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INFORMATION SYSTEMS IN THE SAN DIEGO REGION

DAVID MICHAEL RYFE*

INTRODUCTION

The phrase “knowledge is power” has a long history in philosophy. Over the centuries, it has helped to propel a series of highly abstract debates that center on such questions as the nature of identity and how one gains knowledge of the world.¹ In recent years, however, the phrase has been of import in the most unlikely of places—local governments—for the most pragmatic of reasons. In the 1990s, scarce federal funds and cries for greater localism have devolved policymaking more and more to local governments. At the same time, the federal government has called for greater bureaucratic efficiency² and better performance at all levels of government, and local community leaders have embraced notions such as “quality of life” and “sustainability” as guiding metaphors.³

These conditions have bestowed upon local policymakers the power to shape local agendas as never before, the responsibility to do so efficiently, and the freedom to do so in ways that correspond to rather nebulous terms, like quality of life. Policymakers need accurate knowledge of local communities to achieve their goals. Knowledge, local policymakers have found, truly is power, and lack of knowledge leads to inefficiency, ineffectiveness,

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1. Many of the most recent debates have been inspired by the work of Michel Foucault. *See generally* MICHEL FOUCAULT, *THE ORDER OF THINGS: AN ARCHAEOLOGY OF THE HUMAN SCIENCES* (1970); MICHEL FOUCAULT, *THE ARCHAEOLOGY OF KNOWLEDGE* (A.M. Sheridan Smith trans., 1972); MICHEL FOUCAULT, *POWER/KNOWLEDGE: SELECTED INTERVIEWS AND OTHER WRITINGS 1972-1977* (Colin Gordon ed. & Colin Gordon et al. trans., 1980).

2. *See* National Partnership for Reinventing Government (visited Feb. 9, 2000) <<http://www.npr.gov/library/vision2000.html>> (detailing federal initiatives to make government more efficient).

3. *See generally* CRC PRESS, LLC, *SUSTAINABLE COMMUNITY DEVELOPMENT: STUDIES IN ECONOMIC, ENVIRONMENTAL, AND CULTURAL REVITALIZATION* (Marie D. Hoff ed., 1998); *QUALITY OF LIFE: PERSPECTIVES AND POLICIES* (Sally Baldwin, et al. eds., 1990) (discussing the sustainability and quality of life movements).

and powerlessness.

This situation has produced much interest in regional information infrastructures: which agencies collect data, what the agencies do with data, and how agencies are linked to other agencies involved in the same activity. Information is only as good as the information infrastructure that produces it. For instance, agencies may be required to collect a wide variety of data about the world, but they actually collect only certain kinds of data. After collection, agencies may leave data in highly technical forms that are difficult to decipher, or they may translate data into a form easily used in policy and community discussions. Agencies may leave data sitting in reams of computer printouts in a storage facility, or they may discover ways to make data publicly available. Agencies may develop agreements with other agencies to share their data, or they may wield their data in a bid to protect their spheres of influence. Ultimately, the structure of information systems shapes the ability of policymakers to make effective decisions.

The dynamic of San Diego's information systems is driven by a simple structural fact: government agencies collect the vast preponderance of data about the region, and their activities are generally determined by legislative acts and policy guidelines set forth at the state and federal levels. Non-profit and community-based organizations also collect some data, but their efforts are sporadic because of time and resource constraints. Further, although the San Diego Area Governments (SANDAG) acts as a kind of central warehouse for many kinds of government-produced data, it relies principally on data gathered by other government agencies, and these agencies are linked in a distributed system across local, state, and, to a lesser extent, federal boundaries.

These simple facts about San Diego's regional information systems reveal much about the systems' strengths and weaknesses. By government mandate, there are a whole host of data collection activities continuously funded and undertaken in the region. However, because these activities are closely tied to government programs, the majority of data collected are in the areas where government programs are most dense—health and human services, the environment, and the economy. This close affiliation between data collection and government programs tends to make the region rich in information but poor in knowledge. That is, local agencies continuously collect data, but this data is used mainly to demonstrate program effectiveness to state and federal oversight agencies. Therefore, local agencies have had little incentive to share data across organizations or to translate them into terms more easily digested by policymakers or the public. Local agencies do not pursue more imaginative or locally-rooted uses of data because the agencies collect data pertinent to programs initiated at the state and federal level rather than at the local level. The result is a set of information systems that produce vast amounts of information but provide or shed little insight into local problems facing the local community.

However, there is some hope for communities searching for insight into

local problems. In response to the new political realities, local government agencies have instituted forums to share information and resources among themselves; established new and innovative links with non-profit agencies, foundations, and community-based organizations; capitalized on new information technologies; and developed sets of social indicators to make their data more publicly available and understandable.

It is in this spirit that this article examines the San Diego regional information infrastructure.⁴ Based on interviews with over fifty individuals involved in data collection activities and materials gathered from a wide variety of agencies, this article outlines the manner in which various kinds of data concerning the San Diego region are gathered.⁵ This article traces the organizational relationships between agencies across local, state and federal jurisdictions, describes the dilemmas associated with the structure of these information systems, and considers several agency initiatives in response to these dilemmas. Throughout the article is attentive to the way in which the structure of these systems shapes the kinds of data available to policymakers.

Part I of this article reviews SANDAG's activities. Part II describes the contours of the regional information infrastructure. Part III identifies problems endemic to this infrastructure involving the quality of data. Part IV discusses several initiatives recently undertaken by various regional bodies to overcome these problems.

I. SANDAG

A review of information systems in the region must begin with a discussion of SANDAG, the principle data collection and research agency for the area. SANDAG is the planning body for the eighteen municipalities and county government of San Diego. Typical of local government agencies, most of SANDAG's data collection responsibilities stem from government mandates. However, SANDAG is unique in the diversity of its responsibilities.

The earliest incarnation of SANDAG, the Comprehensive Planning Organization (CPO), was created in 1966 within the county administration by a state-authorized Joint Powers Agreement. The state government designated CPO as the Metropolitan Planning Organization in 1970 and the Regional Transportation Agency in 1972. In 1972, local area governments established the CPO as an independent joint powers agency, formally giving it the inde-

4. An important caveat: an accurate representation of regional information systems is very elusive. The array of state and federal agencies in a given issue area can be bewildering. Also, there are tens if not hundreds of non-profit organizations, national and state foundations, and state, national and even international professional associations and research institutions which may produce research pertaining to the region. Although this study is not fully comprehensive, it does provide an accurate description of the basic regional information infrastructure while identifying most, if not all, of the major actors within these systems. Hopefully, this study will be updated in the future.

5. A list of individuals interviewed can be found in Appendix A.

pendent status as the region's planning body. In 1978, CPO was jointly designated with the county to implement federal and state Clean Air Acts. The state created the State Census Data Center (SCDC) in 1978, and in 1980 the CPO was renamed SANDAG and became a formal regional center of the SCDC.⁶ In 1986, the state designated SANDAG as the Regional Transportation Commission. Three years later, in 1989, SANDAG became the Regional Planning and Growth Management Review Board by county mandate. In the 1990s, SANDAG has been designated as the Congestion Management Agency, the Integrated Waste Management Task Force, and the San Diego-Coronado Bridge Toll Authority.⁷ To accomplish the variety of tasks associated with these responsibilities, SANDAG employs eighty individuals, twenty-four of whom are directly involved in research and information systems management.⁸

SANDAG routinely produces reports, profiles, and projections in the areas of demographics, transportation, housing, land use, crime, the economy, and the environment.⁹ However, from an information systems perspective, its primary strength lies in its Regional Information System (RIS). Described as a "fully integrated system of data, computer hardware and software," RIS is essentially a master database composed of all the data SANDAG generates as it fulfills its responsibilities.¹⁰ The bulk of this data is demographic and geographic, but RIS also has models that allow agencies to evaluate alternative planning options by manipulating the data in various forms. For instance, an outside agency may use RIS data to profile populations in a given census tract, to determine the best location for a public facility, or to evaluate the likely impact of a land use initiative.

The world wide web and Geographic Information System (GIS) technologies dramatically enhance the power of RIS.¹¹ Today, most RIS modules are available over the web. Simply by visiting SANDAG's website, users

6. The SCDC is located within the State Department of Finance. See California Department of Finance, *Demographic Research Unit* (visited Feb. 10, 2000) <<http://134.186.99.249/html/demograp/drudesc.htm>> (containing information on the history and resources of the SCDC).

7. See SANDAG, *Brief History of SANDAG* (visited Feb. 7, 2000) <http://www.sandag.cog.ca.us/whats_new/brief_history.html>.

8. Letter from Robert Parrott, Director of Research of SANDAG, to David Michael Ryfe, Assistant Professor, School of Journalism, Middle Tennessee State University (June 25, 1999) (on file with author).

9. For instance, every month SANDAG publishes an "Info" report containing data produced as part of its overall planning program. Recent issues have forecast San Diego's regional growth, presented results of a public opinion survey on attitudes and perceptions about regional issues, and described regional demographic and economic characteristics.

10. SANDAG, *REGIONAL INFORMATION SYSTEM OVERVIEW* iii, ix (1998). For further information about SANDAG, visit their web site at <http://www.sandag.cog.ca.us>.

11. The United States Geographic Systems (USGS) service describes GIS as "a computer system capable of assembling, storing, manipulating, and displaying geographically referenced information, i.e. data identified according to their locations." USGS, *Geographic Information Systems* (visited Aug. 13, 1999) <<http://www.info.er.usgs.gov/research/gis/ttle.html>>.

can access a wealth of data. Moreover, SANDAG may represent this data in color-coded GIS maps that make it easy to capture, integrate, project, and overlay data, as well as make these data understandable to lay people. These tools and the RIS database are available to local government agencies through SANDAG's Local Technical Assistance (LTA) program and to the general public through SANDAG's non-profit corporation, SourcePoint.

The RIS system represents SANDAG's strength, but other structural aspects indicate its weaknesses. As a government agency, SANDAG is program-oriented. This means the data SANDAG collects is simply a "by-product" of responsibilities unrelated to data collection.¹² Planning, not data collection and research, is the primary focus of the agency. Much like the San Diego County Department of Health and Human Services, SANDAG collects data that is directly linked to specific programs for which it is responsible, such as Transnet or the Integrated Waste Management Board. Other kinds of data which may not be directly connected to an existing program generally lie outside its purview. Therefore, although its data-gathering resources are much more extensive than any other local agency, the scope of SANDAG's activities is restricted to specific program needs.

Of course, SANDAG's Board of Directors may ask SANDAG to collect data on issues outside the purview of an existing program. Here, however, SANDAG is inevitably drawn into the politics inherent in the decentralized regional political structure. SANDAG's Board of Directors includes representatives of the eighteen incorporated cities in the region, the county of San Diego, and advisory and liaison members from the California Department of Transportation, the U.S. Department of Defense, the San Diego Unified Port District, the San Diego Water Authority, and the regions of Tijuana, Baja California, and Mexico. The Board is charged with establishing a menu of programs and plans to be undertaken by SANDAG.

Normally, the Board discharges its duty at monthly meetings. During the meetings, the Board facilitates discussions, which may include community participation, and then votes to establish programs and plans for SANDAG. This process is advertised as a "streamlined, comprehensive and coordinated approach to planning," but one can imagine the politics involved in a voting process that includes representatives from eighteen municipalities.¹³ Moreover, in many cases, even if the Board votes to recommend particular plans or programs, it remains up to individual local governments to adopt them.¹⁴ Thus, outside its regular program structure, SANDAG's itiner-

12. SANDAG, *supra* note 10, at ix.

13. SANDAG, *About SANDAG* (visited Aug. 13, 1999) <http://www.sandag.cog.ca.us/whats_new/about_sandag.html>.

14. SANDAG possesses a relative power to enforce its recommendations. On issues in which it has secured a federal or state mandate, it may force local municipalities to abide by its recommendations. However, on every other issue, SANDAG acts merely as a neutral body, and municipalities are free to ignore it. Telephone Interview with Doree Henry, Clerk of SANDAG's Board (Aug. 19, 1999).

ary is shaped by the wider political context.

Finally, although SANDAG collects primary data, other government agencies gather most of the data SANDAG uses. For instance, base line demographic statistics are generally obtained from the U.S. Census conducted every ten years and from population estimate models devised by the California's Center for Demographics. Data on the health and welfare of the population come from the San Diego County Department of Health and Human Services, and crime statistics are gathered by local police agencies such as the Sheriff's Department and the San Diego Police Department. Data on the economy may come from a host of sources, including California's Employment Development Department, the U.S. Bureau of Labor Statistics, and the Greater San Diego Chamber of Commerce, among others.

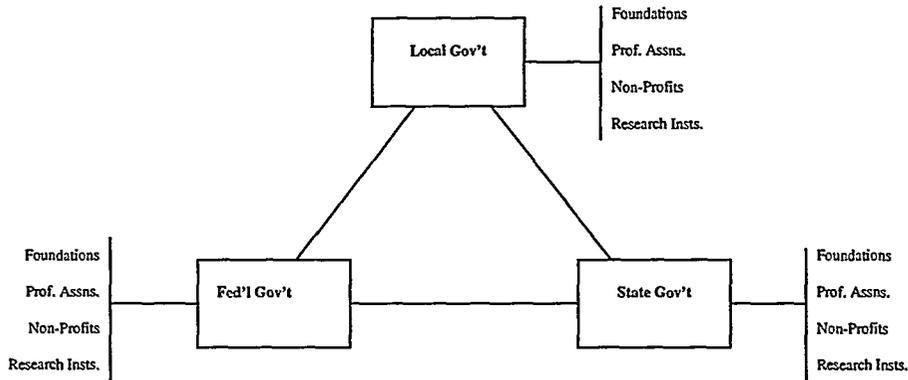
This reliance on secondary data implies two things: first, SANDAG's ability to conduct innovative research is conditional on the type of data available from primary data collectors; and, second, SANDAG's data will only be as solid as the quality control systems within these primary agencies. Thus, even though SANDAG has tremendous value as a central repository of data for San Diego, aspects of its organizational structure and the wider political context limit SANDAG's value as a regional data source.

II. THE REGIONAL INFORMATION INFRASTRUCTURE

SANDAG is clearly the preeminent regional data collection agency, but it is only one of many agencies that form the regional information infrastructure. Before describing particular data domains and agencies, it is useful to take a more global view of this infrastructure. At its center are local government agencies (see Figure 1).¹⁵ These agencies do most of the primary data collection in the region. They are linked closely with state agencies through funding streams, program policies, and guidelines. Many county-administered programs are funded by state legislatures. As part of the requirements for receiving this funding, county agencies report to the state on a program's performance and effectiveness, and the agencies collect data to produce such reports.

County agencies are less closely connected to federal agencies (as represented in the figure by a dashed line). Though federal funds and laws obviously shape local activities, county agency personnel generally have little contact with federal officials. However, data from county agencies still filter upward to federal offices, usually through the mediation of state agencies.

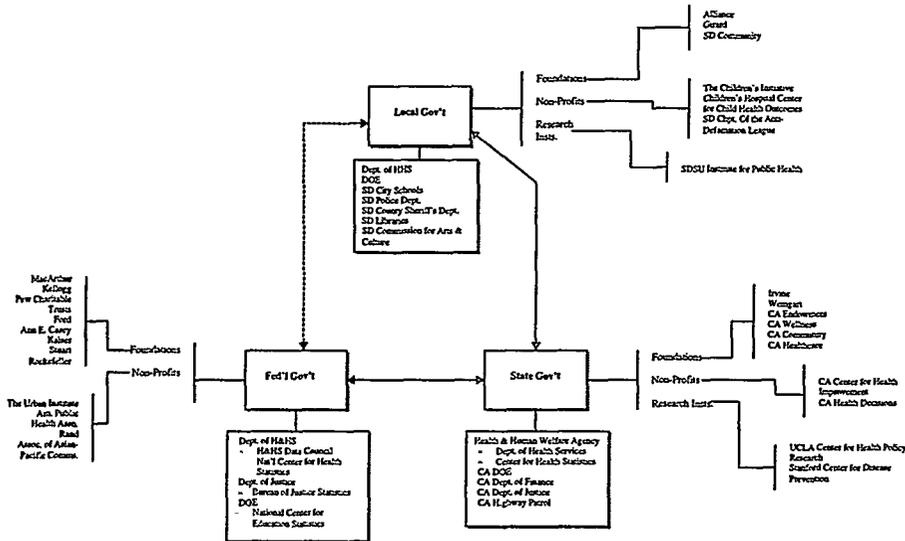
15. Except in the case of economics, where federal and state agencies collect the majority of data, and local agencies do very little primary data collection.



While government agencies form the backbone of the regional information infrastructure, other kinds of organizations also participate in data collection and research at the local, state, and national levels of this system. These organizations may be grouped generically into four categories: foundations, professional associations, non-profit organizations, and research institutes. However, a particular sub-system of the regional information infrastructure does not necessarily contain each of these four categories. For instance, although professional associations collect certain kinds of economic data, they may not collect environmental data. Similarly, although non-profit organizations are very active in the environmental sector, they are less active in the economic sector. Factors such as funding patterns, political developments, and perceptions of pressing needs shape the number of these programs in any particular sub-system.

Among foundations, professional associations, and non-profit organizations, data collection and research is usually secondary to other activities such as membership support, policy tracking and lobbying, and public awareness campaigns. Even so, these kinds of organizations are an important part of regional information systems. For example, a catalyst in a foundation may move it to devote substantial resources to the collection of primary data and the publication of a significant piece of research, or a study published by a local non-profit agency can greatly influence policy makers. Therefore, it is important to include these organizations in a description of the regional information infrastructure even if they are properly viewed as secondary rather than primary components of these information systems.

A. Health and Human Welfare



Since regional information systems are linked so tightly to government programs, data collection and research are closely aligned with those areas of government concern. Perhaps the most extensive of these areas is health and human welfare.¹⁶ This category principally includes the areas of health, education, and crime, but it also extends to more cultural concerns such as data on local arts programs and libraries (see Figure 2). As principal actors in this system, the San Diego County Departments of Health and Human Services (HHS) and Education (DOE) collect the bulk of health- and education-related data in the region. HHS gathers vital statistics on the San Diego population as well as data on rates of infectious diseases. DOE collects data on educational performance and youth behavior in San Diego County schools. The City of San Diego School District, representing the largest school district in the region, is also very active in collecting education-related data. In addition, the City of San Diego Police Department and the San Diego County Sheriff's Department collect most crime-related data. In addition, the San Diego Arts and Culture Board and the San Diego County Library Services collect data connected to their programs.

Each of these agencies is linked to counterparts at the state level. For example, the San Diego County HHS is linked to the Department of Health Services within the California Health and Human Welfare Agency. Through its Center for Health Statistics, the California Health and Human Welfare Agency coordinates, collects, and manages data collected by all county HHS

16. In the next few pages, I provide an overview of the three major sub-systems in the regional information infrastructure. For the sake of brevity, I have discussed primarily government agencies, which are most important to these information systems. For more information on entities other than government agencies, visit the websites presented in Appendix B.

agencies in the state. Similarly, the California Departments of Justice and Education collect data on crime and education, respectively, from the relevant county organizations. The San Diego City Commission on the Arts is linked to the California Arts Council, and the San Diego County Library system is part of the wider state library system.¹⁷ These relationships are often very strong because individuals at the county and state levels may interact directly with one another.

On the other hand, state rather than local agencies maintain regular contact with the relevant federal agencies. For instance, the U.S. Department of Health and Human Services receives most of its county-level data through the California Department of Health Services. The California Department of Justice filters county-level crime data to the U.S. Department of Justice, and the California Department of Education passes data to its federal counterpart.¹⁸ Although some county agencies have contact with their federal counterparts,¹⁹ the relationship between state and local agencies is stronger and more consistent than the relationship between federal and local agencies.

A variety of foundations, non-profit organizations, and, to a lesser extent, research institutes surround this core health and welfare information system at all levels. Unfortunately, it is difficult to summarize the relationship between these organizations and the core system because each individual organization develops its own unique set of activities. However, in the broadest terms, foundations fund applied research directed at the level at which they operate. Thus, the Alliance Healthcare foundation, which concentrates its resources on the San Diego region, provides funding for local,

17. Because programs developed by the San Diego City Commission on the Arts are usually self-initiated rather than mandated by the California Arts Council, the link between the Commission on the Arts and the Arts Council is slightly different from that of other agencies. Telephone Interview with Joe Ross, Program Development Coordinator for the San Diego City Commission on Arts & Culture (July 16, 1999). Although the Commission on the Arts may receive funds for its programs from the Arts Council, the Commission on the Arts has no formal relationship with the Arts Council. *See id.* Of course, for any program that is funded by the Arts Council, the Commission on the Arts must collect data and submit progress reports. *See id.* Thus, the relationship between the agencies is best characterized as formal with respect to funding streams for specific programs but informal with respect to other aspects of the relationship. *See id.*

18. Each of these federal agencies maintains national databases that are accessible via the Internet. *See* Department of Health and Human Services, *Department of Health and Human Services* (visited Feb. 9, 2000) <<http://www.os.dhhs.gov>>; U.S. Department of Justice, *Bureau of Justice Statistics* (visited Feb. 9, 2000) <<http://www.ojp.usdoj.gov/bjs>>; Department of Education, *National Center for Education Statistics* (visited Feb. 9, 2000) <<http://www.nces.ed.gov>>. For additional federal databases, see Centers for Disease Control and Prevention, *National Center for Health Statistics* (visited Feb. 9, 2000) <<http://www.cdc.gov/nchs>>.

19. For example, the Centers for Disease Control, an agency located within the Federal HHS, administers a Youth Risk Behavior Survey program in which the City of San Diego School system participates. *See* Interview with Jack Campana, Director of the Health, Physical Education, and Wellness Department for the City of San Diego School System (July 9, 1999). The Youth Risk Behavior Survey is the "best adolescent health practices survey" in the country. *Id.*

applied research activities, such as assessments of needle exchange programs.²⁰ The more nationally-based Kaiser Foundation, on the other hand, tends to publish data on the nation's health as a whole. For example, the Kaiser foundation publishes basic demographic, medicaid, health insurance, and health needs data for all fifty states.²¹ However, the Kaiser Foundation also administers a California Health Policy program through which the foundation conducts studies that include regional data.

Though not so centrally connected to data collection and research, non-profit organizations also play an important role within this information sub-system. Usually, these organizations combine some form of issue advocacy and research. For instance, the California Center for Health Improvement (CCHI) interprets health research and policy information for the public as part of its effort to influence the healthcare policymaking process.²² The local chapter of the Anti-Defamation League collects hate-crime related data.²³ Like the Anti-Defamation League, other non-profits, such as the Urban Institute and Rand, tend to pursue issue advocacy through their research efforts. For example, Rand publishes a wide variety of research and data on California which includes a wealth of material on the San Diego region.²⁴ Similarly, the locally-based Children's Initiative publishes reports as part of its public information campaigns. Furthermore, the Center for Child Health Outcomes at Children's Hospital conducts medical research and assists in the evaluation of county government programs.

Still other non-profit organizations are linked to the San Diego County Health and Human Services Agency (HHSA) as contractors.²⁵ For example, the Chicano Federation operates social service programs which are funded by the county, as does the Urban League and the Union of Pan-Asian Communities. As part of the county infrastructure, these non-profit organizations are required to collect program-related data. However, for confidentiality reasons, this data is sent directly to the county and are not publicly accessible.²⁶

20. See generally LINDA S. LLOYD ET AL., *INJECTION DRUG USE IN SAN DIEGO COUNTY: A NEEDS ASSESSMENT* (1994). This publication was sponsored by Alliance Healthcare Foundation. See *id.*

21. See The Henry J. Kaiser Family Foundation, *State Health Facts* (visited Feb. 9, 2000) <<http://www.kff.org/docs/state>>.

22. See California Center for Health Improvement, *Policy Matters* (visited Feb. 9, 2000) <<http://www.cchi.org/cgi-bin/cchi/default.asp>>.

23. See San Diego Anti-Defamation League, *1992-1995 Hate Crimes Registry Executive Summary* (visited Oct. 7, 1999) <http://www.adl.org/san-diego/f_95exec.html>.

24. See RAND California, *An Online Source on Public Policy and Economics* (visited Oct. 7, 1999) <<http://www.ca.rand.org>>.

25. The San Diego County HHSA has contracts with over 500 vendors, many of whom are grass-roots non-profit organizations that deliver primary health- and social service-related services to individuals at a neighborhood level. See KPMG PEAT MARWICK LLP, *COUNTY OF SAN DIEGO HEALTH AND HUMAN SERVICES AGENCY: PROPOSED AGENCY BUSINESS MODEL REPORT* (Jan. 6, 1998) (on file with author).

26. Telephone interview with Marcelles Walker of the Chicano Federation (July 22,

Professional associations and research institutes are much less important to the health and human welfare information system than foundations and non-profit organizations.²⁷ UCLA's Center for Health Policy and San Diego State University's School of Public Health are the only two regional institutes which address issues of health and human welfare. Despite this lack of depth, the Center for Health Policy and the School of Public Health have produced research, often in collaboration with local government agencies. In so doing, they have been especially good at transforming government-collected data into knowledge useful for the community.

B. The Environment

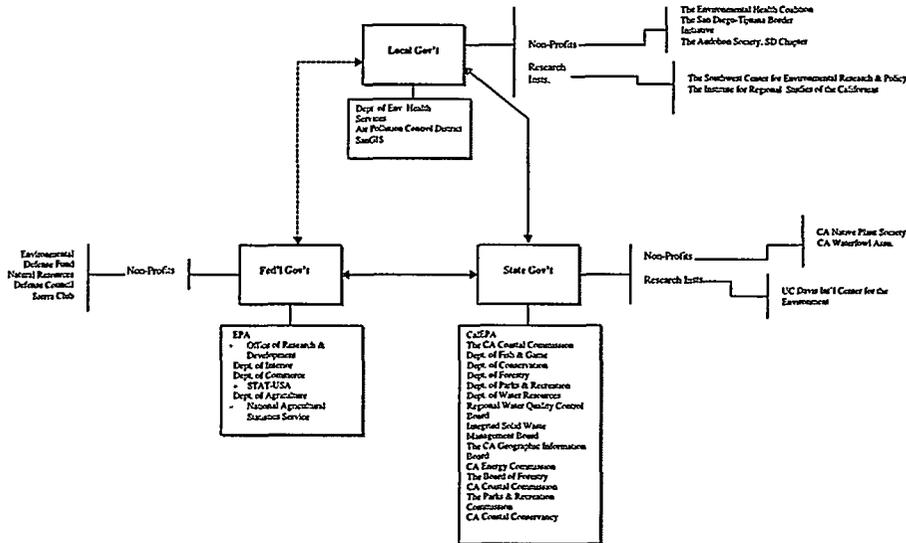
Compared to the health and human welfare information system, the environmental system is concentrated more within government agencies and is distributed across a wider variety of these agencies (see Figure 3). This results in an information system is at once more centralized and more fragmented than the health and human welfare information system. Many environmental government agencies were created to carry out very specific oversight functions. For instance, the Integrated Solid Waste Management Board is designed to issue permits and monitor activities related to solid waste disposal, while the Fish and Game Department performs a similar role in relation to California's wildlife. These mandates are very narrow, and much of the data collected through them are in the form of permit records that are difficult to share with other agencies.

Unlike in the health and human welfare system, non-profit organizations and foundations have not created links across government agencies to reduce this fragmentation. Foundations are nearly non-existent in this system, and non-profits have preferred to monitor government agencies rather than coordinate activities across agencies. Thus, while environmental data is more centralized within government agencies, there are many such agencies, and they are poorly coordinated.

Similar to health and human welfare, the center of the environmental information system is occupied by local government agencies (see Figure 3). The San Diego County Department of Environmental Health Services keeps all records related to hazardous materials, toxic substances, and other ground

1999).

27. My research did not reveal any health and human welfare research produced by professional associations pertaining directly to the San Diego region. While the Academy of American Pediatrics and the American Medical Association, among others, produces volumes of health and human welfare research, the research did not pertain directly to the San Diego region.



pollutants. The Air Pollution Control District monitors toxin levels in the local atmosphere. The Regional Water Quality Control Board and the Coastal Commission collect data on water pollution, and both are state-created agencies with local jurisdictions. The San Diego Geographic Information Systems (SanGIS) keeps a digital land base for the region (composed of roads, lots, parcels, etc.) and has produced about 200 layers of data that can be overlaid onto these land base maps.²⁸

The number of agencies involved in environmental data collection expands considerably at the state level. Besides the California Environmental Protection Agency (CalEPA), other state agencies include Departments of Conservation, Fish and Game, Forestry and Fire Protection, Parks and Recreation, and Water Resources. Within each of these departments are sub-agencies responsible for particular issue areas. For instance, the CalEPA is composed of six entities: the Air Resources Board, the Department of Pesticide Regulation, the Department of Toxic Substances Control, the Integrated Waste Management Board, the Office of Environmental Health Hazard Assessment, and the State Water Resources Control Board. Beyond these core departments, there are a number of commissions and boards, including the California Coastal Commission, the California Energy Commission, the Fish and Game Commission, the Board of Forestry, the Parks and Recreation Commission, and the California Conservancy.

This is a dizzying array of departments, agencies, commissions, and boards. Each was created in response to a specific environmental regulation or to administer a specific set of programs. Much of the data collected by

28. See Electronic correspondence from Lisa Stapleton, SanGIS, to David Michael Ryfe, Assistant Professor, School of Journalism, Middle Tennessee State University (June 10, 1999) (on file with author); see also SanGIS, *We Have San Diego Covered!* (visited Feb. 10, 2000) <<http://www.sangis.org>>.

these agencies is in the form of permit records. For example, businesses and homeowners must file forms if they handle potential pollutants as defined by state guidelines. These forms are stored in enormous databases managed by the San Diego County Department of Environmental Health Services.²⁹ Similarly, individuals and businesses possessing property abutting a waterway, such as a beach, must also obtain a permit from the California Coastal Commission, and farms using pesticides must be inspected by the Department of Pesticide Regulation.

Similar to health and human welfare agencies, county environmental agencies are closely connected to their state counterparts. However, federal environmental agencies, unlike federal health and human welfare agencies, have a considerable presence in the San Diego region.

In particular, four federal departments are especially important: the U.S. Environmental Protection Agency, the U.S. Department of the Interior, the U.S. Department of Commerce and the U.S. Department of Agriculture. The Department of Interior contains the Geological Survey, the National Park Service, the Fish and Wildlife Service, and the Bureau of Land Management. The U.S. Department of Commerce runs the National Climatic Data Center, the National Oceanic and Atmospheric Administration, the National Marine Fisheries Service, and the National Geophysical Data Center. The U.S. Department of Agriculture is responsible for the Forestry Service and the Natural Resources Conservation Service. Many of these agencies have local offices in San Diego that collect data specific to this region. The U.S. Environmental Protection Agency has sought to compile these data nationally through its Office of Research and Development, which it administers as a set of environmental databases available on the internet.³⁰

Non-profit environmental groups surround these government agencies at every level. These groups spend much of their energy lobbying government agencies to take a particular action or suing them for inaction. However, non-profit environmental groups also conduct extensive public education campaigns, which often involves some data collection or research component. For instance, the locally based Environmental Health Coalition produces "Right to Know" reports in which it documents the presence of hazardous materials in particular communities using data from the San Diego County Department of Environmental Health Services. The Environmental Health Coalition has also conducted a pilot health survey of residents in several especially impoverished San Diego neighborhoods.³¹

29. Over 13,000 businesses in the San Diego region handle hazardous materials. Telephone interview with Mike Handman, Emergency Response Coordinator for the San Diego County Department of Environmental Health Services (July 14, 1999).

30. See EPA, *Office of Research and Development* (visited Feb. 10, 2000) <<http://www.epa.gov/ORD/>>; U.S. Department of Commerce, *STAT•USA* (visited Feb. 10, 2000) <<http://www.stat-usa.gov>> (containing a database including data collected by a variety of government agencies); U.S. Department of Agriculture, *National Agriculture Statistics Service* (visited Feb. 13, 2000) <<http://www.usda.gov/nass/>>.

31. See Telephone interview with Joy Williams, Community Assistance Director for the

Similarly, the San Diego Chapter of the National Audobon Society regularly conducts regional bird and wildlife surveys.³² The California Native Plant Society³³ keeps an inventory of plants native to the state, and the California Waterfowl Association likewise tracks the population of various waterfowl.³⁴ Although nationally based groups generally do not conduct research specific to the San Diego region, several groups have published reports or data pertaining to this area, including the Environmental Defense Fund,³⁵ the Natural Resources Defense Council,³⁶ and the Sierra Club.³⁷

Non-profit organizations in the environmental sector have substantial contact with government agencies. Three other organizations have worked to make these collaborations more uniform and helpful to all parties: the Southwest Center for Environmental Research and Policy, the Institute for Regional Studies of the Californias, both located at SDSU, and the non-profit San Diego-Tijuana Border Initiative. Both the Southwest Center for Environmental Research and Policy and the Institute for Regional Studies of the Californias are dedicated to regional environmental research as well as inter-agency and cross-border collaboration on environmental issues. The San Diego-Tijuana Border Initiative is also dedicated to cross-border resource sharing, which includes the collection of regional environmental data.

Ostensibly, foundations dedicated to environmental issues are needed just as much as foundations dedicated to health and human welfare. However, although a great number of foundations are active in the area of health and human welfare, my research did not reveal any foundations active in environmental issues.³⁸

Environmental Health Coalition (July 9, 1999); *see generally* ENVIRONMENTAL HEALTH COALITION, COMMUNITIES AT RISK: YOUR RIGHT TO KNOW ABOUT TOXICS IN SAN DIEGO COUNTY (April 1993); ENVIRONMENTAL HEALTH COALITION, CHILDREN AT RISK? A COMMUNITY-BASED HEALTH SURVEY OF RESIDENTS IN SAN DIEGO'S MOST POLLUTED NEIGHBORHOODS (November, 1998).

32. *See* Electronic correspondence from Claude G. Edwards, representative of the Audubon Society, to David Michael Ryfe, Assistant Professor, School of Journalism, Middle Tennessee State University (July 11, 1999) (on file with author).

33. *See* California Native Plant Society, *Rare Plant Program* (visited Feb. 19, 2000) <<http://cnps.org/vegetation/vindex.htm>>.

34. *See* California Waterfowl Association, *Programs and Resources* (visited Oct. 14, 1999) <<http://www.calwaterfowl.org/Main.htm>>.

35. *See* Environmental Defense, *Search* (visited Feb. 19, 2000) <<http://www.edf.org/search>>.

36. *See* Natural Resources Defense Council, *nrdc's web sites* (visited Feb. 19, 2000) <<http://www.nrdc.org/search/ssearch.html>>.

37. *See* Sierra Club, *Search the Sierra Club Web Site* (visited Feb. 17, 2000) http://www.sierraclub.org/_vti_script/search.html0.idq; *see also* California Environmental Resources Evaluation System, *Environmental Information by Organization: Non-Governmental Organizations* (visited Feb. 19, 2000) <<http://www.ceres.ca.gov/org/ngo.html>> (containing a useful listing of environmental non-profit organizations at the state and national levels). This system has been developed for the specific purpose of collecting and codifying the myriad sources of environmental information in the state and publishing them on the web. *See id.*

38. Likewise, despite the existence of numerous associations of environmental activists

C. Economics

The collection of economic data presents its own distinctive difficulties. Health and human welfare data is gathered from individuals, usually in connection with a government program. Environmental data is collected using technology to measure aspects of nature. In contrast, economic data must be gathered from the thousands of for-profit companies driving the economy. These companies may be very small, or they may be dispersed across regions, across the country, or across the globe. Whatever their size, these companies consider their economic performance to be proprietary information, unless they are publicly owned. In this context, quality economic data is very expensive to obtain. Therefore, it is not surprising that the economic regional information system is the thinnest of the three areas, that federal and state agencies, rather than not county agencies, collect the majority of economic data (see Figure 4), and that a variety of for-profit companies specialize in gathering and interpreting these data.³⁹

At the federal level, two agencies collect the bulk of economic data: the Bureau of Labor Statistics (BLS) and the Department of Commerce.⁴⁰ The BLS collects labor market information, including employment and wage data down to the county level, and produces the consumer price index. Through its Bureau of the Census and Bureau of Economic Analysis, the Department of Commerce collects a variety of data related to personal income, employment, regional economic profiles, foreign trade, construction, and housing.

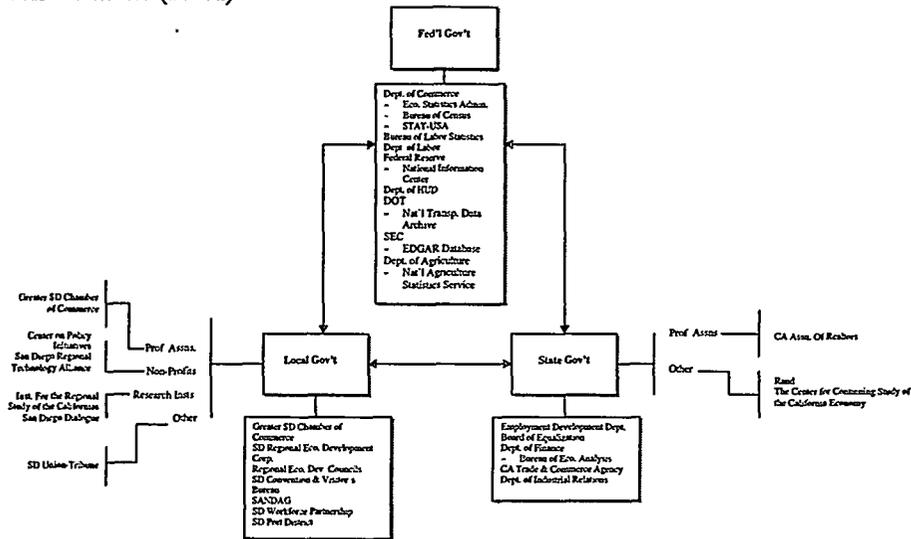
Other federal agencies also collect economic-related statistics. The Federal Reserve produces summaries of current regional economic conditions based on reports from the Federal Reserve Bank and Branch directors.⁴¹ The

and government professionals, my research did not reveal any professional associations that participated in data collection or research in this field.

39. EconData.Net is an excellent internet source with links to all of the agencies discussed below. The Economic Development Administration sponsors the website, which aims to be "a convenient, comprehensive first stop for anyone searching among the vast, disparate array of public and private data sources on the Web." EconData.Net, *About EconData.Net* (visited Feb. 19, 2000) <<http://www.econdata.net/index.html>>.

40. The Federal Interagency Council on Statistical Policy maintains a website that provides links to all of these agencies. See Federal Interagency Council on Statistical Policy, *Agencies* (visited Feb. 14, 2000) <<http://www.fedstats.gov/noframe.html>>. The Global Information Locator Service (GILS) will be of use in finding government publications. See Global Information Locator Service, *GILS* (visited Mar. 16, 2000) <<http://www.gils.net>>. See generally University of California San Diego, *Social Sciences Data Collection* (visited Feb. 14, 2000) <<http://ssdc.ucsd.edu>>; Oregon State University, *Government Information Sharing Project* (visited Feb. 19, 2000) <<http://govinfo.kerr.orst.edu>>; University of Virginia Library, *Geostat: Geospatial and Statistical Data Center* (visited Feb. 14, 2000) <<http://fisher.lib.virginia.edu>>.

41. See The Federal Reserve Board, *Summary of Commentary on Current Economic Conditions* (visited Feb. 19, 2000) <<http://www.bog.frb.fed.us/FOMC/BeigeBook/1999/>> (containing reports commonly known as "beige books"); see generally The Federal Reserve, *National Information Center* (visited Feb. 19, 2000) <<http://www.ffiec.gov/nic/default.htm>>

Security and Exchange Commission (SEC)⁴² and the Small Business Administration (SBA)⁴³

gather data on financial transactions and regional small business economies, respectively. The Department of Housing and Urban Development (HUD) administers a database on America's cities and suburbs that includes data on employment, economic development, land use, income, and poverty. The Departments of Treasury, Agriculture, and Transportation also collect data on their respective issue areas.⁴⁴

Unlike federal agencies in the area of health and human welfare, federal agencies in the area of economics gather much of the economic data themselves rather than collecting data gathered by local agencies. However, federal agencies obtain some of these data from state agencies. The relevant state agencies are the California Employment Development Department, which publishes monthly, quarterly, and annual statistics on state labor market conditions; the California Department of Finance, within which the Cali-

(containing a wealth of economic data).

42. See Securities Exchange Commission, *Edgar Database of Corporate Information* (visited Mar. 7, 2000) <<http://www.sec.gov/edgarhp.htm>>.

43. See U.S. Small Business Administration, *SBA* (visited Mar. 7, 2000) <<http://www.sba.gov>>.

44. Again, the websites of these agencies are wonderful resources for a variety of data. See HUD, *Reading Room* (visited Feb. 16, 2000) <<http://www.hud.gov>>; see also Center for Urban Policy Research, *The State of the Nation's Cities: A Comprehensive Database on American Cities and Suburbs* (visited Feb. 17, 2000) <<http://www.policy.rutgers.edu/cupr/sonc.htm>>; Internal Revenue Service, *Statistics and Income Program* (visited Feb. 17, 2000) <http://www.irs.treas.gov/tax_stats/index.html> (income tax data); Department of Transportation, *Bureau of Transportation Statistics* (visited Feb. 13, 2000) <<http://www.bts.gov>>; Department of Agriculture, *National Agriculture Statistics Service* (visited Mar. 7, 2000) <<http://www.usda.gov/nass>>.

fornia Bureau of Economic Analysis resides; the California Trade and Commerce Agency, which collects trade-related data; and the California Department of Industrial Relations, which collects data on the state's workplace population and workplace conditions.⁴⁵

Outside of these government agencies, most other organizations in this information system are private, for-profit enterprises. The California Association of Realtors collects and sells data on trends in the real estate industry. Similarly, the Rand Corporation manages a database of business and economic statistics and publishes economic reports. The Center for Continuing Study of the California Economy (CCSCE) also conducts economic research for a fee. There are also various other private, for-profit market analysis firms that also collect economic data.⁴⁶ However, these data are very expensive to obtain and are generally not available to the public.⁴⁷

At the regional level, local counterparts to state and federal economic data collection agencies do not exist. That is, there is no San Diego Employment Development Department or Bureau of Labor Statistics. Instead, there is a triumvirate of agencies involved in monitoring the local economy. These are the Greater San Diego Chamber of Commerce, regional economic development councils and corporations, and the San Diego Convention and Visitor's Bureau. Of these three agencies, the Chamber of Commerce is the most active in collecting data. The Chamber of Commerce, through its Economic Research Bureau, develops regional economic profiles and publishes a monthly Economic Bulletin that highlights trends in particular industries. Similarly, the San Diego Convention and Visitor's Bureau collects a variety of data related to the tourist industry, such as visitor volume estimates, lodging trends, and border crossing data.⁴⁸ The four Economic Development agencies—the East County, Center City, and South County Development Corporations plus the San Diego Regional Economic Development Corporation—are private, non-profit agencies funded by local government and businesses.⁴⁹ These agencies are designed to stimulate economic development,

45. As with federal agencies, each of these state agencies maintains a website where many of their databases may be accessed. A central site for these agencies is the California Government home page, which provides links to every state government agency. *See* State of California, *California Agency Index* (visited Feb. 17, 2000) <<http://www.ca.gov/search/hello.html>>.

46. *See generally* Center for Continuing Study of the California Economy, *CCSCE* (last modified July 29, 1999) <<http://www.ccsce.com>>. Among other for-profit firms are Claritas, Regional Economic Forecasting Associates, and Urban Decision Systems. *See* Interview with Millicent Cox, Economic Consultant in the San Diego area, in San Diego, California (July 1, 1999); *see generally* EconData.Net, *Quick Links* (visited Feb. 19, 2000) <<http://www.econdata.net/index.html>> (containing links to a variety of firms that conduct economic research).

47. Beyond these sources, I was unable to identify other state or national organizations involved in economic data collection.

48. *See* Electronic correspondence from James Navarro, Research Coordinator, San Diego Convention and Visitor's Bureau, to David Michael Ryfe, Assistant Professor, School of Journalism, Middle Tennessee State University (June 29, 1999) (on file with author).

49. Because these agencies are linked to local government through funding streams and

provide resources for local businesses, particularly small businesses, and coordinate regional economic growth. Within these mandates, they do little research or data collection.⁵⁰

Aside from these agencies, a few other local organizations are noteworthy. Although SANDAG is not solely dedicated to economic data collection, it produces periodic regional economic forecasts based on data obtained from other agencies.⁵¹ A useful companion to SANDAG's recent prosperity report is a similarly designed, but much more critical, report published by the non-profit Center for Policy Initiatives.⁵² The Port District collects economic data related to airport and freight transportation systems. The San Diego Workforce Partnership collects data on clients seeking employment through their programs, particularly through the recently passed welfare-to-work program initiated by California. San Diego Dialogue, an organization located on the UCSD campus, has published a variety of reports on the border economy.⁵³ The San Diego Regional Technology Alliance, a non-profit organization dedicated to fostering better use of technology in industries, has recently created an industry cluster database on its website.⁵⁴ Finally, the *San Diego Union Tribune* collects a variety of marketing data. Its most useful data are contained in a survey conducted continuously over the last twenty-five years of local consumer habits, the Continuing Analysis of Shopping Habits (CASH) survey.⁵⁵

have a great deal of contact with local government officials, I have put these agencies in the local government category.

50. *But see* EAST COUNTY ECONOMIC DEVELOPMENT COUNCIL, THE ECONOMIC ADJUSTMENT OF SMALL TO MEDIUM-SIZED DEFENSE RELATED FIRMS IN SAN DIEGO COUNTY (1997) (containing a survey of firms in the San Diego region and assessment as to how defense-related industries were adjusting to recent down-sizing trends); East County Economic Development Council, *San Diego County Connector* (visited Feb. 16, 2000) <<http://connector.sdsu.edu/default.asp>> (containing a database of firms in the San Diego region).

51. *See* SANDAG, *San Diego Region Demographic and Economic Characteristics*, SANDAG INFO, Mar.-Apr. 1999, at 19. For a list of publications, see SANDAG, *Regional Economic Prosperity Strategy* (visited Oct. 7, 1999) <http://www.sandag.cog.ca.us/projects/regional_planning/prosperity_strategy.html>.

52. *See* ENRICO A. MARCELLI & PASCALE M. JOASSART, PROSPERITY AND POVERTY IN THE NEW ECONOMY: A REPORT ON THE SOCIAL AND ECONOMIC STATUS OF WORKING PEOPLE IN SAN DIEGO COUNTY (1998).

53. *See* San Diego Dialogue, *Publications* (visited Feb. 16, 2000) <<http://www.sddialogue.org/pubs/index.html>>.

54. *See* Telephone interview with Dawn Cicero, Program Manager of the San Diego Regional Technology Alliance (Aug. 2, 1999). The industry cluster database is simply a GIS map of industries by geographic location in the region. *See id*; *see also* San Diego Regional Technology Alliance, *San Diego Regional Technology Alliance* (visited Aug. 4, 1999) <<http://www.sdrta.org/sdrta/clusterdata/clusterdata.html>>.

55. The bi-annual survey contains data on the consumption habits of 300 San Diego residents in a variety of categories, from men's shoes to washing machines. Electronic correspondence from Jeff Beliveau, Director of Research, *San Diego Union Tribune* to David Michael Ryfe, Assistant Professor, School of Journalism, Middle Tennessee State University (June 7, 1999) (on file with author).

D. Problems with the Regional Information Infrastructure

Together, organizations in the areas of health and human welfare, the environment, and economics account for the vast majority of data collection and research in the San Diego region. Indeed, excepting the Registrar of Voters, which collects data related to voting patterns, all other data-collecting organizations collect a kind of data that fits easily into these three categories. This illustrates how strongly data collection is linked to government programs. Unless government programs are directed toward an issue, it is very unlikely that data are continuously being collected on that issue.

Although a wide variety of information is collected by these systems, it is usually as a by-product of program activities, and there is little time, and even fewer resources, devoted to data collection or research that is not geared toward assessing program performance or effectiveness. The result is a deep, but narrow, information infrastructure that rarely seeks answers to questions that lie outside the boundaries of government activities.

Other problems with regional information systems include problems with the quality of data, a lack of coordination across agencies, poor data accessibility, and a limited research capacity. All of these problems are caused, at least in part, by the fact that few of these agencies devote significant resources to data collection, maintenance, and dissemination.

III. QUALITY OF DATA

Data quality is perhaps the most difficult problem with regional information systems. A key aspect of this problem pertains to the uniformity of data categories and collection procedures over time. Many government agencies have been collecting data for years, perhaps decades. During that time, they may have reorganized, and they likely became responsible for collecting different categories of data. Perhaps the forms on which data was charted changed as well. However, because few resources are devoted specifically to data maintenance, little effort is made to account for these changes.⁵⁶ As changes accrue, it may become very difficult to compare data collected today with data collected five or ten years ago because categories and even entire forms have been altered. The result is a gradual deterioration in the quality of the data.

Uniformity and validity are crucial aspects of data quality. Validity relates to how well a particular data set represents a given phenomenon. In an ideal world, data accurately portray the event or process under investigation. However, because agencies collect data as a by-product of programmatic ac-

56. See Interview with Linda Pratt, Director of the Community Sustainability Program, San Diego Natural History Museum and former employee, San Diego County Department of Environmental Health Services, in San Diego, California (June 10, 1999). However, in subsequent conversations with other data collectors, nearly all agreed that this issue was a concern for their respective organizations.

tivities, this is sometimes difficult to ensure. Dr. Nancy Bowen of the San Diego County HHSA experienced this difficulty during her efforts to develop an accurate measure of homelessness in San Diego.⁵⁷ These numbers are normally developed from counts of individuals who sign up at shelters for the homeless. However, Dr. Bowen found that people often were counted at these shelters only if they had formally registered at the shelter. Often the shelters were full, leaving uncounted a crowd of homeless people in the hallways and doorsteps. Obviously, a measure which does not count these people is not a valid representation of the rate of homelessness. While the rate of homelessness is a unique challenge to data collectors, Dr. Bowen's experience illustrates a more generic problem: accurate data collection is very time consuming, and if it is done as a by-product of other activities, the data's validity may be in question.

Quality of data is also associated with the issue of timeliness. Data must represent the current status of an issue area in order to be useful to policy-makers. However, timely data can be very difficult to obtain. This is especially true in the case of economic data. For instance, the California Employment Development Department releases employment figures monthly. However, those figures are tentative and do not become conclusive until the release of the yearly figures.⁵⁸

Similarly, BLS numbers on the state of the economy routinely become available one to two years after data have been collected. In this situation, analysts are forced to make estimates of the current situation based upon the numbers for prior years. This kind of estimation can be more of an art than a science because of the many assumptions involved.

Indeed, the softness of government economic estimates is one reason that businesses routinely turn to private market research firms.⁵⁹ These firms use government numbers, but because they are devoted solely to economic analysis and forecasting, they add value to these numbers that government analysts are unable to match.

The problem of data quality is pernicious because it generally lies beneath public deliberations. Agencies release the best numbers available and often urge others to use caution when using these measures. However, by the time these data filter into public conversation, that caution has usually dissipated. At the level of public policy discussion, data often are employed as factual descriptions, and issues of quality are rarely raised. To the extent that the data does not accurately reflect the status of a particular issue, delibera-

57. See Telephone interview with Dr. Nancy Bowen, San Diego County HHSA (June 10, 1999).

58. See Interview with Kelly Cunningham, Director of Research for the Greater San Diego Chamber of Commerce, in San Diego, California (June 15, 1999). Mr. Cunningham also stressed this point during a presentation at the Dashboard Series Roundtable held by the San Diego Natural History Museum on June 8, 1999. See *id.*

59. See Interview with Millicent Cox, Economics Consultant in the San Diego area, in San Diego, California (July 1, 1999).

tions and policies based upon this data is themselves likely to be faulty.

A corollary to the problem of quality is that of coordination across agencies. Data often is most useful when it can be combined across a number of different sources to construct a larger picture of a given situation. Coordination refers to the ability of agencies to share data in this manner. Unfortunately, the structure of government agencies severely limits their capacity to share data. The environmental sector is an especially good example of this problem.⁶⁰ A myriad of government agencies is involved in environmental data collection. Each of these agencies collects data specific to its responsibilities: hazardous materials in the ground, toxins in the air, forest degradation, water pollution, etc. These agencies often employ different forms for collecting data and thus use different categories for inputting that data into their databases. They may even use different, and incompatible, computer systems to store their data. Therefore, it is nearly impossible to aggregate data across these agencies.

Not only is it impossible to aggregate data across agencies, in many cases it is impossible even within agencies. Most environmental data is in the form of individualized permit records stored in separate files. Though it is possible to access individual files, it is nearly impossible to aggregate across them. The result is that an accurate representation of the state of the regional environment is difficult to produce.

Beyond issues of quality and coordination, there is also a problem of accessibility. Traditionally, agencies have made little effort to translate data into forms that are easily accessible to public debates.⁶¹ The primary use of data is to monitor and assess program performance, not to produce data for public consumption. In practice, this means that the reams of data collected by agencies often remain in highly technical and arcane forms, as professionals in one agency write reports for professionals in other agencies. Given the enormous quantity of these reports and the fact that very few individuals inside or outside government are dedicated solely to data collection and research, it is easy to see how politicians or civic activists can be stymied by the seeming impenetrability of regional information systems.

In the area of health and human welfare, confidentiality is also an issue. By federal and state law, agencies cannot release data which contain per-

60. See Telephone with Mike Handman, Emergency Response Coordinator for the San Diego County Department of Environmental Health Services (July 14, 1999).

61. See Electronic correspondence from Carolyn Chase, member of the state and national boards of the Sierra Club, to David Michael Ryfe, Assistant Professor, School of Journalism, Middle Tennessee State University (June 10, 1999) (on file with author).

The key to any data is having it organized and interpreted meaningfully. Bureaucracies tend to put a lot of stuff out there, but it often conceals the things they don't want you to figure out—or makes it difficult or time consuming to find leverage points . . . [T]here are few who take the data and make it relevant to [San Diego] in a way that an average person . . . can understand . . .

Id.

sonal information. This means that data must be aggregated before it can be released, a process which can make it impossible to access data on the local level.

Regional information systems suffer from another problem: a lack of local research capacity. Overall, there is a remarkable lack of resources devoted to using data collected by government agencies to produce useful research. Employees of government agencies are charged with administering programs and have little time for research activities.⁶² For instance, the Chamber of Commerce is a preeminent collector of economic data in the region but employs only two individuals in its research bureau.⁶³

Non-profit organizations are similarly lacking in research resources. For example, Larry Johnson of the San Diego United Way is responsible for all research produced by that organization, and he spends as little as twenty percent of his time on this activity.⁶⁴ Thus, even if government agencies produce good data and make it accessible to the public, there are very few resources for transforming these data into compelling research projects.

IV. SOLUTIONS

Problems of data quality, agency coordination, accessibility, and research are caused by the traditional framework of the regional information infrastructure. This framework is hierarchical, fragmented, highly bureaucratic, and very consumer-unfriendly. In the 1990s, several forces have come together to reorganize this framework where it is possible and to create alternative organizational forms where it is not. Among these forces are the Clinton Administration's reinventing government initiative; a growing call for greater localism in government; efforts to involve private organizations such as churches and non-profit organizations in community problem-solving; a sustainability movement that has inspired local groups to become more involved in public decision-making; and the availability of new technologies such as the internet and GIS mapping technologies. Spurred by these forces, agencies inside and outside the regional information infrastructure have developed several kinds of solutions to the problems outlined above.⁶⁵ These solutions include new agency collaboratives, the creation of social indicators, and new uses of the internet and GIS technologies.

62. See Telephone interview with Paula Bernadino, San Diego Workforce Partnership (June 27, 1999); Telephone interview with Mike Handman, San Diego County Department of Environmental Health Services (July 14, 1999).

63. See Interview with Kelly Cunningham, Director of Research for the Greater San Diego Chamber of Commerce, in San Diego, California (June 15, 1999).

64. See Telephone interview with Larry Johnson, San Diego United Way (June 21, 1999). Most of Mr. Johnson's time is spent on community relations projects. See *id.*

65. In the following, I focus on solutions developed by regional actors, but it should be understood that similar kinds of initiatives are also underway at the state and federal levels.

A. Agency Collaboratives

One kind of solution involves efforts to achieve greater coordination across data collecting agencies (see Table 1). Perhaps the most extensive of these initiatives has been the recent reorganization of the San Diego County HHSA. Traditionally, the San Diego County HHSA was organized into six separate agencies: health services, family resource centers, social services, aged and disabled programs, veteran's assistance, and community collaboratives.⁶⁶ Each of these agencies administered distinctive programs and maintained databases that were directly linked to those programs. Data was rarely shared across agencies. This meant that clients had to report the same information to every agency with which they interacted. Further, case officers in one agency remained ignorant of the activities of other case officers, although they may have been working with the same clients. Agencies also contracted individually with community-based organizations, resulting in an inefficient and costly system in which the San Diego County HHSA contracted with over 500 contractors, any one of which may have held multiple contracts with several different San Diego County HHSA agencies.

Table 1. Agency Collaboratives

<p>HHSA Reorganization Regional Data Sharing Forum Regional Information Group (RIG) Regional Taskforce on the Homeless (SHAC) Suicide Homicide Action Committee City of San Diego Livable Neighborhoods Initiative Regional Taskforce on the Homeless</p>

To solve these problems, the San Diego County HHSA recently reorganized into six regional offices. These offices incorporate the activities of the formerly separate six agencies. They are responsible for creating databases specific to their jurisdiction and for coordinating the activities of case workers and contractors. No longer isolated in separate agencies, case workers share an office and information from common databases. Moreover, they work much more closely with local community collaboratives to share data and develop programs. This is being accomplished through the creation of an information, access, and referral (IAR) system that allows clients to fill out a single form to be shared by all case workers. Data from these forms will be made available to all case workers, collaboratives, and contractors through a network computer system.⁶⁷ This new structure attempts to solve traditional

66. See KPMG PEAT MARWICK LLP, *supra* note 25.

67. These collaboratives have themselves been charged with developing strategic plans and policies in collaboration with the regional San Diego County HHSA offices. The Telesis Corporation, a local consulting firm, has been contracted by the San Diego County HHSA to

problems related to agency coordination and data accessibility.

Other efforts similar to those undertaken by the San Diego County HHSA, though less ambitious, are also underway in the San Diego region. For instance, in 1994 the City of San Diego launched a Renaissance Project intended to transform the relationship between local communities and the city bureaucracies.⁶⁸ Spurred by a desire to make San Diego's neighborhoods truly livable, the project is dedicated to three goals: transforming city government to make it more responsive to communities, stimulating greater community engagement with public issues, and involving the business community in public decision-making. To these ends, the project has created an Office of Neighborhoods, established community service centers throughout the city, and established a Neighborhood Revitalization Superfund. Like the reorganization of the San Diego County HHSA, this project seeks to link local government programs more closely to the community to create better and more continuous information flows between the two so that members of the community can be empowered to participate in policy decisions.

On a still smaller scale, county agencies have created several task forces, commissions, forums, and groups to deal with specific issues in a cross-departmental manner or to share information across agencies. For example, the City and County of San Diego have chartered a Regional Taskforce on the Homeless to address the issue of homelessness on a region-wide basis.⁶⁹ Guided by a Board of Directors that includes representatives of government agencies, non-profit organizations, and mental health professionals, the Taskforce has developed a centralized Homeless Information System containing all available data on homelessness in the region.

Similarly, the Suicide Homicide Audit Committee (SHAC) created a multi-agency committee that collects and analyzes all data related to youth suicide deaths in the region.⁷⁰ Committee members representing local hospitals, government agencies, and non-profit organizations meet monthly to review all violent deaths of young people in the region. From this process, the committee has identified several risk factors associated with violent deaths among youth, and these risk factors have been employed to devise agency-

assist the collaboratives in this process and to train employees to use the new computerized information systems being developed to link them with regional agencies. *See* Interview with David Cleveland, President of Telesis Corporation, in San Diego, California (June 24, 1999).

68. *See* San Diego City Mayor's Office, *Report of the Renaissance Commission: Spring 1996* (visited Oct. 7, 1999) <http://www.sannet.gov/renaissance/#toc>; *see generally* NICO CALAVITA, MEASURING "QUALITY OF LIFE" IN SAN DIEGO (Norris C. Clement & Eduardo Zepeda Miramontes eds., 1993) (discussing the Renaissance Project and similar initiatives).

69. *See* Regional Taskforce on the Homeless (visited Oct. 7, 1999) <<http://www.electricti.com/homeless/home.html>>.

70. SHAC was created in 1994 by the San Diego County HHSA. The most recent SHAC 1999 Annual Report may be obtained from the San Diego County HHSA Office of Violence and Injury Prevention. The county has also created a Domestic Violence Fatality Review Team that is intended to review all domestic violence deaths in the region.

specific programs and policies.

Other information-sharing initiatives include the Regional Data Sharing Forum and the Regional Information Group (RIG). The Data Sharing Forum, which includes representatives from fifty government and non-profit agencies in San Diego, was created by the San Diego County HHSA.⁷¹ Headed by Connie Roberts, director of the HHSA Office of Community Initiatives for Children and Families, the Forum meets monthly and has created several working groups to deal with issues of data sharing and data quality. In addition, the Forum has considered new technologies that might improve agency performance in these areas. Although RIG, a group created by SANDAG, is more closely focused on government agencies than the Regional Data Sharing Forum, both RIG and the Forum have mandates to stimulate data sharing and discussions on issues of data quality and the uses of new information technologies.

Collaboratives like these are inspired by the intuition that government agencies produce an enormous variety of information, but coordination is required to transform this information into useful knowledge. Moreover, members of these collaboratives recognize that useful knowledge is central to empowering communities to engage in public deliberations over common problems. Properly collected and translated, data can play a primary role in producing innovative, imaginative solutions to public problems in which the entire community can participate.

B. *Indicators Projects*

Social indicators reports are inspired by the same intuition. Simply defined, an indicator is a single statistic which illuminates the status of a more complicated situation.⁷² For instance, numbers of children living in poverty is a statistic which might illuminate the status of a local economy. Or, levels of water pollution may reveal something meaningful about the state of the local environment. Initially developed in the 1960s, the use of social indicators waned during the 1970s and 1980s. However, in response to the devolution of government power and the sustainable communities movement, local governments and other agencies have returned to indicators in the 1990s as a way of simplifying and making meaningful the masses of available data.⁷³

In San Diego, there are no less than five indicators projects in production (see Table 2). Again, the San Diego County HHSA is leading the way.

71. See Telephone interview with Kim Frink of the Commission on Children, Youth, and Families Assessment and Planning Department, San Diego County HHSA (June 10, 1999).

72. See ROBERT J. ROSSI & KEVIN J. GILMARTIN, *THE HANDBOOK OF SOCIAL INDICATORS: SOURCES, CHARACTERISTICS AND ANALYSIS* 15 (1980).

73. See *generally* REDEFINING PROGRESS ET AL., *THE COMMUNITY INDICATORS HANDBOOK: MEASURING PROGRESS TOWARD HEALTHY AND SUSTAINABLE COMMUNITIES* (1997) (containing a useful introduction to social indicators and the indicators movement of the 1990s).

In collaboration with the California Health Association, SDSU's Public Policy Program, and the Center for Child Health Outcomes at Children's Hospital, the county has created a Community Health Improvement Partners (CHIP) program.⁷⁴ This program, in which twenty-five non-profit hospitals participate, has produced a community health needs assessment report. The report includes data on thirteen health indicators related to the health and well-being of San Diego's population. The San Diego County HHSA, in collaboration with Alliance Healthcare and the Center for Child Health Outcomes, has also produced a report titled, "The San Diego Health Report Card."⁷⁵ This report card includes twenty-nine indicators, and, like the CHIP report, is designed to provide a snapshot of community health. The Telesis Corporation's quality of life indicators index represents a final indicators project in the area of health and welfare.⁷⁶ This index will be composed of indicators associated with risk and prevention factors for alcohol and drug abuse.

Table 2. Indicators Reports

California Health Association CHIP Report County HHSA Health Report Card Telesis Corporation Quality of Life Report SANDAG Prosperity Report San Diego-Tijuana Border Initiative Environmental Indicators Report San Diego Natural History Museum Regional Indicators Coordination Program EPA Border XXI Environmental Indicators Report University of San Diego School of Business Leading Economic Indicators

Several indicators reports have also been initiated in the area of the environment. As part of its Border XXI initiative, the Environmental Protection Agency, in collaboration with other federal agencies in both the United States and Mexico, recently produced an environmental indicators report for the entire border region.⁷⁷ The San Diego-Tijuana Border Initiative is in the process of developing its own border region environmental indicators study, using a framework developed by the United Nations Center for Human Set-

74. See Telephone interview with Kristin Garrett, California Health Association (June 9, 1999).

75. See SAN DIEGO COUNTY BOARD OF SUPERVISORS ET AL., SAN DIEGO COUNTY CHILD AND FAMILY HEALTH & WELL-BEING REPORT CARD 11 (1999). This report can be obtained from Dr. Nancy Bowen of the San Diego County HHSA at telephone number (619) 692-8809.

76. See David Cleveland, *QOL Model* (visited Oct. 14, 1999) <<http://www.qolsandiego.net/Presentation/index.htm>> (containing examples of these indicators).

77. See U.S. Environmental Protection Agency, *U.S.-Mexico Border Environmental Indicators 1997* (visited Mar. 9, 2000) <<http://www.epa.gov/usmexicoborder/indica97/index.htm>>. One may obtain the report by calling (800) 334-0741. This report will not be duplicated by the EPA but will be updated in a four-page leaflet to be included in a Year 2000 report on the project.

tlements.⁷⁸ While the Border Initiative is still in its planning stage for this project, it has begun to adapt the United Nations framework to the San Diego-Tijuana border and to collect some initial data.⁷⁹ The San Diego Natural History Museum also initiated an environmental indicators project known as the Regional Indicators Coordination Project. This project consisted of a series of five public forums in which social, economic and environmental indicators associated with community sustainability were developed.⁸⁰

Not surprisingly, given the dearth of regional economic data collection and research, indicators projects in the domain of economics are more scarce. However, two initiatives deserve mention. In 1998, SANDAG published a prosperity report in which it employed economic indicators to compare current economic trends in San Diego to trends among similarly-sized metropolitan jurisdictions.⁸¹ The purpose of this report was to chart a path to regional economic prosperity in the first decades of the twenty-first century.

In an effort to track the current condition of the regional economy, Alan Gin, an economist at the School of Business Administration at the University of San Diego, has created a list of six leading regional economic indicators which track the current status of San Diego's economy.⁸² This index is updated monthly, and it provides a useful, yet small-scale, set of economic indicators that can be tracked over time.

D. *The Internet and GIS Technology*

Much of the excitement over the internet is due to the value added by GIS technology. GIS simply refers to a software package that enables individuals to map data according to geographic location. For instance, it is possible to map the numbers of teen pregnancy clinics across the region by zip code. These data may be overlaid on another map that displays regional income distributions. Thus, the relation of teen pregnancy clinics to income distributions may be correlated and displayed on easy-to-understand, color-coded maps.

Local government and community groups have responded to problems

78. See Telephone interview with Karrie Kiros, Director of the Border Initiative (June 22, 1999). For more information regarding the framework developed by the United Nations Center for Human Settlements, see The United Nations Centre for Human Settlements, *Global Urban Observatory: Urban Indicators Programme* (visited Oct. 13, 1999) <<http://www.undp.org/un/habitat/guo/uip.htm#intro>>.

79. See Telephone interview with Karrie Kiros, Director of the Border Initiative (June 22, 1999).

80. See Interview with Linda Pratt, Director of the San Diego Natural History Museum's Community Sustainability Program, in San Diego, California (June 10, 1999).

81. See SANDAG, *CREATING PROSPERITY FOR THE SAN DIEGO REGION: SAN DIEGO REGIONAL ECONOMIC PROSPERITY STRATEGY* (1998) (available at http://www.sandag.cog.ca.us/whatnew/publications/demographic_economic/economic_prosperity.pdf).

82. See University of San Diego Real Estate Institute, *University of San Diego School of Business Administration* (visited Mar. 9, 2000) <<http://www.acusd.edu/~agin/usdlei.htm>>.

with regional information systems in yet another way: a whole-hearted embrace of internet-based and GIS technologies.⁸³ Several of the projects already mentioned, from SANDAG's RIS to the IAR system of the San Diego County HHS to the Regional Taskforce on the Homeless, have a significant internet component. In addition, the United Way and the San Diego County HHS have recently developed a website intended to serve as a primary site for social service and health related data.⁸⁴ A similar site, BorderEcoWeb, has been developed by the EPA, SDSU, and the United States-Mexico Border Information Institute, a non-profit organization in Ciudad Juarez. This site contains an inventory of environmental information, metadata, databases, projects, program activities, grants, and other information related to the border, as well as a directory of agencies, organizations, groups and projects which are active in border environmental issues.⁸⁵

The power of GIS technology is enhanced when the technology and the requisite databases are made available via the internet.⁸⁶ SANDAG's RIS system goes furthest in this direction. Simply by going to the SANDAG website, users may produce GIS maps on a whole host of demographic variables. However, SanGIS, an agency created in 1997 through a joint-powers agreement between the city and county of San Diego, also makes available via the internet about 200 layers of geographic and demographic data, some of which it obtains from SANDAG.⁸⁷ These layers include such variables as

83. Perhaps due to the availability of resources, state and national Internet-based initiatives have been more ambitious than local efforts. See U.S. Department of Commerce, *STATUSA* (visited Feb. 10, 2000) <<http://www.stat-usa.gov>> (an Internet-based data clearinghouse for the federal government); California Environmental Resources Evaluation System, *Environmental Information by Organization: Non-Governmental Organizations* (visited Feb. 19, 2000) <<http://www.ceres.ca.gov/org/ngo.html>> (containing an environmental information clearinghouse for the state). For a more complete listing, see Appendix B.

84. United Way of San Diego County, *Inform San Diego* (visited Mar. 8, 2000) <<http://www.informsandiego.com/index.asp>>. The site has two principal parts. The first part is a database warehouse containing information gathered from the regional health and social service community. Access to these data costs \$100 per year for non-profit organizations and \$150 per year for for-profit organizations. See United Way of San Diego County, *Sign-Up* (visited Mar. 9, 2000) <<http://www.informsandiego.com/menuFrame.asp?menuItem=signUpMenuItem&mainPage=signUp/signUpMain.htm&tableOfContentPage=signUp/signUpContents.htm>>. A second part, *Stat-Source*, is a directory of data sources for the San Diego region. See United Way of San Diego County, *Stat-Source San Diego* (visited Mar. 10, 2000) <<http://www.informsandiego.com/menuFrame.asp?menuItem=statSourceMenuItem&mainPage=statSource%2FstatSourceMain%2Ehtm&tableOfContentPage=statSource%2FstatSourceContents%2Easp>>. This part of the site lists reports produced on issues related to health and social services, and there is no charge for access.

85. See Institute for Regional Studies of the Californias & Environmental Protection Agency, *Border ecoweb* (visited Mar. 16, 2000) <<http://www.borderecoweb.sdsu.edu>>.

86. Of course, the potential downside of GIS technology, and the irony of its popularity, is that the technology is expensive, and the requisite software takes a considerable amount of training to learn. To enjoy the fruits of this technology, community groups will have to make a considerable investment of resources and training time.

87. See SanGIS, *We Have San Diego Covered!* (visited Feb. 10, 2000) <<http://www.sangis.org>>.

income distributions, libraries, ecological information, and many others. It is this ease of accessibility and use which has led the San Diego County HHSA to embed internet and GIS technologies into the design of its IAR system, and it is the image of databases distributed throughout the San Diego community in an easy-to-manipulate format that has led a whole host of organizations and agencies to initiate plans to make available their data in internet and GIS formats.⁸⁸

CONCLUSION

Collaboratives, social indicators, the internet and GIS technologies—these are the ways in which local agencies have responded to problems of data quality, accessibility, and research capacity that mar the regional information infrastructure. In many ways, these efforts are exciting and ambitious. The San Diego County HHSA has been completely reorganized to become more internally efficient and externally transparent to its constituencies. Individuals throughout this system have spent a great deal of energy to make data more widely available and easier to use. New internet-based and GIS technologies promise to make these efforts less cumbersome and more dynamic. After decades in which the traditional information infrastructure grew and solidified, the 1990s have witnessed a dramatic turn toward a less bureaucratic, less hierarchical, and less insular system of data collection and dissemination.

However, there is a major obstacle to continued movement in this direction: federal and state legislative mandates that drive most data collection.⁸⁹ Government agencies are required by state and federal law to collect a vast amount of regional data. This data is used primarily to ensure program efficiency and to document the expenditure of program costs. Little or no money is available to collect other kinds of data or to conduct significant research. Indeed, little money is available to ensure that the data which is collected is of high quality and publicly accessible. Foundations, non-profit organizations, and research institutes take up some of this slack, but they too are constrained by a lack of resources. If regional information systems are to become more robust and useful to both policymakers and the public, then current legislative mandates will have to be revised. Achieving this goal is largely out of the hands of local agencies or individuals. Instead, it will re-

88. For instance, both the Environmental Health Coalition and the San Diego County Department of Environmental Health Services have made initial plans to incorporate GIS technologies into their data sharing activities in the near future.

89. See Transportation Research Board et al., *Information Needs to Support State and Local Transportation Decisionmaking into the 21st Century* (visited Oct. 7, 1999) <<http://www.bts.gov/site/news/dataneeds/index.html>>. In this report, participants noted that most data are collected for “operational or planning needs,” and even this activity is limited because of the “high costs of collection and the stringencies of data-collection budgets.” *Id.* To dramatically alter this system, “[i]t would be necessary to terminate the legislated mandates . . .” *Id.*

quire federal and state recognition of the importance of data and research to the policymaking process, and a commitment of time and resources—not of one or two years, but over the long term—to improved capacities for these activities. In this manner, the regional information infrastructure might make the region not only rich in information but rich in knowledge as well.

Appendix A**Individuals Interviewed***In Person:*

Name	Organization	Date Interviewed
Calavita, Nico	SDSU School of Public Administration and Urban Studies	June 14, 1999
Cleveland, David	Telesis Corporation	June 24, 1999
Coe, Doug	SDSU Social Science Laboratory	May 10, 1999
Colby, Fred	Consultant	May 13, 1999
Cox, Millicent	Consultant	July 1, 1999
Cunningham, Kelly	Greater San Diego Chamber of Commerce	June 15, 1999
Grimes, Scott	San Diego Dialogue	April 4, 1999
Parrott, Robert	SANDAG	May 21, 1999
Pezzoli, Keith	UCSD Dept. of Urban Studies	June 23, 1999
Pratt, Linda	San Diego Natural History Museum	June 10, 1999
Spalding, Marc	Environmental Lawyer	May 15, 1999
Tayman, Jeff	SANDAG	May 21, 1999

By Phone:

Name	Organization	Date Interviewed
Bell, Peter	City of San Diego School District	August 3, 1999
Bernadino, Paula	San Diego Workforce Partnership	June 14, 1999
Billings, Suzanne	Children's Hospital Center for Child Health Outcomes	August, 12, 1999
Bowen, Nancy	County HHSA	June 10, 1999
Brooks, Sean	San Diego Anti-Defamation League	July 14, 1999
Campana, Jack	City of San Diego School District	July 9, 1999
Cicero, Dawn	Regional Technology Alliance	August 2, 1999
Cross, Julie	County HHSA	June 22, 1999
Flom, Beryl	City of San Diego League of Women Voters	July 21, 1999
Frink, Kim	County HHSA	June 10, 1999
Green, Kristin	California Health Association	June 9, 1999

Name	Organization	Date Interviewed
Handman, Mike	County Dept. of Environmental Health Services	July 14, 1999
Honeysutt, Kathleen	City of San Diego Libraries	July 24, 1999
Jay, Jennifer	Planned Parenthood of San Diego	August 17, 1999
Johnson, Larry	San Diego United Way	June 21, 1999
Kapel-Hall, Ann-Lyn	Mid-City Youth Services	August 8, 1999
Karos, Kaare	San Diego-Tijuana Border Initiative	June 22, 1999
Lloyd, Linda	Alliance Healthcare	July 16, 1999
Picone, Jacque	San Diego Workforce Partnership	June 27, 1999
Reichmann, Rebecca	San Diego Foundation	June 7, 1999
Ross, Joe	City of San Diego Commission for Arts and Culture	July 16, 1999
Sison, James	Local Initiatives Support Corporation	August 4, 1999
Walker, Marceles	Chicano Federation	July 22, 1999
Weeks, John	SDSU Department of Geography	June 1, 1999
Williams, Diane	County HHSA	July 1, 1999
Williams, Joy	Environmental Health Coalition	July 9, 1999
Wilson, Ann	Consultant	July 23, 1999

By E-Mail:

Name	Organization	Date Interviewed
Alm, Donna	Center City Development Corporation	June 8, 1999
Belliveau, Jeff	San Diego Union Tribune	June 7, 1999
Capri, Ruth	Regional Taskforce on the Homeless	June 4, 1999
Chase, Carolyn	Sierra Club	June 10, 1999
Edwards, Claude	San Diego Audubon Society	July 11, 1999
Harper, Judy	San Diego Dialogue	August, 2, 1999
Lamphere, Karen	SANDAG	May 25, 1999
Navarro, James	San Diego Convention and Visitors Bureau	June 29, 1999
Rode, Ron	City of San Diego School District	June 7, 1999
Slupe, Mary	City of San Diego	June 7, 1999

Stapleton, Lisa	SanGIS	June 10, 1999
Weeks, Deanna	East County Eco. Dev. Corp.	June 7, 1999

Appendix B
URLs for Non-Governmental Organizations⁹⁰

Organization	URL Address
Alliance Healthcare Foundation	http://www.alliancehf.org
California Health Decisions	http://www.cahd.org
San Diego Regional Office of the Anti-Defamation League	http://www.adl.org/san-diego
San Diego Foundation	http://www.sdcf.org
San Diego Dialogue	http://www.sddialogue.org
Institute for Public Health, San Diego State University	http://www-rohan.sdsu.edu/dept/iph/
Stanford Center for Research in Disease Prevention	http://scrdp.stanford.edu
The American Public Health Association	http://www.apha.org
The Annie E. Casey Foundation	http://www.aecf.org
The Association of Asian Pacific Community Health Organizations	http://www.aapcho.org
The Audubon Society, San Diego Chapter	http://www.audubon.org/chapter/ca/sandiego
The California Association of Realtors	http://www.car.org
The California Center for Health Improvement	http://www.cchi.org/cgi-bin/cchi/default.asp
The California Community Foundation	http://www.calfund.org
The California Endowment	http://www.calendow.org
The California Health Care Foundation	http://www.chcf.org
The California Native Plant Society	http://www.cnps.org
The California Waterfowl Association	http://www.calwaterfowl.org/
The California Wellness Foundation	http://www.tcwf.org
The Center on Policy Initiatives	4004 Kearny Mesa Road, San Diego, CA 92111
The Children's Initiative	4438 Ingraham St., Pacific Beach, CA 92109
The Center for Continuing Study of the California Economy	http://www.ccsce.com
Environmental Defense	http://www.edf.org
The Environmental Health Coalition	1717 Kettner Blvd., Suite 100, San Diego, CA 92101
The Ford Foundation	http://www.fordfound.org
The Girard Foundation	2223 Avenida de La Playa, La Jolla, CA 92037

90. In cases where an organization does not have a website, I have provided its regular mailing address.

Organization	URL Address
The Greater San Diego Chamber of Commerce	http://www.sdchamber.org
The Institute for the Regional Studies of the Californias	http://www-rohan.sdsu.edu/dept/press/institute.html
The James Irvine Foundation	http://www.irvine.org
The Kaiser Family Foundation	http://www.kff.org
The W. K. Kellogg Foundation	http://www.wkkf.org
The John D. and Catherine T. MacArthur Foundation	http://www.macfdn.org/index.htm
The Natural Resources Defense Council	http://www.nrdc.org
The Pew Charitable Trusts	http://www.pewtrusts.org
Rand California	http://www.ca.rand.org
The Rockefeller Foundation	http://www.rockfound.org
The San Diego Regional Technology Alliance	http://www.sdrta.org/sdrta/home/home.html
The San Diego-Tijuana Border Initiative	The San Diego Border Institute, 2838 Granada Avenue, San Diego, CA 92104
The San Diego Union Tribune	http://www.uniontrib.com
The Sierra Club	http://www.sierraclub.org
The Stuart Foundation	http://www.stuartfoundation.org
The Information Center for the Environment	http://ice.ucdavis.edu
The Urban Institute	http://www.urban.org
The Weingart Foundation	http://www.weingartfnd.org
UCLA Center for Health Policy Research	http://www.healthpolicy.ucla.edu

