

SECOND CARNEGIE INQUIRY INTO POVERTY  
AND DEVELOPMENT IN SOUTHERN AFRICA

Measles and poverty  
in Port Elizabeth

by

Stewart Fisher

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## 1. INTRODUCTION

Measles is an highly infectious viral disease, characterised by fever, mucosal inflammation, and a typical skin rash. Almost any organ of the body can be affected by the viremia, while concomitant depression of the cellular immune response by measles renders the patient more susceptible to secondary bacteria infections. Acute complications of measles range from conjunctivitis, pneumonia and gastro-enteritis, to encephelitis and death. Late complications include deafness, blindness and chronic lung damage.

In industrialised countries, and among the elite in developing communities, measles is generally regarded as a mild childhood disease. In fact, in many countries, measles has been virtually eradicated following intensive immunisation programmes.

In many developing communities, however, measles is the most serious and severe disease encountered by children. It has been estimated that 15.5% of deaths in African children under 5 years of age can be attributed to measles.

It is generally accepted that the high morbidity and mortality of measles in developing countries is associated with the following factors:

### i) Malnutrition

The risk of severe complications and death is significantly increased in the malnourished child. Furthermore, measles may precipitate malnutrition in the child with borderline nutrition.

### ii) Younger Age

It is generally accepted that, the younger the age at which a child is infected, the greater the risk of complications from measles. In South Africa as a whole, the highest age - specific case - fatality rates have been found in children under 1 year of age.

iii) Overcrowding

Overcrowding allows for more rapid spread of measles through a community, and therefore for children to be infected at a younger age. Aaby, in Guinea-Bissau, found that family size was a greater risk factor for measles mortality than malnutrition.<sup>2</sup> The association between overcrowding and malnutrition compounds the problem.

During the period December 1982 to July 1983 the Port Elizabeth area experienced an epidemic of measles predominantly involving the 'Black' and 'Coloured' townships in the area of jurisdiction of the Municipality of Port Elizabeth. During this period 1,925 cases of measles were notified, and the case-fatality rate was 15.3%

The possible causes, epidemiology and control of this epidemic have already been described elsewhere. 3,4.

The main aim of this paper is to relate certain epidemiological features of the epidemic to socio-economic conditions in the area.

2) MEASLES IN PORT ELIZABETH - SOME EPIDEMIOLOGICAL FEATURES

During the period 1st December 1982 to 31st July 1983 1,925 cases of measles were notified, with 295 deaths, giving a case-fatality rate of 15,3%

The temporal distribution of notifications, by month is shown in Figure One.

The shape of the epidemic curve suggests rapid spread of infection through a highly susceptible population.

i) Distribution By Population Group

88.04% of all measles notifications, and 91,24 % of all deaths were in the 'black' population group. 10,9% of cases and 8,4% of deaths were in the 'coloured' group.

Table one gives the incidence and mortality rates per 100 ,000 estimated population, and the case-fatality rates for each population group.

FIG. ONE

Monthly Measles Notifications & Deaths - P.E.M.

JULY 1982 to JULY 1983

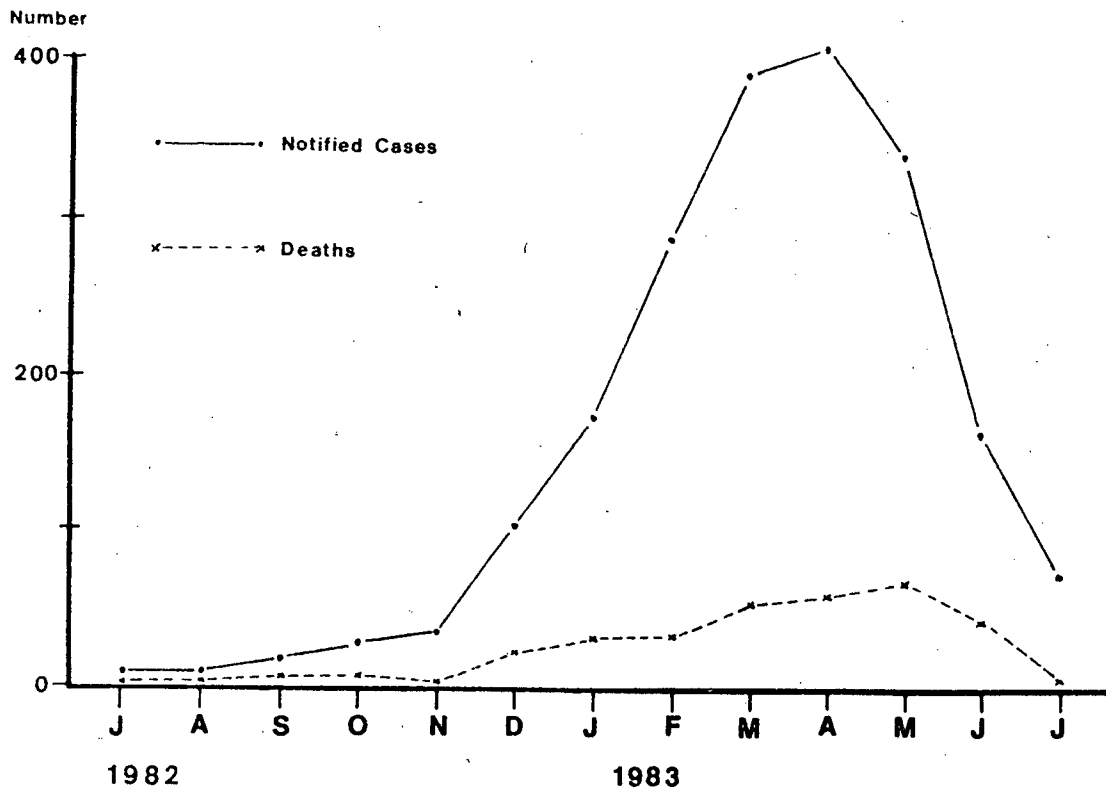


TABLE 1

MEASLES INCIDENCE AND MORTALITY BY POPULATION GROUP  
PORT ELIZABETH JAN - JULY 1983

|          | Notified Cases |                              | Deaths |                              | Case-fatality |
|----------|----------------|------------------------------|--------|------------------------------|---------------|
|          | Number         | Rate Per 10 <sup>5</sup> Pop | Number | Rate Per 10 <sup>5</sup> Pop | Rate          |
| White    | 18             | 11,8                         | 1      | 0,6                          | 5,5%          |
| Coloured | 198            | 152,2                        | 23     | 17,7                         | 11,6%         |
| Black    | 1 590          | 447,8                        | 250    | 70,4                         | 15,7%         |

The black population group thus experienced the greatest impact of the epidemic.

ii) Geographical Distribution

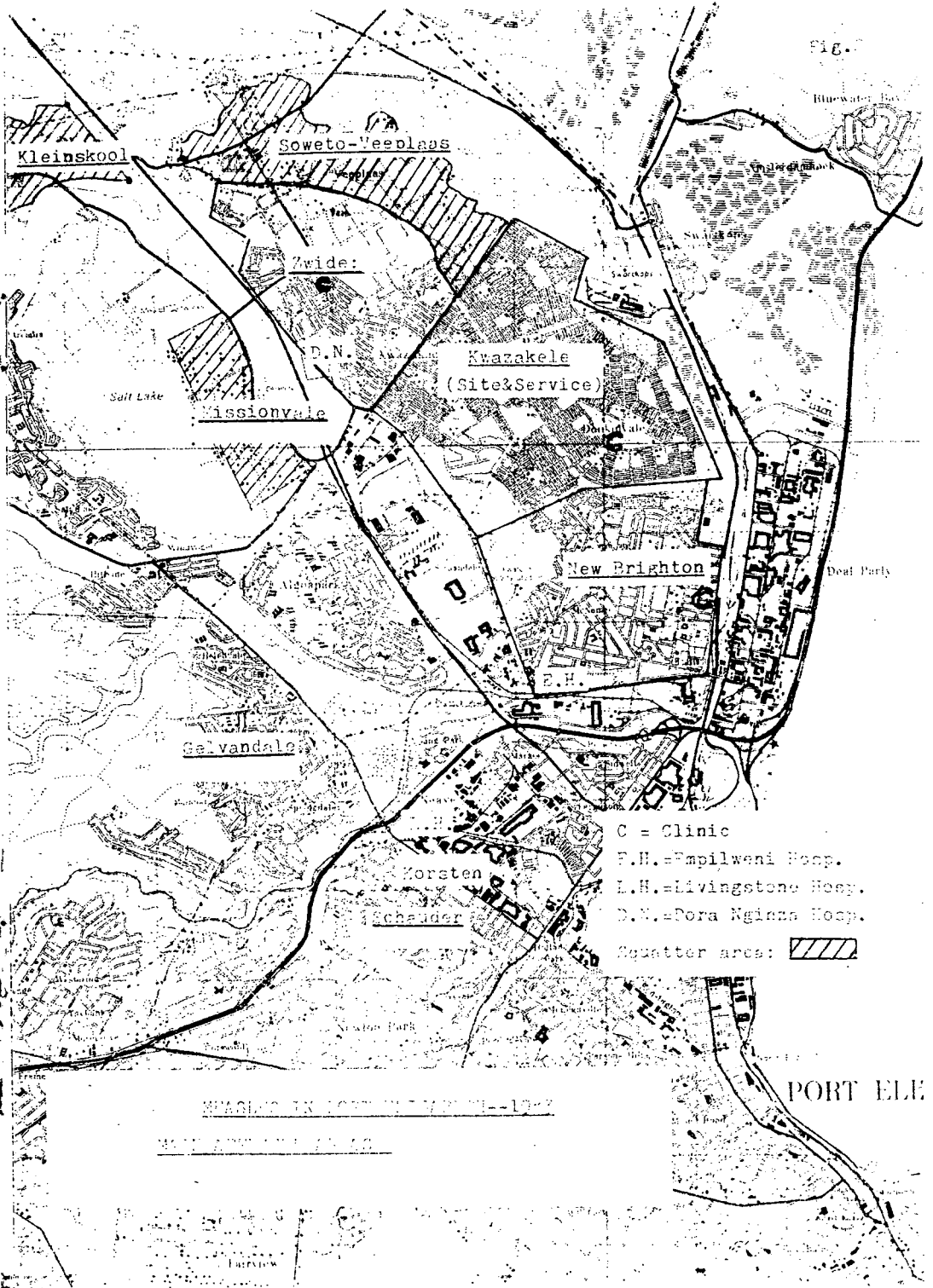
The areas of Port Elizabeth predominantly affected by the measles epidemic are shown in Figure Two.

Table Two gives the incidence, mortality and case-fatality for the different areas.

TABLE 2

MEASLES IN PORT ELIZABETH - GEOGRAPHICAL DISTRIBUTION  
JANUARY - MAY 1983

| Area                  | Notified Cases   |                                    | Deaths            |                                    | Case Fatality Rate |
|-----------------------|------------------|------------------------------------|-------------------|------------------------------------|--------------------|
|                       | % of Total Cases | Incidence Per 10 <sup>5</sup> Pop. | % of Total Deaths | Mortality Per 10 <sup>5</sup> Pop. |                    |
| <u>Black Areas</u>    |                  |                                    |                   |                                    |                    |
| Soweto Veeplaas       | 27,9%            | 441                                | 34,8%             | 66                                 | 15,11%             |
| Zwide                 | 17,5%            | 311                                | 16,8%             | 36                                 | 11,64%             |
| Kwazakele             | 21,9%            | 282                                | 23,2%             | 36                                 | 12,86%             |
| New Brighton          | 16,6%            | 342                                | 15,7%             | 39                                 | 11,44%             |
| Other                 | 3,03%            | 716                                | 1,7%              | 50                                 | 6,97%              |
| <u>Coloured Areas</u> |                  |                                    |                   |                                    |                    |
| Gelvandale            | 3,3%             | 139                                | 2,3%              | 120                                | 8,33%              |
| Schauder              | 3,5%             | 377                                | 0                 | 0                                  | 0                  |
| Missionvale           | 1,3%             | 455                                | 3,5%              | 152                                | 33,3%              |
| Korsten               | 0,4%             | 740                                | 1,2%              | 25                                 | 33,3%              |
| Salt Lake             | 0,7%             | 196                                | 0,6%              | 17                                 | 9,09%              |
| Other                 | 3,4%             | 185                                | 0                 | 0                                  | 0                  |



WVAGS 10 K 1000 1:10000 1973

WVAGS 10 K 1000 1:10000 1973

PORT ELIZABETH

- C = Clinic
- E.H. = Empilweni Hosp.
- L.H. = Livingstone Hosp.
- D.N. = Pora Ngizwa Hosp.
- Scattered areas:

It is thus apparent that the black squatter area of Soweto-Veeplaas experienced the most cases, with a high mortality rate. The 'coloured' squatter area of Missionvale, although having relatively fewer cases, also experienced a high incidence and mortality rate. The "other" black areas in fact includes some 'blacks' living in Missionvale. It is interesting to note that, although the established 'black' township of New Brighton experienced a high incidence rate, the mortality rate was relatively low. Similarly, the established 'coloured' township of Schauder had a high incidence rate, but no deaths.

iii) Age Distribution

The age distribution of the coloured and black cases and deaths is shown graphically in figures 3 & 4 respectively.

54,21% of all black cases and 62,17% of all coloured cases were aged one year or under. Similarly, 84,1% of 'black' measles deaths, and 78,9% of 'coloured' deaths were under 2 years of age.

The higher age specific incidence and mortality rates in both groups were in children under one year of age.

The highest age specific case-fatality rate was in blacks under six months of age, being 43,6% in this group.

These statistics underline the severity of measles in the young infant.

iv) Nutritional Status

It was not possible to assess the nutritional status of all notified cases. However, of a sample of 153 cases of complicated measles requiring hospital admission, 36,2% of those who died, and 39,4% of those who recovered were below the 3rd percentile of weight-for-age (N.C.H.S. standards)

3. PORT ELIZABETH - SOME SOCIO-ECONOMIC FEATURES

The following discussion should not be seen as an in-depth examination of socio-economic circumstances in Port Elizabeth, but rather as a brief review of available data, in order to pin point problem areas.



FIG.3

AGE DISTRIBUTION OF BLACK MEASLES CASES & DEATHS

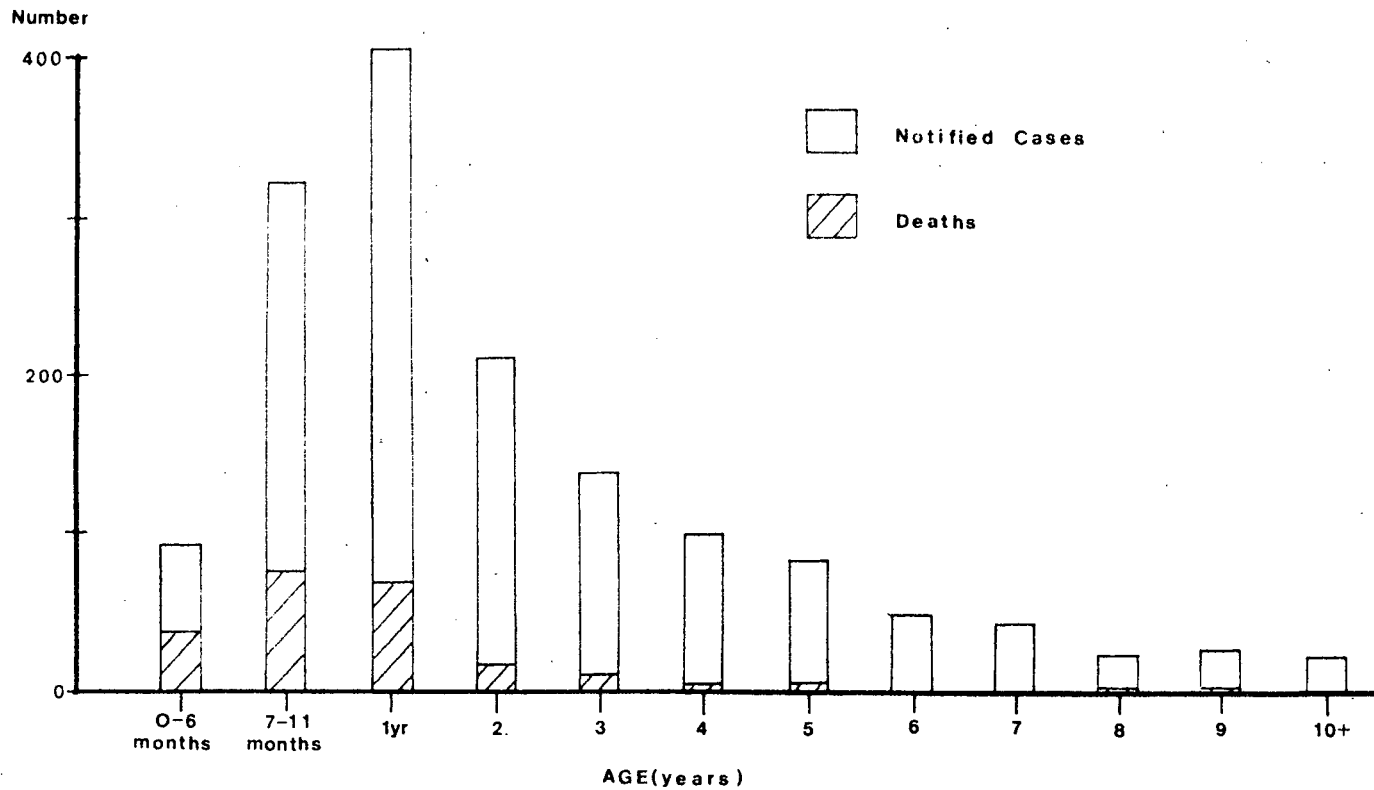
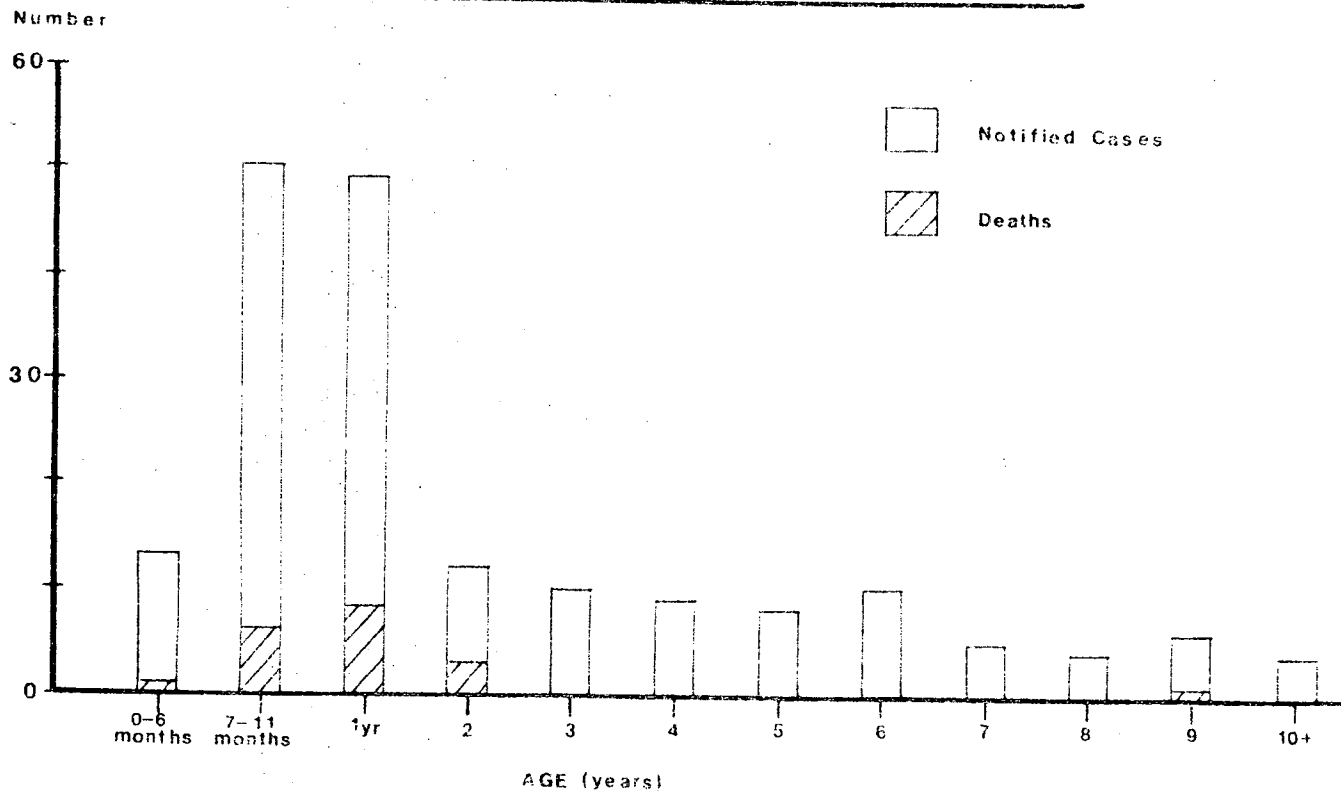


FIG. 4

AGE DISTRIBUTION OF COLOURED MEASLES CASES AND DEATHS



Port Elizabeth is situated on the South-eastern coast of the Republic of South Africa, in close proximity to the newly-independent states of Transkei and Ciskei. The area has a temperate climate with predominantly winter rainfall.

It is predominantly an industrial area, with motor vehicle manufacture making up a large proportion of the industry. The area thus provides job opportunities for its own inhabitants, and for the population of the surrounding Eastern Cape region.

It is possible that, with the economic recession and drought experienced in the area during 1982-83, the population of surrounding rural areas, including Ciskei and Transkei, was attracted to Port Elizabeth in search of employment.

i) Demography

According to the 1980 population census, and allowing for growth rates of 1,85% for whites, 2,67% for coloureds, 2,64% for Asian and 3,17% for Blacks. The estimated population of the Municipality of Port Elizabeth (P.E.M.) is:

|               |                |
|---------------|----------------|
| Whites        | 152 000        |
| Coloureds     | 130 000        |
| Asians        | 7 000          |
| <u>Blacks</u> | <u>285 000</u> |
| TOTAL         | 574 000        |

Accurate demographic data on the black population is difficult to obtain, with different sources giving different total population sizes, ranging from 280 000 to 340,300.

The estimated geographical distribution of the black population, according to different sources is as follows:

| SOURCE           | E. CAPE<br>ADMIN. BOARD. | COMMUNITY COUNCIL<br>HOUSING DATA | PROJECTED FROM<br>1980 CENSUS |
|------------------|--------------------------|-----------------------------------|-------------------------------|
| <u>AREA</u>      |                          |                                   |                               |
| New Brighton     | 67 600                   | 70 500                            | 68 600                        |
| Kwazakele        | 100 000                  | 113 000                           | 108 700                       |
| Walmer           | 2 900                    | 2 700                             | 7 800                         |
| Zwide            | 79 800                   | } 107 100                         | } 88 200                      |
| Soweto Veepplaas | 90 000                   |                                   |                               |
| Other            | -                        | 5 200                             | 11 600                        |
| <u>TOTAL</u>     | <u>340 300</u>           | <u>298 500</u>                    | <u>284 900</u>                |

It is estimated that 15,2% of the coloured population and 18,3% of the black population are children under 6 years of age.

3.2 HOUSING

i) Coloured Population Group

The coloured population is housed in a wide variety of dwellings, ranging from privately owned houses, economic and sub-economic housing schemes, to squatter housing.

In 1978, a report by the P.E.M. Housing Department showed there were 7 410 sub-economic, 387 economic housing units and 2 618 squatter dwellings. More recent data is not available.

The same report showed that the overall population density for the coloured group area was 13,81 persons per hectare. However, in certain areas it was much higher, namely Gelvandale (119,5 per ha), Korsten and Schanderville (98,5 /ha), and Betheldorp and Missionvale (15,8/ha)

The average occupancy rate was 6,3 persons per housing unit, and 3,01 persons per bedroom.

According to the 1981 Annual Report of the Medical Officer of Health, the squatter population in the coloured group area was distributed as follows:

| <u>AREA</u>                | <u>NO. OF SHACKS</u> | <u>POPULATION</u> | <u>OCCUPANCY RATE</u> |
|----------------------------|----------------------|-------------------|-----------------------|
| Korsten                    | 379                  | 1 200             | 3,16 per unit         |
| Chatty (col & blacks)      | 30                   | 170               | 5,6 "                 |
| Missionvale (col & blacks) | 742                  | 4 034             | 5,4 "                 |
| Kleinshool "               | 565                  | 1 819             | 3,2 "                 |
| Drichfield "               | 96                   | 430               | 4,5 "                 |
| West. Suburbs "            | 21                   | 106               | 5,04 "                |
| Betheldorp "               | 88                   | 488               | 5,5 "                 |

ii) Black Population Group

The majority of the black population of P.E.M. are housed in sub-economic housing schemes, administered by the Eastern Cape Administration Board (E.C.A.B.) in New Brighton, Kwazakele, Zwide and Walmer. In recent years a sprawling black squatter area, "Soweto Veeplaas", has developed adjacent to Zwide. The E.C.A.B. estimated the occupancy rates for the areas in 1983 as follows:

ESTIMATED OCCUPANCY RATES FOR BLACK AREAS  
PORT ELIZABETH, 1983 (E.C.A.B.)

| <u>AREA</u>     | <u>NUMBER OF HOUSING UNITS</u> | <u>ESTIMATED POPULATION</u> | <u>OCCUPANCY RATE</u> |
|-----------------|--------------------------------|-----------------------------|-----------------------|
| New Brighton    | 8 041                          | 67 634                      | 8,4 persons/house     |
| Kwazakele       | 11 652                         | 100 028                     | 8,6 "                 |
| Zwide           | 7 063                          | 79 800                      | 11,3 "                |
| Soweto Veeplaas | 8 471                          | ±90 000                     | 10,6 "                |
| Walmer          | 377                            | 2 955                       | 7,8 "                 |

In 1981, a survey<sup>6</sup> of a small sample of housing units in New Brighton Kwazakele, Zwide showed that 40% of the sample families shared accommodation with other families. The average occupancy rate was 6,1 persons per housing unit, but 11% of the sample had more than 10 occupants.

In the Soweto-veeplaas squatter area, the average shack occupancy was 10,8 persons, and 56,6% of the sample had more than 10 occupants. There is an estimated shortage of 17 000 houses for the black population.

3.3. SOME ECONOMIC PROFILES

a) Coloured Population

The following is based on the 1978 survey<sup>5</sup>, more recent data not being available.

In 1978 it was determined that the average total monthly household income for the coloured population was R227,11. In the squatter/slum areas, the mean household income was R14,31 per month. At that time, the household subsistence level for the coloured population of Port Elizabeth was estimated as being R150,00 per month.

b) Black Population

The following data is based on a survey performed in 1981<sup>6</sup>. At that time the household subsistence level for blacks in Port Elizabeth was estimated as being R205,00 per month.

3.3.

- b) In the 1981 survey the average monthly household income in New Brighton Kwazakele, Zwide was R226.00 per month.

A quarter of the sample households earned less than R120.00 per month and 10% less than R90,00 per month.

In the Soweto-Veeplaas squatter area the average monthly household income was R185,37. 20% of the sample household there earned less than R90,00 per month.

3.4. NUTRITIONAL STATUS

Data relating to the nutritional status of coloured children in P.E.M. is not available.

However, in 1981, 192 malnourished, pre-school, coloured children received subsidised skimmed milk powder from the local authority clinics<sup>8</sup>. A further 1 027 needy children also received supplementary milk powders. A recent survey<sup>9</sup> of a sample of black pre-school children in Port Elizabeth showed that 10,6% were below the 3rd percentile (weight-for-age). However, in Soweto-Veeplaas, 42,2% of the sample were below the 3rd percentile for weight.

4. HEALTH SERVICES IN PORT ELIZABETH

a) Curative Services

The Dora Nginja Hospital in Zwide and the Kwazakele Hospital are primarily day hospitals serving the black population and seeing about 1 000 patients per day.

The Livingstone Hospital is a large 1 200 bedded general hospital, situated near the coloured townships of Korsten, Schauder and Gelvandale, and serving both the coloured and black populations.

b) Promotive and Preventive Services

These are provided by the health department of the P.E.M. local authority and include immunisation, well-baby clinics, family planning etc. Services are provided from both fixed and mobile clinics.

The coloured population of 130,000 is served by 4 fixed clinics and 1 mobile clinic, with 28 nursing staff. These provisions are in keeping with the recognised norms.

Conversely, the black population of about 350 000 is served by only 4 fixed clinics, with 58 nursing staff. Zwide, and the Soweto-Veeplaas squatter area is especially poorly served, with only one inadequately sized clinic for the population of approximately 100 - 170 000. Plans are now in progress for the improvement of these services.

## 5. DISCUSSION

It has already been mentioned that overcrowding allows for rapid spread of measles through a susceptible community. It similarly contributes to an increased incidence in younger infants, and therefore to higher morbidity and mortality. The malnutrition and unhygienic conditions often associated with overcrowding and poverty serve to further increase the morbidity and mortality associated with measles. In the 1982-83 measles epidemic in Port Elizabeth, 88% of all notified cases and 91% of all deaths were members of the black population group. In this group, the black squatter area of Soweto-Veeplaas was the most severely affected, accounting for 25% of all cases and giving the highest overall incidence rate and the second highest mortality and case-fatality rates.

The mixed coloured and black squatter area of Missionvale, although accounting for only 4,3% of all cases, had the highest mortality and case-fatality rates.

It is no co-incidence that the areas of P.E.M. most severely affected by the epidemic are also those that are most socio-economically deprived. The inadequacy of both curative and preventative services in these areas may have contributed both to the epidemic (via low immunisation coverage) and to the relatively high case-fatality rate.

Table three compares the incidence and mortality rates in specific areas, with the household occupancy rates and household incomes in those areas, where these are known:

MEASLES INCIDENCE (1983) AND SOME SOCIO-ECONOMIC FACTORS PORT ELIZABETH

| AREA               | MEAN HOUSEHOLD<br>INCOME/MONTH * | MEAN OCCUPANCY<br>RATE HOUSING UNIT | MEASLES INCIDENCE<br>RATE PER 10 <sup>5</sup> | MORTALITY RATE<br>PER 10 <sup>5</sup> | CASE FATALITY<br>RATE |
|--------------------|----------------------------------|-------------------------------------|---|---------------------------------------|-----------------------|
| <u>Black Areas</u> |                                  |                                     |   |                                       |                       |
| New Brighton       | R 229                            | 8,4                                 | 342   | 39                                    | 11,4%                 |
| Kwazakele          | R 228                            | 8,6                                 | 282   | 36                                    | 12,8%                 |
| Zwide              | R 218                            | 11,3                                | 311   | 36                                    | 11,6%                 |
| Soweto Veeplaas    | R 185                            | 10,6                                | 441   | 66                                    | 15,1%                 |

\* Figures relate to 1981 when household subsistence level was R205/m

Coloured & Mixed Areas

|             |                    |      |     |     |       |
|-------------|--------------------|------|-----|-----|-------|
| Gelvandale  | R 277 <sup>o</sup> | 6,3  | 139 | 12  | 8,3%  |
| Schauder    |                    |      | 377 | 0   | 0     |
| Korsten     |                    |      | 74  | 25  | 33,3% |
| Missionvale | R 140 <sup>o</sup> | 6.16 | 455 | 152 | 33,3% |
| Salt Lake   |                    |      | 196 | 17  | 9,1%  |
| Other       |                    |      | 185 | 0   | 0     |

o Figures relate to 1978, when the household subsistence level was R150/month



CONCLUSIONS

It is a general epidemiological rule that one can never state that one variable definitely causes a specific disease outcome. Rather, it must be stated that a variable is associated with a specific outcome, and that association may or may not be causative.

During a recent epidemic of measles in Port Elizabeth, it was noted that there were strong associations between high incidence, mortality and case-fatality rates in certain areas, and poor socio-economic circumstances in those areas. It is surmised that this was, to some extent, a causative association.

It is further surmised that a relative inadequacy of preventative health services (especially immunisation) contributed to the epidemic, and that malnutrition associated with the poor socio-economic circumstances may have contributed to the relatively high case-fatality rate in those areas. It must be stated that the local health and housing authorities in Port Elizabeth are well aware of certain inadequacies that exist, and that every effort is being made to correct those inadequacies.

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These papers constitute the preliminary findings of the Second Carnegie Inquiry into Poverty and Development in Southern Africa, and were prepared for presentation at a Conference at the University of Cape Town from 13-19 April, 1984.

The Second Carnegie Inquiry into Poverty and Development in Southern Africa was launched in April 1982, and is scheduled to run until June 1985.

Quoting (in context) from these preliminary papers with due acknowledgement is of course allowed, but for permission to reprint any material, or for further information about the Inquiry, please write to:

**SALDRU**  
School of Economics  
Robert Leslie Building  
University of Cape Town  
Rondebosch 7700