# GUIDELINES FOR URBAN AND REGIONAL ANALYSIS:
## Types of Analyses Applicable to A. I. D. Activities

by

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# I. INTRODUCTION

The importance of appropriate analyses to successful development efforts cannot be overemphasized. Most of the great failures, such as the Tanganyika Groundnut Scheme, result from incomplete or inappropriate analysis. An understanding of the development context and of the anticipated impacts of development efforts is required for success and this understanding can come from a careful analysis.

Analysis can take many forms. It can be very simple, such as the separation of national income into its various components. It can be very complex and require millions of computations, such as a detailed regional input-output analysis. Analyses frequently are quantitative and require computations using non-verbal data. Quantitative analyses often use analytical or statistical models which specify sets of mathematical procedures. Regression is a good example of this type of analysis.

However, analyses need not necessarily be quantitative. Analyses can be performed on verbal data. A model for non-quantitative analysis may consist of

an ordered set of questions or topics to be considered. In this case, the analysis is performed by addressing the questions or topics using whatever information is appropriate and available.

Urban and Regional Analysis: Urban and regional analysis is basically different from sector analysis. Sector analysis is normally confined to one sector such as health, education, or nutrition. Urban and regional analysis, which may be performed on any sector, is identified by its spatial perspective. For example, a regional education analysis would focus on identifying and explaining regional differences in levels of education, educational needs, types of education, enrollments, and inputs such as teachers, staff, facilities, and supplies. In addition, interregional flows would be analyzed, especially the migration of recently educated individuals, the outputs of the system. Through this type of analysis, the peoples and areas of greatest educational need can be identified and the distribution of benefits from educational efforts can be assessed. In addition, the impacts of education projects on urbanization can be determined.

There is no clear dividing line between urban analysis and regional analysis. Urban analysis is

actually a special case of regional analysis which focuses on patterns and processes within individual urban or metropolitan areas or within the urban system. Patterns within the urban area being analyzed may result from processes operating elsewhere; these external processes should be considered. For example, the rapid expansion of an urban squatter settlement may result from a persistent drought in another region of the country. In this case, an analysis of the squatter settlement should investigate the impacts of the drought on the growth of the squatter settlement.

Analysis of the urban system focuses on the size, functions, and locations of all urban centers within an area. The urban system is viewed as an interconnected set of nodes for the provision of needed urban functions. These nodes may vary in size from large metropolitan areas to small rural service towns. Urban systems analysis may identify areas which are lacking key urban functions such as markets for agricultural products or basic services, such as education or health care.

Regional analysis may focus on distributions between regions or within regions. Multiregional analyses investigate regional characteristics and interregional

flows for many or all regions in a country. A multi-regional nutrition analysis would be concerned with food production and consumption within each region and the flows of food between regions. In addition, flows of food into and out of the country would be considered.

Analyses within a region focus on distributions and flows within a single region of the country. This type of analysis may look at provincial, district, or urban-rural distributions and flows. In such an analysis, flows into and out of the region must also be considered. A within-region analysis can provide the baseline information for a regional development scheme.

Urban and Regional Analysis in AID At present AID is primarily concerned with the rural poor. Future efforts to assist that target group may be more successful if greater consideration is given to regional-spatial analysis and the role of growth and service centers in rural development. Although the concern for the rural poor continues to be paramount, recent changes in the Foreign Assistance Act call for efforts focusing on the urban poor. The nature and extent of AID involvement with urbanization and the urban poor are outlined in a recent policy determination (PD 67).

Under this policy AID will continue and increase its efforts to integrate cities and market towns with their rural hinterlands. Interest in the process and consequences of rapid urbanization will be reemphasized. AID will focus also on the problems of the urban poor. New activities will be directed at urban informal sector employment generation, improved urban planning, and the distribution of social welfare programs between urban and rural areas.

The initiative for programming for rural-urban integration may be taken by field missions or by regional or central bureaus of the Agency. In the case of field missions, Development Assistance Plan (DAP) strategy revision may be necessary before programming for the urban poor can be initiated.

In addition to possible new activities in urban and regional development, AID already is involved in numerous activities which have urban and regional components. These various activities may require many different types of analyses with varying degrees of complexity. Urban and regional considerations should be included in sector assessments which are included in developing country DAP's. More detailed urban and regional analysis may be required in DAP

preparation where countries have definite policies of urban or regional development.

Additional analysis may be necessary for project proposals. Very rough ("quick and dirty") analysis, using readily available information, may be appropriate for project ideas in the pre-Project Identification Document (PID) stage. This level of analysis may be as simple as formulating answers to a small set of questions. On the other hand, detailed analysis involving basic data collection may be appropriate for preparation of Project Papers (PP's) or as a key primary effort of the actual project.

Guidelines. This report is intended to act as a guide to types of urban and regional analysis which are relevant to AID activities. Several types of analysis with varying degrees of complexity are discussed. These analyses are designed to assist field missions in programming urban and regional projects. In initial stages the analyses can be used to both identify and conceptualize projects. They can assist in project formulation and justification as well as detailed project design. The type and level of analysis to be implemented depend upon the country situation, DAP strategy, and types of projects anticipated. An "Urban Poverty Assessment"

which might be required as part of a project PRP or PP may draw upon some, probably not all, of the analyses. As a minimum an assessment should at least address some of the basic issues discussed in Section A, National Policy of Urban and Regional Development; Section B, The Distribution and Characteristics of the Poor; Section G, Urban Administration and the Delivery of Essential Services; and Section J. Social Analysis of the Urban Poor.

Each section provides a brief description of a type of analysis and its relevance to AID activities. Examples of the kinds of questions which can be addressed by each type of analysis are presented. Appropriate data (and their sources) for each analysis are discussed. Sources of further information on each analysis are referenced and briefly described. These guidelines should be considered as only an overview of the type of urban and regional analysis relevant to AID activities. They are not meant to be a "how to" manual or cookbook; however, such manuals are referenced when appropriate.

## II. TYPES OF URBAN AND REGIONAL ANALYSIS

The ten sections below discuss ten different types of urban and regional analysis. The analyses are independent; therefore, each section may be read separately. In cases where the analyses complement each other, they are cross-referenced. The ten types of analysis include: national policy and urban and regional development, the distribution and characteristics of the poor, the system of central place service centers, the distribution of development and underdevelopment, migration analysis, analysis of key urban-rural linkages, urban administration and the delivery of essential services, analysis of urban employment, urban functional analysis, and social analysis of the urban poor. Before these analyses are discussed some important background reference materials are presented.

General References on Urban and Regional Analysis.

The references described below provide general background information on the types of analysis described in this monograph.

Beier, George, et al., "The Task Ahead for Cities in The Developing Countries." World Bank Staff Working Paper No. 209 (Washington, D.C., July, 1975). The problems of rapid urbanization are reviewed and development priorities are presented for four types of urbanization situations.

Flood, J. David and Dean Schreiner. "Application of Regional Economic Analytical Models to Less Developed Countries," prepared for AID (Washington, D.C., 1976, mimeo). This report addresses three aspects of regional planning: 1) the theoretical underpinnings, 2) the development and use of quantitative regional models, and 3) the identification of regional programs.

Friedman, John and Robert Wulff, The Urban Transition: Comparative Studies of Newly Industrializing Societies. (Los Angeles: School of Architecture and Urban Planning, University of California, 1974). This monograph provides a very comprehensive and concise (99 pages) synthesis of the literature on urban development in the third world countries. A 50 page bibliography is included.

Miller, James C., "Regional Development: A Review of the State of the Art." (Washington, D.C., 1974). This very readable paper is oriented toward the application of regional development process to effect urban-rural integration and development in developing countries.

PADCO, Inc., Guidelines for Formulating Projects to Benefit the Urban Poor in Developing Countries. Prepared for AID (Washington, D.C., April, 1976). The problem of urban poverty is analyzed and detailed discussions are provided of potential projects in the areas of: employment, water supply, sanitation, health, education, housing, transportation, and urban management and finance.

Rondinelli, D. A., and Ruddle, K., Urban Functions in Rural Development: An Analysis of Integrated Spatial Development Policy Prepared for AID (Washington, D.C., 1976). This monograph discusses policies, experiences, and approaches to integrated spatial planning.

Stohr, Walter, Regional Development Experiences and Prospects in Latin America (Hague: Mouton, 1975). An analysis is provided of 75 regional development projects.

University of Pennsylvania, University Science Center, Formulation of a Project on Population and Environmental Aspects of National Policies Related to Redistribution of Population and Human Settlement. Prepared for the Center for Housing, Building, and Planning, United Nations (New York,: May, 1976). The monograph provides an understanding and appreciation of urbanization processes; particular attention is given to formulating suitable policy and the problems of migration and squatter settlements.

World Bank, "Urbanization Sector Working Paper" (Washington: 1972). Problems and potential approaches to solutions are discussed.

## A. National Policy of Urban and Regional Development

This type of analysis seeks to identify and describe the impacts of national policy on urban and regional development. It includes the explicit urban and regional policies of the national government as well as the implicit, and often unintended, impact of national policy on urban and regional development.

The number of countries with explicit urban and regional policies has increased rapidly in recent years. This increase can, in some ways, be attributed to the lack of success of earlier development policies which focused almost exclusively on economic growth. When such strategies proved inappropriate, a search began for new development strategies. This search led many countries to adopt approaches which were sensitive to the spatial dimension. These strategies have been translated into a number of explicit urban and regional policies which have come forth under a variety of labels, such as growth poles, growth centers, regional development, intermediate-sized city development, urban decentralization, market towns, rural service centers, and rural development. Most, if not all explicit urban and regional policies attempt to stimulate development

in communities outside the primate city. The size of the communities which are selected for concentrated development efforts may vary in size from cities of over half a million to rural villages. Examples of countries which have adopted this type of approach to development include Brazil, Colombia, Peru, Venezuela, Ghana, Kenya, Nigeria, Tanzania, India, Indonesia and Panama.

Although some countries do not have an explicitly stated urban and regional development policy, all countries have an implicit policy. The policies and actions of all national governments impact on the patterns of urbanization and regional development. For example, budget allocations, which may be directed by a policy of economic development, have differential impacts on urban centers and therefore stimulate their growth. The decision to improve rural education may increase urbanization indirectly as school graduates migrate to cities in search of employment opportunities in the modern sector. The decision to promote industry will, through economic multipliers, stimulate the economies in areas which receive new industries. Such economic stimulation will promote migration and urban growth. In short, governmental decisions have differential impacts on regions and urban areas. The net effect of

these impacts constitutes an implicit urban/regional development policy.

Capital cities very often receive a greater than proportional share of government budget allocations and capital expenditures. This is especially true in countries without explicit policies of urban decentralization. In addition, due to the operation of purely economic forces, primate cities also receive a disproportionate share of private investment. These expenditures stimulate the urban economy, promote increased migration and urban primacy, and may increase regional inequalities even though the expenditures may be perfectly justified on the basis of economic growth criteria.

Relevance to AID Activities. Host country collaboration is essential to the success of AID efforts, and useful collaboration is dependent upon mutual understanding. The host country and AID must understand each other's policies. In some cases this understanding must be preceded by identification because some countries do not have explicit urbanization or regional development policies. This type of analysis is designed to facilitate this identification and understanding.

Ideally the analysis should be completed prior to the preparation of a Development Assistance Program (DAP).

In some cases the analysis may be required in the preparation of a Project Review Paper (PRP) or Project Paper (PP). In the analysis of national urban and regional policy, particular attention should be paid to the balance of social expenditures between urban and rural areas, since this is specified explicitly as a priority area in the new AID policy determination (PD-67).

Typical Questions. The following are examples of the types of questions which can be addressed with this type of analysis:

- Does the government have a stated urbanization or regional development policy? If so, what is it?
- What development objectives does the government have? How do these objectives impact on urbanization and regional development?
- What agencies in the national government are involved in issues of urbanization and regional development? What is their perspective? What are they trying to accomplish?
- If the government has an explicit policy, what programs are needed to implement the policy?

- What urban problems are of greatest concern to the government? What are they doing to alleviate these problems?
- What is the regional and urban-rural allocation of government expenditures? How do these impact on urbanization and regional development?
- What is the degree of commitment of the government to the urban poor? What efforts are being made to improve the quality of life of the urban poor?
- Is decreased rural-to-urban migration, especially to the primate city, a government goal? Is the urban-rural distribution of government expenditures consistent with this goal?
- To what extent is government centralized in the capital? What kinds of decisions are made at national, provincial, district, municipal or village levels?

Data Sources. Several types of data may be used for this type of analysis. Although most of the data will be nonstatistical, some quantitative data such as budget allocation by region, may be used.

A primary source of data is the host country

intermediate-term (5-year) plan. Such documents usually indicate if countries have explicit regional development or urbanization policies. If such policies are not stated explicitly in such documents, they may be present implicitly. Government reports of all types may be useful, including budget documents (especially those with regional breakdowns), annual and special reports of national ministries and departments, reports of regional, provincial, and municipal governments, and census data on the spatial distribution of government employees by occupational category. Reports and analyses of international agencies and scholars also may provide useful information. For example, an AID Shelter Sector Analysis may provide data on national urban policy.

Analysis of Data. The host country development plan should be analyzed to identify explicit policies for urban and regional development. This analysis involves a careful reading of the plan. In addition, other national policy documents should be scrutinized.

Analysis of the implicit urban and regional development policy is more involved. If data permit, government budget allocations should be subdivided by regions and by urban and rural categories. The urban category should be further subdivided

by settlement size. The per capita expenditures for each subdivision should be compared. The comparison will provide a simple measure of the implicit policy. It might be assumed that areas with the highest per capita government expenditures are benefitting the most from government development efforts.

Another approach is to compare the ratio of national government expenditures to collections for regions and for urban and rural subdivisions. This indicates the impact of government activities on the geographical redistribution of resources. High expenditures to collection ratios may reveal areas which benefit most from government development efforts. This type of analysis may indicate whether or not implicit urban and regional policy is consistent with the explicit policy as stated in development plans and other documents.

In cases where appropriate budget data are not available, census data on the per capita distribution of government employment may provide insights into the implicit policy.

A major disadvantage with these approaches is that government expenditures may not accurately indicate the distribution of benefits from government activities.

Expenditures in one area may benefit adjacent areas. This is particularly true of expenditures in towns which benefit their surrounding hinterlands. Unfortunately, easy-to-use methods are not available for the accurate assessment of the spatial distribution of national government activities.

This question may be approached using simulation. For each region or for urban areas of each size, a profile of a typical family in each income category could be developed. The contribution of each family to the national government could be estimated. This estimate should include taxes, license fees, and government marketing activities and price regulations. The estimated contributions could then be compared to estimated benefits from national government activities. Estimated benefits might include: education, health care, agricultural extension, public housing, employment services, as well as subsidization of transport, water supply, sewerage and basic commodities. The comparison of contributions to benefits could reveal the implicit urban and regional policy of the national government. Comparisons could be made for only low-income families or for the total population by appropriately

weighting the contributions-to-benefit ratios by the number of families in each income category for each area analyzed.

In some situations the approaches described above may not be feasible. In these cases analysts must use whatever data and approaches are available and appropriate in an attempt to identify the implicit policy of urban and regional development.

Sources for Further Information. Selected references related to this type of analysis are described below:

1. Cohen, Michael A., Urban Policy and Political Conflict in Africa: A Study of the Ivory Coast (Chicago: University of Chicago Press, 1974). Part Two analyzes both the explicit and implicit urban policies of the national government.

2. Rondinelli, D.A. and K. Ruddle, Urban Functions in Rural Development: An Analysis of Integrated Spatial Development Policy. Prepared for AID (Washington, D.C., 1976). Policies leading to urban centralization are contrasted with decentralization strategies. Attention is focused on the appropriate roles of international assistance agencies and national and local governments in implementing balanced spatial development.

3. Stohr, Walter, Regional Development Experiences and Prospects in Latin America (Hague: Mouton, 1975). A detailed analysis is provided of 75 national and international efforts at regional development. The following regional development strategies are assessed: decentralization of decision making, depressed area policies, colonization and resource frontier policies, border area development programs, and metropolitan area and new

. growth pole policies.

4. University of Pennsylvania, University Science Center, Formulation of a Project on Population and Environmental Aspects of National Policies Related to Redistribution of Population and Human Settlement. Prepared for the Center for Housing, Building, and Planning, United Nations (New York, May, 1975). Part two discusses a wide range of urban and regional development policies.

## B. The Distribution and Characteristics of the Poor

This analysis is concerned with identifying the spatial distribution and characteristics of the poor majority. The analysis can be used to compare the incidence of poverty (percentage of the population classified as poor) in different areas of a country. Regions or provinces with the highest and lowest poverty can be identified. Comparisons can be made of the relative poverty between urban and rural areas, between small towns and big cities and between different neighborhoods within the same urban area. This analysis focuses on the poor majority and should not be confused with the analysis in Section C which focuses on development indicators of the total population in specific subareas.

The general approach taken with this type of analysis identifies poverty groups by comparing incomes to a poverty line. The poverty line is based on the cost of essentials, such as food and shelter and varies from place to place. A shortcut approach can be used to estimate the distribution of poverty from the percentage of the population below some arbitrarily established minimum standard of income, education, housing or employment status. An advantage with this shortcut method is that it can be used to quickly identify the locations of the poorest people in an area. Its disadvantages are adjusting the arbitrary minimum standards to meet local conditions

and finding readily available indicators which realistically reflect poverty.

Relevance to AID Activities. The Congressional mandate focuses AID resources on the poor majority. Projects should be designed to improve the quality of life of this group and part of the project review process involves the assessment of whether or not a project's target population is indeed the poor majority. Ideally this assessment should be made before a project is proposed. This is especially true of projects designed to help the urban poor. Many believe that poverty is essentially a rural phenomenon and are reluctant to have AID become involved with the urban poor. In this kind of environment, it is important that urban project proposals provide hard evidence of the incidence and degree of urban poverty. Thus, an assessment of the relative poverty between urban and rural areas may be required in urban project proposals.

Typical Questions. The following questions are examples of issues which this type of analysis can address:

- What is poverty? How should a "poverty line" be delineated?
- What is the incidence of poverty in the country, in each region, in each district, in each city, in each neighborhood?
- What is the difference in the incidence of poverty between rural areas and urban areas?

- What towns and cities have the highest incidences of poverty?
- What are the characteristics of the poor? What types of employment do they have? What levels of education do they have? What are their housing and sanitary conditions? Their access to essential services?

Data Sources. This type of analysis may rely on a variety of different data sources. Census data provide a good starting point. Often census publications can be used to assess the distribution of several dimensions of poverty, such as lack of employment, low-income occupations, lack of formal education, and substandard housing.

New data processing systems now enable many countries in Latin America and other areas to provide census data in a wide variety of forms. The required computer software was developed by the International Statistical Program Center (ISPC) of the U.S. Bureau of Census. With this software, tables can be produced to address specific analytical questions. For example, the Costa Rican Statistics and Census Office recently fulfilled a request in 48 hours for a table showing the distribution of the economically active population by major occupational categories by 5-year age intervals, by sex, by urban and rural residence for each district, region, and province. Other tables could be quickly produced which indicate for small spatial areas the number and percentage of households in dwellings

without electricity and piped water and headed by unemployed persons with less than five years of formal education. This type of data can be readily used with the shortcut approach to identify the spatial distribution and characteristics of the poor majority. These new data processing developments are discussed more thoroughly elsewhere.[1]

Relevant data may also be acquired from the annual and special reports of national ministries and departments, as well as regional, provincial, and municipal governments.

When they are available, surveys can provide useful data on the characteristics of the poor. Special sample surveys conducted by census offices on a regular basis are especially useful because they can be used to assess poverty trends. Some countries conduct quarterly sample surveys of household incomes and consumption patterns. These surveys are good because they contain data on income distribution, a key factor in efforts to identify the poor majority.

Household sample surveys conducted by nongovernmental agencies are also very useful. Such surveys have been conducted in most major cities. A bibliography of such surveys has been

1. Inter-American Development Bank, Economic and Social Progress in Latin America: Annual Report 1975. Washington, D.C., chapter 5.

compiled by Kipnis.[1] Much of the data from these surveys have been tabulated by Shail Jain in a recent World Bank Publication.[2] This very useful report provides data on percentage of total income received by each decile of the population.

Appropriate data for developing a poverty line are not always easy to obtain. Usually the type of data needed can be acquired from surveys of household incomes, of household expenditures, of nutritional levels, and of the costs of basic locally available staple foods which meet minimum dietary needs. Appropriate poverty income line data and their sources are described in a recent publication by Webb.[3] The Central Projects Staff of the World Bank Staff is currently compiling urban and rural poverty income lines for member countries.

Data on the spatial distribution of poverty in urban areas can be efficiently collected using aerial photographs. This procedure has been used with considerable success in Port au Prince, Haiti.[4]

Analysis of Data. Poverty groups can be identified by comparing minimum needs to the ability of people to acquire those needs. This type of approach to the identification of target poverty groups is advocated in a recent AID-funded report.[5] The report considers

1. Kipnis, J., "Size Distribution of Income: Bibliography of Basic Sources," World Bank Staff Working Paper, 217,(March, 1975).
2. Jain, Shail, Size Distribution of Income: A Compilation of Data (Washington, D.C.: The World Bank, 1975).
3. Webb, Richard. "On the Statistical Mapping of Urban Poverty and Employment," World Bank Staff Working Paper No. 227 (Washington, D.C. (January, 1976).
4. PADCO, Inc. Guidelines for Formulating Projects to Benefit the Urban Poor in Developing Countries, prepared for AID, Washington, D.C. April, 1976, p. 30.
5. Ibid., p. 17.

poverty groups in terms of "1) their levels of current consumption and prospects for improving these levels, 2) the extent to which they already control and can be expected to control capital assets that could be a basis for future consumption, and 3) their territorial orientation." Types of consumption considered include food, potable water, fuel, shelter, information, political participation, and recreation. Capital assets include human capital, rights to land, and access to credit. Three types of territorial orientation are considered -- i.e., "externally oriented - where members of a target group are in an urban area primarily in order to generate income for consumption and investment elsewhere; in-transit - where the members of a target group are intending to remain in the urban area in which they are now located but are using the particular locality they are in merely as a staging area; and consolidating - where the members of a target group are expecting to remain for a relatively long period in the locality they are in." The report suggests that these concepts might be used to construct profiles of project target groups.

A similar but more explicit procedure is advocated in a recent World Bank Study.[1] The procedure identifies the spatial distribution of income, poverty line, and population. Due to its importance to AID activities, a detailed example of this procedure is presented below. The example uses data from Costa Rica.

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1. Webb, Richard. "On the Statistical Mapping of Urban Poverty and Employment," World Bank Staff Working Paper No. 227 (Washington, D.C., January, 1976).

The problem is the determination of the incidence of poverty in Metropolitan San Jose, in other urban areas, and in rural areas. The 1973 census populations of these three areas are : 401,000; 146,000; and 1,260,000 respectively. The size distributions of income of each of these areas are presented in Table 1. Assume that poverty lines for households are 10,000 colones for San Jose, 9,000 for other urban areas, and 6,500 for rural areas. Although these poverty lines appear realistic, they are only crude estimates. A discussion of procedures to develop poverty lines is provided in subsequent paragraphs.

TABLE 1
Size Distribution of Income in Costa Rica
(1971 Survey of Households)

| Decile Distribution of Households (%) | Decile Average(%) | Percentage of Total Income | | |
|---|---|---|---|---|
| | | Metropolitan San Jose (%) | Other Urban (%) | Rural (%) |
| 0-10 | 5 | 2.1 | 2.4 | 2.8 |
| 10-20 | 15 | 3.3 | 3.7 | 4.1 |
| 20-30 | 25 | 4.1 | 4.6 | 5.1 |
| 30-40 | 35 | 5.2 | 5.7 | 6.1 |
| 40-50 | 45 | 6.3 | 6.8 | 7.2 |
| 50-60 | 55 | 7.6 | 8.3 | 8.4 |
| 60-70 | 65 | 9.4 | 10.1 | 10.1 |
| 70-80 | 75 | 11.8 | 12.7 | 12.3 |
| 80-90 | 85 | 16.1 | 16.8 | 15.8 |
| 90-100 | 95 | 34.1 | 28.9 | 28.1 |
| 95-100 | 97.5 | 22.9 | 17.7 | 17.7 |
| Mean Household Income (Colones) | | 22,150 | 17,555 | 9,550 |

Source: Shail Jain, Size Distribution of Income: A Compilation of Data (Washington, D.C.: The World Bank, 1975), Table 14, p. 28.

The data presented above can now be used to compute the distribution of poverty. In Metropolitan San Jose the poverty line, 10,000 colones, is 45% of the mean income, 22,150 colones. Therefore, households receiving less than 45% of the mean are considered poor. In one column of Table 1 households are divided into deciles, each comprising 10% of the total income. If one of these deciles earned the mean income, they would receive 10% of the total income. If they are poor and earn less than 45% of the mean, they receive less than 4.5% of the total income. Column three of Table 1 indicates that between 25% and 35% of the households in metropolitan San Jose are poor. Interpolation reveals that the incidence of poverty in Metropolitan San Jose is 29% (25 + 10 x (4 ÷9)).

In other urban areas, the poverty line is 51% (9,000/17,555) of the mean. This suggests "other urban" households in deciles receiving less than 5.1% of the total income are poor. Using interpolation, column four indicates that the incidence of poverty in other urban areas of Costa Rica is 31% (25 + 10 x (7÷11)). In rural areas, the poverty line is 68% (6,500/9,550) of the mean. Column five indicates that 41% (35+10x(7÷11)) of households in rural areas are poor. Assuming households in the three areas are of equal size and multiplying incidence of poverty by respective populations result in the number of poor in each area, i.e., Metropolitan San Jose -- 116,290 (.29x401,000), other urban areas 45,260 (.31x146,000), and rural areas -- 516,000 (.41x1,260,000). If data were available, this same procedure could be used to calculate the number of poor in individual regions, cities, or neighborhoods within urban areas.

Most approaches to poverty line development are based on the

assumption that nutritional deficit is the most basic dimension of poverty. The poverty line should at least cover the cost of locally produced foods which meet FAO international dietary standards for calorie or protein intake. Consideration should also be given to local household size and age composition. To basic food cost must be added costs of essential non-food needs such as shelter. Non-food costs can be estimated from actual price data or from the actual non-food expenditures obtained from surveys of people who are known to be poor. This survey approach has been suggested by the World Bank.[1] Survey data can be used to define the poverty line as the actual income of households who are barely meeting minimum dietary requirements. Alternatively survey data can be used to determine the income and nutritional level of households assumed to be near the poverty level. When these nutritional levels are compared to FAO standards, the income level of the poverty line can be inflated or deflated accordingly.

If appropriate survey data are not available, the essential distribution of poverty may be roughly estimated using census data. With this shortcut method, poverty must be defined in terms of census variables. For example, if the census provides data on occupations, the poverty rates might be defined as the percentage of the economically active population unemployed or employed in unskilled occupations. Alternatively census education data may be used to define the poverty rate as the percentage of adults (or adult males) without formal education. Housing data might

1. Webb, Richard. "On the Statistical Ma-ping of Urban Poverty and Employment," World Bank Staff Working Paper No. 227 (Washington, D.C., January, 1976.

be used to define poverty in terms of overcrowding or lack of essential services, such as piped water or electricity. Although these measures of poverty rates are too simplistic, they do provide a very rough estimate of the distribution of poverty among individual regions, districts, urban areas, and individual urban neighborhoods.

If country census offices have appropriate data processing facilities, multidimensional definitions of poverty may be used. For example, census data could be used to define the poverty rate as the percentage of adults with less than five years of formal education who are either unemployed or in unskilled occupations. Such multidimensional definitions provide a more accurate measure of poverty than unidimensional indicators.

Sources for Further Information. Selected background materials for this type of analysis are described below:

1. Brookings Institute, Estudios Conjuntos Sobre Integracion Economica Latino America (ECIEL). Urban Household Income and Consumption Patterns in Latin America (Washington, D.C. 1974).

2. IBRD, Central Projects Staff efforts on improving the definition and measurement of poverty income levels. Poverty income lines for rural and urban areas are being developed by country economists from survey data on the cost of minimum nutritional needs and non-food requirements.

3. Jain, Shail. Size Distribution of Income: A Compilation of Data (Washington, D.C.: The World Bank 1975). Income shares received by each decile of the population are estimated for 81 countries. Coverage within countries is broken down by rural, urban, agricultural and non-agricultural. Types of population units considered include total population, households, income recipients, economically active population and workers. Data on mean income and and per capita GNP are provided and three measures of income inequality are compute

4. Kipnis, J., "Size Distribution of Income: Bibliography of Basic Sources." World Bank Staff Working Paper No. 217 (Washington, D.C., September, 1975) All major data sources since 1962 for 57 developing countries are listed.

5. PADCO, Inc., Guidelines for Formulating Projects to Benefit the Urban Poor in Developing Countries. Prepared for AID (Washington, D.C., April, 1976). Chapter Two focuses on identification and characteristics of the urban poor. Appropriate date sources and data collection methods are presented.

6. Webb, Richard., "On The Statistical Mapping of Urban Poverty and Employment," World Bank Staff Working Paper No. 227 (Washington, D.C., January, 1976). Detailed procedures are described for mapping poverty from data on income distribution, poverty line and population. Data sources on the distribution and characteristics of poverty are presented. There also are appendices on quantifying poverty in Peru and on describing the poor in Malaysia.

## C. The Distribution of Development and Underdevelopment

This type of analysis provides a concise description of the spatial pattern of development in a country, region, or city. It can be used to identify the wealthiest and poorest regions in a country, districts in a region, or neighborhoods in an urbanized area. The wealth-poverty, development-underdevelopment dimensions may be defined in a variety of ways depending on the focus of the analysis. For example, the analysis may identify areas which have the lowest per capita income, lowest literacy rate, lowest life expectancy, or lowest protein intake. In addition, several of these dimensions of development may be combined to form an overall index of development. This analysis, which focuses on development characteristics of the total population in specific areas, should not be confused with the analysis in section B, which focuses on the characteristics of the poor majority in specific areas.

Very often spatial differences in level of development are overlooked. National measures are sometimes assumed to be representative of most regions in a country. Urban social indicators are often taken to be descriptive of all centers in the urban system or even of all neighborhoods within urban areas. In truth, spatial variations in level of development are large. For exampl-

in many Latin American countries large areas have per capita incomes less than 50% of the national average.

Relevance to AID Activities. This type of analysis may contribute to AID project development in several ways. The analysis can contribute to the identification of viable project opportunities. This may occur when the analysis indicates regions or districts which exhibit extreme underdevelopment with respect to specific sectors or subsectors. For example, the analysis might reveal certain districts with very high infant mortality rates. This discovery may then point up the need for health related projects in those areas.

The analysis is also very helpful in selecting appropriate locations for viable projects identified by other means. Project location is a key factor in the success or failure of a project design. In order to find the "best" or even an "acceptable" location for a project, the project designer should have accurate information on the characteristics of different areas within the country. This analysis provides that type of information at various geographical scales. A multiregional analysis can indicate the most appropriate regions for the project. An analysis of districts in those regions can reveal the most suitable districts. An even more detailed

analysis can be performed to identify the locations of appropriate project sites. For example, the DAP or other considerations may suggest the viability of a small city project for the vocational training of recent migrants. A multiregional analysis of migration rates, demand for skilled labor and local employment capacity would suggest appropriate regions for the project. A provincial or district level analysis of the distribution of these and other factors would indicate suitable areas within the region. A detailed analysis of migrant residential patterns, employment locations and infrastructural distribution would provide the type of information needed to select acceptable sites for the training centers.

Besides contributing to improved project location decisions, this type of analysis also provides information useful in other aspects of project design and implementation. After the project location is selected, the information provided by the analysis can be used to tailor the project design to local conditions.

Typical Questions. The framework of the analysis can be thought of as a set of questions to be addressed. The following questions are examples of those which can be addressed with this type of analysis:

- Which regions in the country have per capita income of less than $100 or less than 50% of the national average?
- Which regions in the country have fertility rates greater than 15% above the national average?
- Which districts in a region have infant mortality rates greater than 50% of the regional or national rate?
- In which cities and towns do migrants (persons born in other regions) make up more than 50% of the population?
- Which cities and towns have the highest population-to-doctor or population-to-hospital bed ratio?
- In which neighborhoods (enumeration districts) of the capital city are unemployment rates above 25%?
- In which urban neighborhoods are per capita incomes less than 75% of the national average?
- Which regions, districts, or towns are experiencing the most rapid population growth?

Data Sources. National censuses are the most readily available and appropriate sources of data for this analysis. Census data are appropriate because they cover all areas in a country. Censuses have been conducted in most countries and the quality of data is improving.

In most cases, censuses provide data on regional distributions of such things as employment in different industries and occupations, levels of education, migration status, and housing characteristics. Data are readily available also on characteristics of urban areas. These data can be used to make comparisons between urban areas and rural areas. District and provincial data are also available with most censuses. In many cases municipality and enumeration area data are available. These can be used to make detailed spatial distribution analyses within specific districts or urban areas. Sometimes enumeration data are not published but are available from the host country census office.

With newly developed computer software (see discussion in Section B) census offices in Latin America and other areas can provide detailed census data on the distribution of development. For example, tables can be produced which indicate which areas have the highest levels of illiteracy, infant mortality and unemployment. The tables can be designed to display these data for small spatial subareas such as municipalities, villages or urban neighborhoods. This capability can also be used to obtain project specific data. For instance, tables could be produced indicating for each district the number of unemployed males, aged 15 to 25, who have migrated in the last 5 years. Data on their level of education could also be

included. Such tables would be very valuable in designing a project of vocational training centers.

Unfortunately, data on the spatial distribution of per capita or median income are often sparse. Accurate income data are difficult for census takers to collect because of the belief that the income information will be used for tax collection purposes. Surrogate indicators must be used frequently to analyze the spatial distribution of income. Previous research indicates that income is correlated closely with level of education, professional and white collar occupation, and possession of radios, televisions, or automobiles.

National statistics offices are another useful data source. These offices frequently keep ongoing registration data on the distribution of such things as school enrollments, deaths, births, marriages, and employment in health, education and extension services.

In some cases survey data have been used to analyze spatial distributions. Data from sample surveys in Indian cities have been used to investigate distributions of income and socio-economic status, family size and structure, migration status, and religious persuasion. The advantage of a survey is that it can provide current data on those characteristics which are of specific relevance to an individual analysis or project. Because of this advantage surveys may be appropriate in many circumstances.

Analysis of Data. One of the easiest and most useful ways to analyze the data is to map the distribution pattern. The mapped pattern can indicate which subareas have highest and lowest levels with respect to the variable of interest -- for example, literacy rate. Maps can be developed by selecting about five or six ranges of the variable of interest such that each range contains approximately the same number of subareas. For example, a literacy map of a country containing 20 provinces might have five literacy categories each containing four provinces.

A map of the development pattern provides a very concise profile of the spatial distribution of development. The map may reveal pockets of poverty surrounded by relatively developed areas. Several maps can be developed representing different dimensions of development. These maps can be compared to reveal relationships between different aspects of development or between development indicators and other characteristics. For example, a comparison of maps may reveal that areas dominated by certain ethnic or linguistic groups have surprisingly low fertility rates. Closer scrutiny may uncover the reasons for this relationship and these, in turn, may be instructive in designing population projects in other areas.

Comparisons of distribution patterns can also be accomplished using correlation and regression techniques. Correlation coefficients indicate the strength of the relationship between development indicators. Regression analysis can be used to produce quantitative measures of the relationships between variables. Regression coefficients can be interpreted as elasticities and used to assess the impact on key development indicators (dependent variables) of changes in project inputs (independent variables).

Areal data can also be used in factor analysis. The procedure, which is often called factorial ecology, essentially groups the variables into basic factors. These factors can be mapped to reveal the spatial distribution of the basic dimensions of development. For example, Soja's factorial ecology of Kenyan district data revealed a basic modernization factor; European settled areas of Kenya scored highest on this factor.[1] A second factor was interpreted as African moderization; African districts surrounding Nairobi scored highest in this factor. The value of this type of analysis is that it indicates similarities and differences between the variables and between areas included in the analysis. This knowledge can

1 Soja, E.W., The Geography of Modernization in Kenya: A Spatial Analysis of Social and Economic Change, (Syracuse, New York: Syracuse University Press (1968).

be useful when assessing the spread effects of projects or when attempting to identify appropriate locations for projects.

Sources for Further Information. Selected case studies and background material for this type of analysis are described below:

1. Berry, B. J. L., and P. H. Rees, "The Factorial Ecology of Calcutta," The American Journal of Sociology, v. 74, (1969), pp. 445-91. This is one of the best known applications of the factorial ecology technique to data on a nonwestern city. Theoretical and methodological aspects of the technique are reviewed. The spatial distribution of population characteristics of Calcutta are analyzed.

2. Brand, R. R., "The Spatial Organization of Residential Areas in Accra, Ghana with Particular Reference to Aspects of Modernization," Economic Geography, v. 48, (1972), pp 284-298. Data from the 1970 census are used to assess spatial distributions of such population characteristics as unemployment, education and migration status.

3. Cole, J. P. and P. M. Mather, "Peru Province Level Factor Analysis," Revista Geografica, n. 77, (1972), pp 7-32. This factorial ecology analyzes 139 provinces using 33 variables from the 1961 census.

4. Soja, E. W., The Geography of Modernization in Kenya: A Spatial Analysis of Social and Economic Change, (Syracuse, New York: Syracuse University Press (1968). In this well known study, the spatial distribution of several development characteristics are analyzed separately and then combined in a factor analysis.

5. Soja, E. W. and R. J. Tobin, "The Geography of Modernization: Paths, Patterns and Processes of Spatial Change in Developing Countries," in G. D. Brewer and R. O. Brunner eds. Political Development and Change (New York: Free Press, 1975). Theories related to the spatial distribution of development are reviewed. A detailed case study is provided of spatial development in Sierra Leone between the 1920's and the 1960's.

6. Stohr, Walter. Regional Development Experiences and Prospects in Latin America (Hague, Mouton, 1975). Chapter Three provides an in depth discussion of the pattern of development in Latin American countries.

## D. The System of Central Place Service Centers

Urban places provide goods and services (urban functions) to their surrounding hinterlands as well as to their own populations. Village service centers generally serve small hinterlands with populations of about 5,000 - 15,000 (including the village population of 500 - 1500). These small hinterlands only provide sufficient effective demand to support low threshold functions, such as small retail shops, crude agricultural storage facilities, branch post offices, health dispensaries, and primary schools. Market centers normally serve bigger hinterlands with populations of about 15,000 to 50,000. This population provides sufficient effective demand to support some higher threshold functions, such as specialized retail shops, gas stations, agriculture grading and packing facilities, credit offices, telephone service, health clinics and secondary schools. City level centers generally serve even larger hinterlands of about 50,000 to 200,000 population and provide some high threshold functions, such as large retail stores, wholesale outlets, agroindustrial processing plants, banking facilities, newspapers, hospitals and technical schools. Together these service centers constitute a hierarchical, central place system for the distribution of urban functions. The purpose of this analysis is to identify the

structural components of this system, to find problem areas,and to uncover appropriate project opportunities.

Relevance to AID Activities. The recent AID policy determination on urbanization and the urban poor emphasizes the importance of integrating central place service centers with their rural hinterlands. The analysis described in this section seeks to identify the central place system and to uncover ways to improve its efficiency and equity. Such improvements can stimulate rural development as well as enhance the quality of life of both the urban poor and the rural poor, AID's primary target group.

Typical Questions. The following questions are examples of those which can be addressed with this type of analysis:

- What functions are presently being provided by existing central places at each level of the hierarchy?
- What functions should be provided at each level?
- How large are the hinterlands of existing central places?
- In each region how many people (on the average) are served by village centers? market towns? small cities? regional capitals?
- What are the average and minimum (threshold) effective demands (hinterland populations) required for each function?

- What functions are provided by the national government? regional government? provincial government? district government? municipal government? cooperative societies? private entrepreneurs?
- What is the maximum distance rural people must travel to obtain urban services from village centers? from market towns? from city service centers?
- Which centers at which levels in the hierarchy have been growing most rapidly? Why?
- What essential functions are not effectively provided by the existing central place system? How can the system be changed to overcome the deficiency?

Data Sources. Two types of data must be collected: data on the supply of functions and data on the demand for functions. Rough data of both types can be obtained from censuses. The population of an urban place provides a very rough indication of the number of functions it provides. Detailed census data on employment or businesses provide a better indication. Often such data are coded according to the Uniform National Industrial Classification System which is recommended by the United Nations. This coding system distinguishes types of industry,(i.e., service, retail, or

manufacturing) and types of specific functions -- for example, within the retail group, food stores, clothing stores, etc. It is assumed that if a place has employment or a business establishment in one of these specific functional categories then the place provides that function. By the same token, places without employment or an establishment in a particular category are assumed to be without that function.

On the demand side, it can be assumed that effective demand for most functions is proportional to population. If income data are available they should also be considered. In certain circumstances subpopulations should be used as an indicator of demand. For example, the demand for secondary schools might be estimated from enrollment in primary schools. For some functions other measures of demand may be appropriate. For instance, the number of hectares of cocoa under cultivation or employment in the cocoa industry may be used as an indicator of the demand for cocoa marketing and storage facilities.

Governments are a good source of data on supply of government-provided functions. Often national and local governments can provide data on the location and capacities of schools, health care facilities, extension offices, communication facilities, banks and credit bureaus, administrative services and public works such as electricity,

transportation, water supply and sewerage. In addition, licensing bureaus may provide data on a wide range of privately supplied functions.

When they are available, survey data can be very useful in analyses of central place systems. Surveys may provide data on functions supplied by the informal (unlicensed) sector. On the demand side, surveys of utilization patterns may indicate the number of people using certain facilities, the distances they have travelled to the facilities, what alternative facilities they use, and what presently unavailable functions they would benefit from most. Such data can be very useful in delineating hinterlands, identifying gaps in the existing system and forecasting the impacts of anticipated changes to the system.

Analysis of the Data. The analysis should include an inventory of the functions provided by central places and the estimated size of their hinterlands. The inventory starts with a list of each central place, the functions it provides, and its population. The list can often be developed from census data on employment and business. If the data are reported by industrial or activity classification code, it is convenient to simply list the appopriate codes for each central place. Other data sources may also be used in the compilation of this list.

The total number of functions provided by each center may be used to develop a multilevel hierarchy with village centers at the lowest level and the largest cities at the highest level. The actual number of levels in the hierarchy depends on the central place system being analyzed and on the analytical methods used. For centers which fall near the boundaries between layers, the decision as to which layer they belong may be made by using additional information such as their population size, their location within the region, and their specific set of urban functions. In some studies component analysis and other sophisticated techniques have been used to assign centers to levels.

The development of a map of central places at different levels of the hierarchy may indicate areas which are without or distant from needed centers. A more detailed map of the locations where each function is provided may indicate areas which are distant from urban functions which are required for rural development. Such areas present potential opportunities for service center projects.

The hinterlands of centers at each level can be delineated with actual utilization data or by assuming rural people go to their nearest center. Gravity models may also be used to delineate hinterlands. It should be remembered that hinterlands at different levels overlap; i.e., a rural settlement will be in a village hinterland, a market center hinterland, and a small city hinterland, etc. The

hinterland population of each center, which can be estimated from census data, may be used to assess the average and minimum (threshold) demand required to support centers at each level as well as individual urban functions. Diferences between regions may be assessed by comparing ratios of population to the number of centers at each level and population to the number of centers which provide a function or functions of particular interest. Such comparisons may reveal regions which are provided with the lowest level of service.

The map of centers and hinterlands may indicate a large area with numerous village centers and a definite shortage of market towns. This situation provides a good opportunity to develop a project which selects certain villages and provides them with key functions so that they can develop into market towns. Several criteria should be used in deciding which villages should be selected. First, the selected villages should exhibit potential for growth and development. Research indicates that past growth is the best predictor of future growth. Therefore, villages which experienced rapid growth in the past (either in population or functions) should be selected. In addition, market towns should be located so as to maximize accessibility (i.e., minimize the average distance farmers must travel to their nearest market town). Manual methods to perform this task have been developed and applied to location problems in the Indian context.[1]

1 Fisher, H. B. and G. Rushton "Rural Growth Centers: Experience in the Pilot Research Project, 1969-1974," in Man, Culture and Settlement, Essays in the Honour of Professor R. L. Singh, R.C. Eidt, K.N. Singh and R.P.B. Singh eds. (Bombay, 1976).

It is useful to know that computerized algorithms have been developed which can perform this task under a number of constraints, such as assuring that every farmer is within a specified distance of a market towns, or assuming that no town will be required to serve more than a specified maximum or less than a specified minimum number of farmers.[1] Political realities should be considered also in selecting villages to be upgraded to market towns. In short, one is faced with a problem with three objectives: maximize growth potential, maximize accessibility, and optimize political considerations. This is a challenging problem which is just beginning to receive analytical attention.[2]

Sources of Further Information. Selected case studies and background materials for central place system analysis are described below:

1. Fisher, H. B. and G. Rushton,"Methods for Integrated Rural Area Planning -- Experiences of the Pilot Research Project in Growth Centres, 1969-1974," in Man, Culture and Settlement, Essays in the Honour of Professor R. L. Singh, eds. Robert C. Eidt, K. N. Singh, and Rana P. B. Singh (Bombay, 1976). Attention is focused on principles and techniques of central place service center planning. Described are manual and computer methods of finding efficient locations for service centers. (Also see Banerji and Fisher, Footnote 2 below).

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1 Banerji, S. and H.B. Fisher "Hierarchal Location Analysis for Integrated Area Planning in Rural India," Papers of the Regional Science Association, v. 33, (1974).

2 Hillsman, Edward L. "Solving Public Sector Location Problems," Proceedings, Association of American Geographers, v. 8, (1976) pp. 143-146.

2. Grove, D. and L. Huszar, The Towns of Ghana (Accra, Ghana: University Press 1964). This is an exemplary example of central place system analysis.

3. Harvey, M. E., M. S. Hung and J. R. Brown, "The Application of A p-Median Algorithm to the Identification of Nodal Hierarchies and Growth Centers." Economic Geograpny, v. 50, n. 3, (1974) pp. 187-202.

   Techniques for maximizing accessibility are discussed and used to develop an efficient system of central place service centers in Sierra Leone.

4. Johnson, E.A.J., The Organization of Space in Developing Countries (Cambridge, Mass.: Harvard University Press, 1970) Central place theory is reviewed and the critical role of market towns is emphasized. Numerous examples of central place projects are provided.

5. Rondinelli, D. A. and K. Ruddle, Urban Functions in Rural Development: An Analysis of Integrated Spatial Development Policy. Prepared for AID (Washington, D. C., 1976).

   This report is an excellent source of background material on analysis of central place systems. Examples from several countries are used in a discussion of the functions provided at each level of the central place hierarchy. Approaches to affecting improvement are presented.

6. Wanmali, S. Regional Planning for Social Facilities: An Examination of Central Place Concepts and their Application. National Institute of Community Development (Hyderabad, 1970).

   A detailed analysis of the central place system in Eastern Maharashcra, India, is presented. Results of the analysis are incorporated with a regional planning process.

## E. Migration Analysis

Migration is a major contributor to rapid urbanization in developing countries. The movement of people into urban centers is a widespread phenomenon having important impacts on urban and rural areas. Numerous governments in developing countries have expressed interest in policies designed to influence migration flows. Rural-to-urban migration is dependent upon conditions in both rural and urban areas and programs in both areas have important impacts on migration. Although more attention has been focused on rural-to-urban migration, urban-to-urban migration predominates in many areas, especially in Latin America.

Migration analysis seeks to describe accurately and explain major migration flows. The analysis may focus on factors which affect migration or on the effect of migration on urban and rural areas. The analysis described here concentrates on the effect of different policies, programs, and projects on migration.

Relevance to AID Activities. The effective integration of rural and urban areas is a major area of AID concern. Rural-to-urban migration and the considerable urban-to-rural counterflow provide personal linkages between urban and rural areas. Because these personal linkages act to integrate areas, an adequate

understanding of migration is needed before effective rural/urban integration projects can be programmed. Migration analysis can provide this understanding.

Analysis of migration is important also in AID's efforts to better understand the problems of the urban poor and the process of rapid urbanization. A sizeable percentage of the urban poor is migrants; therefore, an understanding of the problems of the urban poor requires an understanding of migration processes, especially migration of the poor.

Analysis of migration is also needed to assess accurately the impact of social welfare programs on urbanization. AID projects in both urban and rural areas affect migration. It is not surprising that projects in rural areas which successfully improve the quality of life also stimulate rural-to-urban migration. However, many successful rural projects also stimulate rural-to-urban migration. For example, projects which increase rural productivity and income also enable rural children to acquire more education. When these children finish school, they very often migrate to urban areas in search of employment consistent with their skill level. In fact, most projects which enhance rural nonagricultural skill levels directly contribute to rural-to-urban migration. Migration analysis is needed to assess the impact of AID projects on rural-to-urban migration. The

analysis may also suggest projects which are specifically designed to influence migration.

Typical Questions. The following questions are examples of those which can be addressed with migration analysis:

- What are the major centers of out-migration and in-migration?
- What are the characteristics of migrants? Age? Sex? Level of education? Income? Occupation?
- Where do migrants stay when they arrive in cities? What neighborhoods have the largest percentage of migrants?
- What are the key factors which influence migration flows?
- What effect on migration will result from the creation of 1000 jobs in the capital city? in rural areas?
- How can migration to the capital city be slowed?
- What are the impacts of migration on migrants? on migration origins? on migration destinations?
- Is urban-to-urban or rural-to-urban migration dominant?
- What impacts does migration have on the urban poor?

Data Sources. Migration data are available from two primary sources, censuses and surveys. Most censuses indicate the place of birth of residents in each region, province and district. Sometimes these data are provided by enumeration area. Often the data are presented in the following form: number born in

the same district, number born in different district of the same region, number born in different region and number born in different country. These data are useful in identifying the destination regions and districts of major migration flows. In some circumstances censuses indicate the actual region of birth of all residents of a given region or district. The data reveal the major long term flows. Sometimes censuses compile data on place of residence five years prior to the census. These data are more useful because they identify a specific time period of migration.

Numerous migration surveys have been conducted in developing countries. These surveys provide data on the characteristics of migrants, their reasons for migrating, and their experiences on arrival at their migration destination. These data provide a basis for understanding migration.

Analysis of Data. Several methods can be used to analyze migration. Analysis of migration data from censuses can focus on the characteristics of areas which have experienced rapid in- or out-migration. The types of characteristics which can be analyzed include level of education, percentage urban, availability of amenities, and income levels. Regression analysis can be used with migration flows as the dependent variable and area characteristics as well as distance as the independent variables.

The regression coefficients, which can be interpreted as elasticities, provide a measure of the influence on migration of changes in key independent variables. If properly interpreted, these coefficients can be used to assess the impact on migration of urban and rural programs and projects designed to expand job opportunities, increase wages, or improve amenities.

Analysis of migration surveys can concentrate on the characteristics of those who migrate and those who do not. The focus here is on the individual or on the household; many argue that this is the appropriate level of analysis because the decision of whether to migrate or not is usually made at the individual or household level. Tabular analysis can be used to assess the differences between migrants and nonmigrants with respect to age, sex, income, education, skill level, land holdings, and the availability of information on urban opportunities and on relatives and friends in urban areas. Surveys can also be used to appraise the reasons and motivations for migration.

Analysis of detailed survey data on migration can provide the background knowledge needed to accurately assess the impact on migration of specific projects and programs. Unfortunately, surveys are expensive. Despite their expense, numerous surveys

have been conducted. Before new surveys are attempted, the results of past surveys should be carefully scrutinized. In designing a new survey, great care should be taken in the wording of the questionnaire and the selection of the sample.

Source of Further Information. Sources of background information on migration analysis are described below:

1. Brigg, Pamela, "Some Economic Interpretations of Case Studies of Urban Migration in Developing Countries," World Bank Staff Working Paper No. 151 (Washington, D.C., March 1973). After briefly reviewing migration theory and regression studies of migration, this paper provides a detailed review of 27 field surveys of migration in 17 different countries. Suggestions for improved methodologies are provided and migration policies are discussed.

2. Findley, Sally E., Planning for Internal Migration: A Review of Issues and Policies, prepared for AID by the Bureau of Census (Washington, D. C., 1976). This in-depth review responds to policy makers' need to understand the issues and policies relating to migration in less developed countries. A thorough discussion is provided of research on both the causes of migration and the impacts of migration on urban and rural areas. The major focus is on the very broad spectrum of policies suggested or actually used to effect migration. The discussion of each policy includes the actual intent of the policy, how the policy operates, its impact on migration, and examples (where possible) of countries pursuing the policy. The policies discussed include rural development strategies and programs, rural land settlement and colonization schemes, dispersed service center strategies, growth center approaches, centralized urbanization strategies, and policies designed to cope with rapid urbanization. The report contains a very useful summary and conclusion chapter as well as very extensive footnotes.

3. Shaw, R. P., Migration Theory and Fact (Philadelphia: Regional Science Research Institute, 1976).
This theoretical review provides in-depth discussions of several types of migration analyses including regression analysis, cost-benefit migration models, factor allocation models, gravity models, intervening opportunity models, utility models, mover-stayer probability schemes, and stochastic models. These analyses are not mutually exclusive; often several are combined in one study. The book provides useful background for in-depth analysis of migration.

4. Yap, Lorene Y.L., "Internal Migration in Less Developed Countries: A Survey of the Literature," World Bank Staff Working Paper No. 215 (Washington, D.C. September, 1975).
This paper provides in-depth reviews of econometric regression analyses of census data on migration. Four case studies are analyzed and elasticities are discussed. Weaknesses of the analyses are indicated. Key factors affecting migration are identified and policy conclusions are offered.

## F. Analysis of Key Urban-Rural Linkages

Although this section emphasizes "urban-rural" linkages, the importance of "urban-urban", "rural-rural" and "region-region" linkages should not be overlooked. The analyses described in this section can be performed on all of these types of spatial linkages.

Linkages are a very important component of integrated regional development programs as well as of growth and service center projects. These linkages provide the network needed to facilitate important flows, such as the movement of agricultural products into agroprocessing centers, the distribution of needed agricultural inputs, or the spread of innovations and new ideas from centers to their hinterlands. Several types of linkages exist: economic linkages, physical linkages, administrative linkages and social linkages.

Although the importance of linkages is widely recognized, detailed procedures for analyzing linkages are not well developed. This section provides an overview of the procedures which can be used. Aspects of urban-rural linkages are discussed in several other sections of these guidelines -- namely, in sections

D, The System of Central Place Service Centers, E, Migration Analysis, and G, Urban Administration and the Delivery of Essential Services. In this section the emphasis is on economic and physical linkages.

Relevance to AID Activities. The primary AID target group is the rural poor, and an important approach to assisting this group is the integration of rural areas into the national economy. This integration can also benefit the urban poor; for example, enhanced integration can result in expanded agroprocessing in regional centers which may provide employment opportunities for the urban poor. This integration can only be achieved through key urban-rural linkages. Projects to improve these linkages must be based on an adequate understanding of existing and potential useful linkages. The analyses discussed in this section are designed to provide this understanding.

Typical Questions. The following questions are examples of those which can be addressed with this type of analysis:

- What is the pattern of flows of agriculture products from rural areas to demand centers?
- From what areas do manufacturing activities receive their raw materials?

- To which centers do farmers go to obtain needed agricultural inputs, such as fertilizer, farm implements, improved seed and credit?
- What changes can be made in the road network to improve the marketing of rural products?
- Does the regional resource base provide the potential to support additional production and processing activities?
- What new activities can be supported? What linkages are needed to implement these activities?
- What is the pattern of key communication linkages?
- What are the daily, weekly and seasonal commuting patterns of off-farm labor?
- What are the key bottlenecks in the existing linkage system?

Data Sources. Good data on spatial linkages is very often difficult to obtain. Linkage data are generally not available in censuses and other published data sources. In many circumstances it is necessary to conduct surveys to acquire these data. Lack of appropriate data is probably one of the main reasons why detailed analyses of spatial linkages are rare. Lack of data, however, is not a sufficient reason to overlook linkages. These

linkages are crucial to the success of integrated regional development programs and growth and service center projects. For these types of projects, analysts must make the most of existing data and in many cases conduct a survey to acquire additional data.

Existing data on economic linkages may be available from national departments or ministries of agriculture, commerce, industry, planning or transport. Data on the origin of commodities marketed at regional centers may be available from the market administration or marketing board. Agricultural extension offices may be able to provide data on the linkages between farm input distribution centers and specific agricultural communities. The reports of industries or individual firms may contain data on their sources of raw materials.

Information should be obtained on the regional resource base and the potential for increased production. This information can be used to estimate the linkages needed to achieve increased production. The needed linkages can then be compared to the existing linkage system to identify important constraints. Information on the regional resource base may be obtained from government agencies dealing with agriculture, planning, regional development, industry, and labor. In addition, useful information

may also be contained in the documents of international agencies publications, and other research reports.

In many situations surveys may be required to obtain the appropriate data for linkage analysis. Surveys may be initiated in either rural areas or urban centers or both. A rural area survey should be designed to obtain information on linkages between farms and places where farm produce is marketed and on linkages between farms and sources of farm inputs. Questions should address the route, modes, and time and money costs of acquiring farm inputs and marketing farm produce. The survey should cover both large and small-scale farms and should ask farmers what they think are the major linkage constraints. Surveys in urban centers should be administered to agencies involved in the linkage system such as agro-processing firms, truckers, market administrators, storage and handling operators, as well as wholesalers and retailers of farm implements, fertilizer and seed, and agencies which provide credit. People in these activities should also be asked what they think are the key linkage constraints.

Data on physical linkages relate to the condition of transportation networks (roads, railways, and inland waterways) as well as the flows over the network. Data on transportation

networks and flows can usually be obtained from government public works and transport agencies. Vehicle licensing data may provide further information on the distribution of carriers and their movement patterns.

Data on social interaction patterns and communication linkages can be obtained from a variety of sources. Bus, train and boat schedules and licenses provide data on the pattern and volume of human movements. Data on telephone traffic can provide useful information on social linkages as well as on economic and administrative linkages. Newspaper circulation data can also be used as an indicator of important linkages.

Data on political and administrative linkages can be obtained directly from governmental agencies.

Analysis of Data. There are two important components of the analysis: (1) the identification of existing linkages and (2) the comparison of existing linkages with needed linkages to identify constraints to future development and opportunities for projects. The identification of existing linkages is basically a data compilation exercise. The data should be organized in such a way as to accurately describe existing linkages. Origin and destination maps and tables can be used. These can be compared with each other to identify relationships. For example, an origin-destination map may indicate that the

flow of agriculture produce from a farm area to a nearby market is smaller than anticipated. This information could be combined with data on the road network to reveal that the flow is low because the connecting road is very often impassable.

In order to identify constraints and project opportunities, existing linkages must be compared to the linkages needed for future development. Unfortunately, knowledge is limited on the specific linkages required to promote future development. One approach is to assess regional potential for development and use this as a basis for identifying needed linkages. The raw material potential of the region can be assessed. This assessment should investigate agricultural and mineral potential. Possible forward linkages should be appraised between raw material output and potential processing activities. Possible locations for these activities might be specified by considering scale economies and the minimization of transport costs. This provides a basis for identifying needed improvements in the transportation network and additional capacity requirements of transport agencies.

The backward linkages from the processing activities to needed infrastructural requirements can also be assessed. These backward linkages might include financial agencies, quantity and quality of labor, serviced industrial sites, and inputs from other regions. Additional backward linkages from these inputs could be appraised, such as the housing requirements of labor.

An appraisal can also be made of the backward linkages from the raw material production to needed inputs. These inputs might include credit fertilizer, hybrid seed, farm implements, mining machinery, and improved appropriate level technology. These input requirements could be compared with existing capacity to identify important linkages constraints. In essense, an appraisal of these backward and forward linkages constitutes a type of spatial inflow - outflow analysis. Although appropriate data are extremely difficult to obtain, the development of a regional input-output matrix is often very useful in identifying and analyzing linkages.

Sources for Further Information. Selected background materials for spatial linkage analysis are described below:

1. Hansen, Niles, ed. Growth Centers in Regional Economic Development (New York: Free Press, 1972). This collection of readings provides theoretical and empirical information on growth center projects. The role of linkages is discussed in several of the articles.

2. Johnson, E.A.J., The Organization of Space in Developing Countries (Cambridge, Mass.: Harvard University Press, 1970). This book provides an indepth discussion of the important linkages between agricultural areas and market towns.

3. Mellor, John W., The New Economics of Growth: A Strategy for India and the Developing World (Ithaca, N. Y.: Cornell University Press, 1976). Chapter seven provides an indepth discussion of the linkages needed to facilitate rural development.

4. Rondinelli, D.A. and K. Ruddle. Urban Functions in Rural Development: An Analysis of Integrated Spatial Development Policy. Prepared for AID (Washington, D.C., 1976). This monograph provides a discussion of physical, economic, population movement, technogical, social, service delivery, and political, administrative and organization linkages. Data requirements and appropriate methodologies for analyzing each type of linkage are listed (pp. 287-288).

## G. Urban Administration and the Delivery of Essential Services

The quality of life of the urban poor is dependent upon the provision of essential services, such as potable water, sewage, health care, education, electricity, transportation and other social services. These services very often are provided by governmental agencies. The ability of these agencies to provide these essential services for the urban poor is dependent upon their management capability, their commitment to the urban poor, and their financial resources, which are usually the most limiting factor in the provision of essential services. The type of analysis described in this section focuses on these aspects of the governmental agencies that operate in urban areas. The analysis describes the structure of governance and identifies the distribution of functions and authority between urban government and higher levels of government.

Relevance to AID Activities. The AID policy determination on urbanization and the urban poor (PD-67) indicates concern for problems of the urban poor and specifies that new activities to benefit the urban poor will consist inter alia of improved urban planning and assessment of impacts of social welfare programs in big cities. Analysis of urban administration is related directly to these

problem areas. The analysis assesses the ability of urban government to carry out effective urban planning and social welfare programs including the provision of essential public services.

Typical Questions. The following questions are examples of those which can be addressed in analysis of urban finance and urban management:

- What are the jurisdictional areas of urban government? Are urban areas underbounded (i.e., do urban settlements extend beyond the jurisdictional boundaries) or overbounded?
- What essential services are most critically needed? education? vocational training? employment services? health care? potable water? sewerage? electricity? public markets? transport terminals?
- What essential services are financed by each level of government?
- What essential services are managed by each level of government?
- What public authorities are involved with the provision of essential urban services?
- How are the revenues of urban government and public authorities acquired? What sources of credit do they have? How much do the urban poor contribute to these revenues?

- What are the expenditure patterns of urban governments and public authorities? How much do the urban poor benefit from these expenditures?
- How committed are local governments and public authorities to assisting the urban poor?
- What budgeting process and decision making criteria and mechanisms are used?
- Are urban governments or the public authorities involved in any projects specifically designed to help the urban poor?
- Do any programs exist for the training of urban management specialists? Are there provisions for technical assistance to urban governments?
- What is the status of urban planning?
- To what extent do the urban poor participate in urban government? What means exist?

Data Sources. Government publications are a good source of data on the distribution of functions and authority among the various layers of government between the national level and local level. The reports of subnational governmental bodies provide information on their structure and organization. In addition, the annual reports of public authorities often contain budget

data pertaining to sources of revenue and expenditure patterns. Annual reports may also provide statistics on the provision of essential services, such as the number of patients cared for at public health centers. The census may also be a good source of data on such indicators of access to key public services as school enrollments, or connections to electrical, water and sewer systems.

Interviews with key public officials can also provide useful data. Mailed questionnaires may be appropriate for obtaining needed data from small urban areas.

Data Analysis. Much of the appropriate data may be nonquantitative and descriptive and, therefore, not amenable to sophisticated quantitative analysis. In many cases descriptive answers to key questions may constitute the most useful form of analysis.

An inventory of the urban governments and public authorities can be made. The inventory should include a description of the structure of each important subnational public body. It should also indicate which services are provided by which agencies. If data are available, sources of revenues and expenditures should be listed. The following categories are suggested:

(a) Revenues

1. Direct taxes (by source: income, property, etc.)
2. Indirect taxes
3. Non-tax revenues (licenses, user fees, etc.)
4. Intergovernmental payment
5. Repayment of loans made
6. Receipts from borrowing
7. Other revenue

(b) Expenditures

1. Government services and programs (by functional area)
2. Transfer payments to households and enterprises
3. Intergovernmental payments
4. Debt services
5. Loans and advances
6. Other expenditures.

Revenues should be compared to expenditures. The relative strengths of the different levels of subnational government might be assessed by comparing the size of their budgets. A simple assessment of the financial capability of an urban government can be made by comparing its per capita revenues with the services it is responsible for providing.

An assessment can be made of the net impact on the urban poor of government activities. This assessment can be made by comparing the incidence of taxes and other revenues with the incidence of public expenditures and service provision. Tax incidence is usually expressed in terms of effective rates at different levels of the income distribution. Estimates of the incidence of property and corporation taxes are very dependent upon the assumptions concerning the shifting of the tax burden to renters or consumers. The incidence

of public expenditures can be expressed in terms of the differences of access to public services. Possible measures of access to public services include proportion of roads paved, percentage of households with piped water, sewerage, electricity, and school age children per classroom or per school teacher. The net impact of government activities on the urban poor is made by comparing tax incidence with the incidence of public expenditures. The comparison may indicate the degree of commitment of urban governmental authorities to the urban poor.

The management capability of urban public authorities can be appraised by investigating their operating procedures. The investigation might look at decision making criteria and mechanisms as well as at the degree of centralization of authority and responsibility. Measures of efficiency might be used to appraise the effectiveness of public agencies.

Urban planning capability can, in many situations, be assessed by the presence or absence of a formal planning body. If no explicit planning body exists, capability to prepare for the future may be reflected in decision making procedures. The type of planning practiced by formal planning bodies should be described. A wide variety of types of urban planning exist, including such diverse activities as capital improvement schedules, social welfare

programming, and the development of zoning regulations and land use maps. In appraising urban planning practices and capabilities, consideration should be given to the role of urban poor participation in the planning process.

Sources for Further Information. Selected case studies and background materials for this type of analysis are described below:

1. Bryant, Coralie, "Participation, Planning and Administrative Development in Urban Development Programs," prepared for AID (Washington, D.C., February, 1976).
   This monograph describes the interrelationships between administration, planning, and participation in urban development programs. Potential project opportunities are discussed and an evaluation process is outlined.

2. Institute of Public Administration, New York, project on International Urban Studies.
   This project studied urban management and urban finance in several cities. The studies investigate intergovernmental relationships, management capability, financial resources, selected public services and planning capacity. Some of the publications from this project are listed below:

   a. Austin, A.G. and S. Lewis, Urban Governments for Metropolitan Lima (New York: Praeger, 1970)

   b. Cannon, M.W.; R.S. Foster and R. Witherspoon, Urban Government for Valencia, Venezuela (New York: Praeger, 1973)

   c. Johnson, K.M. Urban Government for the Prefecture of Casablanca (New York: Praeger, 1970)

   d. Richardson, I.L., Urban Government for Rio de Janiero (New York: Praeger, 1973)

   e. Williams, B.A. and A. H. Walsh, Urban Government for Metropolitan Lagos (New York: Praeger, 1967)

f. Walsh, A. H., The Urban Challenge to Government (New York: Praeger, 1969).

3. Linn, Johannes F., "The Distributive Effects of Local Government Finances in Colombia: A Review of the Evidence," World Bank Staff Working Paper No. 235, (Washington, D.C., March, 1976).
In this exemplary case study the institutional framework of local government is described and the incidence of local taxes and public expenditures are assessed. The methodology used is described in detail.

4. McLure, Charles E., "Taxation and the Urban Poor in Developing Countries," World Bank Staff Working Paper No. 222, (Washington, D.C., December, 1976).
This paper examines critically the procedures used in estimating the incidence of taxation in developing countries. Empirical evidence of the tax burden of the urban poor is reviewed and analyzed.

5. PADCO, Inc., Guidelines for Formulating Projects to Benefit the Urban Poor in Developing Countries. Prepared for AID (Washington, D.C., April, 1976).
Chapter 10 discusses potential projects for upgrading urban management and for improving urban financing. Other chapters focus on specific public services, including water supply and sanitation, urban health services, urban education, and urban transportation.

6. United Nations. "Administrative Aspects of Urbanization" ST/TAO/M/51 (New York: United Nations, 1970).
The various levels of governments which operate in urban areas are discussed with respect to administration, intergovernmental relations, management and financial capability, popular participation and representation, and urban planning capacity. In addition, case studies are included for Calcutta, Casablanca, Davao (Philippines), Lagos, Lima; and Valencia (Venezuela).

## H. Analysis of Urban Employment

Urban unemployment and underemployment are two of the biggest problems facing developing countries. These employment problems essentially reflect rural employment problems. Rapid rural population growth has generally outpaced the ability of rural areas to absorb the additional labor. Consequently, labor has migrated into urban areas in hopes of finding employment. Unfortunately, urban employment has not expanded rapidly enough, resulting in very high unemployment and underemployment.

A very important component of the urban employment situation is the urban informal sector. This sector absorbs a very large amount of labor. The informal sector is so named because it does not have formal relationships with government, with the banking system, with large commercial and industrial enterprises or with workers. Enterprises in the informal sector do not depend on foreign inputs or technology, nor do they have formal marketing channels and distribution networks. Their products lack standardization and quality control. The technology is often indigenous and always labor-intensive. Analysis of urban employment seeks to provide the information and understanding needed for programming successful projects to increase employment for low-income groups in both the formal and informal sectors. Special attention is focused on the informal sector because this sector is more labor-intensive and in many cases

can absorb more labor than the formal sector.

Relevance to AID Activities. The AID urban policy determination (PD-67) lists "problems and prospects for employment generation, especially in the informal sector of big cities " as the highest priority area for new research and development and pilot demonstration projects. The success of such projects is dependent upon a careful analysis of the urban employment situation.

Typical Questions. The following questions are examples of those which should be addressed in an urban informal sector analysis:

- What are the extent and characteristics of urban unemployment and underemployment?
- What are the differences in wage levels between the formal and informal sectors?
- What impacts on unemployment result from certain forms of social legislation, such as minimum wage laws, social security programs, and unionization?
- How many are employed in the formal sector? in the informal sector? in small scale enterprises?
- What are the characteristics of employees in the formal and informal sectors? Age? Sex? Education? Migration status? Incomes?
- What skills are required in the informal sector? What skills are available?
- What are the differences between the informal sectors of

metropolitan areas and smaller urban centers?

- What are the regional differences?
- How are informal sector enterprises financed? How much fixed capital and working capital is employed? To what extent does lack of capital inhibit the expansion of enterprises?
- What inputs are crucial to increased development of the informal sector?
- What changes would be required to increase the quality and marketability of informal sector production?
- What formal sector and government activities restrict development of the informal sector?
- What is needed to promote subcontracting arrangements between the formal and informal sectors?
- How stable are informal sector enterprises?
- To what extent can government procurement from the informal sector be expanded?

Data Sources. Data on formal sector employment are generally available from censuses of business and national ministries or departments of labor, commerce, or industry. In many cases appropriate data may be available directly from formal sector enterprises, especially large enterprises.

Due to its informal nature, limited published data are available on the urban informal sector. Although censuses provide

data on total employment, they usually do not distinguish between the formal and informal sectors. However, censuses may provide employment data by sector, by occupation, or by size of enterprise. These employment data provide a useful starting point. Additional useful data may be included in government reports concerning licensed business firms, wages, or social security payments. Surveys are required to obtain detailed data on the urban informal sector. Before a survey is taken, a thorough search should be made to uncover data from past surveys. The ILO conducts numerous surveys in cities of developing countries. Data from existing surveys should be closely scrutinized before new surveys are initiated. If a new survey is required, the survey design should make use of ILO and others' experience in this field. Most ILO surveys make use of modified versions of the Jakarta informal sector survey.

Analysis of Data. An assessment should be made of potential for increased employment in both formal and informal sectors. The assessment should investigate the markets for products from both sectors, their capital/output and capital/labor ratios, their financial requirements and their key constraints to expansion. The potential for new enterprises and industries should be appraised by analyzing market conditions and the availability of key inputs, such as local raw materials. For the formal sector this analysis can make use of selected economic techniques used in developed countries. For the informal sector the analysis is somewhat stickier.

Although interest in the urban informal sector has been brewing for a few years, most analyses have been limited to identifying the sector and describing its workers. Efforts at identifying and estimating the size of the urban informal sector indicate four different approaches -- namely, the sector approach, the wage approach, the firm size approach, and the formal registration approach.

The sector approach assumes that employment in the informal sector can be estimated from census data on employment in the commercial, construction and personal services sectors. Of course, this very simple approach has obvious drawbacks. A somewhat better approach identifies informal sector employees as those in certain census occupational categories such as street vendors, construction workers, potters, bakers, or domestic servants. National level census tables showing amount of education by occupation can be used to specify which occupations are in the informal sector. For example, occupations which have average employee education levels of less than the national adult average might be included in the informal sector. An advantage with this method is that the size of informal sector in individual cities can be estimated from census data.

With the wage approach, economically active persons earning less than the official minimum wage on a weekly or monthly basis are assumed to belong to the informal sector. The simplicity of this approach is attractive; however, appropriate data on wages are often difficult to obtain.

The firm size approach, which also has the advantage of simplicity, assumes that all firms with fewer employees than some cutoff number, are in the informal sector. Often governments regularly survey firms with more than a certain number of employees. This number can be used as the cutoff and all employees not included in the government survey may be assumed to be in the informal sector. The ratio of informal to formal employment may be computed from the latest census and used with data on the surveyed firms to calculate the size of the informal sector during intercensal periods. The firm size approach may be modified; for example, small professional firms might be excluded from the informal sector even though they have fewer than the cutoff number of employees.

The formal registration approach assumes that the formal sector includes all employment in firms which are formally registered with government or involved in the national social security system or subject to minimum wage laws. All remaining employment is assumed to belong to the informal sector. With this approach, informal sector employment can be estimated during intercensal periods using government data on employment in registered firms and the method described under the firm size approach.

Aside from efforts to identify the urban informal sector, analysis has been mostly limited to description of informal sector employee characteristics, such as age, sex, education, migration status, position in the household and earnings record. Unfortunately, thorough

analyses of the structural dynamics of informal sector enterprises have not been conducted. Such analyses should analyze enterprises in the sector with respect to capital intensity, wages, productivity, need for credit, past growth experience, and potential for future growth. Comparisons between formal and informal sectors should be made with respect to labor costs, overhead costs, capital requirements, quality and price of products, and skill or level of education of employees.

Sources for Further Information. Selected case studies and background materials for urban informal sector analysis are described below:

(1) Badari, V. S. "Disaggression of Urban Populations into Modern and Traditional Categories: A Methodological Note and Application to Venezuela," prepared for AID by General Electric TEMPO (Washington, D.C. July, 1973) GE74TMP-25. A method is presented for identifying the urban informal sector using census data on education levels by occupational categories.

(2) International Labour Office (ILO). The ILO is involved in numerous surveys and studies related to urban employment. The following currently available ILO publications analyze the urban employment situation:

(a) Bairoch, Paul, Urban Employment in Developing Countries: the Nature of the Problem and Proposals for its Solution (Geneva: ILO, 1973)

(b) ILO, Employment Incomes and Equality: A Strategy for Increasing Productive Employment in Kenya (Geneva, ILO, 1972)

(c) Joshi, H., H. Lubell, and J. Mouly, Urban Development and Employment in Abidjan (Geneva, ILO, 1976)

(d) Lubell, Harold, Urban Development and Employment: The Prospects for Calcutta (Geneva, ILO, 1974)

(e) Schaefer, K., Urban Development and Employment in Sao Paulo (Geneva: ILO, 1976)

(f) Sethurman, S.V., Urbanization and Employment in Jakarta (Geneva: ILO, 1976)

(g) In addition to these, the ILO is currently involved with surveys of the informal sector in the areas listed below. Publications are expected soon.

| | | |
|---|---|---|
| Bogota | Freetown | Manila |
| Calcutta | Jakarta | Tanzania |
| Colombo | Kumasi, Ghana | Tunis. |
| Dakar | | |

(3) Mazumdar, Dipak, "The Urban Informal Sector," World Bank Sector Working Paper No. 211 (Washington, D.C., July, 1975). An analysis of data from several countries indicate that the urban informal sector is not the major point of entry for fresh immigrants; great variations of earnings exist in the sector; workers are disproportionately very young or very old, female, limited in education, and not primary household earners.

(4) PADCO, Inc., Guidelines for Formulating Projects to Benefit the Urban Poor in Developing Countries, prepared for AID (Washington, D.C., April, 1976). Chapter Four provides an excellent discussion of employment for low-income urban households and discusses 14 types of project opportunities. These projects are grouped into the following categories: projects to support individual private enterprises, projects to support cooperatives, projects designed to increase the productivity of individuals directly through training or assistance outside specific enterprises, and projects to expand direct government hiring.

## I. Urban Functional Analysis

The interacting set of urban centers in a country may be viewed as a system. Cities, the elements of the urban system, interact with one another and with rural areas. This interaction takes place because each urban center provides functions to the system. Some cities function as administrative centers, others as manufacturing centers, and still others as transportation centers. Urban functional analysis focuses on the dominant functions provided by each center.

All urban centers from villages to metropolises provide functions. Market towns and other small centers provide such services to their surrounding hinterlands as markets for agricultural output and consumer goods, local administration, and social services, such as health care and education. Analyses of these urban nodes ("service centers") are described in another section of these guidelines. (See Section D)

In this section attention is focused on the functions provided by a city to regions beyond its immediate hinterland. These functions are often considered the "economic base" of the city. Due to economies of scale and locational advantages cities specialize in the functions they provide. By analyzing the functional specialization of cities, classification schemes can be developed which contribute to enhanced understanding of the urban system.

Relevance to AID Activities. If AID efforts in urban areas are to be successful, decisions must be based on an adequate understanding of the urban system and its functional elements, the cities and towns of which it is comprised. AID efforts in the urban realm require approaches which are sensitive to the functional characteristics of individual cities. For example, small cities classified as "industrial" might be more appropriate for vocational training projects than small cities classified as "administrative centers."

Urban functional analysis provides an understanding of the urban system by identifying the functional specialization of its component cities and towns. Urban classification schemes based on functional specialization can contribute to improved programming of AID urban projects.

Typical Questions. The following questions are examples of those which can be addressed with this type of analysis:

- Which towns and cities are dominant food processing centers in the country?
- Which towns and cities have the greatest percentage of employees in transportation and communication industries? in extractive industries? in textile industries? in household products industries? in export industries?

- Which towns and cities are cultural, spiritual, and intellectual centers?
- Where are major wholesale activities concentrated?
- Which towns and cities have the highest rates (both net and gross) of in-migration? of out-migration?

Data Sources. Employment data from national censuses are generally appropriate for this analysis. Census data indicate which towns and cities have concentrations of employees in selected industries and occupations. Census population data are also very useful in identifying urban centers which have experienced rapid in-migration. Additional useful data may be obtained from numerous other sources including the reports of national ministries and departments.

Analysis of Data. Several methods may be used to analyze urban functional specialization. Nelson used the percentage employment in different industries to establish a functional classification system.[1] He classified cities by comparing their percentage employment in selected industries with the average percentage for all cities in the analysis. For example, he would classify a city as "manufacturing",

1. Nelson, J. J., "A Service Classification of American Cities," Economic Geography, v. 31, n. 3, (1955) pp. 189-210.

if its percentage employment in manufacturing was greater than one standard deviation above the average. Two standard deviations above the average would result in a classification of "dominant industrial". In classifying American cities, Nelson used ten basic categories: mining, manufacturing, transportation and communication, wholesale trade, retail trade, financial-insurance and real estate, personal services, professional services, public administration, and diversified (a catchall class for cities not falling into any other category). These ten classes are offered only as an example; other categories may be more appropriate in other countries.

A similar and easier-to-apply classification scheme can be developed by using location quotients. A location quotient is a ratio of the percentage of a city's employment in a specific industry to the percentage employment in that industry in all cities. For example, if 25% of the employment in Rabat were in public administration and 10% of the employment in all Moroccan cities were in public administration, the location quotient for public administration in Rabat would be 2.5. Location quotients substantially greater than 1.0 indicate economic specialization.

More sophisticated classification schemes can be developed using R mode factor analysis. The analysis identifies basic dimensions which can be used to classify urban centers. Alternatively, Q mode factor analysis or cluster analysis can be used to group cities directly into classes. Separate analyses could be used to classify cities of different sizes.

It is important to keep in mind that classification for its own sake is rather useless. Classification in this type of analysis is useful when it enables the analyst to identify correctly the distinctive functions of various urban centers. The knowledge of these functions leads to a better understanding of the urban system and, therefore, to more effective development of urban and regional projects.

Sources for Further Information. Selected case studies and background materials for urban functional analysis are described below:

1. Berry, B. J. L. and F. E. Horton. Geographic Perspective on Urban Systems (Englewood Cliffs, New Jersey: Prentice Hall, 1970).
   Chapter Five provides a detailed discussion of the purposes and methods of urban functional classification schemes. Chapter Six describes factor analytic approaches to the identification of the basic dimensions of urban systems.

2. McNulty, Michael L., "Urban Structure and Development: The Urban System of Ghana," The Journal of Developing Areas, v. 3, (1969). pp. 159-176.
A factor analysis of 1960 Census data is used to identify two basic dimensions of the urban system -- namely, degree of economic diversification and attractiveness to migrants. These dimensions are then used to identify the functions of individual urban centers.

3. Nelson, J. J., "A Service Classification of American Cities," Economic Geography, v. 31, (1955) pp. 189-210.
The very well known Nelson classification scheme is described and applied to the American Urban System.

4. Smith, R. H. T., "Method and Purpose in Functional Town Classification," Annals of the Association of American Geographers, v. 50, (1965) pp. 539-548.
Reprinted in Berry and Horton, op. cit., pp. 106-112.
A number of approaches to urban functional classification are analyzed.

## J. Social Analysis of the Urban Poor

This analysis provides an understanding of the social characteristics of urban poverty groups. It can be used to investigate their social organization, behavior patterns as well as their attitudes, values and "world view." This type of analysis is generally the purview of sociologists or urban anthropologists. In years past it appears that some sociological constructs have lead to some misconceptions about urban poverty groups in developing countries. Attempts have been made to fit these groups into dichotomous social classifications, such as urban society - rural society, industrial man - preindustrial man, primary group focus - secondary group focus. Fortunately this approach was rejected several years ago because detailed field work revealed that urban poverty groups often have attitudes, values and behavior patterns characteristic of both ends of these dichotomies. Although a few generalizations can be made concerning urban poverty groups, there are numerous exceptions to each generalization. The analysis in this section is designed to move beyond these generalizations and uncover information on specific urban poverty groups and their needs. Such information is often crucial to successful development efforts.

In short, this analysis should provide needed information on urban target groups so that development programs and projects can be formulated which are consistent with the social organization, behavior patterns, attitudes and values of these groups. This information can also be used to increase target group participation in development projects.

Relevance to AID Activities. Before any development effort is attempted, a clear understanding of the social characteristics of the target group should be obtained. Ideally this understanding should exist before projects are considered. In reality, a social analysis of the target group is often conducted as an early phase in the project programming process. The information gained from this analysis can be very useful in tailoring a project to fit a particular target group and their development needs.

Social analysis of urban poverty groups is closely related to some components of AID policy and programming guidelines. One important aspect of the recent policy determination (PD-67) on urbanization and the urban poor is improving current knowledge and understanding of the problems of the urban poor. The analysis described in this section can provide this knowledge and understanding.

In addition, this analysis is very closely linked to "Social Soundness Analysis" described in Appendix 5A of AID Handbook Three. Although this appendix is couched in terms of small farmers and rural development, it is also very applicable to urban areas. A key component of social soundness analysis is an assessment of the compatability of the project with the socio-cultural environment in which it is introduced -- i.e., its sociocultural feasibility. This assessment is dependent upon the type of analysis described in this section. Other components of social soundness analysis -- i.e., anticipated spread effects and the distribution of project benefits -- also are related closely to social analysis of the urban poor.

Typical Questions. The following questions are examples of those which can be addressed in social analysis of the urban poor.

- What are the social behavior patterns of the urban poor?
- What is the "world view" of the urban poor? Can projects be developed which are consistant with this "world view"?
- What is the attitude of the urban poor toward the government? toward assistance agencies? toward development projects?

- How can projects be designed to increase the participation of the urban poor? What types of projects will they accept enthusiastically?
- What are the dynamics of family structures among the urban poor? What implications do these have on project development?
- What are the differences in the social characteristics of poverty groups in different neighborhoods? in different towns?
- What do urban poverty groups perceive as their greatest problems? What do they think they need to solve these problems?
- What are the goals and aspirations of urban poverty groups? Do they expect to achieve these?
- What are characteristics of social organization in urban poverty areas? Who are the opinion leaders?
- What are the specific characteristics (age, sex, education, attitudes, aspirations) of people expected to participate in the development project?
- What social characteristics appear to be constraints to development? Are these characteristics likely to change? How can the concept of "development" be changed to accommodate these characteristics?

Data Sources. Detailed information on the social characteristics of urban poverty groups is not readily available. Although censuses often provide basic data on employment, demographic characteristics, and housing conditions, they generally do not provide detailed information on important social characteristics such as aspirations, attitudes, values, behavior patterns or social organization. This type of information is usually obtained by using the techniques of social anthropology, such as detailed interviews, key informants, participant observation and projective tests (thematic apperception or Rorschach tests). These techniques are very time-consuming and usually can only be administered to a small group. Because of these limitations, information from existing studies should be exploited to the fullest extent possible.

Unfortunately existing studies in social anthropology have tended to concentrate on rural populations. Although these studies may provide useful insights concerning rural groups which have since moved into urban areas, they should be used cautiously. When rural groups move into urban situations, they make adjustments and experience some social changes. Although they may retain many of their rural values and attitudes, these may be altered considerably. In short, these groups cannot accurately

be characterized as being either "urban" or "rural" ideal types in a sociological sense.

If social anthropology studies in urban areas are available, they should be carefully scrutinized. However, it must be remembered that these studies usually focus on a small urban group whose characteristics may not be typical of other urban poverty groups. Social surveys usually include a more representative sample of urban poverty groups. If survey data are available concerning the social characteristics of urban poverty groups, they should be carefully analyzed. The sociology and anthropology departments of national universities are a good source of information concerning existing studies of the social characteristics of urban poverty groups. If existing studies are not adequate or not available, a survey should be considered. In setting up a survey great care must be taken to insure that the survey instrument is free from cultural biases. This is particularly important in dealing with such subtle concepts of values, attitudes and perceptions.

Data Analysis. Although advances are being made in quantitative social anthropology, data from most existing social anthropology studies of urban poverty groups are usually descriptive and anecdotal and therefore not suitable for quantitative analysis. On the other hand, these verbal data may be very useful in answering key questions concerning the social characteristics of urban poverty groups. This type of verbal analysis involves a very careful review of existing information and an assessment of the development implications therein.

Survey data may be analyzed using a wide range of quantative techniques such as correlation, simple and multiple regression, factor analysis, contingency table analysis and multidimensional scaling. Although these techniques may be suitable in some situations, in many cases such analyses are of limited value to policy makers and project planners.[1] In many situations survey data are more useful when verbally described and presented in simple cross tabulations than when used in sophisticated quantitative analysis. What is important is obtaining accurate information on the social characteristics of urban poverty groups and using this information in identifying and programming projects.

1 Kearl, Bryant ed. Field Data Collection in the Social Sciences (New York: Agricultural Development Council, Inc., 1976), p. 180.

Sources for Further Information. Selected case studies and background materials for this type of analysis are described below.

1. A.I.D., A.I.D. Handbook 3: Project Assistance, Appendix 5A, "Social Soundness Analysis," pp. 5A-1 to 5A-12, (Washington: AID, 1976). This appendix provides an excellent discussion of the importance of social analysis to project success. Important questions and key component of the analysis are identified.

2. Gutkind, P.C.W. Urban Anthropology: Perspectives on 'Third World' Urbanization and Urbanism (Assen, Netherlands: Van Gorcum and Co., 1974). This book, which focuses more heavily on Africa than other areas, provides an indepth discussion of methodologies for investigating social characteristics of urban poverty groups.

3. Laquian, Aprodico A. Slums Are For People. (Honolulu, Hawaii: East-West Center Press, 1969). This book analysis the social characteristics of a Manila slum and documents the Barrio Magsaysay urban community development project. A discussion is provided of the types of analysis is used in assessing the target population and in developing the project.

4. Mangin, William ed. Peasants in Cities: Readings in the Anthropology of Urbanization. (Boston: Houghton Mifflin, 1970). Although this volume focuses the social characteristics of urban poverty groups in all developing countries, special attention is given to Latin America, particularly to Peru.

5. O.Barr, W. M., D. H. Spain and M. A. Tessler, eds. Survey Research in Africa: Its Applications and Limits. (Evanston, Ill.: Northwestern University Press, 1973). This volume provides an excellent discussion of sampling, measurement and survey administration in foreign cultures as well as addressing important ethical issues related to this research approach.

6. Southall, Aidan, ed. Urban Anthropology: Cross-Cultural Studies of Urbanization (New York: Oxford University Press, 1973). This volume includes social analyses of urban population groups in Africa, Asia and Latin America.

# III. APPLICATIONS OF URBAN AND REGIONAL ANALYSIS

The following scenarios describe the use of urban and regional analysis in a number of AID field mission situations. The intent of these scenarios is to indicate to missions the nature and depth of analysis appropriate for different situations. The sections mentioned in these scenarios -- e.g., section C, section D, etc. -- refer to those in Chapter II of this paper, which discuss different types of urban and regional analysis.

Where possible, these scenarios are based on actual field situations. It is hoped that, as the Agency gains more experience in the use of urban and regional analysis, these scenarios will be augmented by actual case studies.

A. Urban Functions in Rural Development Project

The purpose of the project is to establish a network of centers which will serve as the economic and social foci for rational regional development. In developing the project a number of analyses were undertaken.

PID (Project Identification Document) Stage. The project, which was jointly conceived by the mission and host government, is a key component of the government's plan for decentralized development. In the PID four specific service centers were selected for project attention. Their selection was based on a central place service center analysis (Section D) conducted by a UN consultant. The analysis made use of census data on the types of functions provided at centers at different levels of the urban hierarchy. If the analysis had not been conducted by the UN consultant, it could have been completed either with AID/W TDY assistance or by AID consultant at a later phase of project development. The analysis required about two man-months of professional effort.

PRP (Project Review Paper) Stage. At this stage a quick analysis of the distribution of development and underdevelopment (Section C) was made by the mission, with AID/W/TA/UD TDY assistance. This analysis used census data and developed a poverty index based on literacy, infant mortality rate, and access to electricity, potable water, and sanitary facilities. According to this index, half of the districts in the hinterlands of the four service centers were

among the poorest in the country. This simple analysis established that the target population was indeed within the poor majority. In addition the mission with AID/W/TA/UD assistance submitted a scope of work for additional analysis at the PP stage.

PP (Project Paper) Stage In preparation of the PP an analysis of key urban-rural linkages was required (Section F). This analysis involved a survey and four man-months of U.S. consultant effort. The survey, which was purchased from the government census office for $15,000, covered small farmers in the hinterlands of the four service centers and people involved with key linkages, including trucking, warehousing, storage, grading and processing of farm products, and in farm input activities such as the supply of credit, implements, fertilizer, and seed. Agricultural extension workers were also interviewed. The consultant's analysis of the survey data indicated increased rural production was constrained because certain of the urban functions needed for rural development were not being adequately provided. In general, functions in need of upgrading included storage facilities for perishable produce and farmer access to credit and fertilizer. The analysis revealed that one of the service centers was also in need of a new market and grading and sorting facility. This information was very useful in the development of a detailed project design.

## B. Project to Improve the Well Being of Slum Residents in the Capital City

The purpose of the project is to improve the income opportunities, housing, and community services of residents in selected slums in the capital city.

PID Stage This project is targeted to slum dwellers in the capital city of a small country. In the PID the mission identified eight slum areas for project attention. These eight areas were among the seventeen slum areas identified by the host government using census data (Section C). The PID contained a map showing the locations of all seventeen slum areas (population 107,000), including the eight slums in the project (population 68,000). In addition the mission used published income distribution data[1] and a careful, expert estimate of poverty lines to assess the incidence of poverty in the capital city, in other urban areas and in rural areas. Although this comparative assessment did indicate that the incidence of poverty was slightly higher in rural areas, it did provide clear evidence that a sizeable proportion of the poor majority was located in the capital city.

PRP Stage In response to the PID and because the urban poor

1. Jain, Shail, Size Distribution of Income: A Compilation of Data (Washington, D.C., The World Bank, 1975)

were a new target group for this mission, AID/W indicated the need for an urban poverty assessment. The scope of work for this assessment was developed by the mission with AID/W/TA/UD assistance. In developing the scope of work, a review was made of existing studies on urban poverty groups in the country. This review revealed a surprising number of recent and potentially useful materials. Because of these materials, it was decided that existing data were sufficient for the assessment.

PP Stage The urban poverty assessment was a key component of PP preparation. This assessment was written in five months by a four person U.S. consultant team with host government and mission support. The assessment included a section on social analysis of the urban poor (Section J) which was developed from existing published and unpublished documents by the urban anthropologist on the team. Another section focused on employment opportunities in urban areas (Section H). This section, which was written by the team economist, concentrated on credit and technical assistance for small, labor-intensive enterprises and on vocational training. The team's public administration specialist developed an inventory of the provision of urban public services (Section G). Although this section looked at all urban areas, it paid special attention to the capital city and particularly to the seventeen slum areas. Basic data for this assessment were obtained from service provision agencies. Another consultant familiar with the HIG (Housing Investment Guaranty) program wrote a section on the housing delivery system with particular emphasis on low-cost

housing in the capital city. In addition team members collaborated to write an introductory section and a conclusions and recommendations section. The introductory section discussed urbanization and migration trends in the country (Section E) and government policy concerning urban development (Section A).

The urban poverty assessment provided detailed background information which was very useful in developing the detailed project design. The assessment also identified three other potential urban poor project opportunities.

C. Intermediate-Sized City Employment Project

The purpose of this project is to increase employment opportunities for low income groups in secondary cities. The host government, which is very concerned about continued migration to the primate city, supported the project.

PID Stage The PID identified the project areas as being the country's two intermediate-sized cities. These cities had populations of 129,000 and 87,000 at the last census. The project target population has two components:

(1) poverty groups in the two cities, and

(2) low income groups in the hinterlands of the two cities who are being forced to migrate to urban areas because of rural overpopulation and land shortage.

The basic rationale is to develop employment opportunities in the two cities which will act as countermagnets and redirect current migration flows. The government considers this to be a very important component of the efforts to alleviate poverty in rural areas and in the primate city. The PID included a description of existing government policies related to urban development (Section A). In addition the PID described current migration flows and used census data on the rapid population growth of the primate city to underscore the description.

PRP Stage As background for PRP preparation, a number of quick analyses were undertaken by the mission. Using data from the

government budget, a few tables were developed which indicated that although the government plan called for decentralized development, almost half of the budget was being spent in the primate city in which only 18% of the population resided (Section A). These tables highlighted the need to decentralize and to solidify government support for the project.

The official government poverty lines and a government study on income were used to assess poverty in the two intermediate cities and their hinterlands (Section B). The assessment revealed that there was substantial poverty among the target group. In addition results of a migration analysis by a university professor indicated that most migrants moved in search of employment (Section C). This finding, which is consistent with findings in several other countries, was included in the PRP as further evidence that increased employment opportunities in the two intermediate cities would indeed redirect some of the present migration flows.

PP Stage. Additional analyses were performed as a basis for developing the PP. These analyses were directed at identifying ways to expand employment in the two cities (Section H). The mission, AID/W, and the government agreed early on that increased employment in the cities should be linked to regional resources. A consultant team, headed by a regional development expert and composed of mission agriculture sector personnel and government agriculture and regional development personnel, conducted a four month analysis

of regional resources in the hinterlands of the two cities. The analysis indicated that a number of labor intensive agricultural processing activities could be developed in the two cities. In addition, low cost labor was identified as a key regional resource. A list was developed of potential labor intensive activities for the two cities; this list was largely comprised of small scale activities.

As soon as the team identified the activities, they enlisted a small enterprise specialist to investigate constraints to the development of these activities. Interviews were conducted with a number of small businesses both private and cooperative. These interviews revealed that important constraints were lack of information and uncertainty; unavailability of credit and, in one of the cities, lack of adequate serviced business sites. This information was used to develop the project mix for the PP. This mix included funds for the establishment in the two cities of branch offices of the government development corporation. These offices were charged with the responsibility for collecting and disseminating vital information for potential labor intensive enterprises on such things as: sources and costs of regionally produced raw materials, domestic and foreign markets, the availability and skill level of local labor, sources of finance and provision of required infrastructure. In addition, the government agreed to provide limited tax concessions to new firms locating outside the primate city. Another

aspect of the project was the opening of a new loan window in the national bank which provided credit to small scale labor intensive enterprises at less than market interest rates. The project also included a host country financed small scale serviced industrial park in one of the cities.

The PP also included a short analysis of the social characteristics of low income groups in the two cities (Section J). The analysis,which was conducted by a research institute of the national university at a cost of $7,500, focused on attitudes of the target group toward employment. The analyses included interviews with urban and rural target group members and with selected employers in the two cities.