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ABSTRACT

Intended for researchers and policy developers in education and labor market economics, this study reviews, evaluates, and summarizes available information concerning the characteristics of occupationally mobile workers and their jobs. Chapter 1 presents basic concepts and definitions, a review of problems in empirical measurement of mobility, and a brief discussion of problems of occupational classification. Chapter 2 provides brief overviews of several labor market theories, suggests their implications for occupational mobility, and presents a review of empirical mobility studies related to labor market theories. Using the same format, chapter 3 deals with sociological theories and evidence, while chapter 4 deals with theories from vocational psychology and related evidence. Chapter 5 overviews and summarizes the empirical literature and suggests directions for future research. Appendix 1 provides an annotated bibliography of the empirical studies reviewed, including this information for each study: thesis, data, methods, results, and limitations. Appendix 2 provides technical information on the major data sources used in the empirical studies with this information provided: primary source, description, and limitations. (Appendixes comprise over one-half of the document. The table of contents may be used as a cross-reference to surveys cited.) (Author/YLB)

Information Series No. 193

EMPIRICAL EVIDENCE ON OCCUPATIONAL MOBILITY

INTERIM REPORT

by

Dixie Sommers

The National Center for Research in Vocational Education
The Ohio State University
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Columbus, Ohio 43210

1979

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An Interim Report
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FOREWORD

The Occupational Adaptability and Transferable Skills program conducted by the National Center for Research in Vocational Education, and sponsored by the National Institute of Education, is continuing its research on issues of occupational change and its impact on workers. This review of empirical data on occupational mobility is one of several efforts conducted within the program to gain a better understanding of the factors affecting skill transfer to a variety of life and work situations. The purpose of this report is to present an overview of what is known about the characteristics of occupationally mobile workers and their jobs. By summarizing the evidence drawn from several social science disciplines, the author suggests topics for future research.

The opinions and conclusions expressed in the paper are solely those of the author and should in no way be construed as representing the views and policies of the National Center, or the National Occupational Information Coordinating Committee and its constituent agencies.

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Robert E. Taylor
Executive Director
The National Center for Research
in Vocational Education

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INTRODUCTION

Issues

Evidence to date, as reported later in the study, confirms that mobility in the job market continues to be a pervasive fact of American work life. Despite this evidence suggesting flexibility of the work force, however, many labor market problems that theoretically are ameliorated by mobility remain: experienced workers all too frequently become unemployed while employers complain of the scarcity of skilled labor; many training investments produce low returns or go unutilized when workers are overqualified for the jobs they hold; and at least one recent study shows increasing dissatisfaction of workers with their jobs (Staines & Quinn, 1979).

While labor market analysts attempt to find solutions to these difficulties, educators face the equally pressing problem of preparing the future work force to cope successfully with the demands and vagaries of the economy. They must attempt to develop effective guidance counseling programs, curricula and instructional methods that reflect the future worker's need for flexibility as well as for saleable skills.

Perhaps one significant barrier to understanding the apparent dilemma of high levels of occupational mobility in the face of persistent labor market problems that suggest inflexibility, is that not enough is known about the characteristics of the mobile worker or about the jobs that are affected by mobility. While a number of theories offer suggestions about what kinds of jobs are likely to involve mobility and what kind of workers are expected to be mobile, no general theory of occupational mobility has been developed. Furthermore, the empirical evidence is scattered among several branches of the social sciences, and overall conclusions as to the size and shape of the mobility phenomenon have not been drawn.

The purpose of this study, then, is to review what is presently known about the characteristics of occupationally mobile workers and their jobs. In addition to conducting a search of the empirical evidence, the author hopes to evaluate the evidence on its technical merit and, more importantly, to summarize the evidence in light of the theories of mobility drawn from several social science disciplines.

The major interest of the study is to extend our understanding of the process of occupational transfer and the factors that affect its operation. What are the characteristics of individuals that help them successfully transfer their skills from one job to another? What are the characteristics of the jobs and of the labor market, in addition to the presence of transferable skills, that encourage or discourage mobility and affect the chances for successful mobility?

These questions are seen to be of interest primarily to researchers and policy developers in education and labor market economics. These individuals hopefully will find the results useful in guiding future research and, ultimately, in developing and implementing programs in schools, business, employment placement and assistance agencies, and in providing career information and guidance.

Format

The study begins with a discussion of occupational mobility and its measurement. Chapter I presents some basic concepts and definitions, a review of problems in empirical measurement of mobility, and a brief discussion of problems of occupational classification. Chapter II presents several labor market theories and reviews empirical evidence related to those theories. Chapter III deals with sociological theories and evidence, while Chapter IV deals with theories from vocational psychology and related evidence. Finally, Chapter V attempts an overview and summary of the empirical literature and suggests directions for future research. Appendix I provides an annotated bibliography of the empirical studies reviewed, and Appendix II provides technical information on the major data sources used in the empirical studies.

CHAPTER I

MOBILITY AND ITS MEASUREMENT

At the outset a basic question arises: "What is meant by 'occupational mobility'?" An even more basic question may also be asked: "What is meant by 'occupation'?" Readers from different backgrounds will likely have in mind different responses to these questions. It is appropriate, therefore, to establish a working definition of mobility. It is also useful to contrast occupational mobility with other types of mobility, and to describe the term 'occupation' as it relates to the various classifications used for basic data collection.

Occupational Mobility

Mobility is a term commonly used to mean the movement of individuals from one category or status to another. The sociologist may describe people as being socially mobile or immobile with respect to their ability to move from one social stratum to another. The demographer may describe people in terms of their geographic mobility, or movement from one place of residence to another.

From the economist's point of view, occupation is one of several categories used to classify and analyze the labor resources of the economy. Once a set of occupational categories is adopted, then, "occupational mobility" is used to mean *the movement or transfer of workers from one occupation to another occupation.* This definition might be illustrated by any number of examples: a worker who leaves a job as a high school teacher to become an accountant is 'occupationally mobile'.

It is useful to describe the other types of mobility occuring in the labor market that are of interest to the economist. This is done partly to identify what occupational mobility is *not*, in the economist's terminology, as well as to present definitions of other types of mobility that may be related to occupational transfer.

In general, employment[1] is categorized in at least five basic ways describing the type of work that is performed, what is produced, and where the work takes place:

(1) *Occupation* categories identify the type of work being done, i.e., the tasks performed, and may also identify the human behaviors associated with the job. (McKinlay, 1976, p. 5).

(2) *Industry* categories classify work by the type of product produced, e.g., accounting services or automobiles. (Office of Management and Budget, 1972) Movement from one industry to another is 'industrial mobility'.

(3) *Employers* or *firms* identify the place of work as a legal or managerial entity. Movement from one employer to another is 'inter-firm mobility' or 'inter-employer mobility'.

[1] This discussion, as that throughout the study, limits occupational transfer to movement from employment in one occupation to employment in another; movements involving change in labor force status are generally excluded.

(4) *Establishments* are defined as economic units which produce goods or services, such as a factory, mine, or store. The establishment is generally at a single physical location and is engaged predominantly in one type of activity. (Office of Management and Budget, 1972, p. x) Note that an establishment may or may not be the same as a firm: an individual firm may be composed of only one establishment, or may be composed of many establishments. Movement from one establishment to another may be termed "establishment mobility".

(5) *Geographic* categories describe the location of work. They are theoretically defined as labor market areas (U.S. Department of Labor, 1977), but also practically defined as metropolitan areas, cities, counties, states, regions, or the nation. Movement from one location to another is termed "geographic mobility".

At the micro level, the economist may also view the market in terms of *jobs*, a job being defined as a position of employment. An individual may experience "job mobility" by moving from one position to another, which may or may not involve change of occupation, industry, employer, establishment, or geographic location.

Even with these few basic labor market categories, the number of possible combinations of types of mobility quickly becomes large. The examples below illustrate how the types of mobility may occur simultaneously, and distinguish occupational change from other changes:

> *Example 1.* An accountant in a manufacturing firm secures a new job as financial manager at the firm's headquarters in another state. This worker experiences occupational, geographic, and establishment mobility, but *not* industrial or inter-firm mobility.
>
> *Example 2.* An employer in a northeastern state builds a new plant, manufacturing the same products as the old plant, in a southern state, and staffs the new plant with managers from the old plant. A manager transferred to the new plant without change of job duties experiences geographic and establishment mobility, but *not* occupational, industrial, or inter-firm mobility.
>
> *Example 3.* A manufacturer diversifies the business by acquiring a company in the same town involved in wholesaling. A custodian in the manufacturing plant becomes custodian in the wholesale office. This worker experiences industrial and establishment mobility, but *not* occupational, inter-firm, or geographic mobility.

These examples are presented to point out the precision of terminology needed to understand what is happening in the labor market. The delineation of the various types of mobility is also necessary because, while each type is likely to be influenced by different factors, they are inextricably intertwined. Occupational transfer, for example, may be more likely if it does not require geographic mobility, while geographic mobility may be more likely if it does not require inter-firm mobility and the associated risk of losing seniority or vested pension benefits.

Terminology problems arise when the economist finds that, in discussing occupational mobility, other social scientists may use the same words with different meanings, or may use the terms for different types of mobility interchangeably. A pertinent example is found in the summary of the transferable skills project, of which the present study is an extension:

> The project's concern for transferable skills and occupational adaptability was related to occupational change or mobility, that is, to the actual movement of workers from one type of job to another. Of special interest were job changes such as inter-firm, industrial, or occupational changes that resulted in substantial differences in the work performed or in different performance requirements. (Pratzner, 1977, p. 11)

Here "occupational change or mobility" is defined as movement of workers from one *type* of job to another. The concept is expanded to include any change "resulting in substantial differences in the work performed or in different performance requirements", which is understood to include change of firm or industry as well as change of occupation.

An additional problem is that the term "occupational" is often used to describe any activity or characteristic related to an individual's work life, instead of referring to the type of work performed. "Occupational change" comes to mean "job change".

> . . . surprisingly little is known about job mobility and job changing. When is a job change a significant change? How much of occupational mobility reflects a significant change in the work performed? How much merely reflects a change of employers with little actual change of work performance requirements? (Pratzner, 1977, p. 5)

The critical point here is not that these usages are incorrect but that they are different from the usages found in economics. Obviously, any attempt to address the problem of occupational mobility that involves different disciplines must begin with an awareness of the dangers arising when different meanings are attached to the same words.

Different terminology, however, need not be construed as representing different interests. The transferable skills project, for example, is focused not so much on occupational mobility as on "occupational adaptability." A clear definition of this phenomenon is provided. Occupationally adaptable persons are:

> "better able to perform successfully in new jobs when a change is desirable or necessary, or as their own jobs change over time." (Pratzner, 1977, p. 5)

Fine (1957) also provides a definition of adaptability:

> "the movement of workers with certain knowledges and abilities from one job to another . . . making possible the continuous use of developed knowledges and abilities."

Although both definitions use the term "jobs" instead of "occupations", the issue raised is one of equal interest to educators and economists. The educator is interested in finding ways to help students cope with change in their future labor market situations, while the economist is concerned with the adjustment of the economy's human resources to the changing composition of demand with a minimum of economic and social cost. These concerns are really two sides of the same coin. The educator attempts to develop "flexibility" or "adaptability" in students, and the economist attempts to understand the flexibilities and inflexibilities of the labor market.

This discussion has attempted to reveal some of the problems of terminology that arise in a study of this type. It seems appropriate, therefore, to specify the terminology to be used in the remainder of the report. The economist's terms will be used, partly because of the author's biases,

but mainly because of the clarity they provide. Occupational mobility will be considered as the movement of workers from one occupation to another. The other types of mobility are not excluded from consideration—indeed, they cannot be. Occupational change very often involves one or more of the other types of labor market mobility and, to be fully understood, must be analyzed in conjunction with these other types of mobility.

The focus on occupations is appropriate, however. DäuffenBach (1973, p. 2) suggests that occupational mobility is the most significant of the various types of labor market mobility:

> "... it is argued that the nature and content of a given job or type of work performed is more closely associated with occupation than with employer, industry, or locality. Second, a change in occupation is much more likely to involve substantial restructuring of skills and responsibilities."

In short, occupational mobility requires more "adaptability" on the job from the worker than the other types of mobility. The questions of how to instill and develop this adaptability, and how the operation and structure of the labor market foster or hinder the individual's adaptation, are in need of answers.

Occupational Classification

If the concept of occupational mobility as "movement from one occupation to another" is to become operational, we must deal with the problem of defining occupational categories. This must not be dismissed merely as a technical problem, but recognized as a basic issue in empirical and theoretical discussion of mobility. Occupational definition and classification give practical meaning to the mobility concept.

From the labor market analyst's view, as discussed earlier, "occupation" is the term used to refer to the type of work being performed. The kind of classification of most interest to economists, therefore, is that identified by McKinlay (1976, p. 5) as the "job analysis approach", in which the "description of the tasks can be done either by using job-oriented or worker-oriented language."

The most widely used classification based on job analysis is the U.S. Department of Labor's *Dictionary of Occupational Titles* (D.O.T.) (1978). The D.O.T. was designed for use in the placement activities of the state employment services and has become a standard source of information on work activities and worker characteristics by occupation. Because of its complexity and extreme level of detail (the fourth edition contains over 20,000 job titles and 12,000 codes), it is not often used as a classification system for data collection purposes. It does, however, provide the classifying principle and is the basic source document for the occupational classification used in the Labor Department's Occupational Employment Statistics survey, which gathers data on employment by occupation, industry, and state (U.S. Department of Labor, 1976). Because of its emphasis on skills and worker traits, the D.O.T. is used as the "bridge" for relating occupations in the labor market to training programs. (U.S. Department of Labor, 1975; National Occupational Information Coordinating Committee, 1979) The Standard Occupational Classification System also relies heavily on the D.O.T. (Office of Management and Budget, 1977)

McKinlay also identifies a number of other classifying principles: other worker traits, including interests, temperaments, Holland personality types, Project TALENT groups, and Katz's values; socio-economic classifications such as the census classification; curriculum clusters; and work environment groups. He summarizes the problems arising from this multitude of principles:

> "First, work has attracted the attention of most of the social and behavioral sciences and several major research traditions have evolved. The closest to the work activity itself is . . . job analysis where jobs are analyzed for their behavioral components. . . . Psychologists have defined and classified a number of worker traits, ranging from job-determined physical demands to interests and temperaments, and even value priorities and personality types associated with various occupations or fields of work. While each of these traits is related in its own way to work, there has been no satisfactory synthesis, and the more general traits face problems of measurement and documented linkage to jobs. Being distinct from the content of jobs, most worker traits (with the possible exception of interests) do not categorize occupations in a way that represent their essential characteristics. . . . The dominant method of occupational classification, socio-economic status ranking faces the same problem." (p. 39)

The issue, it appears, is that each classification system or principle deals with different characteristics, while no one system deals with all characteristics. What is needed, perhaps, is a multidimensional classification approach that describes not only the economic content of the occupation —the tasks and associated worker traits—but also describes the personal, personality, and social characteristics of the worker. At a minimum, it would be useful to have empirical evidence on these characteristics collected along with, or related to, the individual's occupational identification in terms of tasks performed.

Classification and Measurement of Mobility

There remains the issue of the impact of occupational classification on measuring occupational transfer. The classifying principle or characteristic dictates the information conveyed by empirical studies of mobility. As we shall see in later chapters, we learn much different things about mobility if it is measured using the Holland personality types, for example, than if the census classification system is used.

The level of detail used in empirical work is another obvious concern. The volume of movement from one occupation to another will depend on how finely the occupations are defined. Much different mobility rates are provided if, as extreme examples, the 12,000 D.O.T. codes are used rather than a two-dimensional blue collar/white collar designation.

In general, then, the usefulness of the information on mobility will depend on the level of detail and the type of occupational classification used. Examination of movement from blue-collar to white-collar work tells us something very general about the adaptability of the labor force to long-term trends in the economy, but nothing about changes occurring among the variety of occupations making up the two broad groups. McKinlay (1976, p. 12) observed that many of the work-trait classifications are by themselves too broad to provide much information about the mobility process. On the other hand, data showing movement from one nine-digit D.O.T. to another would likely be too detailed to be meaningful and would have to be aggregated to be analyzed.

Despite these difficulties, it is not the author's purpose in this study to select certain classification systems or levels of detail as the "best" for analyzing occupational mobility. Nor will any one classification be used to define the scope of the information search. Instead, the existing empirical information will be accepted along with whatever classification and level of detail was used in its preparation, with the hope that each study will suggest something about the dimensions and characteristics of occupation changing. The classification system and level of detail used will, however, be evaluated in considering the usefulness of the empirical work and in drawing conclusions from the overall evidence on mobility.

It is by now generally accepted that the labor market is not undifferentiated, but that in an industrialized economy, there are many labor market segments or even many "separate" labor markets. This phenomenon involves more than the differentiation of labor resulting from the technological requirements of the economy. It may be seen as the result of the efforts of both employers and workers to develop shelters to protect themselves from the costs and insecurities imposed by an unstructured market. (Freedman, 1976)

From the technological standpoint, labor market segments develop because, in an economy requiring specialized skills, one worker cannot necessarily be substituted for another. Substitution is possible only among workers with the requisite skills. This 'technological' type of segmentation is not inconsistent with the human capital view which contends that the market for workers in each segment consists of those individuals who have made the investments in the necessary education and training. (Becker, 1964)

To the occupational analyst, technological segmentation implies separate labor markets for different occupations or at least for groups of occupations sharing similar skills. Occupational mobility, then, is expected to occur primarily within occupational markets, and only between markets if individuals are able to develop requisite skills. The technological relationships among occupations indicated by sharing of similar skills is a critical aspect of the "job family hypothesis" of occupational mobility developed by DauffenBach (1973). This hypothesis states that "the numerous categories of occupations naturally partition themselves into distinct sets or substructures such that occupations within each substructure are interrelated by significant, systematic, and non-random patterns of worker movement." (p. 6)

These substructures or job families are further described as clusters of occupations "interlinked through the technical and administrative organization of production." (p. 7) We may therefore expect mobility to be first of all a function of the worker's ability to meet the technological or skill requirements of the occupation entered. Since such skills are probably most inexpensively obtained through experience in a related occupation, instead of or in addition to being obtained through training, we may expect skill relationships among occupations to be a primary determinant of mobility levels and structures.

Labor market structuralists have also observed many non-technological sources of labor market segmentation. Three major views of labor market segmentation and their implication for occupational mobility are described briefly below: internal and external markets, dual markets, and multiple markets.

CHAPTER II

MOBILITY AND THE LABOR MARKET

Theoretical Views of the Labor Market

Because of the movement of workers from occupation to occupation is, first of all, a labor market phenomenon, it is appropriate to begin the theoretical and empirical review with the labor market literature. This chapter provides brief overviews of neoclassical, human capital, and labor market structure theories of labor market operation, and suggests their implications for occupational mobility. A review of empirical mobility studies related to labor market theories is then presented, starting with evidence on the extent and character of mobility and personal characteristics related to mobility. Later sections cover mobility and labor market adjustment processes, and studies relating mobility to the labor market structure hypotheses.

The Neoclassical View

The neoclassical economist views the labor market in the same manner as other markets, beginning with assumptions concerning the nature of competition (perfect competition, monopsony, etc.). The neoclassical theory is, in general, one dealing with wage determination and related issues of aggregate labor supply and demand. The price (wage) paid for labor, that is, the point of intersection of demand and supply schedules, is said to be determined by the marginal revenue product, which in turn is derived from the marginal productivity of homogeneous units of labor and the price received for the product.

This neoclassical view, obviously over-simplified here, leads to the 'queue' theory of the labor market, in which the employer ranks potential workers by their marginal productivity and hires beginning at the most productive end of the queue. Since workers are paid according to their marginal product, each worker will seek to improve his or her position in the queue.

The role of mobility in such a market is to provide "one of the equilibrating mechanisms which restores 'appropriate' differentials in rewards between occupations." (Kohen, 1975) From the workers' view, mobility is a process of "utility maximization": workers are hypothesized to change occupations, or to undertake any other type of mobility, in order to attain real or perceived increases in their economic well-being and personal satisfaction. An individual's decision to transfer from one occupation to another is made by comparing the trade-off between benefits and costs expected to be associated with the transfer.

Human Capital Approach

The neoclassical theory seems inadequate when viewed together with evidence of differing returns to supposedly similar types of labor, particularly persistent wage differentials by sex, race, and geographic area. Also, as pointed out by Bodenhöfer (1967), it is inconsistent with evidence on

economic growth, since the empirical application of the theory leaves persistently high unexplained levels of productivity that cannot be dismissed as 'technical progress'. He suggests that the problem lies in the fact that the theory treats labor as an aggregate, while increases in productivity may be the result of qualitative changes in labor, such as increasing levels of education and training (p. 433).

Analysis of returns to such qualitative aspects of labor has led to an extension of neoclassical theory known as the human capital approach to labor markets. (Becker, 1964) 'Human capital' refers to the individual's stock of skills, knowledge, and characteristics that make him or her valuable in the labor market. Human capital may be narrowly defined to include formal education, training, and on-the-job experience, or broadened to include personal attributes such as health, intelligence, or ability to deal with others. (Thurow, 1969)

The individual is viewed as investing time, energy, and money (either cash or foregone income) to acquire human capital, with the expectation of receiving a return in the form of higher lifetime income. Much of human capital economics has been devoted to measuring these investments and the returns received.

The role of occupational mobility, in the human capitalist's view, is to provide one of the processes that facilitates receiving returns to investments in human capital. (Kohen, 1975) Mobility occurs as the individual increases his or her stock of human capital and seeks to use that capital in an occupation paying higher returns than the previous occupation. On the other hand, mobility may become less likely as the individual approaches the point of maximum returns to existing human capital. At that point, the costs of mobility may become very high, including loss of investments made in the present occupation in terms of training and experience, while expected increases in returns in the form of higher earnings may be low, especially if the worker is already achieving relatively high earnings levels.

From this brief description, it can be readily seen that the human capitalist would analyze occupational mobility in terms of the factors influencing costs of mobility relative to expected returns. The time dimension is crucial: investments in human capital are undertaken at a present cost with the expectation of future returns, and the future returns are not only a function of the rate of return, but also of the period of time over which returns are accrued.

Bodenhofer postulates mobility itself as a form of investment, and ties it to neoclassical views of wage rates as the primary mechanism of labor allocation:

> "If economic resources are required to change the allocation of labor inputs and if this change is undertaken because of expected future returns, we can include labor mobility in [the] model of human capital investment; if labor mobility is regulated in its economic function by price mechanisms and if we can assume that factor-price differences represent differences in factor productivity; then price-regulated labor mobility causes improvements in labor productivity. ... If there are costs involved in labor mobility, we have a simple investment framework of costs and future returns." (p. 436)

Labor Market Structure Concepts

One of the major weaknesses of the human capital approach is its dependence on the neoclassical assumption that labor is paid its marginal product as determined by factor and product markets. (Levitan, Marshall & Mangum, 1976) This limitation is underlined by empirical human

capital analyses showing that different groups in the labor force receive differing returns to similar investments. (e.g. Thurow, 1969) Labor market structuralists argue that these differences result from the 'structuring' or segmentation of the labor market.

Internal and External Labor Markets

An internal labor market is said to exist when the wages and allocation of labor within a firm, craft, or profession are determined by institutional rules as opposed to being determined by economic forces as in the external market. The internal and external markets are interconnected and

> movement between them occurs at certain job classifications which constitute ports of entry and exit to and from the internal labor market. The remainder of the jobs within the internal market are filled by promotion or transfer of workers who have already gained entry. Consequently, these jobs are shielded from the *direct* influences of competitive forces in the external market. (Doeringer & Piore, 1971, p. 2)

Doeringer and Piore argue that internal labor markets are "a logical development in a competitive market where three factors may be present: enterprise-specific skills, on-the-job training, and custom." (p. 39) The presence of enterprise-specific skills, i.e., skills that can be utilized only in a single firm, encourages employers, rather than workers, to invest in training. Employers consequently seek to reduce turnover in order to receive returns on their investments. On-the-job training is a significant factor if, because of its informality or relation to the production process, the worker cannot substitute other training or experience for it. Worker development, then, takes place within the internal market. Finally, custom is viewed as "the natural outgrowth of the psychological behavior of stable groups . . . As work rules become customary through repetition at the work place, they come to acquire an ethical or quasi-ethical status within the work group." Custom may also result in rigidity.

Internal labor markets are characterized by institutional rules, which, when they become inflexible, insulate the market from external forces. In addition to custom as a source of work rules, trade union and managerial controls also play major roles in the development and perpetuation of institutional controls over the internal market. Union-management contracts or company personnel policies establish internal wage structures and levels, seniority systems and other rules governing layoffs, promotions and training opportunities, and a myriad of other rules. These rules are the means whereby unions seek to enhance the employment stability and earnings of members and management seeks to control the fixed cost of training and recruitment and to develop a stable work force. Licensing rules, often developed and fostered by professional associations or trade groups and administered by legal authorities, may have similar effects.

A major implication of the internal labor market is that the neoclassical equivalency of wages and the worker's marginal productivity is disrupted. In fact, it is argued, "neither the employer nor the workers necessarily concern themselves with the connection between wages and marginal productivity at any point in time. Both workers and management decisions will, as a result, "center upon a structure of wages over the series of jobs which the individual is likely to hold over his career in the enterprise, not upon particular wage rates". (Doeringer & Piore, 1971, p. 76) The upshot is that, in an internal market, the wages are attached to *jobs,* not to the *workers.* (Levitan, et al., p. 125)

The implications of internal labor markets for occupational mobility are significant. A general implication is that internal markets tend to *reduce* mobility in two ways. First, the filling of jobs, other than port of entry jobs, from within the enterprise prevents entry of experienced workers from other enterprises to these jobs. Secondly, while mobility must occur within the enterprise, it must also take place within the work rules, for example, providing opportunities for advancement according to seniority rather than ability or desire to advance.

Another implication of internal markets is the existence of career advancement paths. The management must provide promotional ladders and assistance to workers in climbing these ladders, if it is to be assured a trained and capable future work force. Management may also recognize the importance of advancement paths in maintaining employee morale, since the internal market assumes a long-term relationship between worker and employer. (Wiant, 1977, p. 15)

Doeringer and Piore term such career advancement paths as one type of "mobility cluster," observing that part of entry jobs are typically connected to clusters, or "the groupings of jobs within which an employee is customarily upgraded, down-graded, transferred and laid off." (p. 50) They content that jobs within mobility clusters share one or more of the following elements: (1) related skills or work experience, (2) similar levels of job content, (3) a common functional or departmental organization, (4) a single focus o. work (e.g., computers). Mobility clusters are further described as varying in size and shape, that is, having different ranges of skill level and advancement potential, as well as encompassing different numbers of jobs at any level of skill.

Dual Labor Markets

The dual labor market view is succinctly stated by Piore:

> The basic hypothesis of the dual labor market [is] that the labor market is divided into two essentially distinct sectors, termed the *primary* and the *secondary* sectors. The former offers jobs with relatively high wages, good working conditions, chances of advancement, equity and due process in the administration of work rules and, above all, employment stability. Jobs in the secondary sector, by contrast, tend to be low-paying, with poorer working conditions, little chance of advancement; a highly personalized relationship between workers and supervisors which leaves wide latitude for favoritism and is conducive to harsh and capricious work discipline; and with considerable instability in jobs and high turnover in the labor force. (1972, p. 2)

While the definition of dual labor markets describes two different types of *jobs,* further development of the theory often focuses on the characteristics of the *workers* which are seen to result from the labor market behavior patterns imposed on them by the market. Workers in the secondary market, then, are those with unstable employment histories and little attachment to particular jobs or employers. Also included are "those for whom the job itself is a secondary aspect of their lives, whose income requirements are limited, or who foresee eventual access to primary employment." (Doeringer & Piore, p. 167)

Dual labor markets are not a separate view from the internal-external market approach. Doeringer and Piore in fact characterize the primary market "as a series of internal markets." Secondary markets, on the other hand, are of three types. They may be unstructured, not belonging to any internal market. They may be jobs that are in 'secondary internal labor markets', "which

have some formal structures, but many ports of entry, short mobility clusters, and work that is generally low-paying, unpleasant, or both." Finally, there are secondary jobs having few promotional or transfer steps, but which are attached to internal labor markets in which the remainder of the jobs are primary. (Doeringer & Piore, p. 107-108)

Occupational mobility is likely, then, to be a very different process in each type of labor market. Mobility in the primary market implies career development and opportunity for rewards. In secondary market, mobility may be movement from one low-paying, relatively unskilled occupation to another, or perhaps along short mobility clusters (structures allowing some but limited advancement) found in "secondary internal labor markets."

Multiple Labor Markets

The multiple labor market view is a logical development from the dualist's view. In a complex economy, it does not seem entirely satisfactory to divide the market into two sectors, primary and secondary, when many sectors are apparent even to the casual observer.

Levitan, Marshall and Mangum (1976) suggest four broad markets: professional, mainstream, marginal, and submarginal. Freedman extends the list to at least fourteen labor market segments identified through empirical examination of "stability factors" and "bargaining factors" hypothesized to affect earnings. Her work also extends and re-confirms Piore's observations concerning the correspondence between the types of *jobs* in the primary and secondary sectors and the types of *workers* in each sector. Freedman found that replication of the identification of labor market segments using demographic characteristics (age, sex, race, and education) produced a "high correspondence in the relative placement of occupation-industry groups" among the labor market segments. (p. 7)

The labor market structures related to the creation of labor market segments are viewed as providing varying degrees of shelter to the worker from the risks of competition in the market and the risks of unemployment, disability, and old age outside the market. (p. 7-8)

Labor Market Theory and Mobility

The preceding pages have identified several concepts of the labor market that have specific implications for occupational mobility as a labor market process. The fundamental neoclassical view suggests that mobility, like other worker behavior, occurs as workers seek to maximize advantages such as earnings, job security, or satisfaction and thereby respond to incentives and disincentives found in the market place.

Mobility might therefore be expected to operate as a function of market incentives and disincentives such as wage levels and expectation of job stability. The human capitalist suggests mobility as a means by which workers seek to maximize the returns to their investments in human capital such as education, training, and experience. Since mobility is not cost-free, occupational transfer in itself may be a form of investment. It may be expected, then, that occupational mobility will be a function of individual and market factors affecting human capital investments and obtaining returns on investments, such as training and education costs, earnings, the worker's age and expected length of working life, and the cost of mobility itself.

Finally, labor market structural theories provide an institutional context in which the choices of individuals suggested by neoclassical and human capital theories are carried out. The presence of labor market structures of various types -- internal and external markets; primary, secondary, or multiple markets -- may encourage, discourage, or even prevent individual workers from acting out desired changes in occupations.

The Extent and Character of Occupational Mobility

Parnes (1954) identified 'extent and character' as one of three major headings useful in organizing research on mobility. This heading is adopted here, along with his description of the category as including information on:

> "the amount of mobility in the entire economy or in specific labor markets, the proportion of the work force that is responsible for the shifting that takes place, and the relative frequency of different kinds of job shifts." (p. 6)

While the present interest is occupation shifts, as opposed to 'job shifts', similar questions must be addressed:

- What is the level of occupational mobility?
- How is occupational mobility related to other types of mobility, such as change of industry, residence, or employer?
- Are occupation changes random or structured, with identifiable patterns and interrelationships among occupations?

Level of Occupational Mobility

Most evidence confirms the existence of high levels of occupation changing in the U.S. economy, although the observed overall rates vary according to the length of time period and level of detail of occupational definition used for measurement. These methodological differences also hinder the observation of trends in mobility levels, although repetition of a methodology over time, such as the Current Population Survey mobility item, provides some useful evidence.

The most recently collected data from the January 1978 Current Population Survey (U.S. Department of Labor, 1979) indicated that 11.5 percent of the men and 11.7 percent of the women over 18 years old and employed in 1978 were in a different occupation one year earlier. Similar data for 1973 (Byrne, 1975) showed rates of 9.0 and 8.3 percent for men and women, respectively. Data from the 1970 census (Sommers & Eck, 1977) indicated rates of 32.8 percent for men and 23.5 percent for women (p. 8).[1] Both studies showed that occupational transfer was more frequent than labor force entry for men, but less frequent than labor force entry for women. The seemingly large difference between the CPS and census studies in the level of rates observed is largely the result of differences in the length of period over which mobility is observed—one year versus five years.[2]

[1] Note that both sets of rates show transfers as a proportion of employment in the *later* year.

[2] This does not mean, however, that 'annual' rates from the five-year data are one-fifth the observed five-year rate. A worker may have changed occupations several times during the five-year period, but only one change is observed in the data. One-fifth of the five-year rate therefore understates the actual annual rate of change. (U.S. Department of Labor, 1976, p. 7)

Byrne's analysis indicates that the levels of mobility were similar between 1967 and 1973. Controlling for differences in the age distribution of the labor force between the two years narrows the observed increase in mobility for women, but increases the observed decline in male mobility, with black men showing greater declines than white men. The 1978 CPS data show increased mobility rates over the 1973 levels; analyses controlling for age distribution of the labor force are not available, however.

Relationship to Other Types of Mobility

Differences in mobility rates of men and women and somewhat different trends for men and women observed by Byrne point up the problem of interrelationships between occupation changing and other types of labor force behavior. The sex differences and, to some extent, the race difference for men, are partly the result of different labor force participation rates and trends for these demographic groups. Lower mobility rates for women, for example, reflect their greater tendency to leave the labor force (Sommers & Eck, 1977, p. 6; Saben, 1967, p. 32).

Of greater interest here is the interrelationship of occupation changing and other types in mobility employer, industrial and geographic. In general, all the evidence reviewed indicated high degrees of co-incidence of occupational and other forms of mobility.

Employer Mobility. The 1978 Current Population Survey data indicate that about 9 out of 10 persons who changed occupations also changed employers. Byrne also observed that workers who changed occupations were likely to also change employers, and this co-incidence increased somewhat between 1966 and 1973. Saben (1967) provides additional insight on this relationship by indicating that occupation change along with an employer change is more frequent among younger than older men, and far more frequent among non-white than white men. Looking at the subject in a somewhat different manner, Roderick and Kohen (1978) found that young women who changed employers were much more likely to change occupations than those who stayed with the same employer over a two-year period. The differences were higher for black women than for white women.

These results suggest that mobility is more likely among workers who have weak attachments to their employers, particularly those who might be considered secondary workers—the young, the female, and the non-white. The inverse of this observation may not be true, however. Byrne noted that, while about 90 percent of occupation changers also changed employers, only about half the employer changers also changed occupation. Occupational mobility apparently does not, in the aggregate, occur frequently within the internal labor market of particular employers. Attachment to occupation seems to be stronger than attachment to the employer.

Industrial Mobility. The 1978 Current Population Survey data showed 7 out of 10 persons changing occupations also changing their industry of employment. Saben found a similar proportion in 1967 and Byrne noted a ratio of about 8 out of 10 in 1973. The high coincidence of occupational and industrial mobility might be interpreted similarly to the coincidence between occupational mobility and change of employer: mobility is more likely among workers with weak attachments to their industry of employment. Whether this lack of attachment is more likely among secondary workers or secondary jobs is not apparent. Byrne and Saben noted similar patterns for men and women, while none of the studies examined patterns by age, race, or occupation.

Surprisingly, the Current Population Survey studies were the only studies found to treat simultaneous occupation and industry change in any comprehensive way. Industrial mobility information is available from the 1970 Census, but no studies presented tabulations using this item.[3]

Geographic Mobility. Schroeder (1976) presents a rather detailed analysis of geographic and occupational change, using two data files (1970 Census and a sample of Wisconsin men). Both data sources showed a higher rate of occupational mobility among geographically mobile persons than among non-movers, with rates of both types of mobility declining with increasing age. Interestingly, the Wisconsin data indicated that there was no tendency for one type of mobility to lead or lag the other, that is, there was no predominant direction in the relationship. Further evidence on mobility and migration is presented in the section on labor market adjustment later in this chapter.

Structure of Occupational Mobility

Without exception, the studies mentioned in this section showed that mobility followed non-random patterns. The usefulness of this observation, of course, varies with the detail and content with which it can be filled, and analyses of mobility patterns have used a wide range of levels of detail and sophistication of method.

Variations Among Occupations. The variation in mobility rates among major occupation groups appears fairly stable, at least with three of the major data sets. Table 1 shows the ranking of the major census groups for rates of transfer (ranked from low to high) as shown by 1970 Census of Population and the three Current Population Survey data sets.

In general, all three data sets showed lowest mobility rates for farmers, private household workers, and managers (census data excepted); and highest rates for non-farm laborers. These patterns are generalized by most authors as indicating low mobility in occupations requiring high levels of training and education, and high mobility for other relatively untrained groups (e.g., Byrne, 1975), and is seen to be consistent with human capital theory (Sommers & Eck, 1977).

Patterns of high and low mobility tended to vary between the sexes. Rates for women, however, should be interpreted keeping in mind the very low numbers of female workers in some groups (e.g., farmers, managers). Rosenfeld and Sørensen (1979) contend that the difference in mobility patterns between men and women in fact are the result of the sex segregation of occupational employment. Working women have historically been concentrated in a relatively few occupations: the 1970 census data show 39 percent of all female workers were in the 10 largest occupations for men accounted for only 23 percent of all male workers (Sommers & Eck, p. 18). Labor market structuralists suggest that this occupational segregation of women results from their treatment as secondary workers, as well as traditional social views as to what kind of jobs are appropriate "women's work". This suggestion is consistent with the fact that the ten largest occupations in terms of numbers of women workers are also mostly relatively low-paying and low mobility level occupations, especially when compared with the ten largest occupations for men (Table 2). If women are concentrated by discrimination and tradition in o relatively few of the available occupations, their opportunities for occupational change are limited and their mobility rates are consequently lowered.

[3] Industry change was, however, used as a variable in some analyses (e.g., Leigh, 1975 and 1976; Britt, 1966; Johnson & Stern, 1967).

TABLE 1. RANKING OR MAJOR OCCUPATIONAL GROUPS BY OCCUPATIONAL TRANSFER RATE, 1970 CENSUS OF POPULATION AND CURRENT POPULATION SURVEY DATA, BY SEX

Ranking*

Occupation Group	Transfer In							Transfer Out		
	TOTAL	MALES			FEMALES			TOTAL		
	1970 Census	1978 CPS	1973 CPS	1967 CPS	1978 CPS	1973 CPS	1967 CPS	1970 Census	Male	Female
Professional, Technical Workers	3	2	2	2	2	2	2	3	4	1
Managers	11	3	4	3	9	4	5	5	3	9
Sales Workers	5	9	9	4	8	7	8	7	8	6
Clerical Workers	6	8	6	9	7	8	9	8	11	8
Craft Workers	8	4	5	6	10	9	10	4	2	6
Operatives, except Transport	9	10	10	8	6	10	6	10	9	3
Transport Operatives	10	7	7	8	11	6	6	9	6	10
Nonfarm Laborers	12	11	11	10	12	11	—	12	12	12
Farmers	1	1	1	1	1	—	1	1	1	11
Farm Laborers	7	6	3	5	4	1	4	11	10	5
Service Workers	4	5	8	7	5	4	7	6	7	4
Private Household Workers	2	—	—	—	3	3	3	1	5	2

* Occupation groups are ranked from lowest to highest transfer rate for each data source.

Table 2. Ten Largest Occupations for Females and Males Ranked by number in 1970 Labor Force, with 1970 Median Earnings and Occupational Transfer Rates, 1965-1970

Rank	Title	Number in experienced civilian labor force, 1970	1969 median earnings	Rate of transfer into occupation	Rate of transfer out of occupation
Females					
1	Secretaries, except legal and medical	2,704,996	$4,803	14.13	20.02
2	Sales workers, n.e.c.	1,764,391	2,274	23.90	16.91
3	Bookkeepers	1,307,251	4,477	17.45	27.72
4	Elementary school teachers	1,214,743	6,586	17.66	9.59
5	Waitresses	990,259	1,662	25.35	16.05
6	Typists	961,857	4,042	26.98	31.15
7	Sewers and stitchers	883,678	3,379	13.27	14.81
8	Registered nurses	825,963	5,603	11.15	10.16
9	Maids and servants, private household	680,420	1,093	14.91	15.86
10	Not specified clerical workers	648,272	4,056	48.13	28.52
Female Labor Force, Total		30,534,658	$3,646	25.56	23.46
Males					
1	Managers and administrators, n.e.c.	3,114,276	$11,161	23.71	35.07
2	Sales workers, n.e.c.	2,369,269	8,121	29.80	29.94
3	Foremen, n.e.c.	1,468,320	10,018	25.31	42.64

4	Truck drivers	1,442,046	7,246	27.87	28.24
5	Farmers, owners and tenants	1,237,294	4,816	17.22	13.55
6	Janitors and sextons	1,102,922	4,771	28.18	37.54
7	Carpenters	916,005	7,025	18.41	24.59
8	Automobile mechanics	821,822	6,862	24.17	26.22
9	Miscellaneous Machine Operators, specified	770,656	7,116	33.24	38.41
10	Farm laborers, wage workers	696,141	2,493	33.59	29.69
	All male workers	49,536,472	$7,620	33.03	32.79

SOURCE: U.S. Bureau of the Census, Occupational Characteristics, 1970 Census of Population, Subject Reports, inal Report PC (2)-7A, 1973 Table 1; and Sommers and Eck, 1976, Table 5 and Appendix Table I.

This interpretation might at first seem inconsistent with earlier comments on the higher coincidence among women of employer and industry mobility with occupation changing. This inconsistency is more apparent than real, however. The earlier evidence indicates that secondary worker groups are more likely to make multiple changes in their employment situations if they make any changes at all. The later evidence suggests that some secondary workers, women, are less likely to make any changes since they have fewer options and the rewards are lower. Further examination of this issue requires identification of secondary and primary jobs, a problem discussed in the last section of this chapter, and examination of data by occupation group as discussed below.

The differences in mobility patterns by sex also seem to follow a parallel to Blau's (1965) "solidarity" argument, that individuals seek homogeneity by moving out of occupational groups with heterogeneous social compositions into those with homogeneous compositions. Rosenfeld and Sørensen (1979) observed that women tended more often than men to move from *any* occupation into an occupation composed mostly of women, and the inverse for male workers.

A few other differences among occupation groups are also noted. Schroeder (1976) found that workers entering and leaving managerial and sales occupations were more mobile geographically than other workers. Byrne noted that, while the relationship between industrial mobility and occupation changing did not vary among groups, that between employer and occupation changing did vary. Coincident employer and occupation change was much less likely among male professionals, who might be expected to have stronger attachments to both employer and occupation, than among male clerical, operative, or laborer workers. Saben observed that this relationship for women varied among occupation groups more for men than women.[4]

Flows Among Occupations. A number of studies presented some type of transition table showing movement among occupation groups. One study analyzed movement at the detailed occupation level for all occupations (DauffenBach, 1973), while two examined detailed occupations for a segment of the economy (Wash, 1977; Johnson & Stern, 1969).

Transition tables for major occupational groups for the various data sources indicated non-random movement among the groups, whether identified by inspection or statistical technique. Mobility is seen as occurring either within major groups (when change of detailed occupations is the unit of measurement) or between 'closely related' groups (Byrne, 1975; Kohen, 1973; Blau, 1965; Parnes, 1970; DauffenBach, 1973). These authors also generally observed mobility as occurring in an 'upward' direction in socioeconomic status terms, or noted hierarchies of movement. This observation will be investigated in greater detail in Chapter III.

One point of special note in view of the dual labor market hypothesis is the lack of mobility between blue- and white-collar occupations. Saben noted low rates of blue-to-white-collar shifting, with lower rates for men than for women. Blau found the rates low enough to indicate the existence of a semi-permeable boundary between the groups preventing downward mobility.

In their analysis of men who moved from blue- to white-collar jobs, Johnson and Stern (1969) identified some of the factors involved in such shifts. Most of these shifts took place without changing employers, thus constituting 'upgrading' within internal labor markets. The quotes around 'upgrading' are used advisably, since many shifters did not realize immediate gains in earnings, and some suffered losses; most, however, expected long-run financial improvement through more stable employment and chances for advancement.

[4] A clear interpretation of Byrne's and Saben's comments in this point is not easily made, since their published tables are not in the same formats.

In their small sample, Johnson and Stern found no linkages between particular blue- and white-collar occupations. They did, however, identify four paths that led to such shifts, some including training or on-the-job experience and most including recognition by the employer of favorable worker attitudes and abilities, as opposed to specific skills. This observation suggests that advancement in internal labor markets is governed not so much through specific job ladders but by internal conditions fostering individual development and recognition.

Wash (1977) identified a number of 'linkages' between occupations in the health field as well as between some health and non-health occupations. The patterns, or lack of patterns in some cases, can be attributed to special training and certification requirements in health work. His results provide examples of both technological relationships between specific jobs that foster mobility, and internal labor market rigidities that hinder mobility.

DauffenBach (1973) provides the most detailed identification of structure in mobility between occupations. Apart from the theoretical development and review of data and occupational classification problems, his study is primarily concerned with the development of a neutral methodology for identifying related occupations in a 309x305 order mobility matrix. He found that mobility tended to occur among specific groups of occupations, rather than randomly among all occupations. The results indicate the existence of many occupation clusters, which is seen to be consistent with the job family hypothesis as well as labor market segmentation hypotheses. Unfortunately, neither this study nor subsequent studies provide analyses of the characteristics of the various clusters themselves.

Personal Characteristics Related to Occupational Mobility

This section reviews a number of studies providing information on personal characteristics related to occupation changing. This review is confined to observations of relationships, while discussion of analysis of characteristics as determinants of mobility is reserved for later sections. Characteristics reviewed are largely demographic, although a few labor force characteristics and socio-economic items are included. Studies relating to psychological and attitudinal characteristics are reviewed in later sections, one on Holland's theory and three on determinants of mobility.

Age. It is universally acknowledged that mobility rates decline with increasing age, and only minor disturbances to this pattern have been observed (e.g., Sommers & Eck). The age relationship is observed for both sexes and for whites and nonwhites. Some differences, however, are observed in mobility patterns of older and younger workers. Saben (1967) noted that transfer into professional jobs was infrequent before age 20 and after 55, entry into managerial occupations was heavy between 25 and 44; transfer into clerical jobs were made mostly by workers under 25, and shifts by older workers were often into service occupations.

These observations are confirmed in virtually every study dealing with age as a variable. The result is certainly consistent with human capital hypotheses, since older workers are more likely to have substantial occupational investments in terms of seniority, experience, and personal attachment to a career field or company, all of which might be risked by changing occupations. They also are more likely than younger workers to already be receiving higher earnings, and have fewer years of working life remaining in which to accrue any benefits of mobility.

Race. It is a fair observation that mobility rates and patterns differ between whites and blacks, although the differences seem to be greater for men than women (Saben, 1967). Most of the analysis using National Longitudinal Survey data had comparison of patterns by race as their major topic.

Kohen (1973) focused on the question of whether mobility tends to cause the occupational distributions of blacks and whites to converge or diverge over their respective work lives. He observes similar black and white movement among young men away from farm occupations and toward white-collar jobs and a convergence of occupational distributions between first job and job in 1969. When changes between occupations in 1966 and 1969 are analyzed, however, the distributions are seen to diverge. For older men (24-29) more convergence is noted, while only divergence is found for younger men. In the older group, blacks appear particularly unable to move into managerial occupations. Among educational status groups (except the college group not studied), convergence of black-white distributions is found only for older men with less than a high school education.

In an analysis of middle-aged men, Parnes (1970) noted less net movement out of lower status occupation groups for blacks than whites, and that the occupational distributions of the races diverged between their first jobs and 1966. Movement between detailed occupations measured in terms of change in socio-economic status indicated blacks had less probability of upward movement and more lateral and downward movement than whites. This pattern is even stronger when occupation of origin is controlled. Roderick and Kohen's (1973) findings for young women, reported in the preceding section, indicated more frequent occupation change among blacks who changed employers than whites who changed employers.

The mobility of nonwhites, then, appears to result in fewer advantages than that of whites, at least in terms of movement into managerial occupations or movement to higher status occupations. This might be interpreted as consistent with the secondary labor market concept, according to which blacks are disproportionately concentrated in secondary jobs. It may also be consistent with numerous human capital studies (e.g., Thurow, 1969) indicating that returns to human capital investments are lower for nonwhites than for whites. The relationship between race and occupational advancement is examined further in Chapter III.

Educational Attainment. Mobility rates are clearly related to the level of formal schooling, although not monotonically. Both Byrne and Saben found highest rates among persons with 1-3 years of college; lowest rates were either for college graduates and persons with 1-8 years of school completed (Saben) or persons with 1-8 years of school completed (Byrne). Patterns varied somewhat among age, race, and sex groups.

Patterns of movement among occupations varied by educational attainment, as might be expected. Kohen (1973) notes that non-college attenders moved mostly within blue-collar groups, while college attenders shifted away from clerical jobs and toward managerial and sales jobs.

These relationships between education and mobility are as predicted by human capital theory as well as the concept of technological segmentation of the labor market. Persons with high education levels are likely to have specific skills not readily transferable among a variety of occupations, and also face greater costs of mobility in view of their higher-than-average earnings levels. Both Saben and Byrne observe that the low mobility of less-educated workers reflect their older age levels.

Marital status. Byrne noted higher mobility rates for single persons, but this was attributed solely to their young age composition. Andrisani (1973) found marital status to be a significant factor in mobility of white young men from secondary to primary labor markets.

Labor Force Characteristics. Saben noted higher mobility rates among part-time workers than full-time workers, regardless of sex. This observation is consistent with evidence from the Current Population Survey on occupational change and change of employer, suggesting more mobility among workers with weak employer attachments.

Mobility and Labor Market Adjustment

The empirical search identified three studies that analyzed the role of occupational mobility in the adjustment of labor markets to different events: area economic redevelopment efforts, plant closings, and long-term regional decline. All three are case studies, and as such do not provide results for wide generalization. The role of mobility as described by the neoclassical theory is, however, of interest.

Britt (1966) examined the labor market adjustments that take place when new job opportunities are introduced in a depressed area, specifically the establishment of new plants with assistance provided through the Area Redevelopment Act of 1964. Occupational mobility is regarded as one measure of labor market flexibility. He found characteristics of mobile workers consistent with those described in the preceding section: more mobility among younger workers and men, low mobility among persons in managerial, craft, and foreman jobs. College graduates were least mobile, while workers with 1-3 years of college were most mobile.

With regard to labor market adjustment, Britt found that mobility did tend to occur in 'fitting' the labor force to new opportunities. The relationship between mobility and unemployment is noteworthy. Persons experiencing unemployment changed occupations more frequently than those with no unemployment experience, and the longer the length of unemployment, up to one year, the more likely was changing occupations. This result strongly suggests mobility in such situations as an involuntary action, delayed as long as feasible. Unfortunately data are not examined by occupation to indicate whether this involuntary situation is confined to secondary labor markets. Other evidence, however, suggests that it is not. Shifts in occupation were frequently reported as upgrading to higher skill levels.

Another interesting phenomenon was the lower levels of mobility in smaller labor market areas, although workers in smaller areas displayed more employer changing than those in large areas.

Overall, complex mobility patterns involving employer, industry, and occupation changing were observed to contribute to labor market flexibility in depressed areas. The combination of the types of mobility and the extent of flexibility varied with characteristics of the area as well as of the workers themselves.

Perline and Presley (1973) examine the role of occupational, industrial, and geographic mobility in a depressed area, specifically Wichita, Kansas during the aerospace 'depression' of the early 1970s. Among workers, largely engineers and technicians, laid off from Wichita aerospace firms, those leaving the area were less mobile occupationally than those who stayed behind, although mobility rates were exceptionally high for both groups. Migrants are also seen to have lower unemployment rates and, if employed, higher salary rates than nonmigrants. These results, however, are not compared by occupation. The authors contend that geographic and industrial mobility are 'subordinate' to occupation changing, i.e., that workers prefer to move or change industry rather than change occupation—not a surprising observation for the type of workers included in the study. Schroeder's (1976) evidence for a more general population, as reported earlier, indicated no preference for one type of mobility over another.

Somers (1972) compared occupational changes of unemployed persons moving out of areas of low labor demand through a government relocation program with changes of non-movers. He found that both groups changed occupations in similar patterns, leaving semiskilled and unskilled jobs for professional and technical jobs, and generally increasing socio-economic status. Movers, however, experienced more mobility and greater status increases than nonmovers. Movers who returned to their original areas, on the other hand, had lower status than nonmovers.

While the three studies presented here deal with unique populations, they all indicate that the benefits to occupational mobility are likely to be higher if occupation changing occurs in some combination with geographic, industry, or employer moves. Unemployment in all cases stimulated occupation and other types of changes, especially unemployment of long duration.

Tests of Labor Market Structure Hypotheses

Three studies sought to test a tenet of the dual labor market hypothesis, namely, that there is little mobility between the primary and secondary sectors. All three begin, however, with the assumption that some mobility between sectors is present and propose to examine the differences between workers who move from secondary to primary jobs and those who remain behind. Differences are generally hypothesized to be human capital, demographic (race), and social characteristics.

The first problem faced in empirical analysis of dual markets is pointed to by its critics as a major weakness. The dualists have provided only general descriptions of the two sectors, but no empirical means of distinguishing between them. Wachter (1974) notes that "the dual literature does not provide an operational definition of good and bad jobs so that an agreed-upon empirical dichotimization does not exist . . . firms and industries in the high-wage sector may also be employers in secondary markets" (p. 652). Wachter's latter point seems to argue for distinguishing among primary and secondary occupations rather than firms or industries. The criteria for assigning occupations to one or the other sector, however, remain undefined. Cain (1975) notes that the dualists also do not indicate "what degree of bimodality or immobility would be sufficient to justify the dual label" (p. 45).

The solutions adopted by authors of two of the studies reviewed here is to select an earnings level as a point of demarcation. Andrisani (1973) assigns industry-occupation categories to the two sectors according to whether their median earnings are more or less than the 33d percentile for the labor force as a whole. Cournoyer and Sum (1978) examine mobility from low-wage to high-wage occupations, with 'low-wage' defined as median annual earnings of $6,800 or less. Both procedures are arbitrary and, as Cain (1973, p. 45) points out, truncation of the dependent variable biases the regression coefficients toward zero for secondary sector equations.

Andrisani (1973) found fairly substantial movement from secondary to primary employment among young men, a result interpreted as inconsistent with a strict dualist view (p. 86). Cournoyer and Sum found that 10 percent of the workers in low-wage occupations in 1965 moved to high-wage occupations in 1970 (p. 4). Both studies excluded college educated workers.

Examination of characteristics of 'advancers' versus other workers produced conflicting results in these two studies. Andrisani notes less secondary to primary mobility among blacks, and finds somewhat different sets of factors influencing advancement for each race. Among whites, significant variables included marital status, aspirations and more internalized views of their control over events (see Rotter Scale discussed in Chapter IV); for blacks only region of residence and aspirations were significant. Human capital and social background were not found to differentiate 'advancers' from other workers. Cournoyer and Sum, however, found educational attainment and vocational training to be contributors to movement out of low-wage occupations.

Leigh (1976) takes a somewhat different approach, recognizing the lack of criteria for distinguishing between primary and secondary jobs. Using two propositions of the dual theory, that secondary jobs lack upgrading potential and that black workers are disproportionately confined to the secondary sector, he expects blacks and whites to have systematically different occupational

advancement patterns. Regression models were used to analyze the impact of several types of variables on upgrading measured by comparison of earnings levels of first and later occupations.

In general, Leigh's results offer only limited support for the hypotheses he sets out as indirect tests of the duality of the labor markets. Tests using census data indicated only small racial difference in upgrading probabilities of industry movers, and in some cases patterns favor blacks. Among industry stayers, race differences favored whites, but were less important than differences among industries. National Longitudinal Survey data suggest white advantages in some industries.

The lack of solid results in these three studies does not, in itself, undermine the possible significance of labor market structure for mobility. The problem of distinguishing between sectors is a critical one and likely is responsible for lack of results. As such, the studies become in many ways similar to those reviewed in Chapter III, where combinations of variables are examined as determinants of sociological upgrading measured by increase in occupational status.

Labor Market Evidence and Mobility

The studies reviewed in this chapter provide some basic outlines of the shape and structure of occupational mobility and its role in the labor market. The evidence may be seen as generally consistent with the characteristics of mobility suggested by human capital theory and by the technological facets of labor market structure hypotheses and internal-external labor market theory. The results *vis a vis* dual labor markets are less than conclusive because of methodological problems.

Evidence generally suggests that probabilities of occupational mobility are higher for workers who:

- are young (Byrne, Saben, Sommers and Eck)
- have more than a grade school education but less than four years of college (Byrne, Saben)
- are male (Byrne, Saben, Sommers and Eck)
- are employed in an occupation comprised mainly of workers of the opposite sex of the mobile individual (Rosenfeld and Sørensen)
- are employed in an occupation that is part of a cluster or job family (DauffenBach), but not requiring licensing or certification (Wash)
- are not employed in an occupation requiring relatively high levels of education or skill (Byrne, Saben, Sommers and Eck, Britt)
- are geographically mobile (Britt, Somers, Schroeder)
- are mobile among employers (U.S. Department of Labor, Byrne, Saben)
- have experienced unemployment (Britt)
- are in a large labor market area (Britt)

Some factors encouraging successful occupational change can also be suggested, if 'successful' change may be defined as increase in occupational status (see Chapter III) or earnings level, movement from secondary to primary jobs, or movement from blue-collar to white-collar jobs. These types of changes are more frequent among workers who:

- are young (Andrisani)
- are white (Andrisani; Parnes)
- remain with the same employer (Byrne)
- have aspirations and positive attitudes about themselves (Andrisani) and their jobs (Johnson and Stern)
- have higher levels of education and vocational training (Cournoyer and Sum)
- are geographically mobile (Somers)

Evidence in mobility and labor market structures is suggestive but methodologically flowed. At least two studies (Andrisani, 1973; Cournoyer and Sum, 1978) noted substantial mobility from secondary to primary markets, although empirical delineation of such markets is arbitrary. These studies showed conflicting evidence on the role of race, educational attainment, and other personal characteristics that according to human capital theory should affect mobility between sectors. None of the studies dealing with labor market structures attempted to distinguish mobility within technologically related occupation groups from other occupational transfers.

The Current Population Survey data (Saben, 1967; Byrne, 1975; U.S. Department of Labor, 1979) suggest that, overall, mobility is not predominantly an internal labor market phenomenon. This generalization from data on change of employer, however, does not deal with 'internal' occupational markets that cut across employers, such as those found in the building trades.

It must be noted that, while these conclusions are helpful, they are also tenuous. The characteristics related to 'successful' occupational change are in particular open to reexamination. The studies reviewed used measures that are rather arbitrarily interpreted as indicators of successful transfer, and some were not designed to look at transfer itself as the main subject of interest.

With a few exceptions (Wash, 1976; Perline & Presley, 1973; Johnson & Stern, 1969), the studies cited in this chapter dealt with aggregate data rather than with specific occupational groups or comparisons among groups. DauffenBach (1973) identified non-random mobility patterns among detailed occupation categories, but did not analyze the patterns themselves.

This lack of focus on specific occupations, types of occupations, or types of labor markets is unfortunate. One difficulty in making generalizations about occupational mobility is that it is a much different phenomenon in different contexts: Mobility may mean successfully climbing a career ladder or moving to a new career field in face of failure; mobility may mean youthful exploration of the labor market or continual job-hopping in the secondary labor market; absence of mobility may mean success in finding a career field or being 'stuck' in the wrong job. Labor market structure concepts and labor market adjustment processes provide theoretical frameworks for focusing on these different situations in which mobility operates. Skillful application of labor market structure models along with human capital analysis and examination of mobility patterns for technological relationships would shed more light on the occupational mobility process than is available from aggregate analyses.

CHAPTER III

MOBILITY AND SOCIAL STATUS

The sociologists' interest in occupations stems from their efforts to analyze and measure the movement of persons from one social stratum to another. Society is viewed as stratified, that is, having a structure of social inequality or inequality in access to money, power, or prestige.

Theories of Social Stratification

Two theories of social stratification dominate: the functionalist theory and the conflict theory. The functionalist view asserts that a person's social status reflects the rewards distributed on the basis of the value of that individual's role in meeting society's needs. Since that role is primarily the role played in the labor market, that is, the occupational role, occupation is the single most important indicator of social status or class (Montagna, 1977, p. 36). Rewards to the occupational role, in terms of income and prestige, are closely related to the returns received in the labor market (earnings) and the attributes required to enter certain occupations (skill, training, education).

The conflict theory, on the other hand, states that the distribution of rewards in society is the result of the distribution of power and not the result of roles played in meeting society's needs (Lenski, 1966). Social inequality arises from domination of one group by another. Again, occupation is used as a measure of social stratification, since it reflects the individual's wealth (earnings) and power or control over resources and other persons (e.g., managers versus janitors).

Sociologists' interests in social structure ranges beyond stratification itself to the operation of the social structure: which groups occupy positions of high prestige or power? Where did they come from and how did they attain their social status? Is the social structure 'open' so that individuals may move from one stratum to another, or are the strata closed to outsiders?

One obvious need in answering these kinds of questions is a means of identifying the social status of individuals, a problem that has been handled by developing occupational ranking systems. The most frequently used ranking is the Duncan Socio-Economic Index (Duncan, 1961), which is based on the income and education attainment characteristics of the occupations. Social mobility is said to occur when individuals move up or down the occupational hierarchy as ordered by the Duncan Index, from their occupations of origin (usually their father's occupation or their first occupation). Bose (1973) has constructed an occupational prestige index with particular reference to social status of female workers.

It is interesting to note that the debate among sociologists over the functional versus conflict theories of stratification is similar in many ways to the debate among economists over human capital versus labor market structures. Indeed, the two debates address the same issue—the persistence of poverty in an affluent society.

The functional stratification theorists' view that social status reflects rewards distributed on the basis of the value of the individual's role in society is similar to the human capitalists' measurement of differences in earnings as returns to different levels of investment in human capital, and nearly identical with the neoclassical view of each worker receiving his marginal revenue product. Social prestige and economic success are seen as the result of individual characteristics and efforts, fostered by open access to education, training, and employment opportunities.

Conflict theorists and labor market structuralists, on the other hand, view the absence of social and economic equality as the result of social and economic power structures and institutions which prevent the individual's full realization of his or her potential. Access to education opportunities is not seen as equal, nor is access to employment opportunities with meaningful futures.

One major difference between the sociologists' and economists' views of the role of mobility should also be noted. Among sociologists, the occupational distribution of society is seen as the *result* of mobility. "To understand how an occupational distribution came about, one would like to know about the preceding occupational mobility patterns" (Rosenfeld & Sørensen, 1979). To the economist, however, the occupational distribution itself is the result of the economy's demand for labor, derived from its demand for goods and services, and the technologies and productivity levels that define the interaction between overall demand and its occupational composition. Mobility, then, is one means by which occupational demands are met as well as a means by which workers improve their economic well-being.

Determinants of Occupational Advancement

By far the most popular topic in the study of occupational change is the analysis of determinants of advancement in socio-economic status, as measured by an occupational status scale. This section reviews a number of such studies prepared by economists and sociologists alike.

The studies reviewed here share a number of common features. All but one used the Duncan socio-economic index as the measure of socio-economic status of occupations. The exception, Parnes and Nestel (1975), used the Bose index. All studies used multiple regression analysis as the technique for identifying significant variables and measuring their relative importance. All studies except Leigh (1975) used National Longitudinal Survey data, usually for one or two cohorts, and rarely for all four cohorts (Andrisani, 1978). All used a comparison of socio-economic status of earlier and later occupation as the dependent variable, although various formulations of the comparison were used. Finally, most studies focused on differences in levels and determinants of socio-economic change for blacks and whites, and to some extent, differences by sex.

These similarities do not necessarily simplify the presentation of the studies, however. A wide variety of independent variables were examined and, while each study tended to focus its analysis in one or two variables of interest, information is also provided for characteristics used as 'control' variables. These control variables are of equal interest here, since they often include labor market structure factors, and labor market experience measures for individuals, as well as demographic and personal characteristics.

Some structure, then, is needed for organizing the relatively large body of information provided by these studies. The approach adopted here, hopefully successfully, is to examine the results by various categories of independent variables. About three dozen separate independent variables were used, which may be divided somewhat neatly into the following groups: psychological characteristics, human capital variables, sociological characteristics, characteristics representing labor market

experiences of individuals, characteristics of the labor market environment, and demographic characteristics. Each of these groups provides a heading for discussion later in this section.

Before examining the independent variables, however, it is necessary to look at the dependent variables tested. One formulation was found in all studies: occupational status change measured by the difference in socio-economic rating of earlier and later occupations. Kohen (1975) also tested probabilities of upward and downward mobility by specifying the dependent variable dichotomously in two ways: 1 for positive change in status, 0 otherwise (upward probability); and 1 for negative change, 0 otherwise (downward probability). Leigh (1975) tested change in earnings status as a dependent variable, measured by the difference in the 1969 median earnings of the respondent's earlier and later occupations.

Psychological Characteristics

The collection of several measures of attitude and preference variables on the various National Longitudinal Survey (NLS) panels makes possible analysis of the impact of these characteristics on various labor market experiences, occupational advancement in particular. The measures available include internal-external control (Rotter scale), job satisfaction, commitment to work activity, preferences for intrinsic or extrinsic rewards, occupational aspirations, and respondent's identification of best occupation held. Every measure is not available for every cohort; occupational aspirations, for example, was collected only for young men.

Internal-External Control. Internal-external control describes an individual's perception of his ability to influence his environment:

> "Internal control refers to the perception of positive and/or negative events as being a consequence of one's own action and thereby under personal control; external control refers to the perception of positive and/or negative events as being unrelated to one's own behavior . . . and therefore beyond personal control." (Lefcourt, 1966, p. 206)

The standard measure of internal-external control is the Rotter scale (Rotter, 1966). An abbreviated eleven-item version of the scale was administered at least once to all four NLS cohorts.

Andrisani (1977; 1978, Chapter 4) and Andrisani and Nestel (1975) provide extensive analysis of internal-external control (I-E) as a determinant of occupational advancement. Their work may be summarized as finding internality a significant contributor to advancement, although the significance of the variable and its direction of influence depended on its formulation, and varied among age, sex, and race cohorts.

Andrisani (1978) should be considered the definitive study, since it covers three of the four NLS cohorts and corrects for errors in use of the I-E scale in one of the earlier works. In this study the scale is decomposed into two items, a 'personal control' dimension measuring one's attitude toward control of one's own future, and a 'control ideology' dimension reflecting cultural beliefs about individuals' control over their destinies. Lower scores on each scale indicate greater 'internality' or greater belief in the individual's control over future life events.

Analysis of these two dimensions as well as the overall eleven-item scales revealed little differences among the cohorts or races in overall attitudes. Blacks tended to be somewhat less internal than whites, but differences are very small.

The personal control scale displayed a significant, negative influence on advancement for young men, with a greater effect for blacks than for whites. In other words, the greater the individual's perception of being in control of one's own future, the greater the likelihood of occupational advancement. This relationship was also found among older white men, but not among older black men or older women of either race.

Andrisani provides an interesting 'twist' to the analysis and a reminder that attitudes are influenced by, as well as influencing, labor market behavior, by examining I-E as an outcome of occupational advancement. He found that while the overall level of the control scales did not vary much over time, changes that did occur tended to reflect the individual's labor market experience. This was noted particularly for the control ideology measure. Occupational advancement, however, was not one of the influential labor market experiences except among older white males. Among these men occupational advancement was associated with increased belief in individual's control over their own destinies. While Andrisani stresses the need for a conservative interpretation of this analysis, the results suggest that "early formation of external attitudes is not a shackle that precludes an individual from upward mobility" as measured by several types of labor market experiences (p. 129).

Job Satisfaction. A measure of job satisfaction was obtained for all four NLS cohorts using a single question asking the individual to rate how well he liked his current job. Andrisani (1978, chapter 2) provides an analysis of this rating as a determinant of subsequent occupational advancement for all four cohorts. In general, job satisfaction was not found to be a consistent or significant determinant of advancement.

For blacks in every cohort, there was a significant negative relationship, with greater dissatisfaction leading to more advancement. Controlling for change of employer eliminated the significance of the variable for young black men, but not for other blacks.

For whites, the variable was not significant for any cohort. Controlling for employer change, however, produces a significant negative relationship for young women, indicating that for this group, the satisfied advanced more than the dissatisfied.

When the models are tested separately for employer changers and nonchangers, somewhat different patterns are found. Three of the four white cohorts showed less advancement for dissatisfied employer nonchangers than for the satisfied nonchangers, and no significant relationship for blacks. Among employer changers, however, dissatisfaction led to *more* advancement. Additional analyses indicate that these patterns are not the result of differences in initial status of satisfied and dissatisfied workers. Andrisani suggests that the finding that employer changing works to the advantage of dissatisfied workers must therefore stem from factors other than their initial economic and occupational disadvantages (p. 46).

Intrinsic-Extrinsic Reward Preferences. This item refers to the aspects of work the individual likes best, or the type of rewards provided by the job that are preferred. Intrinsic rewards are those relating to the work itself, chance for advancement, individual's capability to do the work, responsibility and freedom allowed, and similar items. Extrinsic rewards are those not directly related to the work, such as earnings, benefits, hours, working conditions, and interpersonal relationships (Andrisani, 1978, p. 216). Questions pertaining to preferences for those rewards were asked of all four NLS cohorts.

Andrisani (1978, chapter 5) found no significant relationship between intrinsic-extrinsic preferences and occupational advancement for any cohort of either race. In examining shift in preference for the two types of rewards as a result of labor market experience, Miljus and Andrisani (1978) also found few significant results.

Occupational Aspirations and Expectation of Achievement. Occupational aspirations, sometimes interpreted as a measure of 'ambition', was measured for the young male NLS cohort by the socio-economic status of the occupation the respondent hoped to reach by age 30. Questions concerning the individual's own rating of his chances for success were also asked. Andrisani (1978, chapter 5) found that higher aspirations were associated with greater advancement for whites, but not for blacks. Young men of both races who were more confident of success advanced more than their less confident counterparts.

Best Occupation. Respondents in the older male NLS cohort were asked if they felt their current (1966) occupation was the best one of his work life. Kohen (1975) found that among men who stayed with the same employer, those who felt their 1966 occupation was not the best were more likely to advance. No relationship was found for employer changers. Results were symmetric for downward mobility probabilities.

Work Commitment and Employer Attachment. Hypothetical questions were asked the two older NLS cohorts about whether the respondent would continue to work if it were not financially necessary. This item is interpreted as measuring work commitment. Another item for older women was future expectation of remaining with the same employer, interpreted as 'employer attachment'. Andrisani (1978, chapter 5) found that work commitment had a significant positive effect on occupational advancement of white women, but not for black women; no significant relationships were observed for men. Three additional work commitment variables for women were also insignificant. He also notes that employer attachment was insignificant as a determinant of advancement.

Human Capital Variables

Although the majority of studies reviewed in this section cannot be described as human capital analyses, all of them relied on variables measuring human capital, including education and training, experience and health characteristics.

Educational Attainment. As noted in the first section of this chapter, levels of mobility are clearly seen to vary among educational attainment groups. Educational attainment, represented by various measures of years of formal schooling, accordingly appears as a variable in all of the studies discussed in this chapter. In many cases, however, education is not the main focus of analysis; often education variables are included as 'control' variables to allow *ceteris paribus* analysis of other variables of interest. This treatment of course simply reflects the authors' recognition of the importance of formal schooling as a determinant of advancement.

In general, the numbers of years of formal schooling is found to be positively related to the individual's chances for advancement and distance of advancement. The magnitude of the relationship, however, varies among sex, age, and race groups. For middle-aged men, Kohen (1975) found years of schooling to be positively related to chance of upward mobility, and distance of upward mobility, and negatively related to chance of downward mobility. Results were consistent for employer changers and nonchangers, except for those who changed employers involuntarily. Schooling was not related to advancement for these men. Analyzing census data for men, Leigh (1975)

found higher probabilities and greater distances of advancement to be associated with higher levels of education. The association was more 'compressed' for blacks than for whites, however, indicating less advancement for blacks regardless of level of schooling.

Coleman et al. (1970) investigated educational attainment in two time frames--attainment prior to first job, and attainment between first and later job--as determinants of advancement between first and later jobs. They found early education to be a determinant of status of first job and to exert a separate and continuing influence on subsequent advancement. Education received between first and later jobs was found to be the most important 'intervening' variable affecting occupational advancement for both black and white men. Differences by race were confined to the education prior to first job variable, with less effect for blacks; intervening educational experiences had about the same impact on advancement of both races.

Although Andrisani (1977) focused primarily on psychological measures, he discusses the influence of education on advancement. He notes that for young men, payoffs to higher education in terms of advancement appear to be higher for blacks than for whites. For older men, however, higher education is not significantly related to advancement. High school completion contributed slightly more to the advancement of young whites than that of young blacks, but slightly more to advancement of older blacks than that of older whites.

Other Training. Human capital includes many forms of training in addition to formal schooling. Measures used in the studies reviewed included on-the-job training and vocational training, generally measured as dichotomous variables.

Leigh (1975) found positive relationships between occupational advancement and four types of vocational training, with greatest effect for business office programs and engineering/science programs. Overall, vocational training often contributed more to advancement of black men than of white men. Among blue-collar workers, however, no racial differences were noted, although vocational training, especially trades/crafts programs, was much more important for this group than for all men. Andrisani (1977) did not find the vocational training variable significant.

Kohen (1975) found that other training contributed significantly to the likelihood of upward mobility of middle-aged men who did not change employers. No relationship was found for those who changed employers. The relationship between other training and downward mobility was negative for employer changers but insignificant for non-changers. In his analysis of the distance of advancement, Kohen notes that among voluntary employer changers, recent vocational training contributes to advancement, while among involuntary changers, only early vocational training makes a contribution. Overall, his results indicate that the impact of vocational training on advancement depends on the time at which it is received and the complexity of the individual's mobility pattern. The results of Coleman et al. (1970) are constant with Kohen's findings.

Experience. Several models attempted to analyze the effect of human capital in the form of work experience on occupational advancement. This type of capital is difficult to quantify, and is generally represented by proxies such as age, job tenure, and years of labor market eligibility.

Kohen (1975) found that for middle-aged men who changed employers, length of service with the new employer was positively related to probability of advancement, up to a certain point. Years of service variables had positive signs, while years of service squared had negative signs. Neither formulation was significant for men who remained with the same employer, although age was significant. Job tenure did, however, appear to act as a buffer against downward mobility among non-changers, and contributed to the advancement of men who changed employers involuntarily.

Andrisani (1977) did not find job tenure to be significantly related to advancement of young men of either race.

Health. The presence or absence of health conditions that limit an individual's work capacity was analyzed in several studies. Kohen (1975) did not find health status to be significantly related to probabilities of upward or downward mobility or to distance of mobility. Similar lack of significant relationship is indicated by Andrisani (1977, 1978) and Coleman et al. (1970). Parnes & Nestel (1976), however, found good health to be positively related to advancement among women.

Sociological Characteristics

A number of different types of variables that can be considered 'sociological' have been analyzed as determinants of advancement. They are discussed here under three categories: family background, initial occupational status, and attitudes toward aspects of female work activities.

Family background. Father's occupation, and sometimes mother's occupation for women, have been analyzed as determinants of advancement between first and later occupations as well as determinants of status attainment. Coleman et al. (1970) found that father's education and occupational status exerted positive influences on the son's occupational advancement, apart from influences on son's initial status. Parnes & Nestel (1966) noted that women whose mothers worked were more likely to be 'career' women, identified as staying in the same occupation or transferring among related occupations.

Initial Occupation. Most models included the status of the individual's earlier occupation as a determinant of advancement between earlier and later occupations. Kohen (1975) describes this variable as necessary to handle the 'regression toward the mean' problem inherent in models with limited ranges for the dependent variable. In general, nearly all models found status of initial occupation significantly and negatively related to probabilities and distances of subsequent mobility: the higher the initial status, the less the chances for advancement.

Attitudes Toward Female Work. Andrisani (1978, chapter 5) analyzes the effect of several attitudes on advancement of women. He found that the husband having a negative attitude toward the wife's working slowed the advancement of older white women, but not of older black women. Among younger working women, whites who were favorably disposed toward working mothers were less likely to advance than those with a less favorable attitude; again no relationship is found for blacks. Parnes & Nestel (1976) noted that favorable husbands' attitudes were positively related to likelihood of 'career status'.

Labor Market Experiences

Several types of experiences relative to the labor market are seen to affect chances for occupational advancement. The most extensively examined is change of employer, while unemployment, part-time work status, and military service are analyzed to lesser extents.

Employer Change. As noted in other sections in this chapter, Andrisani (1978) and Kohen (1975) found that various variables displayed different effects on advancement for employer changers and nonchangers. Their analyses tested the models separately for populations of changers and nonchangers. Kohen also added a variable representing the voluntary/involuntary nature of the employer change. Their results are discussed in earlier sections of this chapter.

Unemployment and Part-Time Work. Coleman et al. (1970) found that experiencing unemployment or part-time work between earlier and later job has significant negative impacts on the advancement of male workers.

Military Service. Coleman et al. found no relationship between service and subsequent occupational advancement in the civilian labor force.

Labor Market Environment. A few of the studies attempted to control for some aspects of the labor market environment when analyzing determinants of advancement. These variables generally represented the size and regional location of labor markets and industry of employment and generally were insignificant. One exception is Parnes and Nestel (1976) who found that size of community was inversely related with likelihood of career status of women. Also, Andrisani (1977) found that southern residence was a significant contributor to advancement among all male NLS cohorts except young blacks, but that size of labor market was significant only for young blacks.

Mobility and Social Status

The studies reviewed in this chapter suggest much about the characteristics of workers, and a little about the characteristics of jobs and labor markets, that contribute to 'successful' occupational mobility. In general, occupational advancement measured by increased status score is more probable among workers who:

- have greater perceptions of control over their own destinies (Andrisani)
- were dissatisfied with their first jobs *and* changed employers (Andrisani)
- were satisfied with their first jobs *and* did not change employers (Andrisani)
- felt their first occupation was the 'best occupation' of their careers *and* did not change employers (Kohen)
- had high aspirations *and* were white (Andrisani)
- were confident of success (Andrisani)
- had higher levels of educational attainment, particularly for whites (Kohen, Leigh, Coleman, Andrisani) *and* were not forced to change employers (Kohen)
- were healthy and female (Parnes and Nestel)
- had fathers (or mothers) with high occupational status (Coleman et al., Parnes and Nestel)
- for white married women, husbands with positive attitudes toward their wives' employment
- for white working mothers, had negative attitudes toward working mothers
- lived in the south, except for young black men
- did not work part-time or experience unemployment

Some factors were shown not to be related to occupational advancement, including:

- values placed on intrinsic and extrinsic rewards of work
- higher aspirations, for blacks
- health, for men
- military service

While some of these results are of interest to the educational and labor market policy questions posed at the outset, it must be kept in mind that they relate only to advancement on a social status scale. Other measures of successful mobility were not formulated. The relevancy of social status scales to policy problems is certainly questionable.

Studies cited in this chapter shared some of the problems of the labor market related studies discussed in Chapter II. They dealt with mobility as a general phenomenon and did not attempt to distinguish advancement patterns for specific occupations or occupational groups. This may be the result of a lack of theoretical development comparable to the labor market structure theories upon which to base an analysis. Such a theoretical development should certainly be of interest as evidenced by Montagna's (1977) recent work discussed in Chapter V, which attempts to integrate labor market structure models into the sociologist's view of occupations and work.

CHAPTER IV

MOBILITY AND VOCATIONAL THEORIES

Workers bring with them to an occupation more than just the skills needed to perform the required tasks. They also bring themselves—their personalities, attitudes, interests, perceptions, and levels of maturity. Vocational psychology has developed theories about how these facets of individuals relate to their choice of occupations, their success or failure on the job, and their lifetime career patterns. Several vocational psychology theories are reviewed here to identify what they propose about the process of occupational mobility.

Vocational Choice Theory

Much of the literature in vocational psychology centers on vocational choice, dealing with the individual's development up to the point of selecting a career, generally in late adolescence or early adulthood. While career choice *per se* is outside the scope of this study, note should be made of recent revisions of the theories in light of new evidence on lifetime career patterns. Ginzberg and his colleagues, in their early theory of occupational choice (Ginzberg et al., 1951) viewed choice as a decision-making process extending from pre-puberty to late teens or early twenties when the individual makes a definitive occupational commitment. Decisions made throughout the process were often seen as reversible, and the resolution of the process always ended in a compromise between individual interests, capacities and values, and the "world of work".

Ginzberg has recently revised this view to theorize a much more flexible and long-lasting —even a lifetime—process. He summarizes his reformulated theory: "Occupational choice is a lifelong process of decision making in which the individual seeks to find the optimal fit between his career preparation and goals and the realities of the world of work." (1972, p. 172) This restatement implies that with the passage of time, individual skills, experiences, interests, and values are likely to change, as is the work environment itself. Ginzberg mentions some of the factors that are expected to operate in this process: the 'feedback mechanisms' between the original career choice and subsequent work experience, whereby satisfactions sought are either fulfilled or not; and factors affecting the probability of attempting and succeeding in making a new career choice, including freedom or lack of it because of changing family responsibilities, and pressures or options arising out of the job situation that enable or force a change. (1972, p. 170)

Vocational Development Theory

Vocational development theory shares some aspects of Ginzberg's revised view of occupational choice. The focus of developmentalists is not so much in the choice itself, but on the various life stages through which individuals pass.

> Basically, the individual does not choose an occupation, but makes a series of occupationally related choices. These choices, when taken cumulatively, result in vocational development, rather than occupational choice, *per se*. (Zaccaria, 1970)

Super (1957) presents vocational development theory as the various life stages of work operating along with the individual's development of 'self-concept'; that is, the individual's continual assessment of personal interests and abilities.[1]

In childhood and early adolescence, the individual's self-concept develops from fantasy to reality. Super views the period of adolescence as one of emergence of self-concept in which the youth explores reality and makes modifications of his self-concept to better fit reality. This exploration includes initial contacts with the world of work, perhaps through after-school or vacation employment.

"Reality testing" in terms of work begins in earnest as the individual passes through the early years of labor market experience. This is likely to involve a succession of jobs that have little relation to one another except that they help the worker gain knowledge about himself and the labor market. For individuals pursuing higher education or post-high school training, this period may also coincide with training experiences, and the jobs may or may not be related to the training, and spill over into the next stage of development.

The "establishment" stage of vocational development is characterized by increasingly orderly labor market behavior: learning and development continue, but job changes may be less frequent and succeeding jobs are more related to one another. The initial years of the establishment stage, referred to as the "trial substage", are marked by increasing maturity, competence, and general adaptation to the world of work. The worker later reaches the "stabilization substage", characterized by goal-oriented behavior. The individual has settled on a particular occupational field and becomes concerned with career advancement in that field. Finally come the "maintenance" stage, where the worker comes to accept his or her position and attempts to retain it, and the "retirement" stage.

The delineation of these different stages of vocational development does not necessarily imply that every worker, or even most workers, progress from stage to stage in an orderly way or at the same pace. Some may move very quickly from the reality-testing stage to the establishment stage, while others get "stuck" in one stage or another.

The ways in which individuals move through the vocational development stages are characterized as "career patterns". Super (1957) presents four career patterns for men: (1) stable career pattern, (2) conventional career pattern, (3) unstable career pattern, and (4) multiple trial career pattern. For women, seven career patterns are proposed: (1) stable homemaking career (no labor market activity), (2) conventional career pattern, (3) stable working career pattern, (4) double-track career pattern, (5) interrupted career pattern, (6) unstable career pattern, and (7) multiple trial career pattern.

In summary, vocational development theory relates occupation changing and other forms of labor mobility to the various life stages of vocational development. Early stages of "reality testing" involve unstructured occupational mobility, that is, movement with little plan or inter-relationship among successive occupations. The "trial substage" may include movement among related occupations, allowing the worker to test a particular career field. In the "stabilization substage", mobility is most likely to involve movement along a career progression, or change of jobs within an occupational area in search of better pay, job security, status, or other benefits. Finally, at the maintenance stage, job changing becomes more and more unlikely, and at the retirement stage, may involve movement to jobs requiring less physical or mental strain.

[1] The remainder of this section is summarized from DauffenBach, p. 17 ff. (1973).

The crucial point in the explanation of the determinants of occupational mobility is the development of self-concept underlying the individual's movement from one stage to the next. Also, it should be noted that the various career patterns described by Super, while characterized by patterns of individual behavior and development, are often discussed in terms of particular occupation or labor market groups. For example, stable career patterns are said to be prevalent for professional workers, while workers in semi-skilled occupations often have unstable career patterns. The examination characteristics of workers in each career pattern or at different stages of vocational development cannot, consequently, be separated from the labor market environment in which their development takes place.

Holland's Personality Theory

Holland (1973) has developed a theory of vocational choice that operates using a typology of personalities and environments along with propositions concerning personal behavior. He summarizes the theory in four assumptions:

(1) In our culture, most persons can be categorized as one of six personality types: realistic, investigative, artistic, social, enterprising, and conventional. Each type is the product of cultural, family, and personal forces which result in individual preferences and aversions to certain types of activities. The individual's personality type is identified by comparing his attributes to those of each model type (p. 2-3).

(2) There are six kinds of environments: realistic, investigative, artistic, social, enterprising, and conventional. Each environment is dominated by a given personality type and is typified by physical settings posing special problems and stresses (p. 3).

(3) People search for environments that will let them exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles. The search for appropriate environment is carried on in many ways, including mobility (p. 4).

(4) A persons's behavior is determined by an interaction between his personality and the characteristics of his environment. The individual's personality type can be used to 'predict' behavior and the types of environments the persons will seek through vocational choice, job changes, and achievement (p. 5).

Holland also proposes three additional characteristics of personality and environmental types: consistency, differentiation, and congruence (p. 4). Consistency refers to the person or environment being characterized by pairs of related personality types, as opposed to unrelated types. The six types are arrayed on the vertices of a hexagon, with adjacent types said to be 'consistent', while types on opposing vertices are said to be 'inconsistent'. An individual's personality pattern is identified by the importance of the various types present, and may be characterized as consistent or inconsistent. A similar description applies to environments.

Differentiation refers to the degree to which each type is represented in a particular personality or environment. A highly differentiated personality would be dominated by one type, while an undifferentiated personality would equally display all six types (p. 4). Finally, congruence refers to the similarity between the individual's personality pattern and the pattern of the environment in which he or she lives and works. Individuals are said to need and therefore to seek congruence, because a congruent environment provides opportunities and rewards needed by the personality type (p. 4).

Holland's theory has some direct applications to occupational mobility, since it provides a well-defined paradigm describing the motivations for mobility and the consequences of successful occupational change. The potential for applying the theory to mobility analysis is vastly increased by the fact that the personality types have been matched with occupational titles in the Dictionary of Occupational Titles (Viernstein, 1972).

Test of Holland's Personality Theory. The information search identified four studies that used occupational mobility data to test Holland's personality/environmental theory. Mobility provides a relevant test, as the typology is based on an assumption that individuals search for environments appropriate to their personality types (Holland, 1973).

Although the various authors formulate their hypotheses in somewhat different terms, they all seek to determine whether mobility in fact follows the patterns predicted by Holland's theory: workers remain within a particular environment and, if they move, tend to move from inconsistent to consistent environments.

Of the four studies, only Gottfredson (1976) used data for the entire population, allowing comparisons by age and sex. One (Nafziger et al., 1974) allowed comparisons by race and sex within an age cohort, while the other two allowed only race comparisons for men.

All four studies identified considerable stability with respect to Holland category, generally measured in terms of remaining within the same category over time. The amount of stability observed varied with the level of detail used (ranging from the basic six categories up to 50 three-letter categories) and with the demographic characteristics of the subjects. In general, the greater the detail, the less stable the patterns (more movement among categories). (Holland et al., 1973) Gottfredson found that stability increased with age; Nafziger et al. observed little difference in stability between the sexes, but some difference between the races, with somewhat greater stability for blacks. Parsons and Wigtil (1974) observed, overall, more movement among categories by white men than by black men, but the relationship was sometimes reversed when looked at by individual category.

Several of the studies tested the hypothesis that consistent categories were more stable than inconsistent ones, that is, workers were more likely to leave categories which offered conflicting rewards than to leave occupations with consistent reward patterns. Holland et al. found greater stability among men in consistent subcategories within the Realistic group. Nafziger et al. found a similar result for white men, but not for black men, although the relationship deteriorated somewhat as greater detail of category was introduced. Gottfredson also observed a direct relationship between level of stability and consistency of initial occupation, with a stronger relationship for men than for women.

The most common type of shift in Holland category and the most stable types of categories varied somewhat with the race and sex of the subject. Parsons and Wigtil address this topic, with somewhat problematic results due to methodological problems (see review in Appendix II). Gottfredson, however, observed that the most frequent shifts were from Realistic to Enterprising for men, and from Realistic to Conventional for women.

The Holland typology and its accompanying hypotheses about mobility seem to offer some useful insights into the mobility process. In general workers are shown to be stable with respect to Holland category, with predictable variations among age groups, and to tend away from inconsistent environments.

The empirical tests are troublesome in many respects, however. The Realistic category tends to overwhelm the analysis of transitions among categories, even with the use of various statistical techniques introduced by several authors. Also, the usefulness of the typology as a tool for understanding the workers in relation to their environment seems greatest when subcategories rather than the six categories are used. Disaggregation also makes the analysis less "top heavy" in the Realistic direction.

The most disturbing problem is that, in these four studies at least, the typology is used in isolation. None of the factors known to influence mobility, other than Gottfredson's age and sex groups and some reference to sex and race differences by other authors, are included. Movement among categories is seen, then, only as the result of the p rsonality characteristics, with little attention to educational status, labor market opportunities, earnings, or socio-economic factors.

The two attempts to include such factors are either weak or peripheral. Parsons and Wigtil suggest that some of the differences in observed stability among the categories is a result of the number of jobs available in the category (i.e., the size). Their method for correcting for such differences is faulty, however, and leaves the question unanswered. Holland et al. assert that the subject's education, income, and level of income can be predicted from the two-letter Holland code of the worker's earlier job. This is not a surprising result in view of the long-standing sociological observation of earlier socio-economic status of occupation being a predictor of later status, and the fact that Holland's method relied on assigning socio-economic prestige scores to the two-letter categories, which were used as predictors of later status.

In addition to incorporation of known factors influencing mobility, empirical work using Holland's typology would reveal far more about occupational mobility if evidence on the match between personality characteristics and 'occupational environments' were examined. It would be useful to know how much mobility was attributable to mismatches between personality types of workers and environments of their jobs. While educational and labor market policies probably cannot do much about personality and environment characteristics, they can influence the match between the two by providing accurate and accessible occupational information along with sound counselling and career planning assistance to individuals.

Vocational Adjustment or Work Adjustment Theory

Vocational adjustment refers to the "state or condition of the individual in relation to the world of work at any given moment after he has entered an occupation" (Crites, 1966, p. 325).

Dawis et al. (1964) have proposed a hierarchy of levels of work adjustment, with each level characterizing further refinement and development of the individual in coming to terms with the work environment. The levels may be divided into three groups which are summarized below (from Oetting et al., 1974, p. 4-6).

The *Acquisition* group contains steps that are preparatory to entering work: basic orientation toward wanting to work (Level I); preparation in terms of skills, training, experience, and awareness of one's needs, interests, and abilities in relation to existing job opportunities (II); and job-seeking skills and abilities (III).

Maintenance comes when the individual enters a job, beginning with conforming to the job and work requirements, such as showing up for work on time (Level IV); and continues with satisfactory performance and obtaining enough satisfaction to continue returning to work each day (V);

with development of interpersonal relationships on the job (VI); and with skilled performance and adequate job satisfaction (VII).

The *Upgrading* phase, sometimes entered after the maintenance stage is successfully completed, consists of orientation for change, including the individual's motivation to seek improvement or upgrading (Level VIII); advancement readiness (IX), job or promotion getting (X), and finally high-level job maintenance (XI).

This approach to work adjustment relies on continued job attachment as the measure of successful completion of each adjustment level, with the exception of Levels VIII through X, where activities related to promotion serve the measurement purpose. Failure at any level is said to move the individual back to the previous level, where the adjustment process must be started again. As such, the model provides a useful tool for analyzing some types of occupational mobility. Mobility up a career ladder is certainly typified by the Upgrading phase, where job or occupation change is the result of successful adjustment at the earlier levels of the hierarchy. Mobility among various occupations in the secondary labor market, characterized by loose job attachment, seems to be consistent with movement among levels in the Maintenance group and Level III. Job or occupation change is in this case the result of failure at some level of adjustment that results in separation from employment.

The work adjustment hierarchy focuses on the individual's characteristics, perceptions of opportunities, attitudes, experiences, and interactions between the individual and the socio-economic environment and the work environment. The process is a developmental one, with experiences at each level influencing the adjustment process at the next levels. Oetting et al. (1973) also point out that the hierarchical nature of the model does not preclude the repetition of several stages over a person's lifetime. The need for repetition may "come about due to changes in individuals, socio-cultural changes, economic changes, and technical changes" (p. 11).

Mobility and Vocational Theories

While work adjustment may bear some resemblance to the vocational development stages presented earlier, the successful outcomes of the two processes—adjustment and maturity—are not the same. Super (1977) distinguishes clearly between the two:

> "Adjustment is an outcome of behavior, whether defined as satisfaction or as success; it is essentially retrospective, for it relates a present condition to past actions. Maturity differs by being prospective; it consists of behaviors and attitudes manifested in the present which pertain to tasks being dealt with in the present or likely . . . in the future. The vocationally adjusted person is one who is doing what he likes to do and is a success at it; the vocationally mature person is one who is coping with tasks appropriate to his life stage in ways which are likely to produce desired outcomes." (p. 294).

The search for congruence between personality and work environment modeled by Holland seems closer to the vocational adjustment process. Holland's typology seems to provide a practical measure of successful adjustment, although no such use of it was identified in the empirical literature.

In all three theories, occupational mobility is an inherent part of the processes described. Mobility is a means of exploring the labor market while at the same time exploring one's own interests and abilities, particularly in the early stages of life described in both the vocational development and work adjustment models. This facet of mobility is similar in many ways to the expectations of human capital theory, presented in Chapter II, that mobility is more likely among young workers. The young are in the position of being able to afford the exploration that mobility offers, in view of their low earnings levels and lack of human capital investments, as well as being in a life stage in which exploration and self-concept development are absorbing activities.

Of interest from the education and employment policy view is the close link in all three models between individual development or adjustment and information gathering. The individual in all three paradigms is conducting a search for information about work as well as about him or herself. This information gathering process is an obvious point at which schools can provide assistance through career education, structured work experiences, counseling and career exploration activities in the individual's early years. Continued support throughout the individual's work life might further ease the worker's development and adjustment, including continued access to career counselling services and occupational information for use in both job searching and career exploration.

CHAPTER V

OVERVIEW AND DIRECTIONS FOR FURTHER DEVELOPMENT

The Introduction to this study posed a number of questions about mobility that are of interest in educational policy. These questions concerned the characteristics of mobile individuals and their jobs that affect the likelihood of mobility itself and the factors contributing to 'successful' mobility.

We have seen that various theories suggest, often indirectly, some hypotheses about the character of occupational mobility. We have also seen the use of data on occupational mobility for testing hypotheses concerning labor market adjustment processes, the existence of labor market structures, the social stratification process, and the operation of psychological and human capital characteristics.

It is notable that few of the empirical efforts and theories center on the mobility process itself. Mobility is not often the primary focus of interest, and when it is the central topic, the analysis is confined to 'extent and character' questions as reported in Chapter II. These studies provide broad outlines describing the level, trend, and relationship of mobility to general demographic characteristics, as well as some detailed information on the structure of mobility, but little insight into the process itself and characteristics of individuals and occupations involved.

A major finding of this study, then, is that empirical work on occupational mobility generally is not built around research questions of interest to educational policy problems. That is, they do not attempt to tell us what makes individuals adaptable, or able to function successfully, in a labor market that often demands occupational change. The tests of Holland's personality theory, for example, may be useful in validating the theory and suggesting that personality/environment types may be helpful in understanding mobility. These studies did not, however, provide insights into whether and how Holland's categories interact with other worker characteristics and labor market environments to facilitate or hinder occupational change.

The studies dealing with occupational advancement and tests of the dual labor market hypotheses are also somewhat removed from our original questions. They provide a great deal of insight as to the characteristics that affect the likelihood and distance of occupational advancement, but have limited relevance because the formulations of the dependent variables are not of particular interest.

These studies sought to explain advancement as measured by change in socio-economic status and/or earnings level. The dual labor market studies are a special case, using models similar in many ways to the socio-economic studies to explain movement from secondary to primary occupations. The problem is that such measures tell us little of the nature of the occupational change itself: was it between related occupations or was a radical change required? was it within or outside an internal market? what motivated the change? did the worker accrue benefits such as increased job stability and career potential at the cost of lower earnings (see Johnson & Stern, 1969)? Only one

study, Parnes and Nestel (1976), attempted to identify movement between related occupations, in this case for the purpose of identifying the dependent variable. None of the studies examined human capital, psychological, demographic, and labor market factors as determinants of occupational transfer itself, regardless of change in socio-economic status or earnings.

In addition to not addressing the issue of what makes for "adaptable workers", the empirical literature on mobility also fails to identify *who* the adaptable workers are in terms that are useful to policy makers. The vocational development and work adjustment theories described in Chapter IV provide sound theoretical descriptions of the adaptable worker as the worker who achieves 'vocational maturity' or 'vocational adjustment'. Both theories point to assistance in self-concept development as it relates to work and to adequate career counselling and occupational information throughout the individual's work life, as activities likely to be useful in developing adaptability. Unfortunately no empirical studies dealt with these concepts or solutions specifically.

The sociologists and labor market structuralists offered both theoretical and empirical frameworks that might be interpreted as identifying adaptability: occupational status achievement and movement from secondary to primary labor markets. Both attempts are flawed, however, by their generality and by measurement problems.

The use of occupational status scales as measures of 'successful' mobility—not successful adaptability--observes patterns that might be termed successful in vocational development or work adjustment terms. The successfully adapted worker may be the one who stays in an occupation or moves to one of lower status but better suiting his or her individual interests and abilities, while the unsuccessfully adapted worker may move from occupation to occupation, some of which have higher status than others.

The labor market theories might, as noted in Chapter II, be more useful in analyzing if focused on specific occupations groups or types of markets. The distinction between mobility in internal labor markets and that in external markets, for example, seems particularly useful. The character of mobility in external markets can be expected to differ radically from that in internal markets. Unless movement into a 'port of entry' job is obtained, the worker may expect his or her career to be a series of moves among occupations, industries, and employers as worker preferences, technological change, and economic changes induce involuntary and voluntary job changes. Workers in this situation will need assistance, both in terms of personal preparation for coping with continued change, and in making the transition from one employment situation to another.

Workers in internal markets, on the other hand, may have some protection from short-term economic fluctuations, but will likely find it difficult to move from one internal market to another, since "reduced mobility is one of the ways in which institutional rules isolate workers in internal markets from external competition" (Levitan et al., 1976, p. 123). Wachter (1974) points out that mobility among internal markets may be frequent among young workers who have not yet advanced on the internal promotion ladder, but mobility becomes more costly the further the advancement (p. 647).

For educational policy purposes, it may be necessary to utilize refinements of the internal labor market hypothesis. Interest could be focused on some types of internal markets but not others. As described in Chapter II, internal markets may contain 'mobility clusters,' of which career advancement paths are one type. Doeringer and Piore (1971, p. 50) describe some of the characteristics of such clusters and note that they are of different sizes and shapes. The educator may find broad clusters with short lines of progression of interest, but not narrow and 'high' clusters.

It seems that educational policy should also take into account the segmentation of labor markets to provide an understanding of the economic context in which the application of the educational product takes place. The dual labor market hypothesis is one obvious consideration, although its lack of empirical criteria and other controversial aspects may limit its usefulness in the educator's eyes. The concept of multiple labor markets, however, should be of more immediate utility. The existence and perpetuation of labor market shelters, as described by Freedman (1977) has an obvious impact on the progress of individual careers, affecting the ease or difficulty of entry into sheltered markets and subsequent movement within and among shelters and segments.

It is unfortunate that few of the studies reviewed attempted to examine mobility within or outside internal labor markets. Only the dual labor market studies dealt with labor market structures in an acknowledged way. There are, however, some recent empirical paradigms that could provide the basis for such analyses. Freedman's work, discussed in Chapter II, provides an empirical delineation of labor market segments as well as extensive discussion of the development and character of labor market shelters. DauffenBach (1973) provides a set of occupational mobility clusters that have not yet been used to analyze the mobility process itself, and should readily lend themselves to analysis of internal labor market mobility clusters. Finally, Spilerman (1976) suggests a method for identifying career paths that may lend itself to analysis of the occupational mobility process.

Interdisciplinary Approach

A major difficulty in presenting the information found was the variety of disciplines and approaches used. Throughout the study interrelationships among the various approaches have been pointed out.

One of the continuing threads uniting studies on mobility, particularly the very recent ones, is the need for an interdisciplinary theoretical approach. The beginning of this chapter noted that mobility is often a side interest or a tool used to study a phenomenon of primary interest. Each of the disciplines had something to say, however indirectly, about how and why mobility is likely to occur. There is, however, no integration of these insights into an overall theory of occupational change. The development of such an integrated, interdisciplinary approach seems to this author to be a top priority if educational policy, and we might add labor market policy, are to reflect the reality of mobility in American work life.

Some starts on an integrated theory have been made. DauffenBach, for example, ties together vocational development theory and labor market structure hypotheses to develop his 'occupational system theory'. Montagna (1977) has developed an integration of labor market structure hypotheses and sociological theories. Spilerman's (1976) efforts at identifying career paths are based on the recognition of links between labor market structures and socio-economic attainment. Andrisani (1978) integrates psychological and attitudinal variables into models of occupational advancement.

None of these, however, provide a fully developed theory of occupational mobility recognizing the psychological, personal, human capital, and sociological characteristics of the individual operating in various labor markets, social structures, and psychological environments. Much theoretical work remains before we can formulate appropriate research questions and find empirical answers to our educational policy questions.

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APPENDIX I

Summaries of Empirical Studies

Criteria for Selection

In Chapter I occupational mobility was defined as the movement of workers from one occupation to another. This definition provided the basic criterion used to identify data sources and analyses of interest: any item considered for inclusion in the inventory *must* include information about the transfer of workers from one occupation to another. This condition is restated in the form of a primary criterion and secondary criteria for inclusion:

Primary Criterion: The analysis contains data elements showing occupation of employment for the same individuals for at least two points in time.

Secondary Criteria:

(1) The analysis attempts to construct information concerning the flow of workers from one occupation to another through techniques such as cohort analysis.

(2) The analysis provides information on occupation changes, with either occupation left or the occupation entered identified.

(3) The analysis provides information on occupation changes, with neither the occupation left or occupation entered identified.

In addition to these criteria for inclusion, a number of exclusions were established. First, because the anticipated use of the study in preparing individuals for future work experiences, emphasis was placed on current studies. In general, studies using data reference periods prior to 1960 were included only if they were major in nature, and none with reference dates prior to 1950 were included. Secondly, intergenerational mobility, the topic of a large body of sociological literature, was excluded entirely. Intergenerational mobility does not meet the definition of occupational mobility established for the study, and is not generally relevant to the anticipated uses of the study. Also, for the latter reason, studies related to manpower utilization in the Armed Forces and transition from military to civilian employment were excluded, as were studies based on non-U.S. data.

The Information Search

The search for relevant empirical work began with computerized searches for items concerning 'careers', 'mobility', and similar topics, found in the Mechanized Information Center, Ohio State University Libraries. This information was supplemented with card catalogue searches at the U.S. Department of Labor Library, reviews of the Social Science Index, and follow-up on items referenced in relevant studies.

The remainder of Appendix I provides a Bibliography of Empirical Information identified in the search, followed by summaries and critiques of each study, presented in alphabetical order by name of author. Summaries and critiques of major data sources are presented in Appendix II. The summaries of empirical studies in Appendix I often mention data limitations that are further explained in Appendix II.

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Summaries of Studies

1. Andrisani, P.J. *An Empirical Analysis of the Dual Labor Market Theory.* (1973)

Thesis:

The author examines evidence for the applicability of the dual labor market theory to the early labor market experience of young men. Among the three research questions posed, one is of interest here: what are the characteristics that differentiate young men who move from secondary to primary jobs from those who remain in the secondary labor market? (p. 56). Factors hypothesized to influence labor market success, defined in this instance as movement into the primary sector, include human capital investments, attitudinal factors, environmental factors, and social background.

Data:

National Longitudinal Surveys, young men surveys for 1966 and 1968. A subset of the NLS data was created, including respondents (1) with 12 or fewer years of schooling in 1966, (2) not enrolled in school 1966 through 1968, (3) in the NLS sample both 1966 and 1968, and (4) first job and 1968 job were nonagricultural wage and salary positions (p. 6-7).

Methods:

(1) Primary and secondary labor market segments are identified as industry-occupation categories with median earnings greater than specified levels (primary), or below specified levels (secondary). (p. 36)

(2) Mobility from secondary to primary employment is specified as a dichotomous variable and is related through linear multiple regression analysis to variables representing the hypothesized factors affecting labor market success. Independent variables are:

(a) Human capital factors: educational attainment, formal training outside school, age, and prestige level of first job.

(b) Attitudinal factors: internality (Rotter Scale), and career aspiration (Duncan Score for socio-economic status of occupational goal). (p. 43)

(c) Environmental factors: labor market tightness at time of job entry, local unemployment rate, size of local labor market, and dummy variable for South/non-South residence.

(d) Family background: race (white, black), a socio-economic status score (p. 46), and marital status.

Results:

(1) Cross-tabulations of the data reveal high levels of secondary to primary movement for both whites and blacks. The proportions moving across sectors were in fact higher than the proportion remaining in secondary jobs. Blacks, however, moved less frequently than whites. (p. 56)

(2) Since initial regressions indicated that the labor market demand measures were insignificant, these variables were dropped from the analysis. (p. 67)

(3) Regression models were tested separately for whites and blacks. Overall explanatory power was low (R^2 = .1139 and .07837), but some variables were significant.

(4) Among white youths, marital status, aspirations, and internality differentiate "movers" from "stayers". Among blacks, only region of residence and aspirations are significant (p. 67-69).

(5) Addition of a 'graduation status' variable, representing possession of a high school diploma produced little change in the results; the new variable was not significant for either race (p. 73-74).

(6) Human capital factors are seen as, ceteris paribus, having no marginal impact on secondary-to-primary mobility. Class background is not significantly related to mobility.

(7) Results suggest that discrimination and motivation are the most important factors in determining upward mobility. However, only part of the difference in white-black probabilities of mobility appears to be attributable to lower levels of aspirations among blacks. Other influences on marital status, internality, and residence in the South. (p. 70)

(8) Internality was not significantly related to mobility among blacks, but was very significant for whites. Interaction of the internality and class variables suggest that lower-class blacks and whites receive no "returns" to motivation, while upper-class whites and blacks do receive "returns," whites more so than blacks.

Limitations:

(1) Models explained very small proportions of the probabilities of moving from secondary to primary jobs.

(2) A temporal problem occurs in measurement of first job—which may have been entered prior to 1966—and motivational measures which were based on aspirations stated in 1966. The causality between mobility and motivation is ambiguous, since mobility may have occurred prior to 1966. (p. 70) This problem might have been avoided by using 1966 occupation instead of 'first job' occupation.

(3) The selection of the earnings cut-off to distinguish secondary and primary work is arbitrary and without strong theoretical foundation. Cain (1975) points out that the dependent variable, earnings, is truncated, which biases the regressive coefficients toward zero. (p. 45)

2. Andrisani, P.J. *Internal-External Attitudes, Personal Initiative, and the Labor Market Experience of Black and White Men.* (1977)

Thesis:

Internal-external control, as a measure of personal initiative, is examined as a determinant of various labor market experiences, including occupational advancement. In general, it is hypothesized that persons with highly internalized attitudes will be more likely to experience labor market success than those who are highly "external." Differences by race are examined to investigate whether racial differences in labor market experiences are due more to a lower propensity among blacks to possess an internal outlook, or to lower 'returns' to an internal outlook for blacks than for comparable whites. (p. 312)

Data:

National Longitudinal Survey data for young men (16-26 years old) and middle-aged men (48-62 years) are used. Occupational change is that observed between 1968 and 1970 for young men, and between 1969 and 1971 for older men. Data are restricted to persons employed full-time as wage and salary workers who are not enrolled in school, at each survey date. (p. 317, 322)

Method:

Internal-external attitudes are measured by scores in an abbreviated four-item version of Rotter's Internal-External Control Scale, administered on the 1968 and 1969 surveys. The lower the score, the more internal the attitude. Occupational change is measured by differences in the Duncan scores of the respondent's occupations in the two survey dates. 'Advancement' is defined as an increase in the Duncan score. Analysis of the impact of internal control on occupational advancement is done through multiple regression, with occupational change as the dependent variable. Other independent variables include dummy variables for educational attainment categories, completion of formal training, health status, marital status, residence in the south, and urbanization of area of residence. Variables for job tenure and years of labor market eligibility (age minus years of schooling), and the Duncan score for original occupation are also included. The model is tested for each race and age cohort.

Results:

(1) Very little difference was found between age groups for either race in the overall levels of the Rotter scale. However, blacks in both age groups had slightly higher (less internal) scores. (p. 314) It should be noted that in no case were the differences in scores among the four groups greater than plus or minus one standard deviation. (Table 1)

(2) For young men, the regression coefficient for the Rotter scale was negative, as expected, and significant for both races. Although the magnitude of the coefficient was small, it was greater for blacks (−0.8) than for whites (−0.4).

(3) For middle-aged men the coefficient for the Rotter scale was negative, as expected, and significant for whites, and positive and insignificant for blacks.

(4) The regressions suggest greater levels of payoff to young men in terms of occupational advancement to blacks' educational investments than to those of whites: regression coefficients for the higher education dummy education variable was more than twice as high for blacks (29.4) as for whites (13.0). (Both were highly significant.) For middle-aged men, however, the higher education variable was not significant for blacks.

(5) The dummy variable for high school completion had only slightly different coefficients for the races, with whites slightly higher (6.3 versus 5.6). For middle-aged men, the variable also had small coefficients, slightly larger for blacks (4.2 versus 3.0).

(6) Neither the formal training program variable nor the job tenure variable was significant for either race. Southern residence was a significant contributor to occupational advancement for all groups except young blacks, for whom the variable was not significant. For this group, however, residence in an intermediate-size labor market (population 200,000-699,999) was a significant factor in advancement, while size of labor market was not significant for any other groups.

Limitations:

(1) Exclusion of the self-employed (see limitations described for Leigh, 1975).

(2) Models explained very little of the variance in advancement probabilities. Coefficients of determination for middle-aged men were .10 and .12 for whites and blacks, respectively; and for young men, .18 and .40.

3. Andrisani, P.J. *Work Attitudes and Labor Market Experience: Evidence from the National Longitudinal Surveys.* (1978)

This volume contains several chapters that are treated as separate studies in the following review. Also, one chapter with joint authorship is reviewed under a separate heading (Miljus & Andrisani, 1978).

CHAPTER 2. "DIFFERENCES BETWEEN SATISFIED AND DISSATISFIED WORKERS IN SUBSEQUENT LABOR MARKET EXPERIENCE."

Thesis:

The author examines the impact of job satisfaction on subsequent labor market experience, including occupational advancement.

Data:

National Longitudinal Survey data for all four demographic groups. Data are restricted to persons employed full-time as wage and salary workers at the initial and later survey dates; and for youth, to persons not enrolled in school at the initial survey date. (p. 14, 16)

Method:

Job satisfaction is measured using the individual's response to a single question, "How do you feel about the job you have now? Do you (1) like it very much? (2) like it fairly well? (3) dislike it somewhat? (4) dislike it very much?" (p. 11) Job satisfaction refers to the job held at the initial survey date. Occupational advancement is measured by the change in Duncan score between the occupations of initial and later job. The method used is multiple regression analysis with occupational advancement as the dependent variable, and job satisfaction and variables controlling for individual differences in educational attainment, formal occupational training, firm-specific on-the-job training, general on-the-job training, health, marital status, region of residence, and degree of urbanization in local labor markets. (p. 17) The Duncan score of the respondent's initial occupation is also included. The regression model is tested separately for whites and blacks in each of the four NLS cohorts.

Results:

(1) The overall lack of significance of the job satisfaction variable in the model suggests that "there is not much evidence that job dissatisfaction leads to below average advancement in occupational attainment." (p. 17)

(2) For blacks, the regression coefficient was significant and positive for every cohort, indicating that dissatisfied black workers were more likely to advance occupationally than their more satisfied counterparts. The authors suggest that this may result from the dissatisfied worker's greater tendency to change employers.

(3) For whites, the regression coefficient was not significant for any cohort, and had a negative sign for all cohorts except young men.

(4) The author reformulates the model to disentangle the effects of change of employer and job dissatisfaction on advancement, citing other evidence that employer changing often results in advancement (Kohen, 1975; Leigh, 1976; Parnes & Nestel, 1975). The model is modified by adding a dichotomous independent variable for employer change.

In the new equation, regression coefficients for the job satisfaction variable remain insignificant for all white cohorts except young women, where a significant negative coefficient appears. For blacks, the coefficient is significant for all cohorts but young men, and has a positive sign. (p. 24) These results, along with the earlier equations, provide evidence of disparities in the occupational advancement that occurred whether or not the worker changed employers. For young black men, virutally all of the above average advancement of the dissatisfied observed earlier is linked to their greater incidence of employer change, and nearly half the advancement of young black women is attributable to employer change. (p. 23, 26) For young white women, the earlier results show no significance effect of for satisfaction on advancement, perhaps because of the greater employer mobility of the dissatisfied. When employer changing is controlled in the model, however, the results suggest that the dissatisfied experience less advancement than the satisfied, and that the advancement they did experience was the result of employer changing.

(5) The author further controls for employer change by testing regressions separately for employer changers (movers) and stayers in each cohort and race. He suggests two reasons to expect greater advancement among dissatisfied movers than satisfied movers: that the dissatisfied may have changed employers earlier in the period and thus had more time to advance with their new employers; and that dissatisfied workers may be further from their 'equilibrium' or optimum occupation level, and thus have greater room for advancement (p. 27).

Among workers who did not change employers, white men in both age cohorts and young white women who were dissatisfied were less likely to advance than the more satisfied stayers. The difference in advancement for the young cohorts was 6-9 points on the Duncan scale. (p. 29)

Among employer changers, there is no evidence that the dissatisfied subsequently advanced less in terms of occupations. (p. 29) On the contrary, there is considerable evidence that the dissatisfied movers were more likely to advance than were satisfied movers, especially among older cohorts. Among black changers, except for young women, and among older white women, the dissatisfied movers gained 7-10 points on the Duncan scale over satisfied movers. (p. 29, 38)

(6) The regression model is further modified to examine differences in the impact of job satisfaction on advancement among workers of different initial earnings and occupation level. Dissatisfied workers are shown to be found disproprotionately in lower paying, lower status jobs. (p. 31-39)

The new model indicates that advancement is influenced to some extent by initial wage and status disparities between comparable satisfied and dissatisfied workers (p. 43). The regression coefficient for the job satisfaction variable, when initial occupation and earnings are controlled, is significant and negative for young whites and significant and positive for black females. (p. 44) The author concludes that the greater advancement of dissatisfied workers in several subgroups (mainly blacks) among those who changed employers may not be accounted for entirely in terms of wage and status disparities between comparable satisfied and dissatisfied workers.

Limitations:

(1) Limitations of the single-question measure of job satisfaction.

(2) Problems of multicollinearity are not discussed.

(3) Exclusion of self-employed workers may bias the results.

CHAPTER 4. "INTERNAL-EXTERNAL ATTITUDES, PERSONAL INITIATIVE, AND LABOR MARKET EXPERIENCE."

Thesis:

This chapter expands on the examination of the effect of internal-external control, as a measure of personal initiative, on subsequent labor market experience, including occupational advancement. See description of thesis for the author's earlier work (Andrisani, 1977).

Data:

National Longitudinal Surveys for three of the four cohorts (all except young women). Data include only persons employed full-time as wage and salary workers at initial and labor survey dates, and for young men, those not enrolled in school at the initial date. (p. 120)

Method:

The internal-external control variable is measured by the respondent's score in an 11-item version of the Rotter scale, with lower scores indicating more internality. The variable is further refined by decomposition into two dimensions: a personal control dimension and a control ideology dimension. The personal control dimension measures the attitude that success is thought to be within one's own power, and is thought to reflect the individual's perception of payoffs to initiative. (p. 108) Personal control is measured using the four 'first-person' items in the abridged Rotter index. (p. 110) The control ideology dimension measures the extent to which the individual holds cultural beliefs about personal effort as the determinant of success, as opposed to the individual's perception of their own efficacy. (p. 108) Control ideology is measured using the seven 'third-person' items on the abridged Rotter index. (p. 111)

Occupational advancement is measured by change in the Duncan score of the respondent's initial and later occupations. Multiple regression models similar to those used in Chapter 2 are utilized, substituting the various Rotter indexes and interaction terms for the indexes for the job satisfaction variable.

Results:

(1) Only slight differences among the subgroups in overall responses to the attitude measures are observed. The lack of age differences is consistent with the assumption in the psychological literature that internal-external attitudes are relatively stable in adulthood. Blacks tended to be somewhat less internal than whites, particularly on the personal control measure, but differences are quite small.

(2) In general, the results confirm that the distinction between personal control and control ideology is crucial, particularly for young men, about whom vastly different conclusions would be drawn depending on which way the attitudes are measured. Vastly different conclusions on the relative importance of initiative for whites and blacks would also emerge. (p. 119)

(3). The results for the personal control measure for men are those reported in the author's earlier work (see review of Andrisani, 1977). For older women, whites with more internalized scores were more likely to advance than their more external counterparts, and magnitudes of advancement are similar to those found for the white male cohorts. (p. 126) The personal control measure was not significant for black women, however. (p. 123)

(4) The regression model is reformulated to analyze internal-external control as an *outcome* of labor market experience (experience variables become independent variables, changes in the control measures, dependent). These equations indicate, first, that control measures changed very little between the two survey dates and, second, that changes that did occur, especially for personal control dimension, tend to correlate with individual labor market experiences. Occupational advancement, however, had a significant effect only in the control ideology of white men. (p. 128-129)

Limitations:

(1) Methodological problems concerning the relative high measurement error associated with short scales, the difficulty of regression toward the mean, and multicollinearity introduce biases in the results. (p. 129, 132)

(2) The influence of workers' expectance of certain labor market experiences, and differences in their vulnerability to labor market downturns are likely to have effects on the relationships between attitudes and experiences that are not measured in the data. (p. 132)

(3) Exclusion of self-employed workers may bias results.

CHAPTER 5. "WORK ATTITUDES AND LABOR MARKET EXPERIENCE: OTHER FINDINGS"

Thesis:

Work attitudes measured on the survey, other than job satisfaction and internal-external control, are examined for their effects on labor market experiences, including occupational advancement.

Data:

National Longitudinal Surveys for all four cohorts. Data include only workers employed full-time as wage and salary workers at initial and later survey dates, and for youth, those not enrolled in school at the initial survey date. (p. 139)

Method:

Multiple regression models similar to those in earlier chapters are used. Occupational advancement is, again, measured by change in Duncan score of initial and later occupations. Work attitudes analyzed include, for older men, work commitment (attachment to the labor force regardless of financial need), and preferences for noneconomic versus economic rewards; for young men, occupational aspirations, expectation of achieving one's goals and preference for noneconomic rewards; for older women, attitude toward one's work role, attitude toward propriety of working mothers, spouse's attitude toward one's work role, attachment to employer, and preference for noneconomic rewards; and for young women, attitude toward propriety of working mothers, commitment to work, and preference for noneconomic rewards. (p. 142-143)

Results:

(1) Neither commitment to work nor preference for noneconomic rewards is seen to have a significant effect on occupational advancement for older men. (p. 146-148)

(2) Among white young men, higher occupational aspirations are associated with greater subsequent advancement; no significant relationship is found among young black men. (p. 149)

(3) Both white and black young men who were confident of their chances of success advanced more than their less confident counterparts. (p. 149)

(4) Preference for noneconomic as opposed to economic rewards had no effect on advancement of young men of either race. (p. 149)

(5) For white older women, husband's opposition to their working had a negative effect on advancement; a similar relationship was not apparent for blacks. (p. 150)

(6) Commitment to work had a significant positive effect in advancement of black women, but no effect for whites. (p. 160)

(7) White women who worked and were favorably disposed toward the propriety of working mothers were slightly less likely to advance than comparable women with a more conservative attitude. No similar relationship was observed for blacks. (p. 157)

(8) Among black young women, the more committed to work were likely to advance occupationally, a relationship that appears to be unrelated to the woman's beginning occupation status. (p. 168)

Limitations:

(1) Problems of multicollinearity are not discussed.

(2) Exclusion of self-employed workers may bias the results.

4. Andrisani, P.J., and Nestel, G. *Internal-External Control and Labor Market Experience.* (1975)

Thesis:

The influence of internal-external control on a number of labor market behaviors is examined. The greater the perceived relationship between individual initiative and success, the more worthwhile initiative becomes and the more likely it is to be demonstrated. (p. 198) Demonstrated initiative is also hypothesized to pay off in terms of improved occupational status and other labor market benefits.

Data:

National Longitudinal Survey data for mature men is used.

Method:

The Rotter Internal-External Control Scale, administered in a shortened version on the 1969 and 1971 surveys, is used as the measure of internal-external control. The lower the scale (range is 11 to 44), the greater the individual's "internality" or perceived individual control over events and association of success with individual effort. Internal-external control is examined as a contributor

to labor market success, including occupational advancement measured by increase in occupational status (Duncan index) from 1969 to 1971. Internal-external control is also examined as a *result* of labor market experience. Analysis is through regression analysis relating change in occupational status (dependent variable) to the Rotter scale and other independent variables (education, training, health, job tenure, age, marital status, region of residence, and city size). Regressions were tested for all workers by race, and for workers with the same employer in both 1969 and 1971, by race.

Results:

(1) Regressions for whites with change in occupational status as dependent variables produced expected negative regression coefficient was not significant. (R^2=.076, .072)

(2) Regressions for blacks produced unexpected positive regression coefficients for the Rotter scale, with t-ratios much closer to statistical significance than those for whites but still insignificant (t = 1.89, 1.66). (R^2 = .093, .100)

Limitations:

(1) The authors caution against too readily accepting the null hypothesis that individual differences in initiative are unrelated to advancement in occupational status. The lack of expected results may reflect the brevity of the study period, the state of the economy during the period (1970 recession), the age of the sample, and methodological problems. (p. 212)

(2) As later noted by one of the authors, this study improperly utilizes the Rotter scale as though it were unidimensional to compare its observed effects among different demographic groups. The Rotter scale is in fact multidimensional, and the distribution of one of the dimensions across demographic subgroups may be much different than the distribution of another dimension. (Andrisani, 1978, p. 108). For analysis of the effect of two dimensions of the Rotter scale on labor market experience, see review of Andrisani, 1978.

5. Blau, P.M. *The Flow of Occupational Supply and Recruitment* (1965).

Thesis:

The author seeks to examine the occupational structure of the society by examining the relationship among occupational substructures. Occupation groups are thought to differ in the extent to which they supply manpower to other groups and to which they 'recruit' manpower from other groups, either across or within generations (p. 475). The flow of manpower between groups is seen as resulting, ultimately, from technological developments and shifts in economic demand. However, more mobility than that needed to meet these needs is observed, and this residual mobility provides information on the conditions for upward mobility in society. Intergenerational mobility patterns are seen as restricting intragenerational mobility to the extent that social homogeneity within groups lessens the tendency of workers to change groups. (p. 476). Hence, it is hypothesized that the heterogeneous social composition tends to lessen solidarity of the group and increase mobility out of the group.

Data:

Occupational Changes in a Generation survey data, including men 20-64 years old in 1962. Occupational detail is limited to 17 groups, plus a residual group for various types of non-respondents (p. 476).

Method:

Transition tables showing movement from first to current occupation, as well as intergenerational mobility, are developed. Nonrandom movements are analyzed using Rogoff's (1953) mobility index.

Results:

(1) Considerable intragenerational mobility in excess of that expected to occur by chance is observed. Excess upward movements exceed excess downward movements by two to one, and short-distance movements predominate. (p. 481) Exceptions to this pattern occur along industrial lines, suggesting that movement within the industry (e.g., manufacturing to construction). (p. 482)

(2) Two special cases are noted. Men who started their careers as farmers, in sharp contrast to those starting as non-farm laborers, are unlikely to move into any non-farm occupation except skilled craft work. Second, self-employed management is disproportionately recruited from all skilled and semi-skilled manual occupations. (p. 482)

(3) The only occupation groups that supply excessive manpower to seven or more other groups are the three laborer groups (farm, manufacturing, and other nonfarm). The three groups which supply the fewest workers to other groups are the professional groups (self-employed and salaried) and farmers. (p. 486)

(4) Four types of supply-recruitment patterns are found: (1) distributors (salaried management and retail sales groups) supply workers to many other groups and recruit from many groups, (2) producers (farm laborers) supply workers but recruit very few, (3) consumers (proprietors) recruit many workers but supply very few, and (4) self-contained (farmers) neither supply nor recruit many workers. (p. 486)

(5) Heterogeneity of the groups, as measured by the diversity of fathers' occupations for men in the group at their first job, is shown to be correlated with the diversity of occupations to which the group hypothesis of 'solidarity'. (p. 488)

(6) Downward mobility is seen to be limited by two "semi-permeable boundaries", i.e., between manual and nonmanual occupations and between boundaries is disproportionately low.

Limitations:

Mobility patterns are distorted by the use of first job versus current job information (see comments for Kohen, 1973).

6. Britt, R.D. *New Jobs and Labor Mobility in Depressed Areas* (1966).

Thesis:

The author examines the operation of the labor market when job opportunities are introduced into depressed areas; by studying the characteristics and work histories of employees in new plants in such areas. (p. 2) Occupational mobility is examined as one measure of labor supply flexibility. (p. 117).

Data:

Data are from a 1964 survey of 1,262 employees in 33 new plants and new branch plants associated with the Federal Area Redevelopment Program (Miernyk & Britt, 1965). Most plants were in manufacturing and tended to be in the Great Lakes region (p. 2), and all were in areas defined as

'depressed' under regulations for administering the Area Redevelopment Act of 1964. Occupational mobility is defined as movement from one 3-digit Census occupational category to another (p. 153). Change of industry and employer (job mobility) were also measured.

Results:

(1) Both occupational and industrial shifting declined with increasing age of worker. Men changed occupation, industry, and employer more frequently than women. (p. 93)

(2) All three types of mobility were highest among workers with 1-3 years of college and lowest among college graduates. (p. 93)

(3) All three types of mobility were less frequent for managerial, craft occupations, and foremen than for other occupation groups. (p. 93)

(4) Occupational changing was somewhat more frequent in larger labor market areas, while job (employer) mobility was much more frequent in smaller areas. (p. 96)

(5) Persons experiencing unemployment changed occupations more frequently than those with no unemployment experience. Mobility increased with the length of the unemployment period, and declined after 52 weeks of unemployment. (p. 97)

(6) Shifts in occupation frequently represented upgrading of employment to higher skill levels. Nearly half the respondents changed major occupation group (p. 98-99)

Limitations:

(1) Results applicable only to a limited labor market segment--workers in new plants, mostly manufacturing, in depressed economic areas.

(2) Analysis limited to cross-tabulations of data, and no analysis of sampling variability is provided.

7. Bryne, J.J. *Occupational Mobility of Workers* (1975).

Thesis:

Presents occupational mobility data from a 1973 Current Population Survey. Data are compared with earlier CPS results, and examined for relationships between mobility and demographic characteristics, flows among occupation groups, and job and industrial mobility.

Data:

Retrospective occupational mobility item, Current Population Survey, January 1973. Data represent occupational change from January 1972 to January 1973.

Results:

(1) Levels of mobility are, overall, similar to those reported in the 1966 CPS (Saben, 1967). Differences for race and sex groups are examined in relation to changes in the age composition of the groups between 1966 and 1973. Changing age composition is found to explain about one-third of the observed increase in mobility among women. Age changes for men, however, tended to mask the observed decline mobility levels. Declines in mobility rates were greater for black men. (p. 53)

(2) Relative to 1965, a substantially smaller proportion of occupational changes in 1972 took place within a single firm. The proportion of mobile workers remaining in the same firm declined from 19.1 percent to 9.5 percent for men, and from 12.6 to 7.0 percent for women. (p. 54)

(3) Mobility rates declined with increasing age. (p. 54)

(4) Sex and race did not exhibit clearcut relationship with mobility rates. (p. 54)

(5) Single workers were more mobile than married workers. This difference, however, disappears when data are examined by age group. (p. 54)

(6) Mobility rates were highest for persons with 1-3 years of college and lowest for those with 8 or fewer years of school completed. (p. 55)

(7) For men, the low mobility rates were for occupation groups requiring large investments in training and experience (professionals and managers), and highest for relatively untrained groups (nonfarm laborers, operatives, sales and service workers). Farmers had the lowest rate. Similar occupational patterns are observed for women.

(8) Transition tables showing occupation in 1973 by occupation in 1972 are presented for each sex. Mobility generally occurred either within broad occupational groups or between closely related groups. (p. 56)

(9) 'Mobility ratios' controlling for the size of the flows among occupations were calculated, and indicate that observed flows are not random.

(10) Three generalizations are made concerning occupational and job (employer) mobility:

(a) Most workers changed neither occupation nor employer,

(b) workers who changed occupation were likely to also have changed employers, and

(c) workers who changed employers were almost as likely to have kept the same occupation as to change occupations. (p. 57)

(11) Relationships between employer and occupational mobility varied by occupation group. For men, occupation changing along with employer changing was much less likely for professionals than for clerical, operative, or laborer groups. (p. 57)

(12) About 80 percent of occupation changes also changed industry, and this proportion did not vary much by sex or occupation group.

Limitations:

Limitations of Current Population Survey data. See Appendix 2.

8. Coleman, J.S.; Blum, Z.D.; & Sorensen, A.B. *Occupational Status Changes for Blacks and Nonblacks During the First Ten Years of Occupational Experience* (1970).

Thesis:

The authors note that while the status of a man's first full-time occupation has been observed as a determinant of his later occupational status, first occupation explains only a portion of labor status. They proceed to analyze the influence of intervening factors, i.e., developments occurring between the time of entering first occupation and some later date, as additional determinants of labor status. (p. 1-3)

Data:

Data are from two samples of the total populations of black and nonblack men 30-39 years old in 1968. (Blum et al., 1969) The sample provides retrospective work histories, including occupation of first full-time job held after last leaving full-time-education and occupation of the job held 10 years earlier. (p. 47) N=1250

Method:

Multiple regression analyses are performed to identify the impact of different types of variables on status of first occupation, and status of later occupation. Variables are basically of four classes: background variables characterizing family orientation (e.g., fathers' education and occupation); variables on individual characteristics (educational attainment, military service, illness, prison, marriage) prior to first job; status of first occupation; and factors intervening between first job and 10 years later. Interviewing variables, in term, are of four types: labor market experience (part-time work, military service, unemployment, number of jobs held); educational (part-time education, on-the-job training, increase in educational attainment); marital and family (marital status, birth control practices, number of children, wife's labor force participation); and residential (number of moves, military status, movement between North and South). Variables are used in both dichotomous form and as levels. Background and pre-first job characteristics are analyzed as determinants of the status of first job, and all variables are analyzed as determinants of later job status.

Results:

(1) Initial data presentations show that beginning job status and overall change in job status were higher for non-blacks than for blacks. (p. 7-8)

(2) Background variables and pre-first job characteristics are seen to be correlated with later job status, and to have larger correlations with later job than with first job for nonblacks, and the inverse for blacks. This is interpreted as the result of greater efficiency and persistence for non-blacks of these variables as determinants of occupational status. (p. 29)

(3) Regression equations of the variables against status of later job indicate several differences between races. Family background remains important for nonblacks, but less so for blacks, compared with its importance in determining initial occupation status. Marriage before the first job increases subsequent status, but more so for blacks. (p. 33-34)

(4) Major variables are educational attainment and status of first job. Educational attainment prior to first job has more influence on later status than any other variables of both races. Its effect is not much different for blacks than for nonblacks, in contrast to its effect on status of first job. (p. 34)

(5) Regressions including variables for intervening events show that educational activity is the most significant intervening event for both races. For nonblacks, 'occupational' events (properly termed 'labor market experiences') are next most important, followed by marital and family variables and residential movement variables. Marital and family variables are second most important for blacks, followed closely by 'occupational' variables. Residential movement contributed little. Overall, the addition of interviewing event variables increased the explanatory power of the models, as measured by R^2 (R^2 changed from .397 to .453 for nonblacks; .290 to .339 for blacks). (p. 40, 42)

(6) Among intervening variables, part-time education was of most importance to both races and is of about equal importance to each. For blacks, amount of on-the-job training and unemployment experience had next most important effects, positive and negative respectively, on status of later

job, followed by length of time practicing birth control and number of children (both negative). Overall, the effects of the intervening variables are generally as great for blacks as nonblacks, and in some cases greater, particularly for educational activities. (p. 40-41)

(7) Status of first job, educational attainment at end of full-time education, and fathers' occupational status (all background variables) had greater influences on later status for blacks than nonblacks, indicating a greater carry-over (persistence) of these variables for blacks. (p. 43)

(8) When controlling for differences in operation of variables due to differences in levels between the races, nonblacks have greater later job status solely because of greater efficacy of their resources, not because of differences in levels of resources. The greater efficacy, however, appears to be confined to background factors and does not expand to intervening variables. (p. 45)

Limitations:

(1) Problems of response error resulting from the long retrospective periods involved (up to 20 years for some sample members) are not noted, but are likely to be serious.

(2) Problems of multicollinearity are not noted. These problems are likely to place severe constraints on the validity in the method, since in the regression models for later occupational status, both dependent and independent variables of the status of first job models are included as independent variables. A two-stage regression model or some other procedure would be less questionable.

9. Cournoyer, P., & Sum, A. *Occupational Mobility of Workers in Massachusetts: An Analysis of Factors Influencing Movement of Workers Out of Low Wage Occupations, 1965-1970* (1978).

Thesis:

The authors seek to provide some insights into the factors, including human capital variables, that determine why some workers successfully move out of low wage occupations while others do not (p. 1). Mobility patterns are seen as means of testing the dual labor market and the human capitalist theories of labor market operation.

Data:

1970 Census of Population occupational mobility item and worker characteristics. Special file drawn from Public Use Samples is limited to workers residing in Massachusetts in 1970 and working in low-wage occupations ($7,800 or less for full-year workers) in 1965. Excluded persons with high 1970 education levels in an attempt to exclude individuals working temporarily at a low-wage job in 1965 while attending college. Final data file included 6,287 persons.

Method:

Occupational mobility is defined as movement from a low-wage occupation to a high-wage occupation. Movement from low to high wages is seen as movement from the secondary to the primary labor market segments. Low-wage occupations are defined as those with median earnings of $1,200 less than the median of $9,000 for all workers (p. 3). Mobility is treated as a dichotomous variable. Multiple regression equations were calculated to measure the effect of human capital variables and labor market segment variables on the individual's probability of being mobile.

Results:

(1) *Human Capital Model.* This model related mobility to independent variables for sex, race, age, marital status, vocational training status, and educational attainment. Test included only workers with 12 or fewer years of education in 1970 and low-wage employment in 1965. This model, as all the other models, produced very low coefficients of determination ($R^2 = .082$). Variables for sex, race, age, formal education, and vocational training were statistically significant and had the expected signs for regression coefficients (all positive except for age). The variable for black race was insignificant, while that for "other nonwhite" was significant and negative.

When tested separately for men, this model produced similar results, except that the marital status variable became significant and positive. The regression coefficients for educational attainment and vocational training doubled in size. ($R^2 = .07$)

When tested for young men (17-22 years old in 1965) in low-wage occupations in 1965, variables for marital status, educational attainment, and vocational training were significant and positive. Age became insignificant, and both race variables were insignificant. ($R^2 = .076$)

(2) *Human capital model plus industry variables.* This model repeats model 1 with the addition of dichotomous variables indicating 1965 employment in one of twelve broad industry groups. The purpose is to test the dual labor market proposition that certain industries are characterized by different internal occupational ladders; the model also is used to test the strict human capital view that the characteristics of the person and not of the establishment are primarily responsible for labor market success (p. 7). The human capital variables remained significant; only three industry variables were significant (business repair services, public administration, and the finance section), all with negative coefficients. ($R^2 = .08$)

When tested for men only, none of the industry variables in the model were significant ($R^2 = .072$). For young men, however, four industry variables had significant coefficients: wholesale trade and finance (negative), and business and repair services and public administration (positive). ($R^2 = .08258$)

(3) *Hybrid Model.* This model included human capital variables from model (1) plus a set of variables representing 1965 employment in "guild unstructured, and manorial industries." The industry variables, based on Alexander (1974), are used to represent types of internal markets: guild industries have horizontal markets (movement among firms, but within a craft or industry), while manorial industries have vertical markets. The authors add a "miscellaneous" category which includes 58% of the low-wage workers in the sample (p. 10). This model produced significant regression coefficients for human capital variables, but not for industry variables. ($R^2 = .08125$) Similar results were found when the model was tested for men only ($R^2 = .07039$) For young men the model produced significant but negative regression coefficients for all three of Alexander's industry groups, while the manorial group was hypothesized to show a positive relationship to mobility ($R^2 = .08597$).

Human capital variables are seen to have consistent, significant effects on occupational mobility of all three groups low-wage tested (all worker males and young males). Higher levels of educational attainment and completion of vocational training both increased the probability of moving out of low-wage occupations. Of the personal attributes examined, being married, older, and male increased mobility likelihood, while race was surprisingly found to be insignificant (consistent with Leigh, 1975). The labor market segmentation variables, on the other hand, showed no consistent relationships, perhaps because they were too broadly specified (p. 14, 15).

Limitations:

(1) Data limited to Massachusetts residents.

(2) Earnings information used to identify low- and high-wage employment were for the occupations, not the individual, which may misrepresent actual changes in earnings over the period (p. 4).

(3) Labor market segment variables are too broadly defined (p. 14-15).

(4) Models explain very small proportions of the probability of moving from low- to high-wage occupations. Coefficients of determination are all below .09.

(5) Insignificant results for race may reflect the census undercount for nonwhite persons (p. 16).

(6) No discussion or measures of multicollinearity are included.

10. DauffenBach, R.C. *The Structure of Occupational Mobility in the U.S. Economy* (1973):

Thesis:

The author seeks to identify mobility-related groups of occupations through a neutral methodology. These groups provide a basis for testing the "job family" basis of occupational classification, and provide information on the nature and kind of families of jobs. The theoretical approach to labor market dynamics through occupationsl mobility is provided by occupation system theory, a synthesis of vocational development theory and theories of labor market structure in conjunction with the job family hypothesis (p. ii). The job family hypothesis states that "numerous categories of occupations naturally partition into distinct sets or sub-structures such that occupations within each substructure are interrelated by significant, systematic, and non-random patterns of workers' movement."

Occupation system theory integrates the labor supply aspects of vocational development theory, the labor demand aspects of labor market structure theory, and the technological emphasis of the job cluster concept. (p. 43) The theory may be summarized as follows: the first-order dimension of the occuaption system is the segmentation of the labor market into sub-markets brought about by the interaction of institutional and economic forces, with the vocational development process. The second-order dimension takes cognizance of the role of technology in further compartmentalizing the occupation through creation of job clusters. (p. 47)

Data:

Occupational mobility item from the 1970 Census of Population, extracted from one-percent Public Use Sample. Data included only persons employed in either 1965 or 1970, or both, who were at least 21 years old in 1970. N = 2 million. (p. 148-150)

Method:

Data were distributed into a 309 x 305 order matrix (1965 work status and occupation by 1970 work status and occupation). Detailed (3-digit) occupations, with some collapsing, were used. Persons not reporting a 1965 occupation but reporting 1965 employment were assumed to be distributed by 1965 occupation in the same manner as reporters (p. 151). Data in this format is treated as providing a probability transition matrix for the entire work force, for the continuous working population or for persons changing work status and occupation, depending on the treatment diagonals and non-work status rows and columns in the calculation of probabilities.

For examining transfers out of 1965 occupations, only the continuous working population is used (p. 12); while for transfers into 1970 occupations, only status changers are used (p. 122). In Chapter V the author develops the basic methodology for identifying occupation clusters from the data matrix. A distance model of clustering was chosen for measurement of agreement between egressive (movement out) and ingressive (movement in) distributions of all occupational pairs. (p. 123) Occupations are viewed as points on a multi-dimensional matrix space with each mobility coefficient providing the projection of a given occupation point on a given occupation axis. (p. 133) Johnson's Hierarchial Cluster Analysis (diameter method) is used to classify occupations into homogeneous groups on the basis of empirical measures of dissimilarity provided by the distance model. (p. 134, 139)

Results:

(1) A ranking of the mobility probabilities for off-diagonal elements of the matrix is used for preliminary analysis of mobility structure. One particularly dominant hierarchical flow pattern noted is movement into "managers and administrators, salaried; twenty of the highest coefficients reflected movement into this occupation. This occupation also has a relatively low retention rate and high rates of movement into self-employed managerial categories.

(2) The preliminary examination points up the critical difference between hierarchical flows of workers and recruitment dependence. Flows into a particular occupation from another occupation may be small relative to the total employment in each occupation, but represent a significant proportion of new entrants (high recruitment dependence) to the new occupations. Other general observations from the preliminary analysis include: (1) the extent of mobility is inversely related to the career status (specialization, high skill level) of the occupation; (2) occupational movements are a major source of recruits, while entrance rates from nonwork status are high and extremely variable among the occupations; (3) the structure of mobility seems weak, as evidenced by generally small off-diagonal coefficients; and (4) the highly structured patterns observed indicate hierarchical as opposed to reciprocal interrelationships. (p. 167-170)

(3) The application of the distance model and clustering methodology lead to the overall conclusion that the structure of occupational mobility displays a level of rationality and purposiveness consistent with occupation system theory and the job family hypothesis. (p. 173) The methodology identifies many clusters which, on subjective examination, appear reasonable, and are seen as a 'striking' confirmation of the job family hypothesis and consistent with occupation system theory. Mobility patterns are also seen to offer evidence of labor sub-markets. (p. 175-186)

(4) Occupations with common recruitment dependencies on nonwork status tended to cluster together. (p. 186)

(5) With respect to the volume of mobility, for example, many occupations exhibit the characteristics of youth-type jobs: low retention rates and relatively high dependence on non-work status as a source of recruits. Female-type occupations display strong interaction with non-work status which can be predicted from their career patterns (greater freedom of substitution of market work, homework, and leisure). Professional occupations have higher than average retention rates and recruit heavily from high quality new entrants. Other career status occupations (foremen, managers) depend on recruits with previous job experience, as would be expected. (p. 197)

(6) With respect to patterns of movement, there is a distinct hierarchical flow (promotion). Movement tends to be from broadly defined, low-skilled job categories to narrowly defined and specialized types. In accordance with labor market structure theory, the empirical findings suggest the existence of skill-graded submarkets and port-of-entry occupations. The cluster analysis results

indicate the influence of technology versus socioeconomic status as a determinant of the structure of occupational mobility. The breadth of the job clusters is, predictably, inversely related to the degree of specialization of the technological form: Specialization is directly opposed to transferability and substitutability. Since there are several technological forms, it is not surprising to see several job clusters. One has the impression that if cross elasticities of supply and elasticities of substitution between all possible pairs of occupations were known (if, indeed, they can even be measured), the results would be congruent, in the main, to those of this study. (p. 197-198)

(7) The author views the data as exhibiting important facets of 'structure' but lacking in 'concentratedness', i.e., mobility structures are observed but they are not very strong. Clusters are not so tight that all movement is within the cluster. From the narrowness of the clusters and the small size of coefficients, it follows that most movements are not internal to the clusters for all but the very largest values of clusters. (p. 199)

Limitations:

(1) No characteristics other than the mobility patterns of the occupations are considered.

(2) Inclusion of all age and sex groups in the data may have a weakening effect on the clusters. Exclusion of youth, for example, would remove some of the random movement among occupations and perhaps reveal stronger clustering patterns. Application of the methodology to different demographic groups would be useful.

11. Gottfredson, G.D. *Career Stability and Redirection in Adulthood* (1976)

Thesis:

Empirical evidence examined for relationship to developmental theories of career adjustment: "that typical careers may initially be unstable but become more stable with advancing age, and that career stability is fostered by work environments that make convergent demands on a worker." (p. 1) The goal is to "examine the stability of careers by classifying psychologically related careers together. Not all occupational shifts are major shifts in the kind of work done or on the demands made on a person by the job." (p. 2)

Data:

1970 Census of Population occupational mobility data for detailed occupations, tabulated from 1,000 public use sample, by age and sex; excludes "allocated" occupation groups. No mention of treatment of nonrespondents to occupation in 1965 item (presumably excluded). (N = 45,000)

Method:

Census data are recoded into Holland's six environmental types, which provide the structure for distinguishing major and minor occupation changes. Data were also recoded into D.O.T. general education levels. Statistical method used to summarize agreement beyond chance between two points in time is Cohen's Kappa (k). People whose occupations at both times were in the same Holland category were considered stable (p. 4); people working in inconsistent occupations, as defined by Holland's hexagon, are expected to make more substantial shifts than people working in consistent occupations. (p. 7)

Results:

(1) Career stability increases markedly up to about the middle 30s, continues to increase at a slower rate up to about age 50 or 60, and remains high up to age 70. (p. 4) This result is examined for possible explanations:

(a) Does observed stability reflect the tendency of workers to stay in the same occupation? (p. 5) Examination of data for occupation changers only showed that occupation changers tended to stay in the same Holland category, i.e., tended to be stable. Youngest age group less stable than older workers.

(b) Is observed stability the result of workers being unable to change levels of work? (p. 6) Examination of data for individuals employed in occupations with different G.E.D. levels shows that occupational change for these workers still tended to be stable with respect to Holland's categories, although not as stable as for all occupation changers or all workers. Workers over 30 are more stable than younger workers.

(2) For men, the results indicate greatest categorical stability for workers with initial (1965) jobs of high consistency, and lowest stability for those with initial jobs of low consistency. (p. 7) The results for women are similar, except reversals for high and medium consistency initial occupations for the 31-35 and 51-55 year old age groups. (p. 8)

(3) The most common type of shift between Holland categories for 41-55 year old men was from 'realistic' to 'enterprising', generally from technical occupations to those involving managerial, supervisory, or persuasive work with people (p. 8). Women moved most frequently from 'realistic' to 'conventional' and also showed a small net shift to 'enterprising' occupations.

Limitations:

(1) Limitations inherent in census data (see Appendix II).

(2) Inability to examine effect of different experience of age cohorts that may affect stability. (p. 8)

(3) Data excluded persons not reporting 1970 occupations, and presumably excluded those not reporting 1965 occupation. Greater than coverage instability may be likely among excluded groups.

(4) Holland's job types are very broad, and most workers fall in the realistic category. Which the classification may be useful for identifying very general trends, its use as a measure of stability masks career instability and redirection problems of workers remaining in the same category. (p. 11) It also masks changes in job levels within categories. (L. Gottfredson, 1978, p. 26)

(5) Assignment of G.E.D. levels to Census occupational categories is a weak procedure, given the absence of definitions for Census data. See Bureau of Labor Statistics, 1975. Cottfredson relies on Viernstein (1974) for the assignments.

12. Holland, J.L.; Sørensen, A.B.; Clark, J.P.; Nafziger, D.H.; & Blum, Z.D. *Applying an Occupational Classification to a Representative Sample of Work Histories* (1973).

Thesis:

The study is an empirical test of Holland's personality type classification of occupations and his theory of career stability. Two hypotheses are examined: (1) that the personality type of a man's first job can be used to predict the category of his later jobs (same category expected), and (2) whether men in some categories achieve more than men in other categories. (p. 34)

Data:

A 1968 survey of retrospective histories of men 30-39 years old was used. (N=973) The census 3-digit occupation codes were assigned to Holland categories; the six main categories are used, along with eleven subcategories for the Realistic type. Rogoff's (1953) mobility index was used to test whether the observed movement from one category to another is different from the movement expected by chance.

Results:

(1) Evaluation of transition tables for 5-year and 10-year retrospective work histories revealed much higher than random stability, or remain within the same category. (p. 36)

(2) Transition tables for the Realistic group subcategories also showed higher than random stability, (p. 36). Additionally men in 'consistent' subcategories displayed more stability than those in 'inconsistent' categories. (p. 38) Men in 'inconsistent' categories tended to display more instability the longer the work history analyzed. (p. 39)

(3) In testing the second hypothesis, correlations of observed and expected prestige, income, and education attainment were found to be sufficiently high to allow authors to conclude that the prestige of a man's job, his income, and level of education can be predicted from the Holland code of his first full-time job, or from the transitions in his work history (p. 39).

Limitations:

(1) Small sample sizes preclude further analysis of subcategories (p. 39).

(2) Methods for evaluating the second hypothesis are obscure.

13. Johnson, D.B., and Stern, J.L. *Why and How Workers Shift from Blue-Collar to White-Collar Jobs* (1969).

Thesis:

Several research questions are posed: Does a shift from blue- to white-collar employment happen because the worker is in the right place at the right time? Are there particular skills which enable an individual to shift easily? Do certain job paths lead logically from blue- to white-collar jobs? Do shifts take place mainly within the firm or across establishment lines, or an inter-industry basis? (p. 8)

Data:

A 10% probability sample of Milwaukee county, Wisconsin, employers covered by unemployment insurance was surveyed to identify male workers hired or promoted into white-collar jobs during the 2-year study period, the number of those men who had at least 1 year of blue-collar experience in the preceding five years, and the total number of men in each white-collar occupation. This data was used to provide a sample of 452 men who had shifted from blue-collar to white-collar work; these men were interviewed to obtain job histories and other data. (p. 7)

Method:

Analysis of percent distributions.

Results:

(1) About one-fifth of the men hired or promoted into white-collar jobs had a year or more of blue-collar experience. (p. 7)

(2) Most blue- to white-collar shifters came had fathers who held blue-collar jobs, most shifted at an early age (averaged 31 years), most had completed high school and were married. About one-third had some full-time higher education or other post-high school training. (p. 7-8)

(3) Work histories indicated that most of the inter-industry job changes occurred before the blue- to white-collar shift, while intra-employer shifts predominated for the blue- to white-collar change itself and for subsequent job changes. (p. 8)

(4) Respondents reported considerable accretion of skills between their first job and last blue-collar job.

(5) Post-shift employment in manager-supervisor and professional-technical jobs was stable, while in clerical and sales jobs, workers tended to move out into other white-collar categories. (p. 8)

(6) Job search patterns were conventional; most new jobs with new employers were obtained through individual efforts. For blue- to white-collar interfirm shifts, however, newspaper ads are the most important source of information. (p. 8)

(7) Many blue- to white-collar shifters did not realize an immediate financial gain through increased job security, benefits, and promotional opportunities. (p. 8-9)

(8) No identifiable linkages between blue- and white-collar job classifications were found. The authors, however, did identify four paths for shifts. (p. 10-11)

Path I: Skills and experience acquired on a blue-collar job provided the basis for shifting into white-collar work. This path was most common for older, less educated men. Factors such as satisfactory job performance, ability to get along with people, and opportunity to qualify for the job on a trial basis were important.

Path II: Individuals are identified by the employers as having potential for promotion, despite lack of blue-collar experience. This path was common for younger workers with some post-high school training, although the training was not usually related to the white-collar job.

Path III: Individuals receive white-collar training; shifters are usually young.

Path IV: Individuals receive blue-collar training for relatively complex skills (e.g., apprenticeship training). Supplementary factors identified for Path I are also important, as well as the desire to focus on non-manual aspects of the job, and post-high school education.

The four job paths are shown to be of varying importance for movement into different white-collar occupations (p. 11).

Limitations:

(1) Data limited to small sample in one city. Inability to identify linkages between blue- and white-collar job classifications, which are implied by the four advancement paths, may result from the small sample size.

14 Kohen, A.I. *Labor Market Experiences of Out-of-School Youth* (1973).

Thesis:

Relevant sections of this study seek to describe the broad patterns of occupational change among young men over different periods of time and to examine how these patterns vary by color, age, and educational attainment. (p. 75)

Data:

National Longitudinal Survey data for young men (17 to 29 in 1969) from the 1966 and 1969 interviews. Data are restricted to those not enrolled in school in 1966 and who were employed at both survey dates. (p. 75) Occupational detail is restricted to nine major groups.

Method:

Percent distribution tables are examined. Tables show occupational status by race for the two survey years and for first job after leaving school; comparison of percentages indicate net occupational mobility.

Tables showing gross mobility between occupation groups and gross mobility standardized by size of occupational group are also analyzed.

Results:

(1) Net changes are generally upward in terms of socio-economic level. Major increases in employment proportions are noted for professional and managerial occupations, and declines among farm occupations. These changes are seen as reflecting the occupational progress expected with career development. (p. 77)

(2) Net changes for whites and blacks are similar in their movement away from farm occupations and toward upper-level white-collar employment. The difference in occupational distribution between the races is narrowed between first job and 1969. (p. 77)

(3) Distinct intercolor differences in net mobility are also observed which indicate a widening socio-economic gap. Despite narrowing of differences in occupational distribution of blacks and whites between first job and 1969, noted above, the differences widened between 1966 and 1969. The absolute differences in the proportion of men in high-level white-collar jobs widens; and among blue-collar workers, upward movement is more pronounced among whites than among blacks. The latter may result from greater movement of blacks from farm occupations to urban blue-collar jobs at the bottom of the occupational ladder (p. 77).

(4) Net mobility is examined for men 24 years old and older, in an attempt to control for age differences between race groups (blacks were somewhat younger but, having less schooling, had more labor force experience than whites). For this older age group, disparity between black and white occupational distributions is higher for first jobs than for 1969; and there is more convergence than for the sample as a whole. However, blacks remain in lower occupational positions, reflecting their lower education levels. The largest difference in proportions of employment was for the managerial group, reflecting blacks' lack of capital needed for self-employment. (p. 80-81)

(5) The convergence of occupational distributions through net occupational mobility found for men 24 and older is not observed for those 17-23 years old. Instead the distributions diverge between first job and 1969. (p. 81)

(6) Comparison of distributions by educational attainment indicate that, regardless of age and color, high school graduates advanced more than dropouts between first job and 1969. For non-college men, movement was mostly within the blue-collar groups, and to some extent for whites, into self-employment. For college attenders, shifts are toward managerial and sales jobs and away from clerical. (p. 81-82)

(7) When data by education group are examined, convergence of black-white occupational distributions is evident *only* among those 24 years old or over with less than 12 years of schooling. However, sample sizes prohibited making comparisons for college attenders. (p. 82)

(8) Gross mobility data indicated large volumes of movement among eight major groups, with only 29 and 26 percent of whites and blacks, respectively, still in the group of their first job by 1969. The proportion varies, as expected, with occupation of first job. Gross movements are seen to be in a generally upward direction. (p. 83, 84)

Limitations:

The analysis is focused mainly, and for gross mobility entirely, on change between first job and 1969 job. Use of this time period instead of the respondents' 1966 and 1969 occupations, distorts the mobility patterns somewhat. The main drawback is the differing time spans involved – men 24 years old in 1969 could by 8 years past their first job, while younger men might still be in their first jobs. If mobility is viewed as a probability process, the amount of occupation changing results not only from the rate of change, but also from the time period over which its operation is observed.

15. Kohen, A.I. *Occupational Mobility Among Middle-Aged Men* (1975)

Thesis:

Occupational mobility is viewed in several dimensions: as one of the processes of reallocation of labor services (neo-classical), a mechanism by which an individual's status in the social hierarchy is altered (sociological), and a process which facilitates returns to investments in human capital (human capitalist). (p. 115) Four research topics and related hypotheses are presented.

(1) *Probability of upward mobility.* Assuming that upward mobility is a response by individuals to occupational differentials in rewards, the probability of securing those rewards is expected to depend on the individual's stock of human capital resources. Secondly, given an individual's level of resources, chances for upward mobility are hypothesized to be negatively related to the beginning level of the occupation (the higher the starting point, the less opportunity for improvement). Third, individual attitudes and attributes, which also reflect labor market and institutional forces, are thought to be constraints on upward mobility. Age, race, and attitude toward the base-year occupation are such factors. Probability of upward mobility is hypothesized to be higher for men who change employers than for those who remain in the same firm. Finally, prevailing labor market conditions such as the size of the local labor force, the local unemployment rate, and the industrial diversity of the local economy are hypothesized to influence mobility probabilities. (p. 122-125)

(2) *Probability of downward mobility.* The hypotheses as presented for upward mobility are used in the inverse for downward mobility. It is noted, however, that the implications of downward mobility are different from those of simply not progressing. The chances for serious damage to the worker's material welfare and self-image are greater. (p. 125-126)

(3) *Distance of occupational mobility.* Hypotheses used to explain upward and downward mobility are also applied in the analysis of determinants of the distance of mobility. The models are applied only to occupation changers, however.

(4) *Returns to occupational mobility.* Since mobility is viewed as a means of realizing returns to human capital investments, it is of interest to determine whether such returns are in fact achieved. Returns in the form of higher earnings and job satisfaction are hypothesized to depend on personal and environmental (labor market) factors as well as on occupational change. These factors are also those hypothesized as determinants of mobility itself. Men who are upwardly mobile are expected to achieve higher returns than mobile men, who in turn should realize greater returns than downwardly mobile.

Data:

National Longitudinal Survey data for mature men are used. A subset of the entire survey panel is selected to include men who were (1) not retired from their regular jobs in 1966 and 1971, (2) employed as wage and salary workers in the 1966 and 1971 survey weeks, and (3) living in the same county or SMSA in 1966 and 1971. (p. 117) Exclusion of geographically mobile men reduces the sample size only slightly (p. 125). N = 1750.

Method:

Occupational change is defined as movement from one a three-digit 1960 census occupation category to another from the respondent's 1966 job to his 1971 job. (p. 116) Upward occupational mobility is defined as movement to an occupation with a higher score on the Duncan index; downward mobility, to a lower score occupation; and lateral mobility, to an occupation with a similar score. Hypotheses are tested through multiple regression models with upward and downward mobility represented as a dichotomous dependent variables, with distance of occupational mobility represented by the change in Duncan index score as the dependent variable. Returns to mobility represented by change in earnings and change in job satisfaction score as dependent variables.

The data were adjusted to exclude "spurious mobility," e.g., men who moved between two very similar but poorly defined census occupations ("mechanical engineers" to "other engineers") or radical shifts such as professional to nonfarm laborer. (p. 128)

Results:

(1) *Upward Mobility.* The following factors were represented by independent variables in the regression model: 1966 occupation (Duncan score), years of schooling, binary variables representing other formal training and health status, tenure (years of service) with 1971 employer, and a binary variable for marital status. The model was run separately for men who changed employers (including a binary variable representing voluntary separation from 1966 employer), for men remaining with the same employer (including a binary variable representing receiving and rejecting an alternative job offer, and a binary variable for public versus private sector employment). All models also included a binary variable representing whether the respondent felt his 1966 occupation to be his best occupation, an age variable, and the three characteristics of the local labor market mentioned earlier.

Regression models for each group explained very low proportions of upward mobility (R^2 = .051 and .071 for firm stayers and changers, respectively.)

For men staying with the same employer, the following variables were statistically significant and had expected signs: 1966 occupation (−), years of schooling (+), receiving formal training between

1966 and 1971 (+), being married with wife present in 1971 (+), being employed in the private sector in 1966 (+), age (–), and perceiving the 1966 occupation as different from the respondent's best occupation expected (+). (Table 4.3)

For men who changed employers, higher probabilities of upward mobility were observed. The following variables produced statistically significant coefficients with expected signs: 1966 occupation (–), years of schooling (+), having no health limitations (+), having longer tenure (tenure produced a positive sign; tenure squared, a negative sign), and perceiving 1966 occupation as best occupation (+). (Table 4.3)

The author noted that the models indicated different upward mobility processes for firm stayers and changers, since different variables were significant and significant regression coefficients were of different magnitudes when expressed in percentages. For example, age was significant only for stayers, while tenure was significant only for changers. The effect of base year occupation level is about twice as large for changers as stayers: the higher a middle-aged man is on the occupational ladder, *ceteris paribus,* the less likely he is to move up the ladder if he changes employers. (p. 135)

Human capital investment is seen as a positive determinant of upward mobility, based on significant coefficients for the years of schooling variable in both equations, and significance of health for firm changers and other training for firm stayers. Personal motivation is significant for both groups, as evidenced by the "best occupation" variable. Married men had much greater likelihood of upward mobility than single men, but only among employer changers. (p. 135)

Middle-aged men employed in the public sector were less likely to be upwardly mobile; the author cites this as consistent with the hypothesis of greater job security in the public sector as a trade-off for advancement opportunity, or perhaps indicating private sector employees do not experience promotion as early as government workers. The models do not suggest age as a strong deterrent to mobility with this narrow age group. (p. 136)

Several hypotheses received no support in either model. None of the local labor market variables were significant, nor was the rejection of an alternative job offer. Likewise, men who changed employers voluntarily were no more likely to be upwardly mobile than involuntary leavers. Race was also insignificant. (p. 136)

(2) *Downward Mobility.* The same models were tested, again for firm stayers and changers, but with downward mobility as the dichotomous dependent variable. Again, very low proportions of the variance of the dependent variable were explained (R^2 = .042 and .057 for stayers and changers). (Table 4.4) About 1 out of 10 stayers and 3 out of 10 changers were downwardly mobile.

Findings with respect to significant variables were symmetrical to the models for upward mobility. 1966 occupation displayed a significant positive effect; years of schooling, a negative effect; and individual motivation and occupational discontent as measured by the "best occupation" variable, a positive effect on probability of downward mobility. The latter result suggest that dissatisfaction disposes a middle-aged man to change jobs even if it means downward movement in social status. The age variable again is significant and small in effect for firm stayers, and race is insignificant. (p. 136-137)

Some results, however, were not symmetric with the upward mobility model. Among firm stayers, job tenure appears to act as a buffer against downward mobility, as does receiving training for firm changers. Also, working in a large local labor market and alternative job seeking activity offer some protection against downward mobility.

(3) *Distance of Occupational Mobility.* The regression model is tested this time only for occupation changers, except that four separate tests were run: (1) blacks and (2) whites for firm stayers, and by (3) voluntary and (4) involuntary leavers of 1966 employer for firm changers. These models explained much higher proportions of variance in the dependent variable (R^2=.244, .383, .314, .418, respectively).

The author concludes that the models provide strong evidence of racial discrimination in internal labor markets (firm stayers). Although the average occupational gain only slightly favored whites, regression results indicate important race differences that keep black men from advancing as fast as whites. (p. 142-143) The coefficient for 1966 occupation is larger for blacks, while the coefficient for years of schooling is larger for whites. Other formal training, however, appears more important for blacks. Kohen estimates that blacks would have progressed nearly twice as far on the average, as they actually progressed if the variables operated in the same manner for blacks as for whites. (p. 142)

For firm changes, other than race, only the human capital variables were significantly related to vertical distance of movement. On the average, men who changed both occupation and employer *lost* occupational status. Also, different variables are operative for voluntary and involuntary firm changers, although net loss is similar for the two groups. For voluntary changers, formal schooling, recent vocational training, and being married make positive contributions to status change. For involuntary changers, however, only previous vocational training and length of service with the new employer make significant positive contributions. For both groups, the 1966 occupation variable was significant and negative. (p. 143)

(4) *Returns to occupation changing.* Three regression models were tested using change in hourly wages, increase in job satisfaction and decrease in satisfaction as dependent variables. (Changes in satisfaction were binary variables.) Independent variables were those used earlier, along with probabilities of upward and downward mobility (binary variables) and the 1966 level of wages or satisfaction. (R^2 = .118, .310, and .313, respectively)

Upward mobility exhibited clear net pay-offs, regardless of inter-firm mobility. Upwardly mobile men experienced 47.5 percent and 51.4 percent net increases in hourly earnings (firm stayers and changers, respectively), compared with 37.5% to 43.5% for other mobility groups. (Table 4.6)

Downwardly mobile men were not significantly disadvantaged with respect to wage increases, relative to occupationally immobile men. In fact, a slightly higher earnings increase was observed for downwardly mobile firm stayers versus immobile firm stayers. Firm changers generally experienced larger effects of mobility on earnings changes: upwardly mobile gained more and downwardly mobile gained less than their firm-stayer counterparts. (p. 147)

With respect to job satisfaction, among firm stayers, the upwardly mobile were more likely to exhibit increased satisfaction than the immobile, who were in turn more likely than downwardly mobile to be more satisfied. Similarly, upwardly mobile were less likely to experience decreased satisfaction, a likelihood that increased with immobility and downward mobility. No clear patterns, however, are apparent for firm changers. (p. 147)

Limitations:

(1) Use of the Duncan scale as a measure of upward and downward mobility limits the applicability of the analysis to labor market operation. Movement up and down the Duncan scale does not necessarily indicate 'promotion' or 'demotion' (although the author uses these terms) on a career ladder inside the firm or a career pattern involving change of employers, nor are movements related to skill levels or earnings levels. As observed in the last set of equations, downwardly mobile firm stayers which may reflect inadequacies of the measure of mobility rather than any "compensation" for loss of status, as suggested by the author. (p. 147)

(2) The exclusion of geographically mobile men, although only a small number, undoubtedly biases the results. Such men were more likely than non-movers to be occupationally mobile and to change employers. (Schroeder, 1976)

(3) The elimination of so-called "spurious" mobility may also bias the results, particularly since non-retrospective longitudinal data should have few really spurious cases. While some changes may seem spurious (e.g., "mechanical engineers" to "other engineers"), these changes, if properly coded, are just as real as other movements (e.g., mechanical to chemical engineer). Note that the "other engineer" census category includes agricultural engineers, biomedical engineers, and other small engineering categories. "Not elsewhere classified" should not be confused with "not specified" categories.

(4) Coefficients of determination for the probability models were extremely low.

16. Leigh, D.E. *Male Occupational Mobility Between 1965 and 1970: Evidence from the 1970 Census* (1975)

Thesis:

The author examines the determinants of occupational upgrading, investigating the following questions. (p. 2):

(1) To what extent does formal training constitute an important determinant of occupational mobility, and is there evidence of racial differences in the returns to formal training in terms of occupational advancement?

(2) How important are 'structural' factors representing labor market segmentation in determining mobility?

(3) What is the impact of employer shifts on occupational advancement, and do differential returns to interfirm mobility exist by race?

Data:

Data for males under 35 years old, for Blacks and whites, from the 1970 census Public Use Sample (1/1000 sample). Sample is restricted to individuals reporting an occupation, industry and state of residence in both 1965 and 1970, employed at least 26 weeks in 1969, and without substantial self-employment income in 1969. (p. 4)

Method:

Multiple linear regression models are tested with several specifications of the dependent variable representing occupation level and change in Duncan socio-economic index of 1965 and 1970 occupations, and the difference in 1969 median wage and salary earnings for males, of the 1965 and 1970 occupations. (p. 4) The dependent variable is also specified as a dichotomous variable to allow probability estimation. Independent variables include measures of formal schooling (years of school completed, in terms of six categories), having vocational training (binary variables for each of four types of training). Personal characteristics include age and race through restriction of the data to age and race groups, and marital status. Structural variables include industry of 1965 employment (binary variables for each of 10 categories), and region of 1965 residence (binary variables for each of four regions). Finally, 1965 occupation is included. Analysis uses comparison of regression coefficients for education and training variables, with coefficients standardized through

use of a reference group. (p. 3-6) The equation was tested for two restricted groups, men between 25 and 34 years old in 1970 and men in blue-collar and service occupations in 1965. The first restriction attempted to exclude individuals who were students in 1965, while the second was an attempt to examine mobility for low-wage workers. (p. 12)

Results:

(1) Coefficients for education variables are generally of expected signs and magnitudes in explaining the level of 1970 occupational attainment: negative for education less than high school completion (reference group value), positive for education beyond high school. Magnitude of the coefficients increases with the distance from the high school completion category. (p. 9) The impacts of successive increments of education are somewhat smaller for blacks than whites, though still strong. Returns to whites are higher in all cases. (p. 9)

(2) Coefficients for education also indicate positive relationships between education and both degree of occupational change and probability of change. The structure of returns is more compressed for blacks, indicating lower returns to successive levels of education. The 1965 occupation variable has a much higher coefficient for whites than blacks, indicating more advancement to whites, regardless of their occupational starting point. (p. 11)

(3) Results for the 25-34 year olds and for blue-collar and service workers were similar to those for all men in the study sample. (p. 12)

(4) Coefficients for the vocational education categories indicated positive returns, in terms of upgrading, to all four types of training, with largest returns to business/office programs and engineering/science technician programs. Coefficients for blacks often exceeded those for whites. (p. 12)

(5) Restricting the sample to blue-collar and service workers produced higher coefficients for vocational training variables, and much higher ones for trades/crafts programs. No significant racial differences were noted. (p. 12-13)

(6) Black/white differences in occupational upgrading as measured by movement into occupations with higher earnings levels are identified as primarily caused by blacks beginning at lower levels, and secondly by lower educational endowments. (p. 15) However, lower educational attainment reduces advancement opportunities less for blacks than for whites. (p. 16)

(7) Industry and region in 1965 were found to have no significant impact on upgrading for either race. This suggests that returns to interfirm mobility are likely to be associated with personal characteristics of workers. (p. 16)

(8) Addition of dichotomous variables for change in industry or residence between 1965 and 1970, has the effect of increasing the magnitude and significance of the coefficients for industry and region. The purpose of this reformulation is to test the hypothesis that, if secondary sector employment is characterized by high labor turnover without movement into the primary sector, and if blacks are mainly confined to the secondary sector, blacks should receive lower returns from inter-industry mobility than whites, as measured by occupational upgrading. The results do not confirm the hypothesis: industry-shifters of both races gained substantially relative to industry stayers, irrespective of initial industry. If industry shifts are accompanied by change of residence, moreover, blacks tend to gain even more than whites. (p. 19)

(9) Among industry stayers, whites gained relatively more than blacks, which is consistent with the hypothesis of racially segregated internal advancement paths. (p. 19-20)

Limitations:

(1) Exclusion of the self-employed (men with more than half their income from self-employment) biases the results somewhat. In some occupations self-employment is in itself a step the career ladder–usually the top rung. Also, some occupations are totally excluded -e.g., farmers.

(2) Coefficients of determination are not shown.

17. Leigh, D.E. *Occupational Advancement in the Late 1960s: An Indirect Test of the Dual Labor Market Hypothesis* (1976).

Thesis:

The author examines two hypotheses: (1) that large and systematic racial differences exist in the effect of interfirm mobility on occupational advancement; and 92) that large and systematic racial differentials in intrafirm occupational advancement exist for workers of equivalent endowments. (p. 156) Hypothesis I is consistent with the dual labor market prediction that interfirm mobility of blacks is largely confined to job changes within the secondary labor market. Hypothesis 2 is consistent with the dualist prediction that blacks tend to be either employed in secondary sector jobs in which advancement hierarchies are typically absent, or placed on segregated promotion lines within internal labor markets. (p. 156)

Data:

The National Longitudinal Survey panels for young men and mature men and the 1970 census retrospective occupation and industry items for males are used.

Method:

Occupational upgrading is measured by the difference in median 1969 earnings for the worker's occupations at two points in time. A regression model for estimating the effects of several variables on change in occupational standing is constructed and tested separately for whites and blacks in each data file. In the census file, change of industry and/or state of residence serve as proxies for change of employer; change of employer is measured directly in the NLS data. Explanatory variables include earlier occupation standing, educational attainment and other training, marital status, earlier industry, change in employer, migration status, and region of residence. Regression results are interpreted by calculating the impact of change in industry and industry of employment (census file) or number of employer changes (NLS file) on the change in occupational status for workers at the mean of each independent variable (p. 158-160). The equation is also estimated with change in occupation as a dichotomous variable, thereby producing estimates of probabilities of occupational upgrading.

Results:

(1) For the census data (young men) a shift between industries is seen to increase the probability of occupational upgrading across all industries. On the other hand, the effect of industry shift on occupational change depends more closely on the industry moved from, since industry change entails greater vulnerability to downgrading as well as upgrading.

(2) Racial differences in the probabilities of upgrading are quite small across the 10 industry groups (census data, young men). Some what greater variation in occupational change appears by industry, but the advantage favors blacks in half the cases (p. 163). (Hypothesis I not supported.)

(3) Among industry stayers (census data, young men), differences by race for given industries are less important than differences for both racial groups across industries. Racial differences observed almost invariably favor whites. (p. 163) (Limited support for Hypothesis 2.)

(4) The NLS data (young men) for industry stayers suggest a white advantage in advancement only for agriculture/forestry, trade, finance/high-wage services, and other services. No evidence of a systematic racial differential among industry shifters is indicated.

(5) The number of changes in employers exhibited different effects on occupational upgrading by race (NLS, young men). Employer change was consistently associated with loss of occupational standing among whites. For blacks, up to two employer changes increased occupational standing, and more than two decreased the standing (p. 167).

(6) In the census data for older men, black industry movers experienced considerably more occupational upgrading than white movers, while no systematic racial differential appears among industry stayers. (p. 168)

(7) The NLS data for mature men indicated estimates of occupational change and upgrading probability for firm stayers that were very similar to corresponding estimates for industry stayers. (p. 169)

Limitations:

(1) Nonresponse bias in both data files, and recall error of census data (p. 159).

(2) Use of median earnings to measure occupational upgrading may mask actual effect of occupation or industry change in a worker's earnings.

18. Miljus, R.C., & Andrisani, P.J. *Worker Preferences for Intrinsic and Extrinsic Work Rewards* (1978).

Thesis:

The authors examine the impact of change in occupational status on worker preferences for intrinsic and extrinsic rewards. (p. 230)

Data:

National Longitudinal Survey data for the four cohorts. Data include only persons employed and not enrolled in school at the survey date. (p. 217)

Method:

Multiple regression analysis is used, with shift between intrinsic and extrinsic preferences, the dependent variables, represented as dummy variables. Preferences were identified by the respondents' answers to questions concerning what they liked best and least about their jobs. Intrinsic rewards are those related to the work itself, while extrinsic rewards are not (earnings, working conditions, etc.). Occupational advancement was measured by change in the Duncan score of the respondents' occupations at the two survey dates. Other independent variables included age, educational attainment, training, health, marital and family status, area and region of residence, job satisfaction, initial occupational status, earnings, and unemployment experience. Equations were estimated separately for whites and blacks in each cohort.

Results:

In most cases occupational advancement was not seen as a significant determinant of shift in preference between the two types of rewards. The variable was significant only for young black men, older black women, and young white women, where negative relationships were found between occupational advancement and shift from intrinsic to extrinsic preferences.

Limitations:

(1) Limitations of the preference questions are noted by the authors, namely, that it is difficult to test the internal consistency of an individual's responses.

(2) No discussion of multicollinearity is presented.

(3) The shifts in reward preferences are not analyzed in conjunction with actual changes in the workers' job situation that may have brought about such shifts, such as change in occupation, employer, or industry.

19. Nafziger, D.H.; Holland, J.L.; Helms, S.T.; & McPortland, J.M. *Applying an Occupational Classification to the Work Histories of Young Men and Women* (1974).

Thesis:

The study tests Holland's classification as a predictor of work histories. Workers are hypothesized to remain in the same Holland category, and occupation changing is expected to take place within that category. Secondly, it is hypothesized that people working in jobs with inconsistent Holland codes change jobs at a higher rate than those in jobs with consistent codes (p. 335).

Data:

National Longitudinal Survey data for young men and young women are used. Analysis is performed separately for blacks and whites. Occupation changes are measured for men using the retrospective 1965 occupation item and currently reported occupation in 1966, 1967, and 1968. For women, retrospectively reported 1967 occupation and current 1968 occupation are used.

Method:

Transition tables are prepared for several pairs of years using Holland's six one-letter codes, twenty-four of the two-letter codes and fifty three-letter codes for men, and the six one-letter codes only for women. Stability of movement among categories is measured using Cohen's Kappa, first unweighted, and then weighted by type of movement. No occupation change or change within the category received the highest weight, while movement to an inconsistent category received the least weight. High and significant values of Kappa are interpreted as reflecting stability of work history.

Results:

(1) Significant and fairly substantial Kappa values are observed in all tables. The values for one-letter codes are consistently higher than those for two- and three-letter codes. (p. 337)

(2) Although the percentages of workers remaining in the same category are higher for black than for white men, the Kappa's are higher for whites. (p. 337)

(3) Similar percentages remaining in the same category are found for black and white women, and whites have slightly higher kappa values. (p. 337)

(4) Differences in occupational stability among the races and sexes are small, and racial differences are greater than differences between sexes of the same race. (p. 338)

(5) The largest and most consistent differences are between black and white men, with blacks more stable. Blacks began and ended with higher proportions of workers in the Realistic group.

(6) Tests of the second hypothesis indicated that white men in consistent occupations were more stable than those in inconsistent jobs. For blacks, the results are either not statistically significant or not in the hypothesized direction. (p. 338)

Limitations:

See comment 4 for Gottfredson (1976).

20. Parnes, H.S. *Mobility and Job Attachment* (1970).

Thesis:

The author examines the mobility of middle aged men to identify patterns of gross and net occupational change, to examine differences in patterns for blacks and whites, and tests a model for explaining the strength of attachment of men to their current jobs. (p. 113)

Data:

National Longitudinal Survey data for middle-aged men (45-59 years old). Current occupation is that reported for the 1966 survey week, or most recent job for those unemployed.

Method:

Percent distribution tables showing employment by occupation for current job, first full-time job after leaving school, and longest job; comparison of percentages indicate net occupational mobility. Tables showing gross mobility between occupations of first and current jobs, and gross mobility standardized by size of occupation group are also analyzed. Coincidence of occupational and geographic mobility is examined. For all types of tables, comparisons by race are made.

Results:

(1) Net occupational shifts are seen as reflecting two factors: The change in occupational structure of the economy during the respondents' work lives, and the kinds of occupational professions expected as their careers unfold (p. 116). The latter is the stronger factor, since only the increase in professionals and decrease in farm and nonfarm laborers is consistent with long-term occupation trends. For whites, declines in proportions of employment (i.e., movement out of the group) occurred among clerical, sales, operative, and laborer groups; increases occurred among professionals, and managers, craft workers, service workers, and farmers. For blacks, declines were among sales and farm laborers; with all other groups increasing, (p. 117) Net movement out of lower status groups in therefore less pronounced among blacks than among whites.

(2) The differences in the occupational distributions of blacks and whites is greater for their 1966 jobs than for their first-jobs.

(3) Twenty-three percent of white men were still employed in 1966 in the same occupation groups as their first jobs. The proportion varied among groups, being highest for professionals (64%), managers (54%), craftsmen (44%), and farmers (43%), and lowest for operatives (25%), sales (16%), service (16%), clerical (13%), nonfarm laborers (9%), and farm laborers (77%). (p. 119-120)

(4) For whites, movements between occupation groups tended to be structured. Professionals and managers moved mainly between these two groups, and some managers becoming craftsmen. Service workers, on the other hand, moved into many other groups. Farmers, and farm laborers moved into craft or operative jobs. (p. 119-121)

(5) The author observes that occupational changes made by blacks were obviously less desirable than those of whites, who saw less movement into professional or managerjal occupations, more movement into craft, operative or laboring jobs, and greater tendency to remain in these latter groups. (p. 121) Standardization of the mobility rates showed even more pronounced differences. (p. 122)

(6) Mobility in terms of movement up, down or laterally in the Duncan scale showed race differences. While the percentage of whites and blacks remaining in the same 3 digit occupation between first and 1966 jobs are similar (13% and 14%), whites were more likely to be upwardly mobile (57% versus 41%) and less to be downwardly mobile (15% versus 22%). Whites also had unilateral mobility (15% versus 23%). (p. 127)

(7) When socio-economic mobility is measured holding occupation of origin constant, differences by race are even more pronounced. On the basis of total figures, the probability of upward movement by whites is about two-fifths greater than for blacks; however, the only occupation groups (occupation of first job) where the difference is this small are the service, clerical, and craft groups. In many other groups the proportion of upwardly mobile was twice as great for whites as for blacks. (p. 128-129)

Limitations:

(1) Use of change between first job and current job may distort patterns (see comments for Kohen, 1973). This limitation is not as serious for the older men as for younger men, since most of their mobility is accounted for.

(2) Method for standardizing the gross mobility rates is questionable (see comments for Parsons and Wigtil, 1974).

(3) Analysis restricted to percent distributions, without controlling for other characteristics.

21. Parnes, H.S., & Nestel, G. *Factors in Career Orientation and Occupational Status* (1976).

Thesis:

The authors examine the work experience of women from their first job to their status in 1972. They seek to identify correlates of "career status" as evidenced by their pursuit of a single occupation or group of related occupations during most of their work lives, and to identify the determinants of career status at various points. (p. 58) The term "career" is used to refer to a work history characterized by "substantial attachment to the labor force and in which there has been a rather firm commitment to a given type of occupation or type of work, or at least a rather orderly progression up an occupational hierarchy." (p. 58)

Data:

National Longitudinal Survey panel for women 30 to 44 years old. Analysis of "career" women is limited to women with specified levels of work experience prior to 1967, and employment in at least ¾ of the weeks between the 1967 and 1972 surveys; and who met certain career criteria noted below. Data are further restricted to women who were married with husband present, and who had

children. (p. 59) In examining the factors influencing occupational status and change in occupational status, the data are confined to women employed during both the 1967 and 1972 survey weeks, and for whom information on all independent variables was available. This data set included women of all marital statuses. (p. 68)

Method:

A woman was identified as having a "career" through examination of her work status according to several criteria, including extent of work experience and pattern of occupational assignment. Occupational patterns included work in the same 3-digit census occupation or work in related occupations at three points (first job, 1967 job, and 1972 job). (p. 59, 87-88) Related occupations are listed (p. 91-92) although criteria for their identification are not mentioned. Analysis of factors affecting probability of being a career woman, versus non-career, was through multiple classification analysis, with the career status as a dichotomous dependent variable.

Analysis of determinants of occupational status utilized stepwise multiple regression analysis, with occupational status measured using the Bose Index of Occupational Prestige. (Bose, 1973)

Results:

(1) Eleven percent of the women in the "career analysis group" were identified as having "careers," 10 percent for whites and 14 percent for blacks. (p. 59)

(2) Among family background variables thought to affect probability of having career status, work status of mothers at respondent's age 15 exerted a positive effect—women who had working mothers were more likely to be career women, suggesting the importance of a role model. Size of community of residence had an inverse relationship to career status—women from rural communities were twice as likely as those in large cities to have careers, with small town residents in between. (p. 62)

(3) Educational attainment was positively related to likelihood of career status. Some differences among college curricula were also observed, with education and other professional curricula more closely associated with career status than with liberal arts curricula. (p. 62)

(4) Career women were more likely to have taken concentrated training programs outside of regular schooling, although such programs did not have a significant relationship with career status unless they were of at least a year's duration. (p. 62)

(5) Career rates vary monotonically with the degree to which women expressed positive attitudes toward working mothers. (p. 65) [Note: The data consisted of working mothers.]

(6) Number and spacing of children was related to career likelihood. The fewer the children and the further apart their births, the higher the career rate. (p. 65)

(7) Career rates were higher for women whose husbands had health conditions affecting their work; the husband's educational attainment, used as a proxy for his income, had no significant relationship. (p. 65)

(8) Husbands' attitude toward the wife's work showed a pronounced relationship to career likelihood, with more favorable attitudes related to higher career rates. (p. 65-66)

(9) Determinants of vertical occupational mobility (increase in Bose index) between first job and 1967 job included number of years of schooling, formal training outside of regular schooling, and good health (note that the sample excludes women with work-preventing health conditions in 1967). (p. 78) Length of service with 1967 employers and work experience were not consistently significant. (p. 78-79) ($R^2 = .548$)

(10) With all other variables accounted for, there remains a 2.2 point difference in the Bose index in favor of whites over blacks. This indicates that, net of other factors, the position of black women deteriorated between their first jobs and the 1967 survey. (p. 79)

(11) Determinants of vertical occupational mobility between 1967 and 1972 jobs included years of work experience prior to 1967 and educational attainment. Variables relating to experience between 1967 and 1972 were not significant. (p. 79) ($R^2 = .748$)

(12) The observation for blacks mentioned above holds for the 1967-1972 equation as well. The relative occupational position of blacks appears to have deteriorated further in this period. (p. 80)

Limitations:

(1) Criteria for identifying career status are somewhat subjective and variable in their application, as noted by the authors. (p. 87)

(2) Analysis of career status limited to married women (husband present) with children.

22. Parsons, G.E., & Wigtil, J.V. *Occupational Mobility as Measured by Holland's Theory of Career Selection* (1974).

Thesis:

The study tests Holland's conclusion that Realistic and Investigative personality types would change type of occupation less often and have more stable job choices relative to other personality types. A second hypothesis is that the number of jobs held by a person will be lower for Realistic and Investigative personality types. (p. 323)

Data:

The National Longitudinal Survey panel for males 45-59 years of age is utilized. Comparisons are for 'first job' and 'current or most recent job', although the authors do not define these terms. Data are examined separately for whites and blacks.

Method:

Occupations are classified into the six Holland personality types by unspecified methods. "Occupational mobility" is then defined as movement from one personality type to another (p. 324). Results are presented as percentage distribution. A ratio is also calculated to adjust the "stability" and "transfer" percentages for the size of the category. For example, Realistic occupations account for 81% of all black men current employment. The authors reason that if movement among categories were random, 81% of the black males in every other category would have moved into "Realistic". This percentage is divided into the actual percent moving into or retained by the category. Comparison of the ratios among categories are interpreted as comparisons of the "stability" of the categories. (p. 327)

Results:

(1) The percentage of men moving from one category is much higher for whites (44%) than blacks (18%). No explanations of this difference are suggested.

(2) The percentages remaining in the same category varied widely among categories, with Realistic and Enterprising appearing most stable for whites, and Realistic and Investigative most stable for blacks. Least stable are Social and Conventional for whites and Conventional and Artistic for blacks.

(3) By far the largest percentages of employment are found in the Realistic category (55% for whites, 81% for blacks).

(4) The calculation of the ratio reverses the identification of stable categories. The highest ratios are observed for Social and Artistic for whites and Artistic, Investigative, and Social for blacks. (p. 327)

Implications:

The authors contend that the results suggest that stability is not so much a function of personality type as it is the number of jobs available within each personality type. (p. 329) However, changes among personality types are seen as more a characteristic of the personality involved than the number of jobs. (p. 329)

Limitations:

(1) Methods are not fully described. For example, the assignment of occupations to Holland's categories is not described, or referenced if another source was used. The definitions of "first job" are not provided: it is not known within the originating occupation is the individual's first job at labor market entry or his job at the time of the first NLS panel interview.

(2) The method used to calculate the ratios on which identification of stability rest is very suspect. Since the denominator of the ratio is the category's share of all workers, use of the ratio assumes that each category should have received this proportion *of all workers in the every other category,* not just this share of the category changers. Use of the ratio as interpreted by the authors is misleading; since the Realistic category's ratio can never exceed 1.2 (100/81.0) for blacks or 1.8 (100/55.6) for whites; while the Artistic category could range up to 1,000 (100/.1 and 125.0 (100/.8), respectively.

(3) Analysis limited to Holland's six categories (see comments under Gottfredson, 1977).

23. Perline, M.M., & Presley, R.W. *Labor Mobility and the "Net Advantage" Theory* (1973).

Thesis:

It is hypothesized that, in a slack local labor market, migrant individuals will display less occupational and more industrial mobility than non-migrants. Migrants are seen as operating in a larger labor market and therefore have greater opportunity to retain their established occupations. Secondly, it is hypothesized that migrants will have gained a greater "net advantage" than non-migrants in terms of less unemployment experience and occupational change, and higher salary levels. (p. 104)

Data:

A mail survey was conducted of engineers and technical workers who had been laid off in the Witchita, Kansas area during the aerospace industry contraction of early 1973. Of the 599 persons surveyed, 301 responded. (p. 104) No analysis of the resulting non-response biases are presented, methods of identifying the surveyed individuals, and whether the 599 surveyed persons represent a universe or a sample, are not discussed. Reference date of survey is not specified.

Method:

Results of survey are tabulated for migrants and nonmigrants showing occupation change, industrial change, and salary at time of the survey. Data are shown as numbers of respondents and percent distributions.

Results:

(1) Migrants accounted for about 45% of the respondents, nearly all of whom were men. (p. 104)

(2) Occupational change was much more prevalent for non-migrants, with 59.8% changing occupations compared to 42 percent for migrants. The authors interpret this result as indicating migrants may have found a more desirable market for their existing occupation than that faced by persons remaining in the Witchita area. (p. 1042) Retaining one's original, in this case, skilled occupation, is presented as the worker's preferred option, because of the psychic and economic costs associated with retraining and change in type of work. Workers who remain in the same occupation therefore have a 'net advantage' over other workers, and are also expected to have higher wages reflecting their higher levels of experience. (p. 1043)

The authors suggest that a very high proportion of displaced engineers and technicians attempted to retain their occupations. Other types of mobility (geographic, industrial) are seen as subordinate to occupation changing, that is, workers will change location or industry more easily than occupation.

Limitations:

(1) Survey design not fully described, and no adjustments for non-response are included. Non-response of 50% can seriously bias data of this sort, since non-respondent may have much different mobility behaviors than respondents.

(2) Analysis is limited to cross tabulations, with no attention given to characteristics known to affect migration and mobility propensities, particularly age and educational attainment.

(3) Limitation to one labor market area and two occupation groups.

24. Roderick, R.D., and Kohen, A.I. *Years for Decision: A Longitudinal Study of the Educational and Labor Market Experience of Young Women* (1973)

Thesis:

The authors examine the job changing among employed young women, specifically change of employers. Of interest here is the examination of occupation changing among those who changed employers, compared with women who stayed with the same employer. (p. 33)

Data:

National Longitudinal Survey panel for young women (14-24 years old). Data are restricted to those employed in both 1968 and 1970. Occupation change is defined as movement among six occupation groups (professional/technical, clerical/sales, blue collar, domestic service, nondomestic service, and farm occupations). (p. 43)

Results:

(1) White women were three times as likely to change occupation group if they changed employers than if they stayed with the same employer (30 percent versus 10 percent). (p. 43-44)

(2) Black women who changed employers had a much higher rate of occupational change (49 percent) than similar white women. The virtually complete withdrawal of black women from domestic service occupations accounts for most of this difference. Black women who stayed with the same employer had a rate of occupational change (9 percent) similar to that of whites. (p. 43-44)

Limitations:

(1) Analysis restricted to brief review of tables for broad occupation groups.

25. Rosenfeld, R.A., and Sørensen, A.B. *Sex Differences in Patterns of Career Mobility* (1979).

Thesis:

The authors conceptualize social mobility as the outcome of an interplay between structural and individual characteristics, that is, between opportunities for moves presented by the structure and differences among people in their ability to take advantage of opportunities. (p. 90) Differences in patterns of mobility for men and women, then, are hypothesized to result from the types of origin and destination occupations women and men hold. Once these differences are controlled for, other sex-related characteristics may or may not influence mobility patterns.

Data:

1970 Census of Population occupational mobility item. Data were extracted from the one-percent Public Use Sample state file to provide two samples. One sample is for persons 20-31 years old in 1970 who had been out of school at least one but less than 11 years as of 1965, and who reported 1965 and 1970 occupations, and who were white. The second sample included whites 32-41 years old in 1970 who had been out of school at least one but less than 21 years in 1965, and who reported 1965 and 1970 occupations. The analysis of mobility is confined to movement among eleven groups, basically census major groups, with the addition of 'nurse, teacher, and related' and 'secretarial, stenographic' groups. (p. 91)

Method:

Observed mobility patterns are compared with those which would be observed if men and women held the same occupational origins and destinations. Differences remaining are attributed to sex-related individual and group characteristics. The statistical method is log-linear analysis. (p. 90)

Results:

(1) Initial display of the data indicate much different mobility patterns for men and women. An index of dissimilarity indicates that, for each cohort, over 50 percent of the men (or women) would have to change to another occupation category for their occupational distribution to be the same as women's (men's). (p. 92)

(2) Initial data review also suggests that women are relatively more likely than men to move from any 1965 category to a 1970 category composed mostly of women; the inverse is observed for men. Such patterns are seen as reinforcing the sex segregation of the occupations. (p. 93)

(3) Results of the log-linear models test hypotheses of the independence of mobility from three variables, tested in various combinations: 1965 occupation, 1970 occupation, and sex. The model of interest hypothesizes that for a given cohort, the 1965 and 1970 occupational distributions differ by sex, that 1965 occupation is associated with 1970 occupation, but this association does not vary by sex once the marginals have been controlled. (p. 98-99) The test of this model leads to acceptance of the hypothesis, and the authors' conclusion that when one controls for sex differences in occupational distribution at a given time, one finds only small differences by sex in the way people move between (or remain within) occupational categories. (p. 99) The focus on differences in male and female occupational distributions should be not in mobility patterns, but on differences in occupational selections.

Limitations:

(1) Influences of nonresponse biases, especially whether non-response varies by sex, are not discussed. (See Appendix 2.)

(2) Occupational categories are limited to eleven groups.

16. Saben, S. *Occupational Mobility of Employed Workers* (1967)

Thesis:

Presents data from a 1966 Current Population Survey. Data are examined for relationships between mobility and demographic characteristics, flows among occupations, and job and industrial mobility.

Data:

Retrospective occupational mobility item, Current Population Survey, January 1966. Data represent occupational change from January 1965 to January 1966.

Results:

(1) Occupational changing occurred among nearly 8 percent of all persons working in January 1966. Young workers had higher mobility rates than older workers. (p. 31)

(2) Rates are generally higher for men, although the situation is not clear-cut (p. 32), since higher labor force mobility is prominent for women.

(3) Mobility rates tend to be higher for non-white men than for white men, while little difference between the races for women is observed. (p. 32-33)

(4) College graduates had the lowest mobility rate of any educational attainment group, while workers with 8 years or less of school had the highest rates. (p. 33)

(5) Mobility rates varied considerably among major occupation groups, with the highest rates for men found among nonfarm laborers, clerical workers, operatives, and service workers. Highest rates for women were for clerical, service and sales occupations, and craft workers. (p. 33)

(6) Entry into professional jobs was infrequent before age 20, and decreased sharply after 55. Entry into managerial jobs was heavy between ages 25 and 44. Older workers often moved into service jobs. Most shifts into clerical jobs were made by workers under 25. (p. 33-34)

(7) Occupational transfer patterns generally did not change the occupational distribution of workers by sex: Occupation changes in each sex tended to have the same occupational distribution as total employment in 1966. (p. 34)

(8) There was comparatively little shifting from blue- to white-collar employment, but men made such shifts more often than women. There was considerable movement of men from blue-collar to service jobs, perhaps reflecting changing employment outlooks for these two groups.

(9) Change of occupation occurred along with change in employer in 4 out of 5 cases for men and more frequently among younger men, and nearly 9 out of 10 times for non-white men. The relationship for women was more varied across occupation groups than for men. (p. 36)

(10) Part-time workers had higher mobility rates than full-time workers, regardless of sex. (p. 37)

(11) For both sexes, about 7 out of 10 occupationally mobile workers also changed industry. Among occup tion groups, high mobility rates were associated with high rates of industry change. (p. 37)

(12) Various correlation measures indicated that occupational mobility rates (rates of entry) among occupations varied directly and markedly with unemployment rates, and had little correlation with earnings. (p. 38)

Limitations:

(1) Limitations of CPS data. (See Appendix 2.)

27. Schroeder, L.D. *Interrelatedness of Occupational and Geographic Labor Mobility* (1976)

Thesis:

The author discusses why interrelationships of occupational and geographic mobility are expected, and the relationship of the two types of mobility to labor market information and time lags. The basic model posits that persons' inclinations to move and/or change occupations depend on the expected relative costs and benefits of such moves. (p. 405) Costs and benefits are related to training and moving costs, and major life cycle events (e.g., graduation from school, retirement). Obtaining labor market information is also viewed as a cost. It is therefore hypothesized that labor mobility in one dimension (e.g., geographic) is associated with an increased probability of mobility in another dimension (e.g., occupational) due to a decrease in the cost of information after the initial move has been completed. (p. 406) In regard to the time lag problem, it is hypothesized that geographic and occupational mobility are interdependent when observed in consecutive year pairs, since information flows and reaction to such flows are likely to be fairly quick but not instantaneous. (p. 405) Thus, it is expected that occupational and geographic changes are likely to occur either simultaneously or with a short lag.

Data:

Short-term mobility is analyzed using data for men by birth cohort from the Wisconsin Assets and Income Study (David, Gates & Miller, 1974). Data are for men filing at least two Wisconsin income tax returns between 1947 and 1959. Occupation is coded to 1-digit 1950 census categories, and residence is coded by county. (N = 82,853)

Data for the longer term is published 1970 census data for geographic and occupational mobility items (interstate mobility and movement among 10 occupation groups) by age. (U.S. Bureau of the Census, 1973)

Method:

Tabulations are analyzed by comparing percent distributions and/or calculating Chi-squares to test hypotheses of no relationship.

Results:

(1) Short-term data show higher incidence of occupation changing among men who changed county of residence. Incidence and coincidence of the two types of mobility generally decreased with age, although not monotonically. (p. 407-408)

(2) Analysis of relationship of mobility in one year with mobility the next year indicated that there is no tendency for one type to lag or lead the other, but the two types remain interrelated. (p. 408)

(3) Long-term data indicated coincidence of the two types of mobility, and both types of mobility decreased monotonically across three age groups (short-term data used 5 age groups). (p. 409)

(4) Data for the ten occupation groups showed that for all occupational mobility paths, the proportion of interstate movers is greater for occupation changers than for those who stayed in the same occupations. (p. 411)

(5) Workers moving in and out of professional managerial and sales occupations displayed more geographic mobility than other occupation changers. (p. 410-411)

Limitations:

(1) Wisconsin sample limited to intrastate movers.

(2) Both samples limited to movement among broad occupation groups.

(3) Non-response bias in the Census data is not discussed. (See Appendix 2.)

28. Somers, G.G. *Labor Mobility: An Evaluation of Pilot Projects in Michigan and Wisconsin* (1972)

Thesis:

Study evaluated the effects of assistance provided under the Michigan and Wisconsin mobility demonstration projects on employment, earnings and satisfaction of relocatees relative to non-movers. Of interest here is the analysis of effects geographic mobility on changes in occupation, including the socio-economic status of occupations. (p. 6)

Data:

Data were for sample of unemployed individuals who received relo ation assistance between 1965 and 1976, under pilot demonstration projects funded by the U.S. Department of Labor. Respondents were relocated from rural areas with high unemployment rates to areas of high labor demand generally within their own states (e.g., Milwaukee, Detroit). (N = 306) Comparison non-mover samples from the movers' areas of origin were also selected. (p. 7-11)

Results:

(1) The occupational pattern of movers prior to relocation is similar to that of non-movers: both groups were weighted heavily toward operatives and laborers.

(2) Following relocation, there was a marked shift of movers to professional and technical jobs (2% to 14.6% of workers) and out of semi-skilled and unskilled jobs. Occup tional shifts of non-movers were in similar directions but of less magnitude. (p. 33-34)

(3) Movers greatly improved their socio-economic status, as measured by the National Opinion Research Center ranking of occupations. Movers who returned to their original location, however, had lower socio-economic status ratings than did non-movers. (p. 34-36)

Limitations:

(1) Small sample size and limited geographic range.

(2) Problems of non-response bias are not treated. Response rates were around 75 and 50 percent for Wisconsin and Michigan, respectively, for the movers; and 55 and 51 percent for non-movers. (p. 8, 11)

29. Sommers, D., & Eck, A. *Occupational Mobility in the American Labor Force* (1977)

Thesis:

Presents detailed tables of occup tional transfer rates, and examines relationships between occupational transfer and demographic characteristics of workers. Variation of transfer rates between sexes and among age groups and major census occupation groups is expected to reflect the different labor force characteristics of men and women and differing human capital investments and return to investments associated with the occupations groups. (p. 7)

Data:

1970 Census of Population; Occupational Mobility Tables, Bureau of Labor Statistics.

Method:

Comparison of rates for different occupation, age, and sex categories; comparison of rates with data from other sources, namely, Current Population Survey matched data and National Longitudinal Surveys. Analysis is of rates of transfer for detailed census occupations.

Results:

(1) High volumes of occupational transfer are observed: nearly one-third of all workers changed detailed occupation between 1965 and 1970. Occupational mobility is seen as accounting for large proportions of the change in employment by occupation: entrants to occupations in 1970 were more likely to be transfers from other occupations than to be new labor force entrants; leavers of 1965 occupations were more likely to enter other occupations than leave the labor force or die. (p. 5)

(2) Young workers exhibit more occupational mobility than older workers and transfer rates generally decline with increasing age throughout all age groups for both sexes. This pattern holds them within major occupation groups. This is seen as consistent with the exploratory experiences of young workers and their lack of occupational attachment or investments in an occupation in the form of experience, seniority, etc. (p. 6)

(3) The proportion of workers remaining in the same occupation increases with age until age 60 and over, when labor force separations and death rates increase sharply. (p. 6)

(4) For men, tendencies to remain in the same detailed occupation are highest for professionals, craft workers, farmers, and managers. These groups also had the lowest transfer rates, except for farmers, who also exhibit lower than average labor force separation rates. (p. 7)

(5) For men tendencies to change occupation were greatest among occupations where weak occupational attachments are expected: private household workers, farm laborers, and nonfarm laborers. (p. 7)

(6) For women, results were less consistent than for men. Comparison of transfer rates among occupation groups does not exhibit readily identifiable patterns. Lowest transfer rates were for professionals, private household workers, service workers, and non-transport operatives; highest were for nonfarm laborers, farmers, transport operatives, and managers. (p. 7)

Limitations:

(1) Data limitations of census data, with adjustments used in developing BLS occupational mobility tables (see above).

(2) Analysis confined to comparison of rates among major occupation groups by age and sex.

30. U.S. Department of Labor, Bureau of Labor Statistics *More Workers are Changing Occupations* (1978)

Thesis:

Presents occupational mobility data from a 1978 Current Population Survey. Data are compared with 1973 CPS data (Bryne, 1975). Brief descriptions of mobility rates by age, sex, occupation group, and industry and employer mobility status are provided along with two tables. Detailed analysis forthcoming in the *Monthly Labor Review.*

Data:

Retrospective occupational mobility item. Current Population Survey, January 1978. Data represent occupational change from January 1977 to January 1978.

Results:

(1) Aggregate levels of mobility are higher in 1978 than for any previous CPS data (Byrne, 1975; Saben, 1967). Levels of employment and the proportion of the labor force under 25 years old also higher in 1978.

(2) No differences in mobility rates by race or Spanish origin were noted for men; among women the rate for blacks was lower than that for whites and Hispanics.

(3) Mobility declined with increasing age.

(4) Mobility rates were lowest for formers and professionals, "occupations for which extensive capital, education or training are generally needed."

Limitations:

Limitations of Current Population Survey data. See Appendix II.

31. Wash, P. *Occupational Mobility of Health Workers* (1977).

Thesis:

Transfer rates into and out of health occupations are expected to vary with training requirements and earnings of the occupations; transfers among health occupations are examined to identify career patterns or transfer patterns.

Data:

1970 Census of Population; Occupational Mobility Tables, Bureau of Labor Statistics. Analysis for four groups of health occupations (13 detailed census occupations) for which data have acceptable levels of statistical reliability. Groups included health practitioners (physicians, dentists, pharmacists); nurses, dieticians, therapists; health technologists and technicians (clinical laboratory, radiologic, and other); and health service workers (dental assistants, health aides except nursing, practical nurses, and nurse aides and orderlies).

Method:

Comparison of rates of transfer into and out of selected occupations with rates for all workers and among health occupations. Analysis of data on transfer from one detailed occupation to another to identify transfer patterns.

Results:

(1) Health workers exhibited overall rates of transfer out of their occupations of about half that for all workers, reflecting the heavy concentration of workers with high levels of training. Variation of rates of transfer out among the four health worker groups reflected training levels and, in some cases, differences in career patterns or labor market conditions. For example:

(a) Health practitioners had the lowest transfer out rate of the four health groups. Pharmacists, however, exhibited a high rate compared to other practitioners, reflecting their career progression from pharmacists to pharmacy managers (one-third of all pharmacists who transferred out became managers). (p. 25)

(b) Nursing, dietician, and therapist group had the next higher transfer out rate. Registered nurses had the lowest rate, reflecting the shortage of nurses during the late 1960s and the resulting salary increases. (p. 25)

(c) The technologist group had the third highest transfer out rate, but had substantial differences in rates among the occupations within the group. Radiologic technicians, who had highest salaries and formal training requirements, transferred least often; while the 'other technician' group transferred most often.

(d) Relatively low-skilled health service groups had the highest transfer out rate, but rates varied within the group. The lowest rate for any non-practitioner health group was for practical nurses, perhaps reflecting their relatively high training for a health service occupation, their older age and rapid increase in employment, and probably in job stability, during the reference period.

(2) Men were more likely than women to transfer out in every health occupation except physician.

(3) Health occupations generally received a much smaller proportion of entrants from occupational transfer than the average for all occupations. The certification, licensure, and specific training requirements limit job changing to those who have met the requirements. (p. 28)

(4) Considerable movement occurs from one health occupation to another. In most cases, between one-fifth and one-fourth of those who transferred into health occupations came from another health occupation. (p. 28)

(5) Transfer in patterns varied for workers who transferred among occupations in the health field.

(a) Most transfers into health practitioner occupations came from other professional level health occupations.

(b) About one-fourth of transfers into the technician and technologist groups came from other health occupations, primarily from the health aides, nurses aides, and orderlies.

(c) In the nurse, dietician, and therapist group, over one-fifth of the transfers in came from other health occupations, mainly health services.

(d) Registered nursing relied more on transfers from lower level occupations than on transfers from professional jobs. Transfers into registered nursing were exceptionally young—more than 60% under 30 years old in 1965—perhaps reflecting exploratory activities of potential young nurses

in nurse aide or similar jobs. Transfer from practical nursing, however, did not provide a significant source of registered nurses. This result may be a result of characteristics of practical nurses mentioned earlier, or classification problems in the census data discussed below.

(e) Transfers into health service occupations generally came from other low skill, low-paid jobs in clerical, sales, and services groups, rather than from other health occupations.

Limitations:

(1) Data limitations of census data, with adjustments used in developing BLS occupational mobility tables. (See Appendix 2.)

(2) Classification problems in census data for registered and practical nurses obscure mobility information for these occupations. (p. 29)

APPENDIX II

Major Data Sources

Appendix II reviews a number of major data sources meeting the primary criterion for inclusion in this study as described in Appendix I: they contain data elements showing occupation of employment for the same individuals for at least two points in time. Only large multipurpose data sets are included, as opposed to small or special data sets forming the basis for particular research efforts.

The review of data sources focuses on two main topics: the content of the data in terms of its occupational detail and inclusion of data elements on characteristics of interest, and the data collection techniques and limitations. A brief overview of the types of data providing information on occupational mobility is also provided.

Overview of Types of Data Sources

The measurement of occupational mobility requires longitudinal data that allow comparison of the occupational status of individuals over time. Longitudinal data may be collected through multiphase or "panel" surveys which trace the occupational histories of a given population, or through retrospective cross-section surveys in which respondents report their current and previous occupations. Each approach has its advantages and disadvantages. Matching of individual respondents to successive cross-section surveys is another potential source of data.

Panel surveys are the more expensive, especially for large samples, and have the major problem of attrition between collection phases. Attrition is usually caused by failure to locate all individuals in the first phase of the survey, and is likely to result in biases, particularly for mobility items. Geographic mobility of respondents is probably the main reason for failure to locate them, and is known to be highly correlated with occupational change (Schroeder, 1976).

Panel surveys also have some major advantages, summarized by Parnes:

> "some types of variables . . . cannot conceivably be measured retrospectively. In general terms, these are characteristics which are subject to change over time and can be ascertained only by objective measurement (or subjective judgment) by someone other than the respondent (e.g., attitudes, preferences). Secondly, . . . periodic surveys have the advantage, compared with a single retrospective survey, of reducing errors in response which may be attributable to faulty recall" (1972, p. 13).

The advantages and disadvantages of retrospective surveys are practically the inverse of those of panel surveys. Because costs are lower, larger or more comprehensive samples are possible, and attrition and its associated biases are avoided. On the other hand, biases of other types are intro-

duced by the reliance on 'recall' questions. Respondents may fail to answer the retrospective question, or give inaccurate answers because they cannot remember or do not make the effort to remember their activities at our earlier data. Even seemingly straightforward retrospective questions, such as the Census of Population question on state or birth, can involve significant recall and reporting errors.

Data constructed by matching responses of individuals who appear in successive cross-section surveys are a recent potential source of information on mobility. In general matched data files have the advantage of being less costly than panel surveys and more accurate than retrospective surveys as far as response bias is concerned. They are, however, fraught with serious problems of statistical validity because of failure to match all individuals and resulting damage to sampling characteristics of the cross-section surveys.

Further advantages and limitation of panel, retrospective and matched data sources are detailed in the following reviews of major data files.

Panel Surveys

1. National Longitudinal Surveys

Primary Source

Center for Human Resources Research, The Ohio State University, with funding of the U.S. Department of Labor, Employment and Training Administration (formerly Manpower Administration), and the assistance of the U.S. Bureau of the Census.

Description

The National Longitudinal Surveys (NLS) provide data from periodic interviews of individuals in four age and sex groups: older men (45-59 years old in 1966), young men (14-24 in 1966); older women (30-44 in 1967), and young women (14-24 in 1968). The original samples were drawn by the Census Bureau as probability samples of the non-institutional civilian population representing every state and the District of Columbia. To permit statistically reliable estimates for blacks, a sampling ratio four times as great as that for whites was used. Each sample consists of about 3,500 whites and 1,500 blacks (Parnes, 1972).

Items collected on successive interviews over five years include labor force and employment status, and characteristics hypothesized to relate to labor force behavior—e.g., health, family structure, education and training and various psychological and attitudinal items. The initial survey also collected detailed work histories. Occupation and industry items are coded according to the 1960 dicennial census classification scheme. A full description of the surveys may be found in the National Longitudinal Surveys Handbook (Ohio State University, 1977).

Limitations

(1) Attrition of individuals from the sample, previously noted as a drawback of the panel approach, is one limitation. However, attrition from the NLS panels for reasons other than death or institutionalization has been comparatively low, under one-fifth of the original sample for all groups except young men (Parnes, 1972). Even these levels of attrition, however, cannot be regarded as trivial.

(2) Measures of gross change—e.g., occupational mobility—may be overstated, since some of the observed change may reflect differences in respondent's way of answering the questions at two points in time, and differences in coding the same responses (Parnes, 1972).

(3) Parnes (1972) suggests the possibility of the 'Heisenberg principle' being operative. The act of interviewing the respondent may in itself result in different labor force behavior than if the respondent were left uninterviewed.

(4) Limitations of the census occupation coding and 1960 classification system apply. See Chapter I.

2. Post-Censal Surveys of Engineers and Scientists, Occupational Mobility Items.

Primary Source

U.S. Bureau of the Census, 1962 and 1972 Post-census Manpower Surveys, conducted in cooperation with the National Science Foundation.

Description

These surveys collect detailed demographic, educational, and career related data on individuals reporting employment in engineering and scientific occupations in the preceding dicennial Census of Population. The sample in drawn from the 20% dicennial census sample, stratified according to dicennial census stratifications, and restricted to the selected occupations and to persons 16 and over and in the experienced civilian labor force. Samples included 108,000 persons in 1972 and 70,000 in 1962 (U.S. Bureau of the Census, 1974, p.117: and 1969, p. 62). An additional sample of persons with four or more years of high school education was also drawn for the 1972 survey.

In addition to information reported in the 1970 Census, the 1972 survey provides data on detailed education items, such as degrees, majors, and institutions attended; membership in professional societies; licenses, certificates or registrations held; supplemental training; professional identification; occupation of first full-time professional job; major work function (e.g., research, teaching); and demographic items. The survey also collected detailed information on occupation of current (or most recent) job and the two preceding jobs.

The 1962 survey collected similar data, including occupation of current employment and a retrospective question on employment in April 1, 1960 (the dicennial census date), used as a check on the census response. Finally, questions on work attitudes were included.

All occupation items were coded using the classification used for the respective dicennial census. Published tabulations for 1962 show occupation in 1962, by occupation in 1960 and educational attainment in 1962, for engineering and science groups and other major occupation groups. (U.S. Bureau of the Census, 1974, tables 8-9). More detailed unpublished tabulations are available from the National Science Foundation.

Limitations

(1) Limitations of census data apply, particularly the limitations of occupation coding and the census occupation classification system. See Chapter I. Availability of employment information in addition to that collected on the census itself helps in overcoming some of these limitations.

(2) The questionnaire itself is rather cumbersome, which may introduce response error on increase non-response. Filling out the 1972 questionnaire took this author, who has more than average experience with such questionnaires, about half an hour.

Retrospective Data Sources

1. 1970 Census of Population, Occupational Mobility Item

Primary Source

U.S. Bureau of the Census, 1970 Census of Population, 5% sample questionnaire.

Description

Respondents 16 years old and over were asked to provide information on their employment status and occupation during the census reference week (April 1970) and 5 years earlier (1965). Specifically, the following categories related to occupation were requested:

Activity in 1970:
- employed, including persons at work and those with a job but not at work
- unemployed
- not in the labor force
- work experience of persons not employed (i.e., employed in the previous 10 years)
- Armed Forces membership
- occupation of employment (currently employed persons only)
- occupation of last job (for persons not currently employed but worked in the previous 10 years)
- industry of employment

Activity in 1965:
- employed
- not working
- work status not reported
- occupation of employment (persons employed in 1965)
- industry of employment (persons employed in 1965)
- Armed Forces membership

The occupation items for both 1965 and 1970 were coded to the full detail of the 1970 census occupation classification (U.S. Bureau of the Census, 1971). However, data for nonrespondents to the occupation question were treated differently for the two years. Nonrespondents to "1970 occupation" were allocated to the twelve census major occupation groups and constitute the twelve "allocated" occupations in the census classification. Nonrespondents to "1965 occupation" were not allocated, but were all coded as "occupation not reported."

Published data from the occupational mobility item were aggregated to 10 major occupation groups (U.S. Bureau of the Census, 1973). However, detailed occupational data can be obtained from the Public Use Samples (U.S. Bureau of the Census, 1972) containing the 5% sample data.

The Census of Population is a household survey including all households and other living quarters identified by the Bureau of the Census. The 5% sample receiving the questionnaire containing the occupational mobility item was a sample of one-twentieth of all households, including nearly 6 million persons 16 years of age or more.

In addition to the employment status and occupational mobility items already identified, the census 5% sample data includes a wide range of demographic and socio-economic items of interest in the analysis of occupational transfer. Cross-tabulation of occupational mobility information with any of these items is possible using the Public Use Sample data files. The useful level of detail of such cross-tabulations may be limited by sampling variability.

Limitations

(1) *Response error* resulting from faulty recall of 1965 employment status and occupation is the major limitation of this data. The extent of response error has been an issue of discussion among those concerned with the technical quality of the data and those concerned with its continued availability. The Bureau of the Census (1970) conducted a special study of recall accuracy using a sample of Current Population survey respondents, and identified large response error levels that varied according to the items recalled (work status, occupation) and the characteristics of the respondent. While this study itself has severe limitations (U.S. Department of Labor, May 1976; Miller, 1976; Miller, 1977), it has unfortunately resulted in a decision to drop the occupational mobility item from the 1980 census.

(2) *Nonresponse.* The census data contain large numbers of nonrespondents to both the 1970 and 1965 occupation questions and the 1965 work status question. About 2.3 million individuals failed to report their 1965 work status; about 1.6 million who did report 1965 employment failed to report an occupation 1965; and about 1.2 million persons reporting 1970 employment failed to report an occupation and were therefore classified in "allocate" occupational categories (U.S. Bureau of the Census, 1973). These high levels of nonresponse introduce biases in the occupational mobility data to the extent non-respondents are different from respondents in their mobility status (U.S. Department of Labor, 1976).

(3) *Occupational Coding Variability.* Some occupational transfers found in the census data are spurious in that they result from inconsistent coding of the 1970 and 1965 occupation items and not from actual transfer. See discussion of Current Population Surveys below.

(4) *Sampling Variability.* Even with samples as large as the 5% census sample or the Public Use samples, sampling variability becomes a problem when data are disaggregated to very fine levels of detail, such as mobility status be detailed occupation, age, and state of residence (U.S. Bureau of the Census, 1972).

(5) *Limitations of Census Occupational Classification.* While the Census occupational classification is one of the most widely used, it has major limitations when used for labor market analysis and other purposes. These limitations are well documented elsewhere (McKinlay, 1976; Kelley et al., 1975), and are discussed in Chapter II.

(6) *Ex-post measurement of characteristics.* Data for most characteristics of interest that change with uncertainty over time (e.g., earnings) are measurements for 1970. Thus the influence of such factors on mobility can be analyzed only from the perspective that they represent results and not motivations for mobility. This limitation is less serious for analysis of characteristics of *occupations* than of individuals, if it can be shown that the characteristics of the occupations did not change significantly over the 1965-1970 period, either absolutely (e.g., percent female) or relatively (e.g., earnings relative to other occupations).

• **2. Occupational Mobility Tables.** U.S. Department of Labor, Bureau of Labor Statistics, Division of Occupational Outlook.

Primary Source

Tables developed from 1970 Census of Population occupational mobility item. (U.S. Department of Labor, May 1976; Sommers and Eck, 1977)

Description

The full set of 34 tables provide occupational transfer rates by detailed occupation, age, and sex; rates of entry into occupations because of transfer, by detailed occupation, age, and sex; and cross tabulations of occupation in 1965 by occupation in 1970 by detailed occupation and age; and other tabulations (U.S. Department of Labor, May 1976).

The original 1970 census data were adjusted to include persons dying between 1965 and 1970 in the 1965 base data used for calculating rates and percent distributions. An additional adjustment procedure was introduced to reduce the non-response bias that caused underrepresentation of some age and sex groups in the original data (Sommers & Eck, 1977, Appendix).

The tables were developed from a special file extracted from the three 1% Public Use Samples for the 5% census sample. Because the three public use samples are mutually exclusive, the files could be combined to form a 3% sample of the total population. The special file included about 3.7 million persons (sample count) 21 years old and over in 1970 (16 and over in 1965). Tables were prepared showing the sampling variability of the transfer rates and the method for calculating standard errors for other data elements are provided (U.S. Department of Labor, May 1976). Data are available for the nation by detailed census occupation, sex, and six age groups.

Limitations

(1) *Census limitations.* The tables reflect the limitations of the 1970 census data on which they are based. The biases introduced by nonresponse on 1965 work status, however, have been reduced by an adjustment procedure.

(2) *Absence of net mobility information.* The size of the nonresponse groups for 1970 and 1965 occupation prevented the calculation of net mobility rates without extensive research on possible adjustment procedures.

(3) *Sampling variability.* Transfer rates for many smaller occupations had standard errors in excess of 10%.

3. Current Population Surveys, Occupational Mobility Item.

Primary Source

Retrospective and current occupation collected on occasional supplements to the monthly Current Population Survey (CPS) conducted by the Bureau of the Census. Data are available for January 1965–January 1966, January 1972–January 1973, and January 1977–January 1978 (Saben, 1967; Byrne, 1975; U.S. Department of Labor, 1979).

Description

Supplemental questions on the January CPS questionnaire asked for the respondent's employment status and occupation during the reference week, and for those employed in the reference week, employment status and occupation one year earlier. Data include persons 18 years old and over and not in school at time of the survey.

The CPS is a survey of a sample of 55,000 households selected to represent the U.S. population. The sample is drawn from a universe of "primary sampling units", which are geographic areas of given population sizes; the sample is stratified to obtain population and employment status estimates by race and urban residence (U.S. Bureau of the Census and U.S. Department of Labor, 1976).

The occupational mobility data show occupation at the survey date by occupation one year earlier, that is, the percentage of workers in an occupation who came from a different occupation. Data cannot be used to calculate rates of transfer out of an occupation, however, since the earlier occupation question is asked only of persons employed at the survey date. Occupational detail is available to the extent sampling variability allow, although most available tabulations are by major occupation group only. Demographic and socio-economic detail are available for those items collected on the January CPS questionnaire.

Limitations

(1) Data cannot show rates of transfer out of an occupation (see above).

(2) Includes the same non-response and coding variability limitations as the 1970 Census of Population occupational mobility item (see earlier discussion of census).

(3) *Criteria for Identifying Matches.* Households in the matched data are identified according to the similarity of individuals within the households as reported on successive CPS surveys. Criteria for similarity are demographic characteristics of the individuals and the composition of the household (e.g., number of persons). Lack of actual identification of specific households allows for matches that are actually different individuals.

(4) *Rotation Bias.* Respondents may be inconsistent in their replies to identical survey questions when reinterviewed (Kalachek, 1978; U.S. Bureau of the Census and U.S. Department of Labor, 1976).

Matched Cross-Section Survey Data

1. Current Population Survey Matched Files

Primary Source

Matched data files have been developed by identifying individuals in households appearing in successive Current Population Survey samples.

Description

Matching is made possible by the CPS sample design. Each survey sample consists of eight subsamples of households, or rotation groups, which are in the survey for four consecutive months, out for eight months, and then returned for four more months. Identification of responses from the same household and determination that the household is occupied by the same individuals at the time of successive interviews allows construction of a 'longitudinal' data file (Kalachek, 1978).

Comparison of responses to employment status and occupation questions in successive surveys allows calculation of occupational mobility rates. Experimental data from matched CPS files have been prepared by the Bureau of Labor Statistics, and will be presented in a forthcoming technical paper.

Limitations

(1) *Census and CPS Limitations.* The matched data have the same limitations as the dicennial census and Current Population Survey data with respect to coding variability, nonresponse and limitations of the census occupational classification. See discussion of 1970 Census and CPS above.

(2) *Exclusion of Movers and Migrants.* Because the matching procedure matches individuals by household, not individuals per se, persons who moved to another household between successive CPS surveys are excluded. This introduces serious biases in the occupational mobility data, since occupational and geographic mobility are known to be highly correlated (see chapter II).

(3) *Loss of Sample Design.* To date valid techniques have not been developed to incorporate sampling weights inherent in CPS cross-section samples into matched data. Each matched household therefore carries an equal weight in tabulations of the matched data, although individual households carry varying weights in the monthly cross-section samples (U.S. Bureau of the Census and U.S. Department of Labor, 1976). The absence of sampling weights effectively destroys the CPS sampling characteristics in the matched data.

(4) *Response Bias.* Matched CPS data are subject to severe problems of response bias. Respondents may be inconsistent in their replies to identical survey questions when reinterviewed in successive months, resulting in individuals being shown as occupation or labor force status changers in the matched data when no change was made, or shown as nonchangers when changes were actually made. Bureau of the Census evaluations of gross change in labor force status data from matched CPS files indicates that gross change rates may overstate actual levels by three or four times (Statistical Methods Division memorandum, May 30, 1979). Additional inaccuracies are introduced by inconsistent coding of responses to occupational questions. An individual employed in the same occupation in both years may respond to the two CPS questionnaires somewhat differently, leading perhaps to different occupational coding of the answers and consequent spurious mobility information.

(5) *Criteria for Identifying Matches.* Households in the matched data are identified according to the similarity of individuals within the households as reported on successive CPS surveys. Criteria for similarity are demographic characteristics of the individuals and the composition of the household (e.g., the number of persons). Lack of identification of specific households allows for matches that are actually different individuals.

REPORTS ON OCCUPATIONALLY TRANSFERABLE SKILLS

McKinlay, B. *Characteristics of jobs that are considered common: Review of literature and research* (Info. Series No. 102), 1976. ($3.80)

A review of various approaches for classifying or clustering jobs, and their use in (a) describing the elements of commonality involved when people make career changes, and (b) understanding better the concepts of occupational adaptability and skill transfer.

Altman, J.W. *Transferability of vocational skills: Review of literature and research* (Info. Series No. 103), 1976. ($3.80)

A review of what is known about the transferability of occupational skills, describing the process or the facilitators of skill transfer.

Sjogren, D. *Occupationally transferable skills and characteristics: Review of literature and research* (Info. Series No. 105), 1977. ($2.80)

A review of what is known about the range of occupation-related skills and characteristics that could be considered transferable from one occupation to another, describing those transferable skills which are teachable in secondary and postsecondary career preparation programs.

Ashley, W.L. *Occupational information resources: A catalog of data bases and classification schemes* (Info. Series No. 104), 1977, ($18.20)

A quick and concise reference to the content of 55 existing occupational data bases and 24 job classification schemes. Abstracts of each data base and classification scheme include such information as: identification, investigator, location, documentation, access, design information, subject variables, occupation variables, and organization variables.

Wiant, A.A. *Transferable skills: The employer's viewpoint* (Info. Series No. 126), 1977. ($3.25)

A report of the views expressed in nine meetings across the country by groups of local community and business representatives concerning the types of transferable skills required and useful in their work settings and how a better understanding of transferable skills could improve training and occupational adaptability.

Miguel, R.J. *Developing skills for occupational transferability: Insights gained from selected programs* (Info. Series No. 125), 1977. ($3.80)

A report of clues and suggestions gained in the review of 14 existing training programs, with recommendations for practice which appear to have been successful in recognizing skill transfer and taking advantage of an individual's prior skills and experience.

Ashley, W.L., & Ammerman, H.L. *Identifying transferable skills: A task classification approach* (R&D Series No. 146), 1977.

A report of an exploratory study designed to test the usefulness of three classification schemes in identifying the transferable characteristics of tasks in diverse occupations.

Pratzner, F.C. *Occupational adaptability and transferable skills* (Info. Series No. 129), 1977. ($6.25)

A summary final report, presenting and discussing an array of issues encountered in the various project activities, and offering recommendations.

Selz, N.A., & Ashley, W.L. *Teaching for transfer: A perspective for practitioners* (Info. Series No. 141), 1978. ($2.35)

An informal discussion of the need for teachers and trainers to give more attention to developing transferability and transferable skills in students for learning and life performance applications. Practical suggestions and techniques for improving the capacity of students to transfer learned skills and knowledge to new situations are given.

Brickell, H.M., & Paul, R.H. *Minimum competencies and transferable skills: What can be learned from the two movements* (Info. Series No. 142), 1978. ($5.10)

A report comparing and contrasting potential impact of the transferable skills and minimum competency testing movements on school programs, staff, and students. Key questions and alternative strategies are presented to assist educational planners and administrators in formulating policy and establishing promotion or completion criteria in secondary and postsecondary education.

THE FOLLOWING REPORTS WILL BE AVAILABLE IN 1980:

Ashley, W.L., Laitman-Ashley, N.M., and Faddis, C.R. (Eds.) *Occupational adaptability: Perspectives on tomorrow's careers* (Info. Series No. 189), 1979.

Proceedings from a national symposium. The topics focused on how training for adaptability can increase the use of human resources in the labor force.

Selz, N. (Ed.) *Adult learning: Implications for research and policy in the eighties,* 1979.

Proceedings from a national symposium on adult learning. Topics include state of the art, research into practice, policy implementation, and future directions.

Wiant, A.A. *Self-assessment for career change: Does it really work? Summary report of a follow-up study* (Info. Series No. 191), 1979.

An analysis of the impact of self-assessment on one's subsequent employment experience. The particular assessment technique studied is one intended to help identify those skill attributes which have provided satisfaction in various life experiences. Outcome measures included skill utilization and job satisfaction.

Selz, N.A., and Jones, J.S. *Functional competencies in occupational adaptability and consumer economics,* 1979.

Perceptions of national adult samples are reported. Document includes where competencies should be taught —at home, at school, on-the-job, self-taught—and how important these competencies are in successful work and life activities.

Kirby, P. *Cognitive style, learning style, and transfer skill acquisition,* 1979.

A review and synthesis of the literature in adult learning styles, as they relate to the acquisition of transfer skills.

Knapp, J.E. *Assessing transfer skills,* 1979.

A review of traditional and non-traditional assessment with respect to the assessment of transfer skills.

Sommers, D. *Empirical evidence on occupational mobility* (Info. Series No. 193), 1979.

A review and synthesis of the literature on the characteristics of occupationally mobile workers and their jobs.

Laitman-Ashley, N.M. (Ed.) *Women and work: Paths to power* (Info. Series No. 190), 1979.

Proceedings from a national symposium that offer perspectives on women in the work force. Topics will cover five major transition points that any person can experience in a lifetime.

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