

**Indicators as Tools for Managing and Evaluating Programs at the National,
State, and Local Levels of Government - Practical and Theoretical Issues**

Jeff Koshel
Senior Program Officer
National Research Council

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FOREWORD

Thomas J. Corbett
Institute for Research on Poverty
School of Social Work
University of Wisconsin–Madison

This special report is the third in a series examining the emergence of social indicators as crucial tools in social policy governance strategies. Special Report No. 71, “Social Indicators and Public Policy in the Age of Devolution” (Brown and Corbett 1997), sets out a basic language for understanding social indicators and provides an overview of selected opportunities and challenges. Special Report No. 72, “Social Indicators of Child and Family Well-Being: A Profile of Six State Systems” (Brown, Kirby, and Botsko 1997), describes how six states—California, Florida, Massachusetts, Minnesota, Oregon, and Vermont—are using indicators in sophisticated ways for a variety of monitoring and management purposes, ranging from simple monitoring to goals-setting and accountability tasks. This special report, by Jeffrey Koshel of the National Research Council, extends our understanding of how *statistical* indicators can be used by “public administrators, elected officials, and advocates to oversee agency efficiency and measure program performance.”

As with the other papers in this series, this work was originally prepared for the May 1997 “Workshop on Social Indicators of Child and Family Well-Being in the Age of Devolution: Defining Next Steps,” organized by Child Trends, Inc., and the State and Local Data Committee of the Federal Interagency Forum on Child and Family Statistics.¹ The workshop focused on the growing use of social indicators at the state and local level. Preparation of the three papers was supported by contributions from the Pew Charitable Trusts, under the direction of Brett Brown and Kris Moore at Child Trends, Inc.

¹This description of the background and context for this paper draws heavily upon the foreword to Special Report No. 72, “Social Indicators of Child and Family Well-Being: A Profile of Six State Systems.”

Support for turning the original papers into IRP special reports came from the Helen Bader and Joyce Foundations as part of the “Informing the Welfare Debate” project.²

As responsibility for social policy devolves from Washington, D.C., social indicators of child and family well-being are increasingly viewed as critical management tools for state and community governments. In consequence, the development of social indicators has become a salient issue in Washington and the states, as well as among academics and others in the policy world.

Social indicators are used for several purposes, as suggested earlier, including higher-level policy and program-accountability tasks. Moreover, indicators are sometimes looked upon as a potential substitute for conventional experimental evaluations of policy innovations. Thus the need for high-quality social indicator data, and the technical assistance required to use those data effectively, is expected to grow substantially during the next several years. These needs are now being addressed in piecemeal fashion by various federal agencies, interstate organizations, research institutions, and private foundations although evidence of increasing collaboration is occasionally seen. Some state and local governments are developing informal networks to exchange insights about how to solve common data concerns, and the statistical arms of several federal agencies are beginning to work together.

The purpose of the workshop, and of several papers discussed at it, was to develop strategies for stimulating and coordinating developmental indicator work among state and local governments in the coming years.³ A constructive dialogue among key players determined that progress is being made to

²Special thanks go to Patty Peltekos for doing excellent editorial work and to Dawn Duren for her manuscript preparation contributions.

³The three papers commissioned by the Pew Charitable Trusts and discussed at the workshop are “Social Indicators and Public Policy in the Age of Devolution,” by Brett V. Brown and Thomas J. Corbett, Institute for Research on Poverty Special Report No. 71 (Madison: University of Wisconsin, July 1997); “Social Indicators of Child and Family Well-Being: A Profile of Six State Systems,” by Brett V. Brown, Gretchen Kirby, and Christopher Botsko, Institute for Research on Poverty Special Report No. 72 (Madison: University of Wisconsin, September 1997); and this paper.

address emerging needs for more and higher-quality social indicator data, and for the information and training to use them effectively.

The workshop reflected the increasing urgency associated with developing child well-being indicators that are both practical and useful given that powerful reforms are transforming government and the management of social policy in the United States. Welfare reform, for example, became a reality in 1996 with passage of the Personal Responsibility and Work Opportunity Reconciliation Act. This legislation was signed into law amidst furious claims and counterclaims about its impacts. Despite the importance of welfare reform, it is merely one expression of a larger transformation in social policy governance, best reflected in what are termed the *devolution* and *reinvention* movements. Essentially, devolution constitutes a shift in the locus of program authority from higher levels of government to levels closer to the problems purportedly being addressed (e.g., from the national government to states to local communities). Devolution, proponents argue, will substantially increase the flexibility afforded states to design, coordinate, and administer social programs affecting children, youth, and their families.

Similarly, the reinvention movement in government purports to shift public sector management from a focus on process and inputs—that is, what organizations and programs do—to a focus on outcomes, or what organizations and programs accomplish. This new focus, proponents argue, gives managers greater freedom to restructure the ways they shape and deliver services with the goal of enhancing efficiency and effectiveness. Taken together, these themes could alter policy making and management by facilitating the emergence of outcomes-based accountability strategies, of systems-wide program coordination and integration efforts, of performance-based competitive service models, and of public sector privatization and democratization schemes.

Renewed interest in developing social indicators as policy-monitoring and management tools emerged early in the 1990s. The Annie E. Casey “Kids Count” project began routinely publishing national indicators on the status of children and eventually supported similar efforts in each of the states.

Over the years, the number of organizations actively involved in the indicator “movement” grew, as did the intensity of their involvement.⁴

In 1993, the Institute for Research on Poverty, Child Trends, Inc., and the Office of the Assistant Secretary for Planning and Evaluation sponsored a one-day planning workshop. From that event emerged plans for a national conference on child and family indicators, which was held in November 1994. (The papers prepared for the conference were later released as an IRP special report; they have been revised and compiled into a book to be published by the Russell Sage Foundation in the fall of 1997.)⁵

In addition, the recently created Federal Interagency Forum on Child and Family Statistics carries on the work begun at the November 1994 conference. The Forum fosters coordination, collaboration, and integration of data collection on children and the reporting of children’s conditions among nine federal agencies. The Forum is filling the gaps in the federal statistical system which limit our capacity to monitor the condition of children, even as profound social policy transformations occur. The Forum recently released its first report, “America’s Children: Key National Indicators of Well-Being.”

Another key development since 1994 is the shift in attention to the states and localities as they begin to undertake major changes in the safety net for children. These changes have increased the need for measurement of child well-being at the state and local levels. Recognizing this trend, IRP in

⁴Some of the key organizations include Child Trends; the Institute for Research on Poverty (IRP); the National Institute of Child Health and Human Development (NICHD); the Office of the Assistant Secretary for Planning and Evaluation (ASPE) and the Administration for Children and Families (ACF) in the U.S. Department of Health and Human Services (DHHS); the Board on Children at the National Academy of Sciences; Chapin Hall (University of Chicago); UC-DATA (University of California, Berkeley); the Joint Center on Poverty (University of Chicago/Northwestern University); and others.

⁵The papers are compiled in IRP Special Report 60a, “Indicators of Children’s Well-Being: Background Papers and Rapporteurs’ Comments,” Special Report 60b, “Indicators of Children’s Well-Being: Child Health, Education, and Economic Security,” and Special Report 60c, “Indicators of Children’s Well-Being: Cross-Cutting Issues: Population, Family and Neighborhood; Social Development and Problem Behaviors” (Madison: University of Wisconsin, May 1995).

December 1995 brought together a number of states in perhaps the first forum where exciting state-level activity was reported to a federal audience (see *Focus* 18 (1) for a report on this forum).

Special Report No. 73, “Indicators as Tools for Managing and Evaluating Programs at the National, State, and Local Levels of Government—Practical and Theoretical Issues,” serves as a conclusion for the body of work encompassed in this series. It notes the explosive growth of interest in social indicators and in the development of a data infrastructure (administrative data and survey data). It reviews key historical events in the evolution of indicators and describes important uses of indicators for planning, management, and monitoring purposes. The paper articulates a taxonomy of uses that help us understand the promise of indicators and, through a discussion of desirable properties, suggests important challenges to be addressed. Finally, the paper summarizes important dimensions discussed in the previous reports by identifying several generic models for using indicators for management purposes.

Clearly, we have entered a period of policy reform and government reinvention. Whether children fare well or poorly in the context of all the changes taking place is an empirical, not a normative, question. But it will remain normative, partisan, and probably inconclusive if we do not have the data with which to decide. This report describes some remarkable efforts under way in several states, initiatives that may well serve as guideposts to future activity. A generation or so ago, during the War on Poverty, a litmus test against which new policies were judged had a certain currency—what does it do for the poor? Today, a new litmus test may be emerging—what does it do for the children? Perhaps this special report series will help us reach the point where we can answer that question.

I. INTRODUCTION

The role played by statistical indicators in program management and evaluation can differ depending on whether they are used by national, state, or local administrators. Each level of governance has different responsibilities as well as varying amounts of data and financial resources with which to support planning and monitoring activities. Most important, the amount of survey data available for creating a system of program-relevant indicators varies by the level of government. The federal government supports a well-developed system of survey data collection, which is used, among other things, to monitor the health and well-being of Americans.⁶ Most states and localities lack the funds to field and maintain a comprehensive data collection system and to effectively analyze those data they do collect. They tend to rely on administrative data, supplemented by a limited number of federally sponsored data-collection activities.

Public officials at all levels have become highly dependent on administrative databases to monitor agency operations and track the progress made by their agencies in realizing stated objectives. In addition, in some cases administrative databases can provide data that are extremely valuable for policy planning and evaluation purposes. The vital records system, for example, consists of administrative databases which are maintained by every state that yield community as well as national-level indicators such as infant mortality, which are used to monitor the health of the public.

Planning and evaluation tasks may differ among levels of government depending on the nature of the policies being analyzed. For example, the federal government has traditionally sought to determine cost-effectiveness strategies, as in the case of which policies and services were most effective in enabling women on Aid to Families with Dependent Children (AFDC) to obtain employment and remain off welfare. In the case of federal/state entitlement programs, such as AFDC and Medicaid, federal waivers often required rigorous evaluations involving random assignment of clients to treatment and control

⁶For a discussion of how such indicators can be used to monitor the well-being of children, see Brown and Botsko, 1996.

groups, followed by multivariate data analysis. But states and localities have often been unable to invest the necessary money, time, and effort to conduct rigorous experimental or quasi-experimental evaluations, focusing their evaluation efforts instead on establishing whether they are meeting specific administrative objectives, such as increasing the number of clients served by a given percentage over the previous year.

As the federal government devolves more responsibility for health and human services to state and local governments, the limitations these entities will face in their capacities to conduct thorough and complete evaluations may present difficulties in establishing and maintaining strong public accountability, unless significant efforts are made to strengthen state and local data infrastructures.

This paper provides an overview of the principal ways that a wide variety of statistical indicators are used by public administrators, elected officials, and advocates to oversee agency efficiency and measure program performance. It discusses the general characteristics that indicators should have in order to meet management and planning needs, as well as to inform the policy choices of elected officials. The paper also provides examples of how indicators are used at the national, state, and local levels.

II. BACKGROUND

Over the past 30 years, there has been an exponential growth in the collection and analysis of data from administrative information systems, surveys, and program evaluations. Such data have become a mainstay among agency administrators and elected officials in monitoring the progress of publicly funded programs in meeting their objectives. Legislators are now far more likely to call upon technical experts for information on the costs and impacts of particular legislation than they are to rely exclusively on testimony from advocates and those expected to benefit (or suffer) from that same legislation. Debates in Washington over social legislation often focus on estimates of costs and benefits provided by the U.S.

Congressional Budget Office and the Office of Management and Budget. In a very real sense, statistics have become the “currency” of political debate in the United States, with people on different sides of an issue offering their estimates of how much alternative policies “impact” a given social problem.

In addition to using administrative data, such as the number of persons served during the last year compared to previous years or the number of people employed by an agency over time, agency administrators at all levels of government often rely upon widely accepted “social” indicators, such as the infant mortality rate, teen pregnancy rate, and the homicide rate, to support their budget requests.⁷ With regard to social indicators for children, for example, Brown and Corbett (1977: 44) report that

The federal statistical system is a major source of social indicator data for states and localities. . . . [Data sources] include vital statistics, school and law enforcement administrative data, and the decennial census. . . . A few states field their own surveys, and more have additional health and education-related administrative data that can be used to construct child indicators. But even among those states which have established the most aggressive benchmarking programs—Oregon, Minnesota, Florida—there are substantial data gaps.

Besides playing a major role in resource-allocation decisions, statistical indicators have become an important tool for managing agency operations. It is common for administrators to use various statistical indicators to monitor the progress made by their employees in meeting agency objectives. School superintendents, for example, pay a great deal of attention to widely recognized indicators such as student reading scores and school attendance; hospital administrators examine indicators of average waiting time to enroll new patients and average length of a hospital stay; social service directors look at the number of clients served during a particular time period and average amount of money spent per client. The reliance upon statistical indicators to monitor agency progress and/or achieve major

⁷Many states—including Oregon, Florida, Iowa, Georgia, and Texas—have mandated that some or all state agencies use outcome and related performance measures as part of their budgeting process. Several of these states plan to go further, intending to use trends in these measures to inform future budget allocation decisions (Schilder, Brady, and Horsch 1996).

objectives can vary significantly, depending on the purpose of the analysis and the level of operational responsibility held by the governmental unit.

Advocates for children, the elderly, disabled persons, and other vulnerable populations depend on administrative statistics and social indicators to document unmet needs for services and to describe program impact as part of their public testimony and fund-raising campaigns. At the local and state level, concerned citizens and advocacy groups use statistical indicators to lobby elected officials to maintain or expand programs and services. An increase in the rate of teen pregnancy within a school or a community, for example, can be cited by parents and child advocates in their appeals to raise local and state spending on family planning services, school-based clinics, and activities like midnight basketball. Of course, that same indicator can be used to argue against more spending on such programs.

The War on Poverty legislation enacted during the 1960s significantly expanded the program planning and evaluation activities conducted by federal agencies. The Department of Health, Education, and Welfare, for example, increased the number of its administrative information systems to collect data on recipients, services, and costs of new programs such as Medicaid and Medicare. Data from administrative information systems provided program administrators with greater opportunities to use statistical indicators to monitor agency performance, thereby supplementing the limited information available to them from traditional management activities such as financial audits and on-site inspections. As Paul Hill and his colleagues at RAND observe (1993), “Until the mid-1960s, Federal oversight of American education consisted of little more than collecting data on enrollments and the number of diplomas and degrees awarded annually. The idea that the Federal government would insist on monitoring program quality, institutional performance, or student achievement was virtually inconceivable.”

During the 1960s and 1970s, the federal government sponsored a series of large-scale welfare, job-training, and education experiments.⁸ Although much was learned from these experiments, they were costly, took several years to complete, and often produced inconclusive results. Since the late 1970s, relatively few new experiments have been launched by federal agencies, which have instead chosen to sponsor short-term “evaluability assessments,” to support evaluations of relatively small demonstration projects, and to make longitudinal and cross-sectional survey data files available to academics and others for multivariate analyses.⁹ Although such efforts have taken less time and been far less costly than randomized experiments, they have still required the efforts of many well-trained researchers and involved significant resources.

The 1980s witnessed strong public sentiment for lower taxes and smaller increases in the growth of budgets at all levels of government, a sentiment that has continued into the 1990s. Given the scarce amount of funding available to support rigorous program evaluations, there has been growing interest in the possibility of using generally agreed upon statistical indicators to provide relatively inexpensive and timely measures of public agency “performance.” This interest has also been sparked by the growing number of administrative databases developed in the past few decades for financial and program-auditing purposes by federal, state, and local agencies in healthcare, criminal justice, job training, education, and housing, as well as those developed by private foundations.¹⁰

⁸A limited number of social experiments continued through the 1990s, mostly to assess the effectiveness of job training and education in reducing welfare dependency.

⁹Examples of such projects include the Summer Training and Employment Program (STEP) and Ohio’s Learning, Earning, and Parenting Program (LEAP).

¹⁰Most notable among these is the effort of the Annie E. Casey Foundation to support the development and dissemination of statistical indicators about the well-being of children through the foundation’s “Kids Count” reports.

III. DEFINITIONS AND CONCEPTS

Administrators of local, state, and federal agencies use a variety of statistical indicators to manage programs and monitor their organizations' progress in meeting important goals and objectives. The following taxonomy identifies the four main types of indicators: administrative, capacity, process, and outcome.

- *Administrative indicators* are often used by agency heads to monitor the efficiency of *internal* operations. The number of tax returns processed by a local or a state department of finance or the federal Internal Revenue Service, and the number of school books distributed to area schools by a local board of education, within a specified time period, are examples of administrative indicators.¹¹
- *Capacity indicators* consist of *normative* standards for personnel, equipment, and/or facilities. One common example of a capacity indicator in elementary and secondary education is the pupil/teacher ratio. In higher education, accrediting organizations rely on capacity indicators such as the percentage of faculty with Ph.D.s, the library holdings, and the availability of specialized laboratory equipment to decide whether an institution qualifies for accreditation.
- *Process indicators* describe how much change in organizational *output* has occurred in a specified time period. In education, health, and human services agencies, process indicators typically focus on the number of services provided to clients within a specified time period. The number of pregnant women provided with nutritional education and smoking-cessation counseling during a year are process indicators commonly cited by maternal and child health administrators to indicate agency accomplishment.
- *Outcome indicators* show a *change in the status of a target population* which is assumed to be attributed to a program intervention. This change in outcome is usually measured on an annual or longer-term basis. Changes in the rate of teenage pregnancy or reading scores of elementary school-aged students are often-cited outcome indicators. Client-satisfaction indicators have also come to be included as outcome indicators in certain instances, such as the report cards issued by health maintenance organizations (Kaiser-Permanente of Northern California 1994), and those developed by the Substance Abuse and Mental Health Services Administration to assess the performance of mental health providers (U.S. Department of Health and Human Services 1996).

To better understand how indicators can be used to set goals and monitor agency performance, it may be helpful to consider two other measurement terms commonly used by public policy makers: social indicators and performance indicators.

¹¹Administrative indicators are often subsumed under process indicators; however, as used here, process indicators have a more direct effect on clients served by public agencies.

- *Social indicators* include outcome indicators that can track the well-being of Americans, whether or not they can be influenced in the short term by public or private intervention, such as the percentage of children in poverty and the percentage of elderly persons suffering from Alzheimer's disease. Social indicators may also include process indicators that, through empirical research, have been demonstrated to be directly related to achieving desirable outcomes. Such process indicators can be thought of as "proxy outcome" indicators. For example, the number of preschool-aged children vaccinated during the year may be used as a proxy indicator for the outcome of reducing the incidence of vaccine-preventable disease. As will be discussed below, social indicators have been used by localities, states, and the federal government to set goals and to monitor progress in meeting those goals.
- *Performance indicators* can consist of administrative, capacity, process, and/or outcome indicators, and are designed to reveal the amount of *progress* made by a given organization in realizing agreed-upon objectives within a specific time period. Performance indicators are usually part of contractual agreements between localities and states, between states and the federal government, or between private sector providers and a contracting governmental agency. The selection of particular indicators to serve as performance indicators will vary across agencies and levels of government, reflecting different organizational objectives, political priorities and, most importantly, the availability of necessary data.

Both social indicators and performance indicators are subsets of a broad array of statistical measures that are thought to have a particular analytic or administrative usefulness. How well any social or performance indicators serve their assigned purpose depends on a number of factors discussed below.

IV. DESIRABLE CHARACTERISTICS OF INDICATORS

In operationalizing indicators for agency use, program administrators must be certain that several important criteria are met (see Moore 1995). First, indicators should meet certain scientific standards of validity and reliability before they are used to measure agency performance. Second, important practical considerations must be taken into account, including (a) whether the indicators are concrete and meaningful; (b) whether they are capable of being measured on a regular and timely basis; (c) whether they cover populations and subgroups of interest; and (d) whether they cover geographic areas of interest. Third, all indicators used to monitor agency performance should have widespread support among the staff, or compliance with data collection procedures and agency morale may suffer.

Validity and Reliability

An operational definition of indicator validity is how well it measures what it is intended to measure or what it is used to measure in any particular application. Clearly, the validity of a specific indicator used to monitor the performance of a given public agency can vary according to how the indicator is used. For example, infant mortality may be a highly valid indicator of the overall performance of a country in meeting an important national health goal but a less valid indicator for measuring the performance of a single state or local public health agency, given the many variables that can affect infant mortality (Perrin and Koshel 1997). Of course, indicators must also be reliable; that is, they must yield the same results on repeated trials, thereby indicating low levels of random error in measurement.

In cases where an outcome indicator is intended to monitor local or state agency performance, the indicator must be shown to measure what it purports to measure, independent of other confounding variables. In other words, an outcome indicator that goes beyond the ability of a given department to influence should be appropriately adjusted for those factors that can affect outcomes if agencies in different jurisdictions are to be compared or if a given agency's performance is to be monitored over several years.

Practicality

Perhaps the most important practical consideration for using a social or performance indicator is whether that indicator is clear and meaningful, particularly to those outside a given public agency. Clearly, if attained goals are to be acknowledged and support for effective programs maintained or expanded, an indicator must be understandable to the general public and to elected officials. Process indicators used to measure performance should be as closely tied to outcomes as possible in order to provide some evidence of desirable results. For example, an indicator of the number of people who received emergency financial aid in a state within, say, 30 days of a natural disaster is more meaningful

than an indicator of the number of applications for financial assistance processed during that same time period.

Other practical considerations include having the ability to obtain data for a given indicator on a timely and regular basis and being able to focus on the populations of concern, such as those living in a specified geographic area. These requirements are especially critical for local and state health departments which must respond to outbreaks of transmittable disease.

Staff Acceptance

Closely related to issues of indicator validity and practicality is the question of whether the staff and management of an agency believe that a specific indicator or set of indicators are appropriate for measuring their performance. For example, teachers may feel that some outcome indicators used by their school system are incomplete, misleading, or simply unfair. "Teaching to the test" is a widely acknowledged problem in public education, where improvements in test scores may be the major determinant in a teacher's or principal's rating.

Another concern of agency workers and management is whether any set of statistical indicators for measuring agency performance is used fairly, that is, not simply to punish poor performance but to identify corrective actions to be taken by the agency, such as upgrading management information systems and expanding training programs. The reason why it is so important for agency staff to view statistical indicators as appropriate is that they can falsify or manipulate indicators they believe are inappropriate. Unless all agency staff and management believe in the value of having statistical indicators, the reliability of the indicators can be brought into question. How statistical indicators are used may be the most important factor in whether agency staff believe that the indicators are appropriate. Some specific uses are discussed below.

V. USES OF INDICATORS BY PUBLIC OFFICIALS

Agency administrators will have many reasons for using statistical indicators. As discussed by Brown and Corbett, indicators can be used for monitoring, goals-setting, outcomes-based accountability, and evaluation (Brown and Corbett 1997). As more pressure is placed on program administrators to document their agencies' accomplishments and to demonstrate positive returns on the public's investment, indicators that can monitor agency progress in meeting objectives will become intrinsic elements of agency budget justifications.

Models for Using Statistical Indicators

There are several basic models for using statistical indicators to establish how well an agency is meeting its goals and to provide the public with evidence of good performance:

- a licensing and regulatory model, used to monitor compliance with regulations, professional standards, or as part of a formal accreditation process;
- a performance contracting model, used as part of formal agreements between agencies and private vendors of services;
- a quality-improvement model, used to measure agency progress in meeting objectives and signaling the need for technical assistance when progress is not made;
- an “objective” effectiveness model, used to measure program outcomes and, in some cases, trigger incentive payments; and
- a “subjective” effectiveness model of consumer satisfaction, often used to supplement “objective” statistical indicators.

Statistical Indicators for Licensing and Regulatory Purposes. Local, state, and federal regulatory agencies and the courts rely on statistical indicators to determine whether individuals, contractors, and institutions meet legal and/or professional standards. For example, a state mental hospital or a local school system must satisfy applicable fire and safety codes, as well as comply with all relevant federal, state, and local laws. Satisfying accreditation requirements is also based, in part, on meeting specific numerical targets: e.g., a university seeking accreditation must provide statistics on the percentage of its

faculty with advanced degrees, the size of its athletic facilities, and data on other items that are judged necessary to promote academic scholarship and personal growth of students and faculty.

The licensing, accrediting, and monitoring of agency operations usually rest with specialized regulatory staff; senior agency management will focus on indicator data only if problems are uncovered during routine audits and/or inspections. The policy implications of these statistical indicators are straightforward, involving the following questions: Are all operating units and contractors in compliance with all applicable standards, regulations, and laws? Can public agencies and institutions out of compliance be brought into compliance within existing budget allocations? If existing budget allocations are insufficient, can the necessary funds be transferred from other accounts or can supplemental funds be secured? If supplemental funding cannot be obtained or is not adequate for correcting deficiencies, can the necessary services be transferred to another institution or service provider? How long will the court(s) allow a facility or provider to operate out of compliance with the appropriate law and/or regulation?

Statistical Indicators in Performance-Based Contracts. It is not unusual for budget officials and legislators to expect that statistical indicators can be used to financially reward “good” performers and penalize those whose performance is not achieving the desired results, thereby increasing the overall return on public investment. At the federal level, the Job Training and Partnership Act (JTPA) was designed in this way and provides supplemental federal funds to states that meet program participation targets. Maryland is one state that carried the JTPA incentives model through to the local level, rewarding local “Service Delivery Areas” that met participation and job-placement targets.

A common mechanism used by states and large localities is to use performance-based contracts in purchasing services. Under such arrangements, contractors are legally obligated to meet specified objectives in order to receive full payment and to remain eligible for future contracts. A review of performance contracts in alcohol and drug abuse treatment program was recently completed for

California, Michigan, and Ohio (Stanitis 1995). The author found that all three states used the following comparison elements to analyze performance: utilization of services, length of treatment, and percentage of target population served. In Michigan, the contracting agencies are allowed to negotiate additional performance measures.

If a contractor in a given area is unable to meet its performance targets, the state or local agency has the option of denying payment or changing the terms of the performance agreement retroactively if it is convinced that changes occurred beyond the contractor's control. By "relaxing" the performance targets of such contracts, local and state agencies, in effect, acknowledge that the contractual terms were unfair or, more accurately, were not valid for the intended purpose.

Statistical Indicators for Total Quality Management Purposes. The most common use of statistical indicators among state and local governments is to monitor the efficiency of agency operations and to signal the need for possible remedial action. Typically, the number of units of service provided during a specified time period are compared to one or more prior periods to examine whether agency efficiency is increasing, decreasing, or remaining the same. For example, the number of children under five years of age who receive vaccination shots from a local public health clinic can be tracked over time. Or a number of different clinics within a locality or across a state can be examined to see if some are more efficient than others in providing vaccinations for a given number of immunization staff.

State and local administrators often use statistical indicators of agency operations to identify agency workers or contractors who are "outliers" (i.e., individuals or groups who may fall outside the bounds of standard or normal performance). Statistics such as the length of time to process new claims for assistance, percentage of clients completing the full schedule of alcohol treatment, and client satisfaction with services are just a few of the many on-going indicators used by agency managers to monitor performance. Meeting goals that have been developed jointly by managers and agency workers can provide a sense of accomplishment. Conversely, indicators that suggest subpar performance can

signal the need for additional training and other forms of technical assistance and, thereby, serve as a basic component of the total quality management (TQM) efforts of many public agencies.

Although statistical indicators can support TQM efforts between Washington and state capitols, this is not a common use of statistical indicators by the federal government, which is more likely to be following the regulatory model or the effectiveness model. Probably the best example of a successful TQM program between the federal government and states is that of the federal Centers for Disease Control and Prevention (CDC) of the Department of Health and Human Services, which uses state surveillance data to monitor the prevalence of disease outbreaks and other illnesses across states. The CDC publishes these data in its “Morbidity and Mortality Weekly Report.” Once an apparent disease outbreak is detected, the CDC sends a technical assistance team to investigate the possible causes of the outbreak. In some cases, the “outbreak” reflects the influx of a high-risk group (which commonly occurs in border states) or a statistical phenomenon caused by a large percentage gain due to relatively small numbers of cases in the previous periods. In other cases, the state or locality in question is judged to have a management problem and technical assistance is offered by CDC to help correct the administrative difficulty.

Statistical Indicators as Effectiveness Measures. In general, elected officials and program advocates tend to view outcome indicators as providing prima facie evidence of program/agency performance. For example, decreases in welfare caseloads during the late 1980s were cited by many governors, legislators, and advocates as “proof” that the employment training of women on AFDC had yielded positive results and saved taxpayers’ money. Some of those same officials changed their opinions during the recession of 1990–91, when welfare caseloads soared.

Most program administrators and virtually all researchers recognize that statistical indicators, by themselves, are unlikely to provide definitive evidence of program effectiveness. Efforts made by public agencies to address complex social problems may be offset by changes in other variables beyond the

agencies' control. In such cases, statistical indicators have to be appropriately adjusted for all relevant factors to allow for valid comparisons of agency performance. If adequate data do not exist to construct adjusted rates, it would be inappropriate to use outcome indicators as exact measures of agency performance. For example, the rate of smoking and drinking among adolescents is affected by multiple social factors beyond a given educational and/or social service system's control. In such cases, it would be critically important to have empirical data regarding the relative impact of a particular intervention in reducing high-risk behavior, given other explanatory variables.

In the absence of "risk adjustment," most researchers would argue that it is not possible to estimate the relative performance of the public agency in bringing about a desired change. Perhaps the best known example of this debate occurred during the 1980s, when the federal Health Care Financing Administration (HCFA) initiated a policy of publicly releasing the mortality statistics of hospitals conducting coronary artery bypass graft (CABG) surgery for Medicare recipients. Medical practitioners, hospital administrators, and public health researchers immediately responded, suggesting that the methodology used by the HCFA to adjust for differences among patients served by individual hospitals was incomplete and that comparisons between the actual and statistically "expected" deaths across hospitals performing CABG surgery could be very misleading. Article after article published in professional journals during the period immediately after the release of the HCFA hospital mortality data reflected the traditional concerns of physicians, public health scholars, and others in the medical community about an overly simplistic method of measuring health quality provided by hospitals serving Medicare patients. The basic point made by all of these authors was that, quite apart from the "quality" of the medical services provided, hospitals may well have patients with different characteristics that can affect their rate of postoperation survival. These include secondary medical conditions, overall health status, high-risk behavior such as alcohol and tobacco use, and age. The consensus view during this period was that all relevant risk factors must be explicitly taken into account in any analysis that attempts

to measure the relative mortality rate of hospitals providing CABG surgery (DuBois et. al. 1987; Kosecoff et. al. 1988; Crede and Heirholzer 1988; Park et. a. 1990). It is interesting to note that the HCFA no longer publishes this statistical “performance” indicator.

Statistical Indicators of Client Satisfaction. In addition to “objective” indicators of program effectiveness, there is growing interest in using “subjective” client-satisfaction measures to examine program services. Client satisfaction is increasingly important in the area of health care, as public health officials and Medicaid administrators monitor the explosive increase in the number of people enrolled in health maintenance organizations (HMOs). The Center for the Study of Services (CSS) in Washington, D.C., is one of the leading organizations in the country for conducting consumer satisfaction surveys of HMOs.¹² The CSS’s work has prompted the U.S. Office of Personnel Management to conduct a national survey of federal employees and retirees enrolled in about 225 of the approximately 320 HMOs currently in operation. The results will be made public to help civil servants and retirees decide which plan to join. The national survey of consumer satisfaction with managed care plans is expected to parallel previous CSS surveys, showing the percentage of consumers who responded “very good” or “excellent” regarding their satisfaction with ten dimensions of HMO services:

- overall quality
- listening and communicating
- thoroughness and apparent competence
- personal manner (courtesy, respect, sensitivity)
- spending enough time
- providing prevention/self help advice
- arranging appointments quickly

¹²The DHHS defines a managed care plan as “a prepaid health plan delivering comprehensive care to members through designated providers, having a fixed monthly payment for health care services, and requiring members to be in a plan for a specified period of time, usually one year” (*Health United States: 1995*)

- being easy to reach by phone
- giving helpful advice by phone
- keeping down office waiting time

Historically, the medical community has been somewhat skeptical of patient satisfaction surveys, like the one conducted by the CSS for measuring the “quality” of health care. Understandably, physicians have been reluctant to rely *solely* on patient satisfaction assessment, believing that different consumers experiencing the same medical care might rate that care differently, depending on their age, educational attainment, and other personal and social characteristics. During the past few years, physicians appear to have accepted the idea that patient satisfaction should play more of a role in assessing the quality of care. Two factors seem to have influenced this change. First, a small but growing body of research has suggested that the perspectives of patients were similar to those of physicians when they were asked about specific aspects of the care they received or provided (Institute of Medicine 1990). Second, HMO administrators consider the number of persons who disenroll from their plan each year as an important indicator of plan viability. Except for those who move away from the geographic area served by a plan, disenrollment is a clear signal to HMO administrators that the perception of value is less than that provided by another health provider. It is clear that surveys of consumer satisfaction with managed care will continue to be conducted by both the private and public sectors. A number of states currently conduct surveys of patients served by Medicaid managed care providers.

VI. EXAMPLES OF INDICATOR SYSTEMS

In actual practice, many of the indicators used by federal, state, and local governments typically involve some combination of the models discussed above, particularly the functions of performance contracting, quality improvement, and objective- and subjective- effectiveness. This section looks at

three public health indicator systems currently in use to illustrate the similarities and differences at the national, state, and local levels.¹³

Healthy People 2000 Measures. One of the best-known national indicator systems is Healthy People 2000: National Health Promotion and Disease-Prevention Objectives. This public health initiative focuses on three broad goals: (1) to increase the span of healthy life for Americans, (2) to reduce health disparities among Americans, and (3) to achieve access to preventive health services for all Americans. These goals are organized into 22 priority areas, with a total of 332 objectives. Of these 332 objectives, approximately 70 percent can be measured in all states using existing data systems.¹⁴ The remaining objectives serve as national goals but data do not exist to provide state estimates of progress. Figure 1 provides an overview of this indicator system.

From a policy perspective, it is important to note that specific Healthy People 2000 plans have been developed by 43 states, the District of Columbia, and Guam, each tailoring their objectives to their own circumstances. Further, all 50 states and more than 300 national organizations have joined to form a Healthy People 2000 Consortium to contribute to national efforts to improve the health of Americans. Clearly, there is broad consensus around the country for Healthy People 2000 goals; however, it is also widely recognized that these goals go beyond the control of the U.S. Public Health Service or state departments of health, individually or collectively.

Although state public health administrators have accepted the Healthy People 2000 indicators as valid public health goals, they have not necessarily accepted them as valid measures of agency

¹³Additional national, state, and local indicator systems are discussed in Brown and Corbett 1997. For a discussion of similar statewide child indicator systems in California, Minnesota, North Carolina, and Ohio, see Bruner et al. 1996. For a detailed discussion of local indicator systems in Atlanta, Boston, Chicago, Cleveland, Denver, Providence, and Oakland, see *Democratizing Information: First Year Report of the National Neighborhood Indicators Project* (The Urban Institute 1996).

¹⁴According to the *Healthy People 2000 Midcourse Review and 1995 Revisions*, 50 percent of the objectives were making progress *toward* the target, 19 percent were moving *away* from the target, 3 percent showed *no change*, and 29 percent had *insufficient data*.

FIGURE 1
Healthy People 2000 Framework

Healthy People 2000 Objectives	Priority Areas	Indicator Examples
Health Promotion	Physical Activity & Fitness	- reduce overweight to a prevalence of no more than 20% of all people
	Nutrition	
	Tobacco	
	Alcohol & Other Drugs	
	Family Planning	- reduce suicides to no more than 10.5 per 100,000 people
	Mental Health & Mental Disorders	
	Violent & Abusive Behavior	
Education & Community Based Programs		
Health Protection	Unintentional Injuries	- reduce work-related injury deaths to no more than 4 per 100,000 workers
	Occupational Safety & Health	
	Environmental Health	
	Food & Drug Safety	
	Oral Health	
Prevention Services	Maternal & Child Health	- reduce low birth weight to no more than 5% of live births
	Heart Disease & Stroke	
	Cancer	
	Diabetes & Chronic Disabilities	
	HIV Infection	- eliminate financial barriers to clinical preventive services
	Sexually Transmitted Diseases	
	Immunizations & Infectious Diseases	
	Clinical Preventive Services	

performance, except over the *long term* as indicators of agency success in organizing and coordinating efforts of all relevant public and private institutions and individuals needed to address a specific public health objective.

At the federal level, DHHS conducts a progress review of each priority health area every three years. Following the senior policy staff review, the DHHS Assistant Secretary for Health develops an action memorandum which details programmatic initiatives, surveillance improvements, and interagency collaborations needed to overcome barriers and make progress in reaching Healthy People 2000 targets.

Oregon's Indicator Systems. Oregon Benchmarks was established in 1989 to develop “standards for measuring statewide progress and institutional performance” of improving the lives of Oregonians. Funded entirely by state general revenues, the Oregon Progress Board has developed an indicator system that consists of 259 outcome measures, or “benchmarks,” in education, social functioning, economic prosperity, and environmental progress. Figure 2 illustrates some of the Oregon Benchmarks. In 1997 the Progress Board released a report showing historical trends and future targets for a reduced set of 92 benchmarks.¹⁵ The 1997 report issued by the Progress Board is similar to the Healthy People 2000 framework, showing historical comparisons and future targets for most of the indicators. Unlike Healthy People 2000, data are currently available for all of the benchmarks, at least for some years between 1990 and 1996. In 1993, the Oregon Commission on Children and Families adopted 11 of the Progress Board's benchmarks to define core support areas:

- increase access to prenatal care
- reduce child abuse and neglect
- increase child care availability

¹⁵In addition to the reduced set of 92 benchmarks, the Progress Board identified 26 *developmental indicators* for which no supporting data are currently available. Over the next two years efforts will be made to develop data sources for these measures. Those measures still lacking data after that time will be dropped from the list of benchmarks (Oregon Progress Board 1997).

FIGURE 2**Sample of Oregon Benchmarks****Nurture Children, Strengthen Families**

Reduce teen pregnancy rates-

Pregnancy rate per 1,000 females aged 10–17

a. African-Americans, b. American Indians, c. Asians, d. Hispanics, e. Whites

Improve early childhood development-

Percentage of children entering kindergarten meeting developmental standards for their age

a. Cognitive development, b. Language and literacy development, c. Physical well-being, d. Social and emotional development

Reduce teen drug use-

Percentage of students free of involvement with alcohol in previous month

a. Sixth grade, b. Eighth grade, c. Eleventh grade

Percentage of students free of involvement with illicit drugs in previous month

a. Sixth grade, b. Eighth grade, c. Eleventh grade

Percentage of students free of involvement with cigarettes in previous month

a. Sixth grade, b. Eighth grade, c. Eleventh grade

Improve Public Safety

Reduce juvenile crime

Juvenile arrests per 1,000 juvenile Oregonians per year

a. Crimes against persons, b. Crimes against property, c. Behavioral crime

Increase the number of communities involved in law enforcement planning

Number of communities involved in a community-based strategic plan for law enforcement

Leave No One Behind in Oregon Life

Reduce the percentage of Oregonians who live in poverty

Percentage of Oregonians with incomes above 100% of the federal poverty level

a. African-Americans, b. American Indians, c. Asians, d. Hispanics, e. Whites

Increase the percentage of high school graduates going on to college

Percentage of Oregon high school graduates who enroll in college in the fall following graduation

a. Oregon 2 and 4 year institutions, b. out of state 2 and 4 year institutions

Maintain or increase the share of employment among Oregonians who live outside the Willamette Valley

Percentage of Oregonians employed outside the Willamette Valley and the Portland tri-county area

Improve Public Service Delivery

Increase agencies who use performance measures

Percentage of public agencies that employ results oriented performance measures

a. state government, b. schools, c. local government activities

- increase children's readiness to learn
- reduce the number of children in poverty
- reduce drug and alcohol use by 8th and 11th graders
- reduce juvenile crime
- reduce teen pregnancy
- increase high school completion
- increase the number of families able to care for their own children

The Commission on Children and Families uses “core” benchmarks to compare progress made across counties and thus to identify counties that may need technical assistance in reaching their goals. If, for whatever reason, a given county appears to have a problem in realizing specific objectives, the state can send in a team of investigators to determine what steps should be taken to improve the county's performance. Oregon's use of performance measures to signal the need for technical assistance is consistent with TQM efforts in the private sector. It should be noted that Oregon's Public Health Services has not used the Healthy People 2000 indicator system to identify states that may benefit from technical assistance, although that policy may be changed with the implementation of Healthy People 2010.¹⁶

A third use of the Oregon Benchmarks system is embodied in a federal-state-local demonstration project called the Oregon Option. Under the Oregon Option, the state and selected counties agree to the following: (a) contract for measurable results, (b) combine funding streams, (c) renegotiate funding amounts and rates, (d) eliminate or suspend rigid and costly program restrictions, (e) provide multiyear funding, and (f) empower those closest to front-line service to choose the delivery mechanisms, initiatives, and investment criteria they deem most suitable. As part of the Oregon Option, the federal government has specifically agreed “to join in a study of how federal rules affect Oregon's efforts to

¹⁶Private communication from Healthy People 2010 planning staff.

create a better trained and better educated work force, to provide funding for the vaccines needed in the infant immunization program and to assist the state's welfare reform efforts by relaxing restrictions on the use of federal funds."¹⁷

Clackamas County, Oregon. The Clackamas County Commission on Children and Families uses the same core indicators as its state counterpart, along with two additional indicators: neighborhood and business involvement. It is not surprising that an indicator system used at the community level would include indicators such as "neighborhood involvement" (number of citizens/1000 involved in community affairs) and "business involvement" (number of businesses/100 involved in support of children), which would be extremely difficult to measure accurately at the state or regional level. The county uses these indicators when preparing its annual strategic plans, contracts, and community development projects. Figure 3 (Clackamas County Commission on Children and Families, 1994) shows the analytic structure of the Clackamas County benchmark framework and the amount allocated for each benchmark during the period 1995–97.

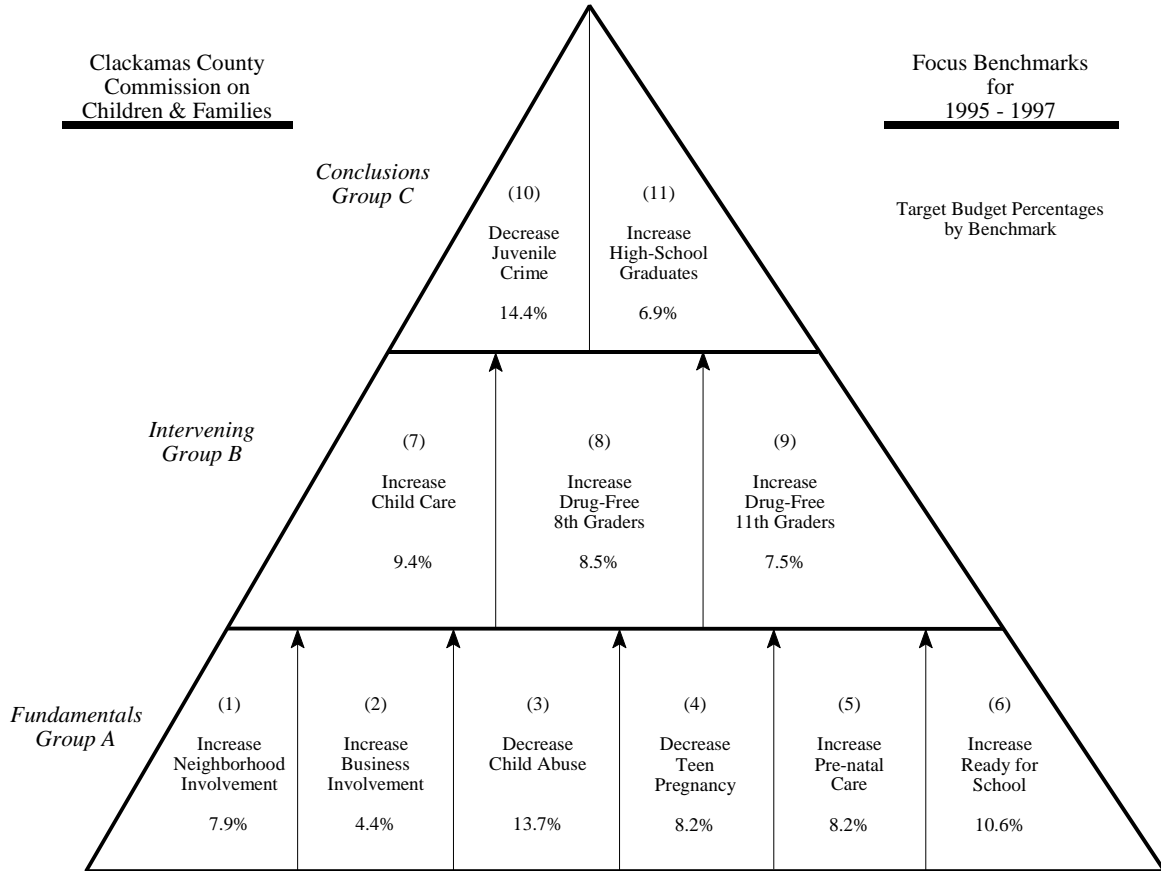
VII. CONCLUSIONS

Statistical indicators have become basic tools for public administrators at all levels of government. Depending on the function of a particular agency or office, indicators can be used for regulatory purposes, as part of contractual agreements, as monitoring mechanisms, as part of goal-formulation, or to support monitoring and evaluation activities. When used for regulatory purposes, indicators help an agency to decide on appropriate rewards and/or punishments for those who are regulated; e.g., an indicator of the number of registered nurses per 100 patients can be used to grant a license to a nursing home operator. Indicators can also be used under the "brokered agreement" approach

¹⁷As quoted in the *Washington Post*, August 6, 1995, p. A18.

FIGURE 3

Analytic Structure of Clackamas County Benchmarks



Source: Clackamas County Commission on Children and Families, 1994.

when the supervising agency negotiates an agreement with those it oversees. This type of agreement can be between agencies in different levels of government (e.g., between the federal government and states) or between an agency and those it supervises at the same level of government (e.g., between a state budget office and other state agencies or between a local agency and private contractors). Brokered agreements can be incorporated into formal contracts, most commonly between public agencies and private providers. Statistical indicators can also be used to signal the need for technical assistance under a TQM program or part of a monitoring system used by the supervising agency to allocate incentive payments based upon “objective” and “subjective” effectiveness measures.

The degree to which statistical indicators are expected to demonstrate the achievement of desirable goals and document the return on public investment varies greatly among citizen advocates, elected officials, program administrators, and policy researchers. Advocates and elected officials are the most enthusiastic about statistical indicators, while researchers and some administrators have significant reservations about using indicators for evaluation purposes.

The interest in the “new federalism” that emerged from the 1992 Congressional elections suggests that the devolution of public responsibility from Washington to the states that began in the 1970s and 1980s is likely to continue into the next century. Perhaps the most dramatic indication of the transfer of responsibility from the federal government to the states occurred in 1996, with President Clinton’s signing of legislation to eliminate the 60-year-old entitlement of low-income women with children under the AFDC program and to provide states with block-grant funds to administer welfare programs. The likely transfer of additional responsibility to states and local units of government poses new challenges to public administrators, who will not only have to manage programs but maintain and expand existing information systems needed to monitor program performance.

As more responsibility for administering programs is shifted from the federal government, statistical indicators are likely to play a larger role in public discourse for two reasons. First, elected

officials are increasingly looking for straightforward answers to the question of how much value is obtained for public expenditures. Outcome indicators have a certain intuitive appeal, especially to legislators; they have the further advantage of being immediately available, and not dependent on new research or evaluation studies that require additional resources and take time to be completed. Second, local, state, and (even) federal administrators have little choice but to rely more on such indicators as the resources available to conduct rigorous program evaluations declines.

The HCFA's decision to stop publishing hospital mortality statistics for CABG surgery appears to be an exception to the general trend of promoting the use of outcome indicators among federal agencies. The Department of Labor, which administers the JTPA program, is a good example of one federal agency with a long history of using outcome indicators to monitor the performance of its programs. The decision by the U.S. Office of Personnel Management to sponsor a national survey of consumer satisfaction with managed care plans is another example of using performance indicators which, in this, case, is a proxy for health outcomes. More significantly, virtually all federal agencies will be required to develop performance indicators as part of their responsibilities under the Government Performance and Results Act of 1993.

Statistical indicators are unlikely to provide clear evidence of agency effectiveness except in those cases where there is a well-documented empirical relationship between the service intervention (i.e., immunization programs) and the desired outcome (i.e., reduction of vaccine-preventable diseases). Unfortunately, the vast majority of social problems (e.g., chronic unemployment, teen pregnancy, poor educational attainment) involve many behavioral, demographic, and economic variables, requiring caution in interpreting simple outcome measures. When many factors are thought to affect outcomes, one can attempt to improve the validity of outcome-based performance measures by statistically adjusting such measures for differences in the composition of state population, economic conditions, and public services infrastructure, etc., in order to make the measures of outcomes more comparable across states

and/or comparable over time. Although this approach has been used to structure federal-state performance-based agreements in a few federal-state programs (e.g., the Job Training Partnership Act), serious concerns may remain as to the validity of using “adjusted” outcome measures to monitor program performance.

Despite the inherent limitations of outcome indicators to determine program effectiveness, agency budget requests are likely to continue to be based on “performance” measures that appear to be heading in the right direction. When key indicators move in the desired direction, even experienced program administrators find it easy to forget the degree of uncertainty of the relationship between a given program and a desired outcome. For example, it is not uncommon for police commissioners to take credit for reducing crime when crimes statistics show that the rate of, say, crimes committed by juveniles has gone down. These same individuals are sometimes embarrassed when crime rates increase and they are “forced” to admit that the reasons for the increase are due to external causes beyond their control.

How indicator systems are used in the future will depend to a great extent on the nature of the new relationships that will be formed across levels of government. As indicated by the examples discussed above, public officials can use indicator systems in a variety of ways to manage programs. Clearly, the federal government and private foundations will have to continue to support rigorous evaluation research on the effectiveness of program interventions on complex problems such as drug abuse, teen pregnancy, and welfare dependency, where outcome indicators, by themselves, are unable to take multiple personal and social factors into account. As more empirical knowledge is obtained on the specific impact of individual public intervention strategies, program administrators at all levels of government will have a stronger rationale for using process indicators as accurate measures of program performance. If shifts in responsibility from the federal to state and local levels of governments are accompanied by new accountability mechanisms that involve thoughtfully constructed statistical

indicators, chances are that the new federalism of the 1990s will become an enduring part of American governance.

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