POLICY RESEARCH PROJECT REPORT

LYNDON B. JOHNSON · SCHOOL OF PUBLIC AFFAIRS ·

Number 6

COMMUNITY INDICATORS: IMPROVING COMMUNITY MANAGEMENT

THE UNIVERSITY OF TEXAS AT AUSTIN

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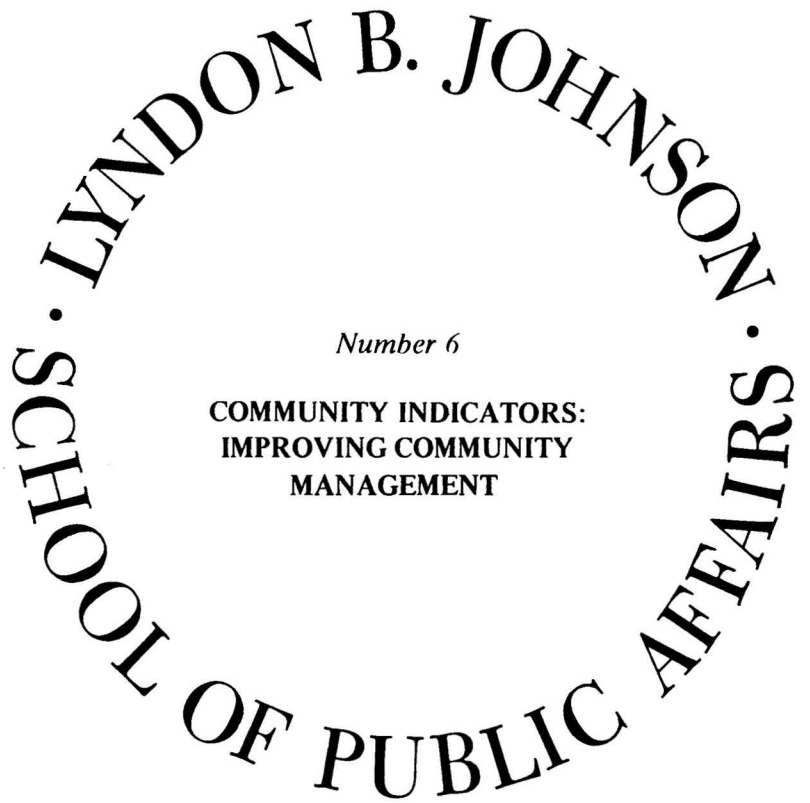

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COMMUNITY INDICATORS: IMPROVING COMMUNITY MANAGEMENT

A Report by
The Community Indicators Policy Research Project
Lyndon B. Johnson School of Public Affairs
The University of Texas at Austin
1974

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FOREWORD

The Lyndon B. Johnson School of Public Affairs has established interdisciplinary research on policy problems as the core of its educational program. A major part of this program is the policy research project in the course of which three faculty members, each from a different profession or discipline, and about fifteen graduate students with diverse backgrounds research a policy issue of concern to an agency of government. This "client orientation" brings the students face to face with administrators, legislators, and other officials active in the policy process, and demonstrates that research in a policy environment demands special talents. It also illuminates the difficulties of using research findings to bring about changes where political realities must be taken into account.

Community Indicators: Improving Community Management is the report of one of the School's policy research projects conducted during 1973-74. In the course of the year's research, students and faculty worked with representatives of six city governments, four state governments, and the various offices attached to the Southwest Regional Office of the Department of Housing and Urban Development. The report describes the cities' experiences in establishing systems of community indicators, provides illustrative analyses of indicator data gathered during the project, and sets forth conclusions about the uses of community indicators which the LBJ School participants feel to be most appropriate at present. Additionally, recommendations are stated for consideration by cities wishing to initiate their own indicator systems and by other levels of government which seek to encourage these cities.

It should be noted, however, that the School does not function as a policy advocate. Its intention is both to develop men and women with the capacity to perform effectively in the public service and to produce research that will enlighten and inform those already engaged in the policy process. The project which resulted in this report has helped to accomplish the former; it is our hope and expectation that the report itself will contribute to the latter.

Alexander L. Clark
Acting Dean

PREFACE

In June 1973, a conference held at the LBJ School was attended by a wide range of public officials. Representatives of state governments in Arkansas, Louisiana, New Mexico, Oklahoma, and Texas, along with officials of the Department of Housing and Urban Development (HUD) and other interested parties were presented with an overview of work just completed under the auspices of the Community Analysis Research Project (CARP), an independent research effort by students at the LBJ School. Immediately following the presentation, state government representatives were asked individually about their state's interest in selecting two cities that would commit themselves to testing the central concept of CARP, a particular kind of urban-oriented, quantitative information called *community indicators.* The states of Arkansas, Louisiana, Oklahoma, and Texas agreed to pursue the matter, and by August 1973, selection of participating cities in these states was well underway.

It is from the meeting described above that the Community Activity Indicators Project (CAIP) grew. The project was designed to create community indicator information systems in a number of cities (eventually, six) in four states, with the assumption that to provide city decisionmakers with sound, quantitative information about their cities would make for better decisions. A secondary objective of the project was to explore the possibility that state and federal government agencies could use community indicator information to better assist cities within the area of the agency's concern. Using the LBJ School as a base, the project was to be conducted during the fall of 1973 and the spring of 1974. Generous funding for the project was provided through a 701 grant from the Department of Housing and Urban Development in cooperation with the Texas Department of Community Affairs. In September of 1973, three faculty members and seventeen graduate students began preparations for the upcoming field tests in the cities selected: *Little Rock*, Arkansas; *Monroe*, Louisiana; *McAlester* and *Shawnee*, Oklahoma; and *Midland* and *San Marcos*, Texas. The work was divided into three phases—(1) indicator construction and data collection, (2) data analysis, (3) report preparation and presentation—with conferences held at the School at the beginning and end of each phase. As each phase progressed, student teams visited the cities to assist the city staff members who had been assigned to CAIP. The conferences were intended to keep all participants current on developments at the School and in the cities. In addition, the first and last conferences of the project were meant, respectively, to orient the cities new to the indicator concept and to project the future for community indicators in CAIP cities.

During the life of the project, the LBJ School students and faculty worked alongside mayors, council members, city managers, and other city staff members in the six CAIP cities. They also cooperated with substate regional organization members; state government personnel; HUD area, regional, and national office representatives; and staff from other interested federal, state, and local government agencies. Both the number of participants and the diversity of their viewpoints created a dynamic learning environment for the students involved in CAIP, affording a unique perspective on intergovernmental relations. This perspective is reflected in the report of the project, *Community Indicators: Improving Community Management.*

The authors of this report wish to express their gratitude to all the individuals who devoted their time and attention to CAIP. Special thanks go to *Richard Morgan,* Regional Administrator of HUD, and *Ben F. McDonald*, Executive Director of TDCA, for their personal interest which made the funding and conduct of the project possible. We also gratefully acknowledge the contribution of the Ford Foundation toward defraying the costs of portions of the research.

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SUMMARY OF RECOMMENDATIONS

The recommendations presented in this report are excerpted here for the convenience of readers who wish to quickly glean an impression of the action recommended by the policy research project on the basis of its findings. Such readers are urged, however, to acquaint themselves eventually with the discussions from which the recommendations were extracted so that they can be properly assessed in the context of the research that supports them.

RECOMMENDATIONS CONCERNING THE ESTABLISHMENT AND DEVELOPMENT OF INDICATOR SYSTEMS IN CITIES

- Before beginning work on an indicator system, a city should arrive at a clear understanding of the project's objectives and the proposed uses of the system. (See Chapter VI.)
- The following are recommended as the most appropriate uses of community indicators: (1) disseminating information to the public, (2) training new city personnel, (3) providing a city management information system, (4) informing the city council, (5) identifying municipal problems, (6) helping to establish municipal government priorities, (7) helping to allocate resources among geographic areas of a city, and (8) monitoring the progress of efforts to attain urban goals. (See Chapters V and VI.)
- Indicators should not be used for program evaluation or as the primary tool in a city's budgetary process. (See Chapter V.)
- During the planning stage of an indicator system, a city should critically assess the availability of staff for working on such a project. (See Chapter V.)
- In developing an indicator system, lines of responsibility must be clearly delineated. If possible, the indicator system should be the responsibility of a separate, autonomous indicator staff. (See Chapters V and VI.)
- Indicators should be reflective of the information needs of a city. Individual indicators should be selected on a broad basis, including the viewpoints of local government and all other elements of the community, to the extent feasible. (See Chapter V.)
- Indicators should be based, if possible, on data sources that lie within the administrative control of the level of government gathering such indicator information. (See Chapter V.)
- Indicator information should be compiled at regular and frequent intervals. (See Chapter V.)
- Indicator information should be gathered in a standardized manner, both in terms of the definition of each indicator and the subcity units used in disaggregating indicator information. All city governmental departments should be required to collect their respective data according to subcity units, as opposed to the collection of information for the city as a whole. (See Chapter V.)
- All indicator data should be documented and subjected to procedures for verifying its accuracy. All indicator information should be available for public inspection. (See Chapter V.)
- Cities using indicator data should develop a means for reliably estimating data for periods other than those used by primary data-reporting agencies. (See Chapter V.)
- Cities developing an indicator system should examine the CAIP Model Set of Indicators for the possible inclusion of parts or all of it in their own set of indicators. (See Chapter VI.)
- Cities should periodically upgrade and refine indicator systems which they develop. (See Chapter V.)

RECOMMENDATIONS CONCERNING INTERGOVERNMENTAL USE OR ENCOURAGEMENT OF COMMUNITY INDICATOR SYSTEMS

- In intergovernmental indicator projects, each party's role should be established clearly in a joint agreement before any actual work is undertaken. (See Chapter VI.)
- State and federal governments should assist cities developing indicator systems wherever possible by providing personnel, resources, and facilities. (See Chapters I, IV, and V.)
- State and federal governments should take the initiative in distributing to any city developing an indicator system all pertinent data on that city which they possess. (See Chapter IV.)
- All jurisdictional authorities, such as counties and school districts which lie outside the domain of a municipality with an indicator system, should be encouraged to provide information to such a city. The reverse exchange should also be encouraged. Such counties and school districts should also be

encouraged to use the subcity data collection units of the city's indicator system. (See Chapters IV and V.)

- Data that can validly be compared is necessary for establishing federal and state governments' urban priorities; thus, city indicator systems must contain precise definitions for individual indicators, and standard monitoring and accounting procedures must be used. (See Chapters IV and V.)
- State and federal governments should use cities' indicator information to gain greater knowledge of particular cities, to more efficiently plan and manage programs affecting such cities, and to develop agency expertise in working with different types of data. (See Chapters I and V.)
- Extreme care should be exercised in comparing indicator information among cities because of the wide range of diversity in economic, social, racial, and other aspects of particular cities. (See Chapter I and V.)

RECOMMENDATIONS CONCERNING GOVERNMENTAL INFORMATION POLICY

- Indicator data and reports containing such data should be public information and widely disseminated. (See Chapters IV and V.)
- Care should be taken to see that no indicator system directly or indirectly infringes on the privacy of any citizen. (See Chapter V.)

SUMMARY OF THE REPORT

Over the last 100 years, the United States has become an increasingly urban society distinguished by a complex set of interdependent forces and factors that face today's urban policymakers with difficult challenges. In meeting these challenges, however, local governmental officials are often forced to make decisions based on either insufficient information or excessive amounts of conflicting information.

THE SCOPE AND PURPOSES OF CAIP

The Community Activity Indicators Project (CAIP) was an attempt to meet the need for systematized, up-to-date urban information in six American cities. It was a pilot project funded by Region VI of the Department of Housing and Urban Development and by the Texas Department of Community Affairs. The project consisted of an attempt by the LBJ School and city, state, and federal officials to develop and implement sets of community indicators with federal, state, and local help in Little Rock, Arkansas; and Monroe, Louisiana; Shawnee and McAlester, Oklahoma; San Marcos and Midland, Texas.

Indicators provide information with the intent of monitoring social, economic, and physical change within a community. The goal of the project was to develop a set of indicators that was accurate, concise, based on readily available data, relevant to the needs of policymakers, capable of being regularly updated, and capable of being measured on a subcity basis. The purpose of this report is to help cities that decide to develop indicator systems in the future to do so with a minimum of difficulty.

The project involved federal governmental personnel from HUD, state planning departments, local governmental representatives, and graduate students majoring in public affairs. This report recognizes the importance of such intergovernmental activities in terms of (a) the types of assistance which various levels of government can provide to each other, and (b) the types of benefits which can accrue to the various parties engaged in such ventures. Specifically, the report stresses the need for the development of urban information systems as a prime motivator of intergovernmental cooperation.

THE NATURE OF INDICATORS

Indicators as monitors of social change are plagued by definitional problems and are not a "value-neutral" measure of urban health. The indicator concept has been in existence for approximately 10 years, but indicator theorists are not yet in agreement on the appropriate functions of indicators. Some observers feel that indicators can be used to set long-range goals, establish priorities, and make possible more rational urban decisions, while most writers on the subject agree that indicators cannot be used to prescribe specific remedies for urban ills. The importance of these opinions and observations in assessing indicators cannot be overestimated, and an overview of indicator theory is presented in Chapter II along with a description of the development of the indicator concept.

DESIGN OF CAIP

CAIP was an experimental program designed to initiate, test, and evaluate an indicator system in six municipalities. It consisted of three phases: (1) indicator construction and data collection, (2) data analysis, and (3) presentation of the final list of indicators. The basic work of the project was accomplished through the use of field visits to the various project cities by three-person technical assistance teams composed of graduate students from the LBJ School, and four general conferences attended by project participants and hosted by the LBJ School and the participating state planning offices. The technical assistance teams were assisted during their visits by state and HUD personnel.

The indicators developed were grouped into 13 functional categories, such as housing, demography, and transportation. These indicators composed the master list that was first presented to the cities. During the course of the project, the LBJ School also developed a set of core indicators as a subset of the general indicator list. The core set represented the intersection of those indicators selected by four or more CAIP cities. The data for the core set were collected on all of the cities to facilitate intercity comparisons of information. The development of this core set was oriented toward state and federal interests in CAIP. In addition to core indicators, the cities also used some of the remaining indicators developed by the LBJ School to meet their unique needs. (See Chapter III.)

THE ANALYSIS OF CORE DATA

A major effort of CAIP was an analysis of the indicator information gathered in the six cities performed at the LBJ School by an Analysis Task Force of CAIP. The analysis was limited to the standardized core set of indicators and

was organized as follows: (1) comparison analysis: comparing the indicator information from each city with national and state norms and averages and with the information from the other cities in CAIP; (2) trend analysis: observing changes over time in individual indicators for each city and for groups of indicators; and (3) relational analysis: testing hypotheses and examining relationships between sets of indicators.

The Analysis Task Force was hampered by the problem of limited availability of data, both in terms of an insufficient number of data points over time and too small a number of cities providing information. In addition, some of the indicator information was not collected in comparable fashion by the cities because of certain definitional ambiguities. (See Chapter IV and Appendix I.)

PROBLEMS AND POLITICS OF INDICATORS

The use of indicators is constrained by (a) conceptual, (b) data-related, (c) organizational, and (d) political problems. (a) The nature of the indicator concept itself delimits the uses to which indicators can effectively be put. (b) Data problems include limited availability, ambiguities in indicator measurement and information reporting, insufficient time series, and validity of information. (c) An organizational problem was encountered in developing municipal staff expertise in local governments for adequately handling the various components of an indicator system. (d) Political problems at both intracity and intergovernmental levels presented themselves in all aspects of the typical indicator system, including the initial implementation of the concept, the data collection process, the public dissemination of indicator information, and the use of indicator data. (See Chapter V and Appendix IV.)

USES OF INDICATORS

Possible applications of indicator information include: (a) information applications, (b) planning applications, (c) decision-making applications, and (d) research applications. Chapter VI identifies a set of indicator uses that seem, based on the experience of the project, to be most *appropriate* given the present development of indicator technology. These applications are: (1) disseminating information to the public; (2) training new city personnel; (3) informing city management; (4) informing the city council; (5) identifying problems; (6) analyzing problems; (7) developing programs; (8) establishing priorities; (9) allocating resources; (10) evaluating programs; and (11) monitoring progress toward goals.

Chapter VI also describes a set of criteria for the selection of individual indicator applications most appropriate to a city, and a set of guidelines for use in the implementation stage of an indicator system.

In addition to the material on the most appropriate indicator uses, the report presents the LBJ School/CAIP participants' recommendations on the fostering and improvement of indicator system in urban settings. A summary of these recommendations is presented on pps. ix-x.

THE APPENDIXES

The report carries four appendixes. Appendix I is the report of the LBJ School Analysis Task Force on the analysis of the core data. Appendix II, the CAIP Field Test Histories, is composed of six reports describing the development of CAIP in each of the six cities. Appendix III is a Model Set of Indicators developed by the LBJ School from the core list to serve as a foundation on which a city can build its own indicator system. Appendix IV comprises the questionnaire used by the LBJ School participants to discover the attitudes of other CAIP participants, and the tabulation of responses to that survey.

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CHAPTER I

URBAN DECISIONMAKING AND THE NEED FOR INFORMATION

INTRODUCTION

Since the turn of the century, the governance of cities has become increasingly professional. While it remains true that popular and citizen control is essential to true democratic government it is also apparent that the growing populations and complexities of cities require a new generation of skilled administrators. This search for administrative professionalism culminated in the establishment of the city manager position.

The advent of the city manager marked the first time in municipal history that a professional employee served as the chief administrator of the city. Formerly, administrative decisions and responsibilities were shared by elected mayors and councils. Although these elected officials were usually motivated by good intentions, many were inexperienced administrators. Because many of these city politicians were involved with their private businesses and gave city government less than their full attention, few officials were experienced in specific managerial concepts of public administration. Also, the fact that no single official in city government had been given the responsibility and held accountable for administrative decisions tended to make local decisionmaking an inconsistent process.

Historically, mayors were often seen as the executive head of the city, although they were, as Harold Stone suggests, "seldom elected for their administrative ability, were hardly ever given authority over all parts of the government, and were usually faced with . . . dividing their time and energy between their private business and the city's business" (Stone 1940). City council members seldom had enough support to function as administrative chiefs due to the intense rivalry often present among the city's elected officials.

URBAN DATA

Rapidly growing urban populations, the automobile, and now the energy crunch have expanded and intensified the problems of the cities. Today the urban decisionmaker is often overwhelmed with problems and concerns needing immediate attention. At the same time he or she is faced with what Bertram Gross and Michael Springer have called an "intelligence gap." Decisions are based on information which is "one-sided, missing, distorted, misinterpreted, or unused" (Gross 1969). The result of incomplete and inadequate information is too often an incomplete and inadequate policy.

A city is unable either to plan effectively for the future or to deal with present conditions in the community without up-to-date information in many areas. For example: population estimates and an assessment of new housing trends will help a city plan for adequate sewers in appropriate parts of town; a check of a city's economic pulse will tell a city government whether a concerted program is needed to encourage citizens to shop locally rather than in a neighboring shopping area; detailed knowledge of the skills and ages of the local working force can provide valuable information for a city seeking new industry.

Many policymakers enjoy some success by relying on an intuitive approach to decisionmaking. However, with the advent of the New Federalism and the concomitant increase in expectations of the local community for more and better services, the need for up-to-date, accurate data becomes increasingly more important to sound decisionmaking. The local community has begun to expect the city government to meet citizens' needs before these needs become obvious. For example, the addition of more recreational areas should not wait until the present facilities become grossly overused, but the city without regular information on the use of parks and the condition of park equipment probably will not see the need until the condition is critical.

Because municipal officials in many cities hold elective offices which are considered part-time jobs, these officials are often unaware of available data or tend to use data inefficiently. "Part-time" elected officials are too often unfamiliar with many of the functions and details of city departments, and they must often make decisions based on visceral feelings. In addition, some city councils are elected for staggered terms and face an election for at least one position annually. This means that the possibility of having new city officials who lack municipal experience is present each year. Such an influx of inexperienced decisionmakers increases a city's need for objective and reliable information to make wise decisions.

One potential impediment to the comprehensive collection and use of urban data is the limited use such information is put to in most decisionmaking by city officials. Because choices made by municipal politicians usually are incremental and generally cover policy areas for which little systematized data are needed or currently collected (such as city-employee relations), urban decisionmaking has not often used the kind of data analysis which could provide a descriptive summary of particular conditions.

Furthermore, limitations upon the use of collected urban information arise from the limited personnel and resources available to most cities. Proper data analysis requires city employees with a certain degree of expertise and training, as well as access to such aids as computers, calculators, and research material. Since the availability of such aids assumes the presence of certain financial and technical resources, the lack of adequate city funds to hire and equip a staff impedes the plans of many cities to use such data.

While city officials may not always see the need for systematized information, the need for accurate data is essential for informed decisionmaking. The decisionmaker with accurate figures reflecting the crimes cleared by arrest, the number of police per 1,000 population, and the number of serious crimes in the community can better evaluate a request for a higher police budget than the decisionmaker without such statistics. Each problem is different, but the data needed by the policymaker have similar characteristics. The information should be:

- accurate;
- disaggregated (broken down into parts or sub-units of the whole);
- concise (expressing a lot in a few words);
- regularly updated (data kept on an annual basis offers an easy method of comparison with past efforts);
- readily available; and
- relevant to the needs of the policymaker requesting the information.

To meet these qualifications, data gathering should be conducted on a systematic, frequent basis, and information must be collected uniformly throughout the city administration.

In many instances, what decisionmakers need and what they want are not the same thing. Many budget-conscious policymakers want data which are easy and inexpensive to collect. This is not always possible, especially when little information has been kept in an area before the city officially instituted data collection as a policy or "institutionalized" data gathering. Administrators also want to see information that is consistent with city administration policies and objectives. Information revealing new city problems or the failure of a particular city program is, understandably, not always welcome.

INTERGOVERNMENTAL COOPERATION

Types of Assistance Possible

Officials at each of the three levels of government—city, state, and federal—are beginning to realize the benefits of working with the other two levels to produce adequate information for decisionmaking. State and federal officials are aware of the increasing number of decisions facing the local administrator. They also realize that many cities lack the managerial skills or the financial resources needed in decisionmaking at the local level. Helping local governments to establish data-gathering systems could ultimately benefit state and federal agencies in several respects. State and federal agencies are in a position to offer four means of data-gathering assistance to cities.

Cooperation between local governments and state and federal agencies through regular communications. State agencies could keep in touch with localities via conferences, on-site visits to explain new techniques or equipment, and the mailing of state reports and relevant research findings. Federal agencies could facilitate data collection in individual states by encouraging cooperation between the agencies within each state. Establishing a reponsive dialogue between the states, federal agencies, and participating state agencies could also bring beneficial results. Specific communication devices could include staff meetings, coordinated briefings, and joint assignments shared by the appropriate state and federal agencies.

Technical Assistance. State officials could teach city personnel various analytical skills needed in data manipulation so that the city might develop its own in-house expertise. Federal agencies, participating through on-site technical assistance teams, would also be a tremendous help to localities.

Facilities. The states could make their facilities available to the cities when needed. Access to computer time and the personnel to operate sophisticated equipment would encourage cities to experiment with their data-gathering systems and would tend to encourage the gathering of more detailed information.

Financial Assistance. Perhaps one of the most welcome forms of assistance could be financial. Providing state grants to cities implementing a data-gathering system would allow the city to hire the necessary personnel for gathering and analyzing information without sacrificing other projects. State grants might also be made available for purchase of equipment (e.g., audiovisuals for display of results) or for travel to inspect other operating systems. States should also consider hosting periodic statewide conferences to discuss problems and results of different systems. Federal funds available for development of a data system might do much to assure serious efforts at the local level. Though revenue sharing has given some needed dollars to cities, many of which face a shrinking urban tax base, additional financial

incentives might be needed before very many cities attempt to initiate extensive data-gathering projects.

Types of Benefits Possible

Instituting data-gathering systems at the local level can result in many benefits for state and federal governments as well as the cities involved. One of the most valuable results could be an increased interaction among the three levels of government, brought about through increased cooperation and closer communication.

Knowledge of individual cities. Systematized information could provide state and federal agencies with annual data on subcity units in a particular city. When analyzed, these new data could provide reliable information on the stages of development and problems associated with particular cities.

Evaluation of federal and state programs. Regularly-collected data might provide one basis for evaluation of state and federal programs (e.g., urban renewal, law enforcement grants). Hard data generated by the information-gathering system could give a more accurate assessment of how various programs are affecting the quality of life in the community.

More efficient management and planning. Analysis of local data could help reveal areas of actual or potential growth or blight, a vital piece of information for planners. Data collected at regular intervals might provide the federal and state governments with the kind of descriptive information that would allow for better planning and maintenance of transportation systems or area health facilities.

Bolstering in-house expertise. Many times state and federal agencies have to rely on expensive outside consultants when a specialized skill is required. Participating in a cooperative effort to install data systems would give valuable experience to these agencies, and their personnel could develop competence in handling statistical information.

Future project planning. By observing the experiences of cities implementing information systems, the state and federal agencies involved might judge whether such a system is practical and useful on a larger scale.

Other Motivations for Cooperation: Information Development

The U. S. Department of Housing and Urban Development (HUD) is the major agency in the federal government responsible for providing assistance to and maintaining the welfare of America's cities. In recent years, the department has sought to allow cities great latitude in determining their own capabilities, needs, and goals. Because of HUD's unique responsibilities, it is a federal agency which could benefit in several ways from data-information systems at the local level.

A motivation HUD might have in providing assistance to cities designing data-gathering systems would be that such a system could result in improved community development reporting by the cities. By helping city personnel establish a data system, HUD could expect to receive more sophisticated reports and analysis of local conditions. Another beneficial result might be the standardization of data-gathering techniques over a regional or state basis. This could form the basis for centralized data banks for federal projects and needs. Another motivation for HUD's participation in the structuring of urban information systems could be the desire to explore potentially more equitable criteria for funding than is now available under revenue sharing. Federal grants could be allocated on the basis of hard analytical data rather than population or some less equitable standard.

Finally, working with cities to develop information systems could increase the expertise of HUD field personnel in information management.

A COOPERATIVE DEMONSTRATION PROJECT

Bringing Together Levels of Government and Types of Assistance

The need for a systematized data-collection process at the local level and the potential benefits deriving from such a process for all three levels of government prompted the formation of an experimental project in fiscal year 1974. Funded jointly by the Southwest Regional Office of HUD and the Texas Department of Community Affairs (DCA), the project was co-sponsored by Texas DCA and the Lyndon B. Johnson School of Public Affairs at The University of Texas at Austin. The pilot project involved six cities in four states in an effort to evaluate the usefulness of a data-gathering system. More details about the organization and activities of the demonstration project can be found in Chapter III.

students to aid in the collection and analysis of data in the six cities. The students provided technical assistance in the form of site visits and frequent communications with city personnel. The facilities of the School were used for four conferences in which participants discussed their efforts and their solutions to problems that had arisen.

The project focused on one concept of data collection which has recently received much attention—social or community indicators. (This report will use the term "community indicators.") Indicators are carefully chosen quantitative measures reflecting the quality of life or "health" of a community. They attempt to monitor social change and also provide a way for synthesizing vast amounts of data into a manageable package. For those not familiar with the history of the indicator movement or the limitations of community indicators as a policy tool,

Chapter II will provide a concise discussion of indicator theory.

Efforts of various agencies were combined, through the Community Activity Indicators Project (CAIP), to discover whether one concept of systematic data collection—community indicators—could prove useful in alleviating the information problems of today's urban policymakers.

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CHAPTER II

THE THEORY AND HISTORY OF INDICATORS

INDICATORS DEFINED

Ideally, indicators are measures of the quality of life. But "quality of life" is a relative concept subject to cultural values and perceptions. Since this definition presents at least as many problems as it purports to solve, it is perhaps more pragmatic to approach indicators as monitors of social change. This means that an indicator system could be designed to provide information on the current status of social conditions in a given city. If the indicator data were collected regularly over time, predictions could be made on the basis of trends discerned. Thus, instead of defining indicators in terms of an equally elusive concept (quality of life), indicators can be seen as data elements which reflect social change. Which data elements possess this characteristic is another unresolved issue. The indicator application process includes (a) selection of data representative of social conditions, (b) monitoring the data over time, and (c) applying analysis techniques that will render the data comprehensible to decisionmakers. The implication of this definition is that indicators are an available technique of potential utility in policy and planning decisions.

While this definition is not directly contradicted in any of the indicator literature, it has been challenged as incomplete. In one of the early works on indicators, Bertram Gross envisioned a national accounting system of social indicators that would apply the principles of systems analysis (Bauer, ed. 1966). Gross wanted to use indicators in an accounting system for social phenomena similar to current accounting systems for economic phenomena. This use would require a social systems model. He later modified his original stance by admitting the lack of a social systems model as a constraint upon current indicator use (Gross and Springer 1967). However, Kenneth Land has since argued that the validity of the social indicator concept hinges on its integration into a social systems model (Land 1971). This would seem to require a moratorium on indicator use until the requisite systems model has been developed.

The development of a social theory is necessary to the most sophisticated projections of indicator potential such as Gross' national accounting system. Agreement on how the social system works, its interrelationships and interdependencies, is the dream of social science. Indicator controversy hinges on the question of indicator use in the absence of such a theory. Dr. Lorna Monti suggests that "indicator makers should supply their interpretation to users, to be accepted or rejected along with the indicator" (Monti 1974). This shifts the emphasis from acceptance of a model to acceptance of individual indicators. In other words, indicators can be used in the present, but decisions should be made regarding the specific claims of each indicator.

Perhaps the most broadly accepted definition of an indicator is "a statistic of direct normative interest which facilitates concise, comprehensive, and balanced judgments about the conditions of major aspects of society" (*Toward a Social Report* 1969). The definition has been qualified by Eleanor Sheldon and Howard Freeman to include "only measures which are employed repeatedly and at regular intervals" (Sheldon and Freeman 1970).

Indicators are also a method of synthesizing unwieldy data while minimizing distortion and loss of pertinent information. A single indicator could conceivably reflect aspects of several different but related social conditions. For example, an indicator on high school dropout rates may be related to unemployment which, in turn, may be related to a high crime rate. Once a relationship is established, changes in related social conditions could be anticipated by monitoring a single indicator. Thus, as a policy and managerial tool, indicators can facilitate comprehension of urban social interrelationships by compiling, reducing, and organizing large amounts of unorganized and seemingly unrelated data.

THE HISTORY OF INDICATORS

In 1966 the National Aeronautics and Space Administration (NASA) financed a collection of essays by Bertram Gross, Albert Biderman, and Robert Weiss entitled *Social Indicators*. The volume considerably expanded its original scope of the social impact of the space program and dealt

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The material in this chapter draws on an article in the *Texas Business Review* (see Suggested Readings at end of chapter) by Dr. Lorna A. Monti of the Bureau of Business Research, The University of Texas at Austin.

with the problems and potential of developing measures of social change. Although later works de-emphasized the grand designs laid in these essays, their contributions in retrospect were to establish some critical guidelines on the limits of indicator application and to identify some of the unresolved problems inherent in the concept.

Some of the authors of *Social Indicators* contributed articles on the subject to two special issues of *The Annals of the American Academy of Political and Social Science* which appeared in 1967. In a joint article with Michael Springer, Gross altered his systems approach and reviewed indicators as a device to reorganize and apply existing imperfect data. This reorientation toward the present provides a rationale for immediate indicator application.

Another contributor, Daniel Moynihan, discussed some of the political ramifications of indicators. Because indicators cannot escape politicization, he argues for indicators that are broadly based in the values of the population and not solely reflections of the values of administrators and intellectuals (Moynihan 1967).

Amitai Etzioni and Edward Lehman, in the second volume of *The Annals* (September 1967), cautioned against one-dimensional measurements of social phenomena, which by nature are multi-dimensional. Alice Rivlin later re-emphasized the danger of using single measures. She foresaw not only the potential distortion of the condition being measured, but also that single measures could result in attempts to "beat the system" (Rivlin 1970). While this is not a refutation of the indicator concept, it leads to the conclusion that indicators of more than one dimension are needed to measure complex social elements.

Legislation on social indicators was introduced in both the 91st and 92nd Congresses. The legislation in both instances was the same (S. 5, The Full Opportunity Act), and was sponsored by Senator Walter Mondale of Minnesota. Mondale criticized the federal government for its paucity of social information and consequent inability to anticipate "socially undesirable phenomena" (Mondale 1967). The bill was clearly patterned after The Full Employment Act of 1946 which established the Council of Economic Advisors. Mondale's legislation provided for the institutionalization of a parallel social perspective by creating a Council of Social Advisors charged with preparing an annual social report.

Although Mondale's legislation never passed, *Toward a Social Report* (HEW 1969) appeared in the last days of the Johnson Administration. The monograph is fully supportive of the indicator concept, but it has been subsequently criticized for lack of substantive contribution to indicator theory (Sheldon and Freeman 1970).

In 1970 *The Annals* again devoted an issue to social indicators in which Michael Springer considered the possibility that designers of indicators could exercise an inordinate degree of control over society by virtue of their particular expertise. While he advocated expanded indicator development and use, Springer concluded that indicators must be developed concurrently with models that will "serve the needs of the poor, despised, and unorganized as well as the rich and powerful" (Springer 1970).

Since 1970 the focus on indicators has shifted from the national to the local level. When Moyhihan wrote in 1967, he saw indicators as a national movement that would result in national solutions to urban problems; the level of government at which indicators were developed would determine the level of abstraction at which problems and solutions were formulated (*The Annals* 1967). However, as the federal government has transferred greater discretionary power to local governments, indicator studies have focused on these levels (Monti 1974).

The National Science Foundation (NSF) has invested $5.5 million in grants supporting 40 indicator projects. Among the goals of this investment are a strengthening of the "interaction between the social scientific and administrative communities" and support of research in presentation techniques (Social Indicators Newsletter 1973). NSF is also committed to research on the conceptual and theoretical aspects of indicators.

The Center for International Studies at Emory University in Atlanta has recently been funded by the Ford Foundation to perform an international study of 40 cities in the United States, Canada, and Western Europe (Social Indicators Newsletter 1973). The study is designed to compare changes in the quality of life in these cities over the past quarter century, and to relate quality of life changes to changes in the pattern of urban populations, such as the flight to the suburbs. Data elements similar to those used in CAIP will be used to measure the quality of life; in addition, citizen perception surveys will be conducted.

The Social/Health Indicators Program of the Census Use Study of the Bureau of the Census has completed two reports on social well-being. The purpose of the reports was OEO program evaluation in Los Angeles and the rural Mississippi areas of Washington and Bolivar Counties. The Los Angeles study used social statistics such as public health and public safety to analyze trends in social well-being on a neighborhood level during a five-year period. The project also developed methods to improve population estimates in intercensal years. The indicators used for the Mississippi analysis included both social and economic measures. Both reports discussed the difficulty in establishing causal relationships between trend changes and OEO programs. Other problems considered were the limited data concerning small areas suitable for trend analysis and the development of indicator systems that will be applicable to different geographic areas.

INDICATOR USE: PROBLEMS AND POTENTIAL

Conservative indicator advocates suggest three areas of indicator applications: (1) descriptive reporting; (2) studies of social change; and (3) prediction (Sheldon and Freeman 1970). Such advocates contend that indicators are a method of consistent data organization and reporting "that allow comparisons over an extended period and which permit one to grasp long-term trends as well as unusually sharp fluctuations in rates" (Sheldon and Freeman 1970). Thus, indicators are an information system that describes the city in terms of those indicators. Furthermore, indicators permit the decisionmaker to view the social changes that are taking place over time and, on the basis of these trends, to predict changes that will occur. These are perhaps the least disputed claims made for indicators.

While data collection has made great advances over the last century, the wealth of information is not distributed evenly within the social sphere. This inconsistency presents problems for both the development and use of indicators in program evaluation.

Information flows in response to goals; data is not generated by goals that have been either ill-defined or assumed, such as elimination of hunger (Henriot 1970). Lack of relevant data naturally constrains innovation in indicator application. There is also a tendency to substitute economic measures for social conditions simply because they are easier to define and quantify than, for example, measures of happiness or satisfaction. Gross hailed indicators as a means to counterbalance the "New Philistinism" but failed to acknowledge that the reliability of indicators depends on the availability of data. It is to be hoped, however, that increasing acceptance of the indicator concept will provide the impetus for generation of data designed to accommodate social theories.

Scarce social data present similar problems for program evaluation. "The existing supply of statistical information does not support goals analysis for the simple reason that it was not designed for this purpose" (Smith 1973). It has also been argued that indicators are not suited to program evaluation because of the lack of a social theory (Sheldon and Freeman 1970). This actually seems to say, however, that indicators cannot be used without an appropriate evaluation design that includes previously determined performance indicators (Monti 1974).

One of the most pressing concerns with indicator development and use is value neutrality. Since goals are expressed through political forums and indicators are a potential input in the setting of goals and priorities, it follows that indicator selection will reflect the goals and objectives of those segments of society with the greatest political influence. Furthermore, one of the more frequent uses of data is to bolster positions already assumed. Thus, indicators are as much a potential political weapon as a decision-making tool.

Similarly, a consensus must be reached about what social conditions an indicator measures. It is conceivable that the latitude of indicator interpretation could provoke considerable controversy on what the indicator means or describes; these disputes always involve value judgments (Bauer 1966). Some facts are also highly controversial, such as an increasing crime rate in a city where the officials have been elected on a law and order platform. Data-collection agencies are subject to political pressures, and the suppression of politically embarrassing information can create problems in insuring the integrity of indicators. In addition, widely publicized indicator data carries the possibility of self-fulfilling consequences. "The sophisticated use of systems of social indicators to discern trends and forecast developments can become a vital force in the process of social events, entering into and influencing the stream of those events" (Henriot 1970). This means that indicators may in part create the future they predict. If, for example, an indicator points to a certain area of the city as potentially desirable for young executives, it is possible that the neighborhood will develop accordingly.

Values are an inescapable consequence of socialization; the political process of setting goals and priorities is an application of social values. This hardly negates the need for more rational decisions based on a credible information system. Indicators can neither prescribe remedies nor guarantee a more rational decision-making process. They are, however, one means of providing an awareness of those conditions in the urban system which require attention in order to maintain a state of dynamic equilibrium; as such, indicators can assist in the process of setting goals and priorities.

CONCLUSION

The use of indicators has been constrained by definitional problems and data ill-suited to the measurement of social conditions.

It has been argued that certain applications of indicators are inappropriate in the absence of social theory. However, by focusing attention on social conditions and interrelationships, indicators can contribute to the development of such theory.

Socio-political values are an inescapable aspect of decisionmaking. Indicator interpretation will be subject to these values until people no longer make decisions. This only serves to emphasize the need for information systems that reduce data to manageable proportions while minimizing data loss. Certain arbitrary features are unavoidable; ignorance is not.

Awareness of social inequities creates its own demand for solutions. If decisionmakers are to meet the needs for future urban populations, social concepts such as indicators will play an increasing role in the policy and planning processes of municipal governments.

The theoretical applications of social indicators discussed in the literature include the following:

- Ideally, indicators *measure the quality of life.*
- Indicators are data elements which *monitor social change.*
- Indicators have been envisioned as incorporated in a *national social accounting system.*
- As a *descriptive reporting system*, indicators are:
  a. a method to synthesize data while minimizing data loss;
  b. a device to reorganize and apply existing imperfect data.
- If data is collected frequently and at regular intervals, indicators can be used for *prediction.*
- *Program evaluation* would seem to require previously determined performance indicators.
- Since indicators provide information on changing social conditions, they may be useful in the process of *setting goals and priorities.*

SUGGESTED READINGS

For those who would like to pursue the literature on indicators beyond the treatment in Chapter II, the following readings are suggested:

GROSS, B. and M. SPRINGER (1967) "New Goals for Social Information," *The Annals* (September) 208-218.

HENRIOT, P. (1970) "Political Questions about Social Indicators," *Western Political Quarterly* 23 (June) 235-255.

MONTI, Lorna A. (1974) "Social Indicators,Prices, and Politics: Uses of Planning and Evaluation Data in Texas State Government," *Texas Business Review,* vol. XLVIII, no. 6 (June) 132-136.

SHELDON, E. and H. FREEMAN (1970) "Notes on Social Indicators: Promises and Potential," *Policy Sciences 1* (Spring) 97-111.

SMITH, D. (1973) *The Geography of Social Well-Being in the United States,* New York: McGraw-Hill, Inc.

CHAPTER III

CAIP: BASIC DESIGN

INTRODUCTION

The Community Activity Indicators Project (CAIP) called for an experimental program to install, test, and evaluate an indicator system in six cities: Midland and San Marcos, Texas; Shawnee and McAlester, Oklahoma; Monroe, Louisiana; and Little Rock, Arkansas. Each city was selected by its respective state planning office and criteria used by one planning office were not necessarily comparable to those used by another. The LBJ School participants were not apprised of any planning office's selection criteria.

CAIP was designated with both short- and long-term goals in mind. The short-term goal was to implant an understanding of the indicator concept in the six city governments. The long-term goal was to establish sets of indicators as valuable information systems that would continue to be used and developed by these cities after the project was brought to a close.

The project consisted of three major phases:

- Indicator Construction and Data Collection (October and November 1973);
- Data Analysis (December 1973 through March 1974);
- Final Presentation (April and May, 1974).

The work was to be carried out by teams organized around each city, consisting of city personnel, state personnel, HUD personnel, and LBJ School faculty and students. Each city was assigned a technical assistance team of three students to help the cities throughout the three phases. These students were to make periodic site visits to work with the city teams. After an initial conference to introduce CAIP to the various participants, a conference was held at the LBJ School following each phase of the project to provide a forum for discussion of experience and problems encountered by the individual cities and their teams.

Conceptually, the project was designed to meet two major areas of responsibility. The primary thrust of the project was to aid the city in developing a community-management information system. This system was to provide the urban decisionmaker with a comprehensive, yet simple, set of indicators which would supplement and expand upon existing sources of information. By relying on existing information sources with their readily available data the indicator system would be within the present capability of small and medium-sized cities. If the New Federalism is to work, such an information system is needed to provide those in public policy decision-making positions with an overview of social, economic, and physical conditions in their communities.

The secondary responsibility was to satisfy the direct state and federal interests in the project by developing an intercity set of community indicators. This model (or core) set of indicators would provide state and federal governments with means to assess community conditions more objectively, potentially leading to more informed resource allocation decisions.

PROJECT DESIGN: CITY INDICATOR SET

Development of Individual Indicators

Individual indicators were the product of a two-step process. The first step involved the identification of general areas of interest to a city. The LBJ School participants drew up 13 major categories believed to form a cross-sectional representation of a community's total well-being. The categories were:

1. Civic Participation
2. Demography
3. Economic Base
4. Education
5. Employment Opportunity
6. Health
7. Housing
8. Land Use and Recreation
9. Personal Income Distribution
10. Pollution
11. Public Safety
12. Public Finance
13. Transportation

The second step of the process was the selection of individual indicators. The indicators were to provide a

general picture of their respective category. They were selected after consulting with experts in various fields consonant with each of the categories in addition to general research. A question of primary importance during these consultations was whether or not the data sought would be readily available to the person charged with the data collection.

Creation of a Master List

Limited experience with community indicators encouraged CAIP to employ a "shopping list" concept. Instead of imposing an arbitrary set of indicators on the cities, CAIP preferred to provide them with a wide range of choices geared to their particular interests and needs. The rationale for providing flexibility in the selection process was to allow the cities to feel more involved in the project and to evoke more interest on their part in collecting the data.

Having compiled the initial list of indicators, CAIP determined that a major reduction of the list was necessary after re-examining each of the indicators with respect to:

- *significance:* the indicator should be broadly representative of its category;
- *simplicity:* the indicator should be easy to understand and easy to compute; and
- *availability:* the indicator should be available for collection at frequent intervals (at least on an annual basis).

Selection of City Indicators

This revised shopping list was presented to the city representatives in order that they might select those indicators most relevant to their city with its unique needs and priorities. Following these initial discussions, consultations in the field with various city department heads were held to supplement the selection process. As a result of these site visits, each city made a final selection of its indicator set and readied itself for the actual implementation of the community information system.

Implementation of Indicator Systems

In implementing the indicator system, each participant had specific responsibilities. The roles of the city, of the LBJ School technical assistance teams, and of the state and federal observers are outlined below.

1. *Role of the city.* The city was to play a major role in the project. The very nature of the project was a community management tool and the goal that CAIP would become a regular part of the city operation suggested that the city must begin to internalize the process. Although the indicator selection process mentioned above would not internalize the project within the cities, it was expected that the implementation process, if handled primarily by the city staff, would facilitate the establishment of such a system in the city. This implementation process involved the gathering of the indicator data, analysis of the indicators, and presentation of the indicators to the public policymakers of the city. The extent to which each of the city staffs participated in the implementation process varied greatly.

2. *Role of the technical assistance team.* The role of the technical assistance team was to provide the major source from which the cities could draw technical advice on the design, selection, implementation, analysis, and presentation of the community indicators.

The degree of participation of each team varied from city to city, depending upon what was necessary to meet the requirements of the project. Each team made four to six site visits to its respective city.

3. *Role of HUD and the state.* Representatives from the HUD area offices and the various state planning departments cooperated in the project with the six cities. Both the federal and state representatives were usually present during the site visits made by the student teams. It was hoped that their participation in the site visits would strengthen city-state-federal relationships, provide an additional source of technical assistance, and familiarize these representatives with the indicator concept to promote continuity of the project. The intergovernmental participation was not as extensive as had been anticipated, probably because the HUD and state representatives were not directly responsible for the data collection, analysis, or presentation.

PROJECT DESIGN: CORE INDICATOR SET

Toward a Model Set

As discussed previously, the LBJ School research project was asked by HUD to produce a model set of indicators. HUD personnel hoped that this model would be used by cities in the future who wanted to establish and develop their own indicator systems. This set of indicators was to be short, comprehensive, and applicable to cities of any size. HUD believed such a model set would (1) allow more objective assessment of community conditions, (2) allow intercity comparisons, where feasible, and consequently, (3) allow for more informed resource allocation decisions. As a step toward developing a model set, a "core" set was developed.

Development of a Core Set

To develop the core list of indicators, the LBJ School participants decided to take an intersection of all the indicators originally selected by the six cities. This inter-

section consisted of those indicators which had been selected by at least four of the cities. From this reduced list, the core set was chosen by applying the following three criteria:

1. representativeness of category,
2. disaggregability of the indicator data, and
3. frequency of availability.

1. *Representativeness of category.* This criterion called for the selection of those indicators which were most illustrative of a particular category. In order to hold the core list to a manageable number, a maximum of three indicators was set for each category.

2. *Disaggregability.* Since disaggregation of an indicator on a subcity basis greatly enhances the value of that indicator to a city, disaggregability was chosen as another criterion for the selection of core indicators. Disaggregation would provide for intercity and intracity comparisons on a subcity unit level.

3. *Frequency.* In order to strengthen the validity of an indicator, its supporting data should be available at frequent intervals. Since the purpose of indicators is to monitor change, use of current data is obviously preferred; therefore, frequency of data collection was also chosen as a criterion for the selection of the core set.

Implementation of the Core Set

Upon completion of the core set, the six cities were asked to collect those core indicators which were not included in their original list of indicators. Once the data for these core indicators was collected by the cities, or in some cases, by the student technical assistance teams themselves, the LBJ School, at HUD's request, analyzed the data. The core data was subjected to three analytical techniques: comparison analysis, trend analysis, and relational analysis. Analysis was initially hampered, however, by discrepancies in the data and the shallowness of the data. Definitional differences and unavailability of disaggregated data also proved to be major problem areas. (Refer to Chapter IV for a more detailed presentation.)

From the Core Set to a Model Set

Corrections made in the core set included deletions of some indicators and definitional modifications of others. The resulting set of "core" indicators (see Appendix III for a detailed description) was submitted to HUD as a model set of indicators which would be recommended to those cities which in the future want to establish an indicator information system of their own.

CHAPTER IV

ANALYSIS OF CORE INDICATOR DATA

INTRODUCTION

From the outset of the project, the LBJ School participants in CAIP were assigned the responsibility for analysis of the core indicator list. To insure that the analysis was done most efficiently, the actual task of coordinating analysis strategies and performing the analysis was turned over to a task force made up of one member from each assistance team along with two faculty members.

This chapter presents a synopsis of the task force's report and illustrates several possible techniques for analyzing community indicator data. A more detailed description of the task force's work and the techniques of analysis appears in Appendix I.

CORE INDICATORS

The core indicator list was designed to provide the project participants with a standard set of data elements in order to: (1) ensure that cities in the project could be compared to each other and to national and state norms and averages; (2) make it possible to follow trends in individual indicators and groups of indicators; (3) aid in testing hypotheses and examining relationships between sets of indicators; and (4) suggest a model set of indicators for any cities that may contemplate the adoption of an indicator system in the future.

The selection of the "core indicators" was a collaborative effort of the LBJ School participants and the federal, state, and local officials. From the universe of indicators presented to the cities, a smaller, more manageable list was selected by each city for its own use. All indicators which were selected jointly by four or more cities were included in the core listing. A few additional indicators were selected to round out the coverage of all the categories.

The results of this selection process produced more than 40 core indicators for which all cities were asked to secure data. Not all of these choices proved to be equally available, however; a few of the core indicators subsequently had to be dropped from the list because of insufficient data from the cities or because of the unreliability of the data secured. Definitions of land use distribution proved so varied, for example, that intercity comparability was impossible to achieve, and that indicator was eliminated from the final core indicator set. Data on fire response time was insufficiently reliable, based more upon estimates than evidence, and it, too, was dropped from the final listing.

The result of this selection and winnowing process is, however, an *experientially derived* listing of indicators for small and medium-sized cities such as those in CAIP. Experience tells us that it is possible to derive relatively satisfactory data on the indicators described in this chapter. For this reason, we call the product of this effort a "model set" of indicators. The listing of the indicators constituting the model set is found below in Table IV-1. A detailed description, together with data sources and methods of calculation, is presented for each model set indicator in Appendix III.

AN OVERVIEW OF ANALYTIC TECHNIQUES USED

The analysis of the core indicators was structured on three levels: comparisons, trends, and "relationships." These three areas are similar in that they can all be used to test indicator relationships. The difference lies in their relative sophistication and in the applications of the techniques. It was decided that a combination of techniques drawn from each of the three levels would provide a good example of useful methods of analysis. The final plan consisted of the following operations:

Comparisons

The major task in this area of analysis was to make intercity comparisons for the whole list of core indicators in an easily understood fashion. The technique selected was a series of raw data tables. The six project cities were listed across the top of a table, and the indicators were listed down the side. Every cell in a table contained data (where available) in the form of a raw, unadjusted figure. From these tables it is possible to compare the quantitative value for one indicator across all six cities. Some tentative conclusions and interpretations may be drawn from the tables, but the primary contribution of the tables is the compilation of data city by city and indicator by indicator.

TABLE IV-1

Model Set of Indicators

Demography

Population Distributions
- Age
- Race

Population Estimates: Interpolation
Population Estimates: Directory Count
Population Projection: Cohort-Fertility

Economic Base

Retail Sales Per 1,000 Population
New Commercial Loans Per 1,000 Population
Additions and/or Expansions of Basic Industries

Education

Public School Expenditures Per Pupil
Public School Tax Base Per Pupil
School Enrollment
- Public
- Private
- White
- Non-White

Public School Dropout Rate
Education Continuance

Employment Opportunity

Unemployment Rate Expressed as a Percent of the Total Labor Force

Health

Infant Mortality Rate
Communicable Disease Index
Number of Physicians Per 1,000 Population

Housing

Net Housing Starts
Subsidized Housing
Vacancy Rate

Land Use

Zoning Distribution
Percent of Land Area Requested for Rezoning

Income

Household Income Distribution
Real Income

Pollution

Ozone
Five-Day Biochemical Oxygen Demand Level
Oxygen Saturation Level
Solid Waste Volume per Capita

Public Safety

Crime Seriousness Index Per 1,000 Population
Number of Police Officers Per 1,000 Population
Percentage of Crimes Cleared by Arrest
Percentage of Stolen Property Recovered

Public Finance

City Government Revenues
- Property taxes
- Sales and gross receipts taxes
- Utility revenue
- Charges and miscellaneous
- Intergovernmental revenue

City Government Operating Budget
- Education
- Highways
- Public Welfare
- Hospitals
- Police
- Fire
- Sanitation
- Parks and recreation
- Natural resources
- Housing and urban renewal
- Air and water transportation and terminals
- Parking
- Correction
- Libraries
- Utilities
- Other

Civic Participation

Percent of Eligible Voters Voting in Local Elections

Transportation

Ratio of Miles of Surfaced Streets to Miles of Unsurfaced Streets
Number of Traffic Accidents per 1,000 Population

Trends

Some form of analysis is necessary to show change or stability in an indicator over time. The task force decided to indicate trends by plotting the average rates of change in certain core indicators. More specifically, these graphs show the rates of change in certain groups of functionally similar indicators such as population growth, population density, and number of female-headed households. Trending, then, is a step beyond comparisons in sophistication in that the data are collected and recorded at intervals rather than at a single point in time.

Relationships

This is the most complex stage of the analysis; the object was to gauge the existence and strength of relationships among indicators and to determine what changes in the value of one indicator would cause a change in the value of one or more other indicators.

Over 850 different combinations of indicators could be examined even if only two indicators were analyzed at a time. This was considered too many hypotheses to examine within the time available. To bring the analysis within manageable dimensions, it was posited that four of the indicators reflect fundamental *structural* aspects of urban life: (1) population or city size; (2) percent of population which is white, reflecting the racial structures; (3) median income, a measure of structural economic vitality; and (4) total city operating budget per capita, yielding some indication of the involvement of city government. We call these "key structural indicators." All other indicators are considered "performance measures," given the conditions established by the structural indicators. By narrowing the focus to key structural relationships, we can examine their association with performance measures.

ILLUSTRATION OF ANALYTIC TECHNIQUES

The following summary of Appendix I, the report of the CAIP Analysis Task Force, is included in the body of the report for two reasons: (1) to illustrate the approach to indicator analysis taken by the task force; and (2) to demonstrate the kinds of findings that resulted from the task force's approach. One example is extracted from each of the three sections of the analysis report. A more detailed discussion will be found in Appendix I.

Intercity Comparisons

Introduction. Once a city embarks upon an indicator project, gathers its data, analyzes its data, and assesses its situation, it still does not fully know how well or badly it is doing until it compares itself with other cities. The analysis task force, therefore, decided to make intercity comparisons of the core indicators a part of the total core indicator analysis so that each city would gain more knowledge about where it stood in relation to other cities.

The first step in doing this was to prepare a master table of the major core indicators described above (see Table IV-2). This table provides a "snapshot" of the six cities together at one time. Also included in this table are the U.S. averages, where available, for each indicator. These provide reference points outside of the CAIP cities for additional comparison. Since more data were available for 1972 than any other year, the master table is a "snapshot" of that year. When U.S. averages were not available for 1972, data for the closest year were used.

In addition to the master table, graphs were drawn of each indicator where information was available. These graphs and the master table, as well as the raw data, were examined for unusual conditions and for patterns. Data were also compared with the national averages.

In conclusion, the intercity comparisons provide an additional dimension to the whole analysis by giving each city an idea of how it stands in relation to other cities or to the national average. The strength of specific conclusions, however, must be tempered by recognition of imperfect data and the influence the uniqueness of each city has on that data.

Example: Income. Cities differ markedly from one another in both the level and the distribution of household income. Few elements of community structure are more significant than income, which has implications for both the resources of and demands on local government. Communities with relatively low incomes may show high levels of need for many public services, even when their ability to pay is relatively low. Communities with high incomes may exhibit different tastes for public services, as well as having the resources needed to support higher levels of services.

Graph IV-1 shows the levels of median net cash household income (money income remaining after subtracting all *income* taxes) for CAIP cities. Midland, Texas, is by far the wealthiest city in the group, and San Marcos is the poorest. At least among these six cities, the larger cities tend to have the highest levels of income and the smaller cities the lowest.

While the *level* of income is important, any number of *distributions* may be associated with any one level. Given a certain median (say, Little Rock's $8,055), distribution of income among households may all be clustered closely about the median, or there may be a wide range of incomes, or there may be clusterings of very rich and very poor. A community with bimodal clusterings might face very different problems than one where almost all households exhibited similar income patterns. Graph IV-2 provides evidence on the distribution of income in these six communities. Midland, for example, has a high concentra-

TABLE IV-2

INTERCITY COMPARISONS
CORE INDICATORS
1972 DATA[a]

Indicators	Little Rock	Monroe	McAlester	Shawnee	Midland	San Marcos	*U.S. Averages*
	Cities						
Population 1970 Census	132,483	56,374	16,297	25,075	59,463	18,860	N.A.
Population Distribution[e]							
Race:							
White	74.8%	61.6%	85.1%	90.1%	78.1%	54.4%	N.A.
Black	24.9%	38.4%	14.9%	7.4%	10.7%	4.1%	
American Indian	0	0	0	2.5%	0	0	
Spanish Heritage	0	0	0	0	11.2%	41.5%	
Age: 0-17	31.9%	35.4%	27.6%	27.9%	39.5%	27.1%	33.7%
18-64	56.9%	54.7%	58.1%	55.4%	55.3%	66.4%	56.4%
65 or over	11.2%	9.9%	14.2%	16.7%	5.2%	6.6%	9.9%
Retail Sales Per 1000 Population	$3,433,000	3,636,060	3,072,000	2,558,544	2,016,690[f]	1,244,620	1,526,553
Public School Expenditures Per Pupil	$ 724	950	659	717	763	1,116	929[f]
Public School Tax Base Per Pupil	$ 47,685	41,090	15,702	18,901	41,808	20,597	N.A.
School Enrollment—Public	23,440	10,248	4,194	4,687	16,698	4,792	N.A.

INTERCITY COMPARISONS
(continued)

Indicators	Little Rock	Monroe	McAlester	Shawnee	Midland	San Marcos	U.S. Averages
	Cities						
Public School Dropout Rate	7.4%	6.8%	1.2%	5.5%	2.3%	.9%	N.A.
Unemployment Rate Expressed as a Percent of Labor Force	3.1%	5.7%	7.5%	8.2%	3.5%	2.4%[a]	5.6%
Infant Mortality Rate	17.8	17.2[b]	18.3[b,f]	35.8	18.8[f]	17.2	19.2[f]
Communicable Disease Index	.16	3.2[b]	1.04[b,f]	.63	1.40	1.39[b]	N.A.
Number of Physicians Per 1,000 Population	4.8	1.5	1.7	1.2	1.0	.5	1.7[e]
Net Housing Starts	3.0%	3.9%	.6%	2.8%	6.1%	4.0%	4.3[e]
Subsidized Housing[g]	5.0%	6.1%	2.3%	2.4%	0	8.3%	N.A.
Vacancy Rate[e]	5.0%	6.4%	11.4%	1.6%	13.6%	N.A.	6.3%
Median Household Income	$ 8,055	6,269	5,435	5,562	10,623	4,913	N.A.
Crime Seriousness Index Per 1,000 Population	184.0	58.6	72.8	74.1	52.0	91.7	79.4
Police Officers Per 1,000 Population	1.9	1.8	1.9	1.5	N.A.	1.3	N.A.

INTERCITY COMPARISONS
(continued)

Indicators	Little Rock	Monroe	McAlester	Shawnee	Midland	San Marcos	U.S. Averages
	Cities						
Percent Stolen Property Recovered	37%	75%	N.A.	30%	36%	28%[g]	38%
Percent Cases Cleared by Arrest	54%	75%	N.A.	10%	38%	28%	22%
Total City Government Revenues Per Capita	$ 89	129	123	93	165	101	N.A.
Total City Government Operating Budget Per Capita	$ 89	112	124	95	131	106	N.A.
Percent Eligible Voters Voting in Most Recent Election	37%	40%	23%	20%	N.A.	37%	31%[c]
Number of Traffic Accidents Per 1,000 Population	7.1	29.9	25.9	27.1	34.9	52.0	77[d]

N.A. – Not applicable/Not available

[a] Based on work force, not labor force.

[b] County or parish data

[c] 1961 data

[d] 1969 data

[e] 1970 data

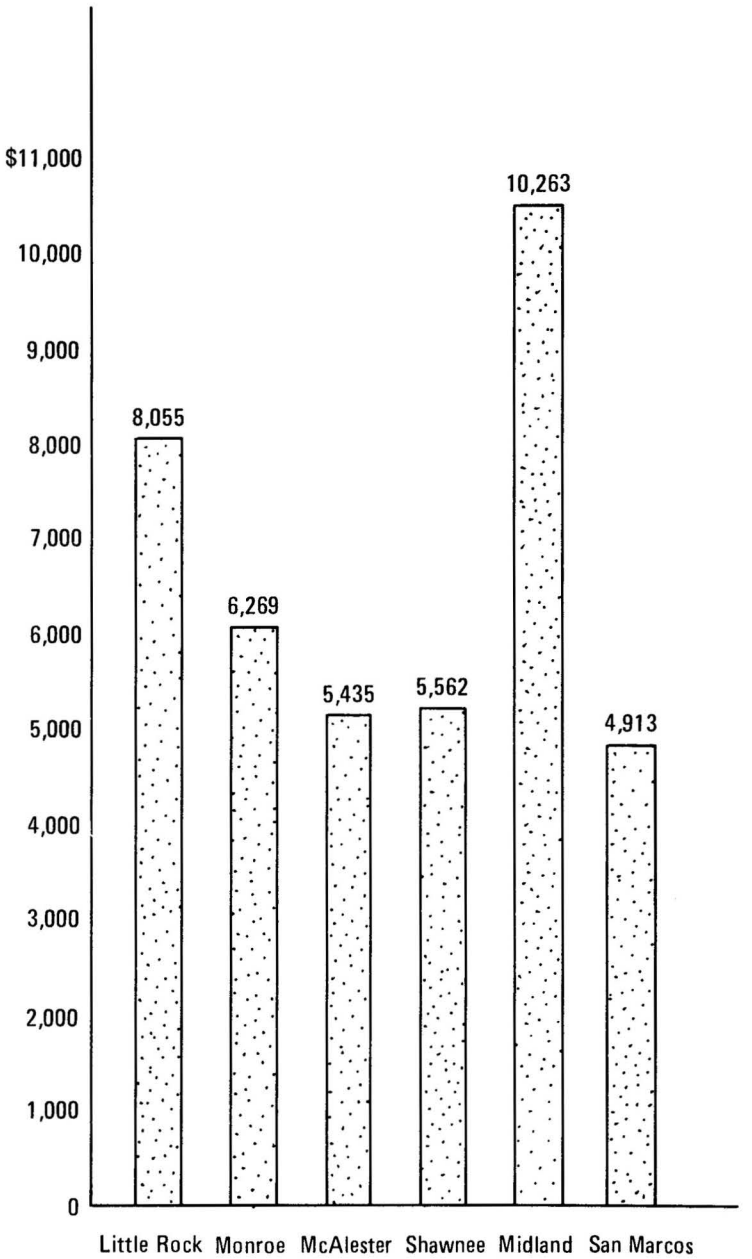
[f] 1971 data

[g] 1973 data

References for data sources are listed at the end of the chapter.

GRAPH IV-1

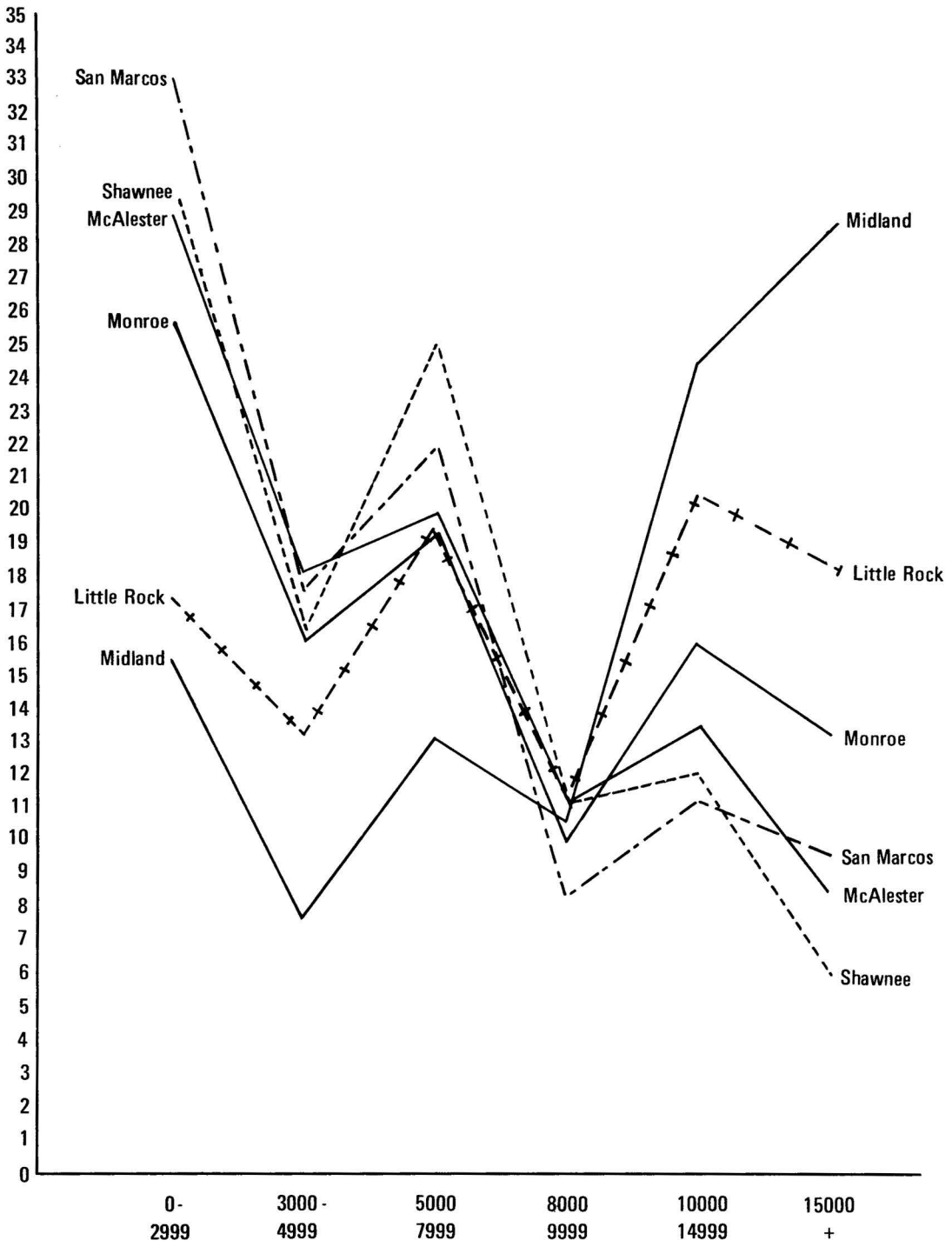
1972 Median Net Cash Household Incomes[a,b]



[a]From *Survey of Buying Power,* Sales Management Magazine, July 23, 1973, Vol. 111, No. 2

[b]Current dollars with no adjustments

GRAPH IV-2
1972 Net Cash Household Income Distributions[a,b]



[a]From *Survey of Buying Power,* Sales Management Magazine, July 23, 1973, Vol. 111, No. 2

[b]Current dollars with no adjustments

tion of relatively affluent households and relatively fewer very poor households. Shawnee follows almost the opposite pattern with relatively few affluent households and a concentration of persons at the lower income brackets. Little Rock follows a middle path, with similar proportions of the affluent and the poor.

Intracity Comparisons

Introduction. One of the most valuable aspects of CAIP, at least to the city participants, was the possibility that each city could assess itself by assessing its parts. In addition to comparing various sections of the city to each other in terms of wealth, population, and racial/ethnic composition, intracity comparison would aid city planners and decisionmakers in allocating city resources among its neighborhoods.

The City of Little Rock performed the only complete intracity analysis in CAIP, and the following example is included to illustrate the kinds of results which can derive from such analysis. Little Rock has computed correlation coefficients between indicators for each census tract in the city.

Example: Health Indicators. The correlates of health indicators for Little Rock are reported in Table IV-3. Three health measures (infant mortality rates, syphilis rates, and tuberculosis incidence) are related to five other variables. Health problems are more likely to be found in neighborhoods with high proportions of minorities, with high dependency ratios, with overcrowded housing, and with lower median family incomes. Yet it should be noted that they are not strictly a function of low income *per se*, because the poverty income measure shows no significant association with ill health. Rather, poor health seems more specifically related to the *racial* makeup than the *socioeconomic* makeup of the neighborhood. The difference in the strength of relationship between health and class on the one hand, and health and race on the other, is striking.

Trending and Time-Series Analysis

Introduction. The analysis of indicator data for a number of years provides an opportunity for identifying trends and possibly making predictions about the future of the city. The importance of trend data will increase as the project continues, since the addition of each year will add significantly to the usefulness of the data.

The three or four years of data generally available have descriptive value and can indicate areas warranting further investigation. The analysis of core indicators over time focused primarily on this descriptive aspect of time-series data, though an effort was made to point out areas that call for more study, and correlations over time among the indicators were noted.

Two techniques were used to analyze the core indicators for changes taking place over time. The principal technique consisted of computing annual compound rates of change of the indicators, grouping them in several categories, and using graphs to make some comparisons both among indicators and among cities. The other technique was to graph selected indicators over time in each of the categories used for rate-of-change graphs. This method was used to supplement the rate-of-change data with trend data which contributes to the time-series analysis.

It is important to remember that rates of change depend on the initial level of the indicator. For example, an indicator for one city may be changing at a rate significantly greater than the same indicator in other cities but, if it was smaller to begin with, it will take a longer time to reach comparable values. This possibility emphasizes the importance of keeping in mind actual indicator values when comparing rate-of-change information.

The indicators chosen for computing rates of change were grouped into the following categories: (1) economics, (2) health, (3) public safety, and (4) education. Most of the change rates were calculated from four data points, generally the years 1970 through 1973, although in some instances shorter time spans were used. Consequently, caution should be used in making comparisons where the time spans are not the same.

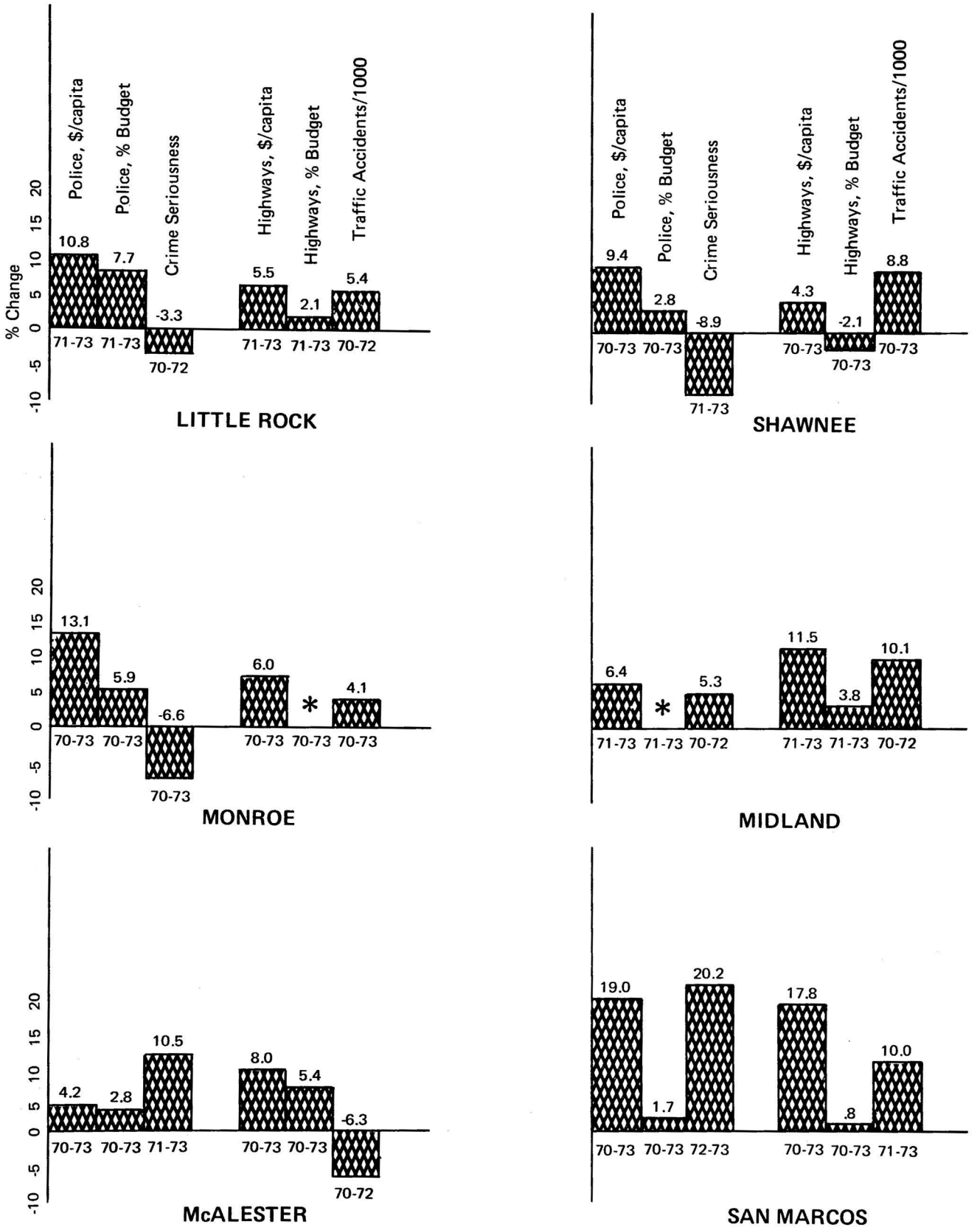
Example: Public Safety. The following discussion of public safety is derived from Appendix I, page 41, and is included in the body of the report for two reasons: (1) to illustrate the kinds of trending analysis performed by the task force; and (2) to illustrate the kinds of results which one may expect from trending analysis.

Public safety rates of change comprise two categories: one composed of the crime seriousness index and two police expenditure indicators; the other containing the traffic accidents per 1,000 population indicator and two highway expenditure indicators (see Graph IV-3). The expenditure indicators are presented both in dollars per capita and percent of operating budget to show the absolute change in expenditures per capita and any change in importance of these two expenditures relative to other budget categories. Since the operating budgets of all six cities have increased, the cities could have increased expenditures per capita without increasing the share of the budget in that category.

All six cities increased their police expenditures per capita—four of them substantially—but only Monroe and Little Rock increased substantially the police expenditures as a percent of the operating budget. In other words, Monroe and Little Rock devoted a greater percentage of their city budgets to law enforcement than in previous years. The other four cities had increases of less than 3 percent annually, and Midland had no increase. It must be

GRAPH IV-3

Annual Compound Rates of Change—Public Safety



* Data unavailable

TABLE IV-3

CORRELATES OF SELECTED INDICATORS WITH HEALTH INDICATORS FOR CENSUS TRACTS[a] LITTLE ROCK, ARKANSAS

Indicators	Infant Mortality	Syphilis	Tuberculosis
1. Percent non-white	.52	.79	.53
2. Dependency ratio	.50	.45	.46
3. Poverty income	-.09	.12	.13
4. Overcrowding	.37	.55	.61
5. Median income	-.24	-.54	-.47

[a]Values significant at .01 level are underlined.

pointed out, however, that even small percentage increases mean that the police function was getting an increasing share of the budget at the expense of other city functions.

The crime seriousness index decreased in three of the four cities with "substantial" increases in per capita police expenditures and increased in the two cities with the lowest increase in police expenditures per capita. However, the city with the largest increase in per capita expenditures, San Marcos, also had the greatest increase in the crime seriousness index.

Dollars per capita expended in the highway budget category were also up for all the cities; for McAlester and Midland the increase was greater than that for police expenditures. McAlester and Midland also showed substantial increases in the budget percentage, while Shawnee showed a decrease. Monroe showed no increase, and the San Marcos increase was less than 1 percent.

There was little correlation between traffic accidents per 1,000 population and highway expenditures. All the cities except McAlester showed an increase in the accident rate, and while McAlester had the greatest increase in the portion of its budget devoted to highway expenditures, the city with the greatest increase in expenditures per capita, Midland, had the greatest increase in accident rate.

Relational Analysis

Introduction. Relational analysis is basically the testing of hypotheses about how one indicator or set of indicators might be related to another indicator or set of indicators. For example, it might be assumed that infant mortality rates are closely and inversely related to the relative number of physicians in the community. To test this assumption, one might compare the infant mortality rate with the number of physicians per 1,000 population in each of the six cities to see whether those cities with large numbers of physicians have low infant mortality. There are reliable statistical techniques available to make such analyses, and the results of the analyses may eventually be used in allocating city resources so that there is a higher probability of the resources being effective. However, it should be pointed out that relational analysis, like trend analysis, is heavily dependent on a large quantity of data collected over a long period of time. For that reason, assumptions which may be made from the relational analyses in this project will be subject to question until further testing is done.

Example: Crime and Police Expenditures. One set of relationships studied in the participating cities concerns crime and police expenditures. As might be expected, per capita police expenditures correlate negatively with crime seriousness in the cities studied. Percent police expenditures, however, correlate positively with crime seriousness. It does not seem logical that high budget priorities for police should be associated with high crime seriousness, especially when we note that the budget data are for the fiscal year ending in the middle of the year for the crime seriousness data. An explanation might be that police expenditures are a major budget item for all cities, and more is spent proportionately by larger cities for fighting crime. On the other hand, because of the population differences, larger cities cannot spend an equivalent amount per capita on police, the factor that seems to be the best

indicator of effectiveness. Crime seriousness is also positively related to population and median income, implying that the larger cities studied, even though relatively wealthier and even with high budget priorities for public safety, are not able to control crime effectively.

LIMITATIONS OF THE ANALYSIS

The methodology used by the LBJ School participants in CAIP, while relatively simple, is procedurally sound and can be effectively used by cities with limited statistical expertise; however, limitations are placed on the analysis of CAIP data by the lack of comparability between the data on the cities. This in no way means that the analyses are useless: the limitations only modify the conclusions which can be drawn. This discussion of difficulties with data is meant to enable future users to avoid some of the problems inherent in first applications of such techniques as community indicators and to alert the reader to the possibility of inferring too much from the analysis performed in CAIP.

Simply stated, the main difficulty encountered in analyzing CAIP data was the lack of consistent, complete indicator readings expressed in the same units.

Analysis can be performed with high reliability only when the data being analyzed are collected for the same time periods and in constant geographic divisions. In other words, it is difficult to ascertain a trend if data are available for city X in 1970 and 1973, but only for county X in 1971 and not at all for 1972. For the same reason, city X could not easily be compared with city Y even if data were available for every year for city Y. Relational analysis is also hindered by a lack of consistency in data. If a relationship between school expenditures and education continuance is to be established, it could be done more reliably if the indicators were collected for all six cities for the same time periods.

Although the lack of a random sample of cities has presented some statistical problems, as has the relatively small number of cities involved, these statistical limitations do not inhibit the conceptual elements of indicator analysis. But because the six cities do not represent a random sample, generalizations about cities cannot be made on the basis of CAIP data.

Again, it should be emphasized that the analysis outlined here and described in the report of the Analysis Task Force can be useful in describing community activities. The problems with data can be overcome, and although they limit the conclusions which can be drawn from this project, they do not affect the validity of the methodology used.

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CHAPTER V

PROBLEMS AND POLITICS OF INDICATORS

INTRODUCTION

In implementing the CAIP indicator sets, it became apparent to the LBJ School Technical Assistance Teams that certain conceptual, data, organizational, and political problems inherent in either the nature of the CAIP indicators or the process of implementing them could have undesirable impacts upon the establishment and future use of indicators within a city. The identification of these problems can begin to provide a basis for determining (a) appropriate applications of indicators, and (b) conditions that are prerequisite to their successful implementation.

Two basic types of conceptual limitations are identified in this chapter: (1) limitations in understanding the uses to which indicators can effectively be put; and (2) limitations in understanding the nature of indicators. The data and organizational problems are largely—but not entirely—concerned with the limitations of the resources relating to data and the size and ability of staff available to a city. The political problems are concerned with both intracity and intergovernmental relationships.

CONCEPTUAL PROBLEMS

In implementing a system of community indicators, the most basic questions to be resolved are conceptual: *What are indicators?* and *How do they work?* In CAIP, these questions were considered at two significant levels. First, there was a need to refine the wealth of indicator theory into a unified concept; and second, it was necessary to establish boundaries defining the conceptual limitations of indicators as a method of urban analysis.

Defining the Indicator Concept

A first step in the development of an indicator set would appear to be the development of a usable definition of the concept itself. At the most basic level, this could be a simple statement of what an indicator is, and how it might be used for analytical purposes. However, to establish a context for those involved in the implementation process, a conceptual definition should define not only the nature of the individual indicator but also the conceptual framework of the whole indicator system and its role in the larger social system.

Such a conceptual definition is not an easy task. As indicated in Chapter II, there is currently no consensus on a definition of urban indicators; and for this reason, the LBJ School participants who were charged with developing the overall project design, were unable to agree internally on a suitable conceptual definition for community indicators. In the absence of such a guide, individual participants were left to develop their own approaches to the concept, based on their readings of the indicator literature, or more often, on a synthesis of their experience in CAIP and their preconceived notions concerning the use of information systems in government. In some instances, this process added new insights to the project's body of knowledge, but more often, it resulted in misunderstandings among project participants when individual perceptions of the indicator concept diverged significantly.

An example of this divergence can be seen in the data collection process. During this phase, the LBJ School Technical Assistance Teams emphasized the need to disaggregate data to subcity levels to facilitate intracity comparisons. In several cities, however, these data, when they were available at all, were excluded from the collection process because city representatives did not share the LBJ School teams' view of their worth. In the absence of a set definition of indicators and indicator systems, none of the conflicting viewpoints was invalid: they were simply built on different premises concerning the goals of indicator analysis. The divergences, however, created operational problems in CAIP, and they were only partially solved by the end of the project.

Two Problems of Indicator Use

Two types of problems—one structural and the other conceptual—limit the potential uses of indicators. The most important structural problems are limitations in the quantity and quality of the data with which one must work and of the city staffs which must work with it. Conceptual problems refer to limitations inherent in the concept of indicators. The most important conceptual problems have to do with causal relationships and with the evaluation of indicators.

1. *Causal relationships.* The first conceptual limitation which should be identified is the inability of indicators to detect causal relationships among factors contributing to a specific social problem. In large part, this inability is due to the lack of a unified social theory comparable to that which has been developed for the economic system. Although it is possible for the decisionmaker to make inferences from indicator data, it is not possible at this time to use them to isolate problems or, at a more complex level, to measure the relative effects of various factors on the creation or elimination of social problems.

2. *Evaluation of indicators.* At present, it is not possible to evaluate a particular indicator in relation to any other indicator or to make wholly positive statements about the value of one particular indicator set in comparison to others. This implies that it is not yet possible to develop an indicator set in which the decisionmaker can be perfectly confident in terms of its ability to monitor the entire social system. Until the concept is more fully developed, it is probably enough to say that those indicators are best which best fit the needs of the individual city.

PROBLEMS IN THE CITIES INVOLVING ORGANIZATION AND DATA

The problems which might be encountered in establishing the indicator process in a city are to some extent the result of inadequate or inflexible resources at the local level of government. The two broad categories into which these problems fall are (1) data limitations and (2) city government operations.

Data Limitations

One of the purposes of CAIP, in recognition of the limited resources available to municipal governments, was to assist cities in developing a list of indicators from existing data sources. The following primary problems regarding data were, unfortunately, a result of this reliance upon existing data.

1. *Availability.* Data which may be desirable or even crucial to the development of a complete picture of a city may simply be unavailable or unavailable in a usable form. The unavailability of data may be due either to the fact that no agency has undertaken to collect or estimate certain information (such as annual population counts), or to an agency's unwillingness to release the data it possesses (such as the records of new loans contained in a community's financial institutions). Whatever the reason, unavailability of data will act as a major limitation upon the final form of the indicator set, upon the analyses that can be performed with the indicators, and on the ultimate usefulness of indicators themselves.

2. *Measurement and reporting.* Diverse sources of data define, collect, and report statistics that are meaningful to the particular source. Thus, regularized methods and units of definition, measurement, and reporting are uncommon among the different data-producing agencies. This situation in turn creates three types of problems: (a) different statistics desired for the indicator set may be measured and reported at geographic subcity levels which are not congruent (such as population information from census tracts and voter registration from voting precincts); (b) other indicator data (such as health statistics) may be collected and reported only on a citywide basis or for larger geographic units such as the county; (c) some indicator statistics which report the same phenomenon (such as population estimates or projections) may be based on different definitions or methods of measurement when collected in different cities or by different sources.

These problems can create difficulties both for the indicator establishment process and for the utility of the indicator sets. Non-standardized reporting and measurement will limit the particular indicators which can be included in an indicator set, and irregular units will limit the data that can be included in intracity and intercity comparative analyses. Reductions in the number of indicators which can be selected and in the number of comparative analyses that can be performed will limit the usefulness of indicators as a management tool simply by reducing the amount of information that indicators provide.

It should be noted that these problems could be partially solved if a city staff were able to obtain access to the raw data and manipulate it to produce the desired geographic totals or units of measurement. The feasibility of this solution will depend upon the proximity of the data source to the data collector, the amount of raw data, and the manner in which the raw data are stored.

3. *Time-series data.* A problem related to units of measurement and reporting is that of obtaining good time-series data. Different data sources collect and publish data at different times, thus adding a temporal dimension to the non-comparability of data. This problem has several aspects. One is that data collection within a single year may take place at different times in different agencies. Data may fluctuate seasonally so that statistics collected in one month (such as the statistics in the Census of Population and Housing collected in April) may not always be properly associated with statistics collected in another month of that same year (such as a local residential vacancy rate collected during a summer month). A second aspect of the problem is that data is often not available for all the indicators for the same years. For example, the Economic Census of the U.S. Bureau of the Census may be available for 1967 and 1972 and its Census of Population and Housing for 1970. This creates problems in making comparisons and will limit the completeness and the usefulness of the indicator set in any one year. A third problem stems from the fact that data sources may change their definitions or units of reporting

over time; for example, census tract boundaries may be changed, or the tracts subdivided into several tracts. The changing of census tract boundaries over time creates a more severe problem for comparison than does the splitting of census tracts.

An additional problem related to indicator data but not necessarily to lack of resources is the unavailability of time-series data for many indicators. This unavailability is a problem normally peculiar to previously-untapped city records which before this time had not been carefully recorded or preserved. This, however, is a problem related to the newness of the indicator process, and it should be overcome as the process is repeated for several years in a given city.

4. *Confidence.* Users of the CAIP indicator sets could find it difficult to develop confidence in the accuracy and reliability of data, because the data comes from diverse sources with diverse collection and validation procedures.

City Government Operations

The other major resource limitation which might affect the indicator effort relates to the quantity and quality of city personnel assigned to the indicator project. The lack of a sufficiently large and qualified staff is a greater problem in small cities than in large cities where operations may already rely heavily on quantitative measurements and on institutionalized statistical processes. Small cities may be more constrained in hiring or using trained personnel by the inflexibility of their resources and, beyond that, may feel that statistical measurement of observable phenomena is superfluous activity. Whatever the reason, small cities are usually not as able to devote qualified staffs to indicator efforts as are large cities. Lack of adequate staff can create the following problems for an indicator project: (1) the data-collection phase can be made more tedious and difficult without proper communication between the data collector and those existing data sources within and outside the city; (2) adequate analysis of the data might not occur due to simple lack of "know-how"; and (3) the data could be put to uses to which it is unsuited, causing misinterpretations of the information and perhaps misallocation of resources.

Another problem related to city operations is the lack of a consistent, continuous data compilation process conducted by the city or its departments. This lack will be an impediment to indicator data collection, and where it exists, minimizing it requires some standardization of reporting units and procedures in city recordkeeping, perhaps in conformance with census tract definitions and divisions if the city is part of an SMSA.

POLITICAL PROBLEMS

Introduction to the Politics of Indicators

The political problems involved with the concept of indicators can best be analyzed through three perspectives: (1) those involving intracity politics, (2) those pertaining to intergovernmental politics, and (3) those involving relations among CAIP participants. Intracity political problems in turn can be broken down into those pertaining to the initial establishment of the indicator concept in a community, the collection of indicator information, the dissemination of indicator information in its final form, and the use of indicator information. Intergovernmental political problems can be classified according to state-city relationships and city-federal relationships.

One's perception of the proper role of the indicator concept in urban systems will undoubtedly depend on one's view of the role of urban decision-making bodies. Some say that local governments should be active in initiating change, while others say that such governments should instead react to problems only as they arise. One must hypothesize as to whether local decisionmakers really want to have local problems clearly illuminated through the use of indicators. Indeed, on what basis do most city councils ultimately make their important decisions—personal hunches or concrete facts?

Before analyzing in detail the political problems surrounding indicators, it is important to remember that the indicator concept becomes heavily laden with value considerations in its applications. Once established in an urban community, indicators will affect the values and goals of countless citizens. A low infant mortality rate, for example, is viewed as desirable by all elements of the community. Few indicators, however, can be viewed in such absolute terms. An indicator showing an increase in housing starts, for example, may elicit different reactions from business interests than it will from environmentalists. One must keep these points in mind when reading the following discussion of the political problems involved with the indicator concept.

Intracity Problems: Initiating an Indicator System

CAIP participants found more often than not that local governments are more inclined to react to problems as they arise, instead of anticipating their growth. Accordingly, only a small minority of the city officials involved in CAIP displayed a keen interest in having indicators as an aid in the urban decision-making process of their respective communities. One of the most difficult political problems with the indicator concept is convincing local officials of its

utility as an aid to urban decisionmakers. The attempt to persuade must not appear as a threat or simply an extension of the "academic ivory tower." The stress must be on indicator utility. Once a community's decisionmakers have agreed to experiment with the concept, one must immediately consider what facet of the city government should handle implementation of the concept. The mayor's office? The city manager? The initial decision on this political matter will produce ripples throughout the course of the indicator system's lifetime in a community. One must also decide how much autonomy the director of such an indicator project should be allowed.

Local governmental leaders may prove to be hesitant participants in an indicator project if grants to their respective communities from external sources are potentially threatened as a result of the project's failing to succeed. The relative importance of such external grants to a community is also a key consideration in this regard. The astute observer should also take notice of the priority given the indicator project by the local decisionmakers. One should determine how much of the local governmental structure will be directly affected by the indicator project and the amount of local governmental resources to be devoted to such a project.

Another aspect of the political scene is the extent to which the indicator project and its results are publicized in the local news media. It is important to note whether city officials wish to de-emphasize the fact that they have agreed to participate in such a novel project. Once the basic concept of indicators has been revealed and generally accepted, one must ask who will select the specific indicators that will compose the final set. One can easily imagine the debate that could ensue regarding the value of one health indicator compared to another, of one pollution indicator compared to another. The role the public should play in determining the final indicator set must be determined in the earliest stage of planning an indicator project. Still another political consideration will become relevant when the question arises of whether or not to collect indicator information on a disaggregated basis according to standardized subcity collection units. The determination of the physical boundaries of such subcity collection units could evoke cries of gerrymandering. Indicator plans must clearly state who will have responsibility for determining these boundaries.

Long-range political ramifications are also likely because of the relative impact of an indicator project on the various departments of a local government. The possibility exists that the head of a specific department, such as public works, may actually decide not to use the subcity disaggregation units when collecting information. Some departments may view the project as a threat. Indeed, several departments could unite to sabotage the purposes of the project.

None of the CAIP cities was coerced into participation. In most of the CAIP communities, the project was conducted through the office of the city manager or his assistants, with staff help usually provided by the local planning department. Most mayors provided little input to CAIP, and city council influence was only slightly greater. Most of the local directors of CAIP were seemingly given relatively unrestricted freedom by their superiors to conduct the project. As a whole, CAIP was given less than enthusiastic endorsement by the local governmental administrative and political leaders and only the larger CAIP communities gave it a high priority. Accordingly, smaller CAIP communities usually devoted only minimal resources to the project. As a new endeavor, CAIP did not seem to exert any influence on the local partisan political scene of any of the project communities, and on the whole it was given only minimal press coverage in the local news media of the project cities.

Few political considerations regarding the selection of the indicators by CAIP cities were raised, because the process of selection generally occurred during the first CAIP general conference. Since it was realized by CAIP participants in the beginning that the cities would have to rely primarily on existing, non-disaggregated data during the first year of the project, potential problems regarding subcity indicator information were not raised. Accordingly, effects on the departments of local CAIP governments were non-existent. It can be expected, however, that such problems will increase once the concept of disaggregated indicators has been instituted on a long-term basis in the CAIP cities.

City officials should be aware of the danger of becoming overly technocratic in indicator design and implementation. By this we mean an overemphasis on seeing things from the managerial point of view. Above and beyond the usefulness of indicators as a management tool, they serve a more basic function in our society. An informed electorate is essential to the proper function of a democratic society, and indicators are information of a most important kind. They can be used to inform the electorate, or they can be used by the administrative structure to manipulate the electorate. To ensure the former result, indicator selection must be broadly based, bringing together the outlooks of local government and all other elements of the community. Indicator data should also be freely available to all citizens.

Intracity Problems: Collecting the Indicator Information

Another difficulty presents itself when one asks how indicator information should be collected given the constraints of a political environment. The first topic of importance here concerns which department of the local government is most capable of handling the project. Usually, this will be the professional staff of the planning

department. The possibility exists, of course, that the professional staff of a planning department could become politicized if it tries to collect certain types of indicator information. It could be that the establishment of a new independent information-gathering staff is needed. In some cases, it will prove necessary to bring in outside technical assistance.

It is also to be expected that problems will arise in the collection of needed indicator information from political and economic jurisdictions outside the scope of city operations. For example, some local lending institutions and banks may deem it politically disadvantageous to reveal information on new loans. A county health department may not find it expedient to start collecting its information according to collection units dictated by a city council. It is also to be expected that the political leaders of a recently incorporated suburb may react unfavorably to a request by a city to reveal information about its well-to-do citizenry.

Still another important political consideration involves potential conflicts of interests. One must decide whether city departments should be entrusted with collecting and reporting their information without external corroboration, especially if the information is to be used to determine the priorities of the annual budget of a local government. In some cases, under a specific information-gathering system, department heads may be tempted to make their department appear understaffed and underfinanced.

To be effectively accomplished, governmental functions often require the cooperation of various city departments. For example, the construction and maintenance of a public lake requires the attention of public health officials, public works' engineers, recreation specialists, city policemen, etc. It is possible that such interdepartmental cooperation could be threatened to the extent that local governmental resources are allocated solely on the basis of indicator information. Indicators should be a means for helping to better the quality of urban life, not an end in themselves.

All CAIP communities used existing local governmental units (usually planning departments) to conduct the project. Indeed, no full-time personnel were hired by CAIP cities to work specifically on the project. Staff resources devoted to the project by cities varied from an entire staff of four professionals working part-time on CAIP to one college undergraduate employed half-time. In two instances the cities assumed minimal data collection responsibilities, leaving those tasks primarily to the LBJ School Technical Assistance Teams. None of the local planning departments involved in CAIP seemed to become any more politicized during the course of the project than they were before it began. Of course, this could have been different had the majority of the indicators been disaggregated.

Most data sources in CAIP communities were cooperative. A notable exception to this cooperation was the refusal of local banks and lending institutions in most cities to release information on new loans. Another problem was inconsistency of data reported by the same source. In two CAIP cities, the educational institutions reported two sets of data for the same indicator. In one of the cities, the school administration reported one set of figures to the state education agency and another set of figures to the CAIP data collector. In the other city, two different sets of figures were given to the CAIP data collector on two different occasions. Again, almost all county information sources and independent community sources of indicator information could have been less cooperative had disaggregated information been involved. It can also be said that CAIP produced no major interdepartmental conflicts in the local government agencies of the participating cities, because no community had decided to use indicator information to determine budgetary priorities.

Intracity Problems: Dissemination of Indicator Findings

Once a set of indicator data has been gathered, it becomes necessary for city officials to determine the extent to which such information should be distributed. The existence of a state open-records law will exert an influence in this regard. It must be determined whether and when the results will be published in the local newspapers. Some individuals may wish that only the planning department and/or the city council be allowed to view the results of the project. Others may decide that a municipal data bank should be founded and opened to public inspection.

If much of the final indicator information is in disaggregated form, serious political considerations present themselves. One can easily imagine how the next mayoralty race in a community could be affected if it is shown that the infant mortality rate across the tracks is four times greater than it is in another area. How will neighborhood B react to the fact that neighborhood A has twice as high a ratio of paved-to-unpaved streets?

It is evident that certain data collected according to subcity units could have far-reaching political ramifications. Consideration of this possibility, however, should not prevent an indicator set from being established. The democratic process requires a free flow of ideas and information. Indicator data should be a part of this flow in that it promotes participatory democracy by providing objective measures of certain aspects of urban life. If indicator information is kept from the public, there is the distinct possibility that political incumbents controlling such information will have an advantage in succeeding political contests.

It should further be noted that the need for public disclosure of indicator information includes, not only the revelation of governmental reports based on indicator information, but also the actual indicator data files on which such reports are founded. Having raw indicator data

open to public scrutiny in the form of a municipal data bank facilitates analysis of such data and reduces the likelihood of such information ever being presented in a distorted fashion in any public report.

Still another consideration is the extent to which certain disaggregated indicators could infringe on the privacy of individuals. The U.S. Bureau of the Census has always confronted this question with great care, and any indicator project must do the same to insure that no citizen's rights are violated.

The results of CAIP were disseminated during presentations to the respective city councils of the participating cities. Press coverage of these presentations tended to be perfunctory. Indeed, throughout the project interest on the part of local news media seemed minimal. Introductory newspaper articles in two CAIP cities were never followed up. An expected newspaper story about a presentation to the council of another CAIP city did not materialize. Even cable television coverage of introductory and final presentations in yet another CAIP city elicited little citizen interest. Had the material been presented in a form with broader citizen appeal, perhaps interest would have been greater.

Intracity Problems: Use of Final Indicator Results

Political considerations regarding indicators do not cease to be important once the final results have been disseminated. Indeed, public use of the information by any elected city official or local political figure will cause some controversies because the information undoubtedly will challenge the role of some vested interests.

The possibility of indicators generating interdepartmental conflict in a local government bears explanation here. It is easy to see how one city department, such as public utilities, could argue for increased funding as a result of its "poor indicator showing" when compared to national or state averages and norms. It will be necessary for a city council to determine the proper role of indicator information in budgetary deliberations *before* such deliberations actually begin. Other political considerations that could possibly be affected by indicator information include the potential impact of such data on the process by which city problems are identified and the influence of such data on local goal-setting commissions and committees. One must determine whether indicators should become a principal technical tool of the planning department of a local government. One must also assess whether indicators can be used to monitor the cost of local city services. The possibility exists that indicator use in terms of program development and program evaluation may create political feuds both within local governmental departments and within the local government as a whole. One must further realize that once made public, indicator information will undoubtedly be used extensively in local political campaigns.

LBJ School participants in CAIP were unable to assess any political consequences resulting from the use of indicator information, because this report was published immediately after the indicator information was presented to the respective cities. Subsequent investigations will have to be conducted to determine any political impact of CAIP results.

An example of what to expect was an inquiry made to the LBJ School by an individual seeking data on one of the CAIP cities to be used in a Congressional election campaign. This request could be accommodated only when the results of CAIP were released in this report.

Intergovernmental Considerations: State-City Relationships

It is possible that an indicator project could be established with joint cooperation between a state and a city. To be successful, such a project would have to be conducted so as not to cause either of the parties to feel that it was carrying an excessive part of the workload. To prevent conflict between the two parties in such a situation, the project could be formulated with the city providing personnel and overhead requirements and the state providing financial backing. Any such state-city venture will be successful only if both parties refrain from attempting to garner complete control of the project. Procedures must be established beforehand for settling disputes and disagreements.

In CAIP, state-city relationships ranged from good to very poor. Part of the problem in the poor relationships resulted from a lack of understanding on the part of the participants as to their proper roles in CAIP. Another part of the problem, however, was the simple eruption of traditional antagonisms between state and local officials.

Intergovernmental Considerations: City-Federal Relationships

It is possible that future indicator projects will only involve the federal government and local governments. The important consideration here is how much local governmental officials may suspect ulterior federal motives in return for federal funding of such a project. Some of these officials will, no doubt, feel that the results of such an indicator endeavor will ultimately affect the flow of federal money to their respective cities. These apprehensions will be reduced if federal motives are clearly presented. An indicator program may cause further political consternation if its results in a given community are purposefully and publicly compared by the federal government with results in other communities.

In CAIP most of the local governmental officials displayed some apprehension as to the real motive of HUD in the project. Surprisingly, few of these local officials displayed concern about HUD's comparing the indicator results of the project cities with each other. Federal-local relationships in CAIP improved as the project progressed.

Relations Among CAIP Participants

Two factors in the design and execution of the project contributed to an initial lack of understanding among CAIP participants. First, the time allowed for city selection and advance planning by the cities was short, on the order of one month. It was anticipated (somewhat optimistically) that state planning offices would quickly select participating cities and that HUD staff members and/or state planning office staffs would visit these communities to describe the indicator concept and project workplan. The month of September was set aside for this purpose. As it happened, however, one month was not enough; little advance work, beyond city selection, was done.

Second, a tension soon developed between some city staff members, who wanted concrete examples of what indicators could accomplish even in advance of indicator selection, and the LBJ School participants, who tended to emphasize the experimental nature of the project. After several sessions of talking around the matter, a consensus was reached that it was part of the project itself to generate solid examples of ways in which community indicators could help local, state, and federal governments.

It must be noted, however, that these two difficulties could hardly have been avoided within the timeframe and conceptual context of CAIP. Both difficulties were eventually surmounted to the apparent satisfaction of all CAIP participants. The fact that graduate students, professors, and representatives of local, state, and the federal government were thrown quickly together to deal with these problems under pressure led to mutual understanding and acceptance in later stages of the project.

Other Political Considerations

The relative importance of certain forms of city government in regard to the indicator concept deserves discussion here. It must be determined whether an indicator project has greater chances of success if implemented in a city with a council-manager form of government as opposed to a community with a commission form of government. In this same regard, it must be established whether the orientation of elected city officials towards indicators is significantly different from that of appointed city officials.

Political consequences of an indicator system will also be influenced by the size of the community in which the system is established. One can more easily obtain a rough, comprehensive picture of the "state" of a small community through visual observation than of a large, sprawling metropolis. Also, the decisionmakers in larger communities tend to rely more heavily on the use of "statistical materials" than do the community leaders in small towns. It is further to be expected that the fast pace of life in a large heterogeneous urban center will experience a relatively smaller public impact from an indicator project than the life in a small town.

Another political shortcoming of the indicator concept results from the fact that some urban phenomena can be more readily measured than others. It is conceivable that those areas of urban concern that are not as amenable to measurement and quantification as other areas will play a less influential role in the decision-making process where indicators are used for this purpose. The indicator concept may also produce some political disillusionment if its benefits are initially "oversold" to a community, and the concept ultimately fails to fulfill its expectations. Almost any attempt to establish the indicator concept in any city will be greeted with some form of opposition as a result of the general resistance to change in the status quo.

It is impossible to judge from CAIP whether the type of municipal government itself has a bearing on application of the indicator concept. The early publication of this document prevented such conclusions from being drawn. But CAIP results tentatively show that non-elected professional employees in local government, such as planners, were generally more likely to endorse the project than were locally-elected officials.

In general, the larger cities in CAIP were inclined to develop the indicator concept in greater detail than were the smaller cities. This was, no doubt, partly because the capabilities of their relatively more specialized planning departments were applied more intensively. CAIP faced institutional obstacles of many sorts in the cities and states, ranging from inattention and inability to devote staff time to, in one case, a purposeful shift in emphasis from the city/subcity level to a region/city level.

FEEDBACK ON CAIP FROM PROJECT PARTICIPANTS

Feedback is essential in judging the success of any project. The diverse opinions of the various levels of government on the results of CAIP can be evaluated only if significant and proper input is received from those individuals participating in the study. To learn the viewpoints of these participants, the LBJ School surveyed each of the participants in CAIP.

The survey consisted of eight questions ranging from numerical ratings to open-ended queries. The survey was mailed to twenty two individuals, and eighteen responded: eight were city personnel, six were HUD staff members, and four were state planning office representatives.

The respondents generally favored the use of indicator

systems, and every reply agreed that the cities should continue to work with indicators. For the most part, the responses indicated that the systems will be more fully developed in the near future. When asked to rate the degree of commitment of each of the various cities, city officials tended to rate it slightly higher than state and federal officials, federal officials tended to rate it lowest. At all three levels of government, the desirable uses of indicators in the cities were given as program analysis, planning, and assistance in the decision-making process. With regard to obstacles facing further indicator development, the consensus was that lack of staff and lack of funds were the major hindrances. When asked whether there were forces favorable to implementation of indicators, all groups mentioned the desire of the city manager, council members, and other local decisionmakers to have better information available.

Almost all respondents to the questionnaire preferred the intergovernmental approach of CAIP; only two replies stated that the local governments should have handled the project alone. The most frequent advantage listed for this intergovernmental approach was that more diverse skills and resources could be brought to bear by using state and federal specialists. Among the disadvantages listed were: (a) cities had little choice in the selection of indicators; (b) actual participation by the state personnel was less than it could have been; and (c) physical distances between the participants were too great. The few suggestions that were given to improve the intergovernmental approach dealt primarily with city-state relations. One reply suggested that the states should take the lead in the project, and another stated that the relationship between the cities and their state planning office should be more clearly defined.

Throughout the survey the "rating" by city officials of the potential value and future of indicators tended to be higher than the assessments of either state or HUD officials. One might also generalize that what some participants in the project viewed as a strength or advantage other respondents to the questionnaire judged as a weakness. For example, one city official indicated that a serious disadvantage of the intergovernmental approach was the lack of participation by state officials. These same state officials, however, saw their participation with the city as a definite advantage to the project. Another city participant concluded that indicators were of little use and lacked a promising future in his city, yet he was strongly in favor of continuing their collection anyway.

A majority of all levels of government felt that CAIP could aid cities in better managing their resources and improving services to their citizens. Though the prospects for expanded use and commitment vary for each of the six cities, it appears that all cities in CAIP will continue their indicator programs. The future of these indicator systems, however, as the questionnaire responses make clear, seems to depend a great deal on further aid and encouragement from the states and from HUD.

A sample questionnaire and a more detailed compilation of responses are presented in Appendix IV.

CHAPTER VI

INDICATORS: POSSIBLE, PROBABLE, AND RECOMMENDED USES

INTRODUCTION

As noted in Chapter II, the theoretical potential of community indicators as a method of social analysis is vast, and the literature on indicators discusses a wide range of feasible applications. Some of those applications, however, were beyond this project's objectives, and other uses were unrealistic in terms of the limitations observed in the initial phases of CAIP. Finally, some uses were thought by city participants to be inappropriate given the constraints of staff and resources.

CAIP participants, then, originally developed a broad range of *possible uses,* and with these to build on, the Technical Assistance Teams noted any limitations and discussed with city participants the uses best suited to the needs of each community. The cities, after working for some time with the project, evaluated their available resources and their unique needs and developed a list of *probable indicator uses* for their community. Some of the applications they listed are already being made and others are planned for the future.

Finally, after observing the difficulties encountered by both cities and Technical Assistance Teams during the course of the project, the LBJ School prepared a list of *most appropriate uses.* This list evolved after consideration of many factors, such as city size, available finances, capability of staff, and political realities.

POSSIBLE USES OF INDICATORS

The following list of the wide array of possible uses which CAIP initially identified for community indicators may be divided into four general classifications: (1) information applications; (2) planning applications; (3) decision-making applications; and (4) research applications.

Information Applications

(1) Information dissemination. At the most basic level, it was believed that indicators could provide a means of monitoring the quality of life in a city over time and of synthesizing that information into a form which could be easily disseminated to various interested individuals, groups, or organizations. This process could have two uses. First, indicator data could simply be used as a means of informing individual citizens or groups of citizens on particular topics relating to conditions in the city or in specific communities within the city. Second, in a more formal application, it would be possible for the city to use indicators as the basis of a state-of-the-city report, summarizing the various conditons being monitored.

(2) City management information system. Indicators were believed to be of possible use to city planning and management personnel as a part of their on-going program. In this sense, indicators could provide a systematic array of city information to be used in planning and management. Growing from this, indicators could serve as the basis of an interdepartmental information system, by which various city departments could be informed of city conditions relevant to their operations.

(3) City council information tool. In this application, indicators could work in one of two ways. First, they might remain at the planning and program level, with relevant bits of information being channeled up to decisionmakers only as needed. Second, indicators could be channeled directly to city decisionmakers as a method of informing them of conditions within the city on a continuing basis. The aim of either of these methods would be to provide a timely and comprehensive overview of the urban setting in an effort to increase interaction among city officials and to facilitate more informed decisionmaking.

(4) City staff training aid. As an information tool, it was also felt that indicators could provide a method of orienting new city employees to their jobs by giving them a succinct overview of the city itself. The goals of such a program would be to integrate the new employee more quickly into the administrative routine and to minimize the disruption created when staff changes occurred.

Planning Applications

(1) Problem identification. Indicators were believed to be useful in making social problems more visible. This would be especially true when city data were disaggregated to the subcity level, allowing individual areas of the city to

be monitored separately. Indicators could be used in this way to gauge the extent of a social problem in a particular community or to detect previously unforeseen social needs in their germinal stages. In a more advanced application, indicators in time-series breakdown could be used to make predictions about future conditions in a community, thus allowing city government to plan more effectively to meet emerging needs.

(2) Problem analysis and program development. Once problems are identified, a relatively sophisticated indicator set might be employed to analyze the extent of a problem within a specific area. Used in this way, indicators could (1) provide insights into the causes of specific problems, and (2) aid decisionmakers in making judgments about methods applicable for alleviating those causes. With this knowledge, city administrators could make more realistic decisions concerning the allocation of resources in existing programs and the development of future programs to fill unmet needs.

Decision-making Applications

(1) Resource allocation and priority establishment. The use of indicators to make resource and personnel allocation decisions is a concept closely associated with a number of uses already discussed. Basically, an urban decisionmaker should be able to use indicator information to make decisions concerning the allocation of present resources to cope with existing problems under his or her jurisdiction. For example, a police chief noting an upturn of crime in a particular area of the city during the past several months might allocate more staff to the area in an effort to reverse the trend. By the same method, it might become apparent to a police chief that the allocation of personnel to a particular area was too high in relation to the magnitude of crime (perhaps in comparison to other areas), and reallocation of staff could be made consistent with this determination.

(2) Program evaluation. Monitored over time, indicators describe conditions in a community and reveal changes in those conditions. Viewed in this way, indicators could be of use in an overall program evaluation process to measure the impact of various programs on certain aspects of the community. For example, a series of health indicators (such as infant mortality rates and disease rates) might be monitored over a period prior to and after the inception of a comprehensive community health program in a specific low-income area. If a decrease in the incidence of these diseases (i.e., decreased infant mortality and a lower disease rate) was apparent, this could be an indication that the program had had a positive impact on the community.

(3) Monitoring progress toward publicly-accepted goals. The use of indicators in this instance would be on a broader basis than their use in a single program or problem evaluation and would assume that the city has one or more long-range goals toward which it orients its planning and policy. In this sense, indicators have a potential value in monitoring the progress which the city government's programs are making toward those larger goals. For example, if one long-range goal is to develop efficient water service for all citizens, an indicator might be established to gauge the percentage of citizens who are being serviced each year. Over time, this indicator might give some idea of the progress being made toward the provision of complete service. If such progress is lacking, reevaluation of existing programs might be in order.

Research Applications

In recent years, researchers have become increasingly interested in creating a workable analytical model of the urban environment. Such a model would attempt to show the inputs and outputs of a particular urban system, allowing technicians to simulate the interactions within the system and to make predictions based on those simulations. During the project, the LBJ School participants decided that the state of indicator technology was not such that it could be of primary use in this area. It was felt, however, that indicator data could be used in two related areas:

(1) Testing relational hypotheses. Indicators could be used as one means of testing the validity of theories relating various objective measures of human well-being. That is, indicators could provide a monitoring mechanism for testing relational hypotheses generated by a modelling system.

(2) Refining modelling systems. It was believed that indicators could aid in testing the validity of models as a way of solving public policy problems. In this application, indicators could be used to monitor the effectiveness of a working model of the urban system. Thus, for example, indicator data monitoring the actual provision of city public services could be used to upgrade a production function which simulates the process. Once this operation was completed, the production function could be used to predict future needs based on current demand.

PROBABLE USES OF INDICATORS

Not all of the possible uses of indicators are reflected in a listing of probable uses by the six CAIP cities. It is too early to say with confidence to what uses indicator data will be put. But based upon the best estimates of the LBJ School Technical Assistance Teams, Table VI-1 shows the probable uses now emerging and those likely to emerge at a later time. The list of future uses is naturally more tentative and more uncertain than the list of currently emerging uses.

TABLE VI-1

Probable Uses of Indicators

INDICATOR USE	NUMBER OF CITIES Now	Future
Information Dissemination	3	4
City Management Information System	4	6
City Council Information Tool	1	2
Problem Identification	1	6
Problem Analysis	0	1
Resource Allocation	0	2
Program Evaluation	1	1
Monitoring Progress Toward Goals	0	3
City Staff Training Tool	1	2

As reflected in the table, one of the more popular uses is information dissemination by means of a state-of-the-city or state-of-the-region report. Little Rock has already published a draft of this type of report, as have Shawnee, McAlester, and Monroe. In most cases, the reports contain raw data displayed through the use of charts and tables. Little data interpretation is attempted in any report. It is assumed that the public will have easy access to the reports.

In both Shawnee and McAlester there is evidence of potential use of indicators as a city council information tool. In Shawnee, data for pollution indicators (oxygen saturation and BOD levels) both give evidence of the beneficial effects of recent improvements in the city's sewage treatment facilities. In McAlester, the city has long been plagued by complaints about garbage pickup; therefore, as a part of the indicator project, the McAlester Department of Community Development measured garbage complaints per 1,000 population over time. With such evidence, it became possible to provide actual rather than estimated figures on the severity of garbage service complaints.

In several cities, it has also been possible to highlight emerging city problems of which city officials may have been only dimly aware. The indicator data showed Shawnee, for example, with an infant mortality rate much higher than the national average, illustrating an incipient problem for the community. Relatively few of the indicator applications have so far been in the areas of establishing resource allocation priorities or evaluation of social programs (although Little Rock plans to use data for these purposes eventually). There is some current and planned use of indicators as a means of monitoring goal-achievement. McAlester, for example, intends to incorporate its indicator system into the construction of its three-year plan, using data generated by the system to monitor progress under the plan.

One promising use of indicators in the City of Midland is as a training device for new city employees. As indicators are intended to provide capsule assessments of city conditions and their change over time, they may be used to shortcut the often long periods it takes new employees to accumulate knowledge of the city and its problems.

On the whole, however, it is still too soon to provide definite assessments of the impact indicators have made on decisionmaking, or of the particular spin-offs that may derive from indicator application generally. Much of the future success of indicators will depend upon the capacity of city officials to incorporate indicator information in their decisionmaking. If this capacity is lacking, indicators will fall far short of their manifest goal of altering the process of urban decisionmaking by bringing evidence to bear where guesswork once sufficed.

That the applications of community indicators which are likely to be implemented in the six CAIP cities fall short of the applications which were originally planned is largely attributable to two factors. First, many of the planned applications were inappropriate with regard to the needs of the cities and the capabilities of the city staffs. Second, implementation of some appropriate applications was hindered by the approach that was taken to their implementation.

MOST APPROPRIATE USES OF INDICATORS

The following portion of this chapter offers suggestions which will enable cities to avoid in the future the missteps taken in the CAIP cities. These suggestions reflect the experience of the six CAIP cities and are based upon the premise that the determination of appropriate applications of a proposed indicator system is prerequisite to the successful design and implementation of the system. The suggestions take two forms: (1) criteria for selecting the applications appropriate to the individual city; and (2) guidelines for the implementation of the indicator system.

Criteria for Selecting Appropriate Applications

(1) *Would inherent limitations in the concept of indicators render some applications less feasible than others?*

(2) *Would the application be of sufficient value to the city to justify the cost and effort entailed in implementing the application?*

(3) *Would the political problems associated with the application be so significant as to make the application unfeasible?*

These criteria have been designed to serve two purposes. First, they provide a basis for evaluating the appropriateness of any indicator application to the needs

and capabilities of a city. An examination of each indicator application proposed for a city with respect to these criteria will insure that the designers of an indicator system consider the conceptual, data, organizational, and political considerations discussed in Chapter V before accepting or rejecting the application. Second, these criteria focus on those possible indicator applications, discussed previously in this chapter, which are most appropriate as major objectives of implementing an indicator system. It will be seen that some of these applications are inappropriate and that others are appropriate only for relatively large cities. To facilitate discussion of this second purpose, a list of possible applications follows:

(1) information dissemination to the public at large;
(2) training new city personnel;
(3) city management information system;
(4) city council information tool;
(5) problem identification;
(6) problem analysis and program development;
(7) resource allocation and priority establishment;
(8) program evaluation; and
(9) monitoring progress toward goals.

Explanation of Criteria

(1) *Concept limitations.* The conceptual limitations which may hinder the usefulness of some of the CAIP applications were analyzed in Chapter V. As mentioned, the major limitations stem from the fact that the state-of-the-art of the social sciences is not sufficiently developed to allow definitive statements on causal relationships between factors contributing to the development of a social problem, or on the relative influence each factor has on the creation or elimination of a social problem.

Because of these limitations, the following applications of CAIP are perhaps too ambitious to be fully implemented at present.

Problem analysis. While a comprehensive set of indicators can identify major problem areas, it cannot analyze these problems and point to their causes or components. Therefore, indicators can neither point toward practical solutions nor determine what resources are needed to overcome these problems.

Program development. Because indicators cannot analyze social problems and determine their causes, they cannot be relied upon to judge the relative merits of alternative plans to solve these problems. The inability of indicators to make statements about causal relationships prevents their use as a tool in the development of programs designed to eliminate or minimize problem areas.

Resource Allocation. Theoretically, a government's budget should be increased only to the point at which the benefit to the public deriving from an increase in expenditure balances the loss experienced by those citizens who must pay for that increase with their tax dollars. Spending decisions on specific programs (e.g., should the budget of the fire department be increased or cut back relative to that of the parks department?) should be made according to the same principle. Given the city's budget, expenditure on specific programs should be redistributed until an extra dollar spent on any program would yield the same increase in benefits, no matter what the program.

But to city officials who face the continual need to make budgetary decisions on a daily basis, the foregoing argument lacks realism. Given the state of the art, we cannot use indicators to make budgets in the manner outlined above.

However, indicators do have an important role to play in resource allocation even under the limitations of the current state-of-the-art. An important aspect of city budgetmaking is the spatial allocation of resources. Where in the city do we locate parks, fire stations, schools, museums, libraries, public transit facilities, hospitals, and so on? And how do we allocate human resources to the various neighborhoods that make up a community? If two neighborhoods have different crime rates, should they get different numbers of police per capita? If so, what should the city's goal be: to minimize the city's overall crime rate, or to make the crime rates equal in all neighborhoods? In dealing with questions such as these, indicators can play a useful supporting role, even though most questions cannot be answered exactly. Because we know so little about cause-and-effect relationships in the public sector, we cannot, for example, accurately predict the change in crime rates in a single neighborhood that would stem from increasing police expenditures there by $1,000 per month. Even so, knowing that one neighborhood has a much higher crime rate than another neighborhood may help public officials decide upon the relative allocation of limited police department resources to the two areas.

Program evaluation. Indicators cannot determine whether a change in the magnitude of a problem is due to the influence of a specific program designed to eliminate the problem. To make such a statement causal relations must be determined, and indicator theory is not yet at that stage. Therefore, program evaluation should be based on criteria other than the indicators project results.

(2) *Cost vs. value.* From the discussion of data and organizational problems in Chapter V, it is evident that five major structural problems are associated with establishing an indicator system: (1) the availability of data in general, (2) inconsistent units of data measurement, (3) the level of disaggregation, (4) the lack of financial resources, and

(5) the quality and quantity of available human resources. From the discussion of the possible uses of indicators in this chapter, it is also evident that all applications of indicators may be affected by one or more of these difficulties. Obviously, if an indicator application is seriously affected by one of the five problems, a solution for the problem will have to be found, and it must be decided whether the benefits derived from that use of the indicator would outweigh the costs of developing the solution.

The importance of these problems in designing and implementing an indicator set varies from city to city, because the experience of the CAIP cities suggests that the problems prevalent in small cities (50,000 population and under) are different from the problems prevalent in large cities (over 50,000 population). In general, most of the major data and organizational problems seem to be more prevalent in smaller cities. The problems associated with unavailability of staff and data are more of a hindrance in small cities, because these cities typically have less stringent requirements for personnel qualifications and recordkeeping than large cities. Large cities tend to be less hampered by lack of funds, because they usually benefit from economies of scale which contribute to a greater flexibility in the use of city resources. The problems posed by inconsistent units of measurement and levels of disaggregation, however, are generally greater in larger cities where the data are more numerous and more disaggregable.

Unfortunately, the benefits to be derived from an indicator application cannot be quantified in dollars, whereas the costs of developing variables can be. There are, therefore, no guidelines for answering the question, "Would the improved information which would result from implementation of a proposed indicator application outweigh the dollar costs of effecting the implementation?" It should be kept in mind, however, that some applications are more appropriate than others as the principal objectives of implementing an indicator system. Some applications can be viewed as reasons in themselves for undertaking the establishment of an indicator system. Other applications can be considered beneficial by-products of a system which do not in themselves constitute valid reasons for establishing the system. For example, information dissemination through a state-of-the-city report would be considered a legitimate objective in most cities, whereas the standardization of city data collection could probably be considered a by-product of the indicator system. A system designed only to facilitate the standardization of data collection would be of limited value in most cities.

Because it represents a beneficial by-product rather than a primary objective, the standardization of city data has been omitted from the list of "most appropriate" indicator uses. This does not mean that data standarization is not to be sought after in connection with other uses of indicators. It simply means that the costs of standardizing data would, in most cases, exceed the benefits if standardization were the only benefit derived.

(3) *Political problems.* The political problems associated with community indicators were discussed in detail in Chapter V. Of these, four are of primary significance: (1) the difficulties in convincing public officials and community civic leaders of the value of indicators; (2) the lack of departmental cooperation; (3) the possibility of alteration of data; and (4) the improper application of indicator information. Before any application is selected for any city, the extent of these problems should be taken into consideration to reevaluate any applications which might be politically unfeasible, and to develop strategies for implementing applications which are not politically unfeasible but which could aggravate or create political problems in the community.

The experience of the six CAIP cities indicates that the "selling" of the indicator concept to political and civic leaders poses a greater problem in small cities where these leaders assume more autonomy in the exercise of their power. The lack of departmental cooperation and the possibility of alteration of data, however, appear to be less related to city size than to the political nature of information in general.

Because of the problems discussed in relation to the second and third criteria, it seems that the most appropriate indicator systems for small cities are those which are relatively unsophisticated and which require less extensive involvement of political leaders. Larger cities may find these types of systems adequate to their needs, but they are generally capable of implementing more complicated systems.

Most Appropriate Applications

Based upon the foregoing analysis and upon the experiences of the six CAIP cities, the LBJ School participants concluded that a community indicator set can most appropriately be applied to disseminate information to the public at large, to help train new city personnel, to serve as the basis for a city management information system, to become a city council information tool, to aid in identification of city problem areas, to guide the establishment of city government priorities, to help determine how to allocate resources among the areas of a city, and to monitor progress toward achieving widely accepted city goals.

RECOMMENDATIONS

As a result of CAIP, the LBJ School participants feel that community indicators are a potentially significant tool

for cities to use in dealing with their increasingly complex problems. The experiences gained from this project can be used to facilitate the establishment of community indicator systems in other cities and thereby allow the concept to become more fully developed. The following recommendations, then, relate to issues that all levels of government should consider carefully in constructing urban indicator systems.

In the recommendations below, the term community indicator is defined as follows:

> A community indicator is a quantitative measure which allows inferences to be made about the status of a community condition and facilitates the measurement of change in that condition over time. Indicator data should be:
>
> - accurate;
> - disaggregated;
> - concise;
> - regularly updated;
> - readily available;
> - relevant.

Recommendations Concerning the Establishment and Development of Indicator Systems in the Cities

(1) *Before beginning work on an indicator system, cities should arrive at a clear understanding of objectives and determine the uses to which the system will be put.* (See Chapter VI.)

The most appropriate ways for cities to apply indicators are as follows:

- as a means to disseminate information to the public at large;
- as a training tool for new city personnel;
- as a city management information system;
- as a city council information tool;
- as a means to identify problems;
- as a guide for priority establishment;
- as an aid in determining the proper allocation of resources among geographic units within a city;
- as an aid in providing baseline data for use in establishing long-term city goals and as a tool for monitoring progress toward those goals. (See Chapter V and VI.)

Indicators should not now be used for program evaluation, nor should indicators be the primary tool in making budgetary allocation decisions. (See Chapter V.)

(2) *In addition to determining their objectives, cities considering establishment of their own indicator system should carefully assess their staff availability in relation to project requirements before finally committing themselves to the project.* (See Chapter V.)

(3) *Cities should clearly delineate lines of responsibility in assigning the system's development work.* Ideally, the work should be assigned to a high-level office or department that has authority to request and receive all data called for by the city's indicators. In larger cities the operation of the system should be given to a full-time, permanent "indicators staff" (the size of the staff depending, among other considerations, upon the complexity of the system, the resources available to the city, and the uses to which the system is put). (See Chapters V and VI.)

(4) *Each city should select indicators that will reflect the information needs of that city.* Selection should be broadly based, bringing together the outlooks of local government and all other elements of the community. This broad base should be retained through annual overall review with government and citizen advisory groups. (See Chapter V.)

(5) *The following technical considerations should facilitate the operation of a city's indicators system):*

(a) *To insure availability (and convenience), cities should give priority in choosing data sources to those within their own administrative control.* (See Chapter V.)

(b) *To insure that data is up to date and to increase the usefulness of time-series information, data should be compiled at regular and frequent intervals.* (See Chapter IV.)

(c) *City data gathering should be standardized.* Standard *definitions* for individual indicators must be agreed upon and met. Standard *subcity units* should be established for purposes of gathering data on social conditions and urban services. These should be contiguous, relatively compact, reasonably distinct in terms of social, economic, ethnic, and other traits. If the city is part of a Standard Metropolitan Statistical Area (SMSA), it should probably establish subcity units which are consistent with census tracts or aggregates of tracts. (In the case of census tracts, definitional change in data over time can be minimized if the tracts are split, rather than boundaries being redrawn, as the city's population changes.) In any case, all city departments should be required to collect operating data based on the subcity units chosen. (See Chapters IV, V, and VI.)

(d) *All data should be subject to verification procedures.* Data gathered from sources internal to city government should be checked for accuracy, the check fully documented, and the providing agencies held responsible for the accuracy of the data. Data gathered from sources external to city government should be documented as to original method of collection and accuracy. All documentation should then be available to individuals or

organizations that request it. (See Chapter V.)

(e) *Cities should develop acceptable methods of estimating data for the periods that fall between those used by primary data-reporting agencies.* (See Chapter V.)

(6) *Cities considering the establishment of their own indicator systems should examine the CAIP Model Set of Indicators.* (See Appendix III.) This set is the distillation of the project participants' experience in selecting and redefining useful community indicators. To gain experience with the technicalities of indicators, cities may want to use all or parts of the Model Set in the early stages of development of their own systems. (See Chapter VI.)

(7) *Cities should focus attention periodically on upgrading and refining their indicator systems.* This work is especially desirable where subcity data are non-existent but could be developed by improving data-collection techniques. (See Chapter V.)

Recommendations Concerning the Potential Intergovernmental Encouragement or Use of Community Indicator Systems

(1) Wherever state and federal agencies assist in the establishment of individual community indicator systems (as was the case in CAIP) the following recommendations apply:

(a) *Agencies representing all governmental levels involved should write a joint agreement specifying each party's expectations and responsibilities.* (See Chapter VI.)

(b) *Participating state and federal agencies should assist (where appropriate) by:*

- keeping in close communication;
- providing Intergovernmental Personnel Act (IPA) personnel;
- conducting training sessions;
- hosting conferences;
- providing other forms of technical assistance. (See Chapters I, IV, and V.)

(c) *State and federal data-collecting and reporting agencies should take the initiative in making known to cities all pertinent city data such as law enforcement, environment, and health statistics.* This effort is especially important with data which facilitate intercity comparisons. These data should be provided in standard form (in accordance with standard subcity units, if possible) at periodic intervals. (See Chapter IV.)

possible) at periodic intervals. (See Chapter IV.)

(2) *Coterminous and overlapping jurisdictions–such as counties, school districts, special districts, and COGs–should furnish appropriate data to the cities and, in turn, be provided with indicator data by the cities.* Where possible, these other jurisdictions should use the standard subcity units defined by the cities. (See Chapters IV and V.)

(3) *If community indicators are ever to be used in ascertaining federal or state urban priorities, the collection of non-standard urban data should be avoided by developing precise definitions for individual indicators and a standard monitoring and accounting procedure.* (See Chapters IV and V.)

(4) *State and federal officials should use city indicator data to secure relevant knowledge for program planning in particular cities, to manage more efficiently programs affecting cities, and to develop agency expertise in data collection and analysis.* Because indicator data represents capsule information about changes in urban conditions, such data will prove appropriate for familiarizing state and federal officials with aspects of the large number of cities with which they must work. The state of indicator technology, especially as applied to smaller and medium-sized cities, however, cautions against applications of indicators to allocate resources among cities or to evaluate state and federal programs in those cities.

(5) *Extreme care should be exercised in comparing indicator data among cities because of the wide range of diversity in economic, social, racial, and other aspects of cities.* Comparison of single indicators will often fail to reflect the richness and uniqueness of particular cities. That a community shows low levels of retail sales, for example, may mean no more than that citizens tend to shop in easily accessible neighboring communities and may not reflect any negative aspects of the urban economy. Indicators can be most appropriately used to provide *profiles* of communities in which values of any single indicator are carefully weighed against the whole picture of community attributes.

Recommendations Concerning Governmental Information Policy

1. *Indicator reports should be treated as public documents, open and available and widely disseminated to the public.* (See Chapters IV and V.)

2. *Care should be taken to see that no information generated by an indicator system infringes on the personal privacy of any citizen.* (See Chapter V.)

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APPENDIX I

ANALYZING INDICATOR DATA

INTRODUCTION

On the Utility of Core Indicators

The purpose of this appendix is to present the results of the analysis of core indicator data performed by the project's LBJ School participants. Few firm conclusions were drawn from the analysis. The limited scope of the analysis does not preclude, however, a tentative statement on the utility of core indicators.

The utility question can be viewed from two perspectives: the city level and the supracity level. The analysis of core indicators was geared to show cities how they might approach concepts like urban change and the quality of urban life. Intracity comparisons were considered essential to the development of the indicator project. Specific emphasis was put on the need for disaggregated data. Only one of the six cities, however, was able to collect that kind of data. Additionally, trends and relationships found in the data were analyzed as a further indication to cities of how they could use indicator data more effectively.

The utility of indicator data for federal or state agencies is readily apparent. Cities amassing data in compliance with a core indicator form would provide those agencies with a standardized log of information. Consequently, cities could be readily compared.

The use of core indicators has two major benefits for all parties:

(1) the indicator system prompts people to ask relevant questions about urban relationships; and

(2) the indicator system allows for comparability of data over time and place.

The use of core indicators also has certain limitations:

(1) the indicator system does not guarantee correct answers to whatever questions are asked;

(2) the indicator system in its present state of development cannot address the issues of causality; and

(3) the indicator system does not, in and of itself, answer value questions.

These conclusions are drawn from experience in CAIP and are by-products of the limitations that appeared during the analysis phase. Several major constraints were identified by the analysis task force, including: (a) slowness in the collection of accurate data; (b) lack of time series data; (c) non-comparable and inconsistent definitions of the indicators; (d) non-random selection of cities; and (e) the limited number of cases (cities).

Aside from these drawbacks, the value of the core indicators was agreed upon. The analysis team concluded that core indicators are a suggestion of what can be done to monitor urban change. Within this context, it should be noted that the work presented here is illustrative rather than exhaustive.

The Analysis Phase

The Analysis Phase of the Community Activity Indicators Project began December 10, 1973, and was scheduled to end March 15, 1974. During this period, all participants were engaged in the analysis of indicator sets. The LBJ School participants had two main responsibilities: (1) to perform the analysis of those indicators designated as core indicators; and (2) to provide technical assistance to the participating cities in analyzing the data accumulated during the collection phase of the project. The city participants were responsible for the analysis of the indicator set chosen for their city and for the development of a plan for presenting their analyses to city decision-makers.

In anticipation of these responsibilities, the LBJ School participants selected an Analysis Task Force to plan the analysis of the core indicators and to investigate the kinds of technical assistance which would be needed by the city participants. It is anticipated that this appendix outlining the analyses performed on the core indicators will benefit cities planning an analysis of their own set of indicators.

Basically, the core indicators were subject to three kinds of analysis and appear in the Appendix under these headings: (a) comparison analysis; (b) trend analysis; and (c) relational analysis.

COMPARISONS: INTRACITY AND INTERCITY

Comparative analysis consisted of comparisons of subcity units within the same city (for Little Rock only), comparisons of the six participating cities to one another,

and comparisons of selected elements in the core indicator set to national averages where available.

Intracity Analysis: Little Rock

Ideally, all cities undertaking the construction of social indicators should be able to disaggregate citywide data to specific intracity units. Whether these units are neighborhoods, census tracts, planning districts, electoral precincts, or whatever, their use should permit statements to be made about the variability of indicator values from area to area. Unfortunately, only one of the cities in CAIP was able to develop a sophisticated data set based on subcity units. The rest of the cities were hampered by the lack of staff time, the inconsistency of geographic units defined for different purposes, and the paucity of data. The analysis reported here, therefore, is illustrative only, using data accumulated by the City of Little Rock, Arkansas.

There are a number of possible techniques available for the analysis of subcity data, including visual graphing and mapping, factor analysis, correlation analysis, and contingency tables. While Little Rock has also applied visual techniques, the approach discussed here is correlation analysis. A correlation coefficient (symbolized by the letter "r") indicates the degree to which two variables are associated. The relationship ranges from +1.00 to -1.00. When two indicators are perfectly associated in a positive direction (i.e., every time one increases, the other increases by the same proportion the score will be 1.00. When the two are perfectly associated but in a negative direction (i.e., when one increases the other decreases by the same proportion) the score will be -1.00. When the relationship between two indicators (e.g., rainfall in Dallas and the crime rate in Little Rock's census tracts) is non-existent, the correlation coefficient is zero. The closeness of fit does not, except under very limited circumstances, prove causation. A statistical relationship may be the result of sheer coincidence, because one variable influences the other, or because each is influenced by some third variable. But Little Rock's 32 census tracts provide a sufficient number of cases to permit some interesting explorations of the correlations among the city's disaggregated data. Table App. I-1 indicates the 23 indicators and their mean values for which the city secured data disaggregated by census tracts.

Two indicators which most commonly differentiate areas within a city are race and income; some tracts or neighborhoods are wealthier, some have more black residents than others. Table App. I-2 shows the intercorrelations of 22 other indicators with the percent of population in the census tract which is black. There are both confirmations and refutations of our hypotheses therein. Among the most obvious conclusions are:

1. race and levels of education are strongly and negatively related;
2. rates of unemployment are considerably higher in black neighborhoods;
3. communicable disease rates and infant mortality are higher in black neighborhoods;
4. housing conditions, as indicated by vacancy rates and overcrowding measures, are inferior in black neighborhoods;
5. the proportion of citizens with incomes below the poverty line is not significantly related to the minority percentage of the census tract;
6. crime rates are positively but not significantly related to the percent non-white in the area; and
7. street conditions, indicated by the character of the surface, are not appreciably related to the percent white in the neighborhood.

A more sophisticated inquiry, with a larger number of measures, might well qualify some of these conclusions. But insofar as the present measures do indeed measure what they are conceptually intended to measure, it is clear that not all of the conventional wisdom about the differences between white and non-white neighborhoods is borne out.

A fairly high proportion of common-sense expectations are established by the data on median family income in Table App. I-3. It is clear that the higher the income of a tract, the higher the educational levels, the proportion white, the employment rate, the indices of good health, and the proportion of home ownership. Such things as burglary rates, open space, and street condition, though, show no particularly strong association with median income.

It is also possible, with subcity data, to examine any number of specific aspects of a neighborhood which might be influenced by city policy. These include such things as streets and sidewalks, crime rates, health rates, park space, library readership, fire damage, and so forth. Although only a few such indicators are actually available in the Little Rock data, it is possible to focus on two: burglary rates and health statistics. Table App. I-4 shows, for example, the correlates of burglary rates with selected indicators hypothesized to be related to this crime measure. In fact, none of these correlations reach a level of statistical significance high enough to place confidence in them. Within this limitation, however, burglary rates are higher in neighborhoods with more poverty, higher unemployment rates, and higher proportions of non-whites; they are lower in neighborhoods with well-to-do and well-educated populations.

The correlates of health indicators, reported in Table App. I-5, tell a more decisive story. Three health measures (infant mortality rates, syphilis rates, and tuberculosis incidence) are related to five other variables. Health problems are more likely to be found in neighborhoods

TABLE APP. I-1

MEAN CENSUS TRACT VALUES OF INDICATORS[a]
LITTLE ROCK, ARKANSAS

	Indicator	X
1.	Population of tract	4373.64
2.	Percent non-white	27.84
3.	Dependency ratio	86.68
4.	Adult median school years	12.00
5.	Population change, 1960-1970	28.53
6.	Percent with poverty incomes	23.54
7.	Percent adults without high school diplomas	42.65
8.	Unemployment rate	3.61
9.	Infant mortality, 1968-1972	7.78
10.	Syphilis rate, 1968-1972	6.56
11.	Tuberculosis rate, 1968-1972	6.25
12.	Net housing starts, 1973	.01
13.	Number subsidized housing units	100.67
14.	Percent of city's subsidized units	3.12
15.	Vacancy rate	6.41
16.	Overcrowding rate	23.91
17.	Acres of open space	688.03
18.	Real income	$5,945.84
19.	Median family income	$7,913.53
20.	Number burglaries, 1973	18.06
21.	Percent streets surface treated	27.03
22.	Percent streets asphalt/concrete	72.90
23.	Home ownership rate	54.28

[a]Note that the means given are the means of all census tracts, which do not necessarily coincide with the overall city means.

TABLE APP. I-2

CORRELATIONS BETWEEN PERCENT OF CENSUS TRACT NON–WHITE
AND OTHER CENSUS TRACT INDICATORS
LITTLE ROCK, ARKANSAS

Indicator	Correlation with Percent non-white	Significance
1. Population of tract	-.20	NS[a]
2. Dependency ratio	.55	.01
3. Adult median school years	-.74	.01
4. Population change, 1960-1970	-.34	NS
5. Percent with poverty income	.13	NS
6. Percent adults without high school diplomas	.60	.01
7. Unemployment rate	.86	.01
8. Infant mortality	.52	.01
9. Syphilis	.79	.01
10. Tuberculosis	.53	.01
11. Housing starts	-.37	NS
12. Number subsidized housing units	.30	NS
13. Percent of city's subsidized housing units	.29	NS
14. Vacancy rate	.50	.01
15. Overcrowding	.48	.01
16. Open space	.02	NS
17. Real income	-.64	.01
18. Median income	-.64	.01
19. Number burglaries	.29	NS
20. Percent streets surface treated	-.04	NS
21. Percent streets asphalt/concrete	.04	NS
22. Home ownership	-.13	NS

[a] "NS" shows a correlation whose probability of occurring by chance is relatively high. The confidence level chosen here is the .01 level, and relationships at or above that level are shown as significant in a statistical sense.

TABLE APP. I-3

CORRELATIONS BETWEEN MEDIAN FAMILY INCOME
OF CENSUS TRACTS AND OTHER CENSUS TRACT INDICATORS
LITTLE ROCK, ARKANSAS

Indicator	Correlation with Median Family Income	Significance
1. Population of tract	.54	.01
2. Percent non-white	-.64	.01
3. Dependency ratio	-.29	NS[a]
4. Adult median school years	.77	.01
5. Population change, 1960-1970	.63	.01
6. Percent with poverty income	-.39	NS
7. Percent adults without high school diplomas	-.78	.01
8. Unemployment rate	-.76	.01
9. Infant mortality	-.24	NS
10. Syphilis	-.54	.01
11. Tuberculosis	-.47	.01
12. Housing starts	.41	NS
13. Number subsidized units	-.24	NS
14. Percent of city's subsidized housing units	-.24	NS
15. Vacancy rate	-.45	.01
16. Overcrowding	-.33	NS
17. Open space	.09	NS
18. Real income	1.00	.01
19. Burglaries	-.21	NS
20. Percent streets surface treated	-.04	NS
21. Percent streets asphalt/concrete	.03	NS
22. Home ownership	.64	.01

[a]See note to Table App. I-2.

TABLE APP. I-4

CORRELATES OF SELECTED INDICATORS WITH CENSUS TRACT BURGLARY RATES[a]
LITTLE ROCK, ARKANSAS

Indicator	Correlation with Burglary Rates
1. Adult median school years	-.32
2. Poverty income	.27
3. Unemployment rate	.40
4. Percent non-white	.29
5. Median income	-.21

[a]None of the reported correlations are significant at the .01 level.

TABLE APP. I-5

CORRELATES OF SELECTED INDICATORS WITH CENSUS TRACT
HEALTH INDICATORS
LITTLE ROCK, ARKANSAS

Indicators	Correlation with Infant Mortality Rates	Correlation with Syphilis Rates	Correlation with Tuberculosis Rates
1. Percent non-white	.52[a]	.79	.53
2. Dependency ratio	.50	.45	.46
3. Poverty income	-.09	.12	.13
4. Overcrowding	.37	.55	.61
5. Median income	-.24	-.54	-.47

[a]Values significant at .01 level.

with a high proportion of minorities, with high dependency ratios, with overcrowded housing, and with lower median family incomes. Yet it should be noted that they are not strictly a function of low income *per se*, as the poverty income measure shows no significant association with ill health. Rather, poor health seems more specifically related to the racial makeup than the socio-economic makeup of the neighborhood. The difference in the strength of relationship between health and class on the one hand, and health and race on the other, is striking.

Conclusions. It is unfortunate that cities in CAIP did not develop a richer set of intracity indicator data. If indicators are designed to measure the health of the urban organism, it is important to know how particular parts of it differ from the condition of the whole. Nonetheless, the Little Rock data are still illustrative and suggestive of what could be done by all cities, even smaller ones, if intracity data were accumulated as a regular part of an on-going indicator project.

Intercity Analysis: The Six CAIP Cities

Demography. The CAIP cities ranged in population from McAlester at 16,000 to Little Rock at 132,000, with most of the cities under 60,000.

Four cities have significant minority populations: Little Rock and Monroe have large black populations; Midland has sizeable black and Mexican-American populations; San Marcos has the largest minority population, largely Mexican-American. McAlester and Shawnee have predominantly Anglo populations. (See Graph App. I-1.)

The national age distribution shows 8 percent of the population under 5 years, 25 percent from 5 to 18 years, 56 percent from 19 to 65 years, and 10 percent 65 years and over. Little Rock, Monroe, McAlester, and Shawnee have population distributions similar to the national distribution, except that McAlester and Shawnee have a larger population in the 65-and-over bracket. (See Graph App. I-2.) On the other hand, Midland and San Marcos have relatively young populations with large percentages in the 5-to-18 bracket and fewer in the 65-and-over bracket.

Economic base and employment opportunity. Retail sales figures for the six cities in 1972 range from Monroe's $3.6 million per 1,000 population to San Marcos' $1.2 million per 1,000 population. (See Graph App. I-3.) When compared with the national average for that year, the cities look economically healthy, with San Marcos' lower figure explained in part by its location between two large cities serving as trade centers for the area. Midland's fifth-ranked retail sales appear somewhat low in relation to its population and median household income (the highest of the cities).

While retail sales reflect the immediate purchasing power of the community's citizens, data for new loans and additions and/or expansions of basic industry suggest future directions of economic growth. Data were available for only four of the six cities for each of these indicators, making it difficult to suggest any firm conclusions. However, Midland's relatively high new loan figure offsets the picture drawn by the retail sales data.

Data on employment (see Graph App. I-4) and income (see Graphs App. I-15 and App. I-16) round out the economic picture of each community. Shawnee and McAlester had the highest unemployment rates in 1972–8.2 percent and 7.5 percent, respectively. The national unemployment rate was 5.6 percent for 1972. With these rather high unemployment rates, it is not surprising that Shawnee and McAlester also had relatively low median household incomes. San Marcos has the lowest median household income of the six cities, but its unemployment figures are based on work force instead of labor force and are, therefore, not comparable with the other cities. Monroe shows an average unemployment rate and below-average median family income. Midland has a low unemployment rate and an unusually high median income. Little Rock has a low unemployment rate and a modest median income.

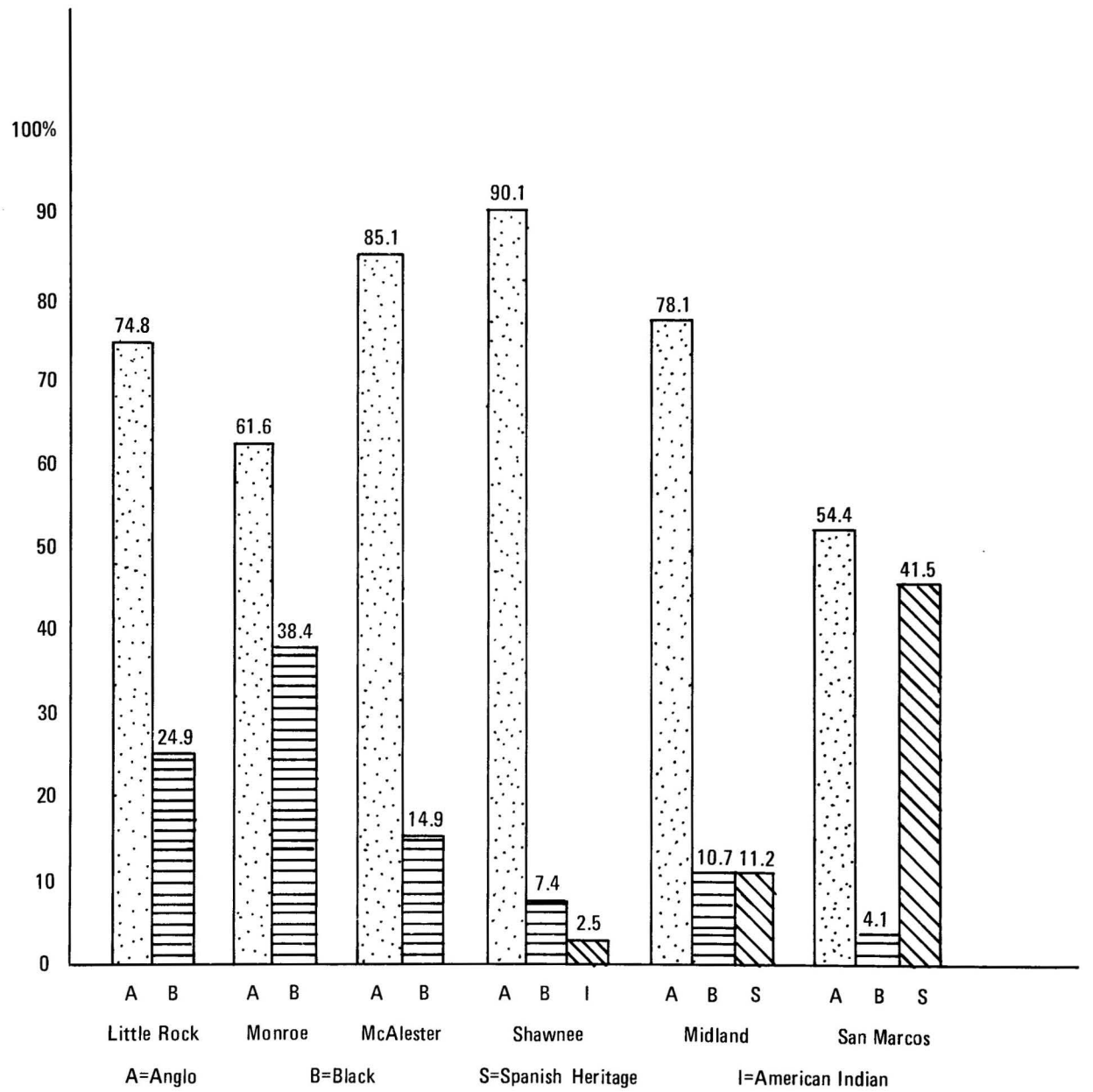
Education. Providing an educational system for its citizens is not a responsibility of any of the CAIP municipal governments; independent school districts perform that service. But education is so vital a part of community life that a community's health cannot be ascertained without knowing the condition of its educational system. Housing, crime rates, income, disease rates–all may influence or be influenced by the quality of the schools.

It is difficult to measure the quality of education, but public school expenditures per pupil provide some indication. In 1971 U.S. school systems spent an average of $929 per pupil. In 1972 only San Marcos and Monroe exceeded that average, even though Little Rock and Midland had higher public school tax bases per pupil, and San Marcos had the second-lowest tax base. (See Graphs App. I-5 and App. I-6.)

Dropout rates and education continuance rates may give some indication of how well the school systems are using their resources. (See Graphs App. I-7 and App. I-8.) In the case of the CAIP cities, there is no definite relationship between dollars spent per pupil and dropout rates or continuance rates. San Marcos, with the highest expenditure per pupil, has the lowest dropout rate and also the second-lowest continuance rate. Little Rock and Monroe, with a relatively high expenditure per pupil, have the two highest dropout rates but also the two highest continuance rates. Little Rock, Monroe, and Midland have significant private school enrollments. If middle and upper-middle class parents send their children to private schools, then the public schools may be left with more potential dropouts from the poorer or minority populations.

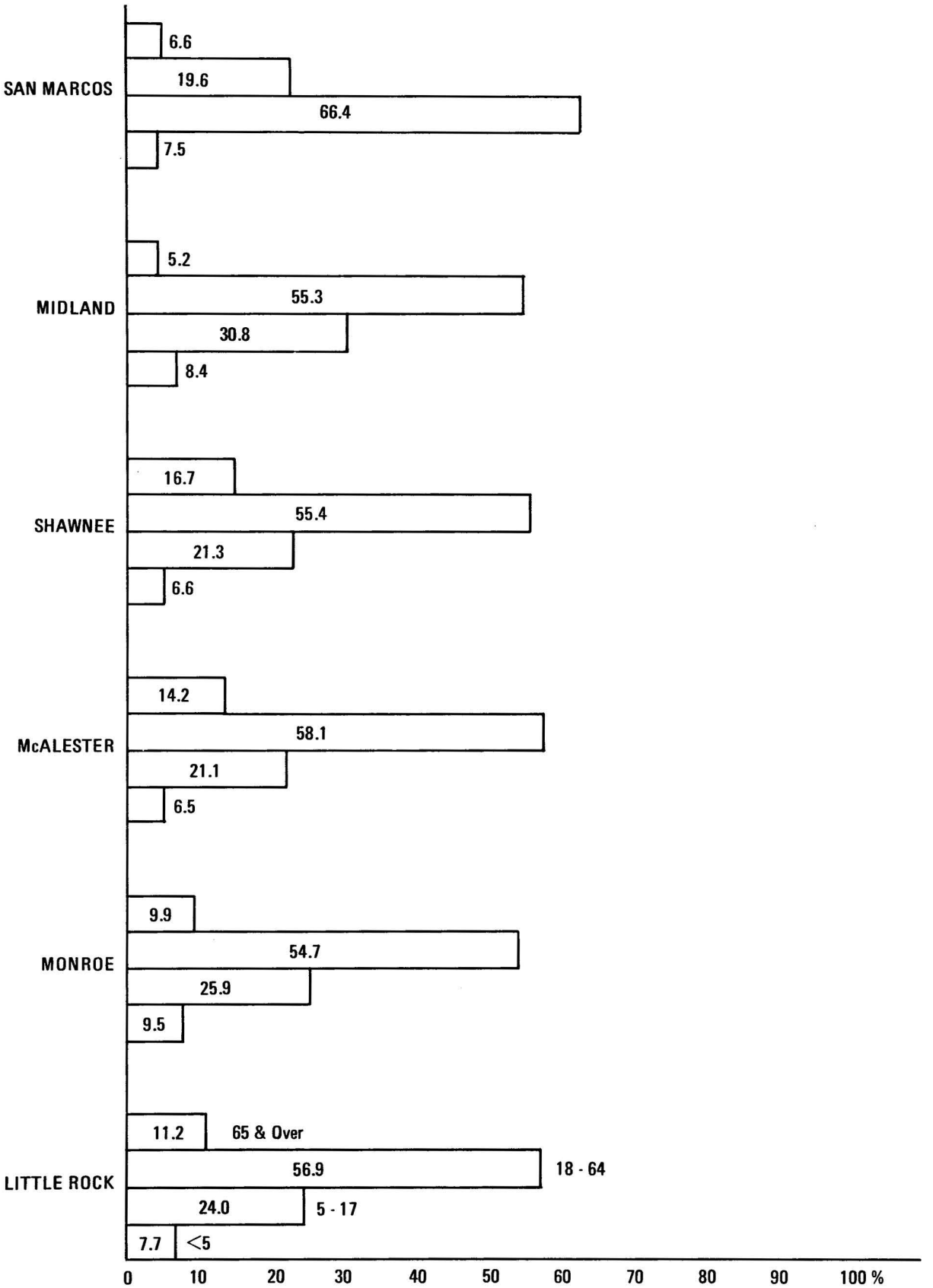
GRAPH APP. I-1

1970 Population Distributions—Race



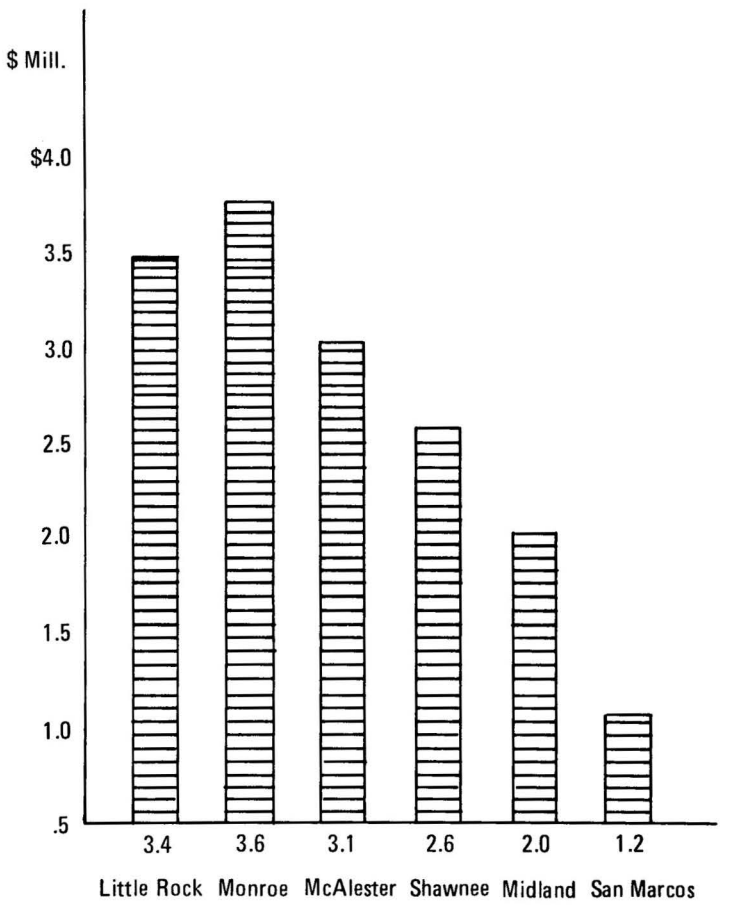
GRAPH APP. I-2

1970 Population Distributions—Age



GRAPH APP. I-3

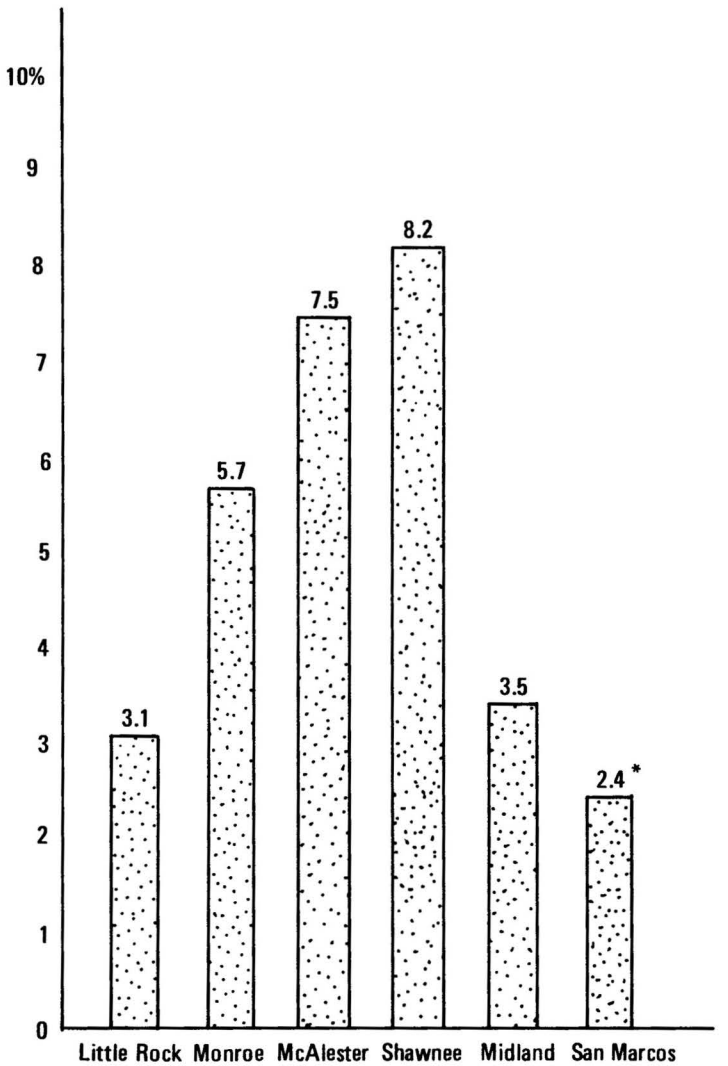
1972 Retail Sales per 1,000 Population[a]



[a]Extrapolated 1972 Population Data

GRAPH APP. I-4

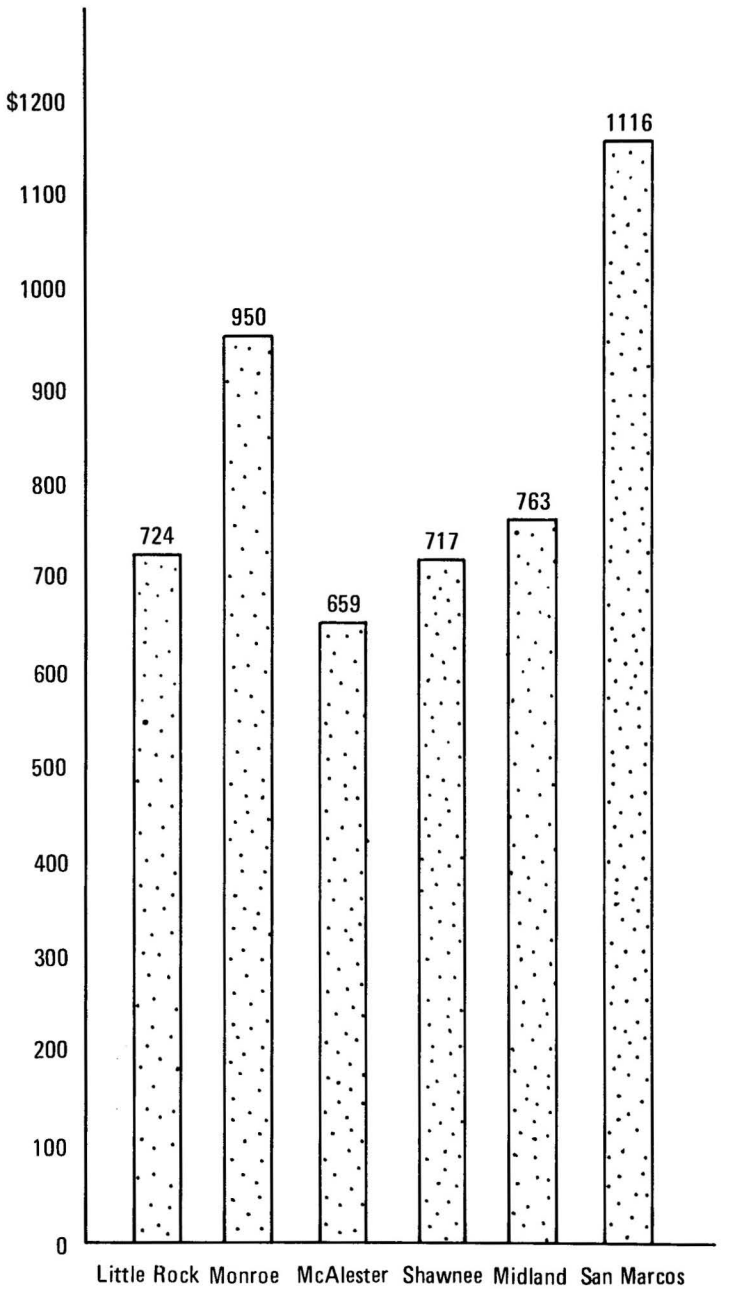
1972 Percentages of Labor Force Unemployed



*Percent of work force unemployed. Work force relates to all those who work or are seeking employment within a geographical unit within the four weeks immediately prior to the reporting date, regardless of residence.

GRAPH APP. I-5

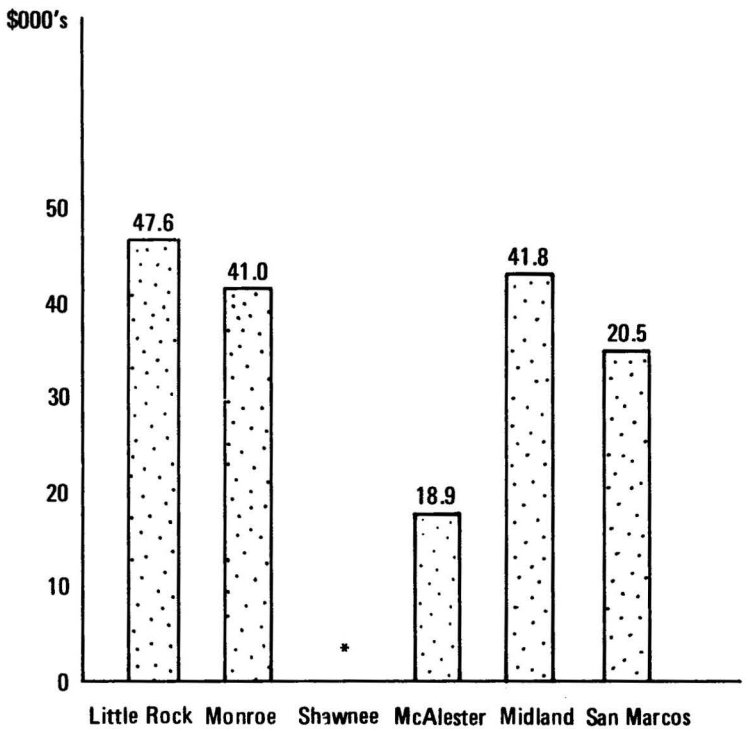
1972 Public School Expenditures per Pupil[a]



[a]School year 1972-73; excludes capital expenditures; average daily attendance data

GRAPH APP. I-6

1972 Public School Tax Bases per Pupil[a]

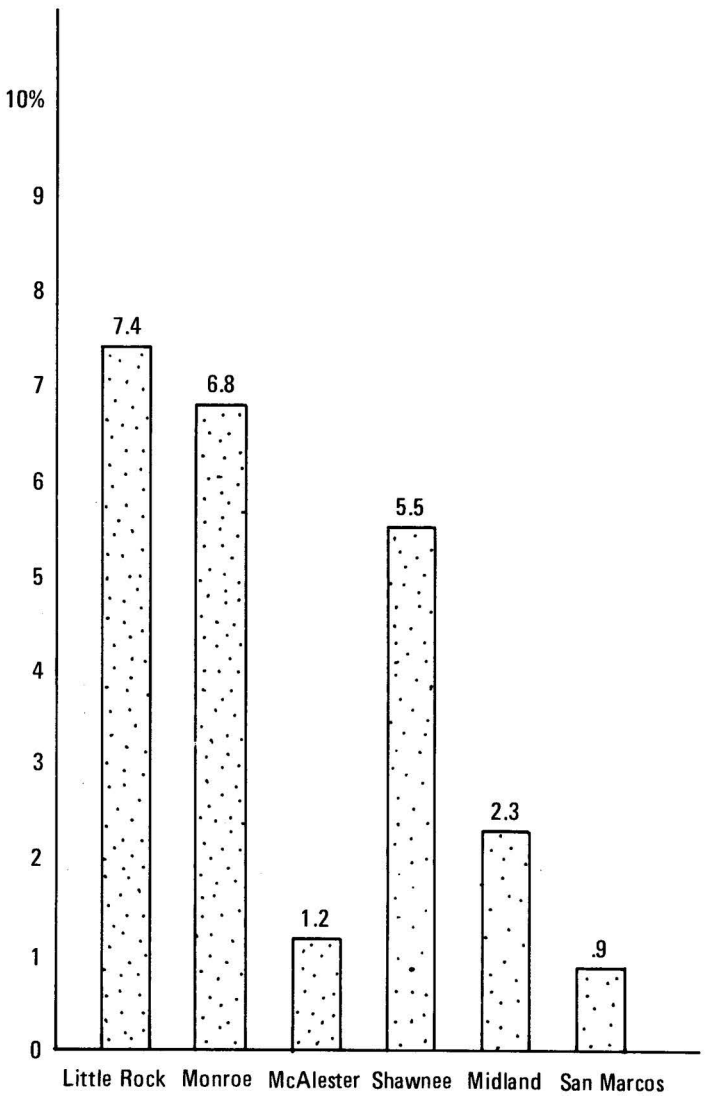


[a]School year 1972-73; total adjusted assessed valuation; average daily attendance data

*Data not available.

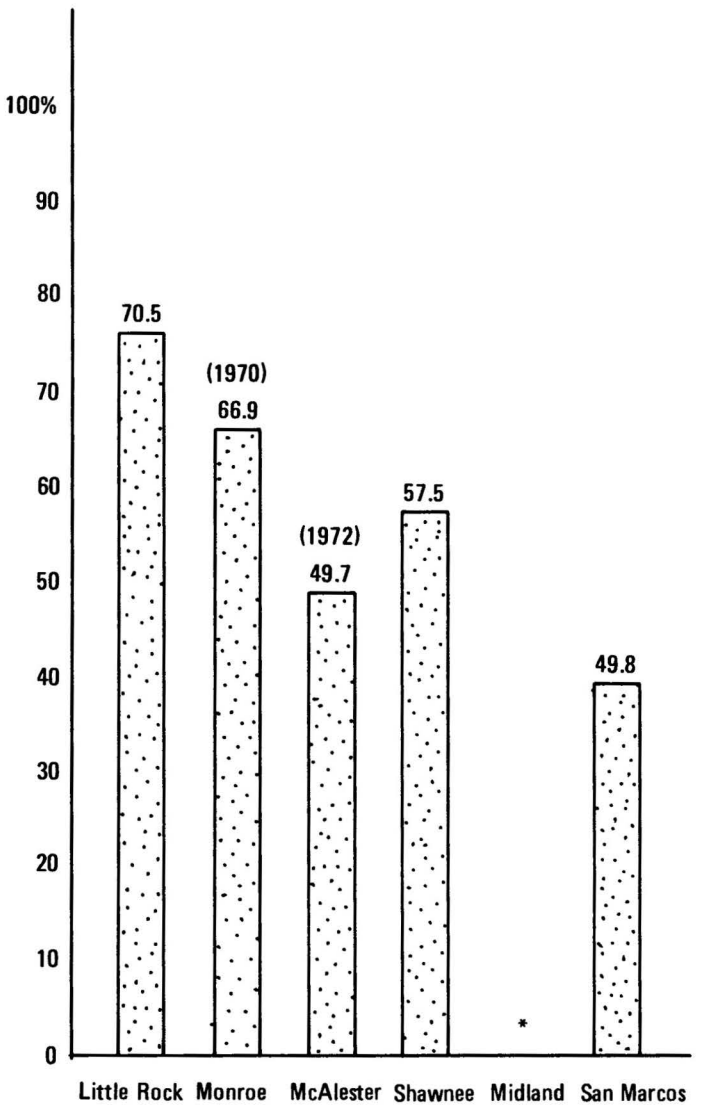
GRAPH APP. I-7

1972 Public School Dropout Rates[a]



[a]School year 1972-73

GRAPH APP. I-8
1971 Education Continuance Rates[a]



[a]School year 1971-72; from among public school graduates

*Data not available.

National averages for dropout rates and continuance rates are difficult to obtain because school systems define the two indicators in a variety of ways. Dropout rates are available for Texas and Louisiana and provide a rough reference point. In 1972 the average dropout rate in Texas was 2.1 percent, and in Louisiana it was 1.8 percent.

While the relationship between expenditures, dropout rates, and continuance rates is not clearcut, there is some correlation between population, dropout rates, and continuance rates. The larger cities seem to have more dropouts but also more children going on to higher education, and the smaller cities have fewer dropouts but fewer continuing their education.

Health. Using physicians per 1,000 population as one measure of the availability of medical services (see Graph App. I-9), Little Rock appears to have extraordinarily good services (it is a regional health center) and San Marcos somewhat scanty services (although San Marcos has the facilities of Austin and San Antonio close at hand). The other cities cluster below the 1970 national average of 1.7 per 1,000 population.

The communicable disease index and infant mortality rates (see Graphs App. I-10 and App. I-11) are difficult to compare across cities since, in several cases, they were gathered on a parish or countywide basis. It is also hard to relate health indicators to expenditures, because some cities have no expenditures for health (the counties are responsible for administering health services).

A few observations can be made, nevertheless. Monroe's disease index, for example, is unusually high when compared with the other cities. The raw data reveal that a large number of gonorrhea cases is responsible for the high figure. Whether Monroe is in the midst of a VD epidemic or simply has an excellent reporting system is not clear. Little Rock's disease rate is very low. This may or may not be due to Little Rock's large number of physicians per 1,000 population.

Changes in infant mortaility rates appear to occur independently of changes in disease index levels. San Marcos has the highest infant mortality rate, and it is considerably above the 1971 national average of 19.2. Monroe was the only other city above that rate.

Housing and Land Use. In 1970 net housing starts averaged 4.3 percent nationwide in urban areas. Only Midland exceeded that average. (See Graph App. I-12.) McAlester's net housing starts look very low in comparison with the other cities and the national average. Its low net housing starts and its high vacancy rate could be cause for some concern and further investigation of the causes. (See Graph App. I-13.) In contrast to the McAlester situation, Midland has a very high vacancy rate but also the highest rate of net housing starts. A time-series analysis as well as consideration of other factors might indicate whether the vacancy rate or the housing start trend lags the trends of other indicators. It might also reveal favorable or unfavorable directions of change in the housing-related indicators.

Midland and McAlester are the only two cities whose vacancy rates are significantly above the national average of 6.3 percent for 1970. Shawnee's vacancy rate is exceptionally low.

Net housing starts and vacancy rates provide an indication of housing availability for the entire population, but subsidized housing indicates the sufficiency of housing for low-income groups. (See Graph App. I-14.) One could assume that a family with a median income below $3,000 would have a difficult, if not impossible, time obtaining suitable housing without some assistance. Table App. I-6 shows the percentage of families with incomes below $3,000 in 1972 and the percentage of subsidized housing available in that city in 1973. Gross discrepancies in the two percentages might indicate that suitable housing is unavailable for many families.

Table App. I-7 provides data on land use for four CAIP cities. The data seem to present a picture of cities with a great deal of open space and little land in industrial or commercial use, as might be expected for smaller cities.

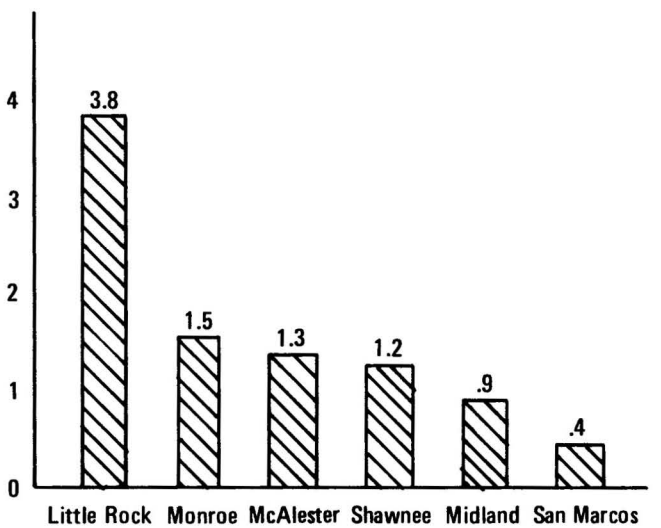
Personal income. Income data are among the most revealing indicators of the state of a community because income is often tied so closely to other factors of community life. Whether or not a city's income patterns affect or are affected by other indicators, these figures alone can give a clue as to what to expect in many different areas of community activity.

Graph App. I-15 shows the levels of median household net cash income (money income remaining after all *income* taxes have been subtracted) for the six CAIP cities. Midland is by far the wealthiest city in the group and San Marcos is the least well off. At least among these six cities, the larger cities tend to have the highest levels of income, with the smaller cities having the lowest.

While the *level* of income is important, any number of *distributions* may be potentially associated with any one level. Given a certain median (say, Little Rock's $8,055), distribution of income among households may all be clustered closely about the median, or there may be a wide range of incomes, or there may be clusterings of very rich and very poor. A community with bimodal clusterings might face a very different range of problems than one where almost all households exhibited similar income patterns. Graph App. I-16 provides evidence on the distribution of income in these six communities. Midland, for example, has a high concentration of relatively affluent households, and relatively fewer very poor households. Shawnee follows almost the opposite pattern with relatively few affluent households and a concentration of persons at

GRAPH APP. I-9

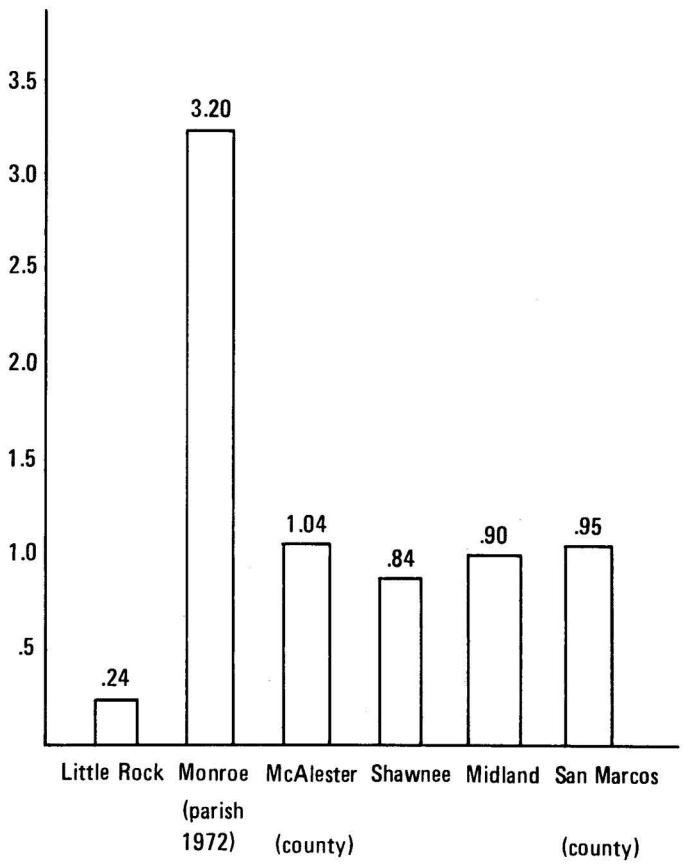
1971 Physicians per 1,000 Population[a]



[a]MDs only; extrapolated 1971 population data

GRAPH APP. I-10

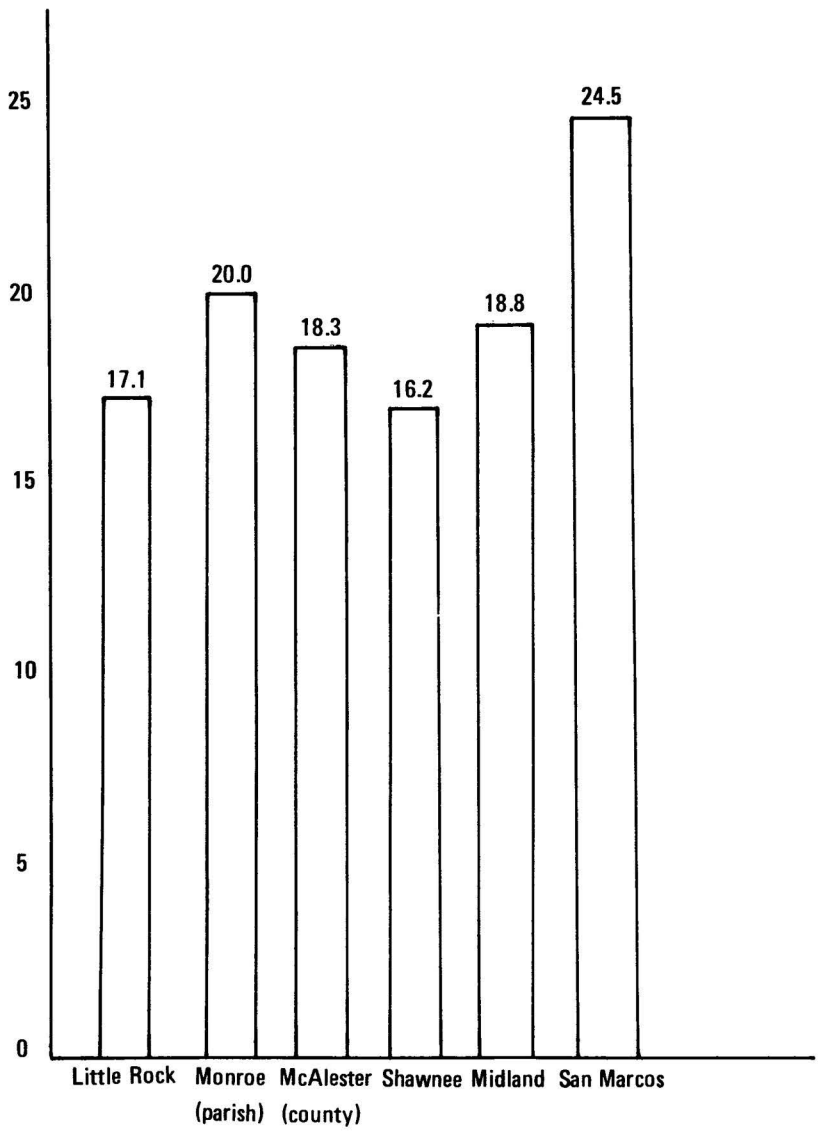
1971 Communicable Disease Index Levels[a]



[a]Number of cases of VD, TB, and Hepatitis reported, per 1,000 population, averaged together.

GRAPH APP. I-11

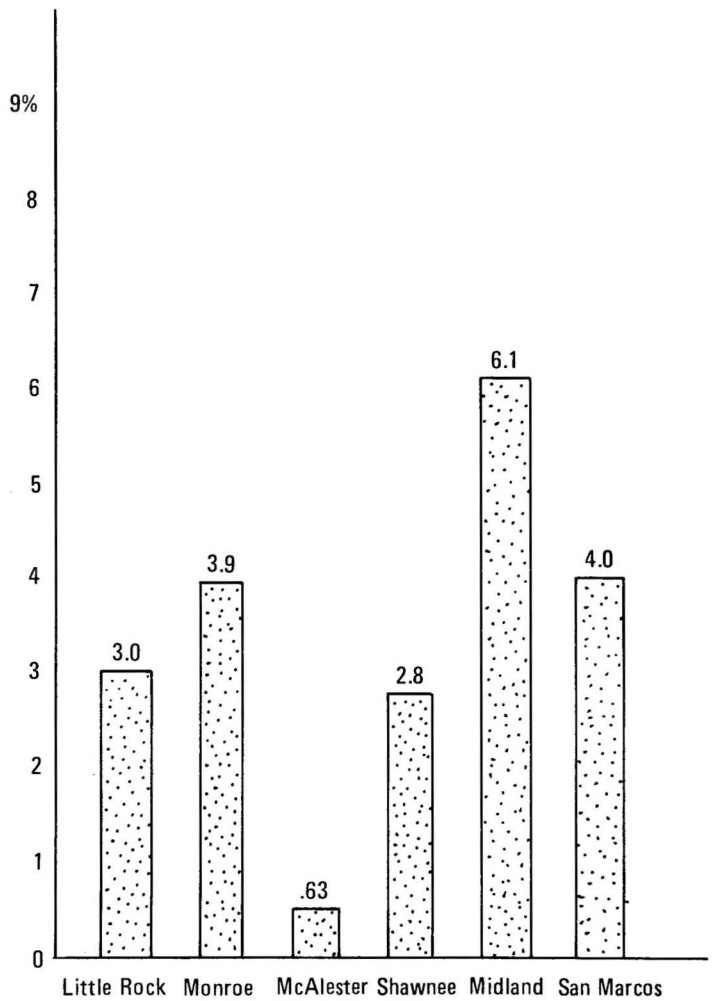
1971 Infant Mortality Rates[a]



[a]Number of deaths of children under one year of age per 1,000 live births.

GRAPH APP. I-12

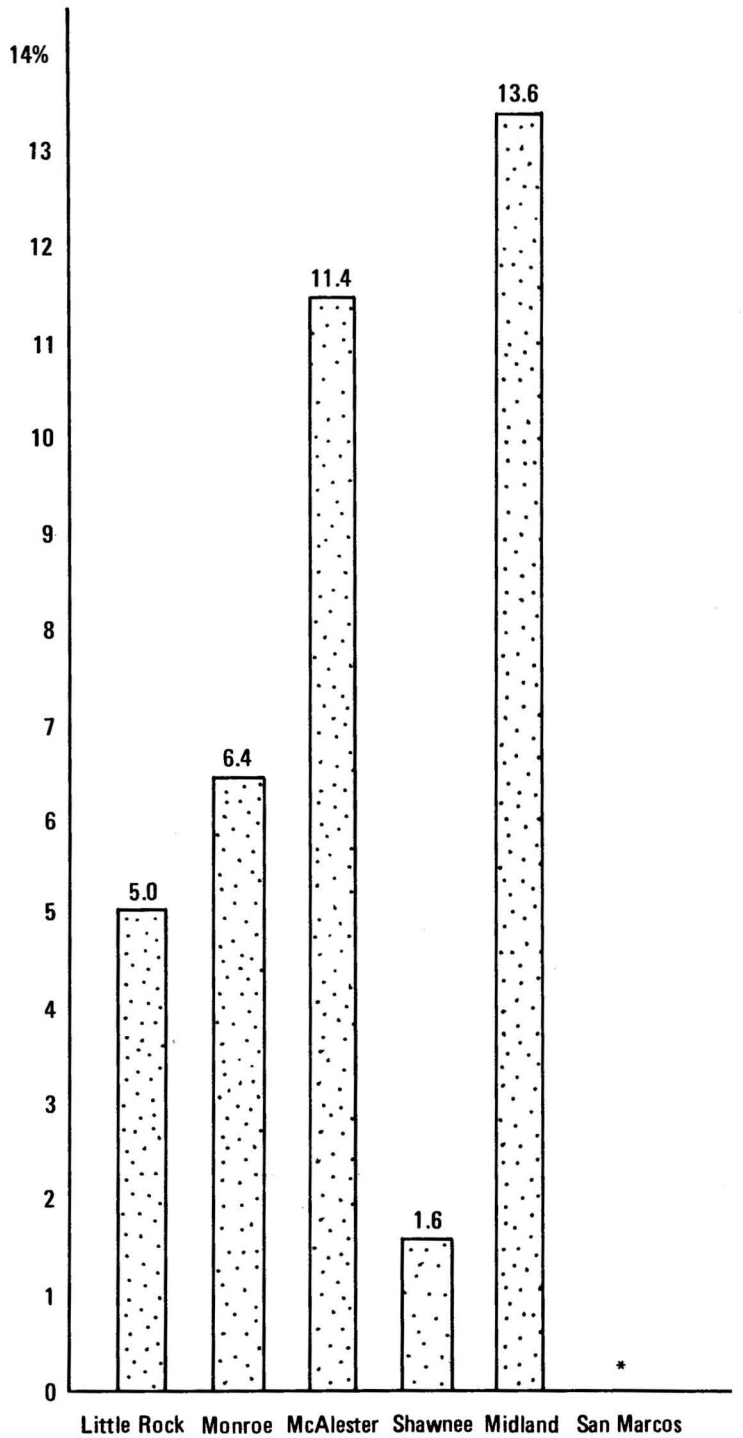
1971 Net Housing Starts[a]



[a]Total housing starts, less demolitions, as a percent of total housing stock.

GRAPH APP. I-13

1970 Vacancy Rates[a]

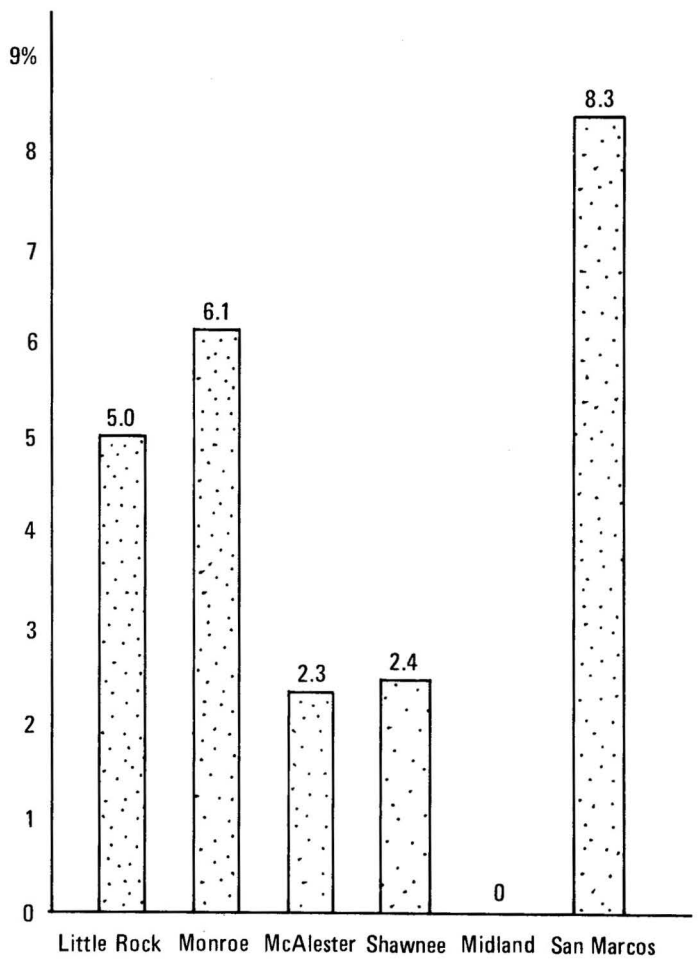


[a]Expressed as a percent of total housing stock.

*Data not available.

GRAPH APP. I-14

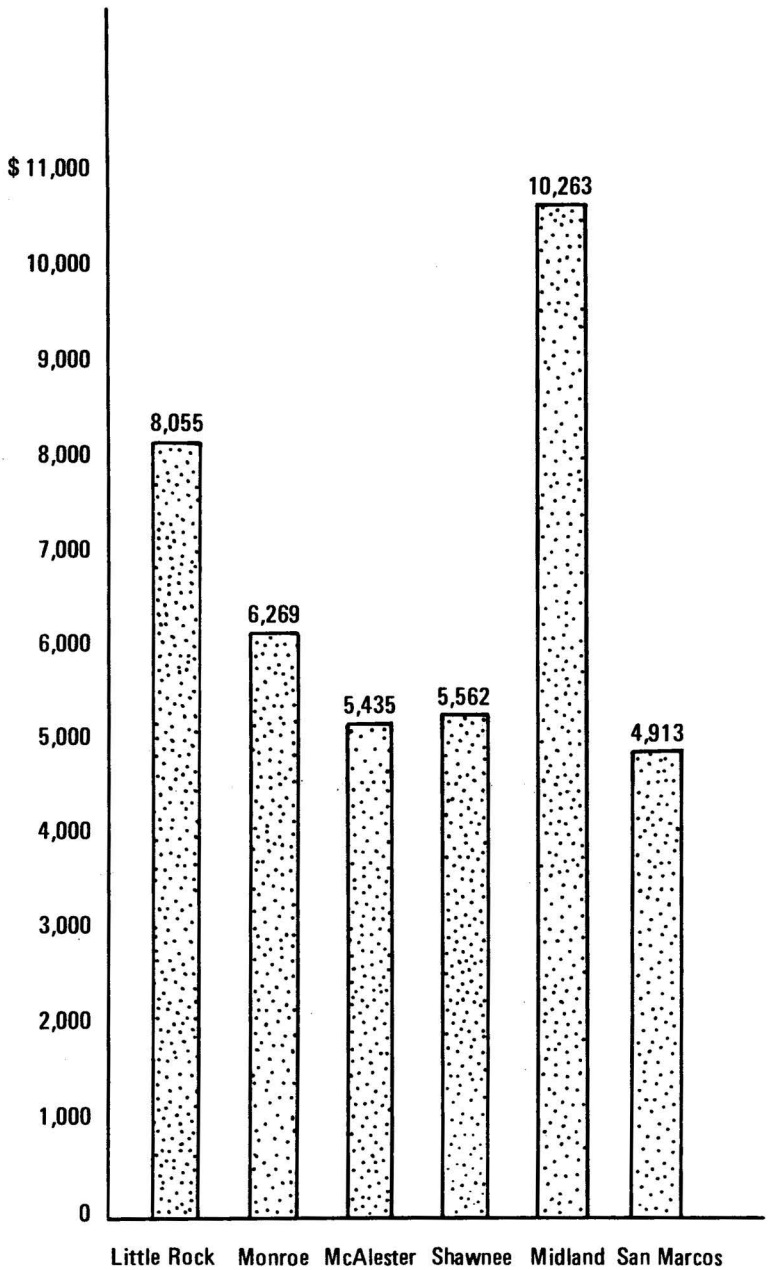
1973 Subsidized Housing Levels[a]



[a]Expressed as a percent of total housing stock.

GRAPH APP. I-15

1972 Median Household Net Cash Incomes[a,b]



[a]From *Survey of Buying Power,* Sales Management Magazine, July 23, 1973, Vol. 111, No. 2.

[b]Current dollars with no adjustments.

TABLE APP. I-6

COMPARISON OF SUBSIDIZED HOUSING WITH FAMILIES WITH INCOMES BELOW THE POVERTY LINE

	Percent Families With Incomes Below $3,000[a]	Percent Subsidized Housing[b]
Little Rock	17.3	5.0
Monroe	25.5	6.1
McAlester	29.0	2.3
Shawnee	29.3	2.4
Midland	15.5	.0
San Marcos	33.0	8.3

[a] 1972 Data
[b] 1973 Data

TABLE APP. I-7

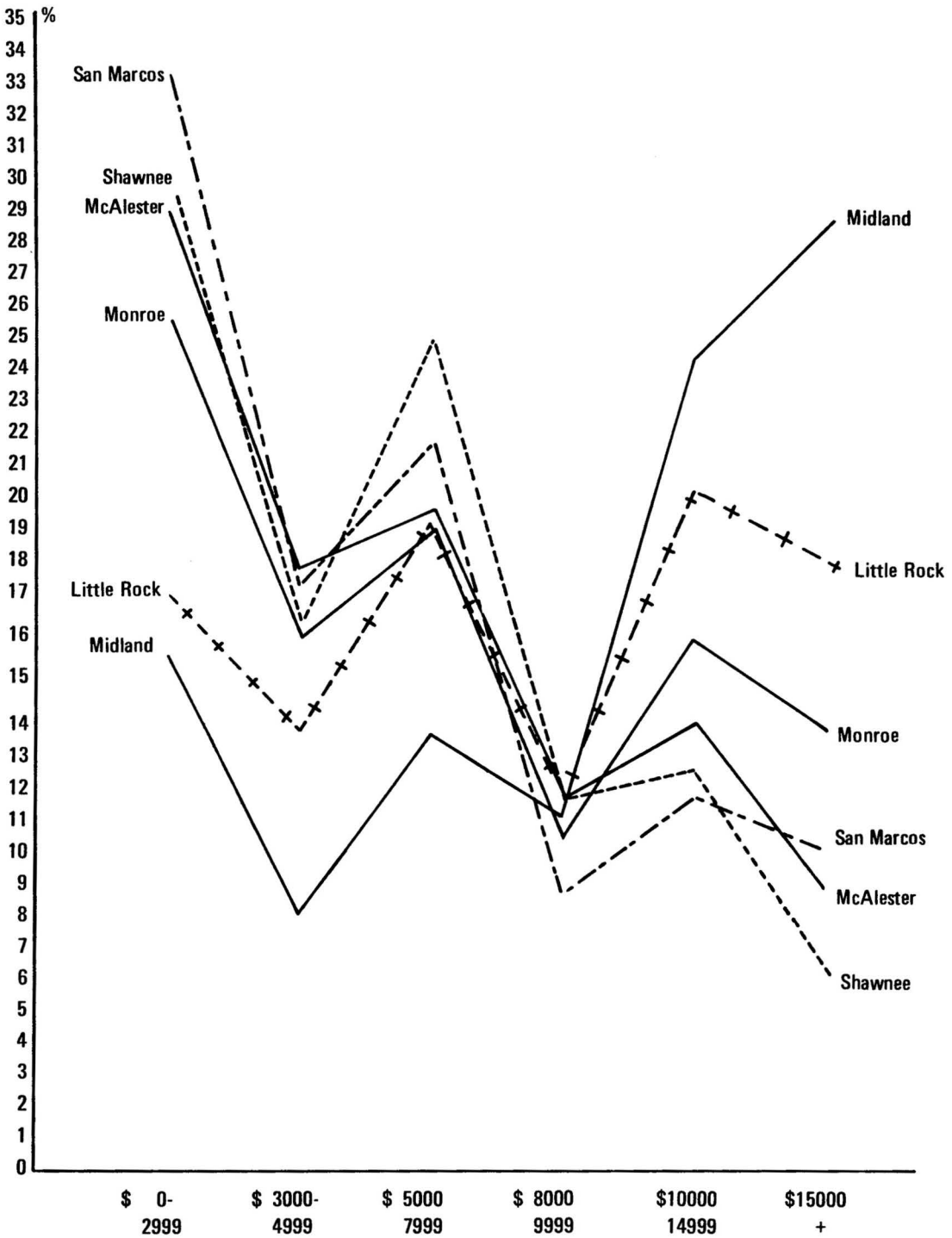
LAND USE DISTRIBUTION BY PERCENT[a]

	Little Rock	Monroe	McAlester	Midland[b]
Residential	24.0	16.6	13.5	0.0
Commercial	2.7	3.2	.9	0.2
Industrial	3.4	.1	2.0	.9
General Public and Government	7.1	1.5	-	-
Developed Parkland	5.0	2.9	.8	.1
Agriculture and Vacant	45.4	56.8	62.9	69.9
Street and Right Of Way	12.4	11.1	-	-
Mineral	-	-	-	28.1
Other	-	7.8	19.1	-

[a]Columns may not necessarily total 100% due to rounding.
[b]Countywide data.

GRAPH APP. I-16

1972 Household Net Cash Income Distributions[a,b]



[a]From *Survey of Buying Power,* Sales Management Magazine, July 23, 1973, Vol. 111, No. 2.

[b]Current dollars with no adjustments.

the lower income brackets. Little Rock follows a middle path, with similar proportions of the affluent and the poor.

As stated above, income data are revealing because income is so closely tied to other factors of community life. Already in the comparison analysis it has been shown that income is related to unemployment rates, and the school tax base. Median income also appears to be related to population in that the larger CAIP cities have larger median incomes. Other parts of this study will concentrate even more heavily on the relationship between income data and other indicators.

Public safety. One might expect the number of reported crimes to rise with the population of a city, but the CAIP cities' crime seriousness index per 1,000 population did not bear out this hypothesis. (See Graph App. I-17.) Little Rock, the largest city, does have an exceptionally high crime seriousness index per 1,000 population, more than twice the national average of 79.4 for that year. Yet the city with the next highest crime seriousness index is San Marcos, the second smallest city. San Marcos is the only other CAIP city to have a crime seriousness index above the national average, although its rate is half that of Little Rock's. Midland, the second-largest city, had the lowest crime seriousness index.

In terms of population distribution, the data were examined to see whether a relationship existed between race and crime seriousness. However, no particular correlation was noted between the crime seriousness index and the percentage of minority population in the city.

There is some correlation between a city's median income and its crime seriousness index. The larger the city's median income, the smaller its crime seriousness index, with Little Rock a glaring exception.

Besides suspecting relationships between demographic and income data and crime data, one might look to the size of the police department or the city budget for other possible relationships, although this study does not suggest any conclusive relationships. The number of police per 1,000 population did not vary greatly from city to city. (See Graph App. I-17.) Little Rock's police budget expenditures (measured on a per capita basis) were, like its crime rate, highest among the cities.

The data on police department efficiency also failed to establish any population-related pattern. San Marcos and Shawnee fell somewhat below 37 percent, the national average for the percentage of stolen property recovered, and only Shawnee fell below the national average of 22 percent for cases cleared by arrest. Monroe's reported percentages for both of these indicators were very high.

One factor which might possibly influence the wide range of figures occurring in the crime seriousness index, the percentage of stolen property recovered, and the percentage of cases cleared by arrest is the reporting mechanism for this data. Each police department reports these statistics voluntarily to the FBI, which issues guidelines for reporting but does not check for accuracy or uniformity. The inconsistencies which inevitably occur in such a reporting system make the data less meaningful.

Fire response time, the remaining public safety indicator, was not an illuminating one. Half of the cities found it impossible to obtain an accurate figure. The cities which did secure the information all found fire response times of approximately three minutes.

Public finance. Analysis of city government revenues reveals the sources upon which the cities depend for their funds. The Texas cities are heavily dependent upon the property tax and charges for utility services. The Oklahoma cities, on the other hand, have no property tax revenues. Shawnee receives one-third of its revenues from charges and miscellaneous revenues and substantial portions of its funds also come from sales tax, utility charges, and intergovernmental sources. One-half of McAlester's revenues come from federal sources, and it also depends heavily on sales taxes.

Monroe receives 40 percent of its funds from utility charges, 25 percent from sales taxes, and 25 percent from charges and miscellaneous. Little Rock is the only city, other than McAlester, receiving a substantial amount of federal dollars—one-fourth of its funds. Little Rock has no sales tax revenues but receives two-fifths of its revenues from charges and miscellaneous.

As can be expected with its high median income, Midland has the highest per capita total revenues, significantly higher than any other CAIP city. But Little Rock's revenues are a relatively low $89 per capita, the lowest of the CAIP cities.

Not surprisingly, Monroe's revenues are higher than San Marcos and Shawnee, since the latter two seem poorer in terms of median income. McAlester's relatively high figure can be explained by the federal funds it receives.

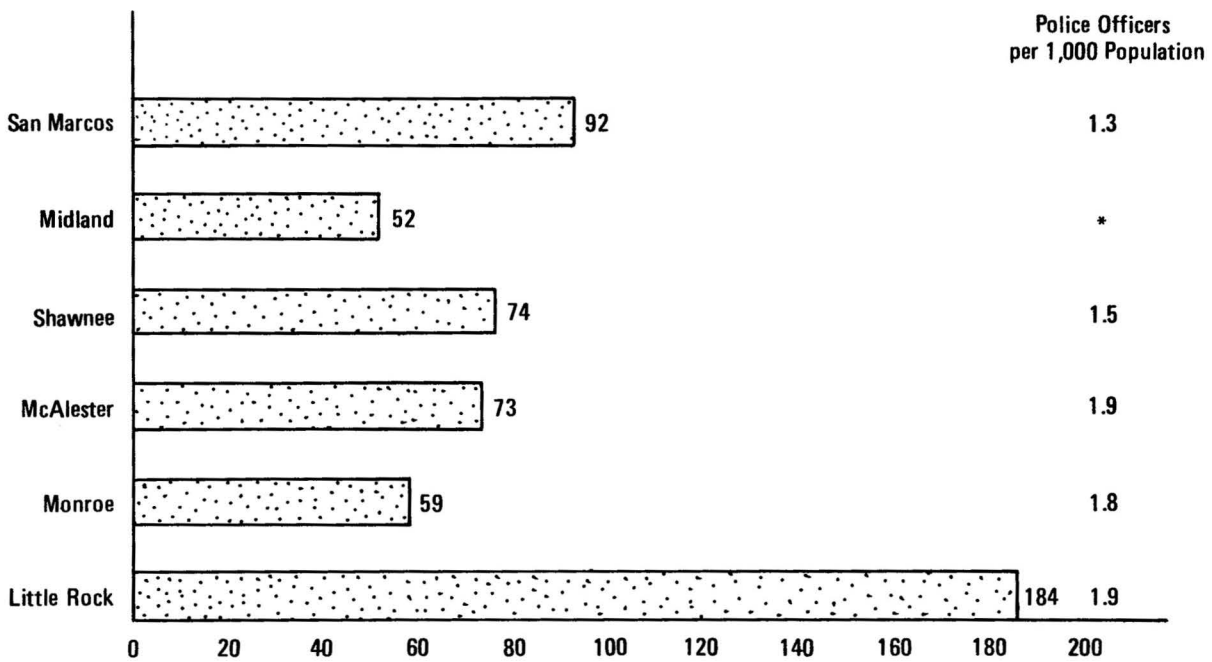
The levels of total city expenditures are obviously closely tied to the level of revenues received. But in all cities, the largest portion of their funds goes to police, fire, sanitation services, parks and recreation, and highways.

Civic participation. The percentage of eligible voters voting in local elections gives some indication of citizen concern for the community. Of course, many political factors influence voter turnout in any given election, so each city could best analyze its own data in light of the political situation, current trends, and similar elements, for signs of increasing apathy or awareness.

Comparison of the turnouts in the six CAIP cities does not lead to any particular conclusions. The most extensive study of local elections shows that, on the average in the U.S., 31.2 percent of the eligible voters turn out. The South has a lower average turnout of 23 percent. McAlester and

GRAPH APP. I-17

1972 Crime Seriousness Index[a] and Police Officers per 1,000 Population[b]



[a]See Appendix III for definition of Crime Seriousness Index

[b]Extrapolated 1972 population

*Data not available.

Shawnee cluster around the Southern average of 23 percent, while San Marcos, Little Rock, and Monroe had, in comparison, more impressive turnouts of almost 40 percent. But again, more should be known about the specific elections before judgments are made.

Transportation. Most cities take pride in maintaining paved streets in all neighborhoods, especially since the condition of the streets is a highly visible and often political issue. Of the four CAIP cities who obtained these data, Little Rock, Monroe, and McAlester fare well; San Marcos has the highest ratio of unpaved to paved streets.

The number of traffic accidents per 1,000 population would seem to say something about the safety of streets and traffic controls in a given city. One would also expect that larger cities would tend to have more accidents, given the greater number of cars and congestion. Data gathered in the CAIP cities speak very well for street and safety conditions in the cities. All are well below the national average of 77 per 1,000 population for 1969, the latest year for which such information is available.

Population is not positively related to accidents; Little Rock has the amazingly low rate of 7.1 per 1,000, lower by almost 20 per 1,000 than the next city, and San Marcos is at the other extreme. The other cities range from 25 to 35 accidents per 1,000 population.

TRENDING AND TIME-SERIES ANALYSIS

The analysis of indicator data for a number of years provides an opportunity for identifying trends and possibly making predictions about the future of the city. The number of years of data required for any reliable conclusions to be drawn about the changes that are occurring in cities depends upon the nature of the analysis being performed. Unfortunately, no statistically significant conclusions can be drawn from the three to four data points available from the CAIP cities, regardless of the specific method of analysis. The importance of trend data will, therefore, increase as the information gathering continues, since the addition of each year will add significantly to the usefulness of the data.

While the three or four years of data generally available might not yet be particularly useful for prediction purposes, they do have descriptive value and can indicate areas warranting further investigation. The analysis of core indicators over time focused primarily on this descriptive aspect of time-series data.

Two techniques were used to analyze the core indicators for changes over time. The principal technique consisted of computing annual compound rates of change of the indicators, grouping them in several categories, and using graphs to make some comparisons both among indicators and among cities. The other technique was graphing over time selected indicators in each of the categories used for rate-of-change graphs. This method was used to supplement the rate-of-change data with trend data.

It is important to remember that rates of change depend on the initial level of the indicator. For example, an indicator for one city may be changing at a rate significantly greater than the same indicator in other cities but, if it was smaller to begin with, it will take longer to reach comparable values. This possibility emphasizes the importance of keeping in mind actual indicator values when comparing rate-of-change information.

The indicators for which sufficient data were available for computing rates of change were grouped into the following categories: (1) economics, (2) health, (3) public safety, and (4) education. The majority of the change rates are calculated from four data points, generally the years 1970 through 1973. Because of missing data, however, shorter time spans were used in some instances. This does affect the reliability of those particular rates and, in general, caution should be used in making comparisons when the time spans are not the same.

Economics

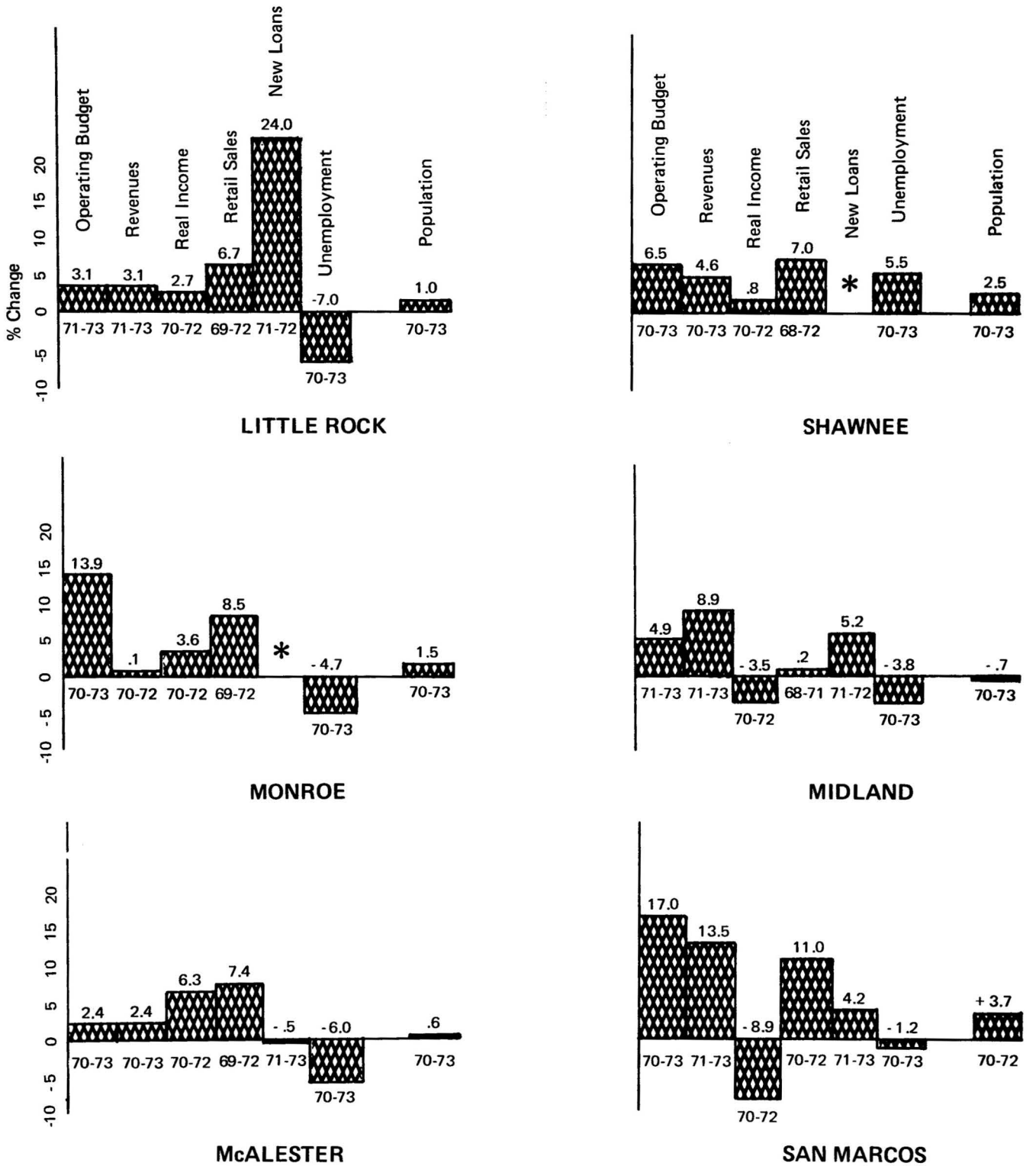
The seven indicators considered under this heading give a reasonably comprehensive picture of the recent changes in the cities. These indicators are city government operating budget, city government revenues, real income, retail sales, new loans, unemployment, and population (See Graph App. I-18.)

Operating budget and revenues. All the cities show increases in their operating budget, though only two, San Marcos and Monroe, have increased their budgets at a rate significantly greater than inflation. The other cities are near or below the national inflation rate. Increases in city revenues roughly parallel operating budget, with the notable exceptions of Monroe, which shows a negligible increase and Midland, where the increase in revenues was almost twice as great as that of the operating budget. The data reveal that the Monroe and McAlester revenues actually declined from 1972 to 1973, but while McAlester's budget also declined for that period, Monroe's increased significantly.

Real income and retail sales. There is some correlation between real income and retail sales, which are up significantly in all of the cities except Midland. The exceptions are San Marcos, where real income and retail sales moved strongly in opposite directions, and to some degree Shawnee, where real income is up only slightly. Midland is consistent with the other cities, because its very small increase in retail sales is accompanied by a decrease in real income. Midland's decline in real income is probably not the same problem as that in San Marcos, given the much higher level in Midland, although the magnitude of the decline would probably warrant some concern. Also, it should be noted that even though retail sales in San Marcos

GRAPH APP. I-18

Annual Compound Rates of Change—Economics



* Data unavailable

have increased rapidly, they are still much below those of the other cities.

New loans, unemployment, and population. No generalizations can be drawn from the new loan rates because of the missing data and the limited number of years for which data are available, although both McAlester and Little Rock might want to investigate the reasons for their more extreme values.

Unemployment decreased over the 1970 to 1973 period for all the cities except for Shawnee, although Graph App. I-19 shows that Shawnee unemployment decreased from 1972 to 1973. The graph also shows that unemployment increased slightly in Monroe from 1972 to 1973.

Population data were included on the Economics Rate-of-Change Graph to provide a reference point for the economic data. It does not appear, however, that any economic indicator is strongly correlated with population growth.

Health

Two of the three indicators in this category–infant mortality and communicable disease index–relate to health conditions in the community, while the third–physicians per 1,000 population–is an indication of the availability of health care in the community. (See Graph App. I-20.) Little Rock and, to a lesser extent, McAlester show the expected pattern: i.e., increasing number of physicians per 1,000 and decreasing infant mortality and disease. The changes in the other cities have no particular relationship to each other, and perhaps the only generalization that can be made is that all of the cities are increasing their physician-to-population ratio.

Five of the six cities exhibit decreases in infant mortality rates. Shawnee's infant mortality rate increased markedly in a single year, but whether this presages a long-run trend remains undetermined. Graph App. I-21 shows the large amount of fluctuation in infant mortality rate.

Public Safety

Public safety rates of change comprise two categories. One is composed of the crime seriousness index and two police expenditure indicators. The other contains traffic accidents per 1,000 population and two highway expenditure indicators. (See Graph App. I-22.) The expenditure indicators are presented in dollars per capita and percent of operating budget to show the absolute change in expenditures per capita and any change in importance of these two expenditures relative to other budget categories. Since the operating budgets of all six cities have increased, the cities could have increased expenditures per capita without increasing the share of the budget in that category.

All six cities increased their police expenditures per capita–four of them substantially–but only Monroe and Little Rock increased substantially the police expenditures as a percent of the operating budget.

Crime seriousness decreased in three of the four cities with substantial increases in police expenditures per capita and increased in the two cities with the lowest increase in police expenditures per capita. However, the city with the largest increases in per capita police expenditures, San Marcos, also had the greatest increase in its crime seriousness index. (The San Marcos increase is a result of only two years of data, and thus any conclusions drawn from it must be somewhat tentative.)

Dollars per capita expended in the highways budget category are also up for all of the cities, with McAlester and Midland also showing substantial increases in the budget percentage. There appears, however, to be little correlation between traffic accidents per 1,000 population and highway expenditures.

Education

Two of the indicators of this section, education continuance and public school dropout rate, attempt to measure the performance of the education system; two others, public school tax base per pupil and public school enrollment, measure influences on the school system not generally controllable by either the school or the city; and one indicator, public school expenditures per pupil, measures financial input into the system. (See Graph App I-23.)

Public school expenditures per pupil shows a strong increase in all of the cities except Shawnee and Midland. This input indicator does not correlate with either of the performance-measuring indicators, however. Two of the cities with large increases in expenditure–Little Rock and Monroe–have increases in their dropout rates, while the two cities with smaller expenditure increases have decreases in the dropout rate. Dropout rates fluctuate a great deal, however, and the rapid drop in the San Marcos rate in particular is difficult to explain.

The public school enrollment indicator shows enrollment down for all the cities except San Marcos, where it is up less than 1 percent. Tax base per pupil is increasing in all the cities, but it is increasing faster than expenditures only in San Marcos and Shawnee, while lagging behind in the other cities.

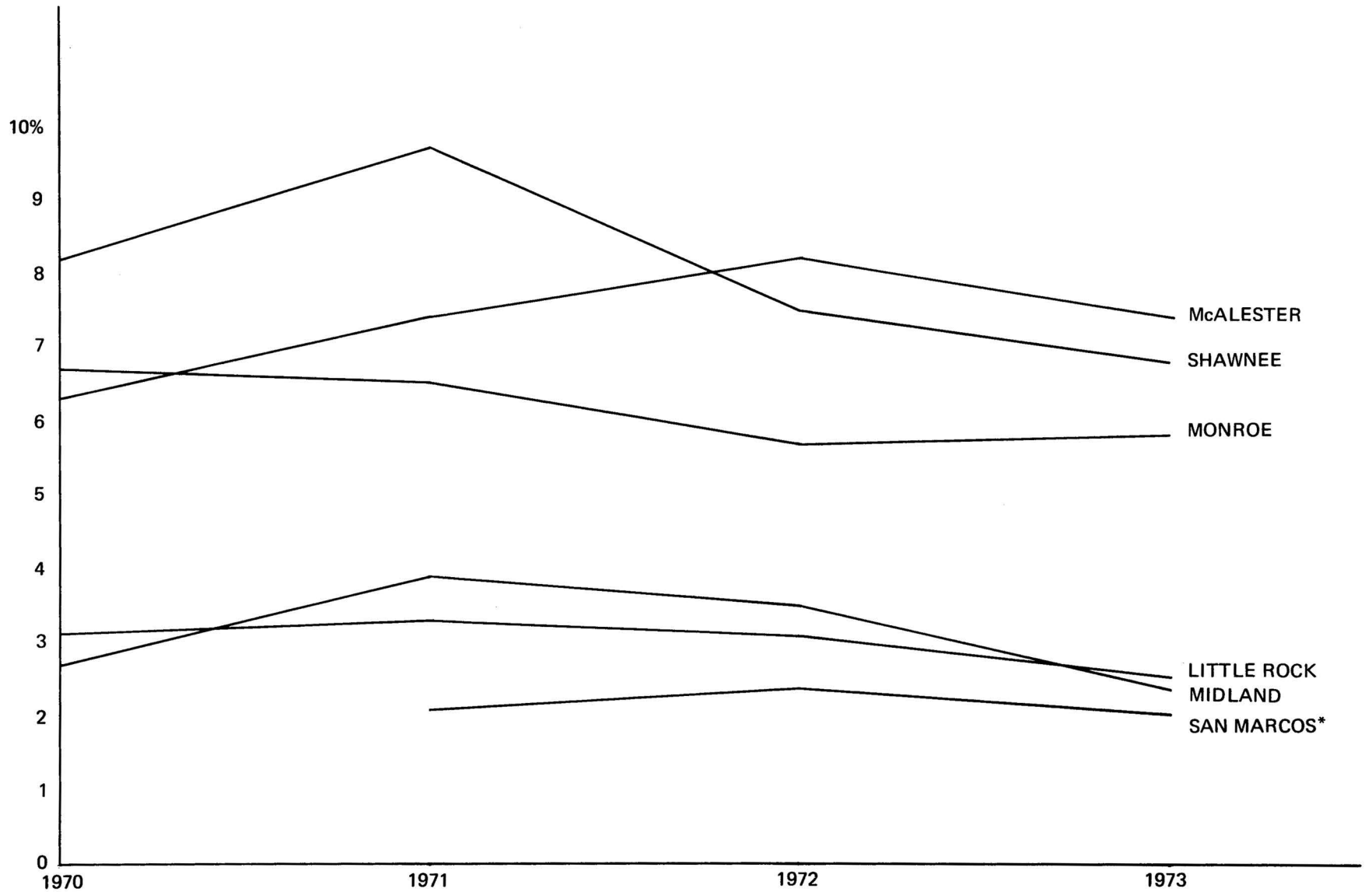
RELATIONAL ANALYSIS

Purpose and Method

The analysis of urban indicators in this project has taken three forms: examination of city and subcity data to illustrate comparisons among the cities; exploration of trends revealed by time-series data; and, attempts to discover relationships among the indicators themselves. In

GRAPH APP. I-19

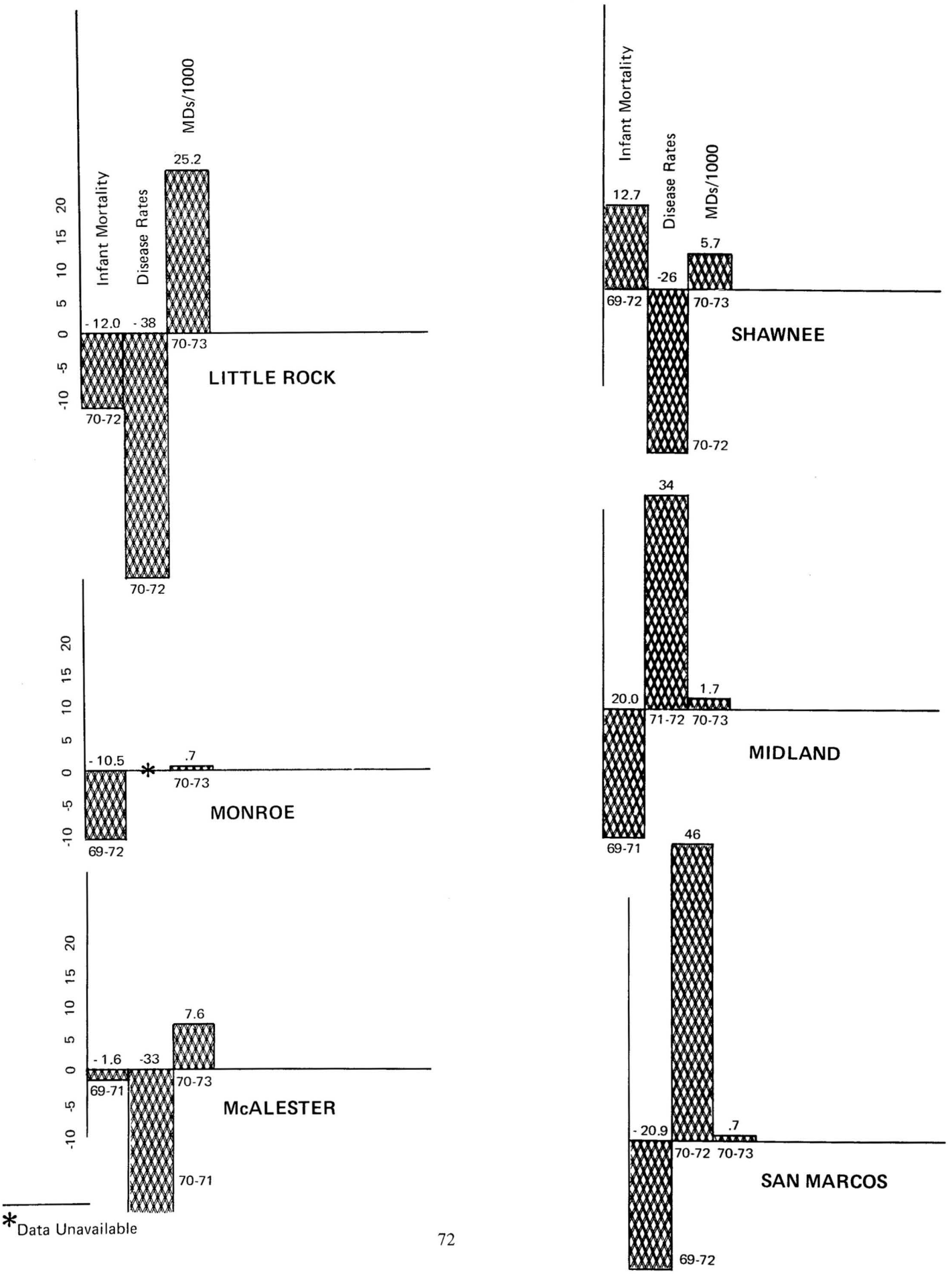
Trend Lines
Percent of the Labor Force Unemployed



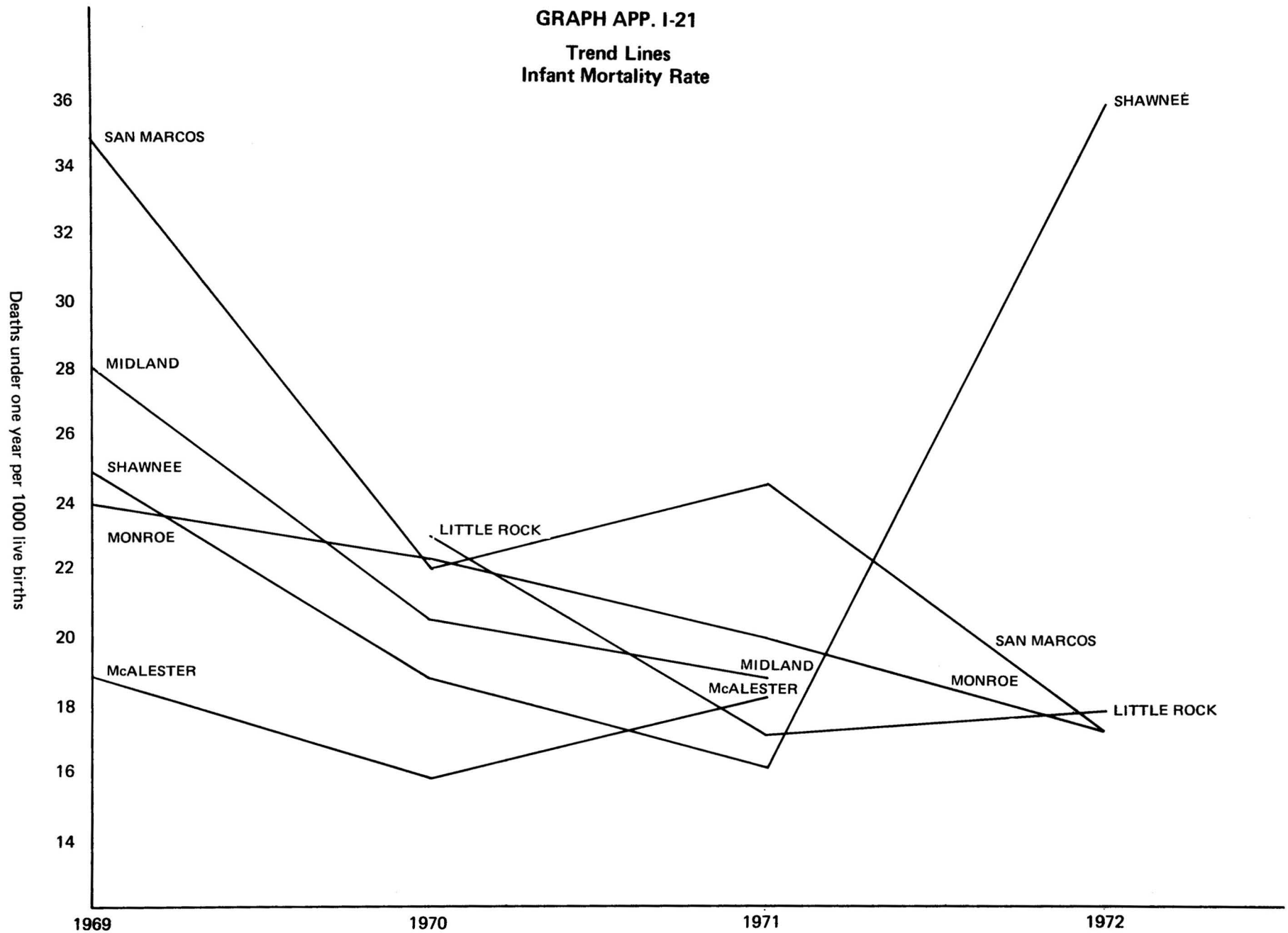
*San Marcos data is based on work force rather than labor force.

GRAPH APP. I-20

Annual Compound Rates of Change—Health

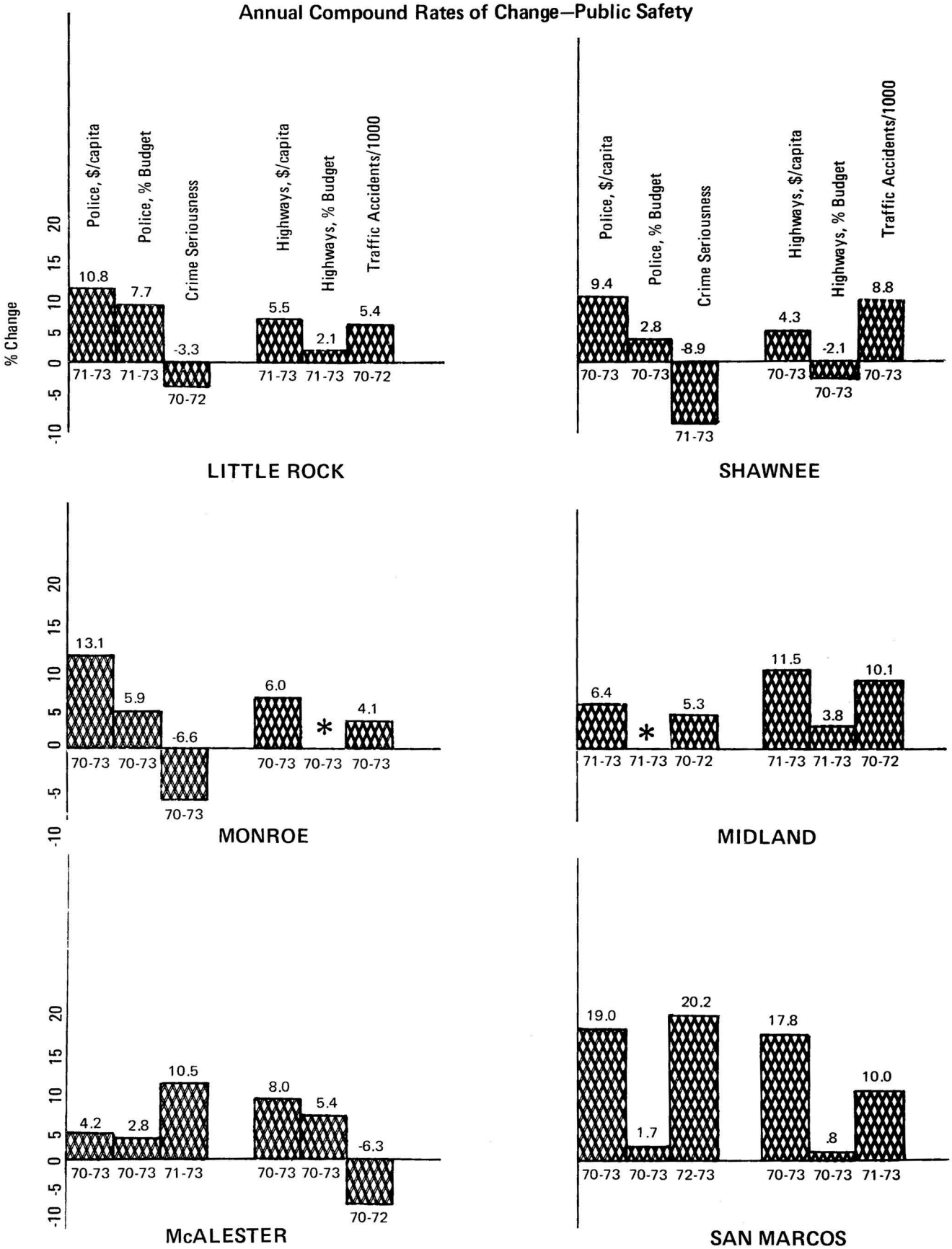


*Data Unavailable


GRAPH APP. I-21
Trend Lines
Infant Mortality Rate
Deaths under one year per 1000 live births
36
34
32
30
28
26
24
22
20
18
16
14
1969
1970
1971
1972
SAN MARCOS
MIDLAND
SHAWNEE
MONROE
McALESTER
LITTLE ROCK
SHAWNEE
SAN MARCOS
MIDLAND
McALESTER
MONROE
LITTLE ROCK

GRAPH APP. I-22

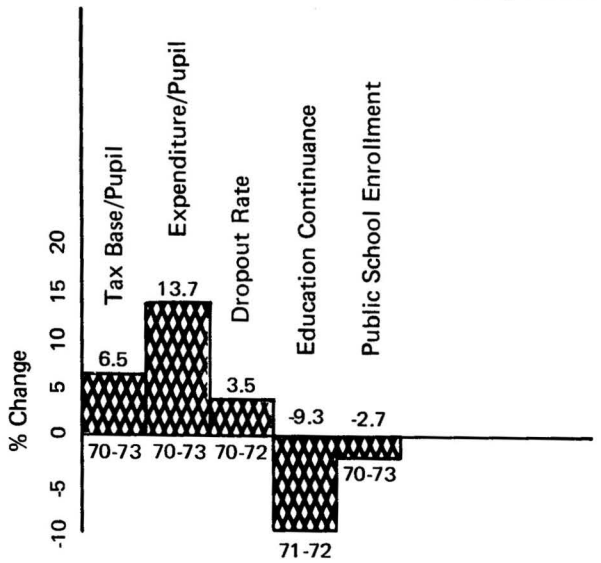
Annual Compound Rates of Change—Public Safety



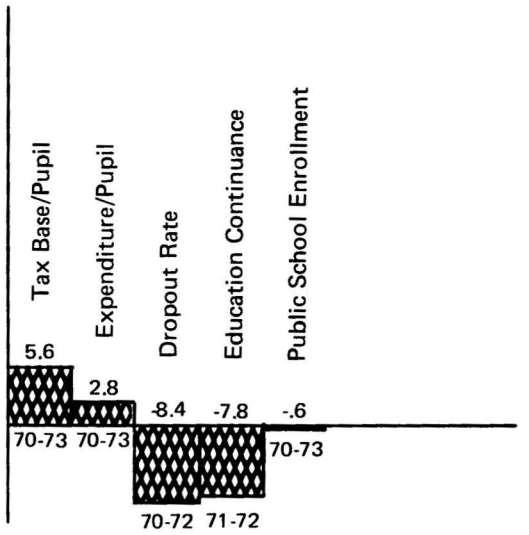
* Data unavailable

GRAPH APP. I-23

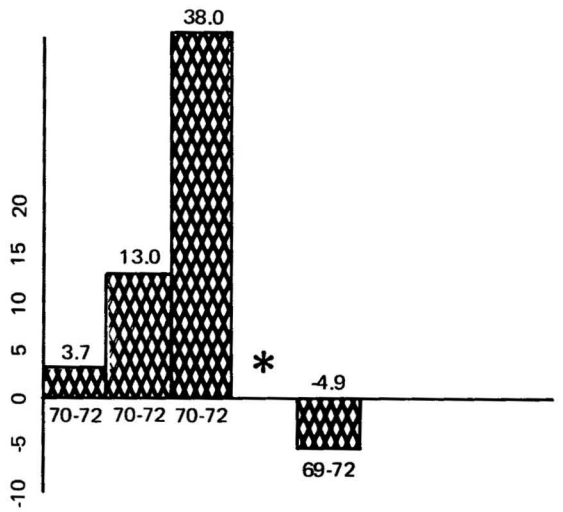
Annual Compound Rates of Change—Education



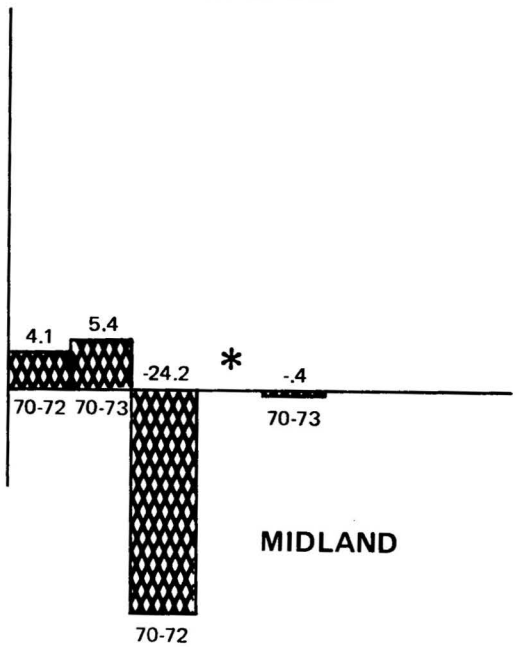
LITTLE ROCK



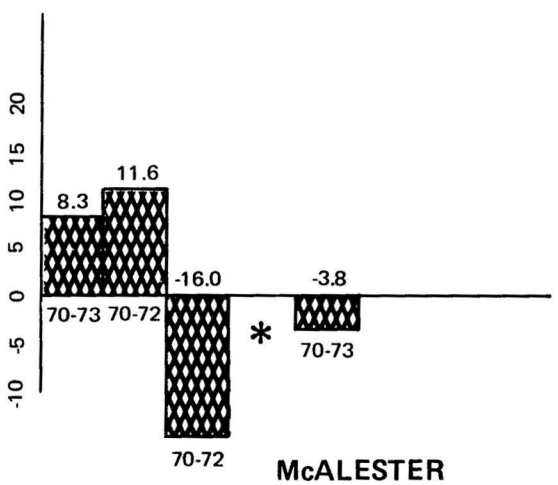
SHAWNEE



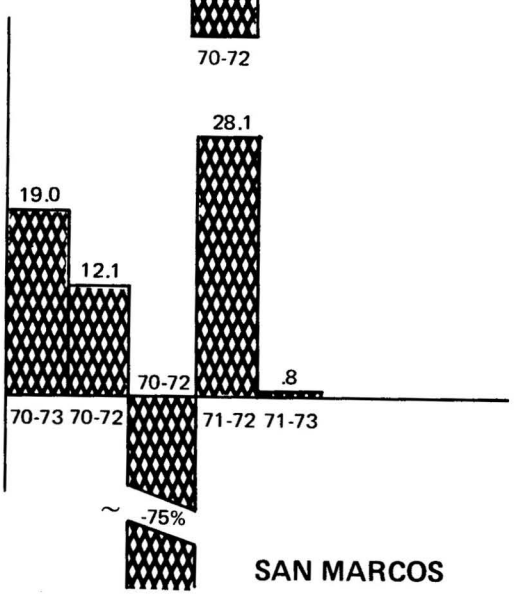
MONROE



MIDLAND



McALESTER



SAN MARCOS

* Data unavailable

many ways, the last effort is the most important of all. It may be interesting to know that one city has a higher indicator score than another, or that one neighborhood exhibits more of one trait than another, but it is even more important to discover the ways in which two or more indicators are related. If the income of a community is higher, are its school expenditures higher, lower, or unaffected? If the proportion of the population which is non-white increases, does the dropout rate or the unemployment rate increase as well? The discovery of relationships is an enterprise which does not settle questions of causal connections among indicators, but it does take us a step or two down the road to more confident formulation of hypotheses about causal relationships.

With the very large number of indicators in the model set, taking them in pairs would produce an extremely large number of possible relationships among the indicators. The construction of a matrix of possible hypotheses or relationships would occupy an enormous amount of time, as well as tremendous effort. So, to delimit the potentially burdensome effort of simply relating every indicator to every other indicator, we developed a simple set of assumptions about the relationships among indicators. For purposes of our analysis, we assume that there are two broad types of indicators within the model set. The first of these we call *key structural indicators.* This concept is intended to emphasize that certain elements of a community are more or less "givens," or basic elements of a community which are only minimally within the conscious control of urban policymakers. These key structural indicators are median household income, per capita city operating budget level, percent of the population that is white, and the total community population. These elements we consider among the most important aspects of any community.

The rest of the indicators we call *performance indicators*, because they reflect how "well" or "badly" the community is doing in the context of its key structural attributes. Health conditions, educational performance, crime rates, and the like are measures of community activities which hypothetically are related to its standings within the key structural indicator framework.

This conceptual distinction enables us to reduce the very large number–more than 850–of bivariate relationships we might investigate to a more manageable number.

Obviously, an important limitation of relational analysis is the very small (and non-random) number of cases in the CAIP experiment. As one swallow does not make a summer, six cities do not make for much of a data base. The possibilities of resorting to sophisticated statistical techniques are therefore significantly reduced. If, in the future, more cities begin to collect data systematically, it will be possible to use such techniques as regression analysis, correlations, factor analysis, and a host of other approaches. (Some of the possibilities for more sophisticated analysis are, in fact, illustrated by the intracity analysis of the Little Rock census tract data, discussed above.) Because the number of cases is so small, probably no relationship could reach statistical significance, and, consequently, the present analysis should be treated with caution.

Depicting Simple Bivariate Relationships

The easiest technique for depicting a simple bivariate relationship is through the use of graphs. Examples are shown in Graphs App. I-24 and App. I-25. There, for purposes of illustration, two key structural indicators are related to two performance indicators. The first, showing the relationship between median household income and infant mortality rates, tests the hypothesis that wealthier cities have lower infant mortality. Clearly, the hypothesis is not supported by the data. In fact, there is very little variation in the value of infant mortality rate among the six cities. The only marked exception is Shawnee, whose infant mortality rate in 1972 was unusually high in comparison to the five other cities.

The second graph tests for another relational hypothesis; i.e., that larger cities, which may exhibit more economic vitality, have lower unemployment rates than smaller towns. Here again, there is an aberrant case–San Marcos with a low population and low unemployment–but the rest of the cities fall into a pattern that fairly clearly supports the hypothesis.

Obviously, these hypotheses could better be tested with a larger and more randomly selected sample of cities, but the same kinds of simple bivariate relationships can be tested within cities, if cities would develop sufficient data for subcity geographic units.

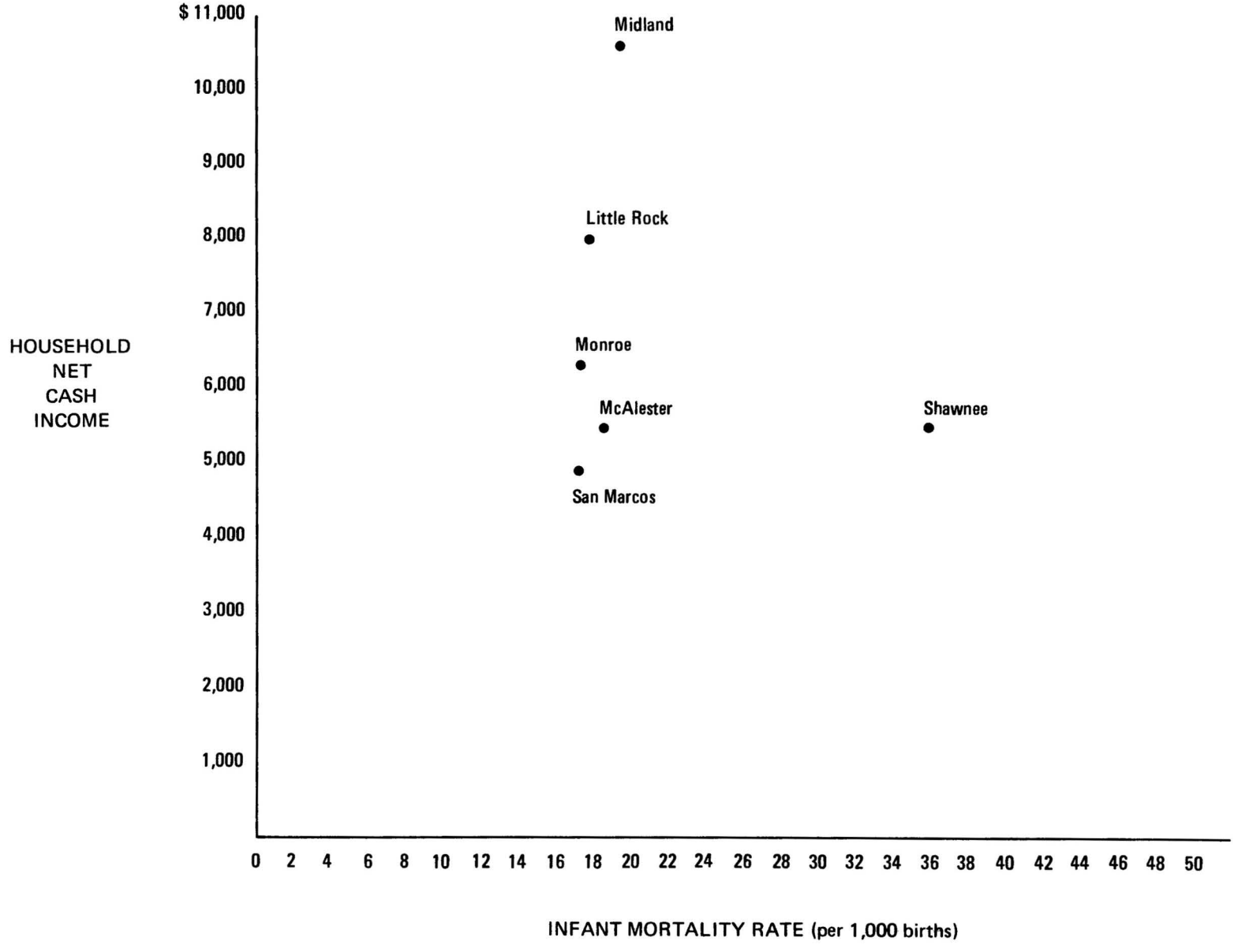
Depicting More Complex Bivariate Relationships

In relation to policymaking, we are rarely interested solely in the testing of a single bivariate relationship. It is important to know about crime rates, for example, not only how they are related to income but also how they are related to racial makeup, and other indicators. If we had a large sample of cases, we could use statistical techniques such as partialling to ascertain the relationship between variables A and B while holding C constant. In this small sample, though, such multivariate analysis was impossible.

The analysis of several bivariate relationships simultaneously was also complicated by the use of different units of measurement. Income is measured in dollars, racial composition is expressed as a percentage, and crime seriousness index as a ratio. Visually, it is not possible to depict several indicators based upon different units of measurement in the same graph unless adjustments are made. The approach taken by the Analysis Task Force was to convert all the indicator data to a standard unit of

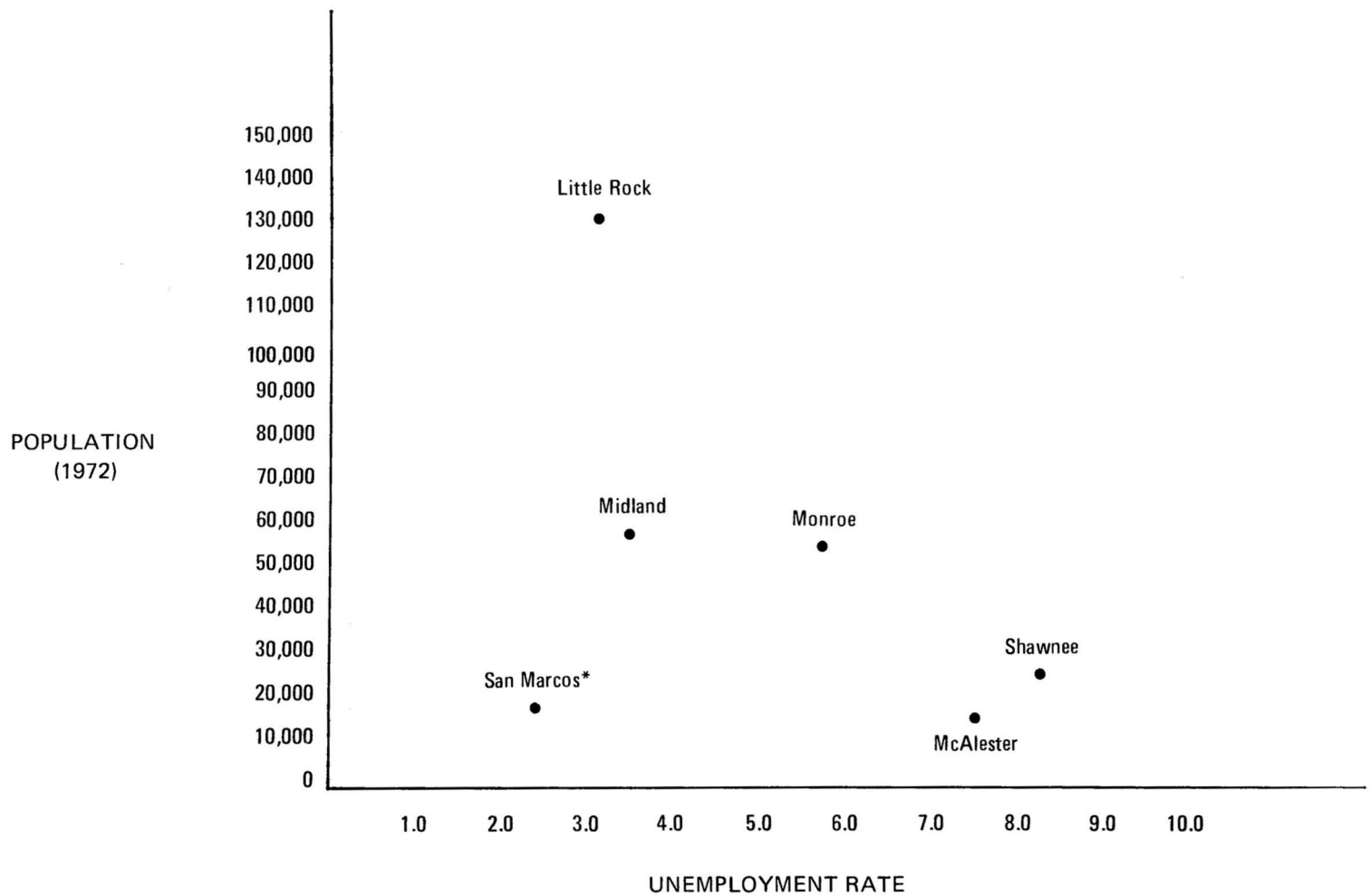
GRAPH APP. I-24

Relationship Between Income and Infant Mortality



GRAPH APP. I-25

Relationship Between Population and Unemployment



*Work force data

measurement. The task force chose Little Rock's indicator values as the base (any city's values could have been chosen), and converted all other indicator values into proportions of the Little Rock score, indicator by indicator. This was true whether the measure was dollars, percentages, ratios, or whatever. The relative rankings of the cities remained unaffected, and it enabled the task force to graphically relate more than two variables at the same time.

For example, Graph App. I-26 shows the relationship between both population and percent white and the crime seriousness index per 1,000 population. Although the small number of cases does not permit a confident conclusion, it appears roughly that population size is negatively related to crime seriousness, Little Rock being an anomolous case, and that percent white is not directionally related to crime seriousness.

Again, it must be pointed out that cities can do a great deal of relational analysis with disaggregated, subcity data, and that the inclusion of a larger number of cities in future indicator efforts will increase the confidence that can be placed in any relationships discovered.

Selected Relationships Identified

While repeating our caution about generalizing from a small group of only six, not very randomly-selected cities, we can nonetheless identify several patterns or relationships in the data. Some of these are depicted in Table App. I-8. There, various performance measures are related to the four key structural indicators, population size, percent white,

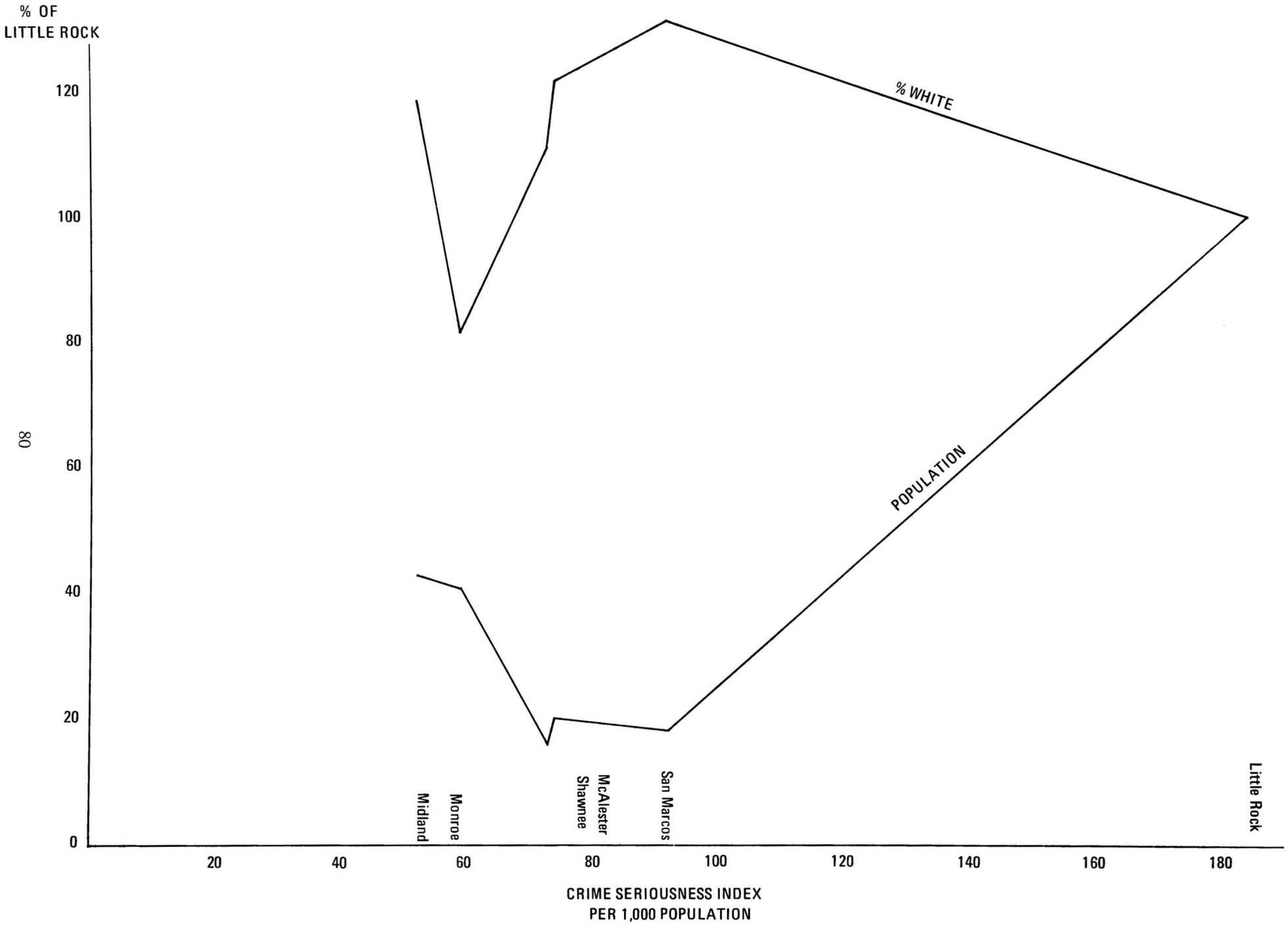
TABLE APP. I-8

Selected Relationships between Performance Indicators
and
Key Structural Indicators[a]

	KEY STRUCTURAL INDICATORS			
PERFORMANCE INDICATORS	Population	Percent White	Median Income	Per Capita Budget
School Expenditures	0	0	0	0
School Tax Base	+	0	+	0
Dropout Rate	+	+	+	0
MDs per 1,000 Population	+	-	0	0
Vacancy Rate	0	0	0	0
Percent Voter Turnout	0	0	0	0

[a]Key to Symbols
+ indicates that the relationship between the indicators is positive
0 indicates that the relationship between the indicators is unclear
- indicates that the relationship between the indicators is negative

GRAPH APP. I-26



median household income, and per capita operating budget of the city government.

Some of the patterns identified conform to intuitive hypotheses. School tax base, for example, is larger in cities with greater populations and in cities with higher median incomes. The number of physicians per 1,000 population is higher in larger cities, consistent with the frequent complaint about inadequacy of physician supply in smaller communities in the nation. On the other hand, some of our expectations are not borne out by the relationships identified. For example, infant mortality is higher, rather than lower, in those cities with higher family incomes; dropout rates are higher in cities with more Anglos and higher median incomes.

In addition, some of the performance indicators are not systematically related to the structural aspects of a city, but seem to vary almost randomly among our six cities. One might expect voter turnout to be related to socioeconomic status of the population, here indicated by median income, but none of the four structural indicators are associated clearly with the level of voter participation. The vacancy rate is not systematically related to any of the four structural indicators, nor do school expenditures show any clear pattern of relationships.

There is clearly a need for city officials to know more about the relationships among indicators. The showing of a relationship between any two indicators does not show causation, but nothing approximating a causal inference can be made without relational analysis. That is exactly why it is important to develop a larger data base—either with additional subcity information or with an increased sample of cities—in order to utilize indicators to their full potential for city decisionmaking.

APPENDIX II

FIELD TEST HISTORIES

The Community Activity Indicators Project (CAIP) was formally scheduled for completion at the end of May 1974. For the participating states and cities, however, work remained to be done on system maintenance, development, and transfer. Plans for the future of community indicators in CAIP states and cities were explored during the final conference of the project, held at the LBJ School on May 15-16, 1974. The following sections of this appendix reflect, among other topics, the import of presentations made during that conference.

COMMUNITY INDICATORS IN CAIP STATES

It became apparent during the conference that each of the participating states judged the project a success and each had plans, developed to varying degrees, to apply indicators to the needs of state government or to spread the technique to cities other than those in CAIP. The position of the Arkansas Department of Planning was that work needed to be done on adapting indicator techniques to a rural setting. To this end, the department would continue to cooperate with the Southwest Arkansas Planning and Development District in its effort to develop a regionwide, rural community indicator system. Assuming that standard indicator definitions and clear, concise methods of data presentation could be generated in the future, the department would promote the technique in other areas of the state. The department would also investigate methods of combining economic and industrial data already produced and circulated in Arkansas with indicator data to further systematize state planning.

The major thrust of future indicator development by the Louisiana Office of State Planning would be toward integrating statewide data generation and use. The office had proposed to the state legislature that a substantial commitment be made in this realm and that indicators should be an integral part of the program. The office would like to involve potential data providers and users in the selection and refinement of a set of indicators that can and will continue to be intensively applied to compiling Louisiana's annual state-of-the-state report. The indicator information would be tapped as needed by the Governor and his staff. It would serve to consolidate and simplify information presented to the state legislature, and would save money now spent in duplicative information development. It is anticipated by the director of the office that one of the program's most beneficial by-products would be a strengthening of the ties between state and local governments as they both increase their reliance upon a centralized data base.

As with Arkansas, the Oklahoma Office of Community Affairs and Planning intended to devote its attention to developing indicator techniques in a rural setting. The work would center on management improvement in relatively small Oklahoma cities, the assumption being that impending problems of urbanization and growth could more easily be avoided with this approach. Indicator data already available and city characterization interviews with local citizens would be combined to help lay the foundation for rapid construction of locally-oriented, locally-operated indicator systems. The office would then act in a consulting capacity to aid in the analysis and interpretation of local indicator information.

In Texas, the emphasis was "transfer." The Department of Community Affairs was looking into ways in which the experiences in Texas' two CAIP cities would effectively be transferred to other cities that might benefit from indicator adoption; several options had already been identified. The Department was considering a statewide seminar, during which the potential of indicators would be promoted and discussed. The eight "Model Cities" of Texas had tentatively been selected as likely participants in a meeting of this sort. It is also possible that professional associations—Texas City Planners Association, Texas Municipal League—would be contacted, and discussions of community indicator possibilities placed on the agendas of upcoming statewide meetings. Finally, the department was cooperating in an effort to construct and make generally available a "master set" of more than 180 indicators, the data from which would be used by local and state government officials throughout Texas. This project was expected to be largely complete by the autumn of this year.

While the plans outlined above are nascent, the scope and depth of thought they represent support a favorable

judgment on the future of indicators in CAIP states. The response to CAIP may be a bellwether of increasing cooperation among state and local governments in Arkansas, Louisiana, Oklahoma, and Texas.

COMMUNITY INDICATORS IN CAIP CITIES

The major actors in the project were, of course, the cities. It was at their policy-making and managment needs that the effort was aimed. City government staff members did the majority of the work involved. Rather than concentrate solely on the *future* of indicators in CAIP cities, therefore, it is appropriate to review the entire indicator experience of each city. To accomplish this, each LBJ School Technical Assistance Team prepared a short history of indicator work in its city, and relied on this perspective to comment on the future of community indicators. The six Field Test Histories follow.

LITTLE ROCK, ARKANSAS

BACKGROUND

The City

The City of Little Rock, in central Arkansas, is the state capital and the Pulaski county seat. It is the political, commercial, financial, and industrial center of Arkansas. Little Rock, North Little Rock, and the population remaining within the surrounding county constitute the only SMSA in the state. The population of Little Rock rose from approximately 138,000 to about 174,000 as a result of recent annexation.

Municipal Government

The city is governed by a board of directors with the assistance of a city manager. The members of the board run and are elected at large. Metroplan, a regional planning agency, serves as a metropolitan planning and coordinating body; it owns and operates the public transit systems for both Little Rock and North Little Rock. The Little Rock Independent School District provides the area's public education.

THE PROJECT: CHRONOLOGY

Initial contact with the Arkansas and Little Rock representatives took place at a conference at the LBJ School in Austin, Texas, October 3-4, 1973. At that time, the LBJ team met with Cathy Davis from the Community Services Division, Arkansas Department of Planning; Ernest L. Whitelaw, Executive Director of the Southwest Arkansas Planning and Development District; Ron Young, Director of the Department of Management and Program Analysis, City of Little Rock; and Rick Hug from the Health and Welfare Council, City of Little Rock.

The LBJ team's first site visit to Little Rock took place October 25-26, 1973, following advance work by Ron Young and his staff. Prior to the team's visit, a memorandum had been distributed by the city manager informing department heads of the goals and purposes of the project. Members of the team met with representatives of the various departments to produce a useful indicator list as quickly as possible.

During this visit the team was asked by Ernest Whitelaw about visiting Camden, Arkansas, to aid in the implementation of an indicator project in the southwest region of Arkansas.

On November 29, 1973, the team visited Camden, a city of about 18,000 residents on the Ouachita River. Camden is the county seat of Ouachita County and the industrial center of south central Arkansas. The team met with Camden city officials and described the procedures being used in CAIP to implement city indicator systems.

On November 30, 1973, the team proceeded to Little Rock, where it met with Jack Young and Les Hollingsworth of the Little Rock Board of Directors to discuss the project and obtain suggestions from the city's elected officials. Both men expressed a definite interest in the project in that it would help them "act" instead of "react" in policy determination. A list of the core indicators was given to the city during this visit.

The indicator-selection and data-collection phase of CAIP ended with the second general conference in Austin, December 11-12, 1973. This conference marked the beginning of the analysis phase of CAIP. During this conference, possible analysis techniques were discussed and presented to the cities as possible methods for their own analysis.

To aid the city staff in the analysis phase of CAIP three site visits were made. Susanne Franza of the LBJ School made a one-day trip on February 1, 1974, to help compile the data needed to perform the analysis of core indicators. She also conducted meetings with Warren McLaury of HUD and Cathy Davis of the Arkansas Department of Planning.

A second site visit was made by Ms. Franza and Gregg Schweers, March 6-7, 1974, to aid in the analysis of Little Rock's indicator data. On March 14-15, James Jackson made a site visit to help prepare a presentation for the third conference on the methods of analysis used by Little Rock.

The presentation of CAIP results and the use of indicators in existing government projects were the subjects of discussion at the third general conference March 21-22 at the LBJ School. Each of the six cities in the project gave presentations regarding actual and intended methods of indicator analysis. The Little Rock presentation, made by Herman Schwartz and Alice McCann, indicated that the city was doing both intercity and intracity comparisons. The city also hoped to use CAIP data to help implement management by objective (MBO) in Little Rock.

A booklet of indicator data was prepared by the Little Rock Department of Management and Program Analysis and is currently being used both in the Chief Executive Review and Comment (CERC) process and in meeting other informational needs of the city.

TABLE APP. II-1

MAJOR PARTICIPANTS BY ORGANIZATION

Local:	Tom Downs, Assistant City Manager, City of Little Rock Ron Young, Director, Department of Management and Program Analysis James Blue, Department of Management and Program Analysis Alice McCann, Department of Management and Program Analysis Herman Schwartz, Department of Management and Program Analysis Mollie White, Department of Management and Program Analysis Don Venhaus, Director, Department of Community Development Nat Hill, Director of Human Resources Jim Beardon, Head of Sanitation Gale Weeks, Chief of Police Paul R. Fair, Superintendent, Little Rock Independent School District Jack Young, Board of Directors Les Hollingsworth, Board of Directors Jase Breckling, Director of Parks and Recreation
Regional:	Jason Rouby, Director, Metroplan Ernest Whitelaw, Director, Southwest Arkansas Regional Planning and Development District, Inc.
State:	Charles Crow, Director, Arkansas Department of Planning Cathy Davis, Community Service Division, Department of Planning Helena Lorenza, State Manpower Office Frank Troutman, University of Arkansas at Little Rock
Federal:	Warren McLaury, Program Manager, HUD Little Rock Area Office Jim Livingston, HUD Little Rock Area Office
LBJ School:	Susanne Franza, graduate student James Jackson, graduate student Gregg Schweers, graduate student

DEVELOPMENT OF CAIP IN LITTLE ROCK

Development of City Indicators

The LBJ team's initial goals for CAIP in Little Rock were based on indicator literature as well as discussions with members of the city government in Little Rock. These goals were:

(1) to establish an on-going information system through the use of indicators;
(2) to see how Little Rock compared in a variety of areas with similar cities in other states; and
(3) to provide an evaluative tool to monitor the transition period the city faced due to its recent annexation.

The major participants in CAIP (see Table App. II-1) in the City of Little Rock were staff members of the Department of Management and Program Analysis. The staff consisted primarily of former model cities personnel trained in the evaluation of social programs. The majority of the CAIP work was carried out in Little Rock, and the LBJ team was fortunate to be working with a department that was extremely receptive to the purposes of CAIP. The staff of this department greatly influenced the indicator selection process, and final responsibility for the indicator selection rested with Ron Young, director of the department. The heads of the various departments throughout the local government were consulted for valuable input on the selection of particular indicators concerning their areas of interest. It was the task of the LBJ team members to relay information to the Little Rock participants about which indicators had been chosen by the other CAIP cities and to provide technical advice when needed.

Difficulties arose because government agencies in Little Rock enjoy a relatively independent status. Consequently,

data coverage areas were not always similar. For example, police reporting areas did not correspond to those for the health department or the school district; so, there were problems of intracity comparability. A lack of a clear understanding of the theory of indicators and of the purposes of CAIP also caused difficulties in the selection of indicators.

Table App. II-2 is the final list of indicators adopted for use in CAIP by the City of Little Rock.

Data-Gathering Process

The data-gathering process in Little Rock was slow in developing, because this was the first time that such a comprehensive process had ever been attempted. Data collection had been conducted before in Little Rock as a part of Model Cities, CERC, Metroplan, and the annual arrangements agreement with HUD.

As mentioned previously, it was the responsibility of the Little Rock Department of Management and Program Analysis to collect and analyze the data. Mr. Herman Schwartz was hired through a grant from the Arkansas State Planning Department to aid in this process.

Difficulties arose as a result of the scarcity of information in places where it was previously thought readily accessible and in gathering data according to precise indicator definitions. The fact that the data-gathering process was also largely dependent upon the full cooperation of many of the other city departments also created problems.

The quality of the Little Rock data warrants cautious optimism at this time. Many of the indicators have been broken down by census tracts, and from three to ten data points are available for most of the indicators for trending analysis purposes. For these reasons, Little Rock had one of the richest data bases in CAIP.

The Analysis Process

A variety of analytical techniques was available for use in Little Rock since the collected data was of such a high quality. The first concern was to analyze the city as a whole. For this purpose, trending analysis was applied to those indicators where three or more successive data points were available, and a list was compiled of the state and national norms and averages where available for the indicators for comparison with the Little Rock data. Another interest of the city was to see how Little Rock compared to other similar cities. This intercity comparison was achieved through a questionnaire sent to officials in eight cities comparable to Little Rock in geographical, demographic, and economic characteristics. Further, it was required that the cities be state capitals.

A major area of interest for analysis was in terms of intracity comparisons. For this purpose, a series of graphs was prepared plotting the data for each indicator by census tract. These graphs were then compared with one another to discern any visible relationships between two or more of the indicators. In addition to this, the LBJ team performed several statistical analyses of the data disaggregated by census tract. It is hoped that the Department of Management and Program Analysis will soon have access to a computer recently acquired by the Little Rock Police Department through LEAA funds.

Difficulties arose in relating one indicator to another in order to achieve a specific answer to policy problems. This appears to be a conceptual limitation of indicators, and perhaps through further work and experience with these data, city officials will be able to more readily apply indicators to various policy problems.

CONCLUSIONS

Results of CAIP in Little Rock

CAIP in Little Rock was aided by the high priority given the project by the city and, as mentioned previously, by an atmosphere entirely conducive to the development of the project. Currently, indicator information is being used in conjunction with two studies in Little Rock: one on family services and the other on housing stock. More generally, indicator data is being used to give a quick picture of the current status of the city as an aid in the CERC review process, and as a means of implementing MBO in the city. The project has demonstrated the need for the various agencies to keep accurate records using standard reporting procedures. Indicators in Little Rock are viewed as a valuable measure of community progress if applied in the following ways:

(1) as a procedure providing an information base by which progress can be measured toward national goals, such as racial and economic equality;

(2) as a means to increase public awareness of the various issues in city elections;

(3) as the basis for a state-of-the-city report to be used by elective and non-elective city officials;

(4) as a means to evalute the effectiveness and equity of public service delivery; and

(5) as a means of establishing an accessible city data information base so that other future research projects will have a foundation upon which to build.

The Future of Indicators in Little Rock

While the indicator data generated by CAIP is already being used by Little Rock city staff members, it is the opinion of the team that development has not ceased. Indicator information will be used in the near future to aid a feasibility study for a city income tax. It is also anticipated that more indicators relating to police, fire, and

TABLE APP. II-2

INDICATORS FOR THE CITY OF LITTLE ROCK

DEMOGRAPHY

1. Population Distribution (by age and race)
2. Population Estimates
3. Population Projections
4. Dependency Ratio
5. Fertility Rate
6. Crude Birth Rate
7. Female Heads of Families
8. Level of Education
9. Percent Change in Population
10. Net Migration in Pulaski County
11. Percent of Families with Income Below $3,743 and Below $5,000

ECONOMIC BASE

1. Retail Sales Per 1,000 Population
2. New Loans
3. Additions and/or Expansions of Basic Industry
4. Total Assessed Valuation
5. Number of Water Hook-ups and Percent Change for Five Years

EDUCATION

1. Public School Dropout Rate
2. Public School Expenditures
3. Public School Tax Base/Pupil
4. School Enrollment
5. Education Continuance of High School Graduates
6. Percent of Adults (age 25 and over) Without a High School Diploma
7. Percent of Adults (age 25 and over) Working Toward a High School Diploma
8. Average Test Scores of Public School Pupils on Regularly Administered Achievement Test
9. Counselor/Pupil Ratio in Public Senior/Junior/Middle Schools

EMPLOYMENT OPPORTUNITY

1. Percent Unemployed
2. Work Force Breakdown by Occupation
3. Years of School Completed by Persons 25 Years and Over

HEALTH

1. Infant Mortality Rate
2. Communicable Disease Index
3. Number of Physicians Per 1,000 Population
4. Ratio of Public Health Nurses to Total Population
5. Childhood Immunization Rates

HOUSING

1. Net Housing Starts
2. Subsidized Housing
3. Vacancy Rate
4. Substandard Housing
5. Owner-Renter Occupancy Ratio
6. Percent Housing Units with More Than 1.01 and More Than 1.51 Persons Per Room

LAND USE AND RECREATION

1. Land Use Distribution
2. Annual Rate of Zoning Requests and Changes
3. Location and Amount of Park/Open Space

PERSONAL INCOME

1. Personal Income Distribution
2. Real Income
3. Median Income for Families

POLLUTION

1. Five-Day Biochemical Oxygen Demand (BOD) Level
2. Oxygen Saturation Levels
3. Solid Waste Volume
4. Sulfur Dioxide
5. Nitrogen Dioxide
6. Particulates in the Air

PUBLIC SAFETY/JUSTICE

1. Crime Seriousness Index
2. Class and Efficiency Index of Police Department
3. Fire Response Time
4. Burglaries by Location
5. Average Caseload of Public Defender
6. Juvenile Recidivism Rate

PUBLIC FINANCE

1. City Government Revenues
2. City Government Operating Budget
3. City Government Fiscal Capacity and Revenue Effort

PUBLIC SERVICE DELIVERY

1. Water Demand as a Percent of Water Capacity
2. Demand on Sewer System as Percent of Capacity
3. Yearly Loss of Life Due to Fire
4. Estimated Dollar Value of Property Loss to Fire and Estimated Dollar Value of Property Involved in Fire
5. Number of Complaints to City Hall by Departments
6. General Obligation Bond Rating and Capacity

CIVIC PARTICIPATION

1. Percent of Eligible Voters Voting in Local Elections

TRANSPORTATION

1. Ratio of Miles of Paved Streets to Miles of Unpaved Streets
2. Number of Traffic Accidents Per 1,000 Population
3. Number of Non-Residents Working in the Corporate Limits
4. Miles of Street by Kinds of Street
5. Traffic Volume Counts

other direct, budgetary concerns will be added to the information base.

It should be noted, too, that the city's philosophy of indicator system development diverges somewhat from the central philosophy of CAIP. Little Rock intends for the system to become imbedded at the city manager/city department head level before concerted effort is made to lay before the board of directors the full range of indicator inforamtion. In this way, staff members think, the system will rest on a firm, productive foundation, and modifications can be made as necessary to suit the needs of the policy makers. Thus, internalization of the system will continue in Little Rock.

MONROE, LOUISIANA

BACKGROUND

The City

Monroe is in the northeastern section of Louisiana on the east bank of the Ouachita River, approximately 225 air miles from New Orleans. Monroe and West Monroe together compose a regional center of some 80,000 persons in the center of Ouachita Parish. The city itself encompasses 33.5 square miles and has a population of 64,000 persons, of which 62 percent are white and 38 percent are nonwhite, the latter group consisting mainly of blacks. The median family income of the population in 1970 was $7,345, compared with a state median of $7,530 and a national median of $10,289 for the same period.

Since the early 1800's, the city has advanced through successive stages of development in agriculture, transportation, forestry, and industry. Today, paper and paper products along with retail and wholesale trade compose the largest sectors of the city's diverse economic base. Numerous other industries contribute to the economy, including the Monroe Natural Gas Field.

Municipal Government

Monroe has a mayor-commissioner form of government, consisting of a mayor, a commissioner of finance and utilities, and a commissioner of streets. In the daily operations of the city, elected officials are available at City Hall on a full-time basis with the mayor also serving as a commissioner for the primary service departments of the city including fire, police, ambulance, and inspection. Elections are held every four years, and all city elective offices are filled on an at-large basis.

Within Ouachita Parish, the local government is the Police Jury, consisting of elected representatives from the six districts in the parish and chaired by a president elected from among the six representatives. The parish is also served by the Ouachita Council of Governments (OCOG) with offices in Monroe.

THE PROJECT: CHRONOLOGY

A preliminary phase was incorporated into the design of CAIP during which the final selection of the cities to participate in the project was made by the participating state agencies and HUD. No interaction between the LBJ School and the test cities occurred during this phase.

Phase I

Phase I of CAIP was initiated with a conference held at the LBJ School on October 3-4, 1973. At this conference the Monroe Technical Assistance Team made its first contact with participants representing the City of Monroe, the Louisiana State Planning Office, and HUD (see Table App. II-3). During an initial meeting of this group, CAIP and the needs of Monroe to be served by the project were discussed.

Following the initial conference, the Monroe team made its first site visit to the city on October 18-19, 1973. During this visit the original "shopping list" of indicators was narrowed to 32 in meetings in which representatives of Monroe, OCOG, the Louisiana State Planning Office, HUD, and the LBJ School participated.

The October site visit was followed by a period of data gathering by the city. Also during this period the final core set of indicators was selected by the LBJ School, and this list was presented to city representatives on November 28-29, 1973. It was reported that the city had completed the collection of approximately 80 percent of its city indicators. Due to limitations of city staff time, it was agreed that the LBJ School team would collect the data for the 17 core indicators not included in the city list.

Phase II

The second phase began during a conference at the LBJ School on December 11-12, 1973, when representatives of Monroe, the State Planning Office, HUD, and the LBJ School discussed the probable uses of the data that Monroe had collected.

During the period between the December conference and the third site visit by the LBJ School team February 14-15, 1974, a significant change occurred in the Monroe analysis plan when the actual task of analysis was shifted from the city to the OCOG. Thus, the third site visit was concerned with discussion of the status of city data analysis with Bill Melvin of OCOG. A staff analyst for Dr. Ron Welch of Northeast Louisiana University also reviewed their efforts at analysis of Monroe's data. Also during this visit the LBJ team displayed the preliminary efforts of the School and completed the gathering of core data.

Phase III

The third phase began with a third general conference at the LBJ School (March 21-22, 1974) during which a presentation was made by representatives of the City of Monroe and OCOG on the types of analysis being done and the format in which this analysis would be presented.

Following this third conference, the staff members of

Monroe and OCOG, in conjunction with the Louisiana State Planning Office and Northeast Louisiana University, continued to refine the data, collecting the results of their analyses in a "State of the Region" report. This report was reviewed by the LBJ School team on April 22-23, 1974, and presented for discussion at the final CAIP conferences on May 15-16, 1974.

TABLE APP. II-3

MAJOR PARTICIPANTS BY ORGANIZATION

Local:	Ralph Troy, Mayor Bill Becton, Programs Director Harold Daricek, Assistant Programs Director Frank Wilcox, Director of the Redevelopment Agency Dr. Ron Marionneaux, Director of the Planning Department Richard Robertson, Programs and Planning Coordinator Robert Norris, Socio-Cultural Planner
Regional:	Bill Melvin, Director, OCOG
State:	Charles Bettinger, Director of the Bureau of Business Research, Northeast Louisiana University Ron Welch, Department of Sociology, Northeast Louisiana University Geneva Carroll, State Planning Office Kim Johnson, State Planning Office
Federal:	Joseph Moncado, Program Manager, New Orleans Area Office, HUD
LBJ School:	Billy Hamilton, Graduate Student Leonette Slay, Graduate Student Kay Stouffer, Graduate Student

DEVELOPMENT OF CAIP IN MONROE

Development of City Indicators

During the initial visit to Monroe the LBJ School team along with representatives of HUD and the Louisiana State Planning Office aided city officials in the formulation of the community indicators for Monroe. This process was completed in two "mark-up" sessions on October 18 and 19 during which the initial "shopping list" of 136 indicators was narrowed to 32 by agreement of those present.

The principal goal toward which the selection process was guided was manageability. To this end city representatives favored limitation of the list based on three criteria.

First, they felt that the final indicator list should take into account the time and staff limitations of the city and regional governments. In this context both Harold Daricek, City Assistant Programs Director, and Bill Melvin, Director of the OCOG, argued that while an extended list of indicators would provide useful information for the city administration, the effort required in its collection would unduly tax city resources and detract from programs already in operation.

Second, limitations were made based on the perceptions of individual participants as to the availability of particular types of data. In general, those indicators were favored for which city representatives felt data would be easily accessible. In other words, indicators were generally excluded from consideration when a city or OCOG representative felt that such data was either not being kept by the city or regional bureaucracies or that the information could not be readily extracted from some agency in a usable form.

Finally, based on their understanding of the indicator concept, city representatives argued that to be useful to the mayor and the city commissioners, the final set of indicators must of necessity be selective in nature. Here a distinction was drawn between indicators and simple raw data. City representatives saw indicators as a tool for aiding city officials in making complex policy decisions. This process would best be served, they believed, if the set was limited in size and simple in format, avoiding the traditional reliance on detailed and time-consuming analysis for which the city official has no time. To be useful, they felt,

indicators must be succinct.

Growing from the goal of manageability and the criteria discussed above are two important trends which may be observed in Monroe's final indicator list (see Table App. II-4). First, the indicators selected had a definite problem monitoring orientation, as opposed to the idea of monitoring the city government in general. While an effort was made to select indicators from all of the "shopping list" categories, the final selection generally reflected the problem areas which participants perceived in the city. City representatives were less likely to favor indicators in those areas in which they were confident of the city's performance. Stemming from this orientation, there was also a tendency for the set to be geared toward short-term applications as opposed to long-term predictive uses. Generally, the need to create a practical and usable tool for city officials was emphasized, with far less consideration given to the role of the system in the anticipation of future needs. For example, poverty indicators were readily accepted, while city representatives were less receptive to pollution indicators, because they felt that air pollution was not a discernible problem for the city.

Within this framework, the participants external to the city administration assumed dual roles, both modifying and reinforcing the Monroe selection process. For its part the LBJ School team was interested, first, in expanding the indicator list to include a complete range of the positive and negative aspects of the city and, second, in selecting indicators conducive to subcity analysis. In general, however, representatives of HUD, the State Planning Office, and the LBJ School were most concerned with creating a list with which the city representatives could and would work. In this sense these participants judged the maintenance of Monroe's enthusiasm for the project to be the key to the success of CAIP. To this end they were willing to accept the limitations imposed by the city's selection criteria in most instances.

Data-Gathering Process

Data gathering by the City of Monroe began in the two-week period following the selection of the city indicator set on October 18-19, 1973. From the outset this process was viewed by city officials as an inherently intergovernmental undertaking, primarily because of limitations on available staff and other resources within the city administration. This difficulty was especially pronounced because department work plans had already been developed in some cases, meaning that staff time for CAIP had to be taken from other programs or added to work schedules already assigned. Despite this, the bulk of city data gathering was done by Robert Norris of the Planning Department and Richard Robertson, City Programs and Planning Coordinator. Gathering of parishwide data was carried out by Bill Melvin and the OCOG staff.

Outside the city administration, several individuals and groups were also active during this phase. Charles Bettinger of Northeast Louisiana University assisted in the collection of income and demographic data, while Geneva Carroll of the State Planning Office made available data she developed in conjunction with a statewide employment study. To a lesser extent, representatives of HUD and the LBJ School acted as resources for answering various definitional problems as they arose. Members of the LBJ School team were also engaged in the collection of core data not included in the city indicator set.

The data initially secured ranged over a wide spectrum in terms of availability and completeness. The city maintained no central data-collection agency and had no standardized method of collection for much of the data required by the project. This factor created a dual problem for data gatherers. First, the availability of data was erratic. In some cases, information was complete and easily accessible, while in others data had to be laboriously extracted from various city departments or from sources external to the city administration. Second, the data collected, even when readily available, tended to be aggregated only at the citywide level, with subcity breakdowns practically nonexistent.

A second set of problems revolved around the nature of the data once collected. For example, several of the indicators were not available on an annual basis. Census data constitute the most striking case in point. Participants faced problems in gathering data in the fashion recommended by the LBJ School. In some cases this was because the information simply was not recorded in the form recommended by the School. However, in other cases the LBJ School definitions proved to be too general in their specifications, which created confusion over the type of data required. For example, it was discovered that there are at least two methods for computing school dropout rates, either including or excluding transfers in the calculation. Because Monroe has three school systems—city, parish, and private—the gathering of usable information on the basis of a single, static definition proved to be virtually impossible.

Despite the numerous technical problems, all of the indicators had been collected in some form by the end of the collection phase. In their final form indicators were generally available for multiple years, although in some cases the years were not consecutive. Also, a problem which continued to plague gathering until the end of the phase was the absence of data disaggregated to the subcity level. As noted earlier, this information could not be extracted from past records. For this reason, the majority of Monroe's indicators were disaggregated only to the citywide or parishwide level.

TABLE APP. II-4

INDICATORS FOR THE CITY OF MONROE

DEMOGRAPHY
1. Population Totals and Percentage Categorical Distributions
2. Population Density
3. Fertility Rate

ECONOMIC BASE
1. Retail Sales Per 1,000 Population
2. Deposits in Banks, Credit Unions, and Savings and Loans
3. Sales of Services
4. General Obligation Bond Rating
5. Additions and/or Expansions of Basic Industry

EDUCATION
1. School Expenditures by Category
2. Pupil/Teacher Ratio
3. Dropout Rate
4. Percentage of Pupils Going on to Some Form of Higher Education

EMPLOYMENT OPPORTUNITY
1. Percentage of the Labor Force Unemployed
2. Percentage of the Work Force in Various Job Categories

HEALTH
1. Infant Mortality Rate
2. Disease Rates

HOUSING
1. Vacancy and Abandonment Rate
2. Per Capita Occupancy
3. Percentage Substandard Housing

LAND USE AND RECREATION
1. Percentage of Total Land Area in Commercial Use
2. Percentage Total Annual Zoning Changes by Neighborhood

PERSONAL INCOME
1. Median Income of Families and Unrelated Individuals
2. Percentage of Families with Incomes Below the Poverty Line

POLLUTION
1. Storm and Sewer System Capacity
2. Number of Gallons of Overflow of Unprocessed Rain and Sewer Water

PUBLIC SAFETY AND JUSTICE
1. Crime Rates by Category

PUBLIC SERVICE DELIVERY
1. City Operating Budget Per Capita (disaggregated by category)
2. City Tax Base Per Capita
3. Dollars of Fire Damage

SENSE OF COMMUNITY

1. Average Percentage of Registered Voters Who Voted in Local Elections

TRANSPORTATION

1. Percentage of Population within 1/4 Mile of Bus Transportation
2. Number of Traffic Accidents

The Analysis Phase

The analysis phase of CAIP brought a significant shift in the direction of local leadership of the Monroe effort when the primary data-analysis responsibility was given to the Ouachita Council of Governments. As noted earlier in this report, the OCOG was active throughout CAIP in helping city staff develop and collect the city indicators; however, this event marked a genuine transposition of roles between the city and the OCOG, with Monroe moving from a position of initiator to one of participant. This transposition rested on two perceptions by city and regional representatives. First, it was felt that the OCOG had more resources available for analysis than did the city. Second, because the indicator data collected were not disaggregated to subcity units, it was believed that the interests of the project for the city and for the Ouachita area could best be served by emphasis on the parish, with Monroe as the largest component. Members of other participating groups agreed with this position, feeling that it was in the best interest of the Monroe effort and that the ultimate result would be similar to that envisioned by city representatives.

From a technical standpoint, limitation on the nature of the data collected dictated that the analysis performed be fairly simple. To this end, the planned analysis centered around the development of a state-of-the-area report, with a concentration on graphical displays of the indicators gathered, along with limited interpretation of these graphs. These displays were to include individual indicators and comparisons of groups of indicators to demonstrate interrelationships where they existed. In general, this analysis followed the goal of manageability set at the outset of the project and sought to present data in a form that would be readily usable by city officials, planners, or individual citizens.

Aiding Bill Melvin and the OCOG staff in the preparation of the report were Ron Welch, professor of sociology at Northeast Louisiana University, and a student analyst, Barbara Barcus. These individuals played an important role in developing relational comparisons and in adapting them to graphical displays. Also involved, of course, were members of the city planning and programs department, who helped in coordinating the analysis effort in a manner consistent with the objectives of CAIP.

CONCLUSIONS

Results of CAIP in Monroe

At this point, it seems that CAIP in Monroe may be judged to have been fairly successful. Monroe was largely able to overcome the limitations imposed by the project's timing and data problems and to develop and analyze a useful set of community indicators. The actual physical product of the project will be a state-of-the-area report. This booklet will feature analyses of the city data, with graphic representation of the city indicators and limited interpretation of the graphs. However, in a larger sense, CAIP had a more substantive effect on the city, and in noting this the LBJ School team identified three significant benefits that accrued to the city from its involvement in the project. Briefly stated, these are:

(1) The city administration became more conscious of the need for and the benefits of systematically collected data in understanding the complexities of the city. Recognition of this fact will make the city officials better able to use available data and will provide insights into the development of new information resources to cope with the ever-increasing demands on city government.

(2) A greater sense of intergovernmental and interdepartmental cooperation, which it is hoped will continue in the future, was fostered by the project. In the course of CAIP, city, regional, state, and national representatives were provided with the opportunity to interact in a manner seldom afforded them. City representatives see this shared experience as opening new possibilities for using the resources offered by other governmental bodies to enhance their capacity for decisionmaking and policy administration. Within the city administration, the collection of indicator data provided various agencies and departments with an opportunity to interact in working together during the course of the project. To the extent that this is continued, it can be exploited by city officials as a means of better coordinating the city government at all levels by encouraging communication and cooperation among departments.

(3) Finally, the city will benefit from the information produced by the project. Indicators provided city officials with fresh insights into the city, unclouded by lengthy

analyses which detract from the value of the basic observations which may be inferred from the data. At present, it is questionable whether Monroe's indicators can be used in city decisionmaking or in program development; however, the information produced should, at the very least, make city officials better informed as a step toward improving the decision-making process.

The Future of Indicators in Monroe

As noted previously, Monroe's state-of-the-region report has been completed. The data it contains is disaggregated by governmental unit (Monroe, West Monroe, and Ouachita Parish). Upon completion of a presentation to the OCOG governing council, the City of Monroe plans to apply the information in a number of ways.

The data will be applied as supporting information for capital improvement-bond issue submissions, for priority setting among the functional areas of concern to city departments, and for revenue sharing fund allocations. Indicator information will also be useful in campaigns to attract labor-intensive industry and to modify the current form of city government.

Proposals to consolidate the city and parish school systems will rely upon indicator data. It may also become possible for Monroe to generate information of a comparative nature as more Louisiana cities adopt indicator techniques. This will highlight needs and resources peculiar to Monroe. However, before this is done, standard indicator definitions and methods of data collection must be developed statewide.

Two points remain to be raised. First, while the immediate information needs of Monroe seem to be well met by the current, citywide level of data disaggregation, future needs may call for subcity information. It is to be hoped that the city will recognize the inherent benefits of subcity data, begin collecting information on this basis, and allow the system greater flexibility and longevity. Second, a potential problem exists in that OCOG has major responsibility for maintaining the indicator system. The team feels that city needs could be met, in the long run, more efficiently if the city itself devoted more staff time to system development. This, of course, is not to negate the contribution made by OCOG; it simply recognizes the future need for system responsiveness. With these two points in mind, the city may profit greatly from further indicator use and development.

McALESTER, OKLAHOMA

BACKGROUND

The City

A city of 17,000, McAlester is located in the southeastern quadrant of Oklahoma some 200 miles west of Oklahoma City and about the same distance south of Tulsa. McAlester is the county seat of Pittsburg County and contains roughly one-half of the county population.

Government is the major industry in Pittsburg County, where one out of every three employed persons works for some level of government. Because of its participation in Model Cities, Urban Renewal, and other federal programs, the city draws over 80 percent of its operating budget from the federal government. In addition to government agencies, the major employers in McAlester include Lockheed, North American Rockwell, and the U.S. Navy Ammunition Depot. In short, the economy of McAlester is highly dependent upon government and government contractors.

Municipal Government

The city government is of the council-manager variety, with six councilmen elected from wards and a mayor elected at large. The city manager, city attorney, city clerk, and treasurer meet with the council at the regularly scheduled meetings on alternating Tuesdays. Council meetings in McAlester are well attended and are carried live by the cable television network which serves the city.

THE PROJECT: CHRONOLOGY

The development and implementation of the McAlester indicator system was a joint effort of the city's Department of Community Development (DCD), the Oklahoma City Area Office of HUD, the Oklahoma Office of Community Affairs and Planning (OCAP), and the LBJ School of Public Affairs (see Table App. II-5). Most of the work involved in the project was done during six visits to the city by a team of two students from the LBJ School. A series of four conferences at the LBJ School involving all participants in the project provided periodic evaluation of the city's progress toward establishing its indicator system.

The first conference at the LBJ School involving McAlester personnel was held in early October. At this meeting Ed Brookshier of the McAlester DCD, Bill Rotert and Clarence Schermbeck of HUD, and Dan Logue of OCAP met with Dan Frederick and Robert King of the LBJ School. During the meeting several indicators from a "shopping list" developed by CAIP were tentatively selected for inclusion in the McAlester indicator set.

Most of the McAlester indicators were selected during the first visit of the Technical Assistance Team (Frederick and King) to McAlester in mid-October. Allan S. Mandel, a member of the CAIP faculty, accompanied the team. Representing HUD at this meeting were Bill Rotert, Dick Nemoytin, and Laura Thomas. Richard Jackson of the Kiamichi Economic Development District Office (KEDDO) also attended the first McAlester meeting. Ken Giles and Mel Priddy of the McAlester DCD participated in the meeting in addition to Ed Brookshier.

Data collection took place between the first McAlester meeting and the third visit of the Technical Assistance Team which took place in mid-January. Two visits were required to complete the analysis of the data. These visits took place in early February and late April. The final visit by the Technical Assistance Team in early May was devoted to compiling a state-of-the-city report.

Conferences were held at the LBJ School during the data-gathering and data-analysis phases, one conference per phase. A final conference was held in May to mark the end of the LBJ School involvement in the project.

DEVELOPMENT OF CAIP IN McALESTER

Development of McAlester Indicators

The initial goals of CAIP in McAlester reflected the optimism of the participants in the early days of the project. Indicators were to be developed as planning and management tools for use by the elected city officials as well as by the city's professional staff. During the selection of indicators a system was in the minds of the Technical Assistance Team which would point to developing trends and warn of impending problems.

It was fortunate for the outcome of the project that during the first visit to McAlester the enthusiasm of the Technical Assistance Team was balanced by practical considerations presented by HUD representatives. Bill Rotert and Laura Thomas were of particular value in suggesting reliable data sources.

Definitely the most significant figure in the selection of the initial set of indicators was Ed Brookshier, Research Information Specialist for the DCD and coordinator of the

TABLE APP. II-5

MAJOR PARTICIPANTS BY ORGANIZATION

Local:	Ed Brookshier, Research Information Specialist for McAlester DCD Ken Giles, Director of McAlester DCD Mel Priddy, Economic Planner for McAlester DCD Charles Gramlich, McAlester City Manager Rick Perkins, Administrative Assistant to the City Al Dickens, Oklahoma Employment Securities Commission Robert LaGrone, Superintendent of McAlester Independent School District
Regional:	Richard Jackson, KEDDO
State:	Dan Logue, OCAP
Federal:	Bill Rotert, Oklahoma City Area HUD Clarence Schermbeck, Oklahoma City Area HUD Laura Thomas, Oklahoma City Area HUD
LBJ School:	Daniel C. Frederick, Graduate Student Robert J. King, Graduate Student

McAlester CAIP effort. Mr. Brookshier had a feel for the political environment of McAlester and a working knowledge of the city's basic problems. These faculties enabled him to select a basic set of indicators which would be adequate to the needs of the professional staff and acceptable to the elected city officials. The Technical Assistance Team and the HUD representatives did not try to force decisions on Mr. Brookshier, but they expressed preferences for certain indicators to balance the scope of the indicator set.

The major criterion for the selection of indicators was pragmatism. Mr. Brookshier was reluctant to approve indicators which were conceptually difficult to grasp or for which data might not be readily available. Complexity and lack of convenient data sources, however, did not automatcally rule out any indicator, because Mr. Brookshire was generally willing to accept any indicator supported by a strong argument.

In light of the goals of the project, the roles assumed by the participants in the selection process served the project well. Had Mr. Brookshier not taken the leadership initiative, the session could have been much less productive. Had any of the participants tried to assume or subdue that leadership, Mr. Brookshier's initial enthusiasm for the project could have been significantly reduced.

Data-Gathering Process

The McAlester DCD appointed Ed Brookshier to work on the indicator project as an addition to his normal work load. Initially he was the only member of the city's professional staff directly involved with the project. During the data-collection phase, however, other personnel were temporarily assigned to the project as needed. Ken Giles, Director of the DCD, was helpful in collecting data for indicators concerned with the physical attributes and budgetary processes of the city. Mel Priddy, Economic Planner for the DCD, was indispensable in the collection of economic data. Rick Perkins, the city's administrative assistant, was a valuable source of information regarding city services. Superintendent Robert LaGrone of the McAlester Independent School District offered his services on several occasions for the collection of data for education indicators.

Outside of the city administration three people helped in data collection on several occasions. Al Dickens of the Oklahoma Employment Securities Commission researched a number of employment opportunity and population indicators. Dan Logue of OCAP and Bill Rotert of HUD contributed to the process by performing a variety of tasks as needed. The Technical Assistance Team also contributed heavily to the data-collection process.

Much of the data needed for the indicators selected in October proved to be unavailable in the desired forms and for the desired time periods. Some data was available only for fiscal years rather than for calendar years. Some could only be collected from obscure files after considerable effort. The lack of consistent data-collection procedures in the city was a constant hindrance.

The level of disaggregation of most of the available data was for the most part citywide. Data for the economic and employment indicators was generally not disaggregable past the county level. Only the annual rate of zoning change could be disaggregated to the ward level. Data for about 30

TABLE APP. II-6

INDICATORS FOR THE CITY OF McALESTER

DEMOGRAPHY
1. Population Totals and Percentage Categorical Distributions
2. Population Density

ECONOMIC BASE
1. Retail Sales Per 1,000 Population
2. New Loans
3. Commercial Vacancy Rate
4. Additions and/or expansions of basic industry

EDUCATION
1. School Expenditures by Category
2. Tax Base Per Pupil
3. Pupil/Teacher Ratio
4. Dropout Rate
5. Education Continuance
6. School Enrollment

EMPLOYMENT OPPORTUNITY
1. Unemployment Rate Expressed as a Percent of Total Labor Force
2. Work Force Breakdown by Category

HEALTH
1. Infant Mortality Rate
2. Communicable Disease Index
3. Number of Physicians Per 1,000 Population
4. Number of Hospital Beds Per 1,000 Population

HOUSING
1. Net Housing Starts as a Proportion of All Housing
2. Number of Subsidized Housing Units as a Proportion of the Housing Stock
3. Vacancy Rates
4. Substandard Housing

LAND USE AND RECREATION
1. Percent of Total Land Area in Commercial Use
2. Percent of Total Land Area in Industrial Use
3. Percent of Total Land Area in Use Containing Non-Conforming Uses
4. Acres Per 1,000 Population of Public, Developed Parkland
5. Annual Rate of Zoning Changes

PERSONAL INCOME
1. Personal Income Distribution
2. Real Income

POLLUTION
1. Number of Point Sources Per Square Mile by Category
2. Particulates in the Air
3. Gaseous Pollutants
4. Storm and Sewer System Capacity

5. Number of Gallons of Overflow of Unprocessed Rain and Sewer Water
6. Ozone (or total oxidants) in Atmosphere
7. Five-day Biochemical Oxygen Demand Level
8. Oxygen Saturation Levels
9. Solid-Waste Collection Volume

PUBLIC SAFETY
1. Crime Seriousness Index
2. Class and Efficiency Index of Police Department
3. Fire Response Time

PUBLIC SERVICE DELIVERY
1. City Tax Base Per Capita
2. Authorized Water Reservoir Storage
3. Water Supply Index
4. Per Capita Water Consumption
5. Percent of Water Consumption Attributed to Industrial Users
6. Garbage Complaints
7. Percent of City Area Served by Sewer System
8. Dollars of Fire Damage
9. Electric Power Reserve (spinning reserve)
10. City Government Operating Budget
11. City Government Fiscal Capacity and Revenue Effort

SENSE OF COMMUNITY
1. Percent of Households Experiencing Intracity and Intercity Mobility
2. Percent of Eligible Voters Registered
3. Percent of Registered Voters Voting in Recent Local Elections
4. Average Number of Citizens Attending City Council Meetings
5. Per Capita Contributions to United Fund

TRANSPORTATION
1. Number of Traffic Accidents Per 1,000 Population
2. Ratio of Miles of Paved Streets to Miles of Unpaved Streets
3. Traffic Counts Per Lane at Selected Locations

indicators were available for a three-year period. City Manager Charles Gramlich, however, showed an interest in upgrading and systematizing the collection of data in the future.

With respect to most of the indicators selected for McAlester (see Table App. II-6), the accuracy of the data collected is not questionable. The data for a few indicators, however, are based on departmental estimates and is, therefore, in doubt. In cases where estimates have been used, provisions have been made for the collection of more reliable data in the future.

The Analysis Process

Because of problems in obtaining disaggregable data and the limited resources of the DCD, analysis of the indicators was kept simple. Basically, the analysis of the McAlester indicators consisted only of time-series analysis and proceeded in two steps.

First, all time-series data were plotted on graphs. Where trends were apparent, they were projected into the future. City personnel were asked to identify possible reasons for trends or for sporadic changes in the data over time.

Second, the average annual percentage change was calculated for each indicator showing a trend. Groups of these were represented on bar graphs to show the interrelationships of various measures.

The Technical Assistance Team, working with DCD personnel, performed most of the analysis. OCAP and HUD volunteered to complete the graphics in order to leave Mr. Brookshier free to compile a CAIP file for the DCD.

CONCLUSIONS

Results of CAIP in McAlester

The physical output of the project was a comprehensive state-of-the-city report consisting of the results of the indicator analysis displayed as simple graphs and verbal interpretation. A by-product of the report was a manual to be developed by Mr. Brookshier from an outline provided by the Technical Assistance Team and approved by HUD representatives. This manual will serve as a guide for the indicator project in the future.

The Future of Indicators in McAlester

The McAlester state-of-the-city report has, as of this writing, been completed by DCD staff members. It has also been presented to the McAlester city council for their consideration. In addition, the recently elected mayor has expressed interest in the potential of indicators for the city. He plans to make use of the data as an integral part of his campaign to promote local industrial development. He may also use indicator data to document McAlester's future needs for federal grant funding.

The DCD staff will continue to rely on the data to fill special requests for community information. Data from the system will also be incorporated into the development of a three-year comprehensive plan for the city. This plan will then be submitted to a citizen "goals assembly," the Urban Planning Council, for their review.

Taking the items listed immediately above together with comments made by DCD staff members to the effect that indicator techniques promote enlightened community leadership, it might be supposed that indicators will continue in use without difficulty. Still to be resolved, however, is the issue of whether or not the city council will ever adapt the information to the city's broad, policy-making requirements. To the extent that the council comes to rely on indicator data, the system will be institutionalized, and CAIP will have been a success in McAlester.

SHAWNEE, OKLAHOMA

BACKGROUND

The City

Shawnee, Oklahoma, covers 35.3 square miles and is located 40 miles east of Oklahoma City. The community's population in 1974 is roughly 28,000, up from 25,075 in 1970, and 24,326 in 1960. Shawnee is located near Interstate 40 and is served by the Santa Fe and Rock Island Railroads. The community is the home of Oklahoma Baptist University and St. Gregory's Junior College.

Shawnee's population is predominantly white, and the small American Indian population outnumbers the black minority. The community's population is most notably characterized by a high dependency ratio. The city is closely linked with several employment sectors in Oklahoma City, especially Tinker Air Force Base. Shawnee serves as the county seat for Pottawatomie County and as a trading center for the surrounding rural inhabitants. The community obtains water from the nearby Twin Lakes, and its treated sewage is discharged into the North Canadian River south of the city. Shawnee is a growing community and, no doubt, will soon become a part of the Oklahoma City SMSA.

Municipal Government

Shawnee is governed by a seven-member city commission, and the mayor is elected from the membership of the commission. The community's governmental structure is primarily composed of a city attorney, a city auditor, a city treasurer, and 15 citywide commissions, committees, and boards. The city is administered by a city manager and assistant city manager who are responsible to the commission. It should be noted that the city commissioners, including the mayor, serve without remuneration. The community has failed to produce more than 31 percent turnout of eligible voters in any local election since 1970.

THE PROJECT: CHRONOLOGY

Phase I

During Phase I the final indicator sets for Shawnee were selected (by including all CAIP core indicators) and data was collected for these indicators.

The first general CAIP conference was held at the LBJ School in Austin, Texas, on October 3-4, 1973. Shawnee selected its initial set of indicators from the "shopping list," and governmental personnel were briefed on the concept of indicators and the overall work plan for CAIP.

The first site visit to Shawnee was made by the LBJ team on October 17-18, 1973. Participants revised the Shawnee list of indicators initially established on October 4. The participants included the mayor and city manager of Shawnee (see Table App. II-7).

The LBJ team made its second site visit on November 8-9, 1973 during which the team and Mr. Harry B. Hill Jr., spent time collecting information for each of the indicators. The LBJ team introduced the core set of indicators to Mr. Hill.

Phase II

This phase was originally designed to allow CAIP cities to analyze the information collected in Phase I. However, Shawnee used part of the phase to finish collecting the indicator information not gathered in Phase I.

The second general CAIP conference was held at the LBJ School on December 11-12, 1973. Cities gave progress reports on the extent of their data collection. Governmental personnel gave presentations of data-analysis techniques by LBJ students, and each city selected its unique package of these techniques.

The third site visit to Shawnee by the LBJ team (December 18-20, 1973) was used to help Mr. Hill gather most of the remaining information. Randy Swenson of Shawnee started helping with the work.

During the fourth site visit to Shawnee (February 7-8, 1974) the LBJ team and Mr. Hill put all Shawnee indicators into final shape. Indicator information was graphed. Participants made all indicator definitions final and noted limitations for each indicator.

Phase III

This phase was designed for institutionalizing the indicator concept in the communities and presenting the results of CAIP to the city councils and commissions of the cities.

The third general CAIP conference was held at the LBJ School on March 21-22, 1974. The cities gave progress reports on how their indicators were being analyzed, used, and institutionalized within local governmental structures.

TABLE APP. II-7

MAJOR PARTICIPANTS BY ORGANIZATION

Local:	Harry B. Hill, Jr., Assistant City Manager and Finance Director of Shawnee William D. Frueh, City Manager of Shawnee Pierre F. Taron, Jr., Mayor of Shawnee Randy Swenson, Engineer, Shawnee Public Works Department
Regional:	Larry Muggler, Planner, COEDD
State:	Dan Logue, Oklahoma Office of Community Affairs and Planning
Federal:	Clarence Schermbeck, Program Manager, HUD Oklahoma City Area Office Bill Rotert, HUD Oklahoma City Area Office Laura Thomas, HUD Oklahoma City Area Office
LBJ School:	Jim Thomassen, Graduate Student Chris Evans, Graduate Student William Wade, Graduate Student

The participants discussed public presentation of CAIP results in the cities and the potential uses of indicator information.

On the fifth site visit (April 11-12, 1974), the LBJ team presented the preliminary analysis of Shawnee data. The team and Mr. Hill compiled previously assigned work in a booklet entitled "CAIP in Shawnee." The team and Mr. Hill laid groundwork for institutionalizing the indicator concept in the local governmental structure of Shawnee. The participants decided to use the planning districts of the Shawnee Comprehensive Plan as disaggregation units.

The sixth site visit was made by the LBJ team on May 13, 1974, to present the results of CAIP in Shawnee to the members of the Shawnee City Commission and to host a small dinner reception for selected guests.

The fourth general CAIP conference was held at the LBJ School on May 15-16, 1974, and the project was concluded as each of the six cities made final presentations.

DEVELOPMENT OF CAIP IN SHAWNEE

Development of City Indicators

The initial set of Shawnee indicators was developed without thought being given to any long-range goals. The city was notified of its participation in CAIP only a few weeks before the project began in earnest and, thus, the goals of Shawnee were short-range in nature. The participants agreed during the first site visit that Shawnee could, at best, after the first year of CAIP hope only to have institutionalized the CAIP concept throughout the data-gathering points of the city government. This effort would in turn provide the framework for: (1) a state-of-the-city report, and (2) revisions of the Shawnee Comprehensive Plan. Initial Shawnee goals did not include plans for program evaluation or trend projections for the distant future because of the limited availability of data for many of the indicators. It was the general opinion among city officials of Shawnee that indicators could best be used by the city manager rather than the city council.

A consensus was never reached with regard to the data required for urban decisionmaking by the Shawnee City Commission. Mr. Frueh was initially of the opinion that any information desired by a commissioner could be obtained from the files of the state government. Mr. Taron seemed to show some support for the idea of compiling such information in a concise indicator summary document that could provide a policymaker quickly and efficiently with a "feel" for the state of a city. Views of the other commissioners in regard to their decision-making needs were not solicited. No city official in Shawnee expressed a need for information disaggregated on a neighborhood basis in order to facilitate comparisons between different parts of a community. Time-series data did evoke interest from the Shawnee city officials.

Shawnee initially selected a total of 63 indicators from the "shopping list" at the first general conference, and this list was reduced during the first site visit to Shawnee in October. The final indicators (see Table App. II-8) were selected according to two basic criteria: (1) Is the indicator information available at present and, to a lesser extent, is time-series information available? (2) Are all 13 of the functional indicator categories represented in the final indicator set given the constraints of available resources?

The final list of Shawnee indicators was chosen primarily by five people–Mr. Hill, Mr. Schermbeck, and the three members of the LBJ team. Mr. Hill wielded the greatest individual influence over the selection process. Mr. Schermbeck provided substantial influence by working with Mr. Hill to reduce the size of the initial indicator list before the first site visit by the LBJ team and by raising key points in the discussions during the first site visit.

The indicator selection process was hampered somewhat by the fact that none of the participants had long-standing experience with the CAIP concept. The process was also retarded because of fears on the part of some city officials that the entire CAIP concept would eventually be used to influence the flow of federal grants to participating cities. The process would have proceeded more smoothly if the participants had been aware of what they wanted in a final project. It also would have proved more helpful if more than one person had represented the interests of Shawnee throughout the entire indicator selection deliberation. The selection process itself benefited greatly from the efforts of Mr. Schermbeck in establishing a working rapport among the local, state, and federal people involved in CAIP.

Data-Gathering Process

The data-gathering process of CAIP in Shawnee was severely hampered by the lack of a city planning department capable of collecting indicator information. The city initially provided only Mr. Hill to work on the project. Half-way through the project Mr. Randy Swensen of the city public works department assisted in gathering data information. Mr. Hill was interested in CAIP, but his position as Assistant City Manager and Finance Director occupied much of his time. The LBJ team spent three trips actually gathering indicator data. Mr. Hill gathered over half of the total amount of indicator information, but the LBJ team was responsible for completing in final form almost all of the indicator data sheets.

The participants found that the existing state of data collection in Shawnee was not systematized in any way. Most sources of information were cooperative in providing data but some, such as local lending institutions, were recalcitrant. The single biggest problem with data gathering was interpreting precisely the definition of each indicator. In this regard participants had to be careful to note all limitations to each indicator definition. Problems were also encountered in establishing the all-important population estimates on which so many of the indicators depended.

The Shawnee indicator data was marked by a distinct lack of sufficient disaggregated information on a neighborhood basis. Those indicators that were disaggregated were more often than not done so according to different geographic units (e.g., postal route areas, or enumeration districts). Hopefully, the city manager will establish common disaggregation units when the CAIP concept is fully institutionalized in Shawnee. Shawnee data as a whole were fairly adequate in terms of time-series information. Most of the indicators were collected for at least three years. The indicator information in Shawnee seemed to be reliable as far as the LBJ team could ascertain.

The data-gathering process in Shawnee was not facilitated to any noticeable extent by the city manager and mayor. The process was impeded by the scattered location of the sources possessing needed information. As it was the process did benefit from Mr. Hill's contacts with many of the individuals responsible for collecting information needed for the project. Mr. Hill proved to be an excellent liaison between the city and the LBJ team.

TABLE APP. II-8

INDICATORS FOR THE CITY OF SHAWNEE

EDUCATION

1. School Expenditures Per Pupil
2. Dropout Rate
3. Pupil/Teacher Ratio
4. Percent of Graduates Going on to Higher Education
5. School Enrollment by Category
6. Public School Tax Base Per Pupil

HEALTH

1. Disease Rates (for VD, TB, hepatitis)
2. Number of Physicians Per 1,000 Population
3. Infant Mortality Rate

POLLUTION

1. Ozone Level
2. Storm and Sewer System Capacity
3. Solid-Waste Disposal Volume
   A. Public Collection Volume
   B. Private Disposal
4. Priority Rating of the Sanitary Sewer Treatment Facilities
5. Oxygen Saturation Levels
6. Five-day Biochemical Oxygen Demand Level

TRANSPORTATION

1. Number of Traffic Accidents Per 1,000 Population
2. Number of Miles of Standard Streets as Percent of Total Street Mileage
3. Number of Miles of Standard Streets Added During the Past Year

PUBLIC SAFETY

1. Class and Efficiency Index of Police Department
2. Crime Seriousness Index
3. Fire Response Time

LAND USE AND RECREATION

1. Rate of Zoning Changes
2. Breakdown of Zoning Changes Issues
   A. Number of Zoning Changes Issued in Accordance with Comprehensive Plan
   B. Number of Zoning Changes Issued not in Accordance with Comprehensive Plan
3. Breakdown of Recreation Expenditures
   A. Per Capita Capital Improvements Expenditures for Park Improvement
   B. Per Capita Expenditures–Recreation
4. Land Use Distribution

PERSONAL INCOME

1. Personal Income Distribution
2. Real Income
3. Percent of Families with Incomes Below the Poverty Line

PUBLIC SERVICE DELIVERY

1. City Operating Budget Per Capita
2. City Government Revenues
3. City Government Fiscal Capacity and Revenue Effort
4. Number of New Books Added to the Public Library in the Last Twelve Months Per 1,000 Population

CIVIC PARTICIPATION

1. Percent of Eligible Population Voting in the Most Recent Municipal Election
2. United Fund Contribution Per Capita
3. Local Newspaper Circulation Per Capita

EMPLOYMENT OPPORTUNITY

1. Percent of the Labor Force Unemployed
2. Employment Breakdown by Category

ECONOMIC BASE

1. Retail Sales Per 1,000 Population

2. New Loans (dollar amount lent per 1,000 population) and Deposits in Banks, Credit Unions, and Savings and Loans
3. Additions and/or Expansions of Basic Industry

DEMOGRAPHY
1. Population Totals and Percentage Categorical Distributions
2. Dependency Ratio
3. Population Estimates and Projections

HOUSING
1. New Housing Starts
2. Number of Subsidized Housing Units as a Proportion of the Housing Stock
3. Vacancy and Abandonment Rates
4. Housing Status
   A. Number of Substandard Housing Units
   B. Number of Substandard Housing Units Rehabilitated Publicly
   C. Number of Substandard Housing Units Cleared
   D. Number of Remodeling Permits Issued Over $500

The Analysis Process

The analysis work in Shawnee was done primarily by the members of the LBJ team. The Shawnee data was analyzed primarily through three different approaches. To facilitate the use of these three techniques each of the Shawnee indicators was graphed over time to reveal trends.

The first analysis technique consisted of comparing the Shawnee indicator information to national norms and averages for the core indicators. In this way, Shawnee could see how it compared to national averages. The second technique consisted of investigating the trends present in the time-series graphs of each indicator to allow Shawnee to make rough projections for the future. The third technique consisted of attempts to reveal relationships between certain indicators to enable Shawnee to see whether certain indicators are related over time.

The three techniques above were selected because (1) they were relatively simple to carry out, and (2) they did not require the use of advanced components, such as computers. Most of the Shawnee analysis was done at the LBJ School, but it could just as easily have been done in Shawnee had the key CAIP participant in Shawnee had sufficient time. Indicator analysis in Shawnee will not surpass the level reached by the limited efforts of the LBJ team until the community devotes more resources to the project, especially personnel. The analysis by the LBJ team was limited by (1) a lack of sufficient disaggregated information, and (2) a lack of clarity in some of the indicator definitions.

CONCLUSIONS

Results of CAIP in Shawnee

The LBJ team and Mr. Hill compiled a booklet on CAIP in Shawnee in April of 1974. The booklet contained a description of the course of CAIP in Shawnee, a complete collection of the indicator information gathered there, and a brief analysis of this information. Also in April the LBJ team and Mr. Hill persuaded the city to require certain departments of the local government to start collecting their usual information on a trial basis according to planning districts used in the Shawnee Comprehensive Plan (i.e., in a disaggregated manner). The results of CAIP and the current status of the indicator concept in Shawnee were presented to the members of the Shawnee City Commission at a special dinner in May 1974.

The Future of Indicators in Shawnee

As a direct result of the presentation made in mid-May to the city commission, city staff members have noted an eagerness on the part of commission members to use the information. They have been alerted to suggestive trends and divergences from national norms, the causes of which will be investigated in the future. Additionally, the city manager plans to adapt his "Monthly Narrative Report" (a summarization from city department heads of their major activities during the reporting period) to incorporate indicator information on a subcity level, as available. These reports, collated at the end of each budget year, will form the nucleus for a current state-of-the-city report, which, in turn, will be used to update Shawnee's comprehensive plan. It can also be used to monitor progress toward goals expressed in the plan. Finally, as each year passes, the indicator set will be reviewed and new indicators added as they become necessary.

The team feels that, in order to achieve the objectives outlined above, the city will have to devote more resources to the system. Unlike most of the other cities in CAIP, Shawnee does not have a planning department to carry out

an indicator project. Only one individual in Shawnee has a grasp of the indicator concept as used in CAIP. At present his other responsibilities are too great to allow him to devote the time and effort necessary to conduct successful follow-up work on his own.

Should Shawnee decide to devote more manpower to the indicator concept, sufficient groundwork has been laid there to give the project a good chance of success in the future.

MIDLAND, TEXAS

BACKGROUND

The City

Midland is located midway between Fort Worth-Dallas and El Paso along Interstate 20 in West Texas. The city is in the center of the Permian Basin, a major source of oil in the United States.

Already a regional center prior to the discovery of oil, Midland became the center of oil activity and management, making it one of the wealthiest communities in the nation. Midland was ranked by the June 1972 edition of *Sales Management Magazine* as fourth in the nation in per-household income, with an average of $15,000 annually.

Midland is a relatively young city with a median age of 27 years. About 90 percent of the population is white, the rest are Mexican-Americans and blacks. A noticeable factor is Midland's highly mobile population; a large percentage of the people remain in town less than five years.

The major employer is the petroleum industry. About 20 percent of the Midland labor force is directly dependent on the oil industry, and other occupations such as construction, transportation, business, and manufacturing depend indirectly on the petroleum industry.

Municipal Government

The City of Midland operates under the council-city manager form of municipal government. Five council members and a mayor are elected at large. Three council members are elected each year for a two-year term. The council is the chief policymaker in the city and is also responsible for the appointments of city department heads and board members. The chief administrator is the city manager, who is appointed by the council. The mayor and the councilmen are paid only a token salary and, therefore, none of them devotes his time exclusively to the city's affairs.

THE PROJECT: CHRONOLOGY

On October 3-4, 1973, the first conference was held at the LBJ School of Public Affairs, and representatives from the six cities, the states, the federal government, and the LBJ School participated (see Table App. II-9). The Midland Technical Assistance Team met with James Brown, Midland City Manager; George Wolf, Planning and Traffic Department Director; Walter Ashby, Urban Planner; Clyde Emmons, HUD; and Larry Crumpton, Texas Department of Community Affairs. CAIP was discussed and received the immediate approval of the Midland representatives. The selection of indicators to be used by the city was also discussed.

The LBJ team first visited Midland in mid-October 1973. The team was taken on a tour of the city. After meetings with the city manager, a few department heads, and representatives of the Permian Basin COG, a decision was reached to hold a conference in City Hall during which a briefing on CAIP would be given to all Midland's officials and to private sector leadership. The selection of appropriate indicators for Midland was further discussed. The initial desire of the planning department was to collect data on more than 130 indicators. Some data for the indicators was already available in the planning department.

The LBJ team discussed the possibility of narrowing this original list with planning department personnel in early November. A decision was reached to create a second list of 54 "key indicators" to be used by the city's decisionmakers with the larger list to be used exclusively by the planning department. On November 2 a presentation on CAIP was made to the city's top officials and private leadership. The presentation was generally successful with one disappointing factor—none of the elected councilmen attended the meeting. A separate presentation was made later to a representative of the local media.

On November 29-30 a final list of "key indicators" was agreed upon after meetings with most of Midland's city department heads. During the visit, data for the indicators were collected by both the LBJ team and the Midland participants. A decision was reached to complete data collection before the second general conference.

The second CAIP conference was held at the LBJ School during December 11-12. Midland representatives related their experience during the data-collection phase to the conference participants. A preliminary discussion on the analysis phase was held with the Midland representatives.

Data collection was almost completed during the fourth visit to Midland (January 10-11, 1974). For the first time CAIP was introduced to a member of the city council, and he promised his support for the project. Agreement was reached about the general areas of analysis which would be performed for the city. A standardized data-collection and reporting system based on the CAIP concept has already been officially instituted in Midland. The Midland team considered this development the first major achievement of CAIP in town.

During a one-day visit to Midland in mid-March a decision was reached on what specific analysis to perform with the data. A summary of the development of CAIP in Midland was presented for the first time to the city's mayor. His reaction was favorable.

On March 23-24 the third CAIP conference was held at the LBJ School. The six test cities discussed their progress in the project and their plans for analysis. LBJ students discussed various techniques which could be used to present final indicator results.

A final visit was made to Midland in late April. While there, the team reviewed the city's progress toward completing analysis of its indicators and presenting the results of the project to the city council. Plans were also made for the presentation of Midland's results at the final CAIP conference to be held at the LBJ School on May 15-16, 1974.

TABLE APP. II-9

MAJOR PARTICIPANTS BY ORGANIZATION

Local:	Jim Brown, Midland City Manager
	George Wolf, Director of Planning and Traffic
	Walter Ashby, Urban Planner
	Tom Hoot, Traffic Engineer
	Fred Baker, Public Works Director
	Virgil Jones, Tax Department Director
	Melvin Little, Fire Chief
	John Lowe, Utilities Director
	James H. Mailey, Superintendent of Schools
	Fred Poe, Assistant City Manager
	Robert Thompson, Acting Director, Parks and Recreation Department
	Fredrick Tyler, Executive Vice President, Midland Chamber of Commerce
	Harold Wallace, Chief of Police
Regional:	Ernest Crawford, Executive Director, Permian Basin Regional Planning Commission (PBRPC)
	Bill Smith, Assistant Executive Director, PBRPC
	Barbara Culver, County Judge
State:	Larry Crumpton, Deputy Director for Community Development, Texas Department of Community Affairs (TDCA)
	Quintin Woomer, Division of Planning Coordination, Governor's Office
	Howard Savage, TDCA
	James C. Logan, TDCA
Federal:	Clyde Emmons, HUD
	Jerry Terry, HUD
	Frank Barnes, HUD
LBJ School:	Jan Godfrey, Graduate Student
	Abraham Goldberg, Graduate Student
	Jim Riley, Graduate Student

DEVELOPMENT OF CAIP IN MIDLAND

Development of Midland's Indicators

The initial goals for Midland were not basically different from the ones suggested by the research project. The immediate reaction in Midland was one of enthusiasm for the concept and a desire to explore and implement all possible goals, provided that the various concepts would prove themselves to be viable and valid.

From the start two major concepts emerged: (a) a full list of indicators would be developed by the planning department for use in planning and coordination of all city activities; (b) a somewhat smaller list of indicators would

be developed and used as an information system and as an aid in decisionmaking for the city council, the city manager, and possibly the department heads.

No selection criteria were applied to the "full list," because Midland chose to collect data on all the indicators in the "universe of indicators" submitted to them. At a later date, based on actual experience with the data, the planning department would determine which ones of these indicators to keep and which ones to discard. Midland decisionmakers made the selection of the smaller list of "key indicators." This is in keeping with the project design of involving decisionmakers in the development of an information system. The list was, therefore, chosen according to what the top city administrators felt was important for them and for the city council to know about current situations and future trends in Midland.

To achieve the foregoing purposes, two meetings were held. During the first meeting the city manager and the various department heads were informed about CAIP. A few weeks later a series of conferences was held with each department head in the city. During these conferences the indicators pertaining to the particular department were discussed and a consensus reached as to which indicators should be included in the "key" list.

The comments and suggestions of these administrators were extremely helpful and were probably the major factor in the selection of the indicators. The most crucial role was that of the city manager, Mr. Brown, who sat in on all the meetings. His suggestions kept the selection process in focus; that is, the indicators which were finally chosen were of general interest to the city as a whole rather than of particular interest to a single department. The LBJ team served as a resource group, explaining to the participants the various concepts and indicators. In this way, the team tried to help the city to select the best and most useful indicators for its purposes (see Table App. II-10).

The process of selection was smooth in Midland for two reasons: (1) Mr. Brown supported the project from the outset, and his aid opened doors that otherwise might have remained closed; (2) the Midland Planning Department was enthusiastic about the project and promoted it strongly among the other city departments.

TABLE APP. II-10

INDICATORS FOR THE CITY OF MIDLAND

DEMOGRAPHY
1. Population Distribution
2. Population Estimates
3. Population Projection
4. Population Density
5. Dependency Ratio

ECONOMIC BASE
1. Retail Sales Per 1,000 Population
2. New Loans
3. Basic Industries Additions and/or Expansions
4. Commercial Vacancy Rate
5. Deposits in Banks, Savings and Loans, and Credit Unions

EDUCATION
1. Public School Dropout Rate
2. Public School Expenditures Per Pupil
3. Public School Property Tax Base Per Pupil
4. School Enrollment
5. Percent of High School Graduates Pursuing Further Formal Education

EMPLOYMENT OPPORTUNITY
1. Unemployment Rate Expressed as a Percent of Total Labor Force
2. Work Force Breakdown by Category
3. Percent Change in Work Force Distribution

HEALTH
1. Infant Mortality Rate
2. Communicable Disease Index
3. Number of Physicians Per 1,000 Population

HOUSING
1. Net Housing Starts
2. Vacancy Rate

LAND USE AND RECREATION
1. Land Use Distribution
2. Annual Rate of Zoning Changes

PERSONAL INCOME
1. Personal Income Distribution
2. Real Income
3. Average Weekly Earnings
4. Percent of Total Family Income Earned by the Poorest 20 percent of the Families
5. Per Capita Income

POLLUTION
1. Ozone in the Atmosphere
2. Solid-Waste Volume

PUBLIC SAFETY
1. Crime Seriousness Index
2. Class and Efficiency Index of Police Department
3. Fire Response Time
4. Breakdown of Crime by Category

PUBLIC SERVICE DELIVERY
1. City Government Revenues
2. City Government Operating Budget
3. Water Services Complaints
4. Frequency of Sewer Maintenance Calls
5. Number of Garbage Complaints

CIVIC PARTICIPATION
1. Percent of Eligible Voters Voting in Local Elections

TRANSPORTATION
1. Ratio of Miles of Paved Streets to Miles of Unpaved Streets
2. Number of Traffic Accidents Per 1,000 Population

Data-Gathering Process

Midland was able to commit the time of its urban planner to the project as a supervisor/manager. The city has a fairly good data-collection capability but in the past has not standardized its collection districts to make data from one city district compatible with any other. Police and school data were detailed, readily available, and complete. City Hall data were spotty but detailed when available. Data for some years were collected by county by the Permian Basin Regional Planning Commission, but these data were not systematically updated.

The most substantial problem during this phase of the project was the lack of disaggregated information for intracity units. Although city departments often seemed to keep accurate and detailed records, no systematic attempt had been made to compare different parts of the city in terms of city services, housing, or demography. Most of the

data collected were available in one publication or another. Little on-site collection was necessary.

The LBJ School Technical Assistance Team gathered approximately 90 percent of the core data. The City of Midland obtained those data elements not available from publications or reports. The indicators chosen by Midland in addition to the core set were to be collected by the city, but lack of disaggregability seems to have blocked the collection of data from previous years. However, a system has now been implemented to facilitate the collection of future data by census tracts.

Six indicators in Midland could be disaggregated by census tracts: population, housing starts, vacancy rate, work force breakdown, paved streets, and traffic accidents. The usefulness of comparing all of these indicators is severely limited. Most indicators are available for three years, and many are available for ten years or more. Ample opportunity exists for Midland to perform trend analysis of several categories of indicators. For example, data are available for deposits and for retail sales over as many years as desired, as well as for the components of both the public safety and public finance categories. However, the applications of these categories to service delivery evaluation or general management is limited by the lack of disaggregation.

Although the data collected are incomplete in some areas, the fact that most came from published sources indicated a high probability of validity.

The Analysis Process

Midland has determined that, because of constraints imposed by lack of disaggregated data, analysis will generally be confined to the display of rates of change for indicators collectible over time and production of maps showing high and low indicator values for indicators which can be disaggregated.

Other than lack of disaggregable data, there seems to be no serious problem in analyzing indicator data. The planning staff in Midland has had experience with analysis, although the city lacks sophisticated computer hardware. The city staff assigned to the project lacks familiarity with statistical procedures and methods. However, through the experience provided by the current project and staff self-study it is hoped that the expertise developed in statistical methods will be more than sufficient for future phases of the project.

CONCLUSIONS

Results of CAIP in Midland

The planning department of Midland, with the cooperation of the LBJ team, will produce a state-of-the-city report. The report will include all the data collected during the project. It is envisioned that, in addition to a simple report of the data, the report will also include census maps of the city on which the results will be reported visually. The second part of the report will include an analysis of the data collected during the project. The third part will include the conclusions, if any, which were derived from the data and their analysis.

Probably the most significant result of the project is the state-of-the-city report described above. While this report will not be detailed enough to allow decisionmakers to use it for the selection of *specific* solutions to problems or for the *specific* allocation of resources, it will, nevertheless, describe for them succinctly the current situation in Midland. It may also point toward main problem areas which merit more attention.

A second benefit of CAIP has already been accrued. The difficulties encountered during the data-collection phase have indicated to the city a need for standardizing a data-collection and reporting system. Therefore, the planning department has asked all other city departments to collect and report data by census tracts. This will allow the city in the near future to disaggregate and correlate data, something which it has not been able to do during this first year of the project's operation.

Third, the city's planning department has committed itself to collecting yearly data on a large number of indicators to be used for planning and evaluation purposes.

Finally, the city manager, Mr. Brown, has indicated that he will use the data for two purposes. First, it will be used as an introductory information packet on Midland for newcomers to city government. Brown believes that the indicators will include information which took him years to become familiar with. Such information will be extremely valuable for newcomers, who can quickly become familiar with Midland and direct their attention immediately to the major problems of the city. Secondly, Mr. Brown plans to use indicators as an aid in his contacts with the city council. The city manager hopes that, while the data will not give him specific answers to specific questions, it can help him point up the areas in which he feels the council ought to act.

The Future of Indicators in Midland

It is apparent that the indicators will not fulfill one of their major intended uses which is to aid city policymakers—the city council. Because the format of the indicators is quite general (due partly to their limited number), they will not provide assistance in pointing toward specific problems and their solutions. All the indicators can do is highlight current problem areas and perhaps those of the near future and direct the council's interest toward them. However, the indicators will not be a

source of suggestions as to how to solve the problems nor will they indicate how much money is needed to alleviate them.

The Midland team can say with confidence that CAIP has made an impact on the data-collection system used in Midland. CAIP has also received the active support of the city's administration. Therefore, it is likely that an indicator system will be continued in Midland after the contract between HUD and the LBJ School of Public Affairs has terminated. The active involvement and interest shown by the Office of the Governor of Texas and by the Department of Community Affairs of Texas point to a possibility that the State of Texas may internalize the project or parts of it in the future. It is also likely that HUD will also internalize the project and use it for their purposes. These two possibilities could serve as added inducement to Midland to continue to implement an indicator system for the purposes in which they have shown interest.

SAN MARCOS, TEXAS

BACKGROUND

The City

San Marcos, the county seat of Hays County, Texas, is located about 30 miles south of Austin on the San Marcos River. San Marcos' location between the two major employment centers of Austin and San Antonio makes the city an ideal residential location for many commuters employed in those centers. The current population of San Marcos is 21,073, and over 41 percent of its residents are of Spanish heritage. The city serves the surrounding region as a recreational-educational center. The economic base of San Marcos is supported by Southwest Texas State University, San Marcos Baptist Academy, and Aquarena Springs, a local tourist attraction. The Gary Job Corps Training Center, located outside the city limits, also provides the city with additional income.

San Marcos is a home-rule city and participates in the Capitol Area Council of Governments. The city has a council-manager form of government. The city council is elected at large and elects the mayor from its members. The city manager is an appointed professional who serves at the pleasure of the council. While the city council retains all policy-making responsibility, proposals forwarded to the council by the city manager are generally accepted. The city manager's administrative authority derives from his budget-preparation responsibilities and his power to appoint and remove all department heads.

THE PROJECT: CHRONOLOGY

Phase I

The first CAIP conference was held at the LBJ School of Public Affairs on October 3-4, 1973 to introduce the CAIP participants to one another and to the project. At this conference, work sessions with representatives of participating cities were held to begin the process of indicator selection for each city. Representatives of the following organizations were present at the San Marcos work session: the Housing Division of the Texas Department of Community Affairs (TDCA), the San Antonio Area Office of HUD, the LBJ School, and the City of San Marcos (see Table App. II-11). At this session, CAIP was discussed and the initial "shopping list" of indicators produced by CAIP was introduced to the project's participants.

Members of the LBJ School Technical Assistance Team met in San Marcos on October 11 with representatives of the following organizations: the City of San Marcos, the Housing Division of TDCA, the San Antonio Office of HUD, and the San Marcos Urban Renewal Agency. The purpose of this meeting was to generate a list of desirable indicators for San Marcos without consideration of constraints. At this meeting a preliminary list of indicators was chosen, and the possibility of using Urban Renewal Agency personnel as data collectors was explored.

The LBJ School Technical Assistance Team visited the City of San Marcos again on October 18. The team's task was to visit individually with certain city officials, inform them of the scope of the project, and tap their expertise in identifying local data sources and determining data availability for the preliminary list of indicators. Officials from the following departments or organizations were interviewed: Police Department, Public Works Department, Fire Department, Building Inspection, Chamber of Commerce, and the local independent school district. These interviews allowed the LBJ School students to determine the availability of and local sources for many of the indicators on San Marcos' preliminary list.

Early in November the LBJ School Technical Assistance Team met in San Marcos with representatives of the following organizations: the City of San Marcos, the Housing Division of TDCA, the San Marcos Urban Renewal Agency, and the San Antonio Area Office of HUD. The purpose of this meeting was to select the final list of indicators for the San Marcos indicator set, and this was soon done. The LBJ students learned at this meeting that the city manager had decided to hire two planning students from Southwest Texas State University to collect the indicator data rather than to use Urban Renewal Agency personnel.

Phase II

On December 12 the second CAIP conference was held at the LBJ School. Meetings between each participant city and its technical assistance team were held to select methods of analysis which might be applied to each city's set of indicators. The organizations represented at the San Marcos meeting were the Housing Division of TDCA and the San Antonio Office of HUD. At this meeting the City of San Marcos selected a priority list of methods of data analysis that it hoped to apply to its data.

In late January the LBJ School Technical Assistance Team met in San Marcos with representatives of the following organizations: the City of San Marcos, the Housing Division of TDCA, the San Antonio Area Office of HUD, the Capital Area Council of Governments, and the R.L. Polk Company. At this meeting San Marcos city data was presented which had been collected and compiled by the R.L. Polk Company under the direction of TDCA.

Phase III

The third CAIP conference was held at the LBJ School on March 23-24 to close out the phase during which city indicator data was analyzed and to share ideas as to how cities might prepare their information for presentation to the city councils. Subsequent contacts with San Marcos were informal, because most of the work requiring technical assistance had been completed. The project was brought to an end with the fourth CAIP conference at the LBJ School on May 15-16.

DEVELOPMENT OF CAIP IN SAN MARCOS

Development of San Marcos' Indicators

The initial goal for CAIP in San Marcos, as expressed by the San Marcos City Manager, was the development of a set of statistics which would be specifically related to city services. The development of such a set of indicators would provide the city manager with a more rational basis for making operating decisions and developing policy proposals for the San Marcos City Council.

From this initial goal evolved the major criteria which were used in the selection of San Marcos indicators. The criteria, which were more implicit than explicit in the process, were as follows: (1) Is the indicator directly related to the delivery or receipt of municipal services? (2) If it is not directly related to the delivery of city services, is the indicator essential to a more complete understanding of the city and its services? (3) Are the data for this indicator readily available? The criteria were applied to each indicator in the list to produce the final list of indicators for San Marcos (see Table App. II-12).

The two major indicator selection meetings occurred in San Marcos on October 11 and November 6, 1973. At these meetings the city manager had the greatest influence among the participants upon the composition of the final set of indicators which were chosen. His selections were concentrated in indicator categories which were closely related to city services and city decisions (e.g., land use and zoning). The LBJ team was also able to influence the process of selection when they felt that desirable major indicator areas were being excluded. The team particularly urged the city manager to select certain indicators which were not directly applicable to his administrative domain but would provide a more comprehensive picture of the city in concert with the indicators he had chosen.

Two major factors served to inhibit the selection process. The first was a lack of understanding of the project on the part of state and HUD representatives initially assigned to the project. The second was that the state representative was particularly concerned with the technical and conceptual imperfections of CAIP. After the November 6th meeting in San Marcos, these problems ceased to exist.

TABLE APP. II-11

MAJOR PARTICIPANTS BY ORGANIZATION

Local:	James Baugh, San Marcos City Manager John Sparks, San Marcos Public Information Officer Cliff Roberts, City of San Marcos Kathi Williams, City of San Marcos
State:	Larry Crumpton, Deputy Director for Community Development, TDCA James Logan, Housing Division, TDCA Howard Savage, Housing Division, TDCA
Federal:	Doyle Clark, San Antonio Area Office of HUD Gene Kachtik, San Antonio Area Office of HUD
LBJ School:	Phillip Blackerby, Graduate Student Cindy Sesler, Graduate Student Jan Hart, Graduate Student

Data-Gathering Process

As is typical of smaller cities, San Marcos has few resources committed to data-gathering activities. The city staff is small and unaccustomed to statistical techniques employed by most large urban areas. Because of its participation in CAIP, however, San Marcos hired two part-time temporary staff members to collect, analyze, and report data to the city manager. Most of the indicator data was gathered by these two employees, Cliff Roberts and Kathi Williams, with little assistance from the LBJ School Technical Assistance Team.

Before this project, the city had never conducted a concentrated and coordinated indicator study. Although other organizations in the city, particularly the Chamber of Commerce and Southwest Texas State University, had conducted sporadic empirical studies of various social and economic sectors of San Marcos, these studies were usually purposefully oriented and were not concerned with collecting data on a continuing basis. Data for San Marcos were thus of necessity assembled from diverse public, private, local, state, and federal sources.

Naturally, many problems were encountered which affected the final set of indicator data. Some indicators which had been initially chosen were simply not available. They had never been collected by the city and would have required too much time to assemble. A few indicators were available only sporadically over time and a few only for the current year.

Disaggregability was a particular problem for San Marcos, which has no census tract divisions since it is not part of an SMSA or any locally-determined subdivisions. Cliff Roberts was able to disaggregate much information, particularly data taken from city records to which he had access. He chose to disaggregate the data on the basis of voting precincts. However, there was much raw data to which he did not have ready access and which he, therefore, could not disaggregate. The disaggregation problem was exacerbated as Polk data was made available to the city; the Polk data is reported not only as city totals but also in subcity units (called Polk enumeration districts) which are not congruent with precinct boundaries.

The major problem associated with the collection phase was the necessary dependence upon individuals and agencies for data assembly. Often key individuals would fall short of expectations in data generation because of external interruptions, or because data were reported in inappropriate forms. In one instance a local agency would cooperate only following a direct request from the mayor.

TABLE APP. II-12

INDICATORS FOR THE CITY OF SAN MARCOS

DEMOGRAPHY
1. Population Totals and Percentage Categorical Distributions
2. Population Density

ECONOMIC BASE
1. Retail Sales Per 1,000 Population
2. Deposits in Banks, Credit Unions, and Savings and Loans
3. New Loans (dollar amount per 1,000 population)
4. Additions and/or Expansions to Basic Industry

EMPLOYMENT
1. Percent of Labor Force Unemployed
2. Percent of Work Force in Various Job Categories

HEALTH
1. Disease Rates

HOUSING
1. Housing Starts as a Proportion of Total Housing Stock
2. Subsidized Housing Units as a Proportion of the Housing Stock
3. Vacancy and Abandonment Rates
4. Median Assessed Value of Single Family Units

LAND USE AND RECREATION
1. Percent Total Annual Zoning Changes by Neighborhood
2. Percent of Total Annual Zoning Change Requests by Neighborhood
3. Acres Per 1,000 Population of Developed Public Parkland
4. Surface Acres Per 1,000 Population of Publicly-Available Recreationally-Oriented Water

PERSONAL INCOME
1. Median Income of Families and Unrelated Individuals
2. Gini Coefficient
3. Percent of Families in Lowest Income Quintile

POLLUTION
1. BOD Levels
2. Storm and Sewer Capacity and Number of Gallons of Overflow of Unprocessed Rain and Sewer Water
3. Solid-Waste Collection Volume

PUBLIC SAFETY/JUSTICE
1. Crime Rates by Category
2. Class and Efficiency Index of Police Department
3. Annual Number of Fire Calls Compared to the Fire Control Budget

PUBLIC FINANCE
1. City Operating Budget Per Capita by Category
2. Percent Legally-Collectible Property Tax Delinquent
3. Percent of City Budget Attributed to State and Federal Contributions

PUBLIC SERVICE DELIVERY
1. Number of Water-System Related Complaints Per 1,000 Population
2. Percent of City Area Served by Sewer System
3. Number of Service Calls Requesting Repair of Mainline Per 1,000 Population
4. Number of Garbage Pick-up Related Complaints Per 1,000 Population

CIVIC PARTICIPATION
1. Percent of Eligible Voters Registered
2. Percent of Registered Voters Voting in Recent Local Elections
3. Average Number of Citizens Attending City Council Meetings

TRANSPORTATION
1. Number of Traffic Accidents Per 1,000 Population
2. Miles of Unpaved to Miles of Paved Streets
3. Traffic Counts Per Lane at Selected Locations

Analysis Process

Several types of analyses were applicable to the data collected, although the time available to perform those analyses was limited. It was, therefore, agreed at the second CAIP conference that the City of San Marcos would use a priority list of desired analyses which would yield the most information possible within the limited time frame.

The priority list of desired analyses was as follows:

(1) Static, cross-sectional analysis of indicator values for the city and subcity units.

(2) Comparison analysis:

(a) against national and state norms, standards, or averages;

(b) against data for the preceeding year.

(3) Trend analysis.

It was further agreed that correlation and regression analysis might be performed if time permitted and if the data were adequate, but only as a fourth priority. Additionally, cross tabulations of data was to be performed during all priority stages.

The analysis phase was also conducted by Cliff Roberts and Kathi Williams of the city staff. Howard Savage of the Housing Division of TDCA was instrumental in the initial

organizational stages in demonstrating what methodologies were possible and appropriate and in offering advice on priority setting.

The most difficult part of the analysis phase was getting started. Perhaps this was a result of the sharp distinctions drawn between the various phases of the project. The last of the indicators to be collected were the most difficult and time consuming, so that the start of the analysis phase was delayed.

CONCLUSIONS

Results of CAIP in San Marcos

As of this writing, the project is only partially complete. Due to the limited staff resources that the city has been able to supply throughout and the uncertain tenure of the staff member who handled the project, not as much has been accomplished as might have been hoped. It can be reported, however, that some effort has been expended in building a "Capital Improvements Data Program" for the city, based in large measure on indicator information. Some of the data has already been presented to the city council during consideration of a bond issue for street improvements.

The Future of Indicators in San Marcos

The city manager of San Marcos plans to use indicators as a tool to increase his ability to make city service and capital improvement decisions and recommendations to the city council. In addition, data reporting forms have been prepared for distribution to city department heads in anticipation of the time when indicators can form the basis for a kind of city management information system. A city staff member is of the opinion that the upcoming San Marcos city goals program will rely heavily on indicator data.

Even though the project is moving slowly, its completion is not in doubt. As for the next cycle of data collection, it is hoped that the coming inclusion of San Marcos in the Austin SMSA will facilitate efforts to update and increase the amount of indicator information available.

APPENDIX III

MODEL SET OF INDICATORS

TABLE OF CONTENTS

POPULATION DISTRIBUTIONS

Descriptive Value

It is vital in any indicator set that population data are available, if only for use in normalizing other variables. The data can be grouped into categories relating to age, race, and subcity areas (e.g., census tracts).

Age is usually determined in completed years as of the time of enumeration from replies to a census question on month and year of birth.

The population is divided into three major groups on the basis of race: White, Negro, and Other. The 1960 and 1970 censuses obtained the information through self-enumeration; thus, the data represent essentially self-classification by people according to the race with which they identify themselves. Persons of Mexican or Puerto Rican ancestry who did not identify themselves as of a race other than white were classified as white. In 1970 the father's race was used for persons of mixed parentage who were in doubt as to their classification. In 1960 persons who reported mixed parentage of white and any other race were classified according to the father's race.

The category "native" comprises persons born in the United States, the Commonwealth of Puerto Rico, an outlying area of the United States, or at sea. It also includes persons born in a foreign country who have at least one parent born in the United States. Persons not having any of the foregoing qualifications are classified as foreign born.

The 1970 census obtained data on origin through self-enumeration of the person's origin or descent. Previously, ethnic origin was inferred from information on place of birth, country of origin, mother tongue, surname, and similar facts.

Method of Calculation

Not applicable.

Data Source, Frequency of Availability, and Levels of Disaggregation

Census reports
Decennial
Census tract and below

Notes

In CAIP, population distribution was broken down into three categories: (1) race–percent of the population white and non-white, (2) sex–percent of the population male and female, and (3) age–percent of the population in the following groups:

Under 5
5 to 17
18 to 64
65 and over.

Just as it is important to have sub-categories of population data, it is also important to have current data. Because the census is taken only at ten-year intervals, current data are difficult to acquire; estimates must be made. Three estimation techniques are discussed below.

POPULATION ESTIMATES: INTERPOLATION

Descriptive Value

Population estimates are of three types: intercensal estimates, postcensal estimates, and projections. The latter two are discussed below.

Intercensal estimates, which refer to years between census years and which take the results of the two censuses into account, are important for many analytical purposes. For example, although the census may show that the population of a city increased by 50 percent during the decade, it would be important to know that growth had slowed to almost zero by the end of the period. Or if one wanted to compute any indicator on a per capita basis for an intercensal year, it would be necessary to have a population estimate for that year.

Interpolation is the technique used to make intercensal population estimates. Two methods, the arithmetic and the geometric, are generally relied upon for purposes of interpolation, and there appears to be little need for additional techniques unless the intercensal period is very long. If the rate of population increase is low and if the intercensal period is short, it makes very little difference whether the arithmetic or the geometric method of interpolation is used.

Method of Calculation

The arithmetic method assumes that the annual increment remains constant or that the population increases or decreases by a given amount during each of the years in the period between two censuses. One merely has to determine the total amount of change, divide this change into as many equal parts as there are years in the intercensal period, and attribute one of these parts to each of the years.

The geometric method of interpolation rests upon the assumption that the rate of population growth is constant throughout the period involved. Unless the rate of growth is declining, it generally is to be preferred over the arithmetic method.

Data Source, Frequency of Availability, and Levels of Disaggregation

Census reports
Decennial
Census tract and below

Notes

The following references may be useful for studying available demographic methods:

The Methods and Materials of Demography (1971) U.S. Bureau of Census, Government Printing Office (October).

Barclay, George W. (1958) *Techniques of Population Analysis,* New York: Wiley.

Jaffe, A.J. (1951) *Handbook of Statistical Methods for Demographers,* Washington: U.S. Bureau of Census.

United Nations (1956) *Methods for Population Projections by Sex and Age,* Population Studies No. 25, New York.

———(1967) *Methods of Estimating Basic Demographic Measures from Incomplete Data,* Population Studies No. 42.

If there is reason to believe that the annual growth rate or the absolute annual increase in population were not constant during the intercensal period, and if this is important to the analysis being performed with the intercensal estimates, then the foregoing interpolation techniques should not be used. Other techniques, described in the preceding publications, are available.

POPULATION ESTIMATES: DIRECTORY COUNT

Descriptive Value

A city directory may be used to estimate directly the adult population of many cities in the United States; these estimates may then be supplemented with estimates of the child population obtained in another manner.

City directories customarily list alphabetically, according to surnames, all persons 21 years old and over and employed persons 18 to 20 years old residing in a given city or a city and its surrounding area. The method and quality of directory enumeration vary from area to area and from year to year; hence, before a city directory is used for estimating population, the directory company should be consulted regarding these matters.

Method of Calculation

The general procedure is to count the names listed in the directory. City directories are compiled by private firms on the basis of house-to-house enumeration and are available on a current basis for most large cities. Because a complete counting job is quite laborious and costly, sampling methods may be used. The estimating procedure may be improved by modifying the sampling ratio to include an adjustment factor representing the ratio of the census count of the covered population to the directory count for the census year.

Data Source, Frequency of Availability, and Levels of Disaggregation

City Directory (published by R.L. Polk & Co. or other city directory firm)
Annual
Citywide

POPULATION PROJECTION: COHORT FERTILITY

Descriptive Value

An approach making use of data on the fertility history of "birth cohorts" of women (that is, women born in the same specific years) as they progress through the childbearing years can be employed to project population data. Cohort fertility, as these data are usually designated, describes the cumulative fertility of specific birth cohorts of women to each successive age, thus reflecting the fertility of each group of women over the several calendar years covered by the cumulative rate.

Method of Calculation

The "completed cohort fertility rate" is the number of children born to a cohort of 1,000 women upon completion of childbearing. The ultimate rate indicates the level to be attained by cohorts of women who have not yet entered the childbearing ages (defined as ages 14 through 49). Projected fertility rates are consistent with the ultimate rates, but the projected rates are affected by the actual experience of the cohorts to date.

For further information, see references listed under "Population Estimates: Interpolation," above.

Data Source, Frequency of Availability, and Levels of Disaggregation

Census data for age-specific population distribution—decennial
County data on births—annual
Citywide projection

Notes

The cohort-fertility method is merely one example of numerous ways to project population growth. A broad-scale projection would include mortality and immigration rates as well as the fertility rate of the area.

RETAIL SALES PER 1,000 POPULATION

Descriptive Value

There is a common understanding in all data sources about the definition of retail sales given here. This

definition excludes sales of services. The indicator is proposed as a means of reflecting the ability of the citizens in the community to consume the products offered by retail merchants.

Method of Calculation

$$\frac{\text{Total retail sales}}{\text{Community population}} \times 1{,}000$$

Data Source, Frequency of Availability, and Levels of Disaggregation

The most frequent source of information is *Sales Management Magazine,* which is a monthly publication. Information on a particular community appears there at set intervals. The main problem is that the magazine has information only for counties and SMSAs. Two other sources are the U.S. Census of Business and the U.S. Census of Wholesale and Retail Sales. They appear every five years. State industrial commissions, or their equivalents, and local chambers of commerce should also have such information available.

Notes

Results should be adjusted to the cost of living index whenever possible. If results are abnormally high or low, attention should be given to the geographic location of the community for a possible explanation; if a town has a very high retail sales rate but is a regional center, some portion of the sales should be considered as contributions from neighboring towns' buyers.

NEW COMMERCIAL LOANS PER 1,000 POPULATION

Descriptive Value

The dollar amount of loans made during a period of one year to commercial and industrial clients per 1,000 population is a good indicator of the strength of the business activity in the area. Usually, strong loan activity indicates expansion of local industries and introduction of new ones into the community. An effort should be made to collect data from all lending institutions in the community.

Method of Calculation

$$\frac{\text{New loans in one-year period}}{\text{Community population}} \times 1{,}000$$

Data Source, Frequency of Availability, and Levels of Disaggregation

While there are quite a few sources which give information on the various activities of lending institutions and their financial situations, none of these sources gives specific information for new loans for commercial customers. Therefore, such information should be requested directly from the local lending institutions. Some of them do not keep separate records for commercial and personal loans; but, for future use, an effort should be made to persuade the local lending institutions to do so.

Notes

We chose to limit ourselves only to *new* loans to get a better indicator of current economic activity. Using total loans outstanding will cloud the picture because previous years' loans will also be recorded and the indicator will not add to the understanding of present business activities in the community.

ADDITIONS AND/OR EXPANSIONS OF BASIC INDUSTRIES

Descriptive Value

Basic industries are defined here to include manufacturing of durable and non-durable goods and the production of minerals and natural resources, tourism, colleges and universities, and government employment.

This indicator will record the relative expansion or contraction of basic industries when measured through time. It will indicate the economic well-being of the community because it records employment and payroll considerations.

Method of Calculation

It is recommended that additions or expansions be measured in terms of the dollar value of new salaries and the number of new employees added during the previous year.

Data Source, Frequency of Availability, and Levels of Disaggregation

Annual Survey of Manufacturers: available for SMSAs only
Census of Manufacturers: available every five years
Local chamber of commerce
Data can be collected only on a citywide basis.

Notes

The closing or opening of a major basic industry in the community may cause wide fluctuation in the data recorded. Therefore, indicators will be of greatest service when measured over time so that unusual fluctuations can be averaged out. While data on manufacturing can, to some extent, be taken from the census, it will be harder to obtain

it for such industries as government or tourism. Therefore the best source will be the local chamber of commerce. The chamber can be asked to keep tabs on all new employment and possibly also on salaries. However, data on salaries may be hard to obtain and in such cases efforts should be made to find the national or state salary averages for these industries.

PUBLIC SCHOOL EXPENDITURES PER PUPIL

Descriptive Value

Public school expenditures per pupil is a measure of financial input to education. These figures become more meaningful when compared to state and national averages and when examined over time. Though a crude measure, this indicator taken in a time series and examined along with measures of achievement might aid in some form of input/output analysis.

Method of Calculation

$$\frac{\text{Total school expenditures (excluding capital expenditures)}}{\text{Average Daily Attendance}}$$

Data Source, Frequency of Availability, and Levels of Disaggregation

Local school district business manager
Annual
Might be available on a school-by-school basis

Notes

To assure use of consistent data, the figures used in these calculations should be those reported to the state education agency. This precaution is warranted because the Average Daily Attendance figures vary, especially between the beginning of the year and the end of the year.

PUBLIC SCHOOL TAX BASE PER PUPIL

Descriptive Value

Tax base here refers to property tax base. This figure should provide an indication of the potential local resource base available to school financing.

Method of Calculation

$$\frac{\text{Total adjusted assessed valuation}}{\text{Average Daily Attendance}}$$

Data Source, Frequency of Availability, and Levels of Disaggregation

Local school district; tax office (city or county)
Annual

Notes

Total adjusted assessed valuation can be generated by dividing the total assessed valuation by the taxing unit's assessment ratio. For example, if the total assessed valuation is $1 million, and the property was assessed at a rate of 10 percent of fair market value, the total *adjusted* assessed valuation is

$$\$1{,}000{,}000/0.10 = \$10{,}000{,}000.$$

SCHOOL ENROLLMENT

Descriptive Value

In any attempt to assess the current status of a community's educational effort, it is crucial that the character of student enrollment be known. Examined over time, for instance, this indicator may allow inferences about the potential drain on public versus private educational resources. It is recommended that four figures (with appropriate comparisons) be derived: total public, total private, percent white public, percent white private.

Method of Calculation

Sample for figuring percentages:

$$\frac{\text{Total public white enrollment}}{\text{Total public enrollment}} \times 100 = \%\ \text{white public}$$

Data Source, Frequency of Availability, and Levels of Disaggregation

Local school district administrators
Local private school administrators
Annual
If available by school, data should be broken down to this level; otherwise, the comparisons recommended above pertain.

Notes

Use Average Daily Attendance figures for enrollment (see also Notes, School Expenditures).

PUBLIC SCHOOL DROPOUT RATE

Descriptive Value

The public school dropout rate is the percentage of students who discontinue public school during a given period of time.

The dropout rate reflects the degree of importance the student places on the school to influence his present and future life. The higher the dropout rate, the less influence the school, in comparison with other factors, has over the student's conception of the school as an essential component of his preparation for earning a living. A student may drop out for many reasons. The school, as presently structured, may or may not have control over these reasons (a student drops out to help support his family, for example); but the community as a whole may have influence over the dropouts and could investigate probable causes if dropout rates are alarming.

School-by-school and neighborhood time-series analyses should indicate specific areas where dropout rates are a particular problem or are increasing.

Method of Calculation

$$\frac{\text{Fall enrollments for 9th, 10th, 11th, and 12th grades less fall enrollments of same class one year later}}{\text{Fall enrollments for grade level}} \times 100$$

Note that the accumulation of dropout rates for grade levels 9, 10, 11, and 12 yields an aggregate dropout rate.

Data Source, Frequency of Availability, and Levels of Disaggregation

Local school board
Annual
Citywide or on a school-by-school basis

Notes

This may be called a "crude dropout rate" in that it does not account for transfers into or out of the system. The city may wish to remove the transfer effects for a more refined calculation of dropout rate. To do so, the transfers out during the year should be subtracted from the beginning enrollments in the numerator and denominator, and the transfers in should be subtracted from the following year's (or years') enrollment figure in the numerator. Some schools may be able to keep accurate figures on actual dropouts. These figures are the most accurate and should be used if available.

EDUCATION CONTINUANCE

Descriptive Value

The desire and ability of students to continue their education beyond high school shows a motivation or ambition to prepare more effectively for a job or career. The number of students doing so reflects, in part, the encouragement and preparation given by the school system to the student. Obviously, other factors, such as family income, status, or occupation also play a significant role in motivating and enabling a student to continue his education.

School-by-school and neighborhood time-series analyses could be made, as well as comparisons with state or national averages.

Method of Calculation

1. Percent of public high school seniors going to college—includes students enrolling in four-year bachelor's degree programs or associate degree programs which are acceptable toward bachelor's degree programs

$$\frac{\text{Number seniors accepted in college or junior college programs}}{\text{Number of graduating seniors}} \times 100$$

2. Percent of public high school seniors continuing their education in programs other than college degree programs—includes students enrolling in non-degree vocational programs at junior or community colleges or proprietary schools

$$\frac{\text{Number seniors accepted in programs other than degree programs}}{\text{Number of graduating seniors}} \times 100$$

Data Source, Frequency of Availability, and Levels of Disaggregation

Local school system
Annual
Citywide or on a school-by-school basis

UNEMPLOYMENT RATE EXPRESSED AS A PERCENT OF TOTAL LABOR FORCE

Descriptive Value

The unemployment rate is the percentage of the labor force which is unemployed. The labor force for any governmental unit (i.e., city, county, or state) consists of all those who reside within the geographical boundaries of the unit, who are at least 16 years of age, and who are either employed or have actively sought employment within the last four weeks. The labor force is not to be confused with the work force. The work force consists of all those who work or are seeking employment within the geographical unit within a four-week period regardless of residence.

The unemployment rate may be used as an overall measure of the economic well-being in that it gives an indication of the economic stability of a community. As the rate increases or decreases over time, it can be compared with other cities on a national basis to examine

the effect of such national economic forces as inflation, changing interest rates, etc.

Method of Calculation

No calculation required.

Data Source, Frequency of Availability, and Levels of Disaggregation

Local office of the state employment commission; area council of governments
Monthly (estimates), verified annually
City or countywide

Notes

Employment offices publish monthly *estimates* which are not verified until after the reporting year has ended.

State employment commission unemployment data are disaggregated by county within SMSA region. In using this information, the rates for an individual city must be estimated from the less-detailed county or area reports.

The Bureau of Labor Statistics bases its unemployment figures on the labor force. Some states calculate their figures from the work force. Care should be taken to base indicator definition on the labor force to allow for comparison with national unemployment rate.

Unemployment figures for years 1967 through 1973 have been adjusted to reflect the labor force basis. Prior to 1967, the figures are based on work force.

INFANT MORTALITY RATE

Descriptive Value

The infant mortality rate is the number of deaths of children under one year of age per 1,000 live births.

There is widespread agreement among health officials that the infant mortality rate of an area is a faithful indication of general health conditions there. Observing this indicator over time offers one of the better descriptions of change in general health among the population of the community.

Method of Calculation

No calculation required.

Data Source, Frequency of Availability, and Levels of Disaggregation

County health department, state health department
Annual
Citywide or subcity

Notes

A refined indicator would be neonatal deaths—deaths of infants between the ages of 28 days and one year per 1,000 population.

COMMUNICABLE DISEASE INDEX

Descriptive Value

This index is a composite of the number of cases of VD, TB, and hepatitis reported per 1,000 population.

The Bexar County Health Department (San Antonio, Texas) has determined through statistical analysis that the incidences of TB, hepatitis, and VD exhibit the most statistically independent behavior of the group of diseases regularly reported. Observing this indicator over time offers one the better descriptions of change in general health among the population of the community.

Method of Calculation

$$\frac{\text{Incidence of hepatitis per 1,000 population + incidence of TB per 1,000 population + incidence of VD per 1,000 population}}{3}$$

Data Source, Frequency of Availability, and Levels of Disaggregation

State health department
County health department
Annual
City

Notes

Cases of VD, TB, and hepatitis are voluntarily reported by doctors in the county health department's jurisdiction. The number of doctors reporting to the county health department may vary from year to year. Users of this indicator should note the variation in the number of doctors reporting this year from last and make adjustments before interpreting the indicator.

NUMBER OF PHYSICIANS PER 1,000 POPULATION

Descriptive Value

This measure indicates the availability of physicians to the population. It will show where the city stands in relation to other cities and states, but the indicator does not show whether all those who need the attention of a doctor are getting it.

Method of Calculation

$$\frac{\text{Total number of physicians}}{\text{Population}} \times 1000$$

The city may wish to break down the classification of physicians into specialty areas. However, we recommend an initial indicator of total physicians per 1,000 population for comparative purposes.

Data Sources, Frequency of Availability, and Levels of Disaggregation

Yellow pages of phonebook
Local AMA chapter
Annual
Citywide or subcity

NET HOUSING STARTS

Descriptive Value

Net housing starts comprise the number of housing units on which construction began minus the number of units demolished during the reporting period (expressed as a percentage of a city's total housing stock). This is an indicator whose value can be increased when used in conjunction with other indicators. Properly applied, it can provide information on neighborhood change, population change, the need for adjustments in city services, and so on.

Method of Calculation

$$\frac{\text{Number of housing units started - Number of housing units demolished}}{\text{Total number of housing units}} \times 100$$

Data Source, Frequency of Availability, and Levels of Disaggregation

Data are available on a continuous basis from city building permits but may be given only by address. Total number of housing units is available from the 1970 census. The net housing starts for subsequent years are added to get the total housing for those years.

Notes

The definition does not include mobile homes or houses that might be moved in (or out).

Data should be collected on a cumulative basis.

SUBSIDIZED HOUSING

Descriptive Value

This indicator is the percentage of the total housing units which are subsidized. When disaggregated by neighborhood or other division such as census tract, the subsidized housing indicator describes the concentration of this type of housing.

Method of Calculation

$$\frac{\text{Number of subsidized units}}{\text{Total number of units}} \times 100$$

Data Source, Frequency of Availability, and Levels of Disaggregation

HUD area office or the local housing authority
Annual
Citywide or subcity

Notes

This indicator does not include payments to individuals to purchase or rent private housing. Thus, VA and FHA loans are not included.

VACANCY RATE

Descriptive Value

This indicator is the percentage of housing units in an area which are vacant. Vacancies can indicate any or all of a number of conditions: deterioration, economic decline, population movement, opportunity for alternate housing, anticipated or actual change in the character of a neighborhood, and so on.

Method of Calculation

$$\frac{\text{Number of vacant units}}{\text{Total number of housing units in area}} \times 100$$

Data Source, Frequency of Availability, and Levels of Disaggregation

The U.S. Postal Service. Mail carriers keep detailed records of number and frequency of mail deliveries to housing units along their routes. (Postal delivery routes will not necessarily coincide with other subcity units, however.)

Real estate agents are also a source of vacancy rates. Other possible sources are electric utility companies or a survey such as the R.L. Polk & Co. survey.

Annual or more frequently
Citywide or subcity

Notes

The source used will affect the definition of a "vacant house."

ZONING DISTRIBUTION

Descriptive Value

This distribution provides a picture of zoning for each of the following categories:

1. Single-family residential
2. Multi-family residential
3. Commercial
4. Industrial
5. Open space
6. Other

These percentages are particularly useful at the intracity, subcity geographic unit level, since they will provide a picture of zoning by neighborhood.

Method of Calculation

Percent zoned per category =

$$\frac{\text{Total land zoned per category}}{\text{Total amount of land}} \times 100$$

Data Source, Frequency of Availability, and Levels of Disaggregation

City planning department
Annual
Citywide or subcity

Notes

Cities should use their own zoning definitions in calculating this indicator for the first four categories. Open space is a category which should contain land zoned for purposes other than residential, commercial, or industrial development.

With respect to intercity comparisons, it must be remembered that variations may exist among various cities' definitions of zoning classifications.

PERCENT OF LAND AREA REQUESTED FOR REZONING

Descriptive Value

All cities with zoning ordinances classify land use by various types, including commercial, industrial, single-family residential, multi-family residential, etc. Followed over time, the use of the measure will indicate a rise or decline in requests for change (whether or not they are subsequently honored) and will show which neighborhoods exhibit the greatest probabilities for what kinds of change, by type of zoning change requested.

Method of Calculation

$$\frac{\text{Number of acres requested for rezoning}}{\text{Number of acres in subcity unit}} \times 100$$

Data Source, Frequency of Availability, and Levels of Disaggregation

City planning department
Annual
Census tracts or other subcity district

HOUSEHOLD INCOME DISTRIBUTION

Descriptive Value

This indicator goes a long way toward generating a comprehensive income picture of a community. It also provides valuable raw data useful for income analyses. The distribution lists the number and percent of families or households whose incomes fall within the following categories:

Less than $3,000
$3,000 to $4,999
$5,000 to $7,999
$8,000 to $9,999
$10,000 to $14,999
$15,000 and over

For some communities, finer breakdowns might be available and might contribute to the accuracy of the analysis.

Method of Calculation

$$\text{Percent households in first category} = \frac{\text{Number families with incomes below \$3,000}}{\text{Total number families}} \times 100$$

Other percentages can be calculated in a similar way.

Data Source, Frequency of Availability, and Levels of Disaggregation

The two prime sources for these data are the Census (available decennially at the citywide level for non-SMSA regions and at the census tract level and below for SMSAs) and *Sales Management Magazine*'s "Survey of Buying Power" (available annually on a county level or on a city level within SMSA). An alternate data source, not used in CAIP, is the *Marketing Economics Guide* (1973-74 and 1974-75), published by Marketing Economics Inc., New York.

Notes

The definition of the term "household income" differs depending upon the data source used. Because the data were available annually, CAIP employed *Sales Management* figures. The definition given is for "net cash household income," all money income remaining to a household after payment of all *income* taxes.

REAL INCOME

Descriptive Value

For time-series data, median income is adjusted so that price changes are taken into consideration. This indicator, then, shows changes in income exclusive of the effects of inflation.

Method of Calculation

$$\text{Real income} = \frac{\text{Median Income}}{\text{Consumer Price Index}} \times 100$$

Data Source, Frequency of Availability, and Levels of Disaggregation

The Consumer Price Index is found in any monthly edition of *Economic Indicators*, prepared for the Joint Economic Advisors, U.S.G.P.O., Washington. Median income data are found in decennial census reports or *Sales Management Magazine,* "Survey of Buying Power."
Economic Advisors, U.S. G.P.O., Washington. Median income data are found in decennial census reports, or *Sales Management Magazine*, "Survey of Buying Power."

Notes

As pointed out in the income distribution indicator description above, CAIP relied upon data from *Sales Management Magazine*. Before 1972, this source defined median income for households in terms of "effective buying income," or all income remaining after payment of *all taxes* with the *addition* of income imputed to households as a result of agricultural production, rents, and so on. Beginning in 1972, however, median income for households was defined by *Sales Management* in terms of "net cash income," the same as income distribution data. This means that to construct a consistently defined time-series for real income (which of course relies on median household income), the median for years prior to 1972 must be calculated from the consistently defined distribution data. For this purpose, the reader is referred to:

U.S. BUREAU OF THE CENSUS (1966) *Income Distribution in the United States* (monograph number A1960, by Herman P. Miller) Washington, D.C.: U.S. Government Printing Office.

It is thought that local prices vary over time in proportion to national price changes, and, because locally-based consumer price indices are not always available, the national Consumer Price Index can be used with local income data. Where local price indices are available, however, they should be used.

OZONE

Descriptive Value

Ozone is an early and continuing product of the photochemical smog reaction, and its presence assures the continuation of the oxidizing process. It is used as a measure of the oxidant level of the atmosphere.

Ozone by itself, a colorless, pungent gas, can cause coughing, choking, headache, and severe fatigue; it can also damage plants, crack rubber, deteriorate fabric, and fade colors.

Ozone (measured in micrograms per cubic meter, mg/m^3) is an indirect measure of the level of hydrocarbons because of its part in the oxidizing process. Hydrocarbons accrue primarily from the combustion of fuels used in transportation and are difficult to measure directly.

Method of Calculation

Not applicable.

Data Source, Frequency of Availability, and Levels of Disaggregation

State air pollution agency or city department where city keeps data
Usually monthly
Citywide

FIVE-DAY BIOCHEMICAL OXYGEN DEMAND (BOD) LEVEL

Descriptive Value

If collected for receiving body of water, this indicator shows the amount of oxygen in water needed to biodegrade wastes present over a five-day period. This is an indirect measure of the life support capacity of a body of water. If measured in conjunction with the dissolved oxygen level (DO) of the water, fish kills may be predicted or estimated. BOD also gives an indication of total pollution levels if collected for plant outfall or contribution to pollution by plant life.

Method of Calculation

$$\frac{\text{Five-Day BOD (Measured in Milligrams)}}{\text{Average Flow Rate from Processing Plant (Measured in Liters per Day)}}$$

Data Source, Frequency of Availability, and Levels of Disaggregation

State Pollution Control Agency (data are kept for all river basins, by segments, and reservoirs)
Monthly
Point Sources by Processing Plant

OXYGEN SATURATION LEVELS

Descriptive Value

This indicator measures the relative saturation of the water with oxygen (for a given temperature). Saturation level is a more comparable indicator than dissolved oxygen (DO) but may be calculated from DO and temperature data. Temperature data is necessary since 100 percent saturation may vary from 7 to 13 milligrams per liter DO. Combined with BOD, this indicator can describe the life support capacity of the water. From 70 to 100 percent saturation is generally acceptable. Values up to 250 percent or greater indicate a different problem–high algal growth, high phosphates, and nutrients; generally a product of sewage and urban runoff. Algae, in photosynthesis, produce O_2 during light hours which cannot escape as fast as it is produced. Another measure prior to sunrise should show *low* DO. If collected only for processing plant outfall, the data give an indication of general contribution to oxygen levels of receiving waters.

Method of Calculation

$$\frac{\text{DO (measured)}}{\text{DO (saturation)}}$$

DO_m is calculated in the field or lab in mg/l (milligrams per liter.

DO_s may be calculated using standard engineering tables using temperature data (DO_s is a function of temperature.)

Data Source, Frequency of Availability, and Levels of Disaggregation

State water pollution control agency or EPA or city sanitation, health, or pollution agency
Monthly
By river basin or basin segment or point source–from processing plant outfall

Notes

Both DO and temperature data are necessary for this indicator.

SOLID WASTE VOLUME PER CAPITA

Descriptive Value

Solid waste represents a form of pollution, in this case of the land, just as particulates pollute the air and water. A measure of solid waste volume will emphasize growing needs for land fills and will anticipate demands on city services for waste treatment and disposal.

Method of Calculation

Should be calculated or measured in pounds per day per capita

$$\frac{\text{Pounds/day}}{\text{Capita}}$$

Data Source, Frequency of Availability, and Levels of Disaggregation

City solid waste disposal department and private contractors
Frequency varies
Probably only citywide

Notes

Includes public and private waste.

CRIME SERIOUSNESS INDEX PER 1,000 POPULATION

Descriptive Value

This indicator attempts to quantify the harm (physical injury, intimidation, property loss, etc.) experienced by the victim or victims of a crime. The index weights crime statistics according to the degree of harm inflicted. For example, a murder is assigned a considerably greater weight in terms of seriousness than is the theft of a $50 watch. The index is an attempt to refine crime statistics in order to provide a concise but accurate picture of public safety.

Method of Calculation

Crime Seriousness =

$$\frac{\text{[(number of murders x 33.29) + (number of rapes x 15.33) + (number of robberies x 6.43) + (number of aggravated assaults x 9.74) + (number of burglaries x 2.65) + (number of larcenies \$50 and over x 2.26) + (number of auto thefts x 2.29)]}}{\text{total population}} \times 1{,}000$$

This is based on the Sellin-Wolfgang Index.

Data Source, Frequency of Availability, and Levels of Disaggregation

Number of reported crime occurrences are available annually from the Uniform Crime Report, published by the FBI.
Local police department
Citywide or by police patrol district

Notes

It should be pointed out that crime statistics are based only on *reported* crime, without reference to either the validity of the reporting or the faithfulness with which citizens report crime. For example, the victimization rate, the rate of actual crime occurrence among a sample of the population, is generally different from the *crime* rate, the rate of reporting the occurrence of crime. This also means that an increase in crime rate could reflect an actual increase in crime occurrence or an increase in crime reporting or both (though not necessarily in the same proportion).

NUMBER OF POLICE OFFICERS PER 1,000 POPULATION

Descriptive Value

This is an indicator of the relative size of the police department. Examination of this indicator over time will help to determine whether police services are keeping up with urban growth and change.

Method of Calculation

$$\frac{\text{Total Number of law enforcement officers}}{\text{Total population}} \times 1{,}000$$

Data Source, Frequency of Availability, and Levels of Disaggregation

Personnel Office of Police Department
Annual
Citywide or by Police Patrol District

PERCENTAGE OF CRIMES CLEARED BY ARREST

Descriptive Value

Arrests are a primary measure of police activity. Arrest practices, policies, and enforcement emphasis will vary from place to place within a community over time.

Police clear a crime when they have identified a suspect, have sufficient evidence to charge him, and actually take him into custody. Crime solutions are also recorded in exceptional instances when some element beyond police control precludes the placing of formal charges against the offender or local prosecution is declined because the subject is being prosecuted elsewhere for a crime committed in another jurisdiction. The arrest of one person can clear several crimes or several persons may be arrested in the process of clearing one crime.

Method of Calculation

$$\frac{\text{Number of cases cleared by arrest}}{\text{Total number of cases}} \times 100$$

Data Source, Frequency of Availability, and Levels of Disaggregation

Monthly: police department statistical reports
Annually: *The Uniform Crime Reports*, published by the FBI
Citywide or by Police Patrol District

Notes

Many police departments are beginning to plot crime data on city maps. If this method is used, the data may then be disaggregated as desired.

PERCENTAGE OF STOLEN PROPERTY RECOVERED

Descriptive Value

In the case of crime against property, the rate of recovery of that stolen property is a measure of the efficiency of the police department.

Method of Calculation

$$\frac{\text{Dollar value of stolen property recovered}}{\text{Dollar value of property reported stolen}} \times 100$$

Data Source, Frequency of Availability, and Levels of Disaggregation

Monthly: police department statistical reports
Annually: *The Uniform Crime Reports*, published by the FBI
Citywide or by Police Patrol District

CITY GOVERNMENT REVENUES

Descriptive Value

As the calls for increased city services rise, governments

naturally are concerned about relative dependence on various financial resources. The advent of revenue sharing argues for a careful examination of city revenues. This indicator categorizes revenues as follows:

(1) Property taxes
(2) Sales and gross receipts taxes
(3) Utility revenue (including gas, water, electricty, and public transit)
(4) Charges and miscellaneous
(5) Intergovernmental revenue (including federal and state)

The indicator also allows for per capita data generation, by source.

Method of Calculation

$$\text{Percent due to source} = \frac{\$ \text{ from source}}{\text{Total revenues}} \times 100$$

$$\$ \text{ per capita due to source} = \frac{\$ \text{ from source}}{\text{Total current population}}$$

Data Source, Frequency of Availability, and Levels of Disaggregation

Revenue summary, city budget
Annual
Citywide

Notes

Standard definitions can be found in U.S. Bureau of the Census, *Census of Governments*, 1967, Vol. 4, No. 5: *Compendium of Government Finances*.

CITY GOVERNMENT OPERATING BUDGET

Descriptive Value

This expenditure is reflected in the city operating budget. This indicator calls for categorization of the budget as follows:

(1) Education
(2) Highways
(3) Public Welfare
(4) Hospital
(5) Health
(6) Police
(7) Fire
(8) Sanitation
(9) Parks and Recreation
(10) Natural Resources
(11) Housing and Urban Renewal
(12) Air and Water Transportation and Terminals
(13) Parking
(14) Correction
(15) Libraries
(16) Utilities (water, electricity, gas, and public transit)
(17) Other

The indicator also allows for per capita data generation, by category.

Method of Calculation

$$\text{Percent expended in category} = \frac{\$ \text{ expended in category}}{\text{Total operating budget}} \times 100$$

$$\$ \text{ per capita expended in category} = \frac{\$ \text{ expended in category}}{\text{Total city population}}$$

Data Source, Frequency of Availability, and Levels of Disaggregation

City budget
Annual
Citywide

Notes

Standard definitions can be found in U.S. Bureau of the Census, *Census of Governments*, 1967, Vol. 4, No. 5: *Compendium of Government Finances*.

PERCENT OF ELIGIBLE VOTERS VOTING IN LOCAL ELECTIONS

Descriptive Value

Information from this indicator is of concern to those who are interested in various measures of participation in democratic government. The indicator is offered under the assumption that changes in the level of voter participation are indicative of certain political situations.

Method of Calculation

$$\frac{\text{Number of people voting in the local election}}{\text{Number of people in city who are legally eligible to vote, according to age limitations, etc., at the time of the election}} \times 100$$

Data Source, Frequency of Availability, and Levels of Disaggregation

Local Election Officials
Periodic
Citywide or by Precinct

Notes

It is desirable to exclude any election involving state and/or national candidates and/or issues. Such elections distort the real level of interest generated by local issues, candidates, and events. "Local elections" includes city council races, mayoral contests, bond issues, etc.

High levels of voter participation may indicate political competitiveness and conflict or reveal a greater sense of civic identification with democratic principles.

In determining the size of the eligible voter population over time one should remember to take into account the impact of the eighteen-year-old vote in 1972.

RATIO OF MILES OF SURFACED STREETS TO MILES OF UNSURFACED STREETS

Descriptive Value

This indicator allows the city policymaker to examine the general conditions of the streets in the community by giving ratios of standard and non-standard streets. It will be important to disaggregate this information for intracity comparison.

Method of Calculation

$$\frac{\text{Number of miles of streets surfaced}}{\text{Number of miles of streets unsurfaced}}$$

Data Source, Frequency of Availability, and Levels of Disaggregation

City streets department, engineering division
Annually
Citywide or subcity

NUMBER OF TRAFFIC ACCIDENTS PER 1,000 POPULATION

Descriptive Value

This indicator describes traffic congestion and the general efficiency and safety with which local street systems convey motorists through and around the city.

Method of Calculation

$$\frac{\text{Number of traffic accidents}}{\text{Total city population}} \times 1{,}000$$

Data Source, Frequency of Availability, and Levels of Disaggregation

Police department
Annually
Citywide or subcity

Notes

If the city has some estimation of total, annual vehicular miles, it would be more informative to look at the indicator per 1,000 vehicular miles:

$$\frac{\text{Number of traffic accidents}}{\text{Total estimated vehicular miles}} \times 1{,}000$$

APPENDIX IV

QUESTIONNAIRE FOR FEDERAL, STATE, AND LOCAL OFFICIALS

AND

TABULATION OF QUESTIONNAIRE REPLIES

CAIP PROJECT QUESTIONNAIRE FOR FEDERAL, STATE, AND LOCAL OFFICIALS

A. INDICATORS

1. Do you think it would be a good idea for the city(ies) which you worked on to continue collecting data of this type?

2. On a scale from 1 to 10, as illustrated below, please indicate your assessment of the most likely state of development of indicator use in you city over the next five years. Please explain.

1	5	10
Poorly developed, not used much.	Moderately developed, used intermittently.	Well developed, used regularly.

3. Using the scale below, please indicate your assessment of the most likely degree of commitment by the city government to the use of indicators over the next five years. Please explain.

1	5	10
Low degree of commitment	Moderate degree of commitment	High degree of commitment

4. What do you think are desirable uses for indicators in your city in the short-run (next three years)? In the long-run?

5. What are the obstacles to implementing these desirable uses in your city? Are there forces favorable to such implementation?

6. Did your attitude toward the usefulness of indicators change as a result of this project?

   If the answer is yes, please indicate on the scale below how it changed.

-5	0	+5
Less favorable	No change	More favorable

B. INTERGOVERNMENTAL RELATIONS

1. In this project LBJ School faculty and students and federal and state government personnel assisted local government personnel. Another approach would have been for the local people to have done the job alone. Which approach, in your opinion, is preferable?

2. What were the advantages and disadvantages of the intergovernmental approach? What changes would you recommend to make the intergovernmental approach work better?

C. ADDITIONAL VIEWS

We would welcome any additional comments you would care to make on the CAIP project.

TABULATION OF QUESTIONNAIRE REPLIES

INDICATORS

1. Every reply agreed that it would be a good idea for the cities to continue collecting this type of data.
2. On a scale of 1 to 10, replies indicated an assessment of the most likely state of indicator use in each city. (1-Poorly developed, not used much; 5-Moderately developed, used intermittently; 10-Well developed, used regularly)

	Cities	States	HUD
Mean	7.0	6.25	7.0
Standard Deviation	1.22	1.08	1.90
Range	3-10	5-10	5-10

3. On a scale of 1 to 10, replies indicated an assessment of the most likely degree of commitment by the city government over the next five years. (1-Low degree of commitment; 5-Moderate degree of commitment; 10-High degree of commitment)

	Cities	States	HUD
Mean	7.25	6.25	5.83
Standard Deviation	1.85	1.08	1.77
Range	1-10	5-10	1-10

4. Replies gave desirable uses for indicators in the cities in the short-run (next three years) and in the long-run. (Frequencies are included in parenthesis immediately following each reply.)

City Identified Short-Run Uses

- pinpoint and analyze problems (2)
- system to make information easily accessible for planning (3)
- collection of more precise information for policymaking (3)

City Identified Long-Run Uses

- policy tool (2)
- expand planning capacity (2)
- set funding priorities and goals (2)
- data pool for on-going programs (1)

State Identified Short-Run Uses

- program analysis (3)
- decision-making aid (2)
- short-range planning (1)

State Identified Long-Run Uses

- decision-making aid (2)
- program analysis (2)
- capital improvement planning (2)

HUD Identified Short-Run Uses

- improve comprehensive data collection (1)
- improve and augment management capacity (1)

HUD Identified Long-Run Uses

- decision-making aid (2)
- set funding priorities and goals (2)
- program analysis (2)

5. Replies gave possible obstacles to implementing the desirable use of indicators as well as favorable forces for implementation. (Frequencies indicated as noted above.)

City Identified Obstacles

- lack of trained staff and facilities (3)
- lack of funds for indicator work (1)
- high turnover among trained staff and administrative personnel (1)

City Identified Favorable Forces

- increasing funding of planning departments (1)
- desire of city managers and councils for more accurate, current information (2)

State Identified Obstacles

- lack of staff (2)
- start-up problems associated with any new concept (1)

State Identified Favorable Forces

- need for systematic data collection (1)
- interest of city council (1)
- need for better technical and management tools (1)

HUD Identified Obstacles

- lack of staff (2)
- lack of funds (2)
- power structure behind elected city officials (2)
- lack of decisionmaker experience with the uses of data (1)

HUD Identified Favorable Forces

- city chief executive favors the approach (2)
- use by decisionmakers (1)
- use by department heads for planning (1)
- demands by citizen action groups for more input into decision-making process (1)

6. Replies indicated whether attitudes of respondents toward the usefulness of indicators have changed as a result of CAIP and, if so, to what extent the change occurred. (-5-Less favorable; 0-No change; +5-More favorable)

	Cities	States	HUD
Mean	+3.40	+0.50	+4.2
Standard Deviation	0.45	0.87	0.29
Range	+2-+5	0-+2	+3-+5

INTERGOVERNMENTAL RELATIONS

1. Replies stated whether the approach of the project should have been one of intergovernmental cooperation (as CAIP was) or if the local governments should have handled it alone. (Frequencies are listed below.)

	Cities	States	HUD
Local Government	2	0	0
Intergovernment Cooperation	6	4	6

2. Replies indicated advantages and disadvantages of the intergovernmental approach and suggested ways to make this approach work better. (Frequencies indicated as noted above.)

City Identified Advantages

- more resources and skills are available (6)
- coordination of effort (2)

City Identified Disadvantages

- cities have less choice in indicator selection (1)
- physical distances between participants are great (1)
- participation by state government was minimal (1)
- definitions of roles were inexact (1)

City Participant Suggestions

- use a paid staff coordinator on the city level (1)
- technical assistance should be more concentrated (1)
- define more precisely the relationship between the city and state government participants (1)

State Identified Advantages

- actual participation by state government (1)
- more skills and resources available (2)

State Identified Disadvantages

- physical distances between participants (2)

State Participant Suggestions

- use more state-trained personnel for local assistance (1)

HUD Identified Advantages

- all levels of government work together as a team toward common objectives at the "grass-roots" level (2)
- more resources available (2)

HUD Identified Disadvantages

- lack of state participation (1)

HUD Participant Suggestions

- states should take the lead in future intergovernmental assistance efforts (2)
- intergovernmental efforts should be allowed some measure of latitude and flexibility (1)