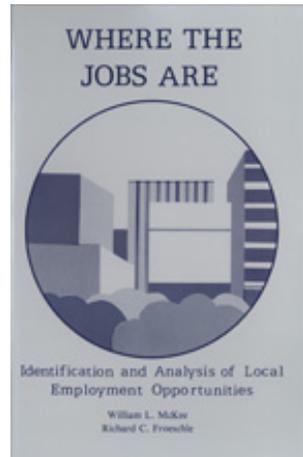# Introduction and Approach

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Chapter 1
Introduction and Approach

Introduction

Information about job opportunities is essential in guiding the decisions of planners, educators, placement specialists, students, businessmen and women, job seekers, and others who contemplate becoming economically active in the marketplace. Understanding the specifics of employment and job openings in a community is an integral part of many local level decisions—for a student about to choose a college major or a local planning agency which has funding to establish a skill training program. To enhance such an understanding, this monograph provides a practical, step-by-step process for using *publicly available* information to analyze the local labor market. The process presented here may also be adjusted to serve very narrow needs, such as identifying local employers who hire workers in a particular occupational category.

For whatever purpose, to take full advantage of the available resources a user must have a grasp of the wide variety of data sources and the ways in which the data may be used to analyze labor market activity. The user should also understand the *labor market concepts* used in the analysis, including the various components of the labor force and the manner in which data are collected. (Appendix 1 provides definitions of the fundamental labor force concepts which the reader will encounter.)

Intuitive Analysis

The intuitive methodology described here actually evolves from a practical and applied approach to making the most complete use of available labor market data. The more pure econometric or mathematical statistics approach, alternatively, proceeds from exactly specified relationships such as independent random sampling, normality of distribution, and homogeneity of variance. From these and other abstractions and assumptions, the mathematical statistician constructs a formal model which hinges upon its own internal consistency.

Intuitive data analysis is more a framework within which information is "teased" from the available, imperfect data. While this approach utilizes and depends upon the findings of statistical theory, intuitive analysis also draws heavily on the researcher's past experiences with these and similar data, reasoned hunches, and (hopefully) good sense. Data analysis in this approach involves the search for indications rather than conclusions. To identify emerging job opportunities in the local area, the process may risk a greater possibility of error, but it capitalizes on its greater frequency of occasions where the right answer is suggested.

In some situations, particularly those involving economic estimates based on statistical surveys of smaller Metropolitan Statistical Areas (MSAs) and counties, the surveys' standard errors are so large relative to the groups' average that intuitive analysis permits a more reasonable estimate. In other words, while one advantage of random sample surveying is that the analyst can calculate the exact limits of the data (i.e., standard errors), these standard errors may be so large that a more intuitive analytical process holds at least as good or better prospect of reasonableness. Still, the integrity of intuitive analysis depends almost entirely upon the reasonableness with which it is deduced.

For other reasons, such as the negative correlation between survey sample size and the amount of nonrandom error, intuitive analysis also may be preferred to a purer statistical approach. In association, then, with the cost efficiencies of intuitive analysis, the less than statistically pure approach has advantages aside from the major reason that it is adopted for local labor market analysis—statistically precise data are not available, at least for the most part.

Background and Methods

An analysis of industrial employment can be undertaken with techniques ranging in complexity from intricate statistical models to simple descriptive examination. The available data, support resources, time constraints, and unique characteristics of the local labor market all play a part in determining the particular technique of analysis that is most appropriate in a given situation. In most cases, a methodical review of the available labor market information will point out specific industrial categories where employment activity and the possibility of job openings seem strongest. In some cases, however, a more rigorous analysis is necessary in order to understand the underlying causes of labor market activity.

Regardless of the mechanical complexity of the approach, the available techniques of analysis depend upon several indicators of job openings potential.

(1) When available, *new hire and worker accession rates* provide some of the best direct indicators of job openings activity and placement potential. Job openings can occur only through employment growth or vacancies created by labor turnover. Workers vacate jobs for many reasons, including quits, deaths, retirements, transfer or promotion. In most situations, the number of job openings

created by turnover exceeds those resulting from employment growth, and the rates at which these vacancies occur vary by industry and geographic area; thus, the new hire rate, representing accessions to job openings, is greater in some industries and labor markets than in others. By assembling data on the number of new hires and calculating new hire rates for separate industries, those that exhibit the greatest potential for job openings can be identified.

Information on new hires, the new hire rate and worker accessions are available in states participating in the Employment Service Potential (ESP) and the Employer Information Systems (EIS) projects. These projects utilize unemployment insurance records (filed with the employment service by all covered employers) to track individual employees by industry and employer. From these records, new hire data are available. Both the ESP and EIS programs are new, however, and data are generally available only for major U.S. industrial sectors and major industrial sectors within each state. Some pilot states have operational systems that provide detailed new hire rates for the state as well as substate areas. In most states, though, ESP and EIS information is limited, and the analyst must rely upon national rates as indicators of local industry new hires.

Data on new hires are important indicators of job openings potential, but, because current detailed data are unavailable for most states and local areas, other factors must be considered.

(2) *The employment level* within an industry is an important indicator of job openings activity. When actual counts of job vacancies and new hires are

unavailable, the level of employment (or size of an industry) can be used as an indicator of job openings activity. If worker separations can be assumed to be uniform across industries, the largest number of openings will occur within the industrial categories with the greatest employment. Because of the volume of employment in large industries, separations will create a larger number of openings. Stated simply, *most of the job openings due to turnover will occur in industries where most of the jobs are located.* Analysis based upon size alone, however, can be misleading, and employment levels as an indicator should be used in conjunction with other supporting information.

The *Standard Industrial Classification (SIC) Manual* provides a systematic code for collecting and tabulating data by industry. This system promotes the uniformity and comparability of data collected by various governmental agencies and private organizations. Industries are classified by the type of activity in which they are engaged; thus, the classification system attempts to cover the entire field of national and local economic activities.

For the classification, an establishment is an economic unit, generally at a single physical location, where services or production are performed. The structure of the classification makes it possible to tabulate, analyze, and publish establishment data on a major division or on a two-digit, three-digit, or four-digit industry code basis according to the level of industrial detail considered most appropriate. Each establishment is assigned an industry code on the basis of its primary activity which is determined by its principal product or service rendered.

The major divisions are as follows:

- Agriculture, Forestry and Fishing
- Mining
- Construction
- Manufacturing
- Transportation and Public Utilities
- Wholesale Trade
- Retail Trade
- Finance, Insurance and Real Estate
- Services
- Public Administration
- Nonclassifiable establishments

Within each division, industrial detail is further disaggregated, thereby increasing the specificity of coverage within the industry. For example, Electrical and Electronic Equipment is classified as major group 36 within the major division of Manufacturing. Within SIC 36 there exist listings of industries at a more specified level of detail. SIC 363, for example, is the industry group Household Appliances. Within SIC 363 are still more detailed industries; SIC 3634 is Electrical Housewares and Fans. The hierarchy begins at the major division level and proceeds to two-, three-, and four-digit categories based on increasing specificity.

Data on employment by industry are readily available for most local areas. Within the public employment service (ES), the ES-202 record of employees covered by unemployment insurance provides a timely count of payroll employment by detailed industrial category within each state and county. In addition, the Current Employment Statistics survey (or 790 Program) operated by the ES estimates the number of employees on nonagricultural payrolls each month in each

metropolitan area. Local industrial employment is recorded and published by several other resource agencies, including the U.S. Bureau of the Census and the Bureau of Economic Analysis, as well as many others.

(3) *Changes in employment* among different industries can provide a valuable indication of job openings activity in two ways. Obviously, net additions to employment evidence job openings within the industry. By monitoring employment changes, it is possible to identify industries in which new jobs are being added to the employment pool.

A second way in which this information is a useful indicator is that it contributes to identification of the direction of change of an industry's employment level and new hire rate. The employment level and new hire data are indicators of job openings activity, but they are measured for static moments in time. Data collection and dissemination take time. It may be feared that, by the time the data are actually in-hand, they may have become out-of-date and no longer represent an industry's current activity. Still, since up-to-the-minute data are unavailable, past and projected employment trends provide an understanding of whether an industry is generally advancing or declining. Recognizing the direction of change helps anticipate whether the number of job openings is expanding or contracting within an industry. In addition to historical time series, projections of future employment by industry are regularly produced by the ES for each state and major area.

(4) *The number of local establishments* (firms) in different industrial categories can be a useful indicator supplementing other information on job

openings activity. New hires and employment levels provide measures of the volume of job openings but do not lend insight into the nature of their hiring activities. Examining the number of establishments along with their levels of employment can pinpoint the industrial identification and concentration of large and small employers. This distinction is critical, since larger employers may have different hiring patterns and employment needs than smaller employers.

Data on the number of employing establishments, like employment data, are available from the ES as well as from other government agency sources. The ES-202 record provides a count of establishments reporting employment covered by unemployment insurance and can provide the number of establishments by size of employment. In addition, several sources available from the U.S. Bureau of the Census provide information on the number and size of employers in separate industry categories.

Analytical Process

The following analytical constructs provide (1) a sequential organization and (2) an analytical framework for using available labor market information (LMI) to identify potential job openings. Basically, the analysis of job opportunities proceeds from industries to occupations, using growth and replacement needs as signals indicating where openings can be expected. Since jobs originate from economic activity, the job search process begins by isolating the key industries in which, based on the analysis of available LMI, possibilities of job openings seem most likely. The key industries are those industries with the larger growth and replacement needs. Then, with specific key industries in mind, LMI can

be used to search for jobs among the occupations associated with employment in those industries. Again, growth and replacement needs are indicators for analyzing occupations and identifying areas where job openings seem likely. As with industries, the prospects for openings in some occupations will be greater than in others.

Having identified industries and related occupations where job openings seem most likely, the background is established for measuring job quality and placement potential and for contacting related employers. Measuring job quality and placement potential involves collecting available LMI on training and education requirements, expected wage rates, and the potential supply of workers available to compete for those openings. With this more comprehensive view of potential job openings, employers may then be contacted in order to verify the anticipated opportunities in each occupational area. The industrial identification of key leading industries serves as a guide to those employers in which openings are expected to exist.

A more detailed examination of the use of available LMI to identify job openings is covered in the following chapters, but figure 1-1, "Labor Market Analytical Process," and the accompanying narrative outline the suggested procedure for identifying local job opportunities.

Step 1. Identify the geographic labor market

The initial step in the job identification process involves identifying the geographic jurisdiction of the local labor market. While the area of immediate interest may be a central city or county, identifying and understanding job opportunities can only be undertaken within the larger context of the geography of economic activity that generates employment. With few exceptions, that economic activity is contained in a geographic area somewhat larger than the city or

Figure 1-1
Labor Market Analytical Process

	Activity	Key Elements of Activity
Step 1	identify geographic labor market	• determine the political or economic jurisdiction • consider all significant pockets of job opportunity
Step 2	identify industrial structure of employment	• identify industrial composition • identify employment levels of industries • identify firms, employment class size
Step 3	analyze historical employment trends	• identify past patterns of growth (long term) • identify recent historical trends in employment
Step 4	interpret current economic conditions	• examine current industrial indicators of performance • compare employment levels with labor force participation
Step 5	inspect other current labor market indicators	• examine local job openings data • examine other local wage and hiring information
Step 6	incorporate employment projections	• examine absolute growth and decline projections • examine percent changes in projected employment
Step 7	rank local industries based on employment potential	• use the industrial evaluation model • identify specific two- and three-digit growth industries
Step 8	identify local employers	• identify local employer names by SIC industry category
Step 9	analyze the occupational composition of selected industries	• identify occupational staffing pattern of key selected industries examine employment distribution among occupations
Step 10	analyze occupational projections	• examine absolute projected employment increases • examine percent increases in projected employment
Step 11	consider job quality	• identify qualitative aspects of an occupation • consider skill transferability, job duties, wages and hours, working conditions, hiring requirements

county. It is important not to stratify the geographic area too narrowly, since it is possible to exclude important components contributing to employment and providing job opportunities.

The labor market area (LMA) and the metropolitan statistical area (MSA) are premised on concepts of economic activity and are logical geographic building blocks for labor market analysis. Both the LMA and MSA are defined by the relationship between place of residence and place of work of the labor force. The primary consideration involves the ability of workers to accept new jobs without the necessity of changing residences or incurring unreasonable commuting distances. To avoid fragmented, incomplete interpretations of job activity, analysis should, as a rule, first be conducted at the LMA or MSA geographic level. Then, analysis for smaller jurisdictions can be performed within that context.

Step 2. Identify the industrial structure of employment

Having identified the geographic area for analysis, the job identification process turns to gaining familiarity with (1) the industrial composition of the area, (2) employment levels among industries, and (3) employers among industries. The size of an industry and the number of employers within an industry can serve as an initial guide to key industries, since openings created by labor turnover and worker separations will occur within all industries. If separation rates are uniform across industry classifications, the largest number of openings should occur within the largest industrial categories (those with the highest employment levels). Because of the volume of employment in large industries, separations will create a large number of openings. From that view, large industries, or industries with large establishments, can be considered key leading industries.

Step 3. Analyze historical employment trends

After the user becomes familiar with the current structure of local industrial employment, the next step in the search for employment potential focuses on growth and growth trends. Specifically, it is important to know where growth has occurred in the past for purposes of understanding or projecting continued growth trends. Base and target years selected for this analysis are those that seem to best fit the trend of total industrial employment over the past five or so years. Then, simple calculations identify the absolute and percentage change in employment by industry. By examining the historical trends of each industry's employment, it is possible to identify industries that have experienced the greatest absolute growth or the fastest rise (percentage increase) in employment. Similarly, industries are identified which have large numbers of employees, yet are actually declining.

Step 4. Interpret current economic conditions of area industries

Although it is necessary to identify industries that have grown in the past, it is equally important to determine how those industries are functioning in the more recent time period. A good place to begin is with the state or local *Labor Market Information Newsletter* published by the local ES. The newsletter provides a narrative analysis of Current Employment Statistics (CES) data on employment trends and the number of nonagricultural wage and salary jobs by major two-digit (SIC) industry. Through a comparison of the figures for the recent month and for the same month in the previous year, it provides insight into how industry employment has expanded or contracted over the past year. Also included in the newsletter are CES data on average earnings and average hours worked, which, when tracked over several months, can be good leading indicators of the growth or decline of an industry.

Step 5. Inspect other current labor market indicators

There are other valuable data items, such as employment service job openings, for examining recent industrial trends. It is valuable to examine the ESARS (Employment Security Automated Reporting System) tables to identify current openings registered by industry to determine if there is an expressed demand for workers in those industries.

Step 6. Incorporate employment projections in the analysis

After examining the current industrial structure and recent and historical trends by industry, inspecting industry employment projections provides a future perspective of the industrial structure. Employment projections show employment data by industry for a base year, a current estimated year, and a target year so that it is possible to calculate absolute and percentage change, and, thereby, identify where the greatest amount of industrial growth is expected to occur. Another valuable source for understanding industrial projections is the *Industrial Outlook Handbook,* which provides a compact survey of U.S. industries and an overview of domestic and international developments which will influence their growth potential.

Step 7. Rank local industries according to their employment potential

The process in steps 1 through 6 above leads to the narrowing of an expansive local industrial structure to a few key industries which are more easily analyzed. This narrowing process continues to a finer level of industrial detail so that the final result is the identification of specific three- or four-digit SIC code industries which have exhibited past growth and are projected to continue growing.

In an analysis of the available local LMI, there normally will be a limited number of industries that consistently stand

out as healthy with good employment growth potential.
Replacement needs must also be considered, but data on
localized replacement needs are not generally available (ex-
cept for special studies). For this reason, the discussion here
is premised on the assumption that replacement needs occur
uniformly across industries; thus, industry size can be used
as a measure of replacement need, and large industries can
be expected to experience a larger absolute volume of
replacement need. Combining replacement information with
growth data will highlight several key leading industries
which exhibit the greatest potential for employment.

Step 8. Identify local employers

After identifying specific four-digit industries with good
growth potential, it is a simple task to refer to a local Direc-
tory of Manufacturers, Dun and Bradstreet listing of million
dollar or middle-level firms, or a Chamber of Commerce
listing of local manufacturers, to get names, addresses, and
marketing scopes of individual firms within those industries.
Integrating this statistical overview of the sources of in-
dustrial employment with a general understanding of the
local employment structure, it is often more effective to con-
tact those firms first before expanding the analysis.
Employer contact is essential because secondary data
systems universally are restricted in the nature and degree of
intensive, current information that can be collected through
either a survey or administrative reporting process.

Step 9. Analyze the occupational composition of selected industries

The next logical step, then, is to identify the occupations
(in relative terms) that comprise the workforce of each
selected industry. Again, the process of examining all the in-
dividual occupations within an industry will be aided by
reviewing the available LMI and identifying those occupa-
tions that represent the greatest reasonable expectation for

employment. When performing a local area economic analysis, disproportionately greater attention must be paid to expanding occupations within expanding industries (all other factors considered equal). If industries within the local area are not expanding, then job stability becomes the primary criterion.

The questions that need to be answered concerning occupations are: (1) How many jobs are there in each occupation within the key industries? (2) What occupations have the largest number of jobs in those industries? and (3) In which occupations are future job opportunities most likely to occur? The occupational composition of employment within industries, taken from the Occupational Employment Statistics (OES) program, will help determine the occupations making up employment within a particular industry and their percentage distributions. Although data on industry staffing patterns are usually available at the state level only, it is feasible to apply those same staffing patterns to the local area. Staffing patterns provide percentage distributions of major occupational groups; thus, it is possible to identify the most commonly reported occupations within the industry. In other words, some percentage of all the local firms within an industry will report jobs in similar occupational categories. This information, coupled with staffing pattern data, provides insight into the number of jobs within a given occupation in a given industry.

Step 10. Analyze occupational projections

Occupational projections are invaluable in identifying growth occupations by industry. Although some states are still using census-based projections, many states now have projections available from the Occupational Employment Statistics (OES) survey program. These projections result from multiplying total employment projections (for an industry in a target year) by industrial staffing ratios. By using the Industry/Occupation (I-O) matrix to cross-tabulate in-

dustrial employment estimates with occupational staffing patterns, it is possible to calculate the additional employment that will be necessary to satisfy occupational growth and replacement requirements.

Step 11. Consider job quality

It is not sufficient, though, to restrict analysis to only the number of jobs within an occupation. Rather, to facilitate the best match between workers and jobs, it is necessary to assess the quality of available jobs. In training or counseling individuals for specific occupations, it is important to analyze the nature of a given job according to: (1) transferability of skills within an occupation; (2) job duties and functions; (3) basic hiring requirement (including ports of entry); (4) pay range or average wage rates; and (5) firm-specific training requirements of potential employees. The task of assessing the quality of occupations becomes a two-fold process of reviewing and analyzing available LMI and gathering qualitative information through contacts with local employers.

The goal of identifying stable or expanding industries should always be kept in mind. Changes in economic trends or industrial structure, however, may require workers to transfer from one industry to another. By providing individuals with skills that are transferable among industries, there is greater probability that these workers will be able to achieve continuous employment.

The basic duties and functions associated with occupational categories can be obtained from any of the occupational classification manuals. The most detailed system is the *Dictionary of Occupational Titles (DOT)*. The *DOT* describes general tasks involved in the occupation, fields of specialization within an occupation, and identification of duties required of workers in this occupation. Another system is the *Standard Occupational Classification System (SOC)*.

There is no substitute for direct employer contact in gathering information on the last category—the firm's specific training requirements. While the majority of actual training takes place on the job, by contacting the individual employer one can learn what types of training are required for workers in that firm's entry level positions.

To achieve the greatest return on counseling, job search or training investments, it is important to identify not only the capabilities and needs of the individual, but also the quality, potential, and limitations of the occupation. If the best match between the individual and available jobs is facilitated, the resulting placement will be suited to the worker's needs, length of tenure on the job will increase, and further benefits will accrue to society. Ideally, identifying those occupations with the greatest employment potential and combining that knowledge with an understanding of job quality within occupations provides the counseling, training, and placement processes with better probabilities of success.