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In planning for the Health Sector, demographic information is required at three different levels of geographic aggregation: the national, the regional, and the local levels. A basic set of national population parameters -- size, density, age and sex composition, and rates of births, deaths, migration, growth, and urbanization -- serve to define the demographic context, and to provide the basis for projections of future health needs, demands, and manpower resources. Regional information, by identifying major spatial differentials in these parameters, suggest priorities and location strategies for the Health Sector. Finally, population information at the local level is essential for catchment area definition, for the identification of local needs, for the estimation of utilization rates, and for evaluation of population coverage.

In connection with the major planning effort, now underway, of the Haitian Department of Public Health and Population, and at the request of the Ministry of Health, a brief review was undertaken (12/6 - 12/16/72) of the population data resources available for health planning at each geographic level. The objectives were three:

- 1) To evaluate the demographic data base;
- 2) to estimate values for the set of demographic parameters basic to health planning; and
- 3) to make recommendations for the strengthening of programs of population data collection and analysis for the Health Sector.

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DEMOGRAPHIC INFORMATION FOR
HEALTH PLANNING
REPUBLIC OF HAITI

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DEMOGRAPHIC INFORMATION FOR HEALTH PLANNING IN HAITI

In planning for the Health Sector, demographic information is required at three different levels of geographic aggregation: the national, the regional, and the local levels. A basic set of national population parameters -- size, density, age and sex composition, and rates of births, deaths, migration, growth, and urbanization -- serve to define the demographic context, and to provide the basis for projections of future health needs, demands, and manpower resources. Regional information, by identifying major spatial differentials in these parameters, suggest priorities and location strategies for the Health Sector. Finally, population information at the local level is essential for catchment area definition, for the identification of local needs, for the estimation of utilization rates, and for evaluation of population coverage.

In connection with the major planning effort, now underway, of the Haitian Department of Public Health and Population, and at the request of the Minister of Health, Dr. Alex Theard, a brief review was undertaken (12/6 - 12/16/72) of the population data resources available for health planning at each geographic level. The objectives were three:

- 1) to evaluate the demographic data base;
- 2) to estimate values for the set of demographic parameters basic to health planning; and
- 3) to make recommendations for the strengthening of programs of population data collection and analysis for the Health Sector.

A summary of the major observations and recommendations follows. Because of the limitations of time and of the data themselves, the estimates offered in this report are subject to considerable uncertainty. Nevertheless, they are deemed to be sufficiently accurate for planning purposes, and are offered in that spirit.

1) A set of basic population parameters for health planning (12/31/72)

The available population data, including provisional counts from the 1971 National Census, were examined and a set of national population parameters was estimated as of 12/31/72, for use in health planning. This set is summarized in Tables 1 and 2. The year-end population is estimated at close to 4.9 million, although for many planning purposes it may be convenient to round the current population to 5 million. The estimated age and sex distribution of these approximately 5 million, shown in Table 2, is calculated from the U.N. Model Population Level 13.6, with an expectation of life of 50 years, a growth rate of 0.0204, a crude birth rate of 0.0364, and a crude death rate of 0.0160. These estimates employ a higher rate of growth than that calculated from the provisional results of the 1971 census. Discussion of the assumptions upon which they rest, details of their calculation, and the data upon which they are based appear as Appendix I.

2) Regional differentials

The spatial distribution of the population, as reported in the provisional totals of the 1971 census, was examined, and regional differentials in density, growth, and urbanization noted. These differentials are summarized in Tables 3 - 8. In addition, the basic census counts for both 1950 and 1971, for Arrondissements and Departements by urban and rural status, are included in Appendix I, and an approach to the calculation of health district differentials is explored in Appendix II. Figures 1 - 3 illustrate these differentials at the Arrondissement level. The data show that although still a densely settled ($172/\text{km}^2$) and primarily (80%) rural population, urbanization is underway in Haiti. Port-au-Prince has grown at an annual rate of 6.0%, the other seven cities of $\geq 10,000$ population at an aggregate rate of 2.9%, and urban areas of all sizes at 4.0%

during the period 1950-71. Except for the Port-au-Prince region, differentials in growth and in urbanization among the five traditional Departments are not large. At lower levels of geographic aggregations, marked differentials appear. Planning for the Health Sector would be well advised to take these Arrondissement differentials into account.

3) Major gaps in the demographic data base for health planning

The following major gaps in the demographic data base for health planning were identified, and efforts underway or proposed to eliminate these noted:

- a) Vital statistics. Coverage of the national vital statistics system is incomplete outside the facilities of the Health System. For the long run, an effective national vital registration system remains the goal; meanwhile, joint Health Department - OPS/OMS vital statistics survey areas are planned.
- b) Health statistics. Coverage is restricted to medical facilities. There are no plans as yet to obtain population-based data on health problem prevalence.
- c) Demographic behavior: family size, structure, household composition, mobility, migration. There is little systematic information about these at present. The IHS/UN sample recensus is to be underway shortly, to obtain such data on a nationwide basis. The CHISS study of urbanization in Port-au-Prince will obtain similar data for the Metropolitan area.
- d) Small area data. Because the census of 1971 was taken on a sample basis in the rural areas, there will be no data from the census at geographic levels below that of the Arrondissement, except for cities and towns which were completely enumerated. For many rural areas, population data are available from SNEM (National Service for the Eradication of Malaria). With the impending redefinition

of its role, the feasibility of continuing the census function of SNEM must be considered. In the absence of census or SNEM data, special surveys are required for small area estimation. (cf. Appendix III for census data available for small areas; Appendix I illustrates use of SNEM data)

4) Deficiencies in Population Analytical Capabilities

The following deficiencies in population analytical capabilities were identified, and proposals for improvement noted:

- a) Population Analytical Unit. There is no population analytical unit in the Health Department at present, but plans have been made to reactivate it, with the cooperation of Dr. Vilgrain and the Hatien Institute of Statistics. (cf. Appendix IV for details)
- b) Data Processing Unit. There is no data processing unit within the Health Department, and only limited facilities within the Hatien Institute of Statistics. The question of the development of an improved facility as the joint responsibility of the two agencies has been discussed; no plans have been adopted as yet. (cf. Appendix IV for details)

5) Recommendations.

Seven recommendations for strengthening programs of data collection and analysis follow:

- a) That the Department be encouraged to proceed with the plans for the development of Vital Statistics survey areas in cooperation with OPS/OMS.
- b) That the Department consider undertaking a population-based Health Statistics survey, possibly also in cooperation with OPS/OMS.
- c) That the Department explore the feasibility of assigning an ongoing census and a Vital Statistics function to SNEM, as part of the redefinition of the role of that agency.
- d) That the Department re-establish the division of population as an analytical unit, to undertake studies of the inter-relationships among population change, resource utilization, economic and social development, nutrition, family planning, and health. The budgeted core of 5-6 staff for this unit should be obtained, and funds sought from USAID and other donor agencies to supplement them as needed for special studies. (cf. Appendix IV for further details)
- e) That this unit encourage, cooperate with, and utilize the results of studies of demographic behavior being undertaken by the IHS, CHISS, and other competent investigative bodies.

- f) That to facilitate the analytical function the Department explore with the IHS the feasibility of expanding the present mechanographic data processing unit of the IHS, the expanded unit to be jointly administered by the two agencies. Funding for such a facility might be sought from UNFPA, USAID and / or other donor agencies. (cf. Appendix IV for further details)
- g) That where training is required for the successful implementation of any of the above recommendations, the Department explore the possibilities for obtaining short term grants for training in vital and health statistics, sample survey, demographic analysis, data processing, etc., either in Haiti or abroad, from UNFPA, OPS/OMS, USAID, or other donor agencies.

Without the active cooperation and assistance of many colleagues on the staffs of the several Haitian agencies and institutions with responsibilities in population data collection and analysis, this exercise would have been impossible. Their generosity in providing data and supporting materials (maps, documents, interview forms, coding manuals, etc.), time for lengthy methodological discussions, and space to work in were invaluable. Responsibility for the conclusions presented here is, however, solely that of the author.

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Table 1. Basic Population Parameters for Health Planning in Haiti

Summary Estimates of the Population, 1950-1980, Period Growth and Vital Rates, Expectation of Life at Birth, and Percent Urban

| Date | Population | Annual Period Rates of Growth | Crude Death Rates | Crude Birth Rates | Expectation of Life at Birth [e_0] | % Urban |
|--------------|------------|-------------------------------|---------------------|---------------------|--|-------------------|
| 1950 | 3.097.220 | 0.0199 ¹ 0.0201 | 0.0239 ¹ | 0.0438 ¹ | 40 ¹ | 12.2 ² |
| 1960 | 3.777.941 | | | | | |
| 1971 | 4.728.471 | 0.0210 | 0.0154 | 0.0364 | 50 ³ | |
| 1972 (12/31) | 4.872.679 | 0.0215 | 0.0149 | 0.0364 | 50 | 20.6 |
| 1980 | 5.738.000 | | | | | |

¹ after Arriaga (1968). e_0 corresponding to U.N. Stable Model 9.3; age structure shows $r = 0.0200$. Vital rates probably high, e_0 low.

² Davis (1969)

³ after IHS (1971). e_0 corresponding to U.N. Stable Model 13.6; age structure shows $r = 0.0204$.

Table 2 Population by Age and Sex, 1971.

| Age Groups | Number of Persons (X 10 ³) | | | Percentage ² | | |
|------------|--|--------------------|--------|-------------------------|-------|--------|
| | Total | Male | Female | Total | Male | Female |
| Total | 5,000 | 2,495 ² | 2,505 | 100 | 100 | 100 |
| <1 | 160 | 81 | 79 | 3.19 | 3.24 | 3.14 |
| 1-4 | 578 | 294 | 284 | 11.56 | 11.76 | 11.36 |
| 5-9 | 620 | 315 | 305 | 12.40 | 12.60 | 12.20 |
| 10-14 | 555 | 282 | 273 | 11.10 | 11.30 | 10.90 |
| 15-19 | 545 | 277 | 268 | 10.90 | 11.10 | 10.70 |
| 20-24 | 475 | 242 | 233 | 9.50 | 9.70 | 9.30 |
| 25-29 | 407 | 210 | 197 | 8.15 | 8.40 | 7.90 |
| 30-34 | 328 | 162 | 166 | 6.55 | 6.50 | 6.60 |
| 35-39 | 287 | 142 | 145 | 5.75 | 5.70 | 5.80 |
| 40-44 | 250 | 122 | 128 | 5.00 | 4.90 | 5.10 |
| 45-49 | 213 | 102 | 111 | 4.25 | 4.10 | 4.40 |
| 50-54 | 175 | 82 | 93 | 3.50 | 3.30 | 3.70 |
| 55-59 | 140 | 65 | 75 | 2.80 | 2.60 | 3.00 |
| 60-64 | 105 | 47 | 58 | 2.10 | 1.90 | 2.30 |
| 65-69 | 77 | 35 | 42 | 1.55 | 1.40 | 1.70 |
| 70-74 | 50 | 22 | 28 | 1.00 | .90 | 1.10 |
| 75-79 | 25 | 10 | 15 | 0.50 | .40 | .60 |
| 80+ | 10 | 5 | 5 | 0.20 | .20 | .20 |
| | | | | | | |
| < 5 | 738 | 375 | 363 | 14.75 | 15.00 | 14.50 |
| 5-14 | 1175 | 597 | 578 | 23.50 | 23.90 | 23.10 |
| 15-44 | 2292 | 1155 | 1137 | 43.15 | 42.70 | 43.60 |
| 45-64 | 633 | 296 | 337 | 12.65 | 11.90 | 13.40 |
| 65+ | 162 | 72 | 90 | 3.25 | 2.90 | 3.60 |

¹ Corresponds approximately to U.N. Stable model $13.6 \frac{e_0}{e_0} = 50.0$, $r = .0204$, CBR = 36.4, CDR = 16.0

² Institut Hatien de Statistiques - Bulletin: "Estimations de la Population de la Republique d' Haiti - 1969," in Projections Quadriennales 1972-1975. Activites de Collaboration de l' OPS/OMS Avec la Republique d' Haiti. July 1971.

Table 3.
Population Density and Rural Population Density ¹ of the Five
Traditional Departements. 1971

| | Area (in km ²) ² | Population ³ | | Density | |
|------------|---|-------------------------|-----------|---------|-------|
| | | Total | Rural | Total' | Rural |
| Haiti | 27,598.99 | 4.314.594 | 3.434.920 | 156.3 | 124.5 |
| Nord-Ouest | 2,238.74 | 216.504 | 190.380 | 96.7 | 85.0 |
| Nord | 4,054.15 | 699.852 | 539.049 | 172.6 | 133.0 |
| Artibonite | 6,681.45 | 755.760 | 665.210 | 113.1 | 99.6 |
| Ouest | 8,447.50 | 1.669.691 | 1.114.540 | 197.7 | 131.9 |
| Sud | 6.177.15 | 972.787 | 882.740 | 157.5 | 142.9 |

¹ Rural density is taken as rural population per km² for the total area of the Departement. It does not correspond to agricultural density in these cases where settlements are areally extended (rare) and/or non-agricultural land makes up a large proportion of the rural area, but may be taken as a crude indicator of minimum agricultural density. (after Davis, Kingsley. World Urbanization. Vol. I. 1968)

² Areas taken from I.H.S. Guide Economique de la Republique D'Haiti. Dec. 1971.

³ National Census, 1971 (provisional)

Table 4.
Population of the eight largest cities in 1950 and (provisional) 1971¹, and growth rates

| Arrondissement #) | Geographic Subdivision | 1950 | 1971 | 1971/1950 | | |
|-------------------|-----------------------------|-----------|-----------|-----------|------|--------|
| | | | | 1950 | 21r | r |
| | Haiti | 3,097,220 | 4,314,594 | 1,3930 | 0.33 | 0.0157 |
| | Rural | 2,719,714 | 3,434,920 | 1,2639 | 0.23 | 0.0109 |
| | Urban | 379,506 | 879,674 | 2,3179 | 0.84 | 0.0400 |
| | Cities > 10,000 in 1971 | 219.473 | 603.600 | 2.7502 | 1.01 | 0.0481 |
| 1 | Port-au-Prince ² | 134,117 | 448,807 | 3.3464 | 1.21 | 0.0576 |
| | Provincial cities | 85.356 | 154.793 | 1.8135 | 0.60 | 0.0266 |
| 3 | Cap Hatien | 24.617 | 43.559 | 1.7695 | 0.57 | 0.0271 |
| 9 | Gonaives | 13.634 | 28.639 | 2.1006 | 0.74 | 0.0352 |
| 20 | Cayes | 11.608 | 23.070 | 1.9974 | 0.69 | 0.0322 |
| 10 | St. Marc | 9.401 | 17.286 | 1.8387 | 0.61 | 0.0290 |
| 25 | Jéremie | 11.048 | 17.117 | 1.5493 | 0.44 | 0.0210 |
| 13 | Port-de-Paix | 6.405 | 13.892 | 2.1689 | 0.77 | 0.0367 |
| 23 | Jacmel | 8.643 | 11.230 | 1.2993 | 0.26 | 0.0124 |

¹ City populations from Institute Hatien de Statistique. Departement des Finances et des Affaires Economiques. Guide Economique de la Republic D' Haiti. Dec., 1971.
Table 11-6-02, p 49. Source, National Census, 1950 and (provisional), 1971.
National totals from national census, 1950 and (provisional), 1971.

² Comprising Port - au - Prince, Petionville, Carrefour

Table 5.
Population of the Five Traditional Departements, 1950 and 1971¹, and
rates of growth, by urban and rural status

| Geographic Areas | 1950 | 1971 | 1971/1950 | 2lr | r |
|------------------|-----------|-----------|-----------|------|--------|
| Haiti | 3.097.220 | 4.314.594 | 1.3930 | 0.33 | 0.0157 |
| Urban | 379.506 | 879.674 | 2.3179 | 0.84 | 0.0400 |
| Rural | 2.717.714 | 3.434.920 | 1.2639 | 0.23 | 0.0109 |
| Nord-Ouest | 168.279 | 216.504 | 1.2865 | 0.25 | 0.0119 |
| Urban | 13.692 | 26.124 | 1.9079 | 0.65 | 0.0309 |
| Rural | 154.587 | 190.380 | 1.2315 | 0.21 | 0.0100 |
| Nord | 539.049 | 699.852 | 1.2983 | 0.26 | 0.0123 |
| Urban | 74.908 | 117.802 | 1.5726 | 0.45 | 0.0214 |
| Rural | 464.141 | 582.050 | 1.2540 | 0.23 | 0.0109 |
| Artibonite | 567.221 | 755.760 | 1.3323 | 0.29 | 0.0138 |
| Urban | 48.898 | 90.550 | 1.8518 | 0.62 | 0.0295 |
| Rural | 518.323 | 665.210 | 1.2833 | 0.25 | 0.0119 |
| Ouest | 1.083.069 | 1.669.691 | 1.5416 | 0.43 | 0.0204 |
| Urban | 185.490 | 555.151 | 2.9928 | 1.10 | 0.0523 |
| Rural | 897.579 | 1.114.540 | 1.2417 | 0.22 | 0.0104 |
| Sud | 739.602 | 972.787 | 1.3152 | 0.27 | 0.0128 |
| Urban | 50.496 | 90.047 | 1.7832 | 0.58 | 0.0271 |
| Rural | 689.106 | 882.740 | 1.2809 | 0.25 | 0.0119 |

¹ National Census, 1950 and 1971 (provisional)

Table 6.
Population of Nine Departements, 1950 and 1971,¹ and
Rates of Growth, by Urban and Rural Status

| Geographic Areas | 1950 | 1971 | 1971/1950 | 2lr | r |
|------------------|-----------|-----------|-----------|------|--------|
| Haiti | 3.097.220 | 4.314.594 | 1.3930 | 0.33 | 0.0157 |
| Urban | 379.506 | 879.674 | 2.3179 | 0.84 | 0.0400 |
| Rural | 2.717.714 | 3.434.920 | 1.2639 | 0.23 | 0.0109 |
| Nord-Ouest | 168.279 | 216.504 | 1.285 | 0.25 | 0.0119 |
| Urban | 13.692 | 26.124 | 1.9079 | 0.65 | 0.0309 |
| Rural | 154.587 | 190.380 | 1.2315 | 0.21 | 0.0100 |
| Nord | 431.370 | 583.096 | 1.3517 | 0.30 | 0.0144 |
| Urban | 60.855 | 101.396 | 1.6662 | 0.51 | 0.0243 |
| Rural | 370.515 | 481.700 | 1.3001 | 0.26 | 0.0125 |
| Nord-Est | 107.679 | 116.756 | 1.0843 | 0.08 | 0.0033 |
| Urban | 14.053 | 16.406 | 1.1674 | 0.15 | 0.0074 |
| Rural | 93.626 | 100.350 | 1.0718 | 0.07 | 0.0033 |
| Artibonite | 466.925 | 522.219 | 1.1184 | 0.11 | 0.0053 |
| Urban | 41.277 | 76.329 | 1.8092 | 0.61 | 0.0293 |
| Rural | 425.648 | 445.890 | 1.0476 | 0.05 | 0.0022 |
| Centre | 255.982 | 300.110 | 1.1724 | 0.16 | 0.0076 |
| Urban | 15.196 | 26.640 | 1.7531 | 0.56 | 0.0267 |
| Rural | 240.786 | 273.470 | 1.1357 | 0.13 | 0.0061 |
| Ouest | 594.765 | 1.151.823 | 1.9366 | 0.66 | 0.0315 |
| Urban | 163.243 | 523.243 | 3.2053 | 1.16 | 0.0179 |
| Rural | 431.522 | 628.580 | 1.4567 | 0.38 | 0.0179 |
| Sud-Est | 332.618 | 351.299 | 1.0562 | 0.05 | 0.0026 |
| Urban | 14.672 | 19.489 | 1.3283 | 0.28 | 0.0135 |
| Rural | 317.946 | 331.810 | 1.0436 | 0.04 | 0.0020 |
| Sud | 375.336 | 519.664 | 1.3845 | 0.33 | 0.0155 |
| Urban | 29.238 | 42.174 | 1.4424 | 0.37 | 0.0174 |
| Rural | 346.098 | 477.490 | 1.3796 | 0.32 | 0.0153 |
| Sud-Ouest | 364.266 | 453.123 | 1.2439 | 0.22 | 0.0104 |
| Urban | 21.258 | 47.873 | 2.2520 | 0.81 | 0.0387 |
| Rural | 343.008 | 405.250 | 1.1815 | 0.17 | 0.0079 |

¹ National Population Census, 1950 and (provisional) 1971

Table 7. Rates of Growth, 1960-1971¹, of the Five Traditional Departements, and of the Nine Departements, by urban-and rural status

| Departement | Total | City ² | Urban | Rural |
|-------------|--------|-------------------|--------|--------|
| Haiti | 0.0157 | 0.0481 | 0.0400 | 0.0109 |
| Nord-Ouest | 0.0119 | 0.0367 | 0.0309 | 0.0100 |
| Nord | 0.0123 | 0.0271 | 0.0214 | 0.0109 |
| Artibonite | 0.0138 | 0.0329 | 0.0295 | 0.0119 |
| Ouest | 0.0204 | 0.0576 | 0.0523 | 0.0104 |
| Sud | 0.0128 | 0.0236 | 0.0276 | 0.0119 |
| Nord-Ouest | 0.0119 | 0.0367 | 0.0309 | 0.0100 |
| Nord | 0.0144 | 0.0271 | 0.0243 | 0.0125 |
| Nord-Est | 0.0039 | - | 0.0074 | 0.0033 |
| Artibonite | 0.0053 | 0.0329 | 0.0293 | 0.0022 |
| Centre | 0.0076 | - | 0.0267 | 0.0061 |
| Ouest | 0.0315 | 0.0576 | 0.0555 | 0.0179 |
| Sud-Est | 0.0026 | 0.0124 | 0.0135 | 0.0020 |
| Sud | 0.0155 | 0.0329 | 0.0174 | 0.0153 |
| Sud-Ouest | 0.0104 | 0.0210 | 0.0387 | 0.0079 |

¹ Data from the National Census, 1950 and (provisional) 1971

² Cities \geq 10,000 population in 1971. Institut Hatien de Statistiques. Dept. des Finances et des Affaires Economiques. Guide Economique de la Republic D'Haiti. Dec. 1971. p.49

| Geographic Area | Rate | | | | Growth Rate 1950-71 ¹ | | | Density ² Class | |
|--------------------------------|-------|-------------------|-------|-------|----------------------------------|-------------------|-------|----------------------------|------|
| | Total | City ³ | Urban | Rural | Total | City ³ | Urban | Rural | 1971 |
| Haiti | 0.016 | 0.048 | 0.040 | 0.011 | 3 | 6 | 6 | 6 | 3 |
| Nord-Ouest | 0.012 | 0.037 | 0.031 | 0.010 | 3 | 5 | 5 | 1 | 1 |
| (13) ⁴ Port-de Paix | 0.008 | 0.037 | 0.033 | 0.004 | 2 | 5 | 5 | 2 | 2 |
| (14) Mole St. Nicolas | 0.000 | - | 0.020 | 0.020 | 4 | - | 4 | 4 | 1 |
| Nord | 0.012 | 0.027 | 0.021 | 0.011 | 3 | 4 | 4 | 3 | 5 |
| (3) Cap-Haitien | 0.025 | 0.027 | 0.030 | 0.013 | 4 | 4 | 5 | 4 | 6 |
| (4) Trou-du-Nord | 0.000 | - | 0.000 | 0.011 | 3 | - | 2 | 3 | 4 |
| (5) Grand Piviere | 0.000 | - | 0.010 | 0.000 | 1 | - | 4 | 1 | 5 |
| (16) Vallieres | 0.025 | - | 0.010 | 0.000 | 2 | - | 5 | 2 | 1 |
| (15) Fort-Liberte | 0.000 | - | 0.000 | 0.000 | 2 | - | 2 | 2 | 1 |
| (6) Plaisance | 0.000 | - | 0.014 | 0.000 | 4 | - | 3 | 4 | 5 |
| (8) Limbe | 0.004 | - | 0.004 | 0.004 | 1 | - | 4 | 1 | 1 |
| (7) Borgne | 0.000 | - | 0.000 | 0.000 | 3 | - | 4 | 3 | 4 |
| Artibonite | 0.014 | 0.023 | 0.020 | 0.012 | 3 | 5 | 5 | 3 | 2 |
| (9) Gonaives | 0.014 | 0.030 | 0.024 | 0.000 | 3 | 5 | 5 | 2 | 2 |
| (10) St. Marc | 0.000 | 0.029 | 0.020 | 0.000 | 4 | 4 | 4 | 4 | 2 |
| (12) Macrelade | 0.000 | - | 0.000 | 0.019 | 4 | - | 5 | 3 | 3 |
| (17) Hinche | 0.004 | - | 0.000 | 0.012 | 3 | - | 5 | 3 | 1 |
| (11) Dessalines | 0.010 | - | 0.010 | 0.010 | 3 | - | 3 | 3 | 3 |
| Ouest | 0.020 | 0.058 | 0.052 | 0.010 | 4 | 7 | 7 | 3 | 4 |
| (1) Port-au-Prince | 0.036 | 0.058 | 0.057 | 0.017 | 5 | 7 | 7 | 3 | 4 |
| (2) Leonane | 0.012 | - | 0.012 | 0.012 | 3 | - | 3 | 3 | 5 |
| (23) Jacmel | 0.004 | 0.012 | 0.010 | 0.000 | 2 | 3 | 3 | 2 | 3 |
| (24) Belle-Anse (Saltrou) | 0.000 | - | 0.010 | 0.000 | 1 | - | 3 | 1 | 1 |
| (18) Mirabalais | 0.000 | - | 0.000 | 0.004 | 2 | - | 2 | 2 | 3 |
| (19) Lascaobas | 0.000 | - | 0.011 | 0.004 | 1 | - | 4 | 1 | 1 |
| Sud | 0.013 | 0.024 | 0.020 | 0.012 | 3 | 4 | 4 | 3 | 3 |
| (20) Cayes | 0.016 | 0.033 | 0.010 | 0.010 | 3 | 5 | 4 | 3 | 4 |
| (21) Aquin | 0.012 | - | 0.010 | 0.000 | 3 | - | 3 | 3 | 2 |
| (22) Coteaux | 0.000 | - | 0.011 | 0.000 | 4 | - | 3 | 4 | 3 |
| (27) Anse-a-Veau (Nippes) | 0.000 | - | 0.011 | 0.001 | 2 | - | 4 | 3 | - |
| (25) Jeremie (Gd. Anse) | 0.000 | 0.021 | 0.014 | 0.014 | 3 | 4 | 3 | 3 | 3 |
| (26) Tiburon | 0.013 | - | 0.041 | 0.000 | 3 | - | 6 | 2 | 1 |

¹ Computed from National Census, 1950 and 1971 (provisional)

| Annual Growth Rate Class | |
|--------------------------|-------------|
| 1 | 0.000 |
| 2 | 0.000-0.009 |
| 3 | 0.010-0.019 |
| 4 | 0.020-0.029 |
| 5 | 0.030-0.039 |
| 6 | 0.040-0.049 |
| 7 | 0.050 |

² U.N./ CONADEP. Oct. 1972 (Map)

| Density Class | |
|---------------|-----------------------|
| 1 | 50-99/km ² |
| 2 | 100-149 |
| 3 | 150-199 |
| 4 | 200-299 |
| 5 | 300-399 |
| 6 | 400-499 |

³ Cities 10,000 population, 1971. from I.H.S. Guido Economique de la Republique D'Haiti. Dec. 1971 p.49

⁴ Arrondissement code numbers. (cf. density, growth maps, figures 1-3)

Figure 1
 Abstraction of the map of the Arrondissements of the Republic of Haiti

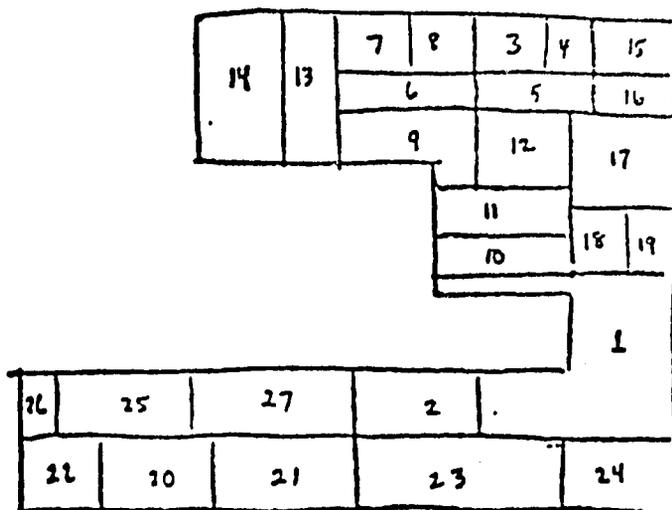
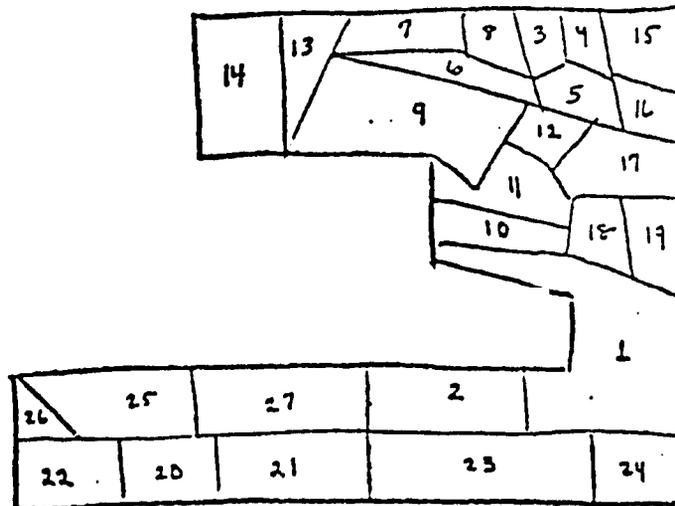
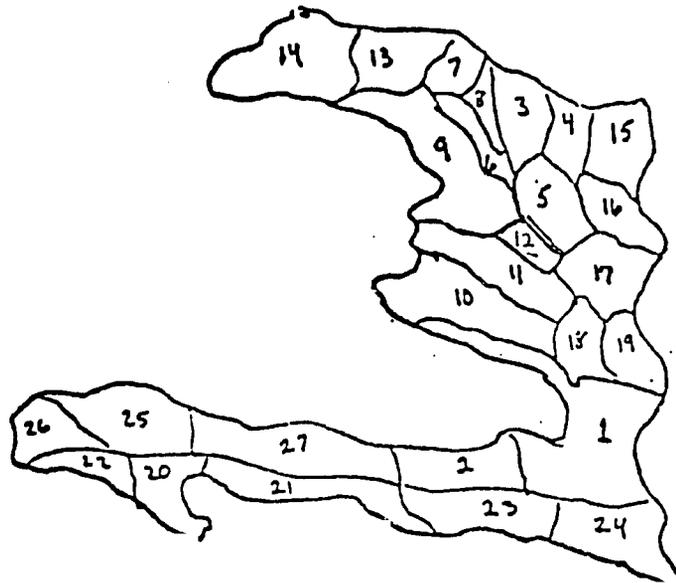
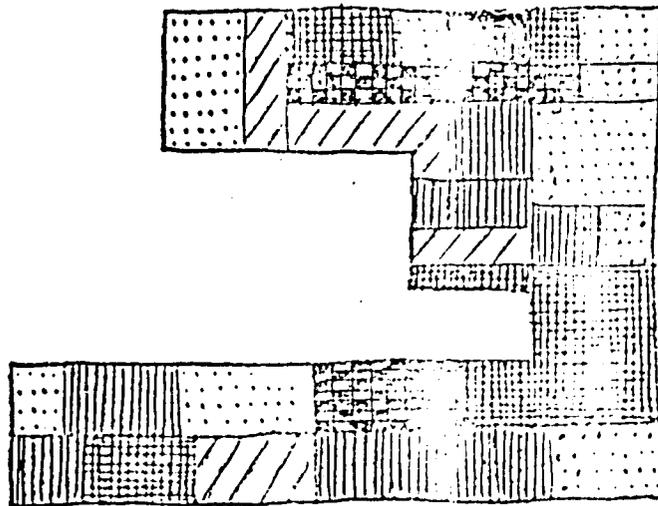


Figure 2. Population Density, 1971



Key:

50-99 / km²



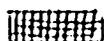
100-149



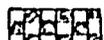
150-199



200-299

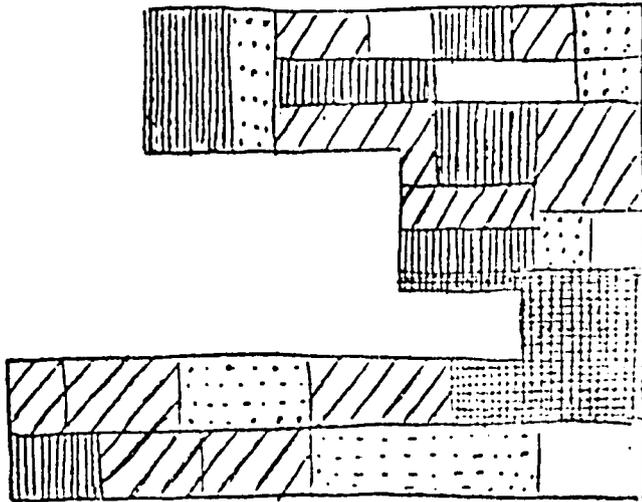


300-399

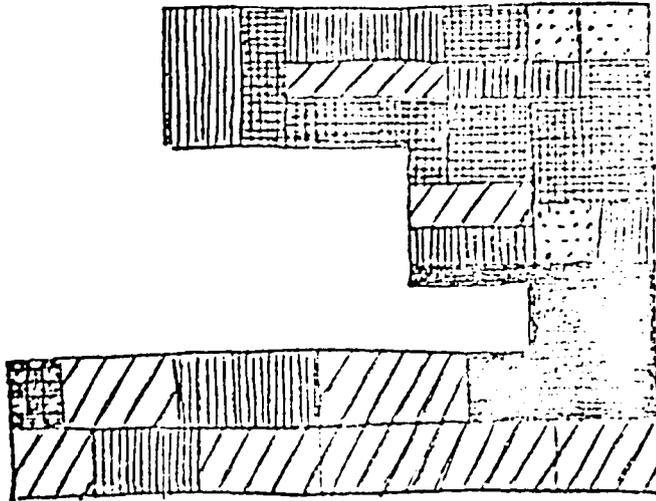


400-499

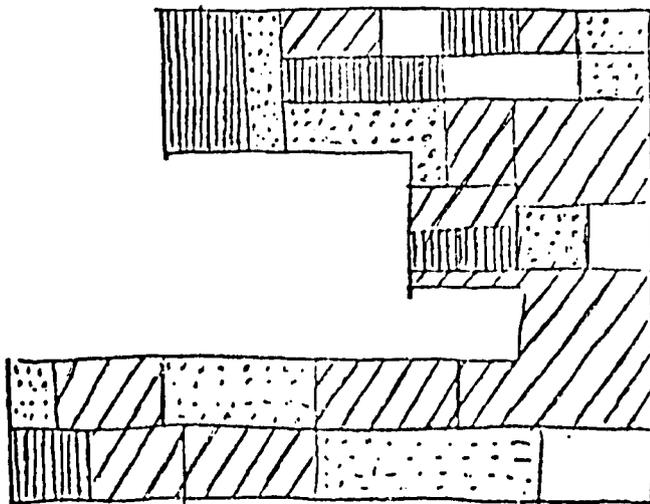




Total 0.0157



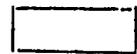
Urban 0.0400



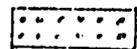
Rural 0.0109

Key:

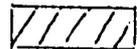
<0.000



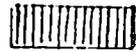
0.000-0.009



0.010-0.019



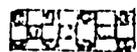
0.020-0.029



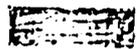
0.030-0.039



0.040-0.049



≥ 0.050



APPENDIX I.

DATA RESOURCES FOR HEALTH PLANNING, AND A SET
OF BASIC DEMOGRAPHIC PARAMETERS (12/31/72)

TABLE I. 1. SUMMARY OF POPULATION ESTIMATES AND PROJECTIONS,
1788-1980

TABLE I. 2. ESTIMATED POPULATION BY AGE AND SEX, 1971

TABLE I. 3. POPULATION BY AGE AND SEX. 1950

TABLE I. 4. POPULATION AND RATES OF GROWTH, 1950-1971, FOR
DEPARTEMENTS AND ARRONDISSEMENTS, TOTAL AND BY
URBAN AND RURAL STATUS

TABLE I. 5. GROWTH IN TOTAL, URBAN AND PRINCIPAL CITY
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TABLE I. 9. AGE STRUCTURE. UN STABLE MODEL LEVEL 9.3

TABLE I.10. AGE STRUCTURE. UN STABLE MODEL LEVEL 13.6

TABLE I.11. AGE STRUCTURE. UN STABLE MODEL LEVEL 14.3

FIGURE I.1. MAP OF THREE SNEM AREAS

APPENDIX I. DATA RESOURCES FOR HEALTH PLANNING, AND A SET OF BASIC DEMOGRAPHIC
PARAMETERS (12/31/72)

Population data generally come from one or more of three major sources: the population census, the vital registration system, and/or one or more special purpose surveys. Haiti has had two national censuses since World War II, in 1950 and again in 1971. Preliminary counts from the latter have recently become available, and suggest a population considerably smaller than had been expected, but detailed information on age and sex distribution and other characteristics awaits further processing. There is also a national system of vital registration, but its coverage is considered relatively incomplete, except for vital events occurring within medical facilities of the Public Health System.

Limited field survey data are also available for certain geographic areas, from both governmental and non-governmental sources. Without doubt the best such source of field data is SNEM (National Service for the Eradication of Malaria), but other groups working in small community development areas also maintain population data files for their areas. Plans for several special purpose demographic surveys are now underway, in some cases close to implementation:

- 1) the Department of Health - OPS/OMS special vital statistics sample area(s);
- 2) the Haitian Institute of Statistics/UN nationwide post-enumeration fertility and mobility survey; and
- 3) the CHISS study of the urbanization of the Port-au-Prince Metropolitan region, to name three major ones.

When detailed data from the 1971 census become available and are corrected for under enumeration, and when the results of the projected demographic studies have been obtained and evaluated, Haitian statisticians and demographers should have a sound basis for developing a current set of estimates for the basic population parameters. Meanwhile, however, planning must go forward, and a set

of interim estimates is required.

Prior to the taking of the 1971 census, several different estimates of the basic parameters for the 1960-70 Haitian population had been made, generally utilizing a projection of the 1950 census population, the concepts of Stable Population Theory, and a set of vital rates estimated from the 1950 age structure itself, adjusted in various ways, together with such other field data as might be available. Table I.1 is a summary of population estimates and projections for Haiti, 1788-1980, from many sources; Table I.2 and Table 2 (in the body of the report) illustrate age distributions projected to 1971 on the basis of the 1950 age distribution and alternative assumptions about vital rates. These estimates have received wide usage, but the unexpectedly low preliminary 1971 census count has raised doubts about their adequacy for the interim.

This report has presented a set of national demographic parameters (cf Table 1 in the body of the report), for 12/31/72, based upon an examination of the preliminary 1971 census counts, the 1950 census, and such fragments of demographic information available to the author. In the calculation of these parameters, total population in 1971 is estimated to have been about 10% higher than was reported in the early census counts, and 5% higher than the 1971 count adjusted by Mr. Brenez for a 5% under enumeration. (cf. Tables I.3 - I.4 for basic data).

Since the 1971 census was designed according to commonly accepted demographic practice, and executed under the supervision of competent professionals, the presumption must be that the reported totals (or the adjusted totals) of the census are reasonably accurate, or as accurate as may be obtained by census methods. Moreover, examination of regional differentials in rates of growth computed from census data, total and by rural and urban status, reveals a reasonably consistent pattern: a 6% annual growth rate for the capital city, 4% for urban residents, and 1% for rural, with, except for the Port-au-Prince region relatively little variation among the five traditional departments. (cf Tables 4-6 in the

body of the report). These urban and capital city growth rates are well within the expected range for Caribbean countries, as shown in Table I.5; the rural rate is low, although not lower than those estimated for the other island countries of Jamaica and Trinidad and Tobago. What is the justification for claiming a 10% under enumeration?

There are three classes of reasons for believing that the 1971 census count is a conservative estimate: 1) those related to problems of taking an accurate count in this population; 2) those concerning the internal reasonableness of the vital rates implied by such a low growth rate; and 3) those relating to evidence from other data sources.

There are difficulties inherent in the enumeration of an illiterate, geographically remote rural population, exhibiting high rates of short term mobility and unstable household composition. Even among technologically sophisticated populations such people are difficult to count; in extreme cases, as in the U.S. among young adult black males in 1960, the undercount may be as high as 20%. Given the widespread impression of instability and fluidity among the Haitian population, but very little systematic data on demographic behavior, a sizeable undercount would not be surprising.

Moreover, if one assumes an e_0 of 50.0 years and a fairly stable age structure close to that of 1950, the crude birth rate implied by such a low rate of growth appears to be unreasonably low (0.032).

Finally evidence from several other sources of data fail to corroborate either the low rate of growth or the set of vital rates implied by that growth. Field data from the Schweitzer Hospital yield higher birth rates; field data from SNEM yield population counts for certain areas far in excess of census estimates; Stable Population Theory holds the census growth rate to be incompatible with reasonable estimates for the other population parameters, obtained from other data. Table I.6 presents the set of alternative estimates of vital rates considered. Table I.7 illustrates the use of data from SNEM as a cross-check; Fig. I.1 SNEM areas.

The set of estimates presented in Table 1 (of the body of the report) were computed as follows:

- 1) Following Arriaga (1968), the assumption was made that the 1950-60 Haitian population met the conditions for the application of Stable Population Theory (constant fertility, constant age structure). The use of an $^{\circ}e_{\circ}$ of 40 years and Arriaga's smoothed 1950 age distribution, led to a set of vital rates for 1950-60 as follows:

$$\text{CBR} = 0.0438 \quad \text{CDR} = 0.0238 \quad \text{CRNI} = 0.0200$$

The 1960 population was projected at 3,777,011.

- 2) For the period 1960-71, the assumption was also made that the conditions for Stable Population Theory were met. An $^{\circ}e_{\circ}$ of 50 years was assumed and the set of vital rates for 1960-71 were computed from Stable Model 13.6, with a rate of growth corresponding to the assumed 1971 age distribution (similar to that of 1950):

$$\text{CBR} = 0.0364 \quad \text{CDR} = 0.0160 \quad \text{CRNI} = 0.0204$$

These rates are well within the range of those estimated from other sources. The 1971 population was projected at 4,728,471.

- 3) These period rates together result in an overall rate, 1950-71, of 0.0201.
- 4) A second way of arriving at an estimate for 1971 was followed, as a check on the life table procedures above. Although a 10% under-enumeration might be suggested for the rural areas, the accuracy of the 1971 census in the urban areas was probably somewhat better. The unadjusted 1971 urban count was multiplied by a factor of 1.08; the unadjusted 1971 rural count was multiplied by a factor of 1.1; the sum, 4.73 million, yielded a rate of growth, 1950-71 of 0.0201.
- 5) During the 1970's the rate of growth is assumed to increase as economic and health conditions improve in the rural areas, mortality declines, and $^{\circ}e_{\circ}$ rises. Except for certain areas where concen-

trated family planning programs may be carried out, birth rates are not expected to respond to mortality decline quickly enough to maintain a constant growth rate; they are assumed to remain close to the 1960-71 rate. Assuming a increase in e_0 to close to 52 years, and a CBR of 0.0364, the growth rate 1971-80 is computed from UN Model 14.3.

$$\text{CBR} = 0.0364 \quad \text{CDR} = 0.0149 \quad \text{CRNI} = 0.0215$$

The 1980 population is projected at 5.738.000.

- 6) Finally the 12/31/72 rate of growth was obtained by interpolation at 0.0210. Given the assumption of no change in the CBR,

$$\text{CBR} = 0.0364 \quad \text{CDR} = 0.0154 \quad \text{CRNI} = 0.0210$$

As of 12/31/72 the population is estimated at 4.872.679.

Table I.8 - I.11 illustrate the Stable Model Populations used in the calculations above.

Table I.1

Summary of Population Estimates and Projections ¹ for Haiti, 1788-1980

| <u>Date</u> | <u>Population</u> | <u>Source</u> | <u>Date</u> | <u>Population</u> | <u>Source</u> |
|-------------|-------------------|---------------|--------------|-------------------|---------------|
| 1788 | 405.528 | (1) | 1955 | 3.736.204 | (9) |
| 1789 | 571.748 | (2) | 1955 | 3.645.026 | (10) |
| 1790 | 501.730 | (1) | 1960 | 4.155.597 | (9) |
| 1804 | 500.000 | (1) | 1960 | 3.991.117 | (10) |
| 1805 | 463.370 | (1) | 1965 | 4.660.284 | (9) |
| 1824 | 590.000 | (3) | 1965 | 4.396.236 | (10) |
| 1843 | 830.136 | (1) | 1968 | 4.674.108 | (11) |
| 1844 | 835.000 | (3) | 1969 | 4.768.101 | (11) |
| 1863 | 1.100.000 | (3) | 1970 | 5.269.392 | (9) |
| 1888 | 960.000 | (1) | 1970 | 4.867.190 | (10) |
| 1914 | 1.960.000 | (4) | 1971 | 4.314.594 | (12) |
| 1919 | 1.631.250 | (1) | 1971 | 4.530.305 | (13) |
| 1918-19 | 2.291.250 | (5) | 1971 | 4.728.471 | (14) |
| 1932 | 2.485.000 | (4) | 1972 (12/31) | 4.872.679 | (14) |
| 1935 | 2.600.000 | (1) | 1975 | 6.015.583 | (9) |
| 1950 | 3.097.220 | (6) | 1975 | 5.399.373 | (10) |
| 1950 | 3.379.813 | (7) | 1980 | 6.925.766 | (9) |
| 1950 | 3.353.095 | (8) | 1980 | 5.738.000 | (14) |
| | | | 1980 | 5.987.932 | (10) |

Sources:

- | | |
|--|--|
| (1) Aristide, 1955 | (9) Saint-Surin, 1962 |
| (2) Pereira, 1956 | (10) Haitian Institute of Statistics, 1967 |
| (3) Moral, 1959 | (11) OPS/CMS, based on 1950 census and Armed Forces census 1965, 1968 |
| (4) Vilgrain, 1955/56, Smith and Amisial | (12) National Census 8/1971 |
| (5) Brand, 1962 | (13) Brenez, census adjustment, 1972 |
| (6) National Census, 8/7/1950 | (14) Newman, census adjustment, 1972 |
| (7) Saint-Surin, census correction, 1962 | |
| (8) Vilgrain, census correction, 1963 | |

¹ After table in Censo de Recursos y Servicios en Salud. Tomo I. Generalidades. Resultados, Departement de la Sante Publique et de la Population. OPS/OMS Haiti, 1968.

Table I.2 Estimated Population by Age and Sex, 1971. ¹

| | Number of Persons ($\times 10^3$) | | | Percentage ² | | |
|-------|-------------------------------------|--------------------|--------|-------------------------|--------|--------|
| | Total | Male | Female | Total | Male | Female |
| Total | 5,000 | 2,495 ³ | 2,505 | 100.00 | 100.00 | 100.00 |
| < 1 | 191 | 95 | 96 | 3.82 | 3.82 | 3.83 |
| 1-4 | 652 | 324 | 328 | 13.03 | 12.98 | 13.08 |
| 5-9 | 665 | 329 | 336 | 13.32 | 13.19 | 13.44 |
| 10-14 | 585 | 292 | 293 | 11.69 | 11.69 | 11.69 |
| 15-19 | 505 | 252 | 253 | 10.11 | 10.10 | 10.11 |
| 20-24 | 435 | 217 | 218 | 8.70 | 8.70 | 8.70 |
| 25-29 | 375 | 187 | 188 | 7.50 | 7.50 | 7.50 |
| 30-34 | 322 | 160 | 162 | 6.43 | 6.40 | 6.46 |
| 35-39 | 277 | 137 | 140 | 5.55 | 5.50 | 5.60 |
| 40-44 | 236 | 117 | 119 | 4.73 | 4.70 | 4.76 |
| 45-49 | 200 | 100 | 100 | 4.00 | 4.00 | 4.00 |
| 50-54 | 157 | 82 | 75 | 3.15 | 3.30 | 3.00 |
| 55-59 | 122 | 65 | 64 | 2.57 | 2.60 | 2.55 |
| 60-64 | 99 | 50 | 49 | 1.98 | 2.00 | 1.95 |
| 65-69 | 78 | 42 | 36 | 1.55 | 1.67 | 1.43 |
| 70-74 | 62 | 22 | 20 | .84 | .90 | .79 |
| 75+ | 52 | 24 | 28 | 1.03 | .95 | 1.11 |
| < 5 | 843 | 419 | 424 | 16.85 | 16.80 | 16.91 |
| 5-14 | 1,250 | 621 | 629 | 25.01 | 24.98 | 25.13 |
| 15-44 | 2,150 | 1,070 | 1,080 | 43.02 | 42.90 | 43.13 |
| 45-64 | 555 | 297 | 288 | 11.70 | 11.90 | 11.50 |
| 65+ | 172 | 86 | 84 | 3.42 | 3.52 | 3.33 |

1. Corresponds approximately to U.N. Stable model 13.6, $e_0 = 50.0$, $r = 0.0262$, CBR = 41.3, CDR = 15.1.
2. From Department de la Sante Publique et de la Population OPS/OMS, Censo de Recursos y Servicios en Salud Tomo I. Generalidades. Resultados. Haiti, 1968, p.23
3. From Institut Haitien de Statistiques - Bulletin, "Estimations de la Population de la Republique de' Haiti - 1969." in Projections Quadriennales 1972 - 1975. Activites de Collaboration de l' OPS/OMS Avec la Republique d' Haiti, July, 1971, p. 39.

Table 1.3 Population by Age and Sex, 1950

| | Number of Persons | | | Percent | | |
|--------------|-------------------|------------------|------------------|---------------|---------------|---------------|
| | Total | Male | Female | Total | Male | Female |
| Total | 3,097,022 | 1,504,736 | 1,592,484 | 100.00 | 100.00 | 100.00 |
| <1 | 73,597 | 36,345 | 37,252 | 2.38 | 2.42 | 2.34 |
| 1-4 | 301,275 | 149,551 | 151,724 | 9.73 | 9.94 | 9.52 |
| 5-9 | 400,518 | 199,274 | 201,244 | 12.93 | 13.24 | 12.64 |
| 10-14 | 397,708 | 203,283 | 194,425 | 12.84 | 13.51 | 12.21 |
| 15-19 | 308,026 | 154,287 | 153,739 | 9.95 | 10.25 | 9.65 |
| 20-24 | 267,401 | 121,342 | 146,059 | 8.63 | 8.06 | 9.17 |
| 25-29 | 277,177 | 125,172 | 152,005 | 8.95 | 8.32 | 9.55 |
| 30-34 | 189,144 | 85,278 | 103,866 | 6.11 | 5.67 | 6.55 |
| 35-39 | 229,644 | 107,718 | 121,926 | 7.41 | 7.16 | 7.66 |
| 40-44 | 157,697 | 80,622 | 77,075 | 5.09 | 5.36 | 4.84 |
| 45-49 | 133,451 | 68,289 | 65,162 | 4.31 | 4.54 | 4.09 |
| 50-54 | 99,389 | 50,937 | 48,452 | 3.21 | 3.39 | 3.04 |
| 55-59 | 56,823 | 27,804 | 29,024 | 1.83 | 1.85 | 1.82 |
| 60-64 | 70,954 | 34,220 | 36,734 | 2.29 | 2.27 | 2.31 |
| 65-69 | 40,390 | 18,608 | 21,782 | 1.30 | 1.24 | 1.37 |
| 70-74 | 39,566 | 18,063 | 21,503 | 1.28 | 1.19 | 1.35 |
| 75 + | 54,455 | 23,943 | 30,512 | 1.76 | 1.59 | 1.92 |
| < 5 | 374,872 | 185,896 | 188,976 | 12.10 | 12.35 | 11.87 |
| 5-14 | 796,216 | 402,557 | 393,669 | 25.77 | 26.75 | 24.85 |
| 15-44 | 1,429,039 | 674,419 | 754,670 | 46.14 | 44.82 | 47.39 |
| 45-64 | 300,622 | 131,250 | 179,372 | 11.64 | 12.05 | 11.20 |
| 65 + | 134,411 | 60,614 | 73,797 | 4.34 | 4.03 | 4.63 |

¹ U.N. Demographic Year Book, 1955, table 10, p. 241 (source: 1950 National Census)

Table I.4
Population, 1950 and (provisional), 1971, and rates of growth, for Departments and Arrondissement, total and by urban and rural status

| Geographic Area | 1950 ² | 1971 ³ | 1971/1950 | 2lr | r |
|------------------------------|-------------------|-------------------|-----------|-------|---------|
| Haiti | 3,097.220 | 4.314.594 | 1.3930 | 0.33 | 0.0157 |
| Urban | 379.500 | 879.674 | 2.3179 | 0.84 | 0.0400 |
| Rural | 2.717.724 | 3.434.920 | 1.2639 | 0.23 | 0.0109 |
| Nord-Ouest | 168.279 | 216.504 | 1.2865 | 0.25 | 0.0119 |
| Urban | 13.092 | 26.124 | 1.9679 | 0.65 | 0.0309 |
| Rural | 154.887 | 190.380 | 1.2315 | 0.21 | 0.0100 |
| 13 ¹ Fort-de-Paix | 115.783 | 136.423 | 1.1782 | 0.16 | 0.0076 |
| Urban | 10.858 | 21.733 | 2.0108 | 0.70 | 0.0333 |
| Rural | 104.925 | 114.690 | 1.0924 | 0.09 | 0.0042 |
| 14 Mole St. Nicolas | 52.491 | 80.081 | 1.5256 | 0.42 | 0.0200 |
| Urban | 2.834 | 4.291 | 1.5225 | 0.42 | 0.0200 |
| Rural | 49.657 | 75.690 | 1.5257 | 0.42 | 0.0200 |
| Nord | 539.549 | 699.852 | 1.2983 | 0.26 | 0.0123 |
| Urban | 74.503 | 117.802 | 1.5726 | 0.45 | 0.0214 |
| Rural | 464.941 | 582.050 | 1.2540 | 0.23 | 0.0109 |
| 3 Cap-Haitien | 118.185 | 190.811 | 1.6906 | 0.53 | 0.0252 |
| Urban | 29.399 | 54.691 | 1.8603 | 0.62 | 0.0295 |
| Rural | 88.786 | 145.120 | 1.6344 | 0.49 | 0.0233 |
| 4 Trou-du-Nord | 52.291 | 69.327 | 1.3260 | 0.28 | 0.0133 |
| Urban | 11.819 | 14.387 | 1.2070 | 0.19 | 0.0030 |
| Rural | 40.372 | 54.940 | 1.3609 | 0.31 | 0.0147 |
| 5 Grande Riviere | 108.453 | 100.431 | 0.9434 | -0.06 | -0.0028 |
| Urban | 9.317 | 16.101 | 1.7281 | 0.55 | 0.0261 |
| Rural | 97.136 | 84.330 | 0.8681 | -0.14 | -0.0066 |
| 16 Vallieres | 43.822 | 47.877 | 1.1051 | 0.10 | 0.0047 |
| Urban | 1.806 | 3.537 | 1.8753 | 0.63 | 0.0300 |
| Rural | 41.436 | 44.340 | 1.0700 | 0.07 | 0.0033 |

| | | 1950 | 1971 | 1971/1950 | 2lr | r |
|----|--------------|---------|---------|-----------|-------|---------|
| 15 | Fort Liberte | 64.357 | 68.879 | 1.0702 | 0.07 | 0.0023 |
| | Urban | 12.167 | 12.869 | 1.0576 | 0.06 | 0.0028 |
| | Rural | 52.190 | 56.010 | 1.0731 | 0.07 | 0.0033 |
| 6 | Plaisance | 57.233 | 96.764 | 1.6907 | 0.53 | 0.0252 |
| | Urban | 2.972 | 4.014 | 1.3506 | 0.30 | 0.0143 |
| | Rural | 54.259 | 92.750 | 1.7093 | 0.53 | 0.0252 |
| 8 | Limbe' | 39.593 | 36.532 | 0.9226 | -0.03 | -0.0033 |
| | Urban | 3.910 | 6.562 | 1.6829 | 0.51 | 0.0242 |
| | Rural | 35.683 | 30.030 | 0.8415 | -0.17 | -0.0080 |
| 7 | Borgne | 57.625 | 60.231 | 1.3922 | 0.33 | 0.0157 |
| | Urban | 3.338 | 5.701 | 1.7079 | 0.54 | 0.0257 |
| | Rural | 54.287 | 74.530 | 1.3728 | 0.32 | 0.0152 |
| | Artibonite | 567.221 | 753.760 | 1.3323 | 0.29 | 0.0138 |
| | Urban | 49.896 | 90.550 | 1.8518 | 0.52 | 0.0295 |
| | Rural | 518.323 | 663.210 | 1.2833 | 0.25 | 0.0119 |
| 9 | Gonaives | 169.716 | 186.736 | 1.1288 | 0.24 | 0.0114 |
| | Urban | 17.862 | 36.736 | 2.0568 | 0.72 | 0.0343 |
| | Rural | 147.854 | 150.000 | 1.0145 | 0.01 | 0.0004 |
| 10 | St. Marc | 96.625 | 147.554 | 1.5270 | 0.42 | 0.0200 |
| | Urban | 11.375 | 20.564 | 1.8025 | 0.59 | 0.0250 |
| | Rural | 85.250 | 127.050 | 1.4903 | 0.40 | 0.0190 |
| 2 | Marmelade | 75.491 | 113.345 | 1.5014 | 0.41 | 0.0195 |
| | Urban | 3.104 | 5.785 | 1.8572 | 0.62 | 0.0295 |
| | Rural | 72.387 | 107.560 | 1.4861 | 0.40 | 0.0190 |
| 7 | Hinche | 100.296 | 133.541 | 1.3314 | 0.29 | 0.0138 |
| | Urban | 7.621 | 14.221 | 1.8660 | 0.62 | 0.0295 |
| | Rural | 92.675 | 119.320 | 1.2875 | 0.25 | 0.0119 |
| 11 | Dessalines | 120.093 | 174.584 | 1.4537 | 0.37 | 0.0176 |
| | Urban | 8.936 | 13.324 | 1.4910 | 0.40 | 0.0190 |
| | Rural | 111.157 | 161.260 | 1.4507 | 0.37 | 0.0176 |

| | | 1950 | 1971 | 1971/ 1950 | 21r | r |
|-------|-----------------------|-----------|-----------|---------------|-------|---------|
| Ouest | | 1.083.069 | 1.669.691 | 1.5416 | 0.43 | 0.0204 |
| | Urban | 185.490 | 555.151 | 2.9928 | 1.10 | 0.0173 |
| | Rural | 897.579 | 1.114.540 | 1.2417 | 0.22 | 0.0104 |
| 1 | Port-au-Prince | 413.777 | 877.275 | 2.1201 | 0.75 | 0.0357 |
| | Urban | 152.393 | 366.525 | 3.3226 | 1.20 | 0.0571 |
| | Rural | 261.379 | 370.750 | 1.4184 | 0.35 | 0.0156 |
| 2 | Leogane | 210.988 | 274.543 | 1.3012 | 0.26 | 0.0123 |
| | Urban | 10.845 | 16.715 | 1.5415 | 0.43 | 0.0204 |
| | Rural | 200.143 | 257.828 | 1.2882 | 0.25 | 0.0119 |
| 23 | Jacmel | 275.706 | 299.059 | 1.0847 | 0.03 | 0.0038 |
| | Urban | 12.425 | 16.449 | 1.3175 | 0.23 | 0.0133 |
| | Rural | 263.221 | 282.610 | 1.0736 | 0.07 | 0.0033 |
| 24 | Belle Anse (Saltrou) | 56.912 | 52.240 | 0.9179 | -0.09 | -0.0042 |
| | Urban | 2.187 | 3.046 | 1.3960 | 0.33 | 0.0157 |
| | Rural | 54.725 | 49.200 | 0.8990 | -0.11 | -0.0052 |
| 18 | Mirbalais | 114.131 | 126.480 | 1.1082 | 0.10 | 0.0047 |
| | Urban | 4.174 | 7.080 | 1.6962 | 0.53 | 0.0252 |
| | Rural | 109.957 | 119.400 | 1.0855 | 0.08 | 0.0038 |
| 19 | Limonohas | 41.555 | 46.089 | 0.9647 | -0.04 | -0.0019 |
| | Urban | 3.491 | 5.333 | 1.5263 | 0.45 | 0.0214 |
| | Rural | 38.154 | 34.750 | 0.9107 | -0.09 | -0.0042 |
| Sud | | 739.602 | 972.787 | 1.3152 | 0.27 | 0.0128 |
| | Urban | 50.436 | 96.047 | 1.7832 | 0.56 | 0.0276 |
| | Rural | 689.106 | 882.740 | 1.2809 | 0.25 | 0.0119 |
| 20 | Cayes | 195.183 | 272.652 | 1.3969 | 0.33 | 0.0157 |
| | Urban | 15.817 | 27.222 | 1.7210 | 0.54 | 0.0257 |
| | Rural | 179.366 | 245.430 | 1.3693 | 0.31 | 0.0147 |
| 21 | Aquin | 123.913 | 160.625 | 1.2962 | 0.26 | 0.0123 |
| | Urban | 5.727 | 5.205 | 0.9193 | -0.08 | -0.0038 |
| | Rural | 118.186 | 155.420 | 1.3145 | 0.27 | 0.0128 |
| 22 | Coteaux | 56.240 | 86.387 | 1.5360 | 0.43 | 0.0204 |
| | Urban | 7.694 | 9.687 | 1.2590 | 0.23 | 0.0109 |
| | Rural | 48.546 | 76.700 | 1.5799 | 0.46 | 0.0219 |
| 25 | Grande Anse (Jeremie) | 175.365 | 240.857 | 1.3734 | 0.32 | 0.0152 |
| | Urban | 15.720 | 25.117 | 1.5977 | 0.47 | 0.0223 |
| | Rural | 159.645 | 215.740 | 1.3513 | 0.30 | 0.0142 |
| 26 | Tiluron | 47.053 | 61.939 | 1.3163 | 0.27 | 0.0128 |
| | Urban | 5.538 | 13.029 | 2.3526 | 0.86 | 0.0409 |
| | Rural | 41.515 | 48.910 | 1.1781 | 0.15 | 0.0076 |
| 27 | Mippes (Anse-a-Veau) | 141.848 | 156.327 | 1.0997 | 0.08 | 0.0028 |
| | Urban | 6.002 | 9.727 | 1.6206 | 0.48 | 0.0228 |
| | Rural | 135.846 | 140.600 | 1.0349 | 0.03 | 0.0014 |

¹ Arrondissement code (c.f. map, Figure 1).

² National Census, 8/1950

Growth Rates
1960-70

1970

| Central American and Caribbean | Total | Urban | Principal City | Rural | % Urban | Principal city as % of urban |
|-----------------------------------|-------|-------|-------------------|-------|---------|------------------------------------|
| Costa Rica | 0.042 | 0.046 | 0.054 | 0.040 | 36 | 68 |
| Dominican Republic | 0.036 | 0.057 | 0.059 | 0.024 | 37 | 41 |
| El Salvador | 0.036 | 0.040 | 0.046 | 0.033 | 39 | 27 |
| Guatemala | 0.031 | 0.049 | 0.050 | 0.020 | 37 | 41 |
| Guyana | 0.028 | 0.032 | 0.031 | 0.026 | 30 | 41 |
| Honduras | 0.034 | 0.052 | 0.059 | 0.027 | 26 | 40 |
| Jamaica | 0.022 | 0.043 | 0.050 | 0.010 | 36 | 77 |
| Mexico | 0.038 | 0.052 | 0.050 | 0.019 | 53 | 12 |
| Nicaragua | 0.035 | 0.046 | 0.059 | 0.026 | 44 | 40 |
| Panama | 0.031 | 0.044 | 0.049 | 0.019 | 47 | 64 |
| Trinidad and Tobago | 0.029 | 0.060 | - | 0.006 | 53 | - |
| Venezuela | 0.035 | 0.056 | 0.055 | 0.032 | 76 | 27 |
| Haiti | 0.020 | 0.038 | 0.052 | 0.016 | 18 | 47 |
| Caribbean | 0.024 | 0.035 | - | 0.019 | 33 | - |

¹ World Bank, Urbanization, Sector Working Paper, June 1972. pp. 78-79

| | | | | | | |
|--------------------------------------|-------|-------|-------|-------|----|----|
| Haiti (from census data) | 0.016 | 0.040 | 0.058 | 0.010 | 20 | 51 |
| Haiti (corrected for 5% undercount) | 0.018 | 0.042 | 0.060 | 0.014 | 20 | 51 |
| Haiti (corrected for 10% undercount) | 0.020 | 0.044 | 0.061 | 0.016 | 20 | 51 |

Table I.6 Alternative Estimates of Haitian Vital Rates

| Type of Estimate, Source, and Data | CRNI | CBR | CDR |
|--|-------|-------|-------|
| I. Two census counts: 1950; 1971 - unadjusted ¹ | .0158 | - | - |
| : 1950 (St. Surin adjustment) ² | .0114 | - | - |
| : 1950 (Vilgrain adjustment) ² | .0119 | - | - |
| : 1971 (Brenez adjustment) ³ | .0181 | - | - |
| : 1950 (St. Surin); 1971 (Brenez) | .0138 | - | - |
| : 1950 (Vilgrain); 1971 (Brenez) | .0143 | - | - |
| II. Census plus vital registration - not available | - | - | - |
| III. One census plus survey: 1950; SNEM (1972) ⁴ | .0277 | - | - |
| 1950 (St. Surin); SNEM (1972) | .0236 | - | - |
| 1950 (Vilgrain); SNEM (1972) | .0241 | - | - |
| IV. Special surveys: 1967-68, Mellon ⁴ | .0166 | .0346 | .0190 |
| 1969 Mellon | .0200 | .0350 | .0150 |
| 1970-71 Mellon | .0276 | .0366 | .0020 |
| V. Stable Population Models: 1950 ages, e_0 (Arriaga) ⁵ | .0200 | .0438 | .0233 |
| : 1968 ages, e_0 (OPS/OMS) ² | .0262 | .0413 | .0151 |
| : 1971 ages, e_0 (IHS) ⁶ | .0204 | .0364 | .0160 |
| VI. Official estimates : 1965-70 UN (1972) ⁷ | .0242 | .0439 | .0197 |
| 1970-75 IHS (1972) ⁸ | .0207 | .0361 | .0154 |
| 1971 US-AID (1972) ⁹ | .0192 | - | - |
| 1972 DSPP ¹⁰ | .0204 | .0373 | .0169 |
| VII. Non-official estimates : 1960-70 Davis (1969) ¹¹ | .0200 | - | - |
| : 1960-71 Newman (1972) | .0204 | .0364 | .0160 |
| : 1971-72 Newman (1972) | .0210 | .0364 | .0154 |
| : 1971-80 Newman (1972) | .0215 | .0364 | .0149 |

- 1 National Census. 1950, 1971 (provisional)
- 2 From DSPP and OPS/OMS. censo de Recursos y Servicios en Salud (1968)
- 3 Personal communication
- 4 Unpublished field data
- 5 Arriaga, E.E. New Life Tables for Latin America Populations in the Nineteenth and Twentieth Centuries. Berkeley, U. Calif. Press 1968
- 6 IHS Projections Quadriennales 1972-75, July 1971
- 7 U.N. Population and Vital Statistics Report. Data available as of 1 April 1972. Statistical Papers Series A. Vol. XXIV No. 2. P. 13
- 8 IHS. Dept. des Finances et des Affaires Economiques. Guide Economique de la Republique D'Haiti. Dec. 1971. P.55
- 9 U.S. AID Latin America. Economic Growth Trends. May 1972 p. 12.
- 10 Dept. de la Sante Publique et de la Population. Section de Statistique. Report de la Section de Statistique sur les Differentes Activites des Etablissements Feb. 1972
- 11 Davis, Kingsley. World Urbanization 1950-70. Vol I. Basic Data for Cities, Countries, and Regions. Berkeley: U. Calif. Press 1969

Table I.7

Comparison of observed and expected population growth, 1950-1972, in three SNEM (Service Nationale d'Éradication de la Malaria) areas.

| Arrondissement, Commune, and Rural Section of three SNEM Areas | POPULATION ¹ | | Growth rates 1950-1971 (72) | Alternative expected ³ growth rates | | | | Alternative expected population, 1972 | | | | Ratio: observed/expected | | | | | | |
|--|-------------------------|---------------------|-----------------------------------|---|------|----------------|------|--|--------|--------|--------|--------------------------|-----|-----|-----|--|--|--|
| | 1950 | 1971 (72) | | Alternative growth | | expected rates | | Alternative expected population, 1972 | | | | | | | | | | |
| | | | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | | | | | | | |
| Leogane (1 st Quest) | 210 088 | 274 548 | 1.25 | | | | | | | | | | | | | | | |
| Urban | 10 845 | 16 716 | 2.06 | | | | | | | | | | | | | | | |
| Petit Goave | 5 374 | 6 727 | 2.33 | | | | | | | | | | | | | | | |
| Rural | 209 149 | 257 110 | 1.21 | | | | | | | | | | | | | | | |
| Petit Goave | 79 419 | - | - | | | | | | | | | | | | | | | |
| SNEM areas | 13 545 | 22 254 | 2.27 | 1.12 | 1.03 | 0.81 | 1.21 | 17,304 | 16,965 | 16,163 | 17,650 | 1.3 | 1.3 | 1.4 | 1.3 | | | |
| 1st. Plaine | 7 126 | 13 702 | 2.99 | 1.12 | 1.03 | 0.81 | 1.21 | 9,113 | 8,936 | 8,516 | 9,290 | 1.5 | 1.5 | 1.6 | 1.5 | | | |
| 2nd. Plaine | 6 399 | 8 552 | 1.29 | 1.12 | 1.03 | 0.81 | 1.21 | 8,187 | 8,026 | 7,647 | 8,351 | 1.0 | 1.1 | 1.1 | 1.0 | | | |
| Miragoane (2 nd) | 141 089 | 150 327 | 0.10 | | | | | | | | | | | | | | | |
| Urban | 6 012 | 6 727 | 0.28 | | | | | | | | | | | | | | | |
| Miragoane | 2 491 | 3 570 | 1.71 | | | | | | | | | | | | | | | |
| Rural | 135 186 | 140 000 | 0.16 | | | | | | | | | | | | | | | |
| Miragoane | 31 228 | - | - | | | | | | | | | | | | | | | |
| SNEM area | 3 460 | 6 594 | 4.34 | 1.12 | 1.16 | 0.81 | 0.16 | 4,427 | 4,406 | 4,135 | 3,585 | 2.0 | 2.0 | 2.2 | 2.4 | | | |
| Chalon | 3 460 | 6 594 | 4.34 | 1.12 | 1.16 | 0.81 | 0.16 | 4,427 | 4,406 | 4,135 | 3,585 | 2.0 | 2.0 | 2.2 | 2.4 | | | |
| Leogane/Miragoane | 351 606 | 424 875 | 0.88 | | | | | | | | | | | | | | | |
| Urban | 16 847 | 26 443 | 2.15 | | | | | | | | | | | | | | | |
| Petit Goave/Miragoane | 7 871 | 12 347 | 2.14 | | | | | | | | | | | | | | | |
| Rural | 335 969 | 387 416 | 0.81 | | | | | | | | | | | | | | | |
| Petit Goave/Miragoane | 110 618 | - | - | | | | | | | | | | | | | | | |
| SNEM area | 16 985 | 31 255 ² | 2.77 | 1.12 | 1.16 | 0.81 | 0.81 | 21,731 | 21,635 | 20,298 | 20,298 | 1.4 | 1.4 | 1.5 | 1.5 | | | |

National censuses, 1950 and (provisional) 1971

1972 SNEM data

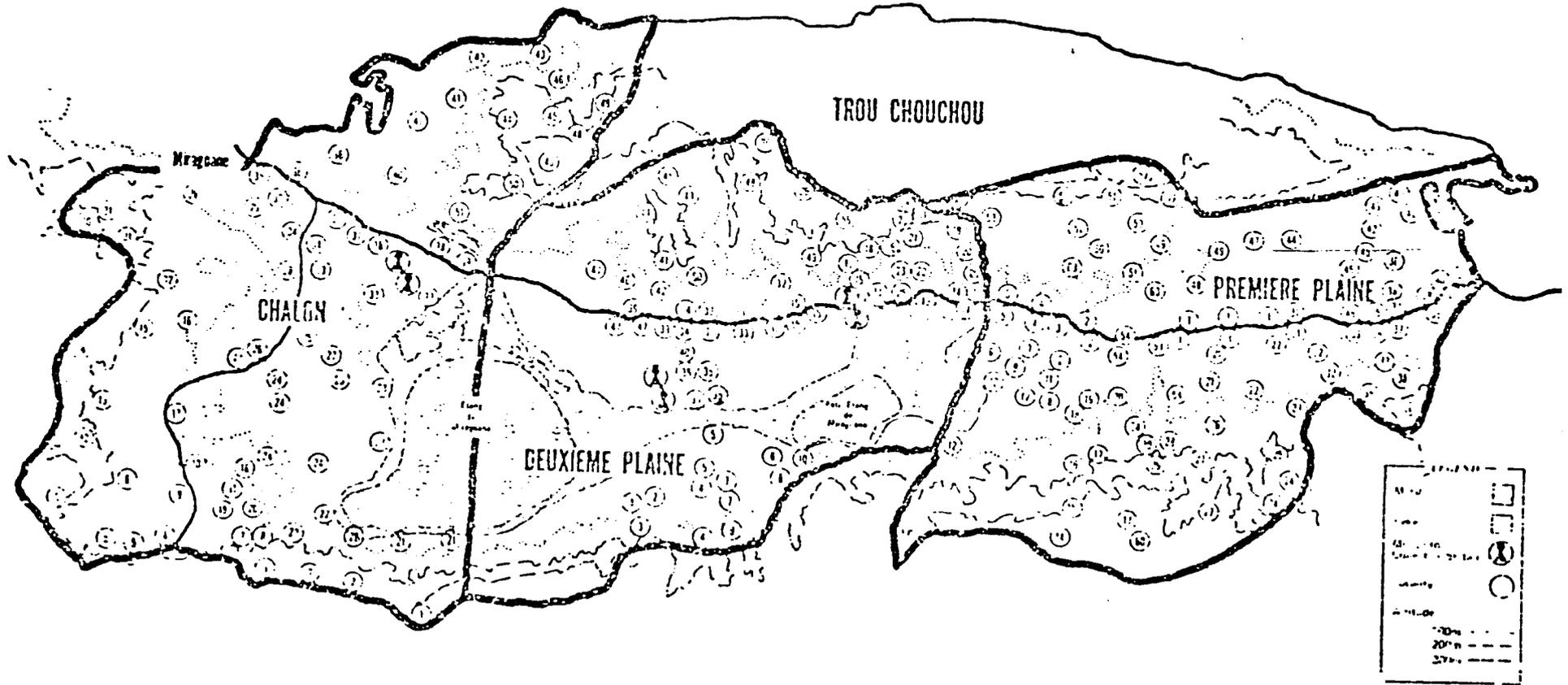
Alternative expected growth rates:

1. National rural intercensal growth rate
2. Département rural intercensal growth rate
3. Rural intercensal growth rate for the two Arrondissements combined
4. Rural intercensal growth rate for each Arrondissement.

Figure I.1 SNEM areas

HAITI ULV STUDY

Petit-Goave and Miragoane - 1972



| | 1950 | 1971 | | | | | | | | 1980 |
|---|------------------|-------------------|-------|-------|--------------------|-------|-------|-------|--------------------|-------------------|
| U.N. Stable Model | 9.3 ¹ | 13.6 ² | | | | | | | | 14.3 ³ |
| e_0 | 39.4 | 50.0 | | | | | | | | 51.72 |
| male | 38.7 | 48.53 | | | | | | | | 50.18 |
| female | 40.1 | 51.50 | | | | | | | | 53.25 |
| | .0200 | .0150 | .0180 | .0200 | .0204 ² | .0215 | .0233 | .0250 | .0262 ² | .0215 |
| Proportions in Age Groups: Age groups: | | | | | | | | | | |
| < 10 | .1968 | .2450 | .2621 | .2726 | .2760 | .2810 | .2910 | .3005 | .3061 | .2779 |
| 10-59 | .6862 | .6757 | .6672 | .6620 | .6642 | .6578 | .6528 | .6481 | .6442 | .6577 |
| ≥ 60 | .1170 | .0793 | .0707 | .0654 | .0598 | .0672 | .0562 | .0514 | .0497 | .0644 |
| CBR | .0438 | .0316 | .0341 | .0360 | .0364 | .0374 | .0391 | .0407 | .0413 | .0364 |
| CDR | .0238 | .0166 | .0160 | .0160 | .0160 | .0159 | .0158 | .0157 | .0151 | .0149 |

- 1 after Arriaga (1968). For 1950, based upon age distribution in the 1950 census and estimated growth rates.
- 2 Two estimated age-sex distributions for 1971 were available, based upon the 1950 census age-sex distribution projected forward, assuming an e_0 of 50 years, (U.N. Stable Model level 13.6), one consistent with a CRNI of .0204 (Departemente de la Sante Publique et de la Population OPS/CMS, Censo de Recursos y Servicios en Salud, Tomo I. Generalidades. Resultados. 1968); the other consistent with a CRNI of .0262 (Institut Nation de Statistiques Projections Quadriennales 1972-1975. Activites de Collaboration de l' OPS/CMS Avec la Republique d' Haiti, 1971)
- 3 Assuming an increase in CRNI from .0204 to .0215, an increase in e_0 to 51.72, no change in CBR from .0364.

$$({}^0e_0 = 40.0, r = 0.0200, \text{CBR} = 43.8, \text{CDR} = 23.8)$$

| | Number of Persons ($\times 10^3$) | | | Percentage ¹ | | |
|---------------------------------|-------------------------------------|--------------------|--------|-------------------------|--------------------|--------------------|
| | Total | Male | Female | Total | Male | Female |
| Total | 5,000 | 2,495 ² | 2,505 | 100.00 | 100.00 | 100.00 |
| <1 1-4 5-9 | 984 | 518 | 466 | 19.68 | 20.76 ³ | 18.62 ³ |
| 10-14 | 578 | 297 | 281 | 11.56 | 11.89 | 11.23 |
| 15-19 | 526 | 264 | 262 | 10.52 | 10.57 | 10.47 |
| 20-24 | 473 | 231 | 242 | 9.46 | 9.27 | 9.67 |
| 25-29 | 420 | 203 | 217 | 8.40 | 8.13 | 8.66 |
| 30-34 | 364 | 174 | 190 | 7.28 | 6.99 | 7.57 |
| 35-39 | 312 | 151 | 161 | 6.24 | 6.04 | 6.41 |
| 40-44 | 257 | 129 | 128 | 5.14 | 5.19 | 5.11 |
| 45-49 | 211 | 103 | 103 | 4.22 | 4.31 | 4.10 |
| 50-54 | 166 | 86 | 80 | 3.32 | 3.43 | 3.19 |
| 55-59 | 124 | 64 | 60 | 2.48 | 2.56 | 2.38 |
| 60-64 65-69 70-74 75 + | 585 | 270 | 315 | 11.70 | 10.87 ³ | 12.60 ³ |
| <10 | 984 | 518 | 466 | 19.68 | 20.76 | 18.62 |
| 10-14 | 578 | 297 | 281 | 11.56 | 11.89 | 11.23 |
| 15-44 | 2,352 | 1,152 | 1,200 | 47.04 | 46.19 | 47.89 |
| 45-59 | 501 | 250 | 243 | 10.02 | 10.30 | 9.67 |
| 60 + | 585 | 270 | 315 | 11.70 | 10.87 | 12.60 |
| 0e_0 | 39.4 | 38.7 | 40.1 | | | |
| CBR | 43.8 | 43.2 | 44.4 | | | |
| CDR | 23.8 | 24.3 | 23.3 | | | |

¹ after Arriaga, E.E. New Life Tables for Latin American Populations in the Nineteenth and Twentieth Centuries. Berkeley, U. California Press, 1968

² Institut National de Statistiques Projections Quadriennales 1972-1975. July, 1971. p. 39

³ Computed from U.N. Model Life Tables for appropriate 0e_0 .

($e_0 = 50.0$, $r = 0.0204$, CBR = 364, CDR = 16.0)

| | Number of persons (x 10 ³) | | | Percentage | | |
|------------------------|---|--------------------|--------|------------|--------|--------|
| | Total | Male | Female | Total | Male | Female |
| Total | 5.000 | 2.495 ¹ | 2.505 | 100.00 | 100.00 | 100.00 |
| < 1 | 172 | 83 | 89 | 3.42 | 3.34 | 3.57 |
| 1-4 | 570 | 292 | 278 | 11.40 | 11.60 | 11.19 |
| 5-9 | 639 | 322 | 317 | 12.78 | 12.79 | 12.67 |
| 10-14 | 567 | 286 | 281 | 11.34 | 11.36 | 11.23 |
| 15-19 | 493 | 254 | 244 | 9.96 | 10.07 | 9.75 |
| 20-24 | 441 | 223 | 218 | 8.82 | 8.87 | 8.72 |
| 25-29 | 387 | 196 | 191 | 7.74 | 7.76 | 7.63 |
| 30-34 | 338 | 171 | 167 | 6.76 | 6.78 | 6.63 |
| 35-39 | 293 | 147 | 146 | 5.86 | 5.87 | 5.81 |
| 40-44 | 252 | 126 | 126 | 5.04 | 5.04 | 5.02 |
| 45-49 | 215 | 107 | 108 | 4.30 | 4.23 | 4.32 |
| 50-54 | 181 | 89 | 92 | 3.62 | 3.57 | 3.67 |
| 55-59 | 149 | 72 | 77 | 2.98 | 2.87 | 3.05 |
| 60-64 | 117 | 56 | 61 | 2.34 | 2.23 | 2.44 |
| 65-69 70-74 75 + | 182 | 72 | 110 | 3.64 | 3.57 | 4.38 |
| < 5 | 742 | 375 | 367 | 14.82 | 14.94 | 14.67 |
| 5-14 | 1206 | 608 | 598 | 24.12 | 24.15 | 23.85 |
| 15-44 | 2208 | 1116 | 1092 | 44.18 | 44.39 | 43.61 |
| 45-64 | 662 | 324 | 338 | 13.24 | 12.95 | 13.49 |
| 65 + | 182 | 72 | 110 | 3.64 | 3.57 | 4.38 |
| e_0 | 50.00 | 48.53 | 51.50 | | | |
| CBR | 36.4 | 37.1 | 35.7 | | | |
| CDR | 16.0 | 16.7 | 15.3 | | | |

¹ Institut Hatien de Statistiques. Projections Quadriennales 1972-75 July, 1971, p. 39

Table I.11 Age structure U. N. Stable Model 14.3

$$({}^0e_0 = 52, r = 0.0215, \text{CBR} = 364, \text{CDR} = 14.9)$$

| | Number of Persons (X 10 ³) | | | Percentage | | |
|--------------|--|---------------------------|--------------|---------------|---------------|---------------|
| | Total | Male | Female | Total | Male | Female |
| Total | 5,000 | 2,495 ¹ | 2,505 | 100.00 | 100.00 | 100.00 |
| < 1 | 166 | 84 | 82 | 3.33 | 3.37 | 3.29 |
| 1-4 | 582 | 293 | 289 | 11.65 | 11.75 | 11.54 |
| 5-9 | 641 | 322 | 319 | 12.83 | 12.95 | 12.72 |
| 10-14 | 567 | 286 | 281 | 11.33 | 11.44 | 11.22 |
| 15-19 | 501 | 253 | 248 | 10.01 | 10.11 | 9.92 |
| 20-24 | 439 | 221 | 218 | 8.78 | 8.78 | 8.70 |
| 25-29 | 384 | 193 | 191 | 7.67 | 7.74 | 7.61 |
| 30-34 | 333 | 167 | 166 | 6.67 | 6.72 | 6.63 |
| 35-39 | 289 | 145 | 144 | 5.77 | 5.80 | 5.75 |
| 40-44 | 248 | 124 | 124 | 4.97 | 4.97 | 4.97 |
| 45-49 | 212 | 105 | 107 | 4.24 | 4.21 | 4.26 |
| 50-54 | 180 | 88 | 92 | 3.59 | 3.51 | 3.66 |
| 55-59 | 146 | 71 | 75 | 2.92 | 2.83 | 3.00 |
| 60-64 | 115 | 55 | 60 | 2.30 | 2.20 | 2.40 |
| 65-69 | 85 | 39 | 46 | 1.70 | 1.58 | 1.82 |
| 70-74 | 58 | 26 | 32 | 1.16 | 1.04 | 1.27 |
| 75 + | 54 | 23 | 31 | 1.08 | .91 | 1.24 |
| < 5 | 748 | 377 | 371 | 14.98 | 15.12 | 14.83 |
| 5-14 | 1,203 | 608 | 600 | 24.16 | 24.38 | 23.94 |
| 15-44 | 2,194 | 1,103 | 1,091 | 43.87 | 44.21 | 43.58 |
| 45-64 | 653 | 319 | 334 | 13.05 | 12.75 | 13.32 |
| 65 + | 197 | 88 | 109 | 3.94 | 3.53 | 4.33 |
| 0e_0 | 51.72 | 50.18 | 53.25 | | | |
| CBR | 36.4 | 37.2 | 35.9 | | | |
| CDR | 14.9 | 15.5 | 14.1 | | | |

¹ Institut National de Statistiques. Projections Quadriennales 1972-75. July, 1971. p.39

APPENDIX II.

ESTIMATES OF THE 1971 POPULATION OF
" HEALTH DISTRICTS"

TABLE II. 1. POPULATION AND GROWTH RATES

MAP. SKETCH OF HEALTH DISTRICT BOUNDARIES

Table II.1 Population and Growth Rates, 1950-71, of Health Districts

An estimate of the 1971 population of each Health District was sought. Since a list of the Arrondissements included within each Health District boundary was not available, an attempt was made to determine this by superimposing a sketch map of the Districts upon another showing political subdivisions. In most cases, the District boundaries appeared to be roughly coincident; where an Arrondissement fell into more than one District, proportional population estimates were made. This crude method resulted in the assignments shown in the table below.

Unfortunately a comparison of the 1950 population so calculated with that appearing in a report issued by the Department of Public Health and Population¹ (1972), shows unacceptably wide discrepancies. Because the resolution of the problem may be obvious to those who are familiar with the Health System, the table is included for whatever use it may be.

Estimation of Population and Rates of Growth (1950-71) of "Health Districts"¹

| Geographic Area | Total | | Urban | | | City ⁵ | |
|------------------|-------------------|-------------------|-------------------|-------|-------------------|-------------------|-------|
| | 1950 ² | 1950 ³ | 1971 ⁴ | r | 1950 ³ | 1971 ⁴ | r |
| Nord-Ouest | 168279 | 168279 | 216504 | .0119 | 13692 | 26124 | .0309 |
| Port-de-Paix | | 168279 | 216504 | .0119 | | | .0309 |
| Mole St. Nicolas | | 52491 | 80081 | .0200 | | 13892 | .0367 |
| Port-de-Paix | | 115788 | 136423 | .0076 | | | .033 |
| Nord | 539049 | 539049 | 699852 | .0223 | 74908 | 117802 | .0214 |
| Cap Hatien | | 539049 | 699852 | .0223 | | | .0214 |
| Borgne | | 57652 | 80231 | .0157 | | | .0257 |
| Limbe | | 39593 | 36532 | .0038 | | | .0242 |
| Plaisance | | 57233 | 96764 | .0252 | | | .0143 |
| Cap Hatien | | 118185 | 199911 | .0252 | | | .0295 |
| Grande Riviere | | 106453 | 100431 | .0028 | | | .0261 |
| Trou du Nord | | 52281 | 69327 | .0133 | | | .0090 |
| Port Liberte | | 64357 | 68879 | .0033 | | | .0028 |
| Vallieres | | 43322 | 47877 | .0047 | | | .0300 |
| Artibonite | 1110182 | 567221 | 755760 | .0138 | 48898 | 90550 | .0275 |
| Gonaives | 241207 | 241207 | 300031 | .0105 | | | .0338 |
| Gonaives | | 165716 | 186736 | .0114 | | | .0028 |
| Marmelade | | 75491 | 113345 | .0195 | | | .0295 |
| Hinche | 100296 | 100296 | 133541 | .0138 | | | .0295 |
| Hinche | | 100296 | 133541 | .0138 | | | .0295 |
| St. Marc | 760389 | 216718 | 322138 | .0190 | | | .0243 |
| Dessalines | | 170033 | 174584 | .0176 | | | .0190 |
| St. Marc | | 96625 | 147554 | .0200 | | | .0280 |
| Ouest | 1178626 | 1083069 | 1669671 | .0204 | 185490 | 555151 | .0523 |
| Belladere | 126214 | 155086 | 166569 | .0033 | | | .0233 |
| Mirehalais | | 114131 | 126480 | .0047 | | | .0252 |
| Las Cahobas | | 41555 | 40089 | .0019 | | | .0214 |
| Port-au-Prince | 408578 | 519271 | 1014549 | .0319 | | | .0562 |
| Port-au-Prince | | 413777 | 877275 | .0357 | | | .0571 |
| Leogane (50%) | | 105494 | 137274 | .0123 | | | .0204 |
| Jacmel | 273721 | 305047 | 321393 | .0024 | | | .0133 |
| Belle Anse | | 56912 | 52240 | .0042 | | | .0157 |
| Jacmel (90%) | | 248135 | 269153 | .0030 | | | .0133 |
| Petit Goave | 370113 | 274913 | 317507 | .0067 | | | .0210 |
| Leogane (50%) | | 105494 | 137274 | .0123 | | | .0204 |
| Jacmel (10%) | | 27571 | 29906 | .0038 | | | .0133 |
| Anse-a-Veau | | 141848 | 150327 | .0228 | | | .0228 |
| Sud | 616374 | 739602 | 972787 | .0128 | 50496 | 90047 | .0276 |
| Cayes | 386956 | 375336 | 364334 | .0167 | | | .0176 |
| Aquin | | 123913 | 5265 | .0038 | | | .0128 |
| Cayes | | 195183 | 272652 | .0157 | | | .0257 |
| Coteaux | | 56240 | 86387 | .0204 | | | .0109 |
| Jeremie | 229418 | 222418 | 302796 | .0148 | | | .0281 |
| Jeremie | | 175365 | 240857 | .0152 | | | .0223 |
| Tiburon | | 47053 | 61939 | .0128 | | | .0409 |

¹ of introductory note above

² Departement de la Sante Publique et de la Population. Section de Statistique. Rapport de la Section de Statistique sur les Differentes Activites des Etablissements de Sante du Service de la Sante Publique durant les Exercices. 1966/1969 et 1969/1970. Feb. 1972. p.11

³ National Census, 1950

⁴ National Census, 1971 (provisional)

⁵ Cities \geq 10,000 in 1971 (provisional) census

Population pour charges
 M = MÉDECIN
 L = LIT D'HÔPITAL ou lit de dispensaire
 D = DISPENSAIRE (pour pay. en dehors de la Grande ville)

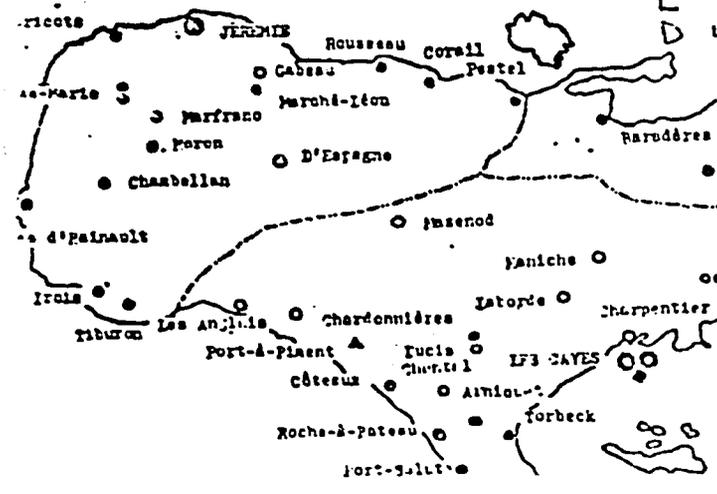
DEPARTEMENT DE LA SANTE

- | | | | |
|---|---------------------|--------|--------|
| ⊙ | HÔPITAL | BUDGET | M.A.P. |
| ○ | HÔPITAL | BUDGET | TRIVE |
| ▲ | DISPENSAIRE HÔPITAL | BUDGET | M.A.P. |
| △ | DISPENSAIRE HÔPITAL | BUDGET | MISTE |
| △ | DISPENSAIRE HÔPITAL | BUDGET | PRIVE |
| ◇ | CENTRE DE SANTE | BUDGET | M.A.P. |
| ◇ | CENTRE DE SANTE | BUDGET | MISTE |
| ◇ | CENTRE DE SANTE | BUDGET | PRIVE |
| ○ | DISPENSAIRE | BUDGET | M.A.P. |
| ○ | DISPENSAIRE | BUDGET | MISTE |
| ○ | DISPENSAIRE | BUDGET | TRIVE |



Haiti
 I 3.800
 M 14.500
 L 1.410
 D 16.900

400
 000
 200
 000



APPENDIX III.

SMALL AREA DATA FROM THE CENSUS, 1950 and 1971

TABLE III.1

TWO EXAMPLES OF CENSUS DATA AVAILABLE FOR
SMALL AREAS WITHIN THE METROPOLITAN REGION,
1950 and 1971,

Fermate in Commune Petionville

Croix des Bouquets town

MAP.

Commune Petionville. Rural Section
Montagne Noir. Habitation Fermate.

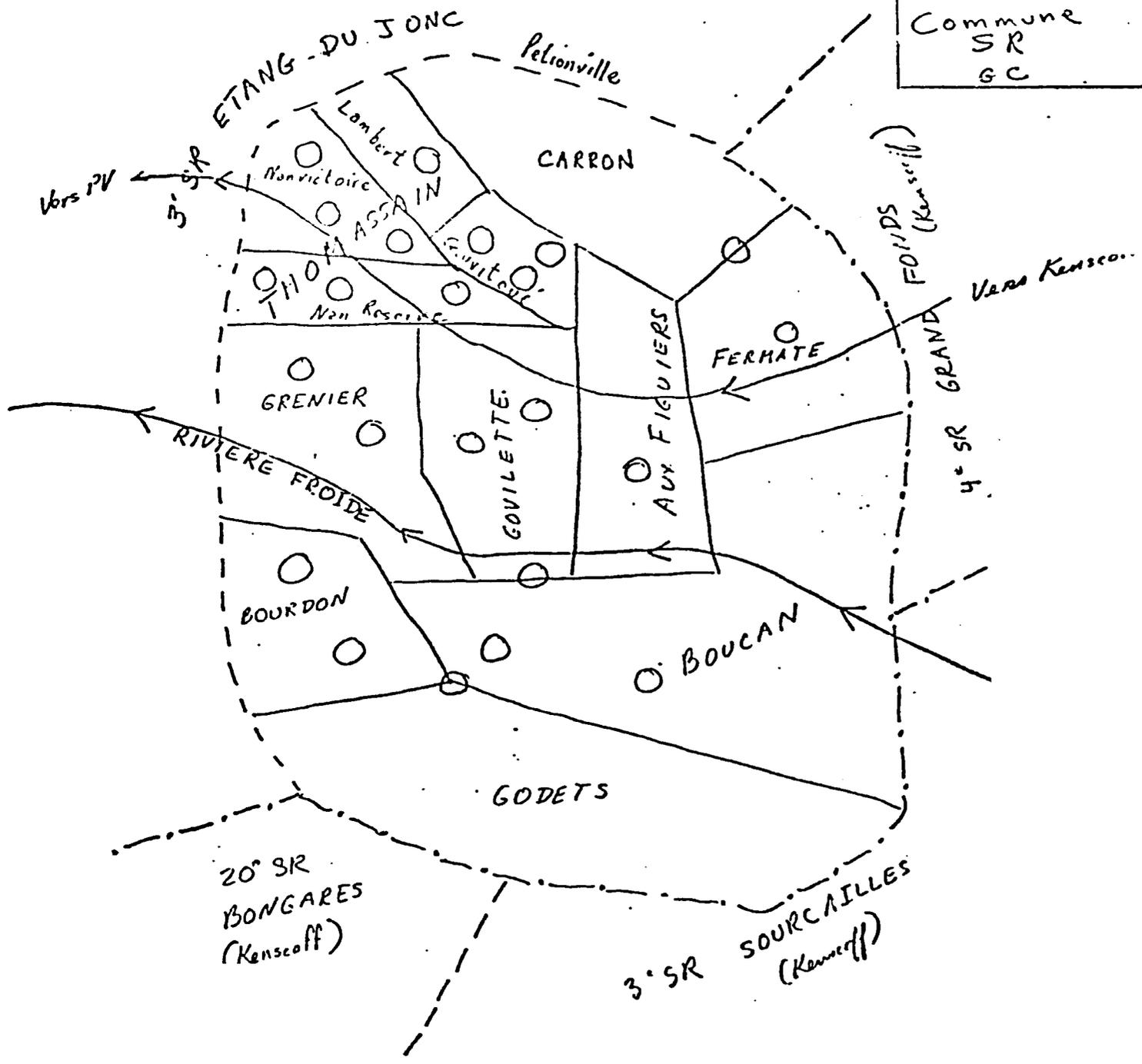
| Geographic area | Population | | |
|---|-------------------|-------------------|-------------|
| | 1950 ¹ | 1971 ² | growth rate |
| Department: <u>L'Ouest</u> | 1.083.069 | 1.669.691 | 0.0206 |
| Urban | .185.490 | .555.151 | 0.0571 |
| Rural | .897.579 | 1.114.540 | 0.0103 |
| Arrondissement: <u>Port-au-Prince</u> | .413.777 | .877.275 | 0.0357 |
| Urban | .152.398 | .506.525 | 0.0571 |
| Rural | .261.379 | .370.750 | 0.0166 |
| Commune: <u>Pétionville</u> | 30.504 | | |
| Urban | 9.417 | 35.257 | 0.0629 |
| <u>Ville de Pétionville</u> | 9.417 | 35.257 | 0.0629 |
| Rural sections | 21.087 | | |
| 1st. Section <u>Montagne-Noire</u> | 1.575 | | |
| Habitacion: <u>Fermate</u> | | | |
| 3rd. Section <u>Etang-du-Jonc</u> | 4.740 | | |
| 4th. Section <u>Bellevue-la-Montagne</u> | 5.004 | | |
| 6th. Section <u>Aux Cadets</u> | 2.083 | | |
| 7th. Section <u>Bellevue-Charbonniere</u> | 7.685 | | |
| Commune: <u>Croix de Bouquets</u> | 56.597 | | |
| Urban | 1.454 | 3.958 | 0.0480 |
| <u>Ville de la Croix de Bouquets</u> | 1.454 | 3.958 | 0.0480 |
| Rural sections | 55.143 | | |
| 1st. Section <u>des Varreux</u> | 7.942 | | |
| 2nd. Section <u>des Varreux</u> | 4.673 | | |
| 1st. Section <u>Petit-Bois</u> | 7.461 | | |
| 2nd. Section <u>Petit-Bois</u> | 4.513 | | |
| 3rd. Section <u>Petit-Bois</u> | 7.400 | | |
| 1st. Section <u>Belle-Fontaine</u> | 6.619 | | |
| 2nd. Section <u>Belle-Fontaine</u> | 5.175 | | |
| 3rd. Section <u>Belle-Fontaine</u> | 4.815 | | |
| 2nd. Section <u>Crochu</u> | 2.861 | | |
| 10th. Section <u>Orangers</u> | 3.684 | | |

¹ National Census, 1950

² National Census, 1971 (provisional)

Arrondissement
Commune
SR
GC

Petionville
1^{ère} MONTAGNE NOIRE
9/1/53



APPENDIX IV.

POPULATION ANALYSIS AND DATA PROCESSING.
A PROPOSAL TO STRENGTHEN ANALYTICAL
CAPABILITES IN THE DEPARTMENT OF PUBLIC
HEALTH AND POPULATION

APPENDIX IV. POPULATION ANALYSIS AND DATA PROCESSING. A PROPOSAL TO STRENGTHEN ANALYTICAL CAPABILITES IN THE DEPARTMENT OF PUBLIC HEALTH AND POPULATION

The reactivation of a Population Analytical Unit, within the Department, of Public Health and Population, with the advice of the Haitian Institute of Statistics, should strengthen the ability of the Department to utilize population data both from on going programs, and from the proposed programs of data collection reviewed in this report. As presented by Dr. Vilgrain, the Division of Population would consist of 4 demographers (with one as director), 5-6 calculatrices, 2 dactylos, and 2 secretaries. A core staff of 5-6 positions has already been budgeted for; the proposal calls for additional funding at a level of 500,000 gourdes/year to be sought from USAID and other donor agencies, to supplement this staff for special studies.

However, increased analytical capability in the Division of Population would soon run into the problem of limited computing facilities. Data processing equipment of the IHS is inadequate, while the Department of Public Health - Population has none. Therefore, for full utilization of the Population Analytical Unit, this proposal might be supplemented by another to develop, a modest but adequate facility, under the joint administration of both agencies. The desired equipment is listed below.

| Type of equipment | On hand | Proposed | |
|-------------------|---------|----------|---------|
| | | Minimal | Optimal |
| Keypunch | 1 | 3 | 3 |
| Verifier | 1 | 1 | 2 |
| Sorter | 1 | 1 | 1 |
| Tabulator | 0 | 1 | 1 |
| Duplicator | 0 | 0 | 0 1 |
| Collator | 0 | 0 | 1 1 |
| Middle level | | | |
| Computer (1401?) | 0 | * | 1 0 |

* have tried to obtain, unsuccessfully