

**Profiling Rural America:
A Guide to Data Sources and
Analytical Techniques**

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ABSTRACT

Evaluating the economic conditions of local economies is an important input to the decisions of policymakers, firms, and individuals. General impressions of the condition of national or state economies obtained from aggregate data often mask important substate differences in economic performance.

State economic profiles are useful tools for presenting the dynamics of substate economic change. Because their economic conditions and environments can be very different, rural and urban areas are often compared in such profiles.

This report describes the major components of a complete economic profile, with special emphasis on rural-urban comparisons. A catalog of data sources and a discussion of their value and potential abuses is provided. Techniques for deriving and interpreting meaningful information from the data are also presented.

PROFILING RURAL AMERICA: A GUIDE TO DATA SOURCES AND ANALYTICAL TECHNIQUES

The economic landscape of the United States has changed dramatically over the past decade. The deep recession of the early 1980s, the wild swings in currency exchange rates, the explosion of international trade, the introduction of many new labor-saving technologies, and the deregulation of many economic sectors have combined to alter established economic relationships. These structural, technological, and policy shifts affect the national economic environment and the overall level of economic activity.

General impressions of the condition of national or state economies obtained from aggregate data may not accurately reflect the economic experience of local economies. Rapid changes in local economies reflecting divergent fortunes of their important industries are masked by such aggregate statistics. In order to make informed decisions regarding the direction of local development policy, policymakers must be armed with the most current, accurate, and meaningful local economic statistics.

While it is important to be aware of current economic circumstances of communities, the longer term must be kept in perspective as well. Some manifestations of change in the economic environment appear slowly. Shifting demography, environmental changes, and deterioration of public infrastructure all reflect the accumulation of years of economic change. These factors also help to determine the course of the community's future.

Clearly, there is much to be described and understood about local communities. One tool that is useful for understanding the dynamics of substate economic change is a state profile. In particular, state profiles that focus on the differences between urban and rural areas may highlight the

heterogeneity among local areas within a state. This report describes the major components of a complete economic profile and identifies the major sources of local area data. Although rural data are notoriously weak, there is a great deal of information available. But the data do have limitations and may be prone to misinterpretation. A catalog of data sources and a discussion of their value and potential abuses is provided. Finally, this report describes some techniques that might be used to derive the most meaningful information from local economic, demographic, and social statistics.

Characteristics of an Economic Profile

Profile may be defined as “a representation of something in outline” and a “set of data in graphic form portraying the significant features of something” (Webster 1984). This is precisely what is needed: an easily understood and accurate statistical outline that highlights the significant features of a local economy. The profile should not overwhelm the reader with detailed statistics, but should highlight the most important points. It should present, in a meaningful summary fashion, relevant information that could, but need not necessarily, call for further in-depth analysis.

The profile design should reflect several goals. First, a profile should highlight the diversity of the rural experience. The economic and sociological characteristics of our rural communities are as different as the nouns and adjectives we use to describe the nature of their economies: “farm,” “government,” “tourist-driven,” “mining,” “forest,” “retirement.” A profile should highlight the differences in the economic performance of these areas. Second, the report should reflect a view of the rural development process that encompasses more than simply the creation of jobs. Although “rural economic development” is difficult to define precisely, it surely is connected to the creation of an environment that can produce and sustain long-term economic growth. Quality of life, quality of public infrastructure, and the availability of social services all affect the livability of a community and its ability to enhance development. Third, the profile should not overwhelm the reader. It should be short and nontechnical so that it is easily understood and used. Finally, the information should be

presented so it helps the reader draw defensible insights into the causes and consequences of variations in regional development.

The overall objective of the profile is an accurate portrayal of economic performance that improves understanding of the causes and consequences of these trends. To build toward this appreciation of recent performance, it is important to begin with general trends, both national and statewide. General information facilitates an understanding of the recent performance of a local economy by providing some notion of the economic environments within which the community's markets must operate. Important technological, policy, and broad economic forces should be identified toward the beginning of the discussion. Thereafter the profile should turn to a discussion of more specific or particular cases.

Outline of a Profile

Certain general trends have particular implications for rural areas. Decreases in military spending, environmental policy changes, declines in national manufacturing employment, and changes in the regulatory environment are examples of broad trends that affect some rural economies. The national trends upon which a state's profile should focus depend on the industrial composition of the state. Any discussion of development in the Pacific Northwest that neglects to mention the forestry sector is incomplete; a discussion of economic activity in Texas and Oklahoma should include the impact of worldwide oil price trends; military base closings are also an important part of many states' profiles.

Having provided a context within which the regional economy operates, a presentation of the state's broad economic and demographic trends should follow. Both long-term and current information on population and employment should be presented; the long-term trends provide an introduction to more current information.

Broad Trends Affecting Regional Economic Development

Policy Trends

- International Trade
- Financial Regulations
- Composition of Federal Government Spending
- Regulatory Environment
- Environmental Policy

Economic and Demographic Trends

- The Aging of the Postwar Population
- Changes in International Trade Patterns
- Changes in Oil and Other Resource Prices

Technological Factors

- Labor-saving Technological Innovation
- Natural Resource Saving Innovation
- Transportation and Communication Improvements

Once the general character of urban versus rural differences is presented, the profile should turn to an analysis of economic trends in various types of rural areas and in important state industries. Finally, a discussion of the social indicators, including housing, infrastructure, health care, and education should supplement the economic section for a well-rounded portrayal of the rural environment.

Constructing a Profile

Trend comparisons between regions cannot be accomplished without first choosing the groups to be compared. The focus here is on profiles highlighting the differences between rural and urban areas.

Identifying Rural Areas

Many attempts have been made to create a meaningful division of a state into rural and urban areas. No widely published, generally accepted definitions have evolved that are appropriate for all

states. Analysts must consider a state's particular urban and rural characteristics when they choose a method to distinguish between urban and rural areas. Finding an appropriate definition of rural areas involves resolving two issues: choosing the level of geographic aggregation and classifying each area as either rural or urban.

Choosing the Level of Geographic Detail

The choice of the basic analytical unit must take into account two considerations. Although the statistics discussed in the profile will often be aggregated over the smallest units to derive overall statistics for urban and rural areas, the basic building block must be small enough to capture local variation. However, the building block must also be large enough so that necessary statistics are available.

The most frequently chosen geographic unit is a county because it often is the smallest unit for which data are available. Furthermore, since county boundaries have generally remained constant since establishment, comparison of county statistics over time is appropriate. However, counties are political, not economic, boundaries. Many counties are very heterogeneous with respect to economic and demographic characteristics. For example, St. Louis County, Minnesota contains some of the most sparsely populated areas in the state; it also includes the city of Duluth. Choosing the county as the geographic unit prevents the analyst from highlighting these intracounty differences, and makes the definition of urban and rural areas less accurate than if the urbanized areas could be removed from the rest of the county. A few data series are reported at a subcounty level, for example, town or school district (the geographic detail of each series is explained in each data section). If the boundaries of these areas have not changed much over time and the data are high quality, some mention of intracounty variations in indicator data could be useful.

Defining Rural Counties

If the county is chosen as the basic geographic unit, then each one must be classified as either rural or urban. One definition of a rural county is one that does not lie within a Standard Metropolitan Statistical Area (SMSA). The SMSA classifications are designated by the Office of Management and Budget (OMB). Each has one or more central counties containing the areas of main population concentration: an urban area with at least 50,000 inhabitants. An SMSA may also contain outlying counties that meet standards for metropolitan character such as levels of commuting to the central county, population density, urban population, and population growth. In New England, SMSAs are composed of cities rather than counties. For details regarding the definition of counties as SMSA counties, see the introductory pages of *Census of the Population, Volume 1, Characteristics of Inhabitants*. Appendix D is a complete list of available data sources.

Using the SMSA definition of urban and rural counties makes available to the analyst a great deal of data reported by SMSA. However, while this definition is convenient, it may not be appropriate. Some subcounty areas not within an SMSA may have an essentially urban character even though they are not located near a large city. Furthermore, the SMSA definition may yield an unbalanced group of counties. For example, in Idaho, only one of the state's 44 counties would then be classified as urban. In New Jersey, all counties are classified as SMSAs.

Possible definitions for rural counties may take into account population size, population density, or the number or percentages of the population living in a census-defined rural place:

- If it is not in an SMSA;
- If its urban population is less than 20,000;
- If less than 50 percent of its population resides in an urban area; or
- If its population density is less than the state's average population density.

For precise definitions of urban and rural places, see Bureau of the Census (1980), volume 1, introduction.

The analyst should use his or her knowledge of the state to choose an appropriate urban/rural county definition. In some cases, it may be best to designate a county as urban even if it does not meet the chosen specification.

Classifying Counties by Geography, Demography, or Economy

Aggregating data across rural and urban counties and reporting statistics for the rural versus the urban portion of the state may mask some important trends within the subgroups. Within the group of rural counties, there may be performance differences that can be explained by distinguishing factors besides an area's urban or rural status. The varying trends may result from identifiable locational or economic characteristics that the profile can make apparent. Further disaggregation develops coherent groups of counties with less variability within the group. Such groupings can improve the explanatory power of the profile.

There are at least four county classifications, in addition to rural and urban, that may be useful in a profile.

Geographic Distinction. For historical, political, or physical reasons, communities in relative proximity to one another may show many similar economic characteristics. Thus, it may be useful to subdivide the state along geographic lines, such as north versus south, above the river versus below the river, or one side of the mountain versus the other side of the mountain.

Proximity to Metropolitan Areas. The pull and push of urban factors can explain much of what occurs in some nonmetropolitan areas adjacent to major metropolitan areas. These bordering rural counties have a fundamentally presuburban character distinguishing them from other rural counties. The U.S. Department of Agriculture Economic Research Service (ERS) has developed a widely used classification system based on proximity. The Beale Code system was designed to reflect not only population concentration, but also commuting patterns between metropolitan and nonmetropolitan counties. The designations give a more refined sense of the rural character of a

county. The specific definitions of each classification are given in Table 1. Information on Beale Codes and a complete list of the codes for each U.S. county can be found in GAO (1989).

Preexisting Substate Districts. Each state has already been partitioned into several types of substate political districts, such as local area planning districts or the Job Training Partnership Act's service delivery areas. Since some information is already aggregated and available at this level of detail and many policymakers are familiar with these regions, it may be useful to present summary statistics for these districts.

Table 1. Beale Codes

Code	Description
0	Central counties of metropolitan areas of 1 million population or more.
1	Fringe counties of metropolitan areas of 1 million population or more.
2	Counties in metropolitan areas of 250,000 to 1 million population.
3	Counties in metropolitan areas of less than 250,000 population.
4	Urban population of 20,000 or more, adjacent to a metropolitan area.
5	Urban population of 20,000 or more, not adjacent to a metropolitan area.
6	Urban population of less than 20,000, adjacent to a metropolitan area.
7	Urban population of less than 20,000, not adjacent to a metropolitan area.
8	Completely rural, adjacent to a metropolitan area.
9	Completely rural, not adjacent to a metropolitan area.

SOURCE: GAO 1989.

Economic Disaggregation. Counties can be classified by primary economic activity. One widely used economic classification system has been developed by the ERS, with seven nonmetropolitan county types:

1. Farming Dependent--Farming contributed a weighted annual average of 20 percent or more of total labor and proprietor income in 1981, 1982, 1984, 1985, and 1986.
2. Manufacturing Dependent--Manufacturing contributed 30 percent or more of total labor and proprietor income in 1986.

3. Mining Dependent--Mining contributed 20 percent or more of total labor and proprietor income in 1986.
4. Specialized Government--Government activities contributed 25 percent or more of total labor and proprietor income in 1986.
5. Persistent Poverty--County per capita personal income was in the lowest quintile in each of the years 1950, 1959, 1969, and 1979.
6. Federal Lands (not updated)--Federal land was 33 percent or more of the county land area in 1977.
7. Destination Retirement (not updated)--For the 1970-80 period, net immigration rates of people 60 or over were 15 percent or more of the expected 1980 population aged 60 and over.

A list of the official categories of all U.S. counties can be obtained by calling 1-800-999-6779 and asking for the Policy Impact Codes database. A more detailed description of the categorization process is provided in Hady and Ross (1990). Originally, these classes were developed using data from the 1970s, but many have recently been updated to reflect changes from the 1980s. These classifications are not mutually exclusive; a nonmetropolitan county may fall into more than one of these categories, or it may not fall into any. Aggregating statistics for each of these county types allows a separate analysis for counties with these particular characteristics. This can be a powerful explanatory tool.

Data and Analytical Techniques

Demographic Trends

One of the most distinguishing characteristics of a rural community is its sparse population. A low level or density of population affects the analysis of economic trends in two ways. First, low population and employment levels cause percentage changes in economic activity to appear very large because of the initially low activity levels. Second, areas with low population densities may have difficulty maintaining the critical mass of demand needed to support some private industries important

for future economic development. Finally, areas with low and sparse population must spend greater amounts per capita to maintain public services and infrastructure.

A recent population change that diverges from state or national averages can be interpreted as a comprehensive indicator of the overall economic health of an area when compared with the remainder of the state or nation. The biggest source of change in an area's population is migration--the willful movement into and out of an area. Since migration is largely determined by the availability of economic opportunities in the destination region relative to the origin region, changes in population are perhaps the best indicator of regional economic potential. Breaking down migration rates by age reveals even more about economic opportunities: an immigration of retirement aged people is not as indicative of economic opportunity as is an influx of working age residents.

Data Sources. A region's population is measured once every ten years in the decennial census. In between census years, each state's local area population estimates are prepared annually through the Federal-State Cooperative Program on Population Estimates (FSCPPE). Estimates are available for counties and many subcounty areas; some detailed population data such as population by age, net migration, and migration by age are also available. The specific data available may vary from state to state.

State agencies work with the U.S. Bureau of the Census in the FSCPPE. The state agency provides information indicative of recent population movements, which are used by the bureau to estimate population levels. The state agencies review and release these estimates. The agency within each state government participating in the FSCPPE is listed in Appendix C.

Measurement and Presentation Issues. It is important to present an accurate picture of a county's rural character. Population is one of the data items for which some subcounty estimates are available. For counties with both urban and rural areas, it may be revealing to take advantage of any subcounty population estimates in order to highlight differences within the county. One statistic that

may shed light on the rural character of a county is the proportion of people living in cities of different sizes (for example, below 2,500, below 5,000). However, subcounty data must be used with care. The geographic boundaries of city governments may change over time; in this case, the validity of intertemporal comparisons would be questionable.

The age distribution of the population within the state and substate areas should be indicated. In most states, rural areas contain a large proportion of older individuals. The age of the population helps to explain the employment structure of a local economy and changes in the age composition can indicate future growth potential. The age profile of a county can be expressed as the mean age of the residents or as the proportion of the population above or below some critical age level (e.g., “younger than 18” or “65 years of age or older”).

Migration needs to be separated from total population change. The change in population is the sum of the level of migration and the natural (birth/death) change in population. Migration is a better measure of the economic “draw” of a region. Generally, the aggregates of total population change are more accurate.

Personal Income

Personal income is one of the most widely used and understood measures of aggregate economic performance. While an increase in income is not the only consequence of economic development, it is the measure by which the development level of a region is most often judged.

Data Sources. There are four principal sources of substate personal income data: the decennial Census of Population; the Bureau of the Census postcensal estimates of personal income; Bureau of Economic Analysis (BEA) estimates of personal income; and Internal Revenue Service (IRS) tabulations of gross (taxable) income. These sources differ in three respects: the geographic level of detail, the frequency with which the data are collected, and the definition of income.

For the decennial census, income information is collected on a sample basis. Data are available for all counties and for municipalities with populations greater than 2,500. Postcensal estimates of per capita income are reported annually by the Bureau of the Census for approximately 39,000 local jurisdictions. In both census reports, income is defined as money income, as described below. Note that this definition does not include in-kind payments from either government or private sources.

The BEA constructs annual estimates of personal income by county. This series is based on administrative records rather than census or survey data, and personal income is defined somewhat differently from money income.

Definitions of Personal Income

Money Income (Census)--Earnings (including losses from a farm or nonfarm operation), social security and public assistance payments, supplemental security income, dividends, interest, and rent (including losses), unemployment and workmen's compensation, government and private employee pensions, and other periodic income.

Personal Income (BEA)--Includes wages and salaries (cash and in-kind), supplementary earnings such as employer contributions to private pensions, proprietors' income, rental income, dividends, personal interest income, and government and business transfer payments.

Taxable Income (IRS)--Adjusted gross income from tax records; excludes nontaxable income such as veterans' benefits, social security benefits, and relief payments.

The IRS has reported, at irregular intervals, adjusted gross taxable income by county. There are a number of difficulties with using adjusted gross income computed for income tax purposes as a measure of personal income. First, people with very low incomes are not required to file. Second, some types of income are excluded, such as veterans' benefits and relief payments. Third, adjusted gross income is computed in so many different ways that the data are not comparable across people. For all of these reasons, these data are very seldom used.

Personal income data are available in a variety of forms. Postcensal per capita income estimates are available in *Local Area Personal Income* for the current year. They can also be obtained in machine-readable form through the state data center program, which was established by the U.S. Bureau of the Census. The Census Bureau furnishes all data series it produces to the state agencies that serve as contacts for the program. The relevant agency for each state is listed in Appendix A. The BEA estimates of personal income are available through the Regional Economic Information System (REIS). Annual county level estimates are released approximately 16 months after the close of the subject year. They are available on magnetic tape, and summary statistics are published in each April issue of the *Survey of Current Business*.

Measurement and Presentation Issues. Regional comparisons require per capita income measures. While useful in describing aggregate trends in personal income, total personal income does not describe the welfare of the average or typical resident of a community. To make regional comparisons of welfare, income should be expressed in per capita terms.

Intertemporal comparisons require real income measures. Because the general level of prices changes over time, the nominal or reported level of personal income can also grow without increasing a household's purchasing power. In order to make intertemporal comparisons of resident purchasing power, the income data must be expressed in real terms; that is, the income data must be deflated.

Income data should be deflated to real terms using broad indexes of the price level such as the Gross National Product deflator or the Consumer Price Index. These indexes can be found in the BLS's *Consumer Price Index* or in the Department of Commerce's *Survey of Current Business*. They also can be obtained through local state data center affiliates.

Transfer income does not represent income-generating economic activity. In some substate areas, transfer income may represent a substantial share of local personal income. Since transfer payments are not generated from economic activity, some analysts prefer to compare personal income

without transfers to gauge relative levels of local economic activity. The share of personal income from transfer payments indicates the dependence of an area on nonmarket income sources.

How to Deflate Nominal Income Data

Indexes such as the Consumer Price Index and GNP deflator are set to equal 100.0 in the base year, and grow as the general price level rises over time. For example, the GNP deflator for 1989 was 122.7 on a 1982 basis. In other words, to have the same purchasing power in 1989 as in 1982, the typical household needed 122.7 percent of the income it had in 1982.

To express household income in these two years in equivalent (1982 dollar) terms, divide 1989 income by 1,227 (or 122.7 percent).

<u>Year</u>	<u>Nominal Income</u>	<u>Deflator (1982 Base)</u>	<u>Real Income</u>
1982	\$23,500	100.0	\$13,500
1989	\$17,000	122.7	\$13,855 (= 17,000/1.227)

When calculating long-run growth rates, the researcher should choose the base year and time period wisely. The closing of a major employer, a strike, or the national decline in a locally important industry (for example, the farm crisis) can have a dramatic impact on short-term economic activity. If either endpoint of the period over which growth is measured is in a year of unusual economic circumstances, the growth rate of personal or per capita income may not accurately reflect the long-term economic vitality of the area. This point applies to employment data as well.

Choosing a Base Year

To illustrate the impact that the choice of a base year can have on a growth rate, consider recent employment trends in two counties in Indiana, Allen and St. Joseph. The ten-year employment growth rate between 1978 and 1988 was 14.7 percent for Allen county and 14.9 percent for St. Joseph County. However, for 1982 to 1988, employment in Allen County grew at 24.5 percent compared to 20.1 percent for St. Joseph. Allen County's larger short-term growth rate represents recovery from the sharp drop in employment from 1979 to 1982. Choosing a recession year as the base year makes those areas most affected by recessions look healthier.

National economic trends should also be considered. If the base year falls in the trough of a business cycle, the growth rate will reflect, in part, the cyclical recovery process. Some counties are more sensitive to national business cycles than others. Their income and employment levels swing more wildly, and growth rates may be of questionable comparability if either endpoint of a growth rate period is during either a peak or a trough. The official arbiter of cycle peaks and troughs is the National Bureau of Economic Research (NBER). The official dates of cycle peaks and troughs of the U.S. economy since World War II are listed below.

**National Business Cycle
Peaks and Troughs: Post-World War II**

<u>Peaks</u>	<u>Troughs</u>
November 1948	October 1949
July 1953	May 1954
August 1957	April 1958
April 1960	February 1961
December 1969	November 1970
November 1973	March 1975
January 1980	July 1980
July 1981	November 1982

Total Employment

Another widely used measure of aggregate economic activity is total employment. In some sense, measures of employment are less indicative of the welfare of a community's citizens than measures of income since employment generates only about two-thirds of a typical household's total income. However, estimates of total employment more closely measure local area economic activity than personal income, since personal income includes transfer payments and capital income. Moreover, employment data are generally available more often than income information, and with a shorter time lag. This is particularly true for smaller substate areas. Finally, employment data need not be deflated to real terms.

Data Sources. The most troublesome aspect of substate employment data is the variety of employment estimates. There are several different sources of local area employment statistics, and each uses different raw data and definitions. Analysts must decide which sources are most appropriate by considering the advantages and disadvantages of each.

Each year, the Bureau of the Census collects county level information on employment by size of firm and industrial sector, using the records generated by the social security tax. These data are collected once each year (in the third week of March) and are available in *County Business Patterns*. These data can also be obtained in machine readable form through the state data center program.

Census employment data possess two desirable qualities. First, they provide an accurate count of covered employment, rather than an estimate. Furthermore, unless disclosure restrictions dictate aggregation (see extract p.), the data are available at the four-digit Standard Industrial Classification (SIC) level of industrial detail. The SIC system was developed to classify establishments by type of economic activity for the tabulation, presentation, and analysis of data, and to promote uniformity and comparability in the presentation of statistical data collected by government agencies and private research organizations. Figure 1 illustrates how the SIC system subdivides the ten major (one-digit) categories into narrower classes.

However, these data suffer from two important flaws. First, workers not covered by social security are not counted; those omitted include government and railroad employees and domestic household workers. These classes of employees may represent a substantial share of total employment in some rural counties. Second, because the data are collected for only one week in the year, they cannot be used to observe seasonal employment patterns. Furthermore, the census employment counts do not represent average annual employment level, but simply the level of employment during the week it is collected; changes before or after that week are not captured by the data. This limits the data's usefulness as an indicator of business activity for the year. Each state collects monthly employment data from the records of the unemployment insurance system. The data are from the ES-202 forms filed by employers and maintained by state employment security agencies

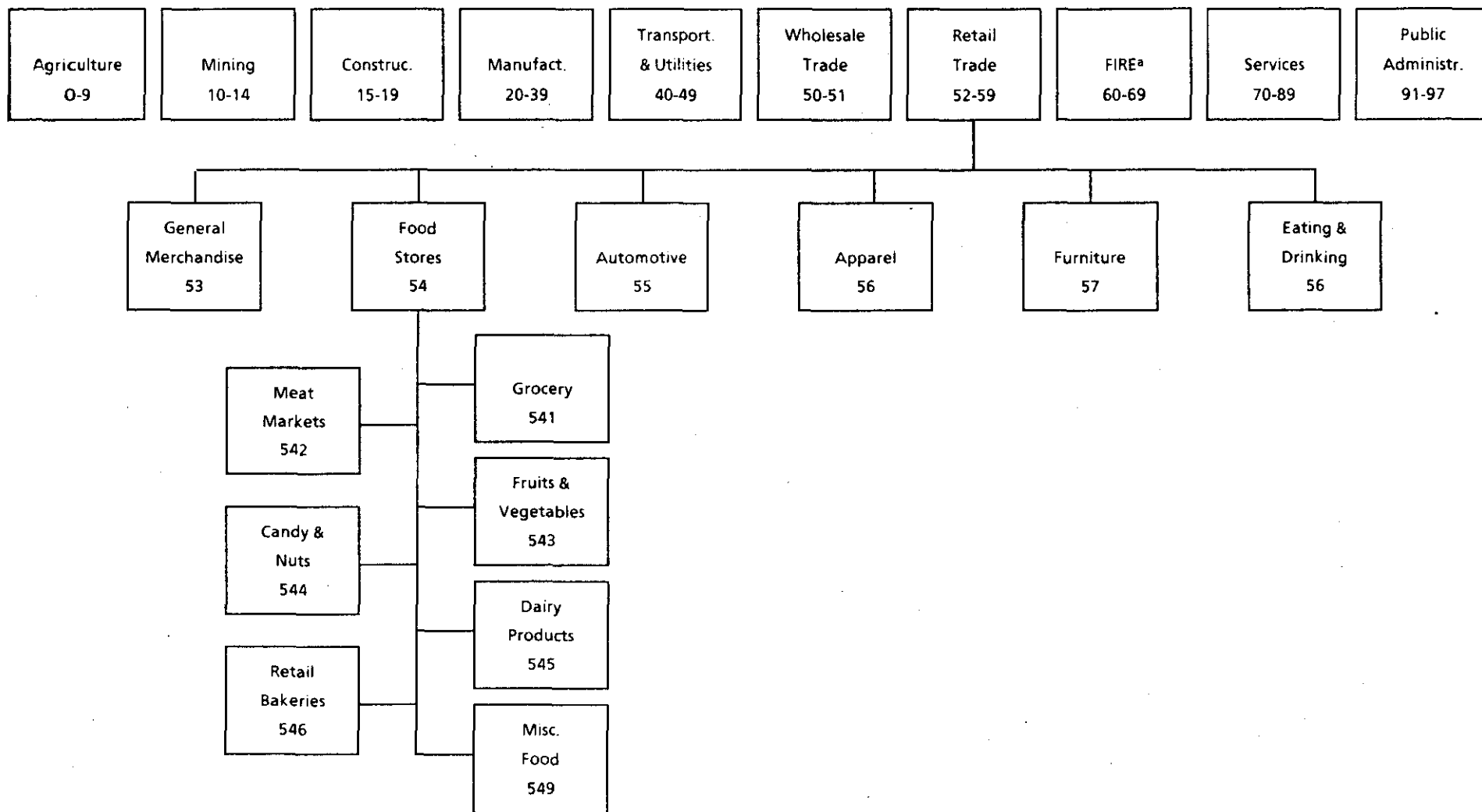


Figure 1. Standard industrial classifications

Note: For more information, see OMB 1987.

*FIRE = Finance, Insurance, and Real Estate

and labor market information directors (see Appendix B). These data, referred to as ES-202 employment statistics, have a number of desirable qualities. Like *County Business Patterns* data, the ES-202 series is a count, rather than an estimate. Employment statistics are available monthly, and the data cover a large percentage of the labor force (98.5 percent of all workers are covered under the unemployment insurance system). Furthermore, the data are reported by industrial sector and are available after only a moderate lag, usually about six months.

Confidentiality and Nondisclosure Requirements

By federal law, agencies of the U.S. government are prohibited from releasing information that may disclose the operations of a single establishment. Statisticians use disclosure analysis to identify data cells where a very small number of firms are dominant—that is, they account for all or a major portion of the sales or other reported activity in the industry, geographic area, or other category for which data are shown. When such situations are found, the data are either withheld from publication or grouped into higher level aggregates. Frequently, when numbers are suppressed it also is necessary to withhold additional data so that the suppressed figure cannot be reconstructed by subtracting the remaining data from a total published at a higher level. In the published tables, suppressed data cells are identified by a (D) for disclosure.

ES-202 data also have some disadvantages. First, even though a greater percentage of the labor force is covered in this series than in *County Business Patterns*, the coverage is not complete. Elected officials, self-employed people, and household service workers are not included. Second, these data are not published regularly. They must be requested from the agency administering the unemployment insurance system in each state. Third, county level statistics may be affected by the operations of multiplant firms. Since firms are not required to report the employment of each plant separately, all employees may be counted at the firms' headquarters, rather than at the location at which they are actually employed. Finally, since the data are not collected for use as a historical time series, they may not be maintained with intertemporal consistency. For example, a state agency may edit historical files of ES-202 records in response to SIC definition changes.

The Local Area Unemployment Statistics (LAUS) program provides estimates of total employment, unemployment, and labor force at the county level. This information is derived from a

combination of data from the ES-202 program, the BLS-790 program, and the records of the unemployment insurance system. These data can be obtained from agencies cooperating in the Federal-State Cooperative Program (see Appendix C). This series produces estimates of unemployment and labor force as well as employment. The data are then adjusted with respect to commuting patterns. Thus, estimates are given for the employment and unemployment rates of the population of a county, rather than simply measuring how many people work in the county. These data are available on a timely basis, usually with a two- or three-week lag.

The LAUS data have two weaknesses. First, they are estimates and not counts. Moreover, some economists maintain that the estimation methods result in biased estimates of relative levels of unemployment between urban and rural areas since rural residents are less likely to apply for unemployment insurance. Second, only total employment estimates are produced, and not estimates of employment by industry.

The Bureau of Economic Analysis provides unpublished estimates of total employment as a part of its efforts to estimate local area personal income, and these can be obtained through the Regional Economic Information System. This series includes estimates of total employment, including proprietorships and nonproprietorship employment. The data are available at the detailed industry level. The biggest disadvantage of the BEA data are their lack of timeliness. Like the BEA personal income series, the BEA employment estimates are available with a lag of up to 18 months.

Each of these employment series uses different data sources and different estimation methods, and each has its weaknesses. When choosing among them, an analyst should consider how the data are to be used and what characteristics are most needed. For example, if the speed with which estimates are available is more important than industrial detail, then the LAUS data should be used. On the other hand, if information on the structure of employment by sector is needed, the LAUS data are not useful; but the BEA data, *County Business Patterns* data, or the ES-202 estimates should be used. However, there is a trade-off between industrial detail and accuracy. The ES-202 data are

more timely than the BEA data, but BEA data estimation methods are backed by a great deal of research and testing, and are probably more accurate.

Measurement and Presentation Issues. Some series measure the number of jobs in a county; others measure the number of employed residents. In most cases, employment data are collected directly from employers. Thus, county level data indicate the number of people employed by firms in that county, regardless of the employees' residence. Employees are counted twice if they have more than one job. The LAUS estimates use the Current Population Survey to adjust for commuting patterns and multiple job holders. These estimates are a more accurate indication of the number of people living in a county who are employed.

Estimates of unemployment rates may be biased downward in rural areas. Unemployment data are collected from records of the number of people applying for unemployment insurance. Since rural residents may be less likely to apply for unemployment insurance than urban residents, these records may not be indicative of the actual unemployment rate. The resulting estimates may underrepresent the unemployment rate in rural counties.

Proprietorship employment, which is not included in some employment data series, may be an important part of a rural county's economy. Proprietorships typically make up a larger percentage of employment in rural areas than in urban areas. Growth in proprietorships is frequently interpreted as a positive sign of the development potential of a local economy. However, these data must be considered together with an overall view of a region's employment situation. Growth in proprietorship employment in itself may not signal an expansion of economic opportunities if employment in other sectors of the economy has declined significantly.

Plant Openings and Closings

Local economic development efforts often focus on new businesses. Growth in the number of establishments represents a potential increase in employment and income for the residents of the community, and indicates a healthy entrepreneurial economic environment.

Data Sources. There are two primary sources of data regarding the number of establishments by county: *County Business Patterns* and ES-202 data. For *County Business Patterns*, changes in the number of establishments from year to year represent both births and deaths that have occurred in the covered sectors from the census week (in mid-March) of one year to the census week of the next. Because ES-202 data are collected monthly they can be used to track shorter term changes in the number of establishments. However, the drawbacks of the ES-202 files, which have already been discussed with respect to employment, apply for establishment data as well.

The establishment data published in *County Business Patterns* and ES-202 data can be used to measure net changes in the number of establishments; however, in order to determine the breakout of net changes into births and deaths, some measure of new firm births is needed. Most sources of data on firm births are collected through informal or administrative channels. For example, all new corporations must register with the state, usually the secretary of state's office. Using the address recorded for each new firm, the data can be aggregated into communities or counties. While these data have the advantage of being very current, they suffer from a number of weaknesses. First, the address of incorporation may not coincide with the firm's operations. That is, a firm may choose to be incorporated in a location different from its area of primary operation. Hence, it is misleading to assume that such a firm increases economic activity in the county in which it is registered. The second problem with records of new incorporation is that the data are collected to fulfill administrative functions and may not be designed for research. Each state may have a different system for organizing, storing, and retrieving the data. The collecting agency must be contacted to determine the practicality of using new incorporation as a data source. Finally, the only legal form of organizations that is covered is the corporation. Proprietorships and partnerships, which may be an important part of a rural community, are not included.

Local chambers of commerce and local economic development agencies often gather information about their communities' economies through informal networks. By maintaining close contact with the business community, these agencies are often able to provide state development

agencies with information regarding new businesses, failing businesses, and vacant land or property. In many cases, the information gathered through these informal networks is compiled by state agencies or chambers of commerce in publications known generally as "new and expanding employers" listings. While this information can be current and geographically specific, it is largely anecdotal; generally, no formal sampling procedures are employed to ensure that all communities are equally represented. Therefore, while this information can be used to give a general impression of the economic environment of a particular community, it cannot be compared across communities or over time.

The Structure of Economic Activity

The community's economy is characterized by the products that it manufactures and trades. The economic well-being of a community can depend to a large extent on the growth and decline of the industries in which it specializes. Therefore, identifying and describing the economic base of a community can be useful in specifying potential sources of growth and decline.

There are two generally accepted methods of identifying the important sectors of a community's economy. In one approach, the relatively important sectors are enumerated by calculating indexes of employment specialization called location quotients (LQ). Technically, the LQ is defined as the ratio of the local percentage of employment in a particular sector relative to the same percentage for the national economy.

$$LQ_{ij} = \frac{\frac{\text{Employment in industry } i \text{ in area } j}{\text{Total employment in area } j}}{\frac{\text{Employment in industry } i \text{ in the United States}}{\text{Total employment in the United States}}}$$

If a community has a relatively large percentage of employment in this sector, the location quotient is greater than 1.0. A high location quotient indicates that the industry is a driving force behind the local economy. For example, in Yamhill County, Oregon, 20.3 percent of total employment in 1988 was in the manufacturing industry. Nationally, only 15.1 percent of all employment is in

manufacturing. The location quotient for manufacturing is $20.3/15.1 = 1.34$. Since this is greater than 1.00, this industry forms an important component of the Yamhill County economic base.

Location quotients are based upon industry employment measures or estimates. Sources of sectoral employment for substate areas have already been discussed. National aggregates can be obtained from the same sources reporting substate data.

An alternative approach to characterizing the economic base of a community is to classify a county by its dominant economic sector. An example of this approach is the classification system developed by the U.S. Department of Agriculture Economic Research Service. As described and defined on page 8, the ERS has identified seven types of nonmetropolitan county classifications. Comparison of the economic performance—in terms of employment, income, and population growth—of each of these types can be useful in identifying causes of economic growth and decline.

Measurement and Presentation Issues. Diversification is often viewed as a positive step toward economic development. It can be measured by comparing location quotients and ERS classes over time. A fall in a location quotient indicates a decrease in the relative importance of that sector to the local economy. As the location quotients of all industries approach 1.0, the economy becomes as diversified as the U.S. economy as a whole. Changes in ERS classes over time can also indicate diversification. Since the classifications were first developed with data from the 1970s and then updated to account for trends in the 1980s, the diversification of a county can be tracked between these two periods. For example, if a county was classified as a manufacturing dependent county in the first classification but had no ERS classification in 1986, this county has diversified away from dependency on manufacturing as an important source of employment.

Sectoral Economic Trends

Once the analyst has identified the important economic sectors, the profile can be made more specific by examining long-term trends in these important sectors.

Data Sources. Every five years, the U.S. Bureau of the Census collects and publishes geographically detailed information on economic activity by industry. The data are collected through a mail census. In the most recent series, taken in 1987, the Census Bureau produced seven censuses:

- Retail Trade
- Wholesale Trade
- Service Industries
- Construction Industries
- Manufactures
- Mineral Industries
- Transportation Industries

The data provided by the economic censuses at the county or subcounty level are indicated in Table 2.

The Census of Construction Industries and the Census of Transportation contain no county level data.

The Census of Agriculture is also taken every five years, in the same years as the economic censuses, and provides the following statistics at the county or subcounty level:

- Number of farms by size and value of assets
- Land in farms
- Value of land and buildings
- Market value of machinery and equipment
- Total and harvested cropland
- Irrigated land
- Market value of agricultural products
- Operators, by principal occupation
- Operators, by days worked off-farm
- Farm production expenses
- Farms by principal crop or livestock

Much more detail is also provided on types of crops, types of machinery, fertilizer used, and inventory.

Table 2. Contents of the economic censuses

Variable	Census Reporting Data
Number of Establishments	M,S,W,R,N
Employment	M,S,W,R,N
Production Workers	M,N
Production Worker Hours	M,N
Employment Size of Establishment	M,S,N
Total Payroll	M,S,W,R,N
First Quarter Payroll	S,R
Production Worker Payroll	M,N
Value of Shipments/Sales/Receipts	M,S,W,R,N

Cost of Materials	M,N
Total Capital Expenditures	N
New Capital Expenditures	M
Value Added	M,N
Establishments by Legal Form of Organization	R,S

Note: M = Census of Manufactures; S = Census of Service Industries; W = Census of Wholesale Trade; R = Census of Retail Trade; N = Census of Mineral Industries.

While the economic censuses and the Census of Agriculture provide a highly detailed picture of sectoral economic activity, they are not very timely, because they are taken every five years and there is a substantial lag (about two years) before they are published. Monitoring sectoral business activity, aside from employment activity, on a short-term basis can only be accomplished with more timely data sources. Administrative records can be useful. A number of industries--for example, housing banking, health care, restaurant, and utilities--are taxed or regulated. These functions generate records that can, in some cases, be used to track the progress of a sector in a given community.

An example of administrative records that have been used to construct a sectoral indicator is the Department of Commerce's housing permit series. The publication *Housing Units Authorized by Building Permits and Public Contracts* (Appendix D) contains the number and value of permits issued for residential and nonresidential permits. These administrative records are collected, maintained, and used as indicators of residential construction activity, and are available through the state data center program. These data are available monthly and are very timely; they are usually published within one month of the subject month. The reports present data on the number and value of permits, by type of residence (single versus multifamily housing).

There are several sources of information on banking activity. Each bank in the Federal Reserve System must report detailed information about its activity each quarter to the Federal Reserve Bank. These data can be aggregated to the county level and can be obtained from any of the Federal Reserve Bank public information branches. Most states also have agencies that monitor banking activity. Data generated by the regulatory process may be available from these state agencies.

Each of the 46 states with a sales tax maintains information on the level of taxable (and often total) sales of all establishments collecting sales taxes. This information can be aggregated to the county level to obtain information on trends in taxable and total sales. The data are available on a timely basis and are often of good quality. There is often a tremendous amount of detail on sales by type (food, clothing, construction material, fuels, automobiles). Most states require the retailer to report its industrial classification, resulting in a series indicative of the sales of specific branches of the retail sector.

Some states and localities impose taxes on restaurants, liquor purchases, and hotel and motel charges. These tax collection data can be used to track activity of the tourism and entertainment industries in an area by measuring the number of people purchasing services and the amount spent at these places of accommodation.

Measurement and Presentation Issues. Housing permit data are collected only for permit-issuing places. Not all places require construction permits and some new construction is not reported. The Department of Commerce estimates activity for these nonpermit-issuing places.

Banking data reflect the activity of home offices within a county. These data must be used with caution. With the onset of financial market reforms that deregulated the banking system in the late 1970s, branch banking has become more prevalent. Banks report loans at the location of their headquarters; all branch bank activity is reported at the headquarters office. Thus, the value of the data for tracking financial activity in communities served by branch banks has become more limited.

Physical Public Infrastructure

The quality of a region's public infrastructure, such as roads, public transportation, and water and sewer systems, can be indicative of both short- and long-term capacity for future economic development. Indicators of the quality of public infrastructure are also important because public infrastructure in poor condition is a reflection of a low capacity to generate the necessary financial capital. Long-term financial stress can be a difficult obstacle to overcome in promoting economic development. Data on the quality of public infrastructure are very limited. The available data

typically cover only a short period of time, and the collection and rating procedures are not consistent across the responsible agencies.

Roadway Data Sources. The U.S. highway transportation network consists of federal, state, and local (primarily county) roads. Data regarding the finances, mileage, usage, and condition of these roads are available on a state-by-state basis in the Federal Highway Administration's *Highway Statistics*. This series has been published since 1945. It includes separate estimates for urban and rural stretches of roadways for some variables. However, no county level data are published.

State governments maintain data on the quantity and quality of federal and state highways by county. Locally maintained roads are not generally included in these statistics; however, many states irregularly perform surveys of the quality of these locally maintained roads and bridges. A nationwide survey of county roads has recently been completed by the National Association of Counties. The results of this survey are available in Walzer and McFadden (1989).

Water Systems Data Sources. The National Rural Community Facilities Assessment (NRCFA) study surveyed administrators of public water systems in 524 communities from November 1981 to March 1982. The results of this survey are available on magnetic tape from the Economic Research Service. The variables include answers to questions regarding many aspects of the quantity and quality of the water from the public water system such as type of treatment system, results from tests for contamination, and problems with interruption of the water supply. Since these data are collected from a sample of communities, they cannot be compared with county level data.

Measurement and Presentation Issues. The extent to which a highway system is overburdened depends on more than simply miles of road per square mile of land or per capita. While the relative abundance of roadways in a given area is usually measured as a roadway per square mile or per capita, this cannot reveal the level of congestion of the existing roadways. Congestion should be measured as the flow of traffic on a highway relative to its capacity. The Federal Highway Administration measures congestion by the "volume-service flow ratio," and provides a listing by

state of the mileage for each rural and urban highway system for various ranges of volume service flow ratio.

Present Serviceability Ratings (PSR) measure the condition of the pavement. The PSR is a numerical value from zero to five, reflecting poor pavement condition at the low end and very good pavement condition at the high end. These statistics are usually presented as the miles of roadway in a region with a given rating. Dividing by the total mileage gives a percentage of highways designated at each PSR level. These data are usually available for given stretches of road but are not necessarily aggregated to the county level. The availability of geographically detailed PSR ratings differs among states.

The data available on the quality of water and sewage systems remain incomplete. While the NRCFA water study was a step forward toward a more comprehensive source of data on public infrastructure, it is still inadequate as a source of these data. Data on sewer systems and telecommunications are still badly needed.

Sociological Indicators

Most development policymakers agree that development encompasses more than simple economic well-being. The quality of life in a community also is affected by and reflected in indicators of the social characteristics of its population and living environment.

Education

The school systems of rural America exhibit a great deal of diversity. While some have become overburdened over the last decade from population immigration, others have been forced to close schools or consolidate with other districts. The needs of rural schools and the methods used to meet them vary greatly among school districts. Despite this diversity, it is widely recognized that schools are an important element of rural life, and that the educational attainment of a community's citizens helps to shape its social and economic environment.

Data Sources. The educational characteristics of a community include the educational attainment of its adults, enrollment trends in primary and secondary schools, and education expenditures by the local government. Educational attainment and enrollment data by grade are available from the decennial census. Attainment data are reported as a percentage of the adult (over 25) population that has reached a particular educational status such as high school graduate, two years of college, or four or more years of college. Enrollment data by grade are also given.

Data on the expenditure of local governments on public schools are available from the Bureau of the Census, *Census of Governments*. Like the economic census, the *Census of Governments* is taken every five years. *Volume 4, Government Finances* includes information on the revenue, expenditure, debt, and financial assets of school districts.

As is always the case with data from the decennial and five-year censuses, these data on attainment, enrollment, and expenditures can be very dated. More current enrollment data are available by grade and county from the U.S. Center for Education Statistics. However, these data are also available from state education agencies. These agencies may also collect additional information on the enrollment, attendance, number and salaries of teachers, and expenditures for all public school districts in the state. The availability varies by state.

Measurement and Presentation Issues. Census data and data collected by state education agencies may not be geographically comparable. The *Census of Population* data are collected from individuals and not educational institutions. Consequently, they are presented as county or place totals. Information gathered from school districts or individual educational institutions will apply to the geographic boundaries of that institution. Unfortunately, in most states, school district boundaries often cross municipal and county boundaries, making comparable geographic aggregation difficult. Moreover, these school district boundaries often change, making strict comparisons over time difficult. Decisions must sometimes be made about where to place school districts that cross boundaries. These decisions are usually based on the percentage of school district residents in each county.

Educational inputs are difficult to measure. The most frequently used measure of an area's commitment to education is expenditures per student. However, there are conceptual problems with equating expenditures to educational input. For example, the comparability of expenditure data among low-cost, low-density rural areas and high-cost, high-density urban areas may make expenditure level comparisons difficult to interpret.

Housing

The availability and quality of a community's housing stock is an indicator of the wealth and well-being of the residents. A higher valued housing stock indicates that residents have higher levels of personal income and wealth. An abundance of affordable but good quality housing makes it easier for middle and lower class families to provide themselves with comfortable housing.

Data Sources. Data regarding the quality and quantity of housing are available from the *Census of Population and Housing*. Variables at the county level include:

- Median value
- Owned versus rental property
- Adequacy of plumbing facilities
- Median number of rooms
- Overcrowded housing units (units occupied by more than one person per room)
- Vacant housing
- Source of water (plumbing, private, other)
- Sewage disposal (public, septic tank, other)
- Type of fuel for heating (if any)
- Year structure built

In order to update the decennial statistics, the Census Bureau performs an annual housing survey. Unfortunately, this report is based on a small sample of housing in each state, and the coverage may be too narrow to provide a comprehensive evaluation of housing quality at the county level. The need for more timely and accurate statistics is especially critical in areas of rapid growth.

The gaps left by the decennial census can be partially filled with data on new housing planned or presently being constructed. The Census Bureau maintains information at the county level regarding the number of new housing permits issued. This information is available monthly from state data centers and is published annually as *Housing Units Authorized by Building Permits and*

Public Contracts. The data include the number of permits issued by type of housing (single versus multifamily), and property value. As discussed earlier, the drawback is that these data are only collected from permit-issuing places. Nearly all of the places not requiring permits for a building are smaller rural communities. The Census Bureau estimates values for construction in nonpermit-issuing places, providing estimates of total new residential housing construction for all counties in the country.

Measurement and Presentation Issues. Rural areas may be underrepresented by permit data. The information on these permits is only gathered for permit-issuing places. Most nonpermit-issuing places are rural communities.

The average age of housing, which is a good indicator of quality, is only available every ten years. However, if housing permit data are available, it may be possible to use this information to adjust the dated housing age estimates. Considering the rate of new housing construction and making assumptions about the depreciation and demolition of old housing structures, an estimate of the age distribution of housing in an area can be constructed.

Poverty Rates

One of the most well-known measures of an area's social and economic well-being is the number of residents with incomes below the federally defined poverty level. The proportion of the population considered to be living in poverty not only reflects the economic well-being of the population but also has many sociological implications.

Data Sources. The Bureau of the Census calculates the percentage of individuals and families with incomes below the poverty level and publishes these figures with the decennial census. Income thresholds below which an individual or family is considered below the poverty level are calculated for different family sizes; these threshold incomes are compared to the individual's or family's money income to determine their poverty status.

The decennial figures can be supplemented with other indicators of changes in the poverty rate. Aside from income statistics, alternative poverty data include the participation of individuals and

families in income support programs. For example, the number of families and people receiving Aid to Families with Dependent Children (AFDC) is available at the county level, and is very timely, usually made available within several months.

Measurement and Presentation Issues. Money income may not fully represent economic well-being. The federal definition of poverty is based upon a measure of money income received by the household. Many households, particularly in smaller communities, participate in informal markets, such as exchange of goods or services, and they may receive a significant share of their income through these nonmonetary markets. Consequently, the level of household income may not perfectly reflect the level of economic well-being. Participation in informal economic markets may vary across counties, and between urban and rural areas, biasing the comparisons of the proportion of households below poverty. Recognition of this bias can help to prevent misinterpretation of poverty statistics.

Cost-of-living differences can affect the relative poverty status of rural and urban residents. It is well known that the costs of living can differ substantially from place to place. Nonetheless, the federal government's definition of the poverty level does not differ geographically. Hence, those defined as living in poverty in rural areas may be better off economically than their counterparts in urban areas.

Participation data can be biased due to self-selection. Relying on participation data for an indication of the direction of changes in poverty rates may bias statistics because participants in these programs are not uniformly rural and urban. Research has demonstrated that rural residents, given similar economic circumstances, are less likely to participate in income support programs. Consequently, state administrative data on program participation may underestimate the actual rate of poverty in rural areas.

Participation data may not be comparable over time due to changes in eligibility requirements. Participation data must be interpreted with care; data spanning a time period during which a change in eligibility requirements has taken place cannot be compared. Federally defined income thresholds are changed annually to reflect changes in the Consumer Price Index.

Health Statistics

The general health of the population and their access to health care are both indicators of the quality of life in a community. Rural residents often have to travel farther or wait longer for medical attention, particularly specialized care.

Data Sources. There are two sources of substate health and health services information: the U.S. Department of Health and Human Services (HHS) *Area Resource File* and state agencies in charge of health related matters. The *Area Resource File* is a rich source of county level information on the vital statistics of residents (birth rates, mortality rates, health conditions) and the availability of health care resources (numbers of hospitals, hospital capacity, admissions, nursing homes, dentists, physicians, nurses). This information can be purchased directly from the Health Resources and Services Administration of HHS. While the *Area Resource File* provides an easily available and usable source of comprehensive health services data, more current data may be available from the state agency in charge of health and hospitals.

Measurement and Presentation Issues. Changes in the health status of a community's residents does not necessarily reflect the availability of health care services. The health status of an area's residents is also determined by demographic, genealogical, environmental, and behavioral factors. While some health care services do focus on preventive care, most can contribute only to the restoration of health and can do little to overcome negative behavior or environmental factors.

Simple statistics on the availability of health care resources can be misleading. Information on the number of physicians per capita ignores the important issue of physician specialties; the number of beds or hospitals per person similarly does not address the level of access to important clinical or specialized facilities such as rehabilitation centers. Finally, the needs of communities will differ with differences in their demography. For more information on this issue, refer to Gilford, Nelson and Ingram (1981).

Crime

Rural areas often attempt to attract new residents by citing the incidence of crime in their communities compared with that in urban communities. Indeed, concerns about crime and safety often influence the location decisions of families; the problems of crime and safety have become a very important local policy issue.

Data Sources. Because U.S. law enforcement agencies voluntarily contribute statistics to the Uniform Crime Rating program it is able to provide periodic assessments of the number and types of crimes as measured by the number of offenses reported to the law enforcement community. These records can be obtained either from the FBI or through state uniform crime reporting agencies.

Measurement and Presentation Issues. Because crime rates are based on the number of crimes reported to police, differences in the willingness and ability of observers to report crimes can affect these statistics. While rural residents may be more likely to report a crime if one is seen, the likelihood of a witness's observing a crime may be lower. Thus, it is difficult to judge what overall effect the possible reporting difference may have on the relative urban/rural crime rate.

Presenting Statistical Tables

In many profiles, a set of tables containing the detailed data used in the analysis can improve impact and use. The text of the profile itself can be viewed as a set of examples of how the data in the statistical tables might be used to analyze a substate geographic area.

Data should be presented at the smallest geographic level. This allows profile users to focus on the areas with which they are most concerned. These data allow analysts to construct a profile for the geographic area of their choice that permits comparisons across areas. The county data can also be aggregated into rural and urban groups, as well as other aggregations, if the need for information on such areas is perceived. A useful tool for such aggregations is a simple spreadsheet computer program, which allows data to be aggregated over any grouping of counties. The electronic spreadsheets can be distributed with the profile; this allows users the greatest amount of flexibility with respect to customization of area aggregations.

Conclusions

A state profile can be very complex, using a number of data sources and sophisticated analytical techniques, or it can be very simple, making use of only the most easily available data. The complexity of the profile should depend on its intended audience, its possible uses, the facility of the analyst with data and statistics, and the cost and time that can be invested in the project.

The benefits of separate data analysis for urban and rural areas of a state include a deeper understanding of the economic and social environments within which rural community leaders must make policy decisions. In addition, the unique contributions of rural areas to the overall economic, demographic, and social character of the state can be recognized.

The most difficult task involved in writing a profile is data collection. For some states, a great deal of very high quality data are available; for others, data may be of poor quality and difficult to obtain. The relative costs and benefits of using data sources that require extra effort to collect or interpret should be weighed carefully. The appendixes that follow provide an introduction to the data collection process. Appendixes A,B, and C list contacts for some of the unpublished data available in hard copy and digital form. Appendix D summarizes the published data sources that have been discussed here. The final section is a list of the general references used to compile this report. Sources cited address many important data and methodological issues involved in constructing a profile.

Sample profiles for Indiana, Oregon, and Idaho have already been constructed using these techniques. Copies can be obtained from CARD Publications, 568 Heady Hall, Iowa State University, Ames, Iowa 50011.

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APPENDIX A

State Data Center Contacts

Alabama

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Tuscaloosa, AL 35487
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Alaska

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Alaska Department of Labor
P.O. Box 25504
Juneau, AK 99802-5504
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Arizona

Arizona Department of Economic Security
1300 West Washington
P.O. Box 6123-045Z
Phoenix, AZ 85005
Betty Jeffries
(602) 255-5984

Arkansas

Center for Information Services
University of Arkansas-Little Rock
2801 South University
Little Rock, AR 72204
Sarah Breshears
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California

State Census Data Center
Department of Finance
1025 P Street, Room 83
Sacramento, CA 95814
Linda Gage
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Colorado

Division of Local Government
Colorado Department of Local Affairs
1313 Sherman Street, Room 520
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District of Columbia

Data Services Division
Mayor's Office of Planning
Room 313, Presidential Building
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Florida

Florida State Data Center
Executive Office of the Governor
Office of Planning and Budgeting
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Tallahassee, FL 32301
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Division of Demographic and
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Georgia Office of Planning and Budget
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Hawaii State Data Center
State Department of Planning and
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Kamamalu Building, Room 602A
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Idaho

Idaho Department of Commerce
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Illinois

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Illinois Bureau of the Budget
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Michigan

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Michigan Department of Management and Budget
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(208) 334-2906

Illinois

Division of Health Information
and Evaluation
Illinois Department of Public Health
535 West Jefferson Street, 2nd Floor
Springfield, IL 62761
(217) 785-1058

Indiana

Division of Public Health Statistics
Indiana State Board of Health
1330 West Michigan Street, Room 236
P.O. Box 1964
Indianapolis, IN 46206-1964
(317) 633-0311

Indiana Business Research Center
Indiana University School of Business
801 West Michigan Street, Room 4003
Indianapolis, IN 46202
(317) 274-0872

Iowa

Census Services
320 East Hall
Iowa State University
Ames, IA 50011
(515) 294-8337

Kansas

Division of the Budget
Statehouse, Room 152E
Topeka, KS 66612
(913) 296-2826

Kentucky

Population Studies Program
Urban Studies Center
University of Louisville
426 West Bloom Street
Louisville, KY 40292
(502) 588-6626

Louisiana

Research Division
College of Administration and Business
Building
Louisiana Tech University
Box 10318 Tech Station
Ruston, LA 71272
(318) 257-3701

Maine

Office of Data Research and Vital Statistics
Department of Human Services
Statehouse, Station 11
32 Winthrop Street
August, ME 04333
(207) 289-3080

Maryland

Maryland Center for Health Statistics
Department of Health and Mental Hygiene
201 West Preston Street, Room 544
Baltimore, MD 21201-2365
(301) 225-5950

Massachusetts

Massachusetts Institute for Social
and Economic Research (MISER)
University of Massachusetts
Thompson Hall, Room 128
Amherst, MA 01003
(413) 545-3460

Michigan

Office of Revenue and Tax Analysis
Michigan Department of Management
and Budget
Lewis Cass Building, First Floor
P.O. Box 30026
Lansing, MI 48909
(517) 373-7910

Minnesota

Minnesota State Planning Agency
300 Centennial Office Building, 3rd Floor
658 Cedar Street
St. Paul, MN 55155
(612) 296-2557
(612) 296-9036

Mississippi

Center for Policy Research and Planning
Mississippi Institutions of Higher Learning
3825 Ridgewood Road, #810
Jackson, MS 39211-6453
(601) 982-6456

Missouri

Office of Administration
Division of Budget and Planning
Capitol, Room 124
Corner of Broadway and West Main
Box 809
Jefferson City, MO 65101
(314) 751-2345

Montana

Bureau of Business and Economic Research
University of Montana
Business Administration Building, Room 209
Missoula, MT 59812
(406) 243-5113

Nebraska

Nebraska Natural Resources Commission
P.O. Box 94876
Lincoln, NE 68509
(402) 471-2081

Nevada

Bureau of Business and Economic Research
College of Business Administration
University of Nevada-Reno
Business Building, Room 415
Reno, NV 89557-0016
(702) 784-6877

New Hampshire

New Hampshire Office of State Planning
21 1/2 Beacon Street
Concord, NH 03301
(603) 271-2155

New Jersey

Division of Labor Market
and Demographic Research
New Jersey Department of Labor
CN 388
Trenton, NJ 08625-0388
(609) 292-0076
(609) 292-0077

New Mexico

Bureau of Business and Economic Research
University of New Mexico
1920 Lomas, N.E.
Albuquerque, NM 87131
(505) 277-2216

New York

New York State Department of Economic De-
velopment
One Commerce Plaza, Room 905
Albany, NY 12245
(518) 474-6005

North Carolina

Office of State Budget and Management
116 West Jones Street, Room 5111
Raleigh, NC 27603-8005
(919) 733-7061

North Dakota

North Dakota State Census Data Center
North Dakota State University of Agriculture
and Applied Science
P.O. Box 5636
Fargo, ND 58105
(701) 237-7441

Ohio

Ohio Data Users Center
Department of Development
P.O. Box 1001
Columbus, OH 43266-0101
(614) 466-2115

Oklahoma

Office of Economic Analysis
Oklahoma Employment Security Commission
State Capitol Complex
305 Will Rogers Building
Oklahoma, OK 73105-4495
(405) 557-7106

Oregon

Center for Population Research and Census
Portland State University
P.O. Box 751
Portland, OR 97207-0751
(503) 464-3922

Pennsylvania

Pennsylvania State Data Center
Institute of State and Regional Affairs
Olmsted Building, Room E310
Penn State-Harrisburg
Middletown, PA 17057
(717) 948-6178

Rhode Island

Rhode Island Statewide Planning Program
265 Melrose Street, Room 203
Providence, RI 02907
(401) 277-2656

South Carolina

Office of Demographic Statistics
Division of Research and Statistical Services
Rembert C. Dennis Building
1000 Assembly Street, Room 442
Columbia, SC 29201
(803) 734-3782

South Dakota

Center for Health Policy and Statistics
State Department of Health
523 East Capitol
Pierre, SC 57501
(605) 773-3693

Tennessee

Tennessee State Planning Office
309 John Sevier State Office Building
500 Charlotte Avenue
Nashville, TN 37219-5082
(615) 741-1676

Texas

Texas State Data Center
 Texas Department of Commerce
 P.O. Box 12728, Capitol Station
 Austin, TX 78711
 (512) 472-5059

Department of Rural Sociology
 Special Services Building, Room 138
 Texas A&M University System
 College Station, TX 77843-2125

Utah

Demographic and Economic Analysis
 Office of State Planning and Budget
 116 State Capitol Building
 Salt Lake City, UT 84114
 (801) 538-1027

Vermont

Division of Public Health Statistics
 Department of Health/Population Programs
 P.O. Box 70
 60 Main Street
 Burlington, VT 05402
 (802) 863-7298

Virginia

Center for Public Service
 Dynamics Building, 4th Floor
 2015 Ivy Road
 Charlottesville, VA 22903
 (804) 924-1022
 (804) 924-7451

Washington

Forecasting Division
 Office of Financial Management
 Insurance Building, AQ44, Room 450
 Olympia, WA 98504
 (206) 586-2804

West Virginia

Office of Health Services Research
 900 Chestnut Ridge Road
 Morgantown, WV 26505
 (304) 293-2601

Wisconsin

Bureau of Health Statistics
 Division of Health
 Wisconsin Department of Health
 and Social Services
 P.O. Box 309
 Madison, WI 53701-0309
 (608) 266-1920

Wyoming

Division of Research and Statistics
 State Department of Administration
 and Fiscal Control
 Emerson Building
 Cheyenne, WY 82002
 (307) 777-7221

CENSUS BUREAU

Population Estimates Branch
 Population Division
 Bureau of the Census
 Washington, DC 20233

APPENDIX D

Published Data Sources

Population

U.S. Department of Commerce, Bureau of the Census, *Census of Population*
 U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*

Income

U.S. Department of Commerce, Bureau of the Census, *Census of Population*
 U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*
 U.S. Department of Commerce, Bureau of Economic Analysis, *Local Area Personal Income*
 U.S. Department of the Treasury, Internal Revenue Service, *Statistics of Income, Small Area Data*

Price Deflators

U.S. Bureau of Economic Analysis, *Survey of Current Business*
 U.S. Department of Labor, Bureau of Labor Statistics, *Consumer Price Index Detailed Report*

Employment, Establishments

U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*
 U.S. Department of Commerce, Bureau of the Census, *Census of Manufacturing*
 U.S. Department of Commerce, Bureau of the Census, *Census of Retail Trade*
 U.S. Department of Commerce, Bureau of the Census, *Census of Wholesale Trade*
 U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture*
 U.S. Department of Commerce, Bureau of the Census, *Census of Service Industries*
 U.S. Department of Commerce, Bureau of the Census, *Census of Construction Industries*
 U.S. Department of Commerce, Bureau of the Census, *Census of Mineral Industries*
 U.S. Department of Commerce, Bureau of the Census, *Census of Transportation*

Highways

Farris, Robert E. *Highway Statistics, 1987* (published annually since 1945), U.S. Department of Transportation, Federal Highway Administration. Washington, D.C.: U.S. Government Printing Office.

Education

U.S. Department of Commerce, Bureau of the Census, *Census of Population*

U.S. Department of Commerce, Bureau of the Census, *Census of Governments*

Housing

U.S. Department of Commerce, Bureau of the Census, *Census of Population and Housing*

U.S. Department of Commerce, Bureau of the Census, *Housing Units Authorized by Building Permits and Public Contracts*