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INCOME DISTRIBUTION, EMPLOYMENT AND SOCIAL WELL-BEING IN GUATEMALA: A SURVEY

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Guatemala's economy has grown consistently at rates above 4.5 percent per year in recent times. During 1967-76 real Gross Domestic Product (GDP) grew at an average annual rate of 5.5 percent. Since 1971, the economy has grown at an average annual rate of 4.6 percent. These growth rates and overall population growth of 3.1 percent per year have allowed for improvements in the average standard of living of about 1.5-2.0 percent per year. The GDP per capita in 1976 amounted to an estimated $674 (current prices).

Exports have been a dynamic element in growth of the Guatemalan economy. During the late 1960s and throughout the 1970s exports increased by more than 6.5 percent each year, with the exception of 1974. In 1976 exports accounted for almost 22 percent of GDP. Coffee is Guatemala's major export commodity. High world prices for coffee in the mid-1970s and increases in Guatemala's export quota under the International Coffee Agreement of 1976 stimulated coffee production. Also, the country has expanded exports of cotton and sugar.

Investment parallels export activity and is financed largely from domestic savings. It accounts for about 17 percent of GDP. Guatemala imports about half of its total capital goods, since the country's capital-goods industries are relatively underdeveloped. A substantial portion of recent fixed capital formation has been in manufacturing, which has benefitted from the broadening of markets associated with the expansion of the Central American Common Market (CACM).

Guatemala's economy is largely based on private enterprise. The Government's role in economic activity is small but increasing. In the early 1970s the Government of Guatemala's budget amounted to about

11 percent of GDP, and by 1977 the percentage amounted to almost 15 percent. Taxes are below 9 percent of GDP. Public enterprises include electric power, railroads, national airlines, postal and telegraph services, and several developmental credit institutions, controlled by the GOG.

In February, 1976, Guatemala experienced a massive earthquake which affected 9000 km^2 in the highlands, killing some 30,000 persons and leaving about 20 percent of the nation's population homeless. Material damages were estimated at between US$750 million and US$1.2 billion, equivalent to more than one-fifth of total GDP in 1975. Although the earthquake destroyed a major part of the country's social infrastructure, it left the productive economic infrastructure relatively unharmed. Since 1976 the economy has been influenced by: (1) the inflow of donor funds for earthquake reconstruction; (2) unprecedented high prices for coffee, sugar and cotton; (3) an increasingly favorable commercial balance with respect to the CACM; (4) inflows of private capital for investments in nickel mining and petroleum exploration; and (5) inflows of donor capital for hydroelectric and other infrastructure investments. The quake had a major impact on imports, which increased nearly US$280 million in 1976, with substantial increases in imports of construction materials and consumer goods.

In recent years, some changes have occurred in the relative emphasis on developmental objectives in Guatemala. There has been increasing interest in income distribution and employment objectives, besides the traditional objective of rapid growth in gross national product. This interest stems from widespread disappointment with the slowness with which the benefits of economic growth have "trickled" down to the poorest social

classes. Economic growth in Guatemala generally has taken on a "dualistic" character, in which a relatively few narrow subsectors of the economy, using modern production methods, enjoy rising incomes, while the majority of the population in traditional sectors experience little, if any, improvement in living standards. This dualistic pattern of growth coupled with rapid increases in population has meant that a large and growing number of Guatemalans are still living in poverty.

Rural development is receiving increased attention in Guatemala. Rural development involves assisting rural people to improve their levels of output and living on a self-sustaining basis through greater participation in economic and social activities. The rural development concept emphasizes improving the quality of life in rural places through such things as low-cost delivery systems to improve health and nutrition levels, broadened educational opportunities, increased employment, and the introduction of new yield-increasing technologies to small farmers.

This paper summarizes and evaluates the available quantitative and qualitative information on income distribution in Guatemala with special reference to rural development. Data both at the national level and for rural-urban regions are utilized. Information on asset distribution and non-market goods and services are incorporated in the analysis where possible. Suggestions for additional research are made at the end of the report.

DEMOGRAPHIC CHARACTERISTICS

Guatemala's total population increased from an estimated 3,005,700 persons in 1950 to about 5,678,500 persons in 1973, representing an average annual compound rate of growth of about 2.75 percent. At this rate of growth, total population could more than double during the 1973-2000 period. Total population is projected to exceed 11,500,000 persons by the end of the century. Rapid population growth in Guatemala contributes to a number of social problems and is a major factor causing living standards to be low.[1/]

The rural population of Guatemala increased from an estimated 2,505,600 persons in 1950 to 4,248,200 persons in 1973. By the year 2000 the total rural population is projected to be 7,678,800 persons. In 1973, about 75 percent of the population was rural. If rural Guatemalans continue to shift gradually from rural areas to the cities, then by the year 2000 about 66 percent of the population will be rural. The rural population is defined to include all persons residing outside the 20 cities and towns of the country with more than 10,000 inhabitants each in 1973.[2/]

1/ For additional details and population projection see W.C. Merrill, The Long-run Prospects for Increasing Income Levels in Guatemala's Highlands, report to the Consejo Nacional de Planificación Económica, 1974.

2/ This definition of rural is different from the census definition which classifies all persons living in "cabeceras municipales" as urban, even though many of them are very small and have charactristics similar to rural conditions of living.

Table 1: Guatemala; Urban and Rural Populations and Projections, 1950-2000

	Census			Projections		
Year	1950	1964	1973	1980	1990	2000
Urban	500.1	901.8	1,430.3	1,872.6	2,799.0	3,903.6
Rural	2,505.6	3,543.1	4,248.2	5,067.2	6,308.9	7,678.8
Total	3,005.7	4,444.9	5,678.5	6,939.8	9,107.9	11,583.3

Guatemalans are classified into two ethnic groups: Indian and Ladino. In 1964 Indians constituted 43.3 percent of the total population and Ladinos accounted for the rest. The term "ladino" does not reflect biological or social difference but refers to cultural differences. Indians are those descendants of the pre-colonial civilizations inhabiting Central America who have not adopted the characteristic features of modern Western culture. Ladinos, then, are non-Indians.

The Indians are primarily farmers living in the western and central highlands. Most Indians are poor, living at near-subsistence levels. The Indian who cannot raise enough food for his family may hire out as a laborer, perhaps to a coffee or cotton plantation on the south coast. Some Indians are engaged in the production of handicrafts.

Culturally, the Indians tend to remain isolated in their small communities, maintaing old traditions and customs and continuing to use traditional production practices. Long-range social and economic development planning for Guatemala must necessarily include special programs designed to reach these people.

Ladinos tend to be more urban and more highly educated than the Indians and are probably more susceptible to change. Large numbers of them are engaged in agriculture on the coastal plains and on the eastern highland slopes.

The principal health problems in Guatemala include: high mortality rates, especially in the 1- to 5-year age group; high incidence of infectious diseases; and serious malnutrition among the poor. These problems are associated with high rates of fertility and overall population growth. Generally, health problems are more serious among rural Guatemalans than among the urban populations.

Guatemala's estimated annual birth and death rates for 1900 to 1973 are presented in Table 2. Since 1920, the birth rate has remained high and the death rate has declined steadily, thus increasing the growth rate of the population. During 1964-1973 total population increased at an average annual rate of 2.74 percent which compares to 2.79 percent for 1950-1964.

Prior to 1960 the crude birth rate was above 45 per 1000 inhabitants. Since 1960 a very modest decline in fertility has occurred. This decline in fertility is attributable to lower fertility among women under 30 years of age. Overall, Guatemalan women average nearly six births apiece. The urban total fertility rate is estimated at 5.32 and the rural rate at 6.60.

Guatemala's crude death rate declined slowly from 35.4 deaths per one thousand inhabitants in 1900 to 20.0 death per one-thousand inhabitants during the late 1950s. Currently the death rate is below 15.0. The reported infant mortality rate for Guatemala is about 80 deaths per one-thousand live births, but the actual figure could amount to around 100 since there is under-registration of deaths. The infant mortality rate declined from about 90 to 80 deaths per thousand live births during the 1960s. In

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1/ This section draws on Schiek, F.W.; Hill, G.A; Parker, N.J.; and Long, E.C. Health Sector Assessment: Guatemala, USAID/Guatemala report, 1977, 343 p.

Table 2 :

GUATEMALAN CRUDE BIRTH AND DEATH RATES (PER 1000) FOR THE PERIOD 1900 TO 1969

YEAR	CRUDE BIRTH RATE	CRUDE DEATH RATE	RATE OF NATURAL INCREASE (%)
1900-04	45.8	35.4	1.04
1905-09	43.6	34.0	.96
1910-14	46.6	33.0	1.36
1915-19	43.2	40.8	0.24
1920-24	48.3	33.7	1.46
1925-29	49.2	32.6	1.66
1930-34	46.2	31.7	1.45
1935-39	44.2	30.7	1.35
1940-44	45.2	28.5	1.67
1945-49	49.1	26.5	2.26
1950-54	50.9	23.4	2.75
1955-59	49.0	20.0	2.90
1960-64	47.6	18.0	2.96
1965-69	44.0	16.4	2.76
1970	41.6	14.9	2.67
1971	43.8	14.4	2.94
1972	44.2	13.3	3.09
1973	43.4	15.4	2.80

Sources: 1900-1959: O. Andrew Collver, Birth Rates in Latin America: New Estimates of Historical Trends and Fluctuations, University of California, Berkeley, 1965.

1960-1973: Population Index 41:3 (July 1975) 546, 551.

dren 1-4 years of age experienced a mortality rate of 28 in 1975, reflecting the synergistic relation between malnutrition and infection.

The country's mortality rates for the general population and for infants are compared with those of fourteen other countries in Table 3. Guatemala's infant mortality rate is high, not only in relation to the United States and Western Europe, but also in comparison with many other countries in Latin America.

Nutritional deficiencies are serious in Guatemala. In 1924 more than 900,000 children (81 percent of Guatemala's children) experienced nutritional deficiencies. Serious deficiencies (Gomez second and third grades) accounted for nearly a third of the cases. This results in retarded growth of children, low birthweights, susceptibility to infectious diseases, and high mortality.

The data show a tendency toward deteriorating nutritional status for the country during 1965-1975. Available data do not serve to identify regions or population groups which are most affected, although it appears that dispersed rural populations are the most adversely affected.

The caloric deficit of the poorest half of the population is 40 percent of the minimum daily requirement. Poor sanitary conditions contribute to a very high rate of diarrheal diseases in children under five years of age. These diseases affect the utilization of nutrients and thus cause malnutrition. Nutritional anemia due to iron deficiency is a major helath problem and affects the productivity of laborers.

Table 3 : **VITAL STATISTICS IN FIFTEEN SELECTED COUNTRIES**

Country	Year	Birth Rate 1/	Death Rate 1&3/	Infant Deaths 2&3/	Life Expectancy (Men/Women)	
Britain	1971	16.0	11.6	17.5	1968-70	72
Costa Rica	1965-70	45.1	7.6	67.1	1962-64	63
Dominican Republic	1965-70	48.5	14.7	50.1 4/	1959-61	58
Ecuador	1965-70	44.9	11.4	76.6 4/	1961-63	52
El Salvador	1971	42.1	7.9	52.7	1960-61	56
France	1971	17.2	10.8	14.4	1970	72
Germany, West	1971	12.8	11.7	23.2	1966-68	71
Guatemala	1970	41.6	14.9	88.4	1963-65	50 7/
Honduras	1965-70	49.0	17.1	36.5 5/	1965-70	49
Jamaica	1971	34.8	7.4	26.4	1959-61	65
Mexico	1970	43.4	9.9	68.5	1965-70	62
Nicaragua	1965-70	46.0	16.5	45.3 5/	1965-70	50
Paraguay	1965-70	44.6	10.8	35.6 4/	1965-70	59
Peru	1965-70	41.8	11.1	72.5 6/	1960-65	54
United States	1971	17.3	9.3	19.2	1971	71

1/ Per 1,000 Population.
2/ Per 1,000 Live births.
3/ Refers to same year as listed in column on left, except when specified.
4/ For 1970.
5/ For 1969.
6/ For 1967.
7/ In 1973, the life expectancy for total population was 52 years. For Ladinos it was 54 years and for the Indian population it was 50 years. Source: Fox & Hughet, Inter American Development Bank, 1976.

SOURCE: United Nations, Statistical Yearbook 1972.

INCOME DISTRIBUTION

Data on the distribution of personal income in Guatemala are extremely sketchy. Moreover, most of the available data are more than ten years old. The distribution of income in Guatemala in the late 1960s can be estimated from the income/expenditure data reported in two budget studies carried out by the Instituto de InvestigacionesEconómicas y Sociales of the University of San Carlos in Guatemala. During 1966-67 a rural household expenditure survey of 1759 agricultural workers was conducted (26). This survey included families with incomes between Q100 to Q3000 per year. In 1969 an urban budget study was conducted in Guatemala's five largest cities: Guatemala City, Quezaltenango, Puerto Barrios, Jutiapa, and Escuintla. This study included urban families with incomes between Q100 to Q10,000 per year. (27)

In 1969 the urban population of Guatemala's five largest cities experienced an estimated average annual per capita income of approximatly Q1520. The average per capita income for the sample of rural workers amounted to Q/81 annually. Table 4 contains summary statistics about the distribution of rural and urban incomes in the late 1960s.[1/] Approximately 20 percent of the rural households had annual incomes below Q/250, equivalent to an average per capita income of Q/45 annually (family size averaged 5.5 persons in both the urban and rural samples). Half of total rural income went to the 29 percent of the households with the highest incomes. Less than 2 percent of the urban households had incomes below Q/500 and only 16 percent had incomes of less than Q/1000. Half of total urban income went to the 20 percent of urban households with the highest incomes. Overall, urban incomes were distributed more unequally

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1/ These figures include imputed (nonmonetary) income as well as monetary income, in current prices.

TABLE 4: INCOME DISTRIBUTION IN RURAL AND URBAN AREAS: 1966 - 1969
(San Carlos sample data)

INCOME LEVEL	RURAL CUMULATIVE PERCENTAGE		URBAN CUMULATIVE PERCENTAGE	
LESS THAN	FAMILIES	INCOME	FAMILIES	INCOME
Q/ 250	19.73	8.79	--	--
500	71.24	50.16	1.35	0.19
750	88.80	73.78	--	--
1,000	95.34	86.36	15.78	4.17
1,500	99.15	96.26	34.48	12.35
2,000	99.77	98.64	50.35	22.07
3,000	100.00	100.00	69.00	38.01
4,000	--	--	81.26	52.85
6,000	--	--	91.13	69.55
10,000	--	--	97.00	85.30
ABOVE 10,000	--	--	100.00	100.00

Source:

1) (Rural) Orellana, R.A., Encuesta Sobre Ingresos y Gastos de la Familia del Campesino Asalariado de Guatemala, Institute de Investigaciones Económicas y Sociales, Universidad de San Carlos, Guatemala, 1966.

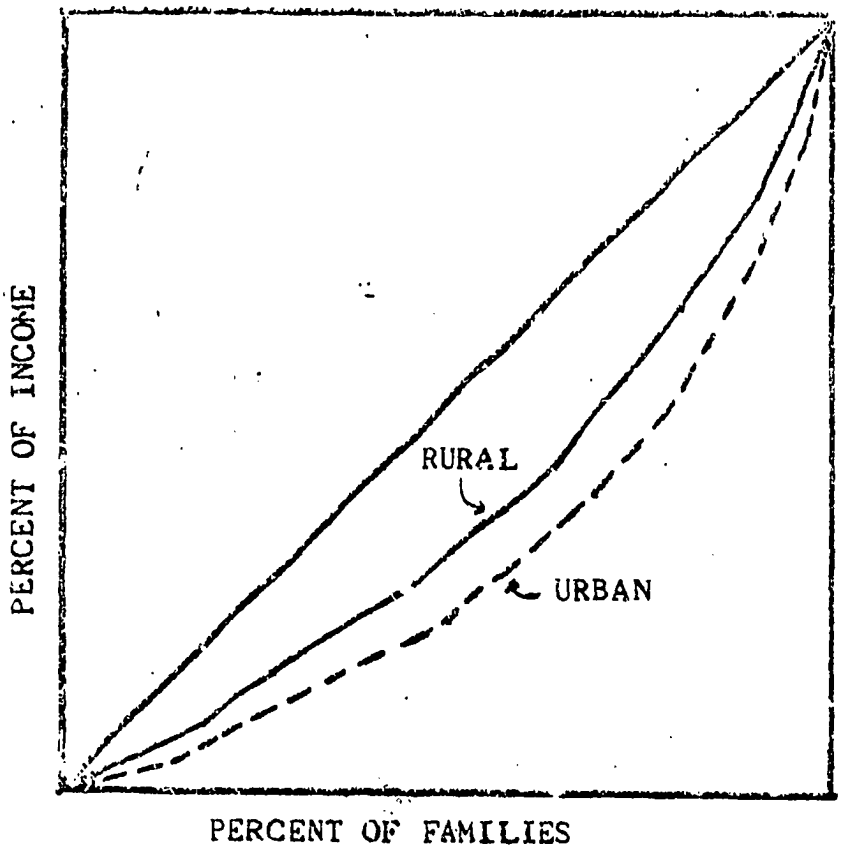
2) (Urban) Orellana, R.A. and De León, Adolpho L., Ingresos y Gastos de Familias Urbanes de Guatemala, Institute de Investigaciones Económicas y Sociales, Universidad de San Carlos, Guatemala, 1966.

than rural incomes. The distribution of rural and urban incomes are shown graphically by the Lorenz curves in Figure 1.

In addition to the survey budgets, GAFICA (Grupo Asesor de la F.A.O. Para la Integración Económica Centroamericana) developed data on the distribution of income which were derived from data collected by the Social Security Institute (IGSS) of Guatemala. Their data only included people who were participating in the Social Security System, mainly professionals and wage earners working for the public sector or large companies. Most self-employed persons, including small farmers, are not included in the social security system. Both very poor people and very rich people probably were excluded from this study. Consequently the degree of income inequality is most certainly underestimated since the poor that are excluded would earn a smaller percentage of income than their percentage of the population, and the rich who are excluded would earn a larger share of total income than their share of the total population. Table 5 contains income distribution figures based on the IGSS data. According to these figures 50 percent of the population received less than 13 percent of total income while the richest 5 percent of the population received more than 35 percent of the total income. These results are similar to the combined survey results, which show that the poorest 50.3 percent of the population received 12.9 percent of total income while the richest 5.0 percent received 27.2 percent of total income.

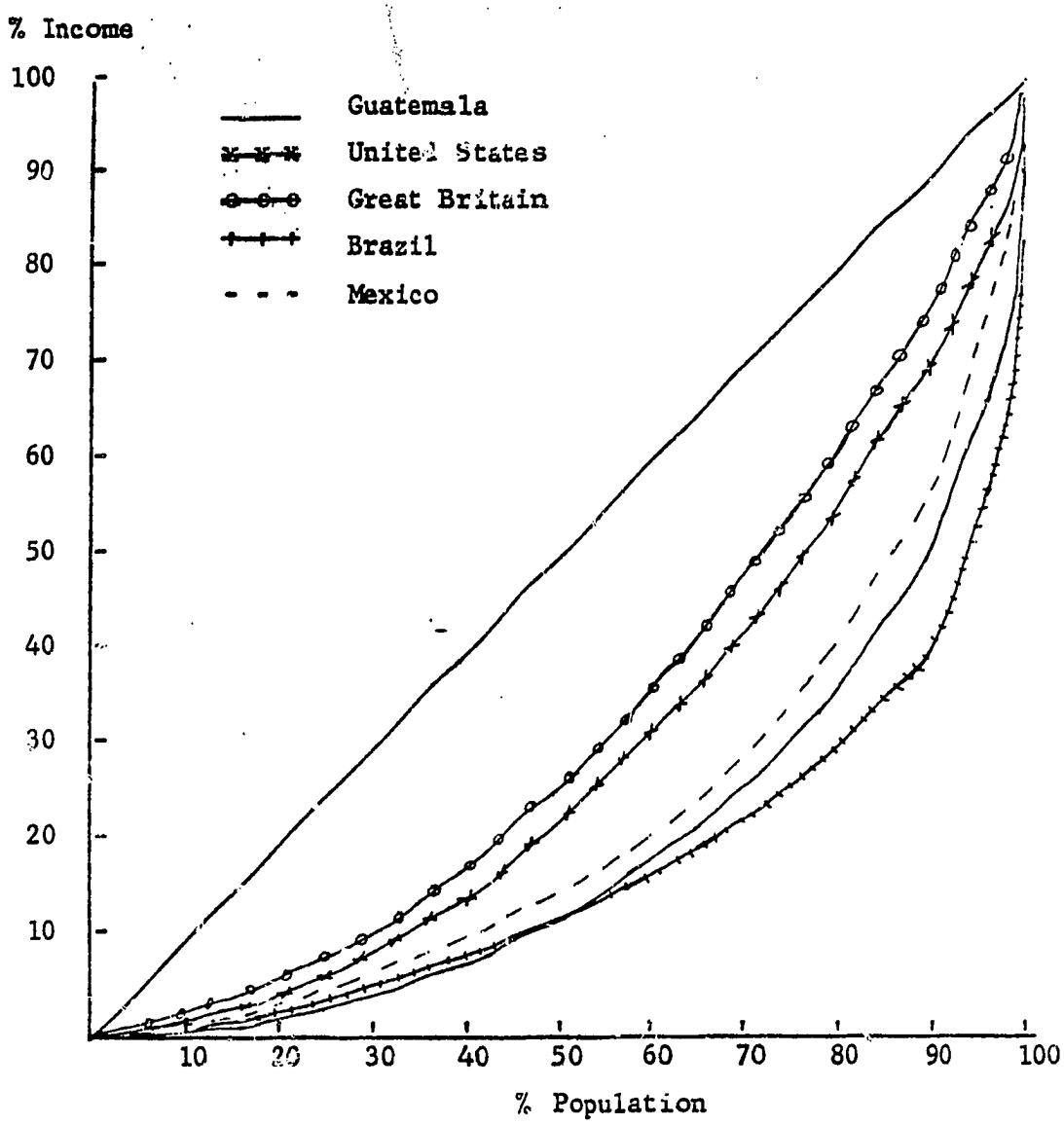
The degree of income inequality in Guatemala is considerably greater than in other countries. Figure 2 contains Lorenz curves for Guatemala, Great Britain, the United Stated, Brazil and Mexico. The poorest 50 percent of families in the United States and Great Britain receive 23.0 per-

FIGURE 1: INCOME DISTRIBUTION IN RURAL AND URBAN AREAS: 1966-1969



Source: Merrill (24).

Figure 2. Lorenz Curves for Guatemala,[a] United States and Great Britain



[a] Using GAFICA data.

Source: Guatemala: GAFICA.

United States: University of Michigan, Survey Research Center, Survey of Consumer Finances.

Great Britain: Cline.

TABLE 5: Distribution of Income in Guatemala, 1968.

	GAFICA Data		
Decile of Population	% Income in Decile	Cumulative % of Population	Cumulative % of Income
1	0.5	10	0.5
2	1.5	20	2.0
3	2.5	30	4.5
4	3.0	40	7.5
5	5.2	50	12.7
6	5.3	60	18.0
7	8.0	70	26.0
8	10.5	80	36.5
9	16.0	90	52.5
10	47.5	100	100.0
Top 5%	35.2		

Source: Applegate (2).

cent and 26.0 percent of total income, respectively, while the top 5.0 percent receive about 18 percent and 13.0 percent, respectively.

The Gini Coefficient can be used as an alternative measure to describe the inequality of income distribution. It is computed as the ratio of the area between the Lorenz curve and the 45° line of perfect income equality, on the one hand, and the total area under the 45° line, on the other. The value of the Gini Coefficient must lie between 0.0 - 1.0; a value of 0.0 corresponds to perfect equality and a value of 1.0 corresponds to perfect inequality. Table 6 contains Gini Coefficient estimates for Guatemala and other countries.

It is of considerable interest to compare theavailable statistics about family incomes with estimates of the cost of living.[1/] In the early 1970s, the cost of living was estimated to have been about Q/125 per capita, annually, in rural areas and Q500 in the ten largest cities. The cost of living in smaller urban centers would have been between Q/125 and Q/500. More than 70 percent of the rural households had annual per capita incomes below Q/100, and over 50 percent of the urban households sampled had annual per capita incomes of less than Q/400. These families can be considered to have been living at or near subsistence levels.

A recent study suggests that agricultural wages increased between 88 percent and 150 percent during 1972 to 1976.[2/] These figures compare to an estimated increase in the cost of living of 76 percent. Overall, per capita income in the Western Highlands and the Verapazes amounted to Q125 to Q138 and for the Oriente, Q160 to Q225. Employment in earthquake reconstruction projects has benefitted numerous wage-labor families. According to this same study the median monthly salaries for all workers covered by social security was Q78.0 for urban areas and Q45.0 for agriculture

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1/ Defined as the cost of a minimum market basket including food, housing, fuel, clothing, household articles, health care, education, travel, and other expenditures. See Best (4a) and Mejía (23a).

2/ Economic Assessment of the CACM Region as of August 1977, Clark Joel, ROCAP, August 29, 1977, p. 33. Data on relative wage increases by geographical region are not available.

Table 6: Gini coefficients of income concentration by country

	G
Guatemala	0.58
Brazil	0.57
Mexico	0.53
United Kingdom	0.40
United States	0.40
Norway	0.36

Source: Applegate (2).

in March 1976. For workers not covered by social security, comparable figures were Q38/in urban areas and Q30/in agriculture. It is believed that many male agricultural workers receive Q1.50 or less, daily, while women and children frequently earn less than 50¢ to Q1.00 for a day's labor in agriculture.

In summary, incomes in Guatemala are distributed highly unevenly. Urban incomes tend to be greater than rural incomes. The highland population, which is predominantly Indian, experiences the lowest incomes and poverty. Most of the data on income distribution are old, but they nevertheless appear to reflect the current situation. Indeed, there is evidence to suggest that the distribution of income in Guatemala has become even more unequal since the late 1960s. The following sections will analyze factors affecting the income distribution patterns in more detail.

LAND DISTRIBUTION

In 1964 there were 417,344 farms in Guatemala comprising 3,448,737 hectares, equivalent to one-third of the national territory.[1/] The average farm size was 8.3 hectares, a decline from 10.7 hectares in 1950. Rural population growth and subdividing of farms associated with inheritance contributed to the reduction in the average size of farm.

Farms can be grouped according to four size classes: 0-0.69 hectares, 0.7-6.9 hectares, 7.0-45.2 hectares, and 45.3 hectares or more. Microfarmers, the smallest size group, are too small to support a farm family regardless of what crops are produced on them. They mainly supplement other sources of income such as work on large farms or rural industry. Microfarms accounted for about 20.4 percent of the farms in 1964 but had only 1.0 percent of the land in farms. Most of the microfarms (57,653 farms) are located in the highlands (Table 7).

Small farms (0.7-6.9 hectares) accounted for two-thirds of the farms in 1964 and had 17.2 percent of the total cultivated land in farms. Most of the small farmers do not have sufficient land of good quality to support a family at a "reasonable standard of living." Nevertheless, most of the small farm households depend almost exclusively on their farms for a subsistence. Other work is not always available. The microfarms and small farms-- which constitute the Guatemalan minifundio-- provide little income above family consumption that could be saved for investment.

1/ In the 1964 census of agriculture, a farm could consist of one or more parcels located within the same municipio provided they were managed by the same individual. In the coastal lowland plantations, workers are customarily compensated in part for their labor with small plots of land for cultivation. These plots were considered as separate farms and their area was double-counted in the census.

Table 7: Number of Farms and Area Cultivated by Farm Size and Region, 1964

Farm Size	Highlands		Lowlands		East		Total	
	Number	%	Number	%	Number	%	Number	%
			Number of Farms					
Microfundios	57.7	21.8[a]	19.4	27.4[c]	8.0	9.7	85.1	20.4
Minifundios	177.6	67.3	40.4	57.1	61.8	74.9	279.8	67.0
Family	25.4	9.7	8.4	11.8	9.8	11.9	43.7	10.5
Multifamily	3.3	1.3	2.6	3.7	2.9	3.5	8.8	2.1
Total	264.0	63.3[b]	70.8	17.0	82.5	19.8	417.3	100.0
			Area Cultivated (Hectares)					
Microfundios	22.2	1.4[a]	7.3	0.6	3.2	0.5	32.7	1.0
Minifundios	404.7	25.1	77.3	6.8	126.6	18.0	608.7	17.2
Family	355.4	22.1	139.3	12.3	155.4	22.2	650.1	18.8
Multifamily	828.4	51.4	912.3	80.3	416.3	59.3	2,157.0	62.5
Total	1,610.7	46.7[b]	1,136.4	33.0[b]	701.6	20.4[b]	3,448.7	100.0

Source: Guatemala, Ministerio de Economía, Dirección General de Estadística, II Censo Agropecuario de 1964.

[a] Total for each farm size as a percent of regional total.

[b] Regional total as a percent of national total.

[c] In the northern departments of Petén and Izabal only 4.2% of the farms were microfundio size, 81.3% minifundio, and 14.5% family size or greater reflecting the lighter pressure on land in that region.

Family farms (7.0-45.2 hectares) have enough land to support a farm family at a comfortable level of living. Some of these farms have adopted modern production methods and inputs. Family farms accounted for 10.5 percent of the farms in 1964 and had 18.8 percent of the cultivated land. Multifamily farms, the largest size category, accounted for only 2.1 percent of the farms in 1964 but had more than 62 percent of the cultivated land. These farms can support more than one family. Most of the coffee, cotton and sugarcane crops are produced on large plantations.

Guatemala's highly unequal distribution of land contributes to income inequality since a majority of the total labor force depends on farming for a living. The distribution of land not only affects the distribution of income directly through the returns to farming but also indirectly through influencing social and cultural factors which have long-run impacts on the distribution of income. Access to public and private services --including education, extension activities, transport, and credit-- increases with the size of farms. The large landowners exercise substantial control over political and social events. The majority of those with low incomes, little education, limited resources and access to few services are politically powerless, or at least inactive.

This imbalance works to the disadvantage of the poor. Consequently many rural Guatemalans are caught in a vicious circle where the distribution of income determines access to land which in turn influences the distribution of political power and important means of advancement such as education.

Although a National Agrarian Transformation Institute (INTA) was created in the early 1950s to coordinate land colonization and distribution, very little progress has been made in improving the equality of

land distribution in Guatemala. INTA has the authority to levy taxes on idle land and to purchase private land, but this power has not been used extensively. INTA currently controls about 400,000 hectares, but much of this land is not farmed because of inadequate infrastructure and management. INTA is involved in land development in the "Faja Transversal." This area, a wide, sparsely populated strip from coast to coast between the highlands and the Petén, will provide valuable needed arable land once the necessary roads and other basic infrastructure are in place.

However, one study estimates that less than one-fourth of the land in the highlands is well-suited for intensive agricultural production and mechanization (24). Practically all of the good highland land types presently are farmed intensively. In nine departments 42 percent of the total land area was in farms in 1964. It is estimated that around 47 percent of the total land area is potentially arable land in the sense that this is the maximum amount of the total land area that could be in production in any given year over a long period of time. In 1964 there were about 200,000 hectares of "potentially" arable land that was not in farms. This is equivalent to 5 percent of the total land area of these departments.

Overall, there is little high quality land available for colonization in Guatemala. It is estimated that approximately 15 percent of total land is suitable for intensive farming and an additional 27 percent is suitable for extensive use such as pasture. The country is utilizing its farm land with moderate intensity. Approximately 82 percent of the land

corresponding figure for pastures is about 50 percent.[1/]

1/ See Desarrollo Agropecuario y Rural de Guatemala (Tripartite Study-Volume I) by Banco Interamericano de Desarrollo (BID); Banco Internacional de Reconstrucción y Fomento (BIRF); Agencia para el Desarrollo Internacional (AID), 1976.

REGIONAL CONSIDERATIONS

Guatemala is divided for administrative purposes into twenty-two departments, each headed by a governor appointed by the President. The map in Figure 3 illustrates the departmental boundaries. The departments in turn are divided into "municipios" which are ruled by popularly elected municipal authorities. The municipio is the basic building block in the national administrative structure of Guatemala. Municipios typically include a scattering of rural villages and hamlets surrounding a "cabecera" (county seat). The cabeceras serve as market, religious, and service centers for the municipios. In total there are 326 municipios in Guatemala.

Departamental boundaries roughly follow geographical features. Two northern departments -- Petén and Izabal -- and four southern departments Retalhuleu, Suchitepéquez, Escuintla, and Santa Rosa-- contain practically all of the coastal lowlands. Commercial plantation agriculture, oriented toward the exportation of sugar, bananas, cotton and beef has developed on the south coast. Generally the lowland areas experience a hot humid climate, considerable incidence of tropical diseases and difficult road conditions. Two manufacturing poles are located on the south coast-- one focusing on Escuintla and the other on the region around Retalhuleu and Mazatenango. Centered in the city of Escuintla are meat processing, cheese production, four sugar mills, a large ice cream plant, several sawmills, a paper plant, two cottonseed oil plants, a petroleum refinery and a metal working factory. Other industries are strung out along the Pacific Highway between Escuintla and Suchitepéquez. Agriculture provides a high percentage of the raw materials needed for these industries. Similarly,

DEPARTMENTS

(22 Departments)

Name of department followed by population in thousands, to nearest thousand, then location on map.

Alta Verapaz, 189. ..... D- 4
Baja Verapaz, 66. ..... E- 4
Chimaltenango, 122. ..... F- 3
Chiquimula, 112. ..... F- 5
El Petén, 16. ..... A- 3
El Progreso, 43. ..... E- 5
El Quiché, 175. ..... D- 3
Escuintla, 124. ..... G- 3
Guatemala, 441. ..... F- 4
Huehuetenango, 193. ..... D- 2
Izabal, 55. ..... D- 6
Jalapa, 75. ..... F- 5
Jutiapa, 133. ..... G- 5
Quezaltenango, 184. ..... F- 2
Retalhuleu, 55. ..... F- 1
Sacatepéquez, 60. ..... F- 3
San Marcos, 250. ..... E- 2
Santa Rosa, 110. ..... F- 4
Sololá, 63. ..... F- 2
Suchitepéquez, 125. ..... F- 2
Totonicapán, 93. ..... E- 2
Zacapa, 70. ..... E- 5

Total GUATEMALA 2,788.

CITIES

Name of city followed by population in thousands, to nearest thousand, then location on map.

Amatitlán, 7. ..... F- 4
Antigua, 11. ..... F- 3
Asunc. de Mita, 4. ..... F- 5
Atitlán, 7. ..... F- 2
Ayutla, 2. ..... F- 1
Carmelita, ... A- 4
Chajul, 3. ..... E- 3
Chimaltenango, 6. ..... F- 3
Chiquimula, 9. ..... F- 5
Chiquimulilla, 3. ..... G- 4
Cobán, 6. ..... E- 4
Comalapa, 8. ..... F- 3
Cuilapa, 3. ..... G- 4
El Progreso, 2. ..... F- 4
Escuintla, 10. ..... G- 3
Esquipulas, 3. ..... F- 6
Flores, ... B- 6
Gualán, 3. ..... E- 6
Guatemala, 285. ..... F- 4
Guazacapán, 4. ..... G- 4
Huehuetenango, 6. ..... E- 2
Ixtapa, 4. ..... G- 3
Jacaltenango, 3. ..... D- 2
Jalapa, 9. ..... F- 5
Jutiapa, 5. ..... G- 5
La Gomera, ... G- 2
La Libertad, 1. ..... B- 4
Livingston, 3. ..... D- 7
Mazatenango, 11. ..... F- 2
Momostenango, 5. ..... E- 2
Nebaj, 3. ..... E- 3
Palín, 4. ..... F- 3
Patzicía, 5. ..... F- 3
Patzún, 5. ..... F- 3
Puerto Barrios, 15. ..... D- 7
Quezaltenango, 28. ..... F- 2
Rabinal, 3. ..... E- 4
Retalhuleu, 9. ..... F- 2
Salamá, 3. ..... F- 4
San Cristóbal, 4. ..... E- 2
San Cristóbal Verapáz, 3. ..... E- 4
San José, 3. ..... G- 3
San Juan Cotzal, 3. ..... E- 3
San Juan Ostuncalco, 3. F- 2
San Luis, 3. ..... C- 5
San Luis Jilotepeque, 4. F- 5
San Marcos, 5. ..... E- 2
San Pedro, 3. ..... F- 2
San Pedro Ayampuc, 3. F- 4
San Pedro Sacatepéquez, 5 ..... E- 2
San Sebastián, 3. ..... F- 2
Santa Cruz Quiché, 4. ..... E- 3
Sta. Lucía Cotz, 4. ..... F- 3
Santo Toribio, ... C- 5
Senahú, 1. ..... E- 5
Sololá, 3. ..... F- 3
Samayac, 3. ..... F- 4
Sumpango, 5. ..... F- 3
Tecpán, 3. ..... F- 3
Tiquisate, 5. ..... G- 2
Totonicapán, 6. ..... F- 2
Uaxactún, ... A- 5
Villa Nueva, 3. ..... F- 3
Zacapa, 8. ..... E- 5

Figure 3: Map of Guatemala

throughout the Retalhuleu-Mazatenango area widely scattered sugar mills, citronella producers and cotton gins are evident along the Pacific Highway as on feeder roads to it.

A second major region in Guatemala is the western highlands comprised of the departments of Sacatepéquez, Chimaltenango, Solola, Totonicapán, Quezaltenango, San Marcos, Huehuetenango, El Quiché, Baja Verapaz, and Alta Verapaz. Quezaltenango, Guatemala's second largest city, is located in the southerwestern highlands. This city has a diversified industrial structure. Foods, beverages, textiles and clothing are the most important industries. Some of the raw materials for Quezaltenango's industrial plants come from domestic agriculture; others are imported from the U.S. and CACM. The trade area for finished products is regional, national and international, the national market absorbing the greatest percentage of all finished goods but closely followed by CACM exports. This region has a temperature climate favorable to the production of grains, deciduous fruits, and vegetables. Agriculture is characterized by small, fragmented plots cultivated with traditional methods, largely by Indians. Although urban communities such as Quezaltenango have developed, many of the small-farm rural areas have remained backward.

A third major region, the eastern highlands, includes the departments of Guatemala, El Progreso, Zacapa, Chiquimula, Jalapa and Jutiapa. The department of Guatemala fits into either the western highlands or the eastern highlands since it lies between them. Guatemala City, in the department of Guatemala, is the focal point for the country's industrial activity. It has the largest and most sophisticated market, the best transportation connections, most efficient communication linkages, greatest power availability, largest labor pool, best developed cultural and physical

amenities as well as other attractions that make it appealing to industry. The lower elevation and mild climate of the eastern highlands allow for a wide variety of crops to be grown, including tobacco, chili, sugarcane, rice, canning tomatoes, and other vegetables where irrigation is available. Many zones are arid and suitable only for livestock grazing, however. The average farm size is slightly larger in the eastern region than in the western highlands. Also, more modern production practices such as the plow are evidenced, and the agricultural cycle is accompanied less by religious rites and ceremonies than in the western highlands.

Urbanization

Durston (10) studied the structural features of twenty-two cabeceras from five different departments: Alta Verapaz, Jutiapa, Chimaltenango, and Escuintla. Individual communities were isolated in order to measure their levels of development and urbanization. A Guttman scale of institutional differentiation for the cabeceras is presented in scalogram form in Table 8. The communities are listed in descending order of scale level and their institutional features appear in descending order of importance as scale steps descriminating institutional complexity in the communities. In a perfect scale, the presence of any item in a given community would indicate that all items lower on the scale were also present in that community.

All of the cabeceras in the sample had Catholic church buildings (step 21) and elementary schools (step 20). Most of them had cementeries and policemen (step 19) and medical dispensaries (step 18). Those towns at scale step 14 have a gasoline station, a more elaborate municipal bureaucracy, a hotel or pension, street lights, etc. Only those towns at

Table 8: SCALOGRAM OF INSTITUTIONAL DIFFERENTIATION, GUATEMALAN "MUNICIPIOS," 1965

STEP No.	TOWNS 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	SE
1. Chamber of commerce ("high school," auto dealer, radio station)	X																						0
2. Lions (print shop, newspaper)	X	X																					0
More than one priest	X	X				X			X														2
Beauty shop	X	X						X			X												2
3. Lawyer (commercial *or* agrarian bank)	X	X	X																				0
4. Hospital	X	X	X	X							X				X								2
5. Doctor	X	X	X	X	X																		0
6. Assistant to market (or treasury) official	X	X		X		X																	2
First-class pharmacy	X	X			X	X			X	1													3
Justice of the peace	X	X	X	X	X	X								X									1
7. Sewers	X	X	X	X	X	X	X			X		X											2
8. Assistant abattoir official	X		X	X		X		X															3
Auto repair shop	X	X	X	X	X	X	X	X			X				X								2
9. Movie theater	X	X			X	X	X		X														2
10. Official municipal vehicle	X		X			X	X		X	X	X				X								5
11. Health clinic	X	X	X	X		X		X			X	X			X								5
Factory, "imports" and "exports"	X	X	X	X	X	X		1	X	X	X	X											1
Market place official	X	X		X	X	X		X	X		X	X					X						4
12. "Junior high school"	X	X	X	X	X	X	X		X	X		X	X										2
Municipal police force	X	X	1	X	X	X	X	X	X	X	X		X										1
Abattoir official	X	X	X	X	X	X	X	X	X		X	X	X										1
Appliance store	X	X	X	X	X		X	X		X	X	X	X		X								3
13. Kindergarten school	X	X		X	X	X	X	X	X		X	X	X	X									2
National police detachment	X	X	X	X	X	X	X	X		X	X	X	X	X		X							2
Abattoir building	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X				1
Priest resides in town	X	X	X	X	X	X	X	X	X	X		X	X	X									1

Table 8 cont.

14. Gasoline station.....	X	X	X	X	X	X		X	X	X	X		X	X	X								2
15. Assistant to the First Official of *Secretaria*	X	X		X	X	X	X	I	X	X	X	X	X	X	X	X							1
Hotel or *Pensión*	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X							1
Street lights	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X			2
Electricity	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X		X	3
16. Marimba band for hire	X	X		X	X		X		X	X		X	X		X	X	X						5
First official of treasury	X	X	X	X	X	X		X	X	X	X	X		X	X	X	X						2
Marketplace space rental.....	X	X	X	X	X	X		X	X	X	X	X		X	X		X			X	X		5
17. Restaurant or lunchroom	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X			1
18. Medical dispensary ...	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X				2
Barber	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		I		1
19. Sports field or court...	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		I	1
Town athletic team ...	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X			1
Civic committee.....	X	X	X	X	X	I	X	X	X	X	X	X	X	X	X	X	X	X	X	X			0
Piped water	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	2
Protestants (police, cemetery, First official of *Secretaria*)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			0
20. Six grade elementary school	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X		1
Bakery (tailor)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		0
Jail	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	I	0
21. Catholic church building.....	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0
Scale errors for towns	0	2	8	2	4	3	7	7	6	5	7	3	2	2	5	2	4	2	1	4	1	2	
Total scale errors .																							79

NOTE.—"X" indicates that the institutional feature is present in the town. "I" indicates insufficient information. Scale items in parentheses have exactly the same distributional pattern as the item that they follow. For example, a Protestant sect, a policeman, a cemetery, and a First official of the municipal Secretaria (scale step 19) were present in all but the two "least developed" communities. For the names of the towns, in order of decreasing institutional differentiation, see table 3.

Source: Durston (10).

the top of the scale (steps 1 and 2) had a chamber of commerce, bank, and a regular newspaper. Thus, the cabeceras have been characterized and compared in terms of the relative level of their institutional differentiation. 1/

An important factor in a cabecera's institutional make-up appears to be its position within the larger social system extending bejond the population of the cabecera proper. Table 9 provides a comparison of the hierarchical scale order of the towns with the urban and total municipio populations. Rank by scale order agrees fairly closely with rank by municipio population size, but contrasts with rank by urban population size. Features such as the geographical surroundings of a town, the kind of agriculture practiced, nearness to a major market, as well as internal elaboration of social organizations within the towns are important determinants of the level of institutional development.

One can think of community structures as containing "behavior settings"; i.e. units of the enviornment that have relevance for humanbehavior and well-being. 2/ Different settings would be found in diverse places such as schools, marketplaces, "chicherías" and "boticas." They would include special public-sector social program activity settings, also. However, measures of well-being have not been generally available for identifying how welfare is related to the various community structures and more generally to the cumulative process of community differentiation. One might

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1/ Guatemala's population censuses classify all persons living in cabeceras municipales as urban residents, and all persons living outside the cabeceras as rural residents. Most of the cabeceras are rural in character, essentially because of their small size. More than a third of the cabeceras have less than 400 families. Also, the predominant occupation among cabecera heads of households is farming. Approximately one of three heads of households in urban areas outside Guatemala City farms for a livelihood.

2/ The concept of a behavior settings was developed by Barker. See Fox (15) for citation.

Table 9: Scale of Guatemalan "Municipios" with Population Characteristics

Scale Rank and Town	Population, 1964	
	Urban	Total Municipio
1. Cobán, A.V.	9,076	38,426
2 Jutiapa, Jut.	7,747	43,775
3. Chimaltenango, Chimal.	9,077	15,372
4. Tecpán, Chimal.	5,350	21,510
5. Asunción, Mita, Jut.	6,341	25,286
6. S. Pedro Carcha, A.V.	3,966	69,019
7. Moyuta, Jut.	1,714	22,164
8. La Democracia, Esc.	1,769	12,537
9. San Cristóbal, A.V.	4,379	19,124
10. El Progreso, Jut.	2,991	8,637
11. La Gomera, Esc.	1,397	28,868
12. Sta. Catarina Mita, Jut.	3,011	13,677
13. Jalpatagua, Jut.	1,602	11,529
14. Tactic, A.V.	1,970	8,419
15. Panzos, A.V.	1,803	17,183
16. Agua Blanca, Jut.	1,778	10,840
17. Sta. Cruz, A.V.	780	5,896
18. Quezada, Jut.	1,499	7,980
19. S. José Acatempa, Jut.	1,808	6,638
20. Yupiltepeque, Jut.	1,311	5,962
21. S. José Poaquil, Chimal.	1,376	7,587
22. Sta. Apolonia, Chimal.	732	2,450

Source: Durston (10).

expect to find positive correlation, especially with respect to economic welfare and the development of institutions.

C. Smith (32) estimated the extent and distribution of rural poverty in Guatemala using data in the population census of 1964 and other available secondary sources. He recognized that welfare is a multi-dimensional notion involving value judgments about what items to consider as "essentials" to welfare. Individual welfare was considered to embrace four "basic needs" areas: income, employment, education, and environment. Income, broadly defined, includes general considerations of consumption levels, health and basic security. Employment is essential as a source of income, social status and self-respect. Education is required for improved employment opportunities and personal enrichment. Environment affects a wide range of human experiences, feelings and attitudes.

Smith's analyses involved determining average reference standards for each of 18 social indicators and ranking departments according to their performance in relation to the reference standards. The standards were chosen as hypothetical "targets" or minimum satisfactory levels of achievement. For example, the standard for adult male employment was set at 90 percent of the economically active males aged 15-64. The unweighted male employment index ranged from 72.3 percent of the reference standard for the department of Guatemala to 91.1 percent for El Quiche. Table 10 lists the social indicators and their respective reference values.

Composite indicators of "welfare" were constructed by applying weights to indexes of departmental rankings on each of the basic indicators. Table 11 summarizes composite departmental rankings according to eight different weighting schemes. A rank of "1" indicates the lowest average

Table 10: Guatemala: Departmental Social Indicators

Indicators	Reference Standard
1. Male Employment (ratio of total economically active to total population)	90%
2. Dependency Ratio (ratio of total economically active to total population)	0.257
3. Basic Services Ratio (number of economically active in transportation, communications, utilities, and sanitation per 1000 population)	5.00
4. Housing (number of rural dwellings per 1000 population)	0.192
5. Survival Rate (number of survivors per year per 1000 population)	989.1
6. Non-Agricultural Employment (number of persons economically active outside of agriculture as a percent of total economically active population)	30%
7. Gross Domestic Product Per Capita	Q200
8. Urbanization (ratio of urban population to total population)	6.43%
9. Agricultural Commercialization (ratio of average daily sales of firms related to agriculture to those of all firms)	Q39.88
10. Land Distribution (ratio of area in the smallest 80% of farms to total area farmed)	20%
11. Man-Land Ratio (ratio of total area in crops to total population)	1MZ.
12. Average Size of Owned Farms (ratio of owned crop area to number of farm owners)	15.8MZ.
13. Corn Yields Per Unit Land	7.27%
14. Land Ownership (ratio of total farm owners to total males economically active in agriculture)	12.877
15. Literacy (ratio of literate population to total population)	90%
16. General Education (ratio of rural population 7 years of age and older with at least one year of schooling to total rural population 7 years of age and older)	90%
17. Two Years' Primary Education (ratio of rural population 7 years of age and older having completed two years of primary education to total rural population 7 years of age and older)	80%
18. School Registration (ratio of primary school children registered in 1966 to the total number of primary school age children)	90%

Source: Smith, G.H. (32).

TABLE 11: INTENSIVE RANKINGS BY VARIOUS COMPONENT WEIGHTINGS a)

	DEPARTMENT	ALTERNATIVE POVERTY INDEX AND CORRESPONDING DEPARTMENT RANK							
		A_1	A_2	A_3	A_4	A_5	A_6	A_7	A_8
1	HUEHUETENANGO	4	5	5	4	4	5	5	5
2	SAN MARCOS	11	12	12	10	13	11	12	12
3	QUEZALTENANGO	18	18	19	19	18	18	18	18
4	EL QUICHÉ	3	2	3	5	2	2	3	3
5	TOTONICAPÁN	1	1	1	1	1	1	1	1
6	SOLOLA	2	4	2	2	5	3	2	2
7	CHIMALTENANGO	9	11	8	9	12	10	10	10
8	SACATEPÉQUEZ	14	16	16	14	16	16	16	16
9	RETALHULEU	20	20	20	20	20	20	20	20
10	SUCHITEPÉQUEZ	17	17	17	18	17	17	17	17
11	ESCUINTLA	21	21	21	21	21	21	21	21
12	SANTA ROSA	13	13	13	13	10	13	13	13
13	ALTA VERAPAZ	12	8	10	12	8	12	6	11
14	BAJA VERAPAZ	6	3	4	7	3	4	4	4
15	ZACAPA	15	15	14	15	15	15	14	14
16	EL PROGRESO	10	7	11	11	7	7	11	8
17	GUATEMALA	22	22	22	22	22	22	22	22
18	IZABAL	19	19	18	17	19	19	19	19
19	JUTIAPA	5	6	6	3	6	6	7	6
20	JALAPA	8	10	7	8	9	9	9	9
21	CHIQUIMULA	7	9	9	6	11	8	8	7
22	EL PETÉN	16	14	15	16	14	14	15	15

a) Rank 1 = highest probable level of poverty.

Source: Smith (32).

level of welfare: i.e. greatest likelihood of poverty. Thus, based on index A1, Totonicapán contains the most serious poverty, while Guatemala is judged to be the best off in terms of average welfare. Data were not available at the municipio level nor on a rural-urban basis, and the high "average" index scores for some of the departments may mask significant pockets of poverty.

Interestingly, there is little variation in departmental rankings from one weighting scheme to the next. Also, it appears that departments can be classified into three groups, "low," "intermediate" and "high" levels of welfare as follows.

"Low" Group: Huehuetenango, El Quiché, Totonicapán, Solola, Chimaltenango, Baja Verapaz, Alta Verapaz, El Progreso, Jalapa, Jutiapa, Chiquimula.

"Intermediate" Group: San Marcos, Santa Rosa, Sacatepéquez, Suchitepéquez, Zacapa, El Petén.

"High" Group: Group: Quezaltenango, Retalhuleu, Izabal, Escuintla, Guatemala.

The high departments contain important urban centers, and one would accordingly expect them to rank high in the areas of public services, housing, non-agricultural employment, literacy, and general education. Totonicapán, El Quiché, Solola, Baja Verapaz and Huehuetenango appear to comprise an especially disadvanteged subgroup. Low per-capita incomes and poor educational achievement are the primary reasons for their low rankings. In general, poverty levels are higher in the highlands than in any of the other regions.

Distribution of Poverty

F. Mann (23) extended Smith's analysis by including additional variables in the departmental poverty index. These variables were: gross value of agricultural production per rural inhabitant, population per rural school, rural illiteracy rate, cropland per rural household, corn production per rural household, and area in large farms. In addition, Mann developed municipal level indexes based on three variables: gross value of agricultural production per rural inhabitant, population per rural classroom, and cropland per rural household.

Mann concluded that more than 70 percent of the rural population and about 38 percent of the urban population were resideing in municipalities with poor average living conditions in 1973 (Table 12).[1/] The poor municipalities account for all of the area in ten departments: Totonicapán, El Quiché, Huehuetenango, Chiquimula, Baja Verapaz, Jalapa, El Progreso, Alta Verapaz, Zacapa, and Izabal. In addition, the poor municipalities account for substantial portions of Solola, San Marcos, Quezaltenango, Chimaltenango, Jutiapa, and Guatemala. These municipalities constitute most of the Western and Central highlands regions. More than 80 percent of the Indian population resides in the poor municipalities.

The Mann study found that the severest poverty was probably concentrated in some 157 municipios with average living conditions considered as poor. Also, an additional 49 municipios were found to have marginal average living conditions. Only 120 municipios were classified as developed, i.e. they had "adequate" average living standards. The 206 marginal and submarginal municipios constitute target areas for special assistance

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1/ There were 157 municipalities classified as sub-marginal and 49 classified as marginal municipalities.

Table 12: Geographic Distribution of Poverty in Guatemala (1973)
(1000 persons)

Department	Number of Persons in Poor Municipios		Number of Persons in Other Municipios		Total Population
	Rural	Urban	Rural	Urban	
Totonicapan	142.4	24.4	-	-	166.8
Solola	81.0	33.2	3.9	9.2	127.3
El Quiche	264.2	34.5	-	-	298.7
Huehuetenango	314.2	54.4	-	-	368.6
San Marcos	231.9	32.6	110.0	15.3	389,8
Chiquimula	122.7	35.5	-	-	158.2
Baja Verapaz	88.1	18.7	-	-	106.8
Quezaltenango	107.0	92.7	90.9	22.2	312.8
Chimaltenango	73.4	36.1	47.2	38.0	194.7
Jalapa	85.4	32.7	-	-	118.1
Jutiapa	165.3	38.1	26.4	3.4	233.2
El Progreso	53.9	19.2	-	-	73.1
Alta Verapaz	246.5	34.0	-	-	280.5
Guatemala	109.8	168.6	69.2	760.6	1,108.2
Izabal	138.5	31.3	-	-	169.8
Zacapa	75.3	30.4	-	-	105.7
Petén	-	-	42.9	21.2	64.1
Sacatepéquez	-	-	27.6	72.4	100.0
Santa Rosa	-	-	138.5	38.7	177.2
Suchitepéquez	-	-	141.3	61.0	202.3
Retalhuleu	-	-	90.7	36.6	127.2
Escuintla	-	-	193.7	83.4	277.0
Total	2,299.6	716.4	982.3	1,162.0	5,160.2

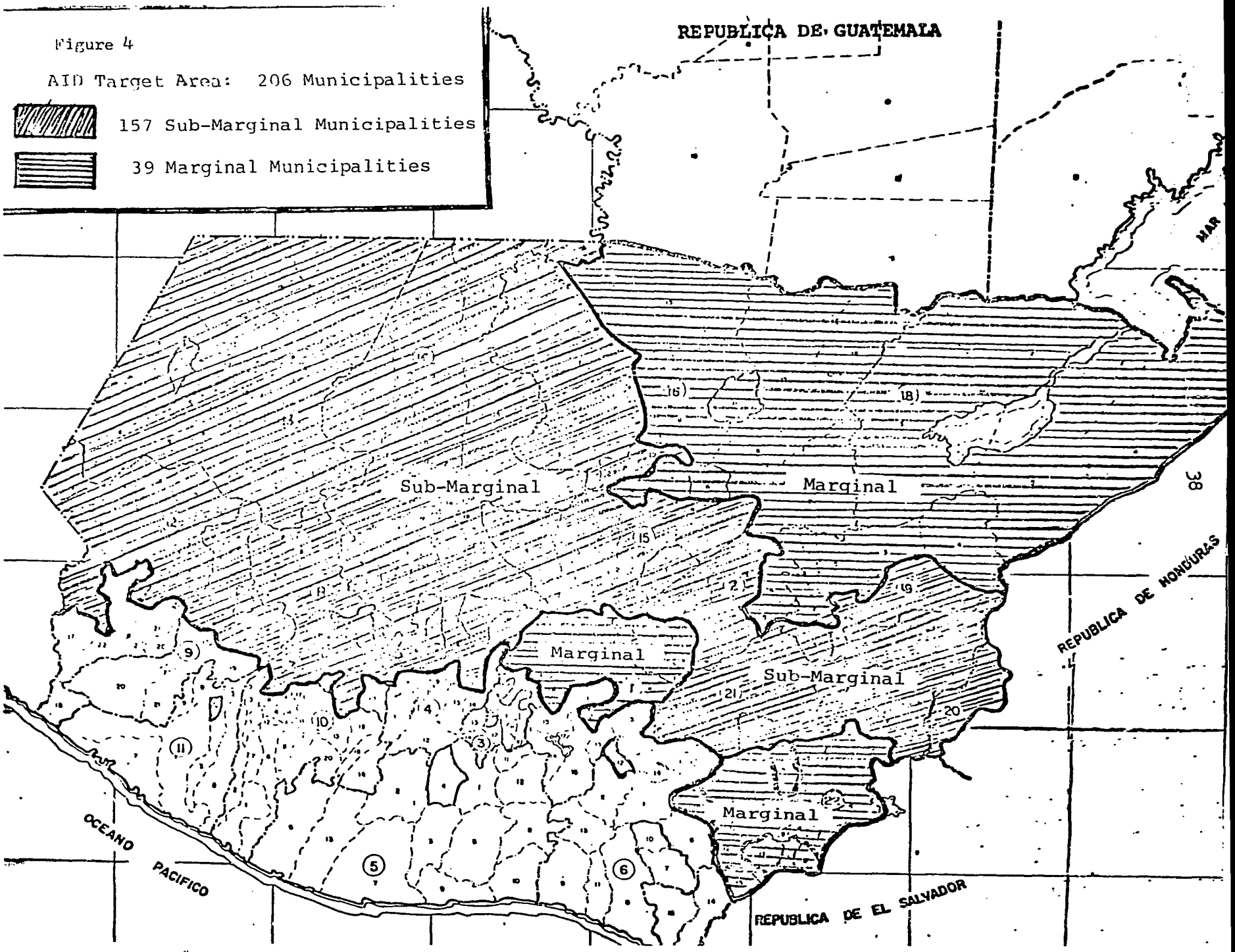
Source: Based on Mann. (23).

Figure 4

AID Target Area: 206 Municipalities

157 Sub-Marginal Municipalities

39 Marginal Municipalities



programs. The GOG Ministry of Agriculture and the National Institute of Municipal Development (INFOM) are jointly developing and implementing a planning methodology which would lead to improvements in the quality of life and increases in incomes of Guatemalans in rural areas. It is recognized that the productivity of farms and other businesses as well as the well-being of rural families are to a large extent dependant upon public investments in infrastructure and services. An initial step of the project is (1) to identify the types of infrastructure and services most required in each municipio and (2) establish priorities among communities for basic infrastructure investments. Also, the project involves developing an inventory of each community's land, water, and mineral resources.

SMALL FARM HOUSEHOLDS AND PRODUCTION

Guatemala had an estimated 718,824 rural households in 1973, including 514,201 households in poor areas and 203,623 households in the relatively well-off areas. Of the 514,201 households in poor areas, 334,573 households were primarily occupied in farming. An additional 78,716 households worked mainly as agricultural laborers. Approximately 72,265 households earned their livelihood from activities such as manual unskilled and semi-skilled labor, domestic service, itinerant sales, artisary and home crafts, etc. Another 15,888 heads of households were openly unemployed or went unreported in the 1973 census. The latter figure may seem low, considering the generally low levels of living and incomes of rural families. Among farm heads of households the primary problem is underemployment or "disguised" unemployment. The Instituto de Investigaciones Económicas y Sociales del Occidente (IIESO) found that total un- and underemployment on farms below 45 hectares in size averaged between 34.3 percent and 55.9 percent in departments of the western highlands.[1/]

Small Farm Production

Most of Guatemala's small farmers grow corn and beans for subsistence. As subsistence needs are met, additional capital and land may be allocated to the production of other crops such as garlic, wheat and potatoes which are marketed. Frequently small farmers experience low productivity and incomes because of difficult marketing conditions, and/or limited availability of appropiate technology, or extreme aversion to risk taking, or lack of land, or absence of some other critical input. Low productivity and incomes are associated with underemployment of farm household labor.

1/ IIESO (21a), based on a sample survey of farms in Sololá, Quetzaltenango, Totonicapán, and Huehuetenango, conducted in 1976.

Table 13: Number and Type of Rural Households,[a] 1973

Primary Occupation	Total Number	Sub Marginal	Marginal	Well off
Farmers and Ranchers	461,480	261,659	72,914	126,907
Agricultural Workers	112,772	56,386	22,330	34,056
Forestry, Fishing & Hunting	18,279	9,140	3,619	5,520
Other Rural Occupations	103,531	51,766	20,499	31,266
Unemployed & Unreported	22,762	11,381	4,507	6,874
Total Rural Households	718,824	370,332	123,869	203,623

Source: Mann, F. Working Paper on AID Development Assitance Strategy in Guatemala, Table 7a, pg. 29-a.

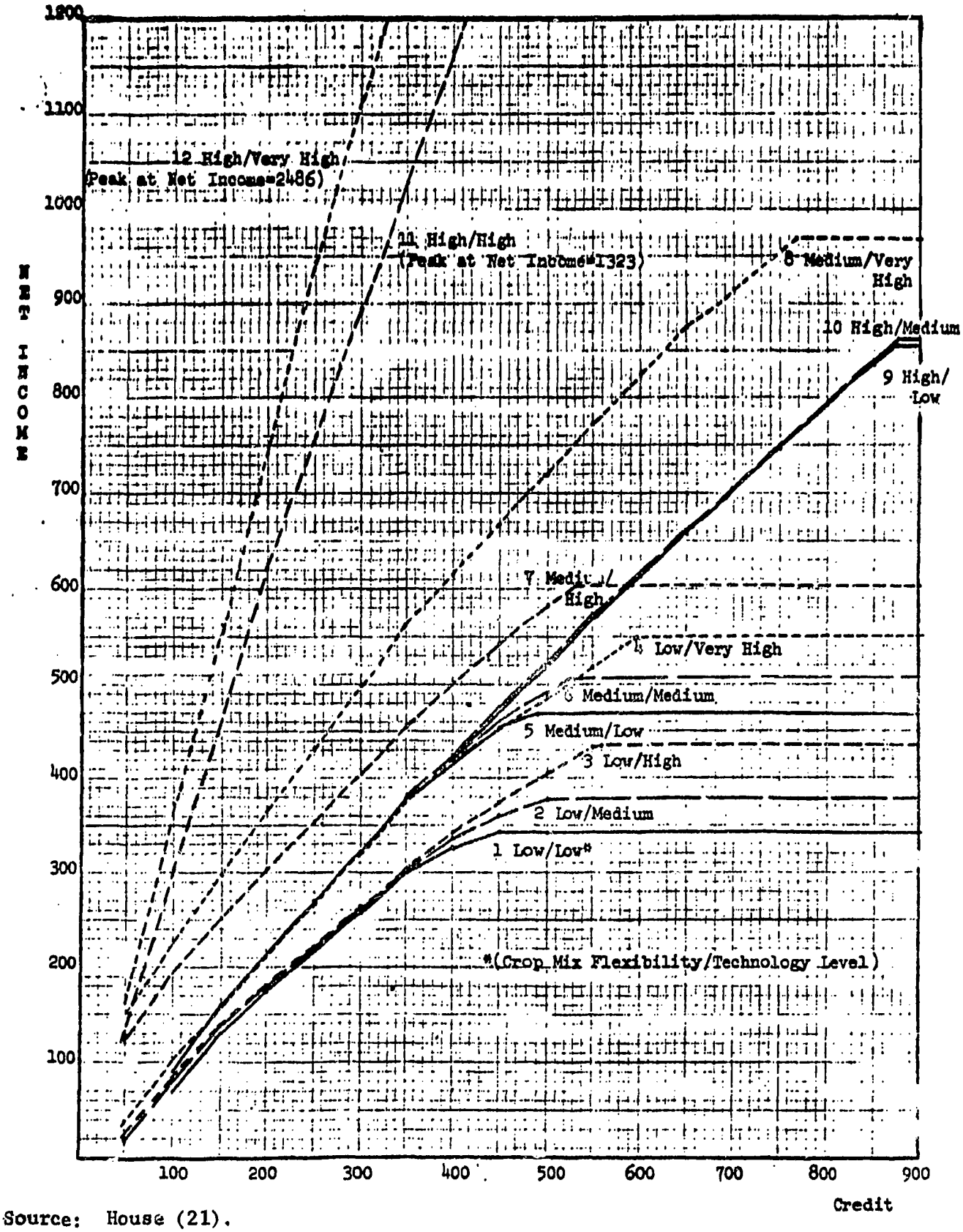
a/ The rural population is defined to include all persons residing outside the 20 cities and towns with more than 10,000 inhabitants each in 1973. Thus, many households residing in the cabeceras municipales are included in the figures of this table.

R. House (21) used linear programming to analyze the effects of changes in technology, crop mix and credit on net income and employment in small farms. Survey data were available for 1600 farms ranging in size from 0-10 hectares.[1/] Functions 1 through 4 in Figure 5 illustrate the "potential" impacts on net farm income of expanding credit and improved technology for bean and corn production in a "hypothetical refernce farm" with 1.8 hectares in crops. If Q450 of working capital were available the reference farm could achieve a net income of Q345 per year, on the average, by applying "traditional" technology.

Traditional technology may be characterized by the absence of modern inputs such as fertilizer, improved seeds, insecticides and machinery. Approximately 137 man-days of labor would be required to achieve a net income of Q345 in farms with 1.8 hectares of cropland. On the average, small farm households have 685 man-days of labor available for work. By introducing improved technological practices and modern inputs and increasing credit supply to Q600, a small farm with 1.8 hectares of cropland can achieve a net farm income of Q550, annually. This represents an increase in net income of 60 percent. Although there would be no change in the demand for labor, the average output per worker would be higher due to the improved inputs.

1/ The USAID/Guatemala -CNP program provided data and analyses about small farmers and the Ministry of Agriculture's small farmer credit and extension program. Approximately 1,600 farms were included in a national sample survey in 1974. The survey provided information about technological practices on farms, employment, gross incomes, and farm inputs; especially credit and technical assistance. Half of the farms in the survey were participants in the governments small farm production program. They obtained credit from BANDESSA and technical assistance from DIGESA. The other half of the survey farms were a randomly selected control group.

FIGURE 5 NET INCOME AS A FUNCTION OF CREDIT AVAILABILITY ON A 1-3 HECTARE FARM - BY TECHNOLOGY LEVEL AND CROP MIX FLEXIBILITY



Source: House (21).

Credit is most productive in farms producing relatively large amounts of "high value" crops such as garlic, wheat and potatoes (Figure 5). If Q450 of working capital were available, a small farmer could achieve a net income of Q525 per year by changing the crop mix to include garlic, wheat or potato production. It would be possible to increase employment from 137 man-days to 173 man-days, even though traditional production methods prevailed. Special crop diversification and marketing programs could benefit many small farmers. But, care would need to taken in order to avoid expanding production too rapidly causing prices to decline.

The available technology levels constrain the potential for increasing farm income from crop diversification. Farms with improved technology and Q450 of working capital can achieve net incomes in excess of Q1200 through crop diversification. With a modest increase in working capital and diversification, a small farm with 1.8 hectares in crops could achieve a net income in excess of Q2,400. This represents a sevenfold increment over what could be achieved with bean and corn production and traditional technology. Total employment could be raised to 342 man-days, a multiple of 2.5 over the traditional technology in beans and corn. The farm family would, nevertheless, experience 40 percent unemployment unless off-farm work were available.

House concluded that a principal reason for poverty among small farmers is the small size of farm in relation to the family size and not inefficiency of productive processes. The study recommended that agricultural production programs be focused on small farmers and not large farmers since the former use land and capital relatively more efficiently. In particular, small farms with credit produced higher gross output per

hectare than small farms without credit. In small farms, with extremely limited access to land, credit is used to finance relatively high valued crops such as vegetables and flowers. In farms with more than one hectare, increased availability of credit is associated with reduced proportion of land in fallow. Smaller farms do not place additional land in production with increased availability of credit since they already are producing crops on all of their land. The extent of multiple cropping does not seem to be affected by credit. The extent of interplanting of crops on small farms appears to decrease with the application of credit. This may reflect movement away from subsistance crops and shifting into cash crops as credit becomes more generally available. Overall, increased availability of credit could lead to more land being placed in cultivation, but would have little effect on the amount of land the very small farms place under cultivation. Increased yields and changes in the crop mix are associated with increased amounts of credit. This study shows that changes in the crop mix can contribute more to raise small farm incomes than increases in yields of the basic grains. Credit is essential if small farmers are to be able to afford the inputs required for growing higher valued crops. These crops require greater capital and labor input than beans and corn.

Cooperatives

In the early 1970s the GOG and the USAID emphasized rural cooperatives as instruments providing farmers with essential services. Six large regional cooperatives with a total of about 50,000 members have been formed. Five of these cooperatives are in the western highlands and one cooperative is in Jutiapa. Data are not available to fully evaluate the overall effecti-

veness of cooperatives in providing services and improving small-farmer productivity and incomes.

However, the cooperatives appear to have been especially effective in distributing fertilizers to small farmers. 1/ Fertilizers were found to be an excellent investment in food crops returning about $3 for every $1 put in the soil. Nitrogen and phosphorous produced the most dramatic results. Also, demostrations with soil insecticides produced encouraging results in San Marcos and El Quiché. In the case of wheat the cooperatives have been providing seed, mechanical threshing, fertilization and marketing services. A key problem area has to do with avoiding loses on the project's credit operations. The operating margin has been slim: 4 percent above costs. Consequently the cooperatives are in the process of "sorting out" their credit clients and refuse credit to those who are behind in paying back loans. Also application forms and paper handling are being simplified. So far, legal action against delinquent borowers and other types of suasion have produced little revenue. The cooperatives could diversify their services in order to help small farmer members out of their subsistence predicament and to produce income for the cooperatives. This would include lending for high-value specialty crops such as vegetables and fruits besides the traditional corn and bean crops. Also, the need for special cooperative credit programs is being evaluated in light of the BANDESA small farmer credit program which provides subsidized loans to small farmers. Generally, the cooperatives have been succesful

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1/ For more information see D. Fiedderjohn, "Terminal Report: Agricultural Cooperative Project in Guatemala," October 1976.

in communicating with the [illegible] aware of the small farm situation. The potential for further advances is very much dependent on the ability of the cooperatives to retain sound management.

The Guatemalan Constitution provides for free public schooling to all Guatemalans. However, limited public resources and poverty have prevented the majority of citizens from attaining a minimal primary education. More than half the population is illiterate and only one fourth of the population has completed 3 years of schooling. In 1973, 68 percent of the school age population (7-14 years) was not attending school. In the urban areas, 30 percent of the school age population are not attending school. An estimated 90 percent of Indian children are not in shcool. At the secondary level, nationwide, 88 percent of the 15-20 year age group are not in school.

Guatemala's education system is considered deficient in a number of respects. Although most rural children are accepted into first grade, only half are promoted to second grade, and only one sixth of those starting first grade reach the sixth grade. Even when a child manages to stay in the system, his progress is usually quite slow; i.e. the average age of third graders in rural areas is 12 years. On the average it takes five years to complete three grades. The USAID/Guatemala Mission estimates that the GOG provides 16 student-years of education to get a sixth grade graduate in the rural areas.[1/] Using an average expenditure of $68 per student-year in rural areas, it costs the GOG $1,358 to produce a sixth grade graduate.

Guatemala's primary education system is in the very early stages of development. The bulk of the teachers are ill-educated and are either untrained or have had very little training. Teaching consists of mechanical

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1/ See Guatemala Country Development Strategy Statement 1981-85, USAID/Guatemala report, Jan. 1979.

drill on M's and memorization of meaningless symbols. Teacher confusion and uncertainty spreads to the children and most make little progress. Children's minds can become completely closed and pupil wastage can be high, i.e. the students drop out. In addition, most of the children are malnourished, which contributes to short attention spans and general inability to learn.

The predominance of adult illiteracy, along with limited educational opportunities for children, poses special problems for the implementation of developmental programs in the rural areas. There is need for new approaches to provide essential information for agricultural development and other rural basic needs such as health. The prospects for doing this on a widespread basis are not fully known. However, the Basic Village Education (BVE) project appears to have successfully utilized radio education to significantly alter the agricultural knowledge, attitudes, and practices exhibited by the small farmer in the Quezada Valley, Yupitapeque, and Ipala areas of Guatemala. This project in non-formal education (NFE) has drawn worldwide attention and the GOG has initiated an expanded NFE program in the rural areas. More than 400 rural promotores have been hired.

The proportion of farmers listening to radio increased from 77 percent to 93 percent in the survey areas during 1973-75. Also, the proportion of farmers owning radios increased from 48 percent to 68 percent for the same period. There appears to have been a greater increase in knowledge, proportion of favorable attitudes, and use of recommended practices in the experimental areas than in control areas (Table 14). For example, in Quezada there was a 9.3 percent increase in knowledge and almost 32 percent

Treatment Sub-areas	% Change 1974-1975*		
	Knowledge	Attitude	Practice
Quezada			
Radio	8.9	11.2	21.7
Radio and monitor	10.4	11.1	33.7
Radio and monitor and agronomist	8.4	9.5	45.7
Quezada Total	9.3	10.6	31.8
Yupi			
Radio	13.5	13.7	29.0
Radio and monitor	39.8	40.2	20.4
Radio and monitor and agronomist	23.2	20.6	13.5
Yupi Total	24.3	23.5	20.5
Ipala			
Control	1.0	2.0	4.3
Monitor	9.9	10.1	14.1
Ipala Total	6.3	6.8	9.5
Total All Areas	12.9	13.5	23.1

* Percent change compared to 1974 base.

Source: Davidson (9).

agronomist-extension agent and radio the increase in adoption amounted to 46 percent. In the area of crop yields, no consistent pattern of impact deriving from the BVE project could be identified since climatic conditions changed significantly during 1973-1975. It is interesting to note that neither literacy nor land ownership variables appear to be an important factor in explaining the changes observed during 1973-75.

SUGGESTIONS FOR RESEARCH ON BASIC NEEDS

Previous sections have reviewed selected references on personal income distribution and related topics. The available data are extremely sketchy and dated. Moreover, the conceptual bases of some of the data are poor; e.g. income in kind and on-farm consumption of subsistence crops frequently are not included in measures of income. Another criticism is that income distribution is but only one facet of the broader concept "social well-being." The remainder of this paper outlines a procedure for the study of social well-being in Guatemala communities based on human need theories.

Human need theories variously include concepts related to economic well-being; conditions of work; health; education; social adjustment; security; and beliefs, customs, and standards of behavior (14). These concepts can be considered to reflect elements in the well-being of rural Guatemalans. Improvements along the various dimensions of the elements in well-being may be considered as ends of social development.

Community structures embody means to well-being; therefore, they are simultaneously desired along with the ends themselves. Thus, if one can consider literacy as an end, then a desire for it may be interpreted as a desire for a school also. The study of indigenous community structures is helpful to improved understanding about social values and to understanding about where, how, and why individuals differ in levels of well-being.

Sets of social indicators on elements in well-being for a group of communities, along with profiles of social structures in the same communities, might serve several useful functions in the development of social policy in Guatemala. Some of the uncertainties in the GOG's social objective

function could be reduced with better information about existing living conditions. The ability to formulate and execute effective social development strategies would be enhanced with improved understanding about community structures. Increased availability of these kinds of information and related basic analysis can lead to testing of theories about the way social variables relate one to another.

More specifically, the objectives of future research could be stated as follows:

1. To develop sets of social indicators on elements in individual well-being for communities in Guatemala. The elements for consideration include:
    a) economic well-being
    b) conditions of work
    c) health
    d) education
    e) social adjustment
    f) security
    g) beliefs, customs, standards of behavior
2. To develop profiles of the nature and extent of community structures in Guatemala. The community structures for consideration include:
    a) economic activities
    b) health systems
    c) school systems
    d) indigenous social structures
    e) transportation and communications
3. To identify how measures of elements in well-being are related to measures of individuals' opinions of well-being.

4. To identify how measures of elements in well-being are related to measures pertaining to community structures.
5. To interpret the research findings with respect to:
   a) raising individuals' opinions of well-being
   b) achieving social goals
   c) improving data systems

To accomplish these objectives considerable thought at the fundamental level of designing appropriate indicators is required, Moreover, this needs to be done recognizing that community structures in the rural areas of Guatemala are different from those in more advanced countries. For example, studies of rural health systems will include midwife services and local pharmacists as well as medical posts. The former often are the main sources of medical care in LDC rural areas.

Measuring Elements in Well-Being

Well-being is difficult to measure since it is a subjective concept held by individuals and is based on one's evaluation of oneself and one's surroundings. The levels of health and nutrition experienced by the individual, his spiritual beliefs and values, his social position with respect to others, and material aspects of life as well as aspirations contribute to the formation of the person's sense of well-being.

One can conceptualize individual well-being as including a set of desires or expectations about the way life should be and a set of perceptions about the way things actually are; and then consider that the levels of relative satisfaction the individual experiences for the various elements or aspects of life, when weighted by their relative importance and then summed, give a measure of the overall well-being state of the individual. To clarify, let E_i $(i=1,\ldots n)$ be the desired

states on various elements of life and O_i (i=1,...n) the perceived states; and let a_i (i=1,...n; Σa_i=1) be the relative importance of the various elements; then the overall level of well-being (Wj) of an individual j at time t may be expressed as follows:

$$W_j = \sum_{i=1}^{n} a_{ij}(O_{ij}/E_{ij})$$

The value (a_i) that an individual places upon a level of a given element depends upon the level already obtained not only of the given element but also of other elements. However, elements will be considered as independent for reasons of simplification.

Economists will notice that utility functions, which were developed in enquiries about consumer behavior, are different from Wj. The notion of utility has been defined as that quality which makes an economic commodity desired (11). Wj goes beyond market or material considerations to include all elements in well-being. Usually utility functions are not pc..ited to have cardinal properties, since an ordinal ranking of preferences is sufficient for purposes of market demand analysis. Wj is specified to have cardinal properties for convenience in analysis about nonmarket elements.

Community well-being is defined by aggregating over elements in well-being and over individuals. Summing the Wj can be considered as an approximation of a social welfare function. Aggregation on an element (i) over all individuals (j) in a community by summing the levels of relative satisfaction (O_{ij}/E_{ij}) can be considered as a measure of collective aspects of the element (i).

Once a framework for viewing well-being has been adopted, the next step is to develop procedures for defining and measuring the various elements in well-being. Social theory can be used to identify the rele-

vant dimensions within each element, and then appropriate statistical indicators for each dimension need to be specified.

Examples of social indicators for measuring various of the dimensions of elements in well-being are listed in table 15. Each of the indicators refers to collective aspects of well-being, and each has been assigned a normative interpretation, as indicated by a plus or a minus sign. Plus means that an increase in the measure is desirable and minus implies just the opposite.

Summary or composite measures for elements can be developed with the use of standard score additive models. This involves transforming data on dimensions into Z scores. The Z score is a linear transformation of the original data such that its mean becomes zero and its standard deviation becomes unity. When a set of variables are transformed in this way, the units of measurement are eliminated which enables scores on different dimensions to be combined by addition. Signs on those variables with negative connotations must be revised prior to addition. This exercise will identify those communities that rank highly on all elements as well as to identify those communities with low or mixed performance.

Individual Opinions of Well-being: Analysis of data on individuals

Understanding about the attitudes of persons whom it is intended to benefit by social programs is important since attitudes influence what is possible and desirable in the way of social development.

For example, do persons who rate their own state of well-being as high or excellent tend to have high incomes also? In exploring this question one would want to consider the person's age, his income relative to the community average, family size, and type of community. Also, do persons who participate actively in community development projects tend

Table 15 Example: Elements in Well-being

I **Levels of Income, Consumption and Wealth**

+ a) personal income per capita
+ b) savings per capita
+ c) percent of owner - occupied housing units
+ d) index of housing quality
+ e) number of persons per room
+ f) percent of homes with television
+ g) median size of land holding

II Health

- a) infant mortality rate
- b) gross death rate
- c) malnutrition index
+ d) index of housing quality

III Conditions of Work

+ a) employment index
+ b) percent of labor force in nonagriculture
+ c) average wage in agriculture
- d) number of workers per administrator

IV Education, Literacy, Skills

+ a) median school years completed by persons 25 years and more
+ b) percent of persons 14 years and more completing primary school
+ c) literacy rate
+ d) percent of head of households reading newspaper

V Social Adjustment

+ a) index of participation in Community organizations
- b) violent crime rate
- c) property crime rate

VI Individual Security

- a) frequency of drought or flooding
+ b) percent labor force with social security
- c) percent of farms owner operated
- d) violent crime rate
- e) property crime rate
- f) probability of major disease
+ g) percent persons with steady employment
- h) divorce rate

VII Beliefs, Customs, and Standards of Behavior

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Source: Based on Essentials of Rural Welfare, F.A.O., Washington D.C., 1949.

to rate their own state of well-being more highly than persons who do not participate? Similarly, one can consider educational, occupational and home ownership variables.

Social indicators are statistics with meaning or capable of interpretation and, therefore, may be of interest for monitoring social change. Structural concepts that might be considered for the development of social indicator profiles on community structures in Guatemala are listed in table 16. One can think about structures in terms of inputs, throughputs, outputs and the environmental characteristics in which the structures are embedded. For example, one might consider a community road network in the following way. The inputs would consist of the road network itself and basic maintenance such as labor and capital inputs. Throughputs would be travelers, vehicles, and cargo; outputs would consist of passenger-kilometers, ton-kilometers, accidents, and, perhaps, the labor input consumed in road maintenance. Labor could be considered as an output if employment opportunities were scarce. Population, land area, production, time, and administrative aspects might be relevant environmental considerations.

Social indicators can be constructed with some of the basic statistics in table 17. For example, kilometers of road/total land area in a community district can be useful as a general indicator of accesibility. Kilometers of feeder road/arable land area would be a good indicator of the adequacy of the road infrastructure for purposes of agricultural development, especially if it could be compared to a scientifically determined standard. Passenger-kilometers and ton-kilometers when related to kilometers of existing road network indicate intensity of use. The employment rate is helpful when considering choice of technique in planning about road net-

Table 16: Example: Community Structures

<u>Economic</u>
Farming
Marketing Farm Products
Local Industry
Local Retailing
Credit and Finance
Other Services
<u>Amenities</u>
Transport and Comminications
Health and Sanitation Services
Schools
Recreation
<u>Social Organization</u>
Local Government and Police
Religious Structures
Fratenal Societies, Business Organizations, Clubs
<u>Development Programs</u>
Extension
Credit
Health
Social Security
School Support
Roads and Construction

Table 17

Example: Social Statistics Pertaining to Road System of a Community District: Transportation, Roads

Inputs	Throughputs	Outputs
Roads	Travelers (no.)	Passenger-Kilometers (km.)
a) Primary Hwys. (km.)	Vehicles (no.)	Ton-Kilometers (km.)
b) Feeder Roads (km.)	Cargo (MT)	Maintenance Labor (man-yrs.)
Maintenance		Accidents
a) Labor (man-years)		
b) Capital ($)		
Quality Considerations		
Paved Roads (%)		
Community accesibility (mos/yr.)		
Environmental Considerations		
Land	Population	Production
Total land (km^2)	Total population (no.)	Total production (MT)
Arable land (km^2)	Employment rate (%)	Marketed production (MT)
Cultivated land (km^2)	Number of farms (no.)	
Time		
Total time by bus to nearest high school, clinic, or Provincial capital (hr.)		
Administration		
Percent of Roads under local jirisdiction (%)		
Tax on road use (yes or no)		

work expansion. Total population when related to the number of travelers would be a measure of participation in road use activities. Participation considered in this sense may not have much meaning when applied to a road network and may, indeed, be impossible to measure. But participation as defined by school enrollment rates is a meaningful statistic about how the environment surrounding a school (e.g. total school age children) relates to school throughput (e.g. number of students.)

The example for roads is meant to indicate a general procedure for developing a set of profile indicators based on four contours: input, throughput, output, and environment. As one repeats the procedure for other structures, some statistics will appear more than one time. These may be considered for inclusion in a data bank. Prior to considering questions of data availability a reasonably complete set of "desirable" indicators needs to be specified for each of the structures.

It would be desirable to have consistent data for 20 towns or more. I would suggest a regional focus perhaps emphasizing a small city and its surrounding towns and hamlets. An explicit framework would have to be developed. Such a study should be of special interest to the National Institute for Municipal Development (INFOM) and the Regional Planning Office of the Consejo Nacional de Planificación Económica. Perhaps the Sectoral Planning Unit (USPA) of the Ministry of Agriculture also would be interested. Some of the data required for a study of basic needs satisfaction are probably available in existing surveys, but much would probabaly have to be gathered in new surveys. A detailed study is likely to require 1½-2 years. Outside technical assistance would be needed, especially in regional planning, survey design, and data manipulation. Various disciplines should be represented on the study team.

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