

AN INTER-RACIAL STUDY IN SOCIAL CONDITIONS AND INFANT MORTALITY IN CAPE TOWN

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THE official health reports of many cities provide a most valuable source of untapped socio-medical data. Those of the City of Cape Town, South Africa, over the past half century are of particular interest. Since the appointment in that City of a full-time Medical Officer of Health in 1901, annual reports have supplied public health information for white and nonwhite populations separately. These reports have been of a high standard and provide a revealing record of the trends in public health of two halves of the population of a single city.

An inter-racial study of the trends in public health in Cape Town shows that there have been marked contrasts between the two "races" with the vitality of nonwhites being considerably lower than that of whites. (Brock, 1949; Phillips, 1956) It is possible that some of these inter-racial differences in vital statistics were due to variations in the accuracy of reporting and census enumeration. There is some evidence, which will be discussed below, that this was the case. It is also possible that part of the racial differences was due to genetic influences. However, the great accumulation of scientific reports which correlates the way of life of communities and their various indices of health makes it more important for us to examine the environmental differences before seeking genetic explanations.

In this study, therefore, comparisons will first be drawn between the social backgrounds of white and nonwhite sections of the population of the City of Cape Town, and, thereafter, the various indices of mortality in infancy will be contrasted.

BACKGROUND OF THE POPULATION

Cape Town is situated on the shores of Table Bay on the

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southwestern seaboard of the continent of Africa. Its climate is mild, and consequently tropical diseases, except for imported cases, are absent, and therefore do not complicate the epidemiological picture.

In 1652 white settlers established a small vegetable garden guarded by a fort on Table Bay for the benefit of the sailing ships of the Dutch East India Company. Today the City and its suburbs extend for twenty-six miles along the slopes of Table Mountain, with an important area of the City spreading out over the low-lying sandy Cape Flats. Originally a series of small municipalities, the City of Cape Town was formed by the amalgamation of several of these local authorities in 1913. Since then, there have been relatively minor additions to the area of the municipality. Until recently, there were no legal provisions for residential segregation on racial grounds, and the white and nonwhite elements generally lived in fairly well-defined, but contiguous, areas in much the same way that poor and well-to-do are separated in any large city in other countries. A certain degree of residential segregation has, however, been produced by the erection of publicly financed or subsidized townships or barracks for various specific racial groups.

Ethnic and Cultural Backgrounds. Officially the population of the City consists of four main racial elements: (1) "White" or "European"—mainly of stock originating in Holland and Britain, but many other European countries have also contributed; (2) "Colored" or "Mixed"—descended from slaves (imported from various parts of Africa or Asia), indigenous African peoples (mainly Hottentot), and Europeans; (3) "Natives" or "Bantu"—members of several Bantu tribes, many of them young men living within the City as migrant laborers and having no family ties locally; (4) "Asiatics"—predominantly migrants and their families from India. In South Africa white and nonwhite populations are usually referred to as "European" and "non-European."

Both White and Colored have been associated with life in Cape Town for over 300 years, and for the most part they share

language and religion and are of the same culture generally. To quote from the conclusion of an authoritative history on the subject of the Cape Colored, "The Coloured do not appear to differ from us (Europeans) today in anything except their poverty." (Marais, 1939) Approximately one-fifth of the Colored population, however, is Malay, and differs somewhat from the rest of the group in being adherents of the Moslem faith.

On the other hand, the Natives are comparative newcomers to the City. Although an increasing number of them have become detribalized and live settled family lives, among them are large numbers of men living away from their families under makeshift conditions in barracks, shanties and slums. Because of these poor social circumstances and because many Natives live in the area illegally, vital statistics such as census enumeration and birth registration for this group are generally considered unreliable.

The small group of Asiatics are also fairly recent immigrants. In Cape Town they are mainly small traders and enjoy on the whole better economic conditions than other nonwhite people do. Their differences in religion and culture are maintained by their close family and community life.

The growth of the population of Cape Town must be viewed

Table 1. Population of City of Cape Town by race groups, 1921, 1936, and 1951.

	1921	1936	1951
	NUMBERS IN THOUSANDS		
Europeans	101.7	150.8	186.7
Non-Europeans	81.7	144.1	254.5
Colored	75.0	127.6	207.5
Asiatic	2.2	3.5	6.8
Native	4.5	13.0	40.2
	PER CENT		
Proportion of Non-Europeans Who Were of Colored Group	92.1	88.5	81.5

Source: Based on Official Censuses of the Union of South Africa.

against the South African background because the City grew not only by natural increase and by immigration from overseas, but also as a result of the drift from rural to urban areas. This urbanization was the outcome of the industrial expansion of the country, initially as a result of the development of diamond and gold mines inland, but greatly stimulated by the two world wars. The population of Cape Town at various censuses since 1921, by racial group, is shown in Table 1.

It can be seen that in recent years the non-European population has been increasing more rapidly than the European. Part of this rapid growth was due to the recent inclusion within the municipality of small peri-urban areas predominantly inhabited by non-Europeans, and part was due to the immigration of large numbers of this population group attracted by the increasing needs for labor in industries in the City. Finally, a considerable part of the more rapid non-European increase was attributable to their falling death and high birth rates, and the consequent greater rate of natural increase as compared with that of the Europeans.

Since the Coloreds formed such a large proportion of the non-Europeans, vital statistics for the latter group represent chiefly the Colored people. It will, in fact, be seen later that the increase in percentage of Natives, while large, did not greatly affect the various total rates and trends.

Socio-Economic Background. A number of surveys have given quantitative expression to the obvious fact that non-Europeans were economically worse off than Europeans in Cape Town. Batson (1942) reported that in a household survey conducted in 1938-1939 it was found that "of every ten Colored households, five were below the Poverty Datum Line; of every ten Native households, five; of every ten Asiatic households, two or three; of every ten European households, less than one." The Poverty Datum Line was defined as "that expenditure which is necessary to procure at the current prices of the district those quantities of food, clothing, fuel and lighting, and cleaning materials which are essential for the health and de-

cency of the members of a given household." In a follow-up survey, Batson (1954) reported that the percentage of Colored households living below the Poverty Datum Line diminished from 53 in 1938 to 33 in 1951.

Occupation. Apart from the conventional "color bar," non-Europeans were restricted occupationally by a number of legal and educational barriers. (U.G.² 53/1948) This resulted in marked differences in the distributions of Europeans and others in better-paid jobs.

Housing. The first full-time Medical Officer of Health of Cape Town deplored the shortage of housing for "the mass of the working classes" of Cape Town in his first report for the year 1901-1902. Several surveys and censuses since then have shown that the Colored population were worse off in this regard than the Europeans. Despite the efforts of the municipal authorities in building sub-economic houses, the percentage of Colored households which were overcrowded, judged by lenient standards, increased from 38 to 44 during the period from 1938 to 1951. (Batson, 1954) Although no figures are available, it is more than likely that the position for Europeans was better, and that for Natives worse, than that for the Coloreds.

Nutrition. There is no scientifically documented evidence that non-Europeans are less well-nourished than Europeans in Cape Town, but the differences in income, occupation, and educational standards, and the differential incidence of nutritional syndromes in hospitals and clinics make it inevitable that this is so.

Social Welfare Services. There have been gross disparities as between race groups in the amount of public money spent in South Africa on social security services. In 1943, the funds per capita per annum spent were 4 pounds for Europeans, 1 pound for Colored and Asiatics, and 1 shilling (equaling 1/20 of 1 pound) for Natives—a ratio of 80:20:1. (U.G. 14/1944) Despite the greater poverty among the non-Europeans in Cape Town, in 1939 there were 83 social welfare organizations serv-

² Union Government.

ing Europeans, and only 52 serving non-Europeans. (Batson, 1942)

Education. Official and other records show that, compared with European children in South Africa, non-European children were at a disadvantage with regard to proportions of school-age children attending school and reaching higher grades, standards of teaching, expenditure on education, facilities for higher and vocational education, etc. (U.G. 54/1937; U.G. 53/1948; Patterson, 1953)

Health Services. Preventive non-personal and personal health services are provided by the City Health Department to both Europeans and non-Europeans on an equal basis and there is evidence that non-Europeans have been utilizing these services to an increasing degree. (Phillips, 1956) In-patient services at public expense, provided mainly by the Provincial Authorities, were deficient in terms of hospital beds available for both sections of the City's population. This deficiency for Europeans was largely, or possibly entirely, made up by beds available in private hospitals or nursing homes, but this was certainly not the case for non-Europeans whose poverty, bad housing, high birth and mortality rates, and lack of education increased their relative needs for hospitalization and lessened their ability to pay for private services. (Phillips, 1956) An index of this inter-racial difference is given by disparity of the proportions of Europeans and non-Europeans who died in institutions (Table 2).

Reproductive Rates. Throughout the period under review,

Table 2. Proportions of deaths by race which occurred in institutions, Cape Town, 1914-1919 and 1949-1953.

PERIOD	EUROPEANS		NON-EUROPEANS	
	Number of Deaths	Per Cent in Institutions	Number of Deaths	Per Cent in Institutions
1914-1919	7,116	23.1	14,980	9.3
1949-1953	7,192	41.5	14,537	26.0

Source: Based on reports of Medical Officer of Health, City of Cape Town.

there have been marked differences in the reproductive rates of Europeans and non-Europeans. Whereas those of the former group were similar to the rates seen in other urban western communities, those of the latter have been considerably higher. In the period 1911–1920, the average crude birth rates for the two groups were 26.5 and 46.6 per thousand respectively. Except for a slight rise in the period 1940–1949, the rate of Europeans has steadily declined, and for the period 1950–1954, averaged 18.2 per thousand. That for non-Europeans has also declined, and by 1950–1954 it averaged 39.9 per thousand. The reproductive differences between the various race groups are more accurately reflected by correcting for age and sex distribution in the population, i.e., by calculating the number of births per thousand females in the reproductive age group in each race. This has been done for the year 1946, the only year in which all the necessary data are readily available. The markedly higher birth and motherhood rates among non-Europeans is readily seen. (Table 3.)

Additional light on the inter-racial differences in reproductive behavior are provided by statistics on illegitimacy. The proportion of registered births which occurred outside of legally recognized marriages has been much higher among non-Europeans than Europeans. In 1913–1916, the averages were 25.8 and 7.0 per cent respectively. In recent years, data are available for the four races separately. The rate for Europeans has

Table 3. Reproductive rates by race in City of Cape Town, 1945–1947. (Annual Average.)

	CRUDE BIRTH RATE 1945–1947	LIVE BIRTHS PER 1,000 FEMALES AGED 15–44 IN 1946
Europeans	20.8	75.4
Non-Europeans	44.7	158.7
Colored	46.2	160.9
Asiatic	35.7	205.3
Native ¹	35.8	133.7

¹ Considered to be inaccurate because of under-registration of births and under-enumeration at censuses in this group.

Source: Calculated from data derived from the Annual Reports of the Medical Officer of Health, Cape Town, and the official census of the Union of South Africa, 1946.

been halved in the past forty years, but that for non-Europeans has remained at approximately the same level. Even when Colored births were separated from those of other race groups, there was little evidence of a decline in the rate for this period. It is also striking that the illegitimacy rate as recorded among Asiatics in recent years was only 0.7 per cent—less than one quarter of that among Europeans. It should be noted that the under-registration of births among Natives mentioned above may affect the calculated illegitimacy rate for this group.

General Mortality. Mortality rates have also shown marked inter-racial differences. For Europeans and non-Europeans, the crude death rates in the period 1911–1920 were 13.8 and 32.0 per thousand respectively. In both groups, there has been a marked decline, and in the period 1950–1954 the rates were 9.5 and 13.8 for Europeans and non-Europeans—representing reductions of 31 and 57 per cent respectively. It is of interest to note that in the latter period the average rates for Colored, Asiatics and Natives were 13.3, 8.9 and 18.7 respectively.

On the data available for 1951, the latest census year, it is possible to allow for differences in age and sex for only the Colored element of the non-European population for comparison with the European rate. If the death rate for Coloreds in 1951 is standardized on the basis of the age and sex distribution of the European population in the 1951 census, the rate is 19.1 compared with 9.5 for Europeans. If the Colored population's structure in 1951 is used as a basis, the rates are 14.3 and 4.9 respectively.

INTER-RACIAL COMPARISON OF MORTALITY IN INFANCY

With such marked contrasts in the socio-economic backgrounds of the four races in Cape Town, it is of interest to compare the various indices of mortality in infancy in these groups during the past forty years. The stillbirth, infant mortality and neonatal death rates, and the mortality rate of infants in their second year of life have been used in this comparison and have been derived from the official Annual Reports of Medical

Officers of Health of the City, or have been computed from figures provided therein. (City of Cape Town, 1913-1954)

The following definitions have been used: (1) Stillbirth Rate—the number of stillbirths per thousand total births per annum; (2) Infant Mortality Rate—the number of deaths under one year of age per thousand live births per annum; (3) Neonatal Death Rate—the number of deaths under four weeks of age per thousand live births per annum; and (4) the Mortality Rate in the Second Year of Life has been calculated from the number of deaths in this age group and the number of births (less the deaths under 1 year) in the previous year.

Table 4. Stillbirths and infant mortality—Cape Town, 1913 to 1953. (Annual averages.)

QUINQUENNium*	STILL-BIRTHS (AVERAGE)	LIVE BIRTHS (TOTAL)	STILLBIRTH RATE	NEONATAL DEATH RATE	INFANT MORTALITY RATE
EUROPEANS					
1913-1918 (a)	96.6	11,382	41.5	39.0	89.4
1918-1923	90.6	12,148	35.9	29.9	89.5
1923-1928	83.0	12,992	31.0	24.0	67.4
1928-1933	97.6	14,342	32.9	24.8	60.6
1933-1938	83.0	13,477	29.9	23.2	43.8
1938-1943	86.8	15,600	27.1	21.7	41.0
1943-1948	81.6	18,666	21.4	20.8	33.8
1948-1953 (b)	50.2	17,445	14.2	16.6	26.6
Reduction (a) to (b), Per Cent	—	—	65.8	57.4	70.2
NON-EUROPEANS					
1913-1918 (a)	244.8	16,208	66.4	65.9	255.6
1918-1923	294.0	19,782	69.1	54.2	216.6
1923-1928	326.0	24,522	62.3	48.9	182.8
1928-1933	408.0	30,676	62.4	48.4	157.2
1933-1938	348.2	33,563	49.3	34.7	132.6
1938-1943	332.4	35,265	45.0	37.3	130.5
1943-1948	334.6	41,295	38.9	39.8	122.0
1948-1953 (b)	344.0	49,958	33.3	33.4	104.8
Reduction (a) to (b), Per Cent	—	—	49.8	49.3	59.0

* In each case, the period begins on July 1st and ends on June 30th.
Source: Taken or computed from data in Annual Reports of M.O.H., Cape Town.

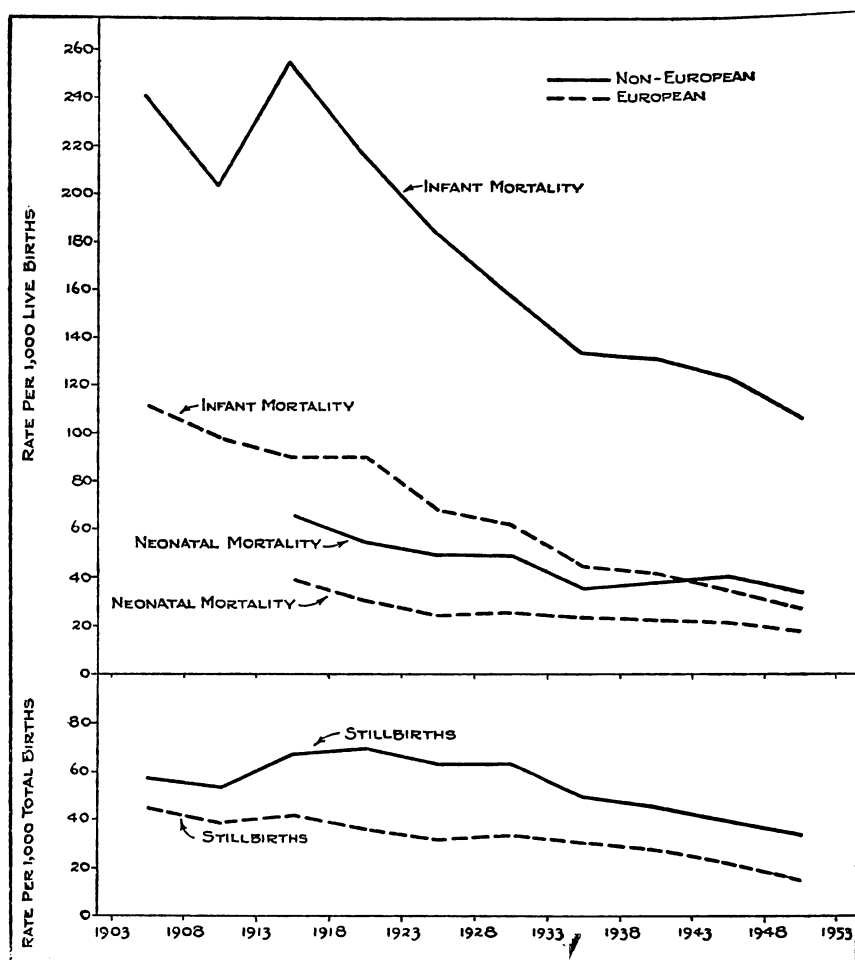


Fig. 1. Five-year average annual stillbirth, neonatal mortality and infant mortality rates for Europeans and non-Europeans in Cape Town, 1905-1953.

The stillbirth, infant mortality, and neonatal rates for Europeans and non-Europeans in the City of Cape Town from 1913 to 1953 are summarized in Table 4 and shown graphically in Fig. 1. These vital statistics show marked inter-racial differences, but unfortunately rates cannot be calculated in all cases for the three non-European races separately. Only in recent years have some of these separate statistics been published, and when available and relevant, rates for the three non-European races are given below.

Stillbirths. The rates for Europeans have consistently been lower than those for non-Europeans. For both groups, the rates began to decline definitely only after 1928–1933.

The data on stillbirths for the four racial groups separately are available from 1947 onwards. In the period 1947–1953 the average rates for Europeans, Coloreds, Asiatics and Natives were 14.8, 30.4, 33.6 and 63.9 respectively, while that for the three non-European groups was 33.7.

It is probable that the higher levels of the rate among non-Europeans, especially Natives, was partially due to under-registration of births as previously mentioned. Here again the rates for the Colored groups and those for all non-Europeans are not markedly different. From Table 4, it is evident that both European and non-European stillbirths declined considerably in the period under review. In the period between 1913–1918 and 1948–1953, the stillbirth rate declined 65.8 per cent for Europeans, and only 49.8 per cent for non-Europeans, despite the higher initial rate among the latter group.

Infant Mortality Rates. The infant mortality rates for Europeans and non-Europeans during the period 1913–1953 have already been shown in Table 4 and Fig. 1. The inter-racial rates since 1938 for the four main races shown separately are given in Table 5 in summary form.

These figures show that infant mortality rates for non-Europeans have been consistently higher than those for Europeans, but that both rates have dropped considerably in the past forty years. The quinquennial average rates used in the tables conceal the annual fluctuations in the rate. The original data revealed that there was far greater variability in the non-European infant mortality rates.

The comparison of reductions in infant mortality rates in the quinquennium 1913–1918 and 1948–1953 shows that, whereas the absolute decrease for Europeans was 52.8 and for non-Europeans, 140.8 per thousand live births, proportionate decreases were 75.2 and 59.0 per cent respectively. In other words, European infant mortality, despite its lower initial level,

has decreased relatively more rapidly. Owing to the influx of large numbers of Natives into Cape Town in recent years, especially during and after World War II, it is probably more correct to compare the infant mortality rates of non-Europeans in 1913–1918 with the infant mortality rate of Coloreds in 1948–1953. However, even when the mortality rates for Colored infants are separated from those of the other non-European groups, proportional reduction from 1938–1941 to 1950–1953 was greater among the Europeans than among the Colored population (Table 5). Among the Natives there was an actual rise in mortality in this fifteen-year period, but it is impossible to know how much of this was due to differences in completeness of registration, to chance fluctuation, or to other causes. It is interesting to note that the infant mortality rate for non-Europeans in 1948–1949 was the same as that for Europeans forty years earlier.

Neonatal Mortality. Neonatal mortality rates for Europeans since 1913–1918 have consistently been lower than those for non-Europeans in Cape Town (Table 4). In both groups there

Table 5. Average annual infant mortality rates and average annual number of infant deaths by race groups, Cape Town, 1938–1953.

PERIOD	EUROPEANS	NON-EUROPEANS	COLOREDS	ASIATICS	NATIVES
	PER CENT				
1938–1941 (a)	39.8	126.3	124.9	50.0	197.1
1942–1945	38.2	135.0	127.8	55.4	227.9
1946–1949	32.7	111.0	100.0	67.6	240.7
1950–1953 (b)	25.9	103.3	91.3	43.3	227.4
Per cent Reduction (a) to (b)	34.9	18.2	26.9	13.4	–15.4
	NUMBER				
1938–1941	119	891	810	10	71
1942–1945	135	971	844	12	115
1946–1949	123	987	783	17	182
1950–1953	89	1,042	799	14	230

Source: M.O.H. Cape Town Annual Reports. (All deaths and rates are corrected for outward transfers.)

have been considerable declines in the past forty years, but the European rates have been reduced 57.4 per cent as compared with the reduction in the non-European rates of 49.8 per cent in the same period. It is apparent, too, that neonatal mortality has decreased proportionately less than has infant mortality in Cape Town and as infant mortality as a whole decreased, deaths in the first months of life became relatively more important. The proportion of infant deaths which occurred in the first four weeks of life, i.e., neonatal, as a percentage of infant mortality during the first twelve months rose from 43.6 to 62.4 per cent among Europeans, and from 25.8 to 31.9 per cent among non-Europeans during the period under review. Thus, in 1948-1953 only 37.6 per cent of European infant deaths occurred in the post-neonatal period (over four weeks but under 1 year of age) whereas 68.1 per cent of non-European infant deaths occurred in this age group.

Mortality in the Second Year of Life. An illuminating picture of the comparative health of Cape Town's infants between the ages of one and two years is provided by a series of mortality tables in the Medical Officers of Health's Annual Reports. These figures are summarized in Table 6.

It will be readily seen that the disparity between European and non-European mortality rates was even greater for this age group than for infants under the age of one. The greater

Table 6. Inter-racial comparison of mortality of infants aged 1 to 2 years.

QUINQUENNium	DEATH RATE PER 1,000 INFANTS AGED 1-2 YEARS		RATIO—NON- EUROPEAN/EUROPEAN
	Non-European	European	
1926-1931 (a)	76.7	15.2	5.0
1931-1936	67.4	12.4	5.4
1936-1941	58.8	9.4	6.3
1941-1946	65.2	5.8	11.2
1946-1951 (b)	44.0	3.0	14.7
Reduction in Rates From (a) to (b) Per Cent	42.6	80.3	

Source: Based on data in Annual Report of M.O.H., Cape Town.

discrepancy was seen not only in the actual levels of the rates but also in the rate of decline.

Hospitalization and Stillbirths. Although in theory medical and health services are provided free to all citizens of Cape Town if they cannot afford private services, in practice it has been far more difficult for non-Europeans generally to gain admission to a hospital than it has been for Europeans. This was largely due to the fact that the public hospitals have not been able to cope with the large and increasing number of non-European patients who require admission. Not only could most non-Europeans not afford to pay for private maternity and medical services, either as out-patients or in-patients as many Europeans could, but the home circumstances were also more unsuitable for domiciliary confinement or medical treatment. In addition, the actual numbers of births and deaths have been far higher for non-Europeans in Cape Town.

The total numbers of births registered and the percentages of these which occurred in hospitals in the City during the period 1947-1953 are shown in Table 7.

It can be seen that of mothers who had live-born infants during the observed period the proportion of non-Europeans that delivered in institutions was approximately half that of Europeans. In Cape Town the policy has been to admit to public maternity hospitals for delivery only those women who are

Table 7. Number and percentages of births in institutions by race, Cape Town, 1947-1948 to 1952-1953.

RACE	LIVE BIRTHS		STILLBIRTHS		SIGNIFICANCE OF DIFFERENCE (1) AND (2)
	Number Registered	Per Cent in Institutions (1)	Number Registered	Per Cent in Institutions (2)	
Europeans	21,277	72.38	322	70.81	None
Non-Europeans	58,901	36.68	2,051	44.90	Significant
Coloreds	51,370	32.44	1,606	44.46	Significant
Asiatics	1,876	37.47	64	28.12	None
Natives	5,655	84.77	381	49.61	Significant

Source: Based upon data provided in Annual Reports of M.O.H., Cape Town.

primiparae, or of high parity, or in whom complications are present or expected. Without further data on mothers, it is impossible to state how the criteria mentioned above have affected European admissions to hospitals. It is certain, however, that many more Europeans could afford admission to private maternity nursing homes and were not prevented by family ties from being delivered away from home.

The high proportion of registered Native births which occurred in institutions is interesting. The reason for this figure is probably that *all* births to Natives in institutions were registered, while many, if not most, domiciliary births remained unregistered. This gives a false impression of a high degree of institutional confinement among Natives. If the same error occurred among the other non-European races, it is likely that it was much smaller than it was among the Native group.

Stillbirths in all races were probably more completely registered than were live births because of the practical difficulty of disposing of the dead baby if the legally required certificate were not obtained. Nevertheless, many stillbirths must have escaped registration. The relative proportions of registered live births and stillbirths which occurred in institutions could still be affected by two factors. These were: (1) the completeness of registration of live births, and (2) the extent to which admission of pregnant women to institutions was determined by the presence of conditions predisposing to fetal deaths.

Among Europeans the proportions of live and of stillbirths which occurred in institutions were about the same. Assuming that birth registrations were complete, this means that the presence or likelihood of conditions which predisposed to stillbirths were not important factors in determining the admission of European women to institutions.

Among Colored women, the proportion of stillbirths occurring in institutions was significantly higher than that of live births. If under-registration of Colored live births had occurred (as it probably did to some extent), the real disparity would have been even higher. This indicated that, for them, admis-

sion to an institution for childbirth was determined significantly by the presence of factors predisposing to stillbirths, e.g., primiparity, high orders of parity, complications, premature births, etc.

For Asiatic women, the proportions of stillbirths and live births occurring in institutions were not significantly different.

Among the Natives the proportion of stillbirths occurring in institutions was very much lower than that of live births. It is highly improbable that of Native parturients those who were to have live born babies would be admitted to hospital nearly twice as frequently as those whose babies would be born dead. The reason for the unusual figures must have been the marked under-registration of those Native live births occurring outside of institutions. This is confirmed by the very high figure for percentage of Native live births in institutions. This conclusion is important because it means that vital statistics based on registered Native live or total births, e.g. birth, fertility, and infant mortality rates, must be markedly inaccurate.

The proportion of stillbirths among Europeans which occurred in institutions was markedly higher than those of the non-European races. Although other factors might have played a part in producing this difference, the inability of non-Europeans generally to pay for private institutional confinements or to obtain admission to the public maternity hospitals owing to shortage of beds were both important factors.

DISCUSSION

The level of the infant mortality rate has for a long time been regarded as one of the most sensitive indices of the "standard of living" of the community. In recent years an extensive literature has developed relating this rate to such social factors as the nutrition, breast feeding practices, marital status, social class, frequency of childbearing, working habits, place of residence, etc. of the mother. Attention has also been given to the association between these factors and stillbirths and neonatal and post-neonatal death rates. The secular trends of infant

and other mortality rates in particular social groups, or under special circumstances, have been reported. In all these studies it has been found that adverse environmental conditions were associated with higher casualty rates among infants and that improving conditions were accompanied by declines in all these rates. In general, the post-neonatal death rate has fallen more than the neonatal and stillbirth rates. Much of this work has been ably summarized by the United Nations Department of Social Affairs (1954).

The association between social environment and fetal and infant mortality is complicated by the fact that certain biological factors such as age and parity of mother are also closely related to such mortality. (Sutherland, 1949; Heady, et. al., 1955) Thus, primiparity, high parity, and motherhood at the extremes of the reproductive age have been found to be associated with elevated rates of mortality.

The separation of these factors into social and biological groups is an artificial one. Such groups are usually closely related to each other. The age and parity of the mother and the size of her family, for instance, are influenced to a very considerable extent by social and economic factors. Overcrowding, nutrition and the quantity and quality of maternal care, on the other hand, are all closely linked with size of family. It is therefore impossible to separate biological from social influences to any great extent since one group of factors so often activates the other.

In the City of Cape Town there is ample documentary and other evidence that non-Europeans have been worse off than their European fellow-citizens as regards economic status, housing, educational standards, availability of social assistance, and utilization of private and public medical services. In addition, there is evidence that non-European women generally have considerably larger families with the probability that they tend to reproduce from an early age until the later years of the reproductive period. Their high illegitimacy rate is evidence of a frequent lack of family stability and often of maternal

care. But even among legitimate infants the mortality rate has been higher among non-Europeans than among Europeans. (In 1946-1953 the infant mortality rates for legitimate infants among Europeans and non-Europeans averaged 23.7 and 85.9 respectively.)

The post-neonatal death rate has generally been found to be sensitive to the environment and to decline relatively more than the neonatal death rate when socio-economic circumstances improve. In both sections of Cape Town's population this phenomenon has been observed, but the decline has been more marked among Europeans.

The adverse circumstances which are presumably responsible for the high post-neonatal rate among the non-European infants appear to persist into the second year of life. In fact, the disparity in mortality rates between infants of the two race groups was even greater in the second year of life than it was in the post-neonatal or any other period. It seems that the mortality rates of infants one to two years of age are even more sensitive indices of social conditions than those of younger infants. If this is so, it is significant that the ratio between the mortality rates for non-Europeans and Europeans in this age group has been increasing considerably, even though some allowance must be made for errors due to the way the rates were calculated and the effects of greater under-registration of non-European births.

In both groups of the population there have been substantial reductions in the various mortality rates of infants over the past forty years. The rates for European infants have followed trends similar to those for infants in other western communities. Those for non-European infants have declined considerably less despite the high initial rates, and the presumably greater incidence of deaths due to preventable causes. Although it is possible that hereditary factors account for some of this disparity, the great improvement in the health of both groups in the space of one generation lessens the importance of any such genetic factors and stresses the fact that, as between races,

biological similarities are far more important than differences.

In Britain, Titmuss (1943), Morris and Heady (1955), and Illsley (1955) have observed that decline in infant mortality among the lower socio-economic classes has not kept pace with that among the well-to-do. Morris and Heady suggested, among other possibilities, that this was one expression of the time lag in the better utilization of money and other resources as economic circumstances in families improved. Illsley showed that, with the improvement of economic conditions, there was a considerable "upward" social mobility and suggested that the less physically and mentally fit women remain in the lower occupational groups, which causes the decline in infant mortality to be slower in these groups.

In Cape Town a number of similar sociological factors can be suggested. The effect of selective mobility between racial groups, or "passing over," could only have been very small, but the influence of migration into the City must have been very important. Among Europeans the immigrants of necessity would have been skilled workers or members of professional or business groups, since unskilled workers are rare in the white group. Among non-Europeans, on the other hand, unskilled workers and their families from rural areas constituted the majority of immigrants, and their large numbers considerably diluted the existing core of settled Colored people. It is likely, too, that the social, conventional, and legal disabilities of non-Europeans have helped to retard their progress generally, and prevented the declines in their infant mortality rates from being proportionate to those of Europeans.

The inter-racial differences in the proportions of Europeans and non-Europeans who died or who were born in institutions in Cape Town have been demonstrated and commented on above. These differences illustrate the economic inability of the non-Europeans to purchase, or the community to provide, the medical facilities required for the maintenance of optimum health. Altenderfer and Crowther (1949) have shown that in the United States the stillbirth and infant mortality rates were

associated with the degree of hospitalization available in the community, and point to the fact that what is important in these communities is not hospitalization *per se*, but the general medical and health facilities that are available to the community.

SUMMARY

Health statistics for the City of Cape Town, South Africa, are available over the last forty years for "European" (white) and "non-European" (nonwhite) populations separately and show marked interracial differences. In more recent years, certain of these statistics for the three separate non-European groups are also available.

In this study, comparisons are, in the first place, drawn between the social backgrounds of the two main sections of the City's population. Non-Europeans were at a disadvantage as regards income, occupation, housing, nutrition, and social welfare, education, and medical services. Their reproductive and death rates have been higher than those of Europeans, whose vital statistics have generally kept pace with those of other western communities. Much higher proportions of non-Europeans were born and died outside of institutions, although the disproportion has decreased somewhat in the last forty years. Among non-Europeans generally the incidence of illegitimacy has been much higher than among Europeans, but there were marked differences among the various non-European races.

Against this background, the stillbirth, neonatal, post-neonatal, and infant mortality rates and mortality of infants in the second year of life in the various race groups are compared. All these rates are found to have been lower and to have declined more among Europeans during the past three or four decades. Of all these statistics the greatest disparity occurred in the mortality rates in the second year of life and there was evidence that inter-racial differences have increased in recent years.

The differences in mortality in infancy have been related to hospitalization. The significance of some of these inter-racial differences has been discussed in the light of changing social conditions.

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