrease in the proportion of the population without primary education. At that time, 18.07 percent of the population was without primary education.[42] The figures in Table 24 show that women have a slight educational disadvantage compared to men. At the lowest educational levels, the proportion of females is higher than of men. At the higher levels relatively more men than women are present.

[42] **Because of a difference in definitions of the various educational categories, it is impossible to make a detailed comparison of educational attainment between the population censuses of 1981 and 1991. 'No primary' in Table 24 includes those who followed some primary education but did not complete it.**

Educational characteristics of Aruba's foreign population

Aruba's foreign-born population makes an important contribution to the economic development of the island. In many fields they form a complement to the skill level and experience of the local population. Since the economic boom of the late eighties, there is a need for personnel in most sectors of the economy. The official government policy is to allow foreign workers, in a controlled manner, to fill these gaps in the labor market, where no local laborers are available. To do this, it is important to have an insight into the educational level of the foreign workers compared with the local population.

Figure 17. Native and Foreign-born population 14 years of age and over by level of educational attainment



Source: Population Census Aruba 1991.

where ISCED categories stand for:

ISCED 1: primary education completed
ISCED 2: 1st level secondary education (MAVO,HAVO1-3,VWO1-3 , LTO, ETAO..)
ISCED3:2nd level secondary education (VWO4-6,HAVO4-5,MHNO1-2, MOVAA1-2, ass.degree AHS1-2, ..)
ISCED 5: higher education but not university (MTO, MHNO, MAO, AHS (ass..degree),MOVAA
ISCED 6: first university degree (BSc, BA, HBO)
ISCED 7: post-graduate univ.degree (MA, Ph.D, Drs., Dr.)
ISCED 9: education not definable by level or not reported.

Figure 17 depicts the level of educational attainment for the native and foreign-born population, 14 years of age and over, who are not currently attending school[43]. At the moment of the census, 27.3 percent of the population of 14 years of age and over and not currently attending school was foreign-born. The percentages shown in the graph show the proportion of foreign-born persons in each educational group. For instance, 34.4 percent for 'less than primary education' indicates that among all those 14 years of age and over, who are not currently attending school, 34.4 percent are foreign-born. This figure is higher than the population average of 27.3. The graph clearly shows that there is an overrepresentation of foreigners at the very low and the higher levels of the educational scale. The only level where there is a real dominance of native persons is in ISCED category 2, which is the level of lower secondary and technical education. These results suggest that foreign workers fill gaps at the very low end of the labor market and at medium and higher levels.

[43] **ISCED stands for 'International Standard Classification of Education' and is an instru ment which is internationally used to present statistics on education. For an explanation of the various categories used, the reader is referred to the 'Selected Tables' or UNESCO (1976).**

Appendix I: The construction of a life table for Aruba, methodology

The construction of a life table for a country like Aruba, with a small population and very favorable survival conditions, poses some specific methodological problems. The major problem one has to solve is that the number of deaths in a one-year period is quite small: in 1991, only 429 persons died on Aruba (Statistische Mededelingen, 1992). Because of the small number of events, the distribution of deaths among some age groups shows irregularities. As mortality is a rare event that takes place rather randomly, it is possible that in a given year no deaths have taken place in certain age groups. This would mean that in our life table some age groups would have a zero probability of death, which is obviously meaningless. Obviously, the problem of random variability due to the small number of events is most pronounced in those age groups where age-specific death rates are lowest. To avoid this problem, it is necessary to adapt an appropriate methodology.

Table ad.1. shows the number of deaths (per month) by age group for both sexes during the period April 1991 through March 1992. These data were extracted from information provided by the population register. There is evidence that the registration of death in Aruba is quite complete. Also, the total population per age group is given for each sex. Based on this information, age-specific death rates were calculated. In the table we can see that mainly in the younger age groups and at very old ages, the number of deaths is very limited. The problems at the younger ages are caused by the very favorable mortality regime of Aruba that simply leads to very few deaths below the age of 20. In the oldest age group, where mortality rates are very high, the problem is caused by the very small number of persons. Among males, only 31 were above the age of 90 at the time of the census.

To solve the problems of small numbers at the older ages, an open age interval was created of 85 and older. The probability of dying in the life table therefore refers to all ages above exact age 85. To avoid the problems at the younger ages, more drastic measures had to be taken. As data in the census are available about the total number of children a woman has born up to the time of the census with the number of these children deceased, it is possible to use some indirect estimation techniques that summarize the mortality experience of all generations of children born to women in particular age groups. The Trussell variant of the original method developed by W.Brass was used. The 'West' model of mortality was assumed. For a discussion of the technique, the reader is referred to Manual X .Indirect Techniques for Demographic Estimation (1983)[44]. As the data only allow us to make an estimate of the survival chances for both sexes, a correction had to be applied for differential mortality between boys and girls. These correction factors were calculated from the 'West' model life tables

[44] **For a good discussion of the original technique to estimate child mortality from information of children ever born and children surviving, see for instance: William Brass : Methods for estimating fertility and mortality from limited and defective data. (1975) Carolina Population Center, Chapel Hill, North Carolina, Laboratories for Population Statistics.**

(level 24). Through the Brass technique, values were estimated for l(1), l(5) and l(10)[45]. It is important to note that the estimates were only based on the experience of the survival of the children of Aruban women. As many foreign women have recently migrated to Aruba from countries with higher levels of infant and child mortality, the inclusion of their experience would bias the result. Our estimate would then be influenced by the mortality situation of a large number of countries. By taking only Aruban women, we assume that the mortality experience of children living on the island, but who are born to non-Aruban women, is equal to children born to Aruban women. There is little doubt that this assumption holds.

As q(x) values[46] for the age groups 10-14 and 15-19 for males and 10-14 for females were still zero, an estimate had to be made about the mortality chances of these adolescents. Obviously, it would be ridiculous to assume that probabilities of dying for young people on Aruba between the ages of 10 and 20 are zero. Given the value of infant mortality, q(x) values for these age groups were imputed using the corresponding values of q(x) from the model life table region 'West'.

Based on the values of q(x) under ten, obtained through the Brass indirect estimation technique, the imputed values between 10 and 20 and the direct estimation above age 20, the life table was further constructed.

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[45] **l(1), l(2) and l(5) are the probabilities to survive from birth to age 1, 2 and 5, respectively.**

[46] **q(x) stands for the probability of dying between age x and x+n.**

Table ad.1. Number of deaths by sex for the period April 1991-March 1992.

	Death rates	Pop.males	Deaths	April 91	May 91	June 91	July 91	August 91	Sept. 91	Oct. 91	Nov. 91	Dec.91	Jan. 92	Feb.92	March 92
0-1	0.006981	573	4		1	1				1	1				
1-4	0.000418	2392	1				1								
5-9	0	2833	0												
10-14	0	2653	0												
15-19	0	2313	0												
20-24	0.000891	2244	2	1									1		
25-29	0.002099	2859	6				1			1		1	1	1	1
30-34	0.001194	3349	4	1					1		1		1		
35-39	0.002708	2954	8		1		1	1			1	2		1	1
40-44	0.004443	2476	11	3	1	1				3	2		1		
45-49	0.004122	1941	8	2	2				1		1	2			
50-54	0.010006	1699	17	3	3			3		2		1	1	1	3
55-59	0.010497	1429	15		1		3	1	1	3	2	1	1	2	
60-64	0.016782	1013	17		3	2	2		2		1	1	1	1	4
65-69	0.028249	708	20	2	3	2	2		2	2	1		2	1	3
70-74	0.05618	534	30	3	1	2	5	3	2	3	4	2		1	4
75-79	0.086957	368	32	4	2	3	1	4		3	2	4	4	1	4
80-84	0.133562	292	39	1	5	2	4	4	4	4	3	4	3	2	3
85-89	0.17	100	17	1		2	2	2	1	2		3	3		1
90-94	0.173913	23	4	1					1					2	
95+	0.125	8	1						1						
			236	22	23	15	22	18	16	24	19	21	19	13	24

	Death rate	Pop.fem.	Deaths	April 91	May 91	June 91	July 91	August 91	Sept. 91	Oct. 91	Nov. 91	Dec.91	Jan. 92	Feb.92	March 92
0-1	0.006303	476	3						2				1		
1-4	0	2098	0												
5-9	0.000751	2664	2					1						1	
10-14	0	2574	0												
15-19	0.000457	2188	1				1								
20-24	0.000461	2168	1			1									
25-29	0.000685	2921	2				1						1		
30-34	0.000294	3404	1												1
35-39	0.001244	3216	4			1		1				2			
40-44	0.001142	2627	3			1		1				1			
45-49	0.003276	2137	7	1	1	1	2					1			1
50-54	0.00159	1887	3					1		1		1			
55-59	0.00738	1626	12	3		1	3	1		1	1				2
60-64	0.012579	1113	14	1		2	2		1	2	1	2	1	1	1
65-69	0.009091	770	7				1	2		2				1	1
70-74	0.032117	685	22	4	3	1	2	4	2	1	1	3		1	
75-79	0.056058	553	31	2	5		1	4	1	2	3	2	6	1	4
80-84	0.076555	418	32	1		4	3	2	3	5	3	4	3	2	2
85-89	0.115578	199	23	3	2		3	1	1	1	3	2	3		4
90-94	0.137255	51	7	1			1		2			1			2
95+	0.6	10	6	1		2		1	1			1			
			181	17	11	14	20	19	13	15	12	20	15	7	18

Appendix II: Geographical division of Aruba.

1. Noord/Tanki Leendert
    - 11 Palm Beach/Malmok
    - 12 Washington
    - 13 Alto Vista
    - 14 Moko/Tanki Flip
    - 15 Tanki Leendert
    - 16 Noord other

2. Oranjestad West
    - 21 Pos Abao/Cunucu Abao
    - 22 Eagle/Paardenbaai
    - 23 Madiki Kavel
    - 24 Madiki/Rancho
    - 25 Paradijswijk/Santa Helena
    - 26 Socotoro/Rancho
    - 27 Ponton
    - 28 Companashi/Solito

3. Oranjestad East
    - 31 Nassaustraat
    - 32 Klip/Mon Plaisir
    - 33 Sividivi
    - 34 Seroe Blanco/Cumana
    - 35 Dakota/Potrero
    - 36 Tarabana
    - 37 Sabana Blanco/Mahuma
    - 38 Simeon Antonio
    - 39 Oranjestad East other

4. Paradera
    - 41 Shiribana
    - 42 Paradera
    - 43 Ayo
    - 44 Piedra Plat
    - 45 Paradera other

5. Santa Cruz
    - 51 Hooiberg
    - 52 Papilon
    - 53 Cashero
    - 54 Urataca
    - 55 Macuarima
    - 56 Balashi/Barcadera
    - 57 Santa Cruz other

6. Savaneta
    - 61 Pos Chiquito
    - 62 Jara/Seroe Alejandro
    - 63 De Bruynewijk
    - 64 Cura Cabai
    - 65 Savaneta other

7. San Nicolas North
    - 71 Brasil
    - 72 Rooi Congo
    - 73 Watapana Gezaag
    - 74 Standard Ville/Rooi Hundo
    - 75 Kustbatterij
    - 76 Juana Morto
    - 77 San Nicolas North other

8. San Nicolas South
    - 81 Zeewijk
    - 82 Pastoor Hendriksstraat
    - 83 van de Veen Zeppenfeldstraat
    - 84 Village
    - 85 Essoville
    - 86 Lago/Esso Heights
    - 87 Seroe Colorado
    - 88 San Nicolas South other

Appendix III: The ISCO, ISIC and ISCED classification systems

ISCO-88: International Standard Classification of Occupations.

Occupation refers to the kind of work done, during the week preceding the census, by the person employed (or the type of work done previously, if unemployed). For classifying the data on occupation, the International Standard Classification of Occupation (ISCO-88) has been used. The ISCO provides a systematic classification structure which encompasses all occupations of the economically active population.

The classification structure consists of four levels: major groups, sub-major groups, minor groups, and unit groups. There are ten major groups.

The ten major groups of the ISCO classification are:

1. Legislators, senior officials, and managers;
2. Professionals;
3. Technicians and associate professionals;
4. Clerks;
5. Service workers and shop and market sales workers;
6. Skilled agricultural and fishery workers;
7. Craft and related trades workers;
8. Plant and machine operators and assemblers;
9. Elementary occupations;
0. Armed forces.

The ISCO classification system uses 4-digit codes for the unit groups of occupation. The unit group of occupation for all persons of 14 years of age and over was coded and entered in the computer.
The following briefly outlines the ISCO-88 major groups and is meant to facilitate the interpretation of the classification.

1. Legislators, senior officials, and managers

This major group consists of occupations in which policy-making and high level management play a primary role. These functions can be executed in the private and in the public sector. Managers at a lower level do not belong to this category.

2. Professionals

This major group includes occupations whose main tasks require a high level of professional knowledge and experience in the fields of physical and life sciences, or social sciences and humanities. The tasks of the members of this group consist of increasing knowledge and experience, applying scientific concepts and theories to the solution of problems, and teaching the foregoing in a systematic manner.

3. Technicians and associated professionals

This major group requires technical knowledge and experience in one or more fields of physical and life sciences, or social sciences and humanities. The main tasks consist of carrying out technical work connected with the applications of concepts and operational methods in the above-mentioned fields, and in teaching at certain educational levels.

4. Clerks

Occupations with main tasks consisting of secretarial duties, operating word processors and other office machines, recording and computing numerical data, and performing a number of customer-oriented clerical duties, mostly in connection with mail services, money-handling operations, and appointments.

5. Service workers and shop and market sales workers

This major group consists of occupations with main tasks consisting of providing services related to travel, house-keeping, catering, personal care, protection of individuals and property, and to maintaining law and order, or selling goods in shops or on the market.

6. Skilled agricultural and fishery workers

The main responsibilities of this group consist of growing crops, breeding or hunting animals, catching or cultivating fish, conserving and exploiting forests and, especially in the case of market-oriented agricultural and fishery workers, selling products to purchasers, marketing organizations, or at markets.

7. Craft and related trade workers

The main tasks of these occupations consist of extracting raw materials, constructing buildings and other structures, and making various products as well as handicraft goods.

8. Plant and machine operators and assemblers

The occupations within this major group are involved in operating and monitoring mining, pro-

cessing, and production machinery and equipment, as well as driving vehicles and operating mobile plants, or assembling products from component parts. These occupations require the knowledge and the experience to operate this machinery.

9. Elementary occupations

This major group covers occupations which require the knowledge and experience to perform mostly simple and routine tasks involving the use of hand-held tools and, in some cases, considerable physical effort. Only in a few cases do these occupations require personal initiative and judgment. The main tasks consist of selling goods in the street, doorkeeping and property watching, as well as cleaning, washing, and pressing, and working as laborers in the fields of mining, agriculture and fishing, construction and manufacturing.

0. Armed forces

Members of the armed forces are those personnel who are currently serving in the armed forces, including auxiliary services, whether on a voluntary or compulsory basis, and who are not free to accept civilian employment. It includes conscripts enrolled for military training or other services for a specified period.

ISIC: The International Standard Industrial Classification of all Economic Activities

Branch of industry refers to the economic activity of the establishment in which an employed person worked during the week before the census or last worked, if unemployed. For the classification of industrial and business activities in Aruba, the International Standard Industrial Classifications of all Economic Activities (ISIC, Revision 2) was used.

Similar to the ISCO, the ISIC system uses a 4-digit code to classify the economic activities of businesses and other economically active organizations in a country. The hierarchy in the classifications of the branch of industry consists of major divisions (1-digit code), divisions (2-digit codes), major groups (3-digit codes), and groups (4-digit codes). Information obtained in the population census is coded at the group level. Due to space limitation, the information provided on 'branch of industry' is restricted to the ISIC major divisions. Those interested in more detailed information on the 'branch of industry' can contact the Central Bureau of Statistics.

The ISIC major divisions are:

1. Agriculture and fishing;
2. Mining and quarrying;
3. Manufacturing;
4. Electricity, gas, and water;

5. Construction;
6. Wholesale, retail trade, hotels, and restaurant;
7. Transport, storage, and communication;

8. Financing, insurance, real estate, and business services;
9. Community, social, and personal services;
0. Activities not stated or not adequately defined.

ISCED: International Standard Classification of Education

The International Standard Classification of Education (ISCED) is an instrument for presenting statistics on education.

ISCED is basically a three-stage classification system, providing successive subdivisions from level of education to field of study to program group. The ISCED level of program which was used in several tables incorporates seven categories. A residual category for education not definable by level has been added. The levels of programs used in the ISCED system are:

Level 0 Education preceding the first level usually begins at age 3, 4 or 5 (sometimes earlier) and lasts from one to three years. School types that fall under this level are: creche, day nursery, playschool, and kindergarten.

Level 1 Education at the first level usually begins at age 5, 6, or 7 and lasts for about five or six years. School types at this level are primary school and special primary schools.

Level 2 Education at the second level, first stage begins at about age 11 or 12 and lasts for about three years. For instance: general programs such as MAVO, HAVO 1-3, VWO 1-3; lower levels of vocational training (LTO, LHNO, ETAO, AHS-lbo, AHS-llw).

Level 3 Education at the second level, second stage begins at age 14 or 15 and lasts for about three years. In this level we find general programs (HAVO 4-5, VWO 4-6) and vocational schooling, intermediate level, such as MTO 1-2, MHNO 1-2, MAO 1-2, Associate degree AHS 1-2, Police school, MOVAA 1-2, and nursing program (first two years).

Level 5 Education at the third level, first stage, of the type that leads to an award not equivalent to a first university degree begins at age 17 or 18 and lasts for about three years. Thus, at about ages 20 or 21, the students who have progressed through the regular school system to complete these programs are usually ready to enter employment. Programs include

vocational education, intermediate level, final year(s) of e.g., MTO, MHNO, MAO, AHS (Associate degree), MOVAA, and nursing program (final year).

Level 6 Education at the third level, first stage, of the type that leads to a first university degree or equivalent also begins at age 17 or 18 and lasts for about four years. Thus, students who have progressed through the school system to complete their first degree are usually ready for employment or for postgraduate study at about age 21 or 22. It includes programs leading to the usual first degrees such as Bachelor of Arts, Bachelor of Science, 'kandidaatsdiploma', 'HBO-diploma'.

Level 7 Education at the third level, second stage, of the type that leads to a post-graduate university degree or equivalent includes all education beyond level 6. The degrees and awards obtained in this level take various forms and have different titles from country to country, some of them being Master of Arts, Master of Science, 'diplôme d'étude supérieure', doctorates of various kinds.

Level 9 Education not definable by level The content of this category can only be described in a negative sense, i.e. programs that cannot be fitted into any of the other categories.

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