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ADAPTATION TO CHANGE IN NUMBER OF INDUSTRIAL ESTABLISHMENTS: THE INTERACTION BETWEEN LABOR FORCE MOVEMENT AND ENVIRONMENT

By

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ABSTRACT

ADAPTATION TO CHANGE IN NUMBER OF INDUSTRIAL ESTABLISHMENTS: THE INTERACTION BETWEEN LABOR FORCE MOVEMENT AND ENVIRONMENT

by

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Human Ecology theory and industrial establishments and interstate migration data are used to study the interaction between social structure and social behavior. Social structure is operationalized as number of industrial establishments and, implicitly, the resultant labor market. Social behavior is operationalized as inter-state migration. This dissertation examines the relationship between out-versus-in migration and changes in the type of industry on a state-by-state basis for the entire United States for migrants age 21 to 29 and age 30 to 59..

Responsiveness to change in number of industrial establishments depends on age, occupation, and industry. Factors influencing immigration are not the mirror image of those that influence emigration. Emigration is influenced by comparison of the origin to its former condition for migrants age 30 to 59; immigrantion for age 30 to 59 is based on comparison among destinations. The behavior of migrants age 21 to 29 is complex and depends more on their occupations rather than their industries.

Dedication

This is dedicated to my daughter who was my reason for keeping on when I was tired.

It is also dedicated to all those who made it possible and to the rest who made it necessary.

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TABLE OF CONTENTS

LIST OF TABLES

"Change is the nursery of musicke, joy, life, and eternity." (Donne, (c) 1600).

In 1960, the major employer on the British Isle of Sheppey closed down (Pahl,1984). After 1960, at least 1400 new private sector jobs were created on Sheppey. In spite of the new jobs, the unemployment rate rose to twenty percent. No increase in out-migration from the island followed this increase in unemployment, although theorists like Hawley (1950) and Greenwood (1975) would predict that out-migration would increase following such an apparent decline in employment opportunities. On the contrary, forty percent of the island's current population moved to Sheppey after 1960. Intutitively, a location with steadily rising unemployment shouldn't be very attractive to anyone. Why did the outsiders come? Why didn't the islanders leave? Why did the unemployment rate rise after the new jobs came to the island? In the light of the Sheppey experience, it doesn't make sense to explain migration primarily as a response to number of jobs without considering the socioeconomic characteristics of those jobs.

I propose that the crucial issue confronting a population for whom the industrial structure is changing is not the mere number of jobs gained or lost, but rather the kinds of

jobs gained or lost. An influx of engineering jobs does not help a population composed primarily of manual laborers.

Although this kind of change is not limited to Sheppey, it is useful and convenient to use Sheppey as an example. In his Divisions of Labour (1984), Pahl has examined in detail the nature and organization of work on this island from its early history through 1984. This includes: accounts of number and type of workplace establishments, number of employees used, rate of pay, and skill level required of employees.

Sheppey has gone through major changes since 1960. These changes have resulted in a complete re-structuring of the labor market demands and industrial diversity on the island. Since Sheppey is an island and thus has the advantage of clear geographic boundaries , it can serve as a convenient example of the challenge of adapting to a changing environment.

Sheppey Island

In the mouth of the Thames River, just off the southeast coast of England, lies Sheppey Island. The first bridge

between the mainland and the island was built in 1860. The toll was a penny each way. The inhabitants rarely left the island. They worked on the island and had their own schools and social service organizations. They simply had very little reason to go anywhere else.

Prior to 1960, virtually the only employer on Sheppey was the British Royal Naval Dockyard. The dockyard provided high wages, stable employment, and vocational training for the island's youth by way of apprenticeships as shipwrights. Shipwrights are carpenters who specialize in the construction and maintenance of ships. Shipwrights were treated by the dockyard as 'general constructors' of the ships. Pahl states that this occupational classification has no parallel in private industry. Jobs tended to be handed down within families, that is, you got in at the dockyard because your father, brother, or another relative worked there.

Sheppey has always had a small tourism industry. Unfortunately, the number of tourists began to decline in the late 1970's. Tourists camped out in caravans (these seem to be some sort of mobile home) along the northwestern shore of the island. People not employed at the dockyard, particularly teenagers or school dropouts, sometimes took seasonal work selling things to tourists. Although respectable married women did not work for wages outside the

home, some of them did rent out rooms to tourists. No special skills were required to enter the job market.

In 1960, the admiralty (Royal Naval) dockyard closed. The closing of the dockyard put 'more than 700 dockyard workers' out of work (Pahl, 1984, pg. 169). Although the port of Sheppey is still open and used, it is no longer a major ship building and repair area. It is merely a transition point for a Japanese car importer (Toyota) or for conventional ships unloading produce for the London markets. Toyota has an auto import staging area on the island, that is, it's not a factory. They use the island more as a sort of open-air warehouse. The type of occupation employable at the dockyard changed from shipwright to stevedore. A stevedore is a person who loads and unloads goods from ships. It is an occupation which requires physical strength and few specific skills. During the late sixties and early seventies the number of dockyard workers (stevedores) increased from 360 to 380. In the 1960's, a local chapter of the stevedores union was formed.

After 1960, new industries and employers did come to the Island. Between 1961 and 1975 Abbott Laboratories, a steel mill, a steel rolling mill and Toyota all brought new jobs to the island. The steel mill and Abbott Laboratories together had brought in about 1400 new jobs by 1983. The steel mill specializes in processing scrap iron into steel

rods. In spite of new establishments, the unemployment rate rose steadily to twenty percent in 1983. The island's 1984 population was about 33,000. This means about 6,600 people were unemployed in 1983, assuming that the population level did not change significantly from 1983 to 1984. This is a very rough number because the 33,000 includes all of the population rather than just the adult population.

Not all of the present inhabitants of Sheppey were born there. Two-fifths (40%) of all households on Sheppey have come to the Island since 1960. The new people came after the dockyard closed and with the new industries. The original inhabitants did not have the skills needed by the new industrial establishments. Ninety percent of the skilled jobs in the steel mill were filled by people from off the island. In fact, the steel rolling mill (a different mill from the one that makes steel rods) is owned by Italians and employs skilled Italians, not the local islanders. In the past few people commuted off the Island to work. Now, about twenty-five to thirty percent do. In the past, married women did not work outside the home. Now, women working is not considered surprising.

It was not just the jobs that changed on Sheppey, but rather the nature of work itself. Previously, it had been the national goverment or private British firms that provided major employment on Sheppey. Now, the major employers are

multi-national firms who treat their employees very differently than had been the custom of the former British employers.

The steel mill that was established in 1972 employed 'more than 800 workers' eight years later (Pahl, 1984, p. 170). This was a Canadian based firm. In this mill, 'ninety per cent of the most skilled workers' came from off the island (Pahl, 1984, p. 170). The new multi-nationals demanded acceptance of discipline and control of the employees by the employer. These firms laid people off at will. The old firms had adjusted hours to suit the needs of the workforce and had cutback the number of hours per employee rather than laying people off in slack periods. Previously, employers had provided job security (if not high wages) and had fostered individualistic attitudes in workers. The shipwrights could even sometimes do private jobs on the government's time with the government's tools and materials. They were also allowed to take scrap lumber home without charge, although they were limited at any one time to the amount they could carry untied under one arm. This is similar to the working arrangments Gouldner found in the Gypsum Plant before the management change (Gouldner, 1954).

There are not many large employers on Sheppey. In 1981, of thirty-nine manufacturing enterprises only fifteen employed more than fifty workers, ten manufacturers employed between

twenty-one and fifty workers, and fourteen manufacturers who employed twenty or fewer workers. Including the fifteen manufacturers, the island has only 27 total employers who employ more than fifty workers. Four of the six largest companies are owned by multi-nationals. Half of the twenty-five largest firms are owned by organizations based outside the United Kingdom.

The current pattern of industrial development is in striking contrast to earlier events on Sheppey. It so happens that the closing of the dockyard is not the first time that the major opportunity for employment had declined on Sheppey. As the result of expansion of the dockyard in the 1850's associated with the Crimean War, by 1861 two-thirds of the male workforce was employed in the naval dockyard or in the military. But by 1870, there were such substantial cutbacks at the dockyard that two troopships were used to take displaced dockyard workers and their families to Canada. In light of this history, it is even more intriguing that the recent demise of the dockyard did not result in increased out-migration.

In addition to the dockyard, development in the nineteenth century included: tourism, a steam engine factory, a glass bottle factory, and what might be termed 'independent salvaging', (also known as smuggling). Occasionally, ships founder or are wrecked on the Channel side of the island.

The islanders are self-starters and willing to work late hours salvaging the cargo. (Pahl reports that this still continues. In the 1970's, he happened to come across industrious salvagers late one evening and was soon convinced that some fieldwork opportunities are best passed by.)

In the twentieth century, industrial establishments (beyond those already mentioned) include: a fertilizer factory, a glass bottle factory, pubs, knick-knack shops for tourists, and assorted shops for carpets, groceries, etcetera. However, none of these is a major employer. In addition, tourism has declined since the 1970's. None of these establishments fostered collective organization (unions), shift work, or the hard industrial discipline demanded by most modern factories.

Implications of the Sheppey Experience

The consensus of the literature on migration (Greenwood, 1975) is that people move primarily because of economic reasons. People leave an area that is not doing well and enter an area that is doing well. In looking at what has happened to the original inhabitants of Sheppey, it seems that a different theoretical approach may be needed. An approach to migration which simply counts jobs assumes that that local people would be eager to leave and outsiders

would be reluctant to enter an area with a high unemployment rate.

Social/Human Ecologists, such as Hawley (1950), would say that the islanders did not leave en masse after the closing of the dockyard because the arrival of new employers created new jobs for them. But the new jobs were not exclusively filled by the old inhabitants; new people moved to the island to take the new jobs. The original inhabitants stayed because there was no work for ship builders either on or off Sheppey. The old inhabitants were largely carpenters. The new jobs required different vocational skills, or technical skills, or new work habits that were not easy for many of the islanders to adapt to.

The islanders could not easily adapt to the demands of 20th century industry. The niches they had occupied had disappeared and they did not fit into the new ones. The problem faced by the islanders becomes comprehensible when it is seen as an exercise in adaptation and not merely a mysterious failure to migrate. Migration is only one possible way to solve the problem of adapting to the loss of one's industrial niche.

It is true that new niches were created on the island, but they were not compatible with the characteristics of the original population. New people, from off the island, moved

into the new niches. The original inhabitants could have been crowded out entirely. However, the original inhabitants developed some new niches for themselves. The women went out to work as clerks or menials; the men put themselves to work as self-employed housing rehabilitators. They buy houses with the income provided by other family members. Then they fix-up the house and sell it to the new comers and use the profits to buy another fix-up house. The implication in Pahl (1984) is that the men only make money when they sell the house. Therefore, they are probably counted among the unemployed.

The experience of Sheppey clearly illustrates that people do not have to migrate when conditions at origin become untenable. So, the question remains, under what conditions does change in the industrial structure at origin result in migration. Migration has been seen in push-pull stimulus terms (Greenwood, 1975). People move because they find conditions in another place more appealing than conditions at origin. In other words, there is the push of unfavorable conditions at origin and the pull of favorable conditions at destination. I agree that the push-pull description is accurate, but I think it is limited in the types of questions it can answer. Most importantly, push-pull tells us that conditions are unequal, but cannot tell us <u>why</u> conditions are appealing or not or <u>how</u> the population will react to these unequal conditions. An adaptation

perspective explicitly asks, what are the characteristics of the population and the environment and how well do they fit together? The answer to this question leads directly to why some conditions might be more appealing than others and what the possible responses to the conditions could be.

Adaptation is a powerful concept that enables us to ask much more sophisticated questions than a more simple descriptive concept like push-pull. The environment only poses the problems, it does not determine what the solution to those problems has to be. The solution to the problem is determined by the characteristic capacities of the population in conjunction with the nature of the problem that must be addressed. For example, if the population is composed primarily of shipwrights, it cannot just suddenly become a population of lab technicians or metal workers.

The phenomenon of industrial change is certainly not limited to Sheppey Island. While a complete survey of industrial changes throughout the world is beyond the scope of this paper, a few examples can be given. Hass (1985) described the closing of the General Electric Metal Iron Plant in Ontario, Canada on February 28, 1982. The plant was shut down even though there was a large market for metal irons and the plant was extremely productive. The shut down occured within a year or so of General Electric specifically denying such plans to the workers and the mayor. Rothstein

(1986) compared the closings of steel plants in Youngstown, Ohio with plant closings in Longwy, France. "Over the years, more than one-fifth of the area's (Youngstown's) employment has been in primary metals" (p.116). Between 1970 and 1980 the population of Youngstown dropped from 140,090 to 115,511 (Hoffman, 1989). From 1977 to 1980 Youngstown lost over 10,000 jobs in the steel industry, or about one-third to one-fourth of local employment in that industry. This included partial or complete closing of several steel plants. The existence of industrial change is widespread and so is the need to respond effectively to it. The late seventies and early eighties was a period of significant change in the structure of the United States economy. During this period, our economy changed such that the manufacturing sector became smaller and the service sector became much larger. This contributed to relatively high unemployment rates and a sixty percent increase in the number of people working part-time for economic reasons from 1979 to 1985 (Hershey, 1986).

A changing industrial structure in the United States will be used in this paper as an example of a problem the environment can pose for a population. The extent to which this problem is solved by migrating will be examined in the context of the amount of inter-state migration in selected industries. Changing numbers of industrial establishments will serve as the measure of the amount of change in

industrial establishments. Four industry types will be included: wholesale trade, retail trade, manufacturing, and service.

The literature review will examine what is empirically known about migration and attempt to explain those empirical findings. In addition, considerable space will be spent explaining and translating Levins (1968). Levins has been chosen because he focuses on adaptation in the context of heterogeneous environments. A changing industrial structure is very likely to be heterogeneous (at least during the period of change). The migration literature is examined for suggestions about when people adapt by migrating. In particular, to what extent does the degree of congruity between population characteristics and environmental demands predict who will enter or leave a given place.

The literature review will be followed by description of the databases used and definitions of the variables. There will be three main hypotheses. The hypotheses will be explicated and the method of examining them will be explained. The data will be used and the hypotheses tested in several different ways and the results given. Finally, the results will be summarized and disscussed in relation to their implications for policy.

Literature review.

The major traditional theories and approaches to migration in this review include: Lee (1966), Ravenstein (1889), Hawley (1950). The first two are included primarily for completeness, but my major interest is in Hawley (1950). I want to see if the ecological approach to explaining and predicting behavior can be made more precise. After Hawley (1950), I proceed to examine Levins (1968) and try to suggest how his ideas on adaptation can be used to augment and extend Hawley's (1950) ideas about migration.

The push-pull discussions of migration by Ravenstein (1889) and Lee (1966) are couched in terms of the inadequacy of locations. The primary cause of migration is some inadequacy of a location for some people and the presumed attraction of another location. This results in a push from the inadequate location and a pull toward a presumably more adequate location.

In both Lee and Ravenstein, an implicit relationship exists between the needs/characteristics of people and the attributes/social-structure of a given location. This relationship is that they have to fit together. For example, if the population needs fuel to burn to heat their homes, the social structure of the location has to provide

information about and access to a fuel that can be burned such as wood or peat. If the fuel resource is eliminated, because the forest has been all chopped down or the peat has all been cut and burned or there is no alternative fuel such as coal to mine, or the people don't know how to mine coal, then the people will have to leave this location. If the social structure of a location does not fit with the characteristic needs of the people, the people will leave the location. Because of a lack of fit, the people feel a push from the area without fuel and a pull toward a location which presumably has fuel.

A recent example of the potential importance of fit is found in Howland (1988). Howland (1988) studied the effects of plant closings on worker displacement using Dun and Bradstreet data on employment and plant closures in auto manufacturing, electronic components, and the metalworking industry. This was a national study. She found that employment shifts to the south in the 1970's were related to high rates of job creation in the Sun Belt rather than plant closures in the Frost Belt. Rates of plant closure tended to be relatively even across regions, although number of plant closures was higher in the older, industrialized states because they had more to begin with. Using the Bureau of Census' 1984 Survey of Displaced Workers, she found that a worker is as likely to be displaced in a

growing area as a declining one. However, displaced workers do not move easily into new occupations and industries. New, compatible jobs are frequently in the wrong region. This effect was particularly strong for older and less educated workers.

Sociology: Human Ecology

Hawley (1950), defines migration as non-recurrent movement from one geographic location to a different location. It "requires readjustment of (the) population in a modified or entirely new structure of relationships" (Hawley, 1950, p 327). Non-recurrent movement is the means of change and the measurable evidence of it (Hawley, 1950). **People who move to a new location and stay there are an example of change through non-recurrent movement. The fact that they are in a new location and remain there is evidence that they have made a non-recurrent change in their location.**

For Hawley (1950), migration depends on two things. The probability that migration will occur is related to (a) the social structure of the community of origin and (b) the ratio of population to opportunities for life at origin and destination (Hawley, 1950).

Hawley (1950) describes the social structure of communities or between communities in terms of social dependence.

Social dependence refers to activities such as sharing information, giving emotional or psychological support, fostering a sense of identity as a member of a community, or economic or political alliances (Hawley, 1950). Social dependence can refer either to the relationship between communities or the relationship among members of a community (Hawley, 1950). Although Hawley does not extensively discuss examples of such dependence, I believe Hawley (1950) would consider reliance of one community on another community for produce or manufactured goods to be be an example of dependence between communities. He might accept an individual's reliance on relatives in the community for defense against hostile members of the community as an example of dependence between members of the community. If the relatives lived in another town, then that would probably serve as an example of dependence of a member in one community on members of another community. Going even further out on a limb, it may be that Hawley (1950) simply uses dependence in a very general, ordinary language, way to mean some sort of regular interaction in which human beings have come to expect, or to depend on, certain behavior from other human beings.

Hawley's (1950) position on migration and dependence can be summarized as follows. There is less probability of migration from tightly knit communities in which the members are very dependent on each other, but the community itself

is not dependent on other communities (Hawley, 1950). An example of a tightly knit community, in which the members are dependent on each other, but the community is not dependent on other communities, might be certain religious communities such as the Amish in Pennsylvannia or the Hutterites in Canada.

There is a greater probability of migration from communities whose members are dependent on members of other communities (Hawley, 1950). For example, during the nineteenth century, people in Europe who were economically dependent on relatives who had already emigrated to America would be more likely to migrate to America than people without such relationships. Communities in which a large proportion of inhabitants had connections to other communities would be expected to have higher out-migration than communities in which relatively fewer inhabitants had connections to other communities.

Migration is more likely between communities that are dependent on each other than between communities that are independent of each other (Hawley, 1950). For example, if a group of rural towns had very little trade with each other, but each had extensive trade with the same urban center, migration between the rural areas and the urban area would be much more likely than migration between the rural areas. Dependence is used to describe how closely linked the parts

of the social structure are to each other. It is also used to describe the links between the parts of the structure. Hawley (1950) does not talk about the needs or characteristics of the potential migrants. Hawley (1950) is using social structure to explain behavior.

There are two major problems with depending exclusively on structure to explain behavior. First, structural explanations, (Lee, 1966; Hawley, 1950) ignore the possibility that the structure could change. The lack of capacity to address change is a serious drawback for a structural approach. Social structure changes. The conditions in a location change. Technologies, customs, mores, availabilities of resources and even climates change over time. Second, structural explanations often assume that the inhabitants of a social structure are like rodents or roaches in a skyscraper. The activities of the inhabitants are at best a nuisance and at worst a threat to the integrity of the structure. It is not recognized that structure may be a tool of the inhabitants to ensure their survival. The interest of the inhabitants in the survival of the structure in its present form may merely reflect their belief that the present structure is an essential tool in their own survival.

Blau (1965) distinguished three levels of study in the study of organizations. Although I am not studying organizations

directly, his discussion on levels of analysis could logically apply to almost any social event, process, or entity. The first level of analysis is the individual, i.e., role analysis. The second level of analysis is the structure, i.e., structural analysis. The third level of analysis is analysis of the system of interrelated elements that characterize the organization as a whole, i.e., organizational analysis. Organizational analysis is that analysis which aims to discover the principles that govern the functioning system. In Blau's (1965) use of the term, any study of the interaction between individuals and structure would probably count as an example of organizational analysis. Blau (1965) does not confine the term 'organization' to formal organizations, but rather uses it to apply to any organized collectivity.

Blau is making distinctions between levels so that he can discuss the interactions and relations between them. Blau is interested in the outcomes of these interactions. I am focusing on the process of the interactions themselves. The process can be described in terms of adaptation and evolution.

Two mechanisms for population response (adaptation) to change in the environment (social structure is the environment) are evolution and migration. Evolution is change resulting from the steady accumulation of small

changes in the characteristics present in the population. For evolution to succeed, the change in the environment has to happen slowly enough so that the steady accumulation of small changes in the characteristics present in the population will be able to keep up with the changes in the environment. Evolution is a time consuming response to change. If the environment changes so quickly that there isn't enough time for adaptation through evolution, then migration is the only strategy left.

Population Ecology, as described by Aldrich (1979), is an evolutionary perspective on '...social change which depends heavily upon the natural selection model borrowed from biological and human ecologists...' (Aldrich, 1979, p.26). The goal of population ecology is to explain the process underlying change (Aldrich, 1979). Organizational change is explained by the nature and distribution of resources in the organizations' environment (Aldrich, 1979). The central force in organizational activities is the competition for resources (Aldrich, 1979). Aldrich (1979) also uses the term 'niche' which refers to a distinct combination of resources and other constraints sufficent to support an organizational form. Aldrich (1979) defines an organizational form as an organized activity system oriented toward exploiting the resources within a niche.

Aldrich (1979) identifies three different outcomes of the process of selection: (a) selective survival of whole organizations, (b) selective diffusion or imitation of successful innovations or partial organizations structures or activities, and (c) selective retention of successful activities resulting from variations in behavior over time. Aldrich (1979) implictly suggests that survival is a matter of finding a niche or adapting to the available niches. The concept of niche for organizational populations has also been discussed in a similar way by Hannan and Freeman (1989). The idea of niche is closely tied with the idea of adaptation (Hannan and Freeman, 1989). Niches and adaptation are more extensively discussed in Levins (1968) where he suggests that there is more than one possible way to adapt to environmental change.

Levins (1968) equates adaptations with strategies. Obviously, strategy is being used in an analogical way by Levins since he applies his ideas to bacteria. The basic choice of strategy is between being a generalist or a specialist. A generalist attempts to be prepared to at least some extent for any eventuality in order to cope over a broader range of conditions. A specialist attempts to be particularly well prepared for a particular condition, but may not be able to cope at all in some other condition. A population therefore has three basic 'choices' in the composition of its members. The choices are: (a) all

members are generalists, (b) all members specialize in the same thing, or (c) each member has a specialty, but more than one specialty is represented in the population.

Levins (1968) wrote about adaptation when the environment changes. Although his hypotheses are specifically concerned with nonhuman (e.g., butterflies and bacteria) populations and communities, the general ideas can be applied to humans. Levins (1968) uses many terms which need to be fully explained and their re-interpretation in sociological terms requires explication. I want to use Levins because his view of adaptation is explicitly interactive. It focuses on the interaction between the characteristics of a population and an environment. Successful adaptation occurs when neither the population nor the environment imposes a set of conditions which the other cannot meet. A mechanism for responding to change is explicitly a part of his theory. Levins assumes that environments are heterogeneous. If it is heterogeneous, then it changes.

Humans are faced with environments that are constantly changing in terms of what is required for survival. New technologies are discovered which change how we live and how we interact with each other, for example, the industrial revolution in the nineteenth century, the development of cars, birth control, mechanized farming, or synthetic fibers and textiles.

Levins calls the different combinations of change over time and space 'patterns of change'. Levins argues that environments do exhibit patterns of change and thereby influence the odds governing which responses will be successful in them. Responses to change will differ depending on the pattern of change.

In Levins, the response to change (adaptation) is called a strategy. For my purposes, a strategy is a pattern or mix of occupations; it is not the occupations themselves. In the context of this paper, adaptation is the process of fitting a mix of occupations distributed in the population to a pattern of change in the distribution of industries. The result is an aspect of social structure: the labor market. Which adaptation strategy (occupational mix present in the population) a population will adopt depends on the pattern of change (in available industries) to which the population must adapt.

To return to the Sheppey example, Sheppey men were able to earn a sufficient living at the dockyards to support families. Now, there has evolved a large group of men who live 'off-the-books'. The men combine odd jobs (sometimes skilled labor such as plumbing) with investing in and developing real estate. They live in one house and buy another one to fix up. When they finish fixing up the second house, they move in and sell the first house. Then

they start the cycle all over again. The strategy has changed from trying to pursue single occupation to combining occupations. The original occupation of shipwright required carpentry skills and the skill of directing one's own work and the work of others. Fixing houses uses carpenter skills and the ability to plan and direct one's own work and the work of others. These skills were originally learned in the shipyard and exercised in one occupation. Now, these men are carpenters, housing developers, and real estate investors. Their skills are now exercised in three occupations instead of just one.

Fine versus Coarse Grained Environments.

Levins divides patterns of change into either fine grained or coarse grained. It may help here to visualize the environment as being divided into patches. Levins assumes the environment is heterogeneous. Some conditions will be hostile and some will be beneficial. The idea that conditions may be hostile or beneficial is implicit in the claim that the environment changes and the population will only have a finite set of characteristics. Any given population of humans beings will have the skills to carry out a variety of occupations, however, no population is likely to have the skills to carry out all occupations that any human anywhere has ever practiced. (If a population

were so blessed, it wouldn't be of interest here anyway. For them, adaptation would not be a challenge.)

In a fine grained environment, an individual will encounter all of the conditions in the environment during its life-span, that is, it will have to spend some time in each of the patches. In a coarse grained environment, the individual can live its entire life-span in just one of the conditions (patches) of the environment, although the population is faced with all of the conditions (patches). The number of different types of industries (niches for occupations) available on Sheppey constituted the grain of Sheppey. When the shipyard closed, the grain of Sheppey changed. It became fine. No one could ignore the closing of the shipyard. Either new niches for occupations had to be found on Sheppey, or the former shipwright had to leave Sheppey.

Additive versus Multiplicative Population Characteristics.

Levins categorized the characteristics of the populations as either additive or multiplicative. If the characteristics are multiplicative, then no one characteristic alone is enough to ensure survival; all characteristics are required to be present in at least some amount. If the characteristics are additive, then either a single characteristic in a very large quantity or a combination of

two or more characteristics in smaller quantities will enable survival.

For example, suppose a population contains occupations A, B, and C. If an individual must do A+B+C to survive, then these occupations are multiplicative. If an individual can survive by doing a lot of just one of them (A or B or C) or by doing some of any two of them (a+b or b+c or a+c), then these occupations are additive. If you have to do all of them, they are multiplicative. If you don't have to do all of them, they are additive. Although it is convienent to speak of occupations as additive or multiplicative, what these terms really describe is how certain occupations can be successfully practiced in a certain context.

The difference between 'additive' and 'multiplicative' is more a matter of degree than kind. It must be realized, that to some extent, all populations are required to have some sets of multiplicative characteristics. For example, no one could survive (even in an agricultural society) by literally just knowing how to pick beans. You also need to know how to get other foods, how to get shelter, how to dress yourself, and other very basic skills. The distinction between additive and multiplicative is more relevant at the level of occupations. Occupation refers to the set of activities that one usually spends most of one's time doing and is necessary to pursue in order to survive.

Most adults need to dress themselves, but without an occupation to pursue for money, or raw materials for construction into garments, they won't have anything to dress themselves in.

The pattern of industries, and consequent occupational opportunities, in the evironment constitutes the grain and determines which pattern of characteristic occupations can be successful. Fine grained labor markets are more likely to reward multiplicative occupations. Coarse grained labor markets may be more likely to reward additive occupations in the population. In the context of human populations, the characteristics of the population would be the occupations in which members of the population work. When the dockyards at Sheppey were open, the grain was coarse and the effect was to encourage an additive pattern of occupations; a man could just concentrate on being a shipwright. The grain was coarse because there was really just this one major industry and you could survive by just working there. When the dockyard at Sheppey closed, the grain became finer (you couldn't work in just one industry all your life any more) and the effect was to encourage the development of multiplicative occupations such as carpenter, real estate developer, and housing rehabilitator.

Competitive Versus Complementary Population Characteristics.

Levins states that characteristics of populations may be either competitive or complementary. They are competing if having one characteristic means having less of the other. They are complementary if having one of them either has no effect or a positive effect on the existence of the other. In terms of occupations, occupations are competitive if practicing one of them diminishes one's ability (or opportunity) to practice the other(s).

Sociologically, the characteristics primarily of interest for survival are occupations. Some occupations are complementary. Tax preparer and accountant are complementary. The more you practice either one, the better you will be at the other. In fact, these occupations are so complementary they are usually combined in general practice. An occupation should not be confused with a job. If you teach part-time for two different school systems, you only have one occupation, teacher, even though you have two jobs (because you have two different employers). An example of competitive occupations would be farming and traveling salesperson. The more time you spend on farming, the less time you have to spend on traveling and selling and vice versa. One could also use the occupations of teacher and researcher as an example of competing occupations. Although

these occupations are combined in university faculty positions (jobs), they do tend to interfere with each other.

Interaction of Population and Environment Characteristics.

Characteristics of population and environment interact to determine the optimal strategy. A coarse grained environment in combination with competing and additive population characteristics will reward specialists. A fine grained environment in combination with complementary and multiplicative population characteristics will reward generalists. Table 1 shows the strategies most likely to be successful for the combinations of population and environment characteristics.

There is one logically possible combination which is not in Table 1. That is, for populations whose occupations are multiplicative and competing. This combination would mean that more than one occupation must be exercised to survive, but practicing more of one occupation means practicing less of another occupation.

Logically, two conflicting activities cannot successfully simultaneously occur. Successful adaptation is not possible if you must perform tasks that interfere with each other at the same time. The possibility of success depends on what Levins (1968) meant by 'at the same time'. I do not

know if 'same' is used literally to mean simultaneous or if it is used more loosely to tasks that are in close temporal proximity but not necessarily simultaneous. Since success under conditions that demand multiplicative and competing occupations is problematic this paper will omit this condition from its scope.

Table 1 shows what kind of occupations would be expected to be optimal given an environment which presents a particular kind of change. The pattern of change in an environment directly affects how the range of resources in it can be exploited.

TABLE 1

Strategies Optimal for Populations With Particular Types of Occupations in Coarse Versus Fine Grained Environments.

	Populations' Occupations		
Environments	Complementary		Competing
	Additive	Multiplicative	Additive
Coarse	homogeneous specialists	heterogeneous specialists	homogeneous specialists
Fine	generalists	generalists	heterogeneous specialists

In Table 1, occupations are not used to mean the same thing as a job. For example, a plumber who works for Ajax Plumbing has an occupation and a job. If Ajax Plumbing goes out of business, the plumber will not have a job but he will still have his occupation, plumbing . An example of homogeneous specialists could be a population whose members all primarily practice slash and burn agriculture. In a population of heterogeneous specialists some members might primarily be farmers, some might be coop extension agents, and some might concentrate on administration of farmer assistance programs. In a population of generalists, each individual would have more than one occupation. For example, farmers who are also farriers, artists who are also writers, and factory workers whose factory work is unskilled but who have a home repair business they pursue part-time.

Levins' (1968) ideas can be translated into labor market terms in order to use them to describe the conditions which might facilitate or impede migration. It is possible to speak of labor markets as fine versus coarse grained. The demand for certain occupations can be described as changing quickly or slowly or over a wide area or a small area. Workers can be described as specialists or generalists. Suppose an environment changes from rewarding specialists to rewarding generalists i.e., from coarse to fine grained. The specialists can either adapt by trying to learn new

occupations or by out-migrating while generalists enter to replace the exiting specialists. In other words, looking at the fit between population occupations and niches for those occupations (industries), can tell us something about why a given location would or would not be attractive to a given population.

Persons who can make a living in more than one way have the advantage in that they are more likely to be able to adapt to environmental change without moving. If you have more than one occupation that enables you earn a living, those occupations are potentially multiplicative. Examples of this include: summer farming and winter factory jobs, or nine months of school teaching and summer as a camp counselor. Individuals who cannot live on the income that one occupation can produce, either have to find additional things they can do, or develop a occupation that can produce an adequate income. If you have one occupation that can produce an adequate income, that occupation is potentially additive. Medicine and law are examples of occupations that are usually additive. Occupations are additive or multiplicative depending on the context in which their possessor wants to use them. Manual labor is additive if that produces an adequate income. Manual labor is multiplicative if you must combine it with vegetable farming in order to survive. If a context is such that no (or very

few) occupation(s) can produce an adequate income, then generalism is the most likely outcome.

If it is possible to make a living from a single occupation, specialization is much more likely. Large cities have more specialized stores of many kinds including food, clothing, household appliance, wine, and tobacco sellers. The presence of natural resources such lumber, minerals, or fishing opportunities may also encourage specialization. If the resources are depleted or the market for a particular specialty is becomes too small to produce an adequate income, the population which specialized in it will have to adapt to the change. The specialists will no longer be able to practice their specialty. They will have lost their niche through contraction of activities. They have to migrate or develop new niches.

Sociological Literature: Organizations

The organization of work is a natural place to apply Levins' ideas. Weber (1947) exhaustively detailed the possibilities for the organization of work. He defined an occupation as specialization, specification, and combination of the functions of an individual so that it provides a reliable source of income or profit. In Levins' terms, an occupation is the combination of skills that enable survival. Weber (1947) described three modes of occupational distribution:

(a) heteronomous assignment of functions, (b) specification or specialization of functions, and (c) using the services of individuals on either an autocephalous basis or a heterocephalous basis. (Heteronomous assignment of functions means that people are employed for wages or a salary.) Specification or specialization of functions implies the existence of specialists. Autocephalous means they are self-directed in their work. Heterocephalous means they are directed in their work by others.

Although Weber (1947) is very informative about the organization of work, he describes it as though it were a static, given entity. A reader who is dissatisfied with the circumstances under which she works would be left with the tantalizing idea that there are alternatives, but the sad news that we have no idea how to change between alternatives. The concept of adaptation gives us a way to talk about how change might happen and what its likely consequences might be.

Although my interest is in the broad process of adapting to change, I have to choose something to serve as a testing ground for the usefulness of the adaptation perspective. I have chosen migration. The literature review will allow us to see what is empirically known about migration and to examine the usefulness of the various theoretical perspectives that have been used.

Sociology Literature: Migration

Studies of migration either ask why people migrate or what are the causes of migration. The goals include predicting when migration will happen or who will migrate so that it can either be anticipated, prevented, or encouraged depending on the policy interests of the writer.

Explanations of migration can be very roughly divided into two categories: migrant's personal characteristics or characteristics of the environment. Under migrant personal characteristics we find discussions of migrant personality, age, sex, employment status, stage of migrant's life, occupation, size of migrant's household, and educational achievement. Under environmental characteristics we find demand for labor, urbanization, occupational opportunities, industrial organization, community structure, birth rates, infant mortality rates, size of population, relation of one community to another community, and per capita income.

These two categories also dictate two basic ways to ask questions about migration. Questions about migration can either be stated in terms of migrants as in: "What are migrants like compared to non-migrants?"; or they can be stated in terms of locations as in: "What kinds of locations have a lot of migrants?". Stating the question in terms of migrants leads to a focus on migrant characteristics and the

migrant as the unit of analysis. Stating the question in terms of locations leads to a focus on location or environment characteristics and the location as the unit of analysis. If one takes an adaptation approach to explaining migration, it becomes obvious that a primary focus on either migrant or environment is inadequate. It is necessary to look at the interaction between the characteristics of the migrants and the locations. Migrants act on environments, and environments influence the behavior of migrants.

Two types of comparisons are commonly made to identify migrant characteristics: (a) those who did not leave the place of origin to those who left, and (b) in-migrants to original residents at destination.

Migrants differ from non-migrants in several ways. They are: age (Thomas, 1938; Danzo, 1978; and Spengler and Meyers, 1977); sex, occupation, education (Thomas, 1938; Danzo, 1978; and Spengler and Meyers, 1977); and employment status (Danzo, 1978); skill, training, and enterprise (Spengler and Meyers, 1977). The typical migrant in these studies is a young, adult, educated, trained, and enterprising male who wants to pursue a highly skilled occupation.

There are many aspects of locations which have a direct effect on migration. They are size, economic self-

sufficiency, amount of contact with other cities (Karp and Kelly, 1971), unemployment rates (Lowry, 1969), occupational opportunities (Vogelnik and Fergoli, 1978; Lowry, 1969; Spengler and Meyers, 1977), climate (Long and Hansen, 1978), degree of urbanization, household size, infant mortality, illiteracy, and percent of population engaged in agriculture (Vogelnik and Fergoli, 1978), and the relative sizes of the non-agricultural labor forces at origin and destination and industrial organization in terms of dispersal or concentration (Spengler and Meyers, 1977). Climate preferences were found by Long and Hansen (1978) to be the most frequent reason for migration after employment and desire to be near family.

Studies do not usually compare the in-migrants for a particular place and time to out-migrants at that same place and time. There is an interaction between migrant and environment. The process of adaptation through migration is a process of migrants matching or fitting their characteristics to the characteristics of environments. The observable outcome of matching is a correspondence between the characteristics of in-migrants and opportunities of destination environments and a relative lack of correspondence between out-migrants' characteristics and origin environment opportunities. The fact that for any given place and time both in-migration and out-migration

occur and may occur for different reasons is obscured by the conventional use of net migration as the dependent variable.

When we discuss the characteristics of a migrant which are likely to further adaptation, we usually begin by discussing what, if anything, the migrant can do for sustenance. In non-agricultural settings, this means pursuing an occupation and getting paid for doing it. Certainly, unemployment rates are often the inverse of the occupational opportunities. That is, if unemployment is high, then occupational opportunities tend to be low. However, this not always true. If the labor market were undergoing a change in the occupations it provided a niche for, and those occupations were not common in the resident population, then the unemployment rate might be high and the occupational niches abundant. When the distribution of occupational niches changes, the grain of the location changes. If there is a change in number of niches, but not a change in type of niche, the location may be becoming more coarse grained, for example, more but smaller number of farms. If there is a change in number of <u>types</u> of occupational niches, without an overall increase in number of occupational niches, then the location is becoming more fine grained, for example, some farmers give up farming and change to farm equipment sales or repair.

The importance of individuals' characteristics and their relationship has been described by Sjaasted (1962). Sjaasted calls these characteristics 'human capital'. 'Human capital' is the knowledge, skills, abilities, education level, experience, and training of each individual. Sjaasted argues that migration causes a loss of human capital because the usefulness of each individual's accumlated human capital declines from one location to another. He further states that this effect increases with age. When an occupation becomes less valued, the practitioner suffers a loss of capital. The desert nomad's detailed knowledge of how to survive in the desert is less useful if he is suddenly transported to an urbanized area. Human capital requires time and effort to acquire. As a move is contemplated, the cost of acquiring new capital and the loss of value in current capital has to be weighed against the possible gains that may come from new capital.

The idea that migration is adaptation could be expressed as the proposition that migration is an effort to preserve old capital or acquire new captial. This, however, would confuse the means with the ends. Human capital is an outcome; adaptation is a process. Lack of fit might be expressed as having accumlated inappropriate human capital, but lack of fit really encompasses more. Human capital puts an emphasis on the individual characteristics and not enough on environmental change. I would not dispute the idea that

human capital exists or that migration has an impact on it. I just want to focus on the process, not the product.

Long and Hansen (1978) found that persons who were not college educated gave non-economic reasons for migration, such as the desire to be near family, more often than the college educated. They interpreted this to mean that these two groups actually have different reasons, in a causal sense, for migration. In contrast, economists suggest the real reasons in both cases may have been economic. Long (1978) notes that the poor moved to the south in the 1960's and 1970's in numbers that gave the south a net in-migration. This was a change from the net out-migration of the 1950's. Rees (1979) reports that manufacturing moved from the northeast to the south in the 1960's and 1970's and also notes that there was tremendous growth in the service sector of the economy during that time period throughout the country, including the south. This also reinforces Hawley's (1950) point that stated motivations may have little to do with the changes preceding migration.

The dual importance of social and economic factors can be seen by comparing the results of Long and Hansen (1978) with Rees (1979). The desire to be near family emphasizes that social ties to the community are important. However, the movement of both jobs and people at the same time emphasizes the crucial influence of employment. Schwarzweller's (1971)

work on stem-family migration shows how the desire to be near family and be employed may be combined in practice. He found that migrants moved primarily to a location where there were relatives as well as jobs. This is quite consistent with Hawley and Thomas on the importance of similarity of community structure. Certainly the presence of kin in a new community lends an aspect of similarity and dependency between origin and destination communities.

If it is true that people move in response to changing occupational opportunities, then it is not surprising that Morrison (1971) finds that migration serves to adjust the labor supply, expands the range of opportunities available to the migrant, and causes urban growth. This in turn is supported by the finding that inter-regional skill distributions tend to remain constant (Horiba and Kirkpatrick, 1979). Rothberg's (1977) conclusion that migration behavior is the outcome of the joint influence of the personal characteristics of the migrant (such as education, skills, tolerance for risk) and labor market conditions is also consistent with the idea that populations must find a way to fit with their environments and will migrate if necessary to achieve an acceptable fit.

Summation of literature.

The literature review has tried to make three major theoretical points. The first point is from Levins' (1968) that adaptation is a very complex process involving an interaction between the demands of the environment and the capacities of the population members as individuals and as a population per se. Second, Hawley (1950) makes the point that migration is heavily dependent on the proportion of resources to population. Third, Hawley (1950) emphasizes community integration at origin and destination through his concept of dependence. All of these points are supported by the empirical findings, however, the findings suggest some additions to the theory.

Every study reviewed emphasizes the importance of work or of factors, such as education, that influence the inhabitants' abilities to do various kinds of work. The only exception to this is climate and that was found to be secondary to employment. The proportion of population involved in agriculture is inverse to the proportion of the population involved in other sectors of the economy. It is directly related to the relative opportunities for pursuing other industries. Urbanization influences the relative variety of industries which may be pursued (Durkheim, 1933) . The larger a city, the more likely it is to have a diverse

occupational and industrial structure. Size is directly related to the tendency of organisms, organizations, and communities to differentiate. Inter-city contact would facilitate the transfer of information about job opportunities and transport of people between cities. News of low unemployment rates would certainly travel quickly and the transportation facilities would make migration much easier.

The studies reviewed imply that migration would be better understood by expanding our perspective to include the interaction between migrant characteristics and location characteristics. Working from the perspective of adaptation allows explicit consideration of interaction between population behavior and environment.

As previously stated, studies do not usually compare the in-migrants for a particular place and time to out-migrants at that same place and time. If the adaptation perspective is correct, the comparison of in-migration to co-occurring out-migration is essential. Adaptation would predict that in-migrants and out-migrants at a particular place and time would differ in their characteristics. For example, rural to urban migration is typically explained as result of a lack of economic opportunity in the rural location, so, one would expect out-migrants to be younger and better educated

persons about to start their careers and in-migrants to be retirees. Because I did not find studies of co-occuring in- and out-migration, I have to combine the results from studies comparing in-migrants to original residents and studies comparing movers to stayers to yield hypotheses about the differences between in- and out-migrants with respect to a particular location.

This study is designed to address three hypotheses. First, for the majority of states, in-migrants will have different occupations or work in different industries than out-migrants. That is, whether a migrant moved into or out of a state between 1975 and 1980 is related to the industry or occupation in which he or she worked in 1980. Second, the average number of in-migrants employed in a given industry will be higher in states that are growing in that industry compared to states which are not growing in that industry. In addition, the number of out-migrants from a given state who worked in a given industry in 1980 will correlate negatively with change in number of establishments in that industry in the state of origin between 1972 and 1977. This means that number of out-migrants will decline when the number of establishments increases. Third, the relationship between changes in industrial structure and migration will vary with age. This comes from Saben (1964) who found that among migrants who moved for work related

reasons, the percent moving because of a transfer was much higher in 25 to 64 year old migrants.

DATA and METHODS

In the literature review, I explored the possibility of enhancing the human ecological perspective by expanding its implict use of adaptation to an explict use. I have suggested that the need for this is made apparent by the example of Sheppey Island where we saw the non-occurance of migration under circumstances that would intuitively suggest that migration would occur. I believe that explicit use of adaptation as a perspective can be usefully examined by looking at migration in a conventional way; by comparing a location's out-migrants to a location's in-migrants during the same period of time. To test the usefulness of the adaptation perspective, I will compare a state's out-migrants to that state's in-migrants during a particular period of time during which the number of the state's industrial establishments may change. There are three major hypotheses: (I) whether migrants exit or enter a state is related to the industries and occupations in which they work, (II) the number of migrants who enter or exit a state depends on the existence of change in number of industrial establishments, (III) the relationship between migration and change in number of industrial establishments will vary with migrant age.

The ideal circumstance to study adaptation to change is one where the environment is changing in a measureable way without the consent of the pre-change population or without the pre-change population trying to make the change happen. In addition, we would know how that population had previously lived, how they lived during the period of change, and how (or where) they lived after the period of change. This would allow clear comparison of pre-change behavior and post-change behavior. It would be even better if the environment were similar to other environments so that we could generalize with confidence to the other populations and environments. The beauty of the Sheppey Island example was that it met these requirements.

The U.S.A. has experienced great changes historically in its industrial structure. The labor force of the U.S. has had to adjust from an economy that was primarily agricultural at its founding to an industrial one after WW II, and currently seems to be changing to a service economy. The locations of concentrations of industry have also shifted over time (Rees, 1979). The populace of the U.S. has had to adjust both its occupations and its locations to adapt to these changes.

Fortunately, the U.S. Census of Population and Housing, which is conducted every ten years, asks for current

occupation and industry and where the respondant lived five years earlier. This makes it possible to examine a location's in-migrants and out-migrants with respect to their occupations and industries. The U.S. Census of Business and Industry provides state level information every five years on the number of business and industry establishments for each state. This makes it possible to determine what changes have occurred in a particular state during a particular period of time. Armed with these two sources on information one can compare the changes in industrial establishments to the occupations (and industries) of people who came to the state or left the state during the period of interest. If the adaptation perspective is correct, then a state which is declining in certain industries ought not to be attractive to people who will be working in those industries. Therefore, as hypothesized earlier, there ought to be a relationship between a migrant's occupation and the industries available in a given enivronment.

OPERATIONALIZATION OF CONCEPTS AND VARIABLES:

Adaptation was operationalized as interstate migration that occured after the beginning of change in number of industrial establishments. It is for this reason that the period of labor market change was chosen to be as close as possible to the time in which migration was observed, and

still have the labor market change start before the migration could start. Because the Census of Business and Industry is only conducted in years ending in '7' or '2' and the Census of Population and Housing is only conducted in years that end with '0' (it asks about residency five years earlier), it was impossible to choose a period of industrial change that would not overlap the migration period to some extent. I chose a period of industrial change (1972 to 1977) that allows three full years of change to occur before begining to observe migration (1975 to 1980). This should be sufficent lead time to allow me to argue that the migration is more likely to have followed the industrial change rather than to have simply co-occured with or stimulated it.

Change in the labor market was operationalized as a change in the number of establishments. Most of this study was limited to four sectors of the economy: manufacturing, wholesale trade, retail trade, and service. This was done to maximize the generalizability of results and yet keep the domain investigated within a reasonable size. The period of change measured was between 1972 and 1977. Number of establishments included those with and without payroll. Establishments without payroll were included to include persons who were self-employed but had no other employees.

Migration is operationalized as interstate migration between 1975 and 1980 within the U.S.A.. Any person whose reported

residence in 1980 was different from the reported residence in 1975 was considered to be an interstate migrant. If the state in 1980 was identified, but the state in 1975 was not, then that person was assumed to be an interstate migrant.

In order to test the hypotheses, it was necessary to maximize the likelihood that migration was due to changing jobs. Migration by persons under the age of 21 in 1980 may have been most influenced by the need to obtain training or education for employment or to remain with a family that the migrant was too young to move away from independently in 1975. Persons over 59 may be thinking about retirement and migration may be undertaken with that in mind. Persons not in the labor force in 1980 are assumed not to have moved directly in response to fluctuations in the demand for labor. In addition, people who were continuously in either school or the military are unlikely to have moved primarily because of changes in civilian occupational demand during the period they were in those institutions. These characteristics are summarized below.

This study is restricted to migrants who: a) did not live in the same state in both 1975 and 1980, b) were in the labor force in 1980, c) were not in college in both 1975 and 1980, d) were not in the armed forces in both 1975 and 1980, and e) were aged 21 to 59 inclusive in 1980.

UNIT OF ANALYSIS:

The state is the major unit of analysis; the migrant is not the major unit of analysis. The independent variable is the change in number of industrial establishments in a state between 1972 and 1977. The dependent variables are the numbers of people who entered and exited the state between 1975 and 1980. The dependent variable is not the rate of entrances or the rate of exits nor the net gain or loss. The relationship between the independent and dependent variables will be tested with Chi-square, correlations, and ANOVAs as detailed in the discussion of the analyses for each hypothesis.

Information on establishments was collected at the state level from tables published in the U.S. Census of Business and Industry for the years 1972 and 1977. Changes in number of industrial establishments are the basis for categorizing the states as growing or not growing. The specific cut-off points for growing versus not growing were set separately for each of the four industrial sectors. These will be detailed in the procedure and analysis section. For states, I collected the number of establishments with or without payroll in 1972 and 1977. Number of establishments was only collected for the wholesale, retail, manufacturing, and service industries.

Aggregate level data about interstate migrants for the variables of interest was not so easily available. For this reason, it was necessary to obtain a file of data on migrants and group them into categories according to location, occupation, industry, and age.

For migrants, I collected: (a) state in 1975, (b) state in 1980, (d) industry in 1980, (e) occupation in 1980, (f) age in 1980, (g) sex, and (f) labor force status in 1980. A description of this data file follows the description of how the migrant data was aggregated.

Before aggregating the migrant data, it was necessary to identify the cases which were suitable for inclusion in the sample. Table 2 shows the stages of narrowing the sample and the resulting number of cases for aggregation. Originally 846,543 cases were available in the data file. After eliminating those who were too young, too old, continuously in the military or in school, persons not in the labor force, and non-interstate migrants, the resulting sample size is 290,237.

Table 2

Identification of Desired Sample

Stage of Sample Construction	No. of Cases
Original Data Available on Tape	846,534
Soldiers, Students and Non-interstate Migrants	122,433
Cases Remaining	724,101
Non-labor Force Migrants	381,657
Cases Remaining	342,444
Under 21yrs or over 59yrs (in 1980)	52,207
Final Population Remaining	290,237

Procedure for creating aggregate migrant data.

A person who lived in a particular state in 1975 was grouped as an out-migrant for that state. He or she was grouped as an in-migrant for the state reported as the 1980 residence.

The number of migrants in each industry and in each occupation was obtained by selecting all the in-migrants for that state and all the out-migrants for that state and then cross-tabulating the direction of migration (in- versus out) by the migrant's industry or occupation in 1980. Separate crosstabulations were done for occupation and industry. A dummy crosstabulation is shown below:

Dummy Table

State "Florida"

	Migrants' Industries in 1980			
	Service	Manufacturing	Retail	Wholesale
In-Migrants (In Florida in 1980)				
Out-Migrants (In Florida in 1975)				

The aggregate migrant data and the business and industry data were then put in a combined file which had one record for each state describing the changes in number of establishment for each of the four industries and the number of in and out-migrants in each of those industries for that state. Number of migrants in each occupation was not included in the aggregate data file because I did not have information about employment in each occupation by state.

As a result of creating aggregate migrant data, fifty groups of in-migrants and fifty groups of out-migrants were created. Table 3 is provided to show the size of each of the aggregated groups. That is, Table 3 shows the number of in- and out-migrants for each state. For example, there were 3,874 people who ostensibly moved into Alabama for job purposes between 1975 and 1980. There were 3,081 people who moved out of Alabama during the same time period for similar reasons.

For each group of in-migrants and each group of out-migrants, I determined the number in each migrant group who had worked in each industrial sector and in each occupational sector in 1980. Tables for number of each migrant group in each industrial and occupational subgroup are not provided here to avoid overwhelming the reader. These tables are presented in the Appendices.

In-migration location data was available for all subjects. Out-migration location data was missing for 63,432 (22%) of the subjects. By "missing", I mean that I do not have information about where they lived in 1975. They are subjects who did not respond to the census question asking them to identify the state they lived in in 1975. Migrants were identified by requiring that "state-in-1980 not equal state-in-1975". Because state in 1980 was not missing for any subject, subjects who were missing state-in-1975 became included in the data file (because missing was not equal to anything for in-migrants). However, they are not counted in the analysis of out-migrants. The analysis of out-migrants required that the state-in-75 be identified.

Census data does have certain limitations. First, the poor are underrepresented. The Census does miss some people and the poor are more likely to be missed than the middle class. However, the Census does try to count the poor by visiting places where the poor or homeless are known to congregate

such as inner-city church missions, truck stops, all-night diners, other locations which are not necessarily in-doors, but are known to the police (Bureau of Census, 1987). The second limitation is in the definition of migrant. People who moved from a place after 1975 and returned to it before 1979 will not be considered migrants.

Table 3

Number of In- and Out-migrants per State (Ages 21 to 59)

State	In-migrants	Out-migrants
Alabama	3874	3081
Alaska	1464	1267
Arizona	6771	3861
Arkansas	2749	2223
California	36461	19507
Colorado	7805	4943
Connecticut	4203	3796
Delaware	940	935
D. of C.	1862	2242
Florida	19720	10684
Georgia	7772	5046
Hawaii	2461	1851
Idaho	2016	1402
Illinois	10836	11680
Indiana	5029	5108
Iowa	2852	3282
Kansas	3537	3368
Kentucky	3263	3149
Louisiana	4275	3179
Maine	1416	1154
Maryland	6342	5368
Massachusetts	5949	6559
Michigan	6492	7386
Minnesota	4067	3636
Mississippi	2436	2370

Table 3 (continued)

Number of In- and Out-migrants per State (Ages 21 to 59)

State	In-migrants	Out-migrants
Missouri	5365	5297
Montana	1369	1192
Nebraska	1906	2144
Nevada	3326	1267
New Hampshire	2123	1300
New Jersey	9159	7892
New Mexico	2522	1951
New York	14546	18698
N. Carolina	6710	5438
N. Dakota	988	1031
Ohio	7760	10105
Oklahoma	4672	3021
Oregon	5404	2746
Pennsylvania	7921	9642
Rhode Island	1076	1096
S. Carolina	4102	2968
S. Dakota	847	1011
Tennessee	5301	4135
Texas	21791	9371
Utah	2479	1487
Vermont	858	769
Virginia	9714	7049
Washington	8536	3768
W. Virginia	1700	1577
Wisconsin	3823	3955
Wyoming	1647	818
Missing *	0	63432
Totals	290237	290237

* Subjects who did not respond to the census question asking them to identify the state they lived in in 1975. Migrants were identified by requiring that "state-in-1980 not equal state-in-1975". Because state in 1980 was not missing for any subject, subjects who were missing state-in-1975 became included in the data file (because missing was not equal to anything for in-migrants). However, they are not counted in the analysis of out-migrants. The analysis of out-migrants required that the state-in-75 be identified.

SOURCE OF MIGRANT DATA:

Using information obtained from the 1980 U.S. Census of Population and Housing, the U.S. Census Bureau creates the Public Use Microdata Sample A (PUMSA) . PUMSA includes the one fourth of the households that received the long form of the census questionnaires. It covers 11 million persons and over four million households. The PUMSA is a five percent sample of the national population. On a national scale, the migration data is only available for half of the five percent sample. Thus, the PUMSA migration data is a 2.5 percent national sample.

The out-migrant data file supplied by the Applied Population Laboratory (APL) is not a 2.5 percent national sample. The Applied Population Laboratory uses the Public Use Microdata Sample A (PUMSA) as a source of information about individuals who lived in a given state in 1975 and lived elsewhere in the U.S. in 1980. The Applied Population Laboratory at the University of Wisconsin-Madison constructs samples of migrant data for each state. The migrant data for this study was obtained from a data set constructed from the Public Use Microdata Sample A (PUMSA) by the APL.

For the purpose of this study, the outmigrant files for all the states were provided in one large file. The file I received contained 1,163,180 records. In census data,

records do not equal individuals. The census data consist of two kinds of records: household and person records. For each household surveyed, there is one household record describing features that would apply to each member of the household (such as where they are currently living) and a set of one or more person records which describe features that would or could be unique to each individual (such as age or occupation). Thus, for each person there are at least two records in the file. There is a person record unique to the person and a household record which may or may not be shared with other individuals depending on the number of individuals in that household. The result of this file structure is that it will contain more records than individuals. The file provided by the Applied Population Laboratory had 846,534 individuals. Not all of the individuals in the file were migrants. All the individuals in a household were included in the out-migrant file even if only one member of the household migrated.

General Demographic Characteristics of Migrants.

I present this information to demonstate that the migrants in this study are similar to migrants in other studies and therefore the results obtained from studying them are likely to be applicable to other instances of migration. Tables 4, 5, and 6 show that as in other studies of migration, migrants were mostly male, young and educated (Ravenstein,

1889; Thomas, 1938; Danzo, 1978; and Spengler and Meyers, 1977). Table 7 shows that, unlike other studies of migration, most of these migrants were married (Ravenstein, 1889).

Table 4
Sex

Sex	Number	Percent
Males	174,137	60.0
Females	116,100	40.0
Total	290,237	100.0

Table 5
Education, Highest Grade Completed as of 1980

Education Level	Number	Percent
eighth grade or less	17,102	5.9
ninth to eleventh	22,797	7.9
twelfth	86,424	29.8
Some College	54,071	18.6
Four yr college or more	109,843	37.9
Totals	290,237	100.0

Table 6
Age

Age Group	Number	Percent
21 thru 29	131,527	45.3
30 thru 39	90,061	31.0
40 thru 49	42,325	14.6
50 thru 59	26,324	9.1
Total	290,237	100.0

Table 7
Marital Status

Marital status	Number	Percent
married	183,392	63.2
widowed	3,120	1.1
divorced	27,295	9.4
separated	9,199	3.2
single	67,231	23.2
Total	290,237	100.0

It should be noted that the data file treats married couples as two separate people so there is no risk of double counting or omitting spouses. A high proportion of this sample is college educated and it may be that such people are more likely to be married than the less educated. One implication of a high number of married couples is that it may dilute the apparent impact of occupation. Because the analysis treats the couple as two separate moving units rather than as one moving unit. In a married couple, it could be that only one person's labor is un-marketable. Treating them as independent has the effect of diluting the proportion of the same which may be suspect to the effects of a changing occupational or industrial structure.

In this study, the movement of a married couple counts as two movers. Each person's movement and occupation or industry is treated separately, whereas in reality, the move may have been due to only been one person's opportunity to

move while the spouse came along in order to remain with the mover. Traditionally, it has been the husband's work which would have dictated the couple's behavior. It seems to me that many women have recently begun to consider their own career development more seriously now than in the past. If this is true, then some of the movers in this study may have been men who were following their wives. In future studies, it would be desirable to examine the behavior of the sexes separately by marital status, but to do so here would open up a whole new area of inquiry much beyond the scope and intent of this paper.

It has to be remembered that this is not a case study. I don't have the opportunity to quiz these movers in depth about their attitudes or values. This is a secondary analysis of data that was collected by other people for their own purposes. The strength of this study is the breadth of the population that is covered and the increased confidence which that permits one to have in the results. The drawback is that the depth one can get from the knowledge of specific details about individuals is lost.

PROCEDURE AND ANALYSIS

The analysis is designed to address three hypotheses.

Hypothesis One:

Whether a migrant moved into or out of a state between 1975 and 1980 is related to the industry and occupation in which he or she worked.

The existence of this relationship was tested with chi-square. The chi-square was calculated as a by-product of the migrant aggregation crosstabulation step.

Hypothesis Two:

Number of migrants will change in response to change in number of establishments.
Number of migrants, instead of rate of migration, is used because I am assessing the net result of change in number of establishments, not the rate of change of migrations. Further, because I only have one observation of migration per migrant, I do not have the necessary information to calculate rates of migration.

Change in number of establishments for a given state can be measured in two ways. (A) The state is growing in comparision to other states. For example, Texas may be considered growing in eggplant proccessing if it has gained more eggplant processing plants than some other state. (B) The state is growing in comparison to its own earlier number of establishments. For example, Texas could be considered to be growing in eggplant processing if it now has more processing plants than it did five years ago, regardless of whether it now has more or fewer eggplant processing plants than some other state. Therefore, Hypothesis two is stated and tested in two ways to correspond to these measurement possibilities.

II (A) The average number of in-migrants employed in a given industry will be higher in states that are growing in that industry compared to other states which are not growing in that industry.

Hypothesis IIA was tested using Analysis of Variance of the effect of change in number of establishments in a given industry on the number of in- or out-migrants who worked in the given industry in 1980.

For the ANOVA, the industrial sectors were categorized with a simple division of the states into two parts. The

dividing line put the fifty percent with the most growth into the growth category and the rest into the non-growing category. This resulted in two groups; one group with 26 states and the other with 24 states. The division is not exactly 25/25 because the dividing line was drawn at the point where a frequency distribution of change-in-number-of-establishments met or exceeded the fifty percent mark.

Specific Growth Cut-off Points:

Because 26 states had an increase in number of wholesale establishments greater than or equal to 124, the change in number of wholesale establishments in a state had to be greater than or equal to 124 for that state to be categorized as growing in wholesale. For retail establishments, the change in number of establishments had to be greater than or equal to 818. For manufacturing establishments, the change in number of establishments had to be greater than or equal to 397. For service establishments, the change in number of establishments had to be greater than or equal to 2,796. Thus, the definitions of growth used are specific to each kind of industry and have an implicit comparison of growth in one kind of industry in one state to growth in that same industry in another state.

II (B) The number of out-migrants from a given state who worked in a given industry in 1980 will correlate negatively with percent change in number of establishments in that industry in the state of origin between 1972 and 1977. That is, out-migration will decrease as the percent change in number of establishment increases.

Hypothesis IIB was tested using correlation of number and type of migrants in each industry with percent change in number of establishments in each industry. This consisted of Pearson product moment correlations of the number of in- and out-migrants in a particular type of industry with change in number of establishments for that industry type (and, incidentally, for the other three industry types as well).

Essential Differences Between HIIA and HIIB, and HI:

The analyses for Hypotheses IIA and IIB have one very important diffference from the analysis for Hypothesis I. The Hypothesis I analysis uses all of the eight major categories of industry used by the Census Bureau or all of the six major categories of occupation as appropriate. The analyses for Hypotheses IIA and IIB uses only four industry types: wholesale, retail, manufacturing, and service.

It will be possible to surmise the most likely causal direction of the effect of change in number of establishments because the change in establishments is measured between 1972 and 1977 while the migration had to have occured between 1975 and 1980. Since the change in number of establishments starts before the migration, the most likely direction of causality is that change in number of establishments has an impact on migration.

Hypothesis Three:

The relationship between changes in number of industrial establishments and migration will vary with migrant age. This comes from Saben (1964) who found that among migrants who moved for work related reasons, the percent moving because of a transfer was much higher in migrants aged 25 to 64 years old.

This hypothesis was tested by doing the analyses for Hypotheses I, IIA, and IIB separately for migrants age 21 to 29 and age 30 to 59 and then comparing the results for each age group to see whether or not they were different from each other.

RESULTS SECTION

The results section will primarily address one hypothesis at a time. The exception to this will have to be hypothesis III. Hypothesis III is concerned with age differences. Because the analyses for hypotheses I and II include separate results for each age group, there will necessarily be some mention of age differences in the results described for hypotheses I and II. At the end of the results section, the differences between age groups will be summarized so that hypothesis III can be considered and discussed in its own right.

Hypothesis I: For the majority of states, in-migrants will work in different industries or have different occupations than out-migrants. These analyses will be done separately to control for age and to allow comparison between the age groups.

The crosstabulation for industry by in- versus out-migrant using migrants 21-29 years old for Alabama is given as an example in Table 8 (for all crosstabulations' cell values, see the Appendices.) The industry categories in which migrants worked in 1980 are the columns of the table. For the rows, 'in' means people who moved into Alabama between 1975 and 1980; 'out' means people who moved out of Alabama between 1975 and 1980. For example, there were 150 people who were working in 'afm' (agriculture, fisheries, and minerals) in 1980 and had moved to Alabama between 1975 and

1980. There were 123 people who were working in 'afm' in 1980 and moved out of Alabama between 1975 and 1980. The point of this crosstabulation is NOT to compare number of people who moved in to people who moved out in a particular industry. The point is to determine whether a relationship exists between direction of migrants' movements and the migrants' industries (or occupations) in 1980.

The Chi-square test of independence proceeds in the following manner. Based on the row and column totals and the total number of observations possible for the table, an 'expected value' is calculated for each cell. The expected value is equal to the number of observations that would be expected to be in each cell if the two variables of interest were independent of each other. Chi-square then compares the expected value for each cell to the actually observed value for each cell. If the pattern of differences between expected and observed values is statistically unlikely, then the null hypothesis of independence is rejected. In this Chi-square calculation, a statistically significant result simply means that the two variables in the table have some relationship to each other. In this case, statistical significance does not imply anything at all about causality or the direction or the strength or the form of the relationship between the two variables. It simply means that some kind of relationship exists.

Table 8

Alabama Movers Age 21 to 29

Movement Directions	Number of movers in each industry in 1980								
	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
In	150	357	106	71	242	75	401	91	1493
Out	123	273	83	59	190	111	443	66	1348
Totals	273	630	189	130	432	186	844	157	2841

The Chi-square for this tabulation equals 29.75.

This crosstabulation (see Table 8) was repeated for each of the fifty states and each of the two age groups for industries and occupations. Chi-square statistics were calculated for each of the resulting 200 crosstabulations. Migrant occupation and industry were categorized using the major divisions used by the census of population. The Census Bureau uses eight major divisions of industry. The Census Bureau uses six major divisions of occupation.

The numbers in Tables 9, 10, 11, and 12 are the values of the Chi-square statistics for each of the separate cross tabulations of mover direction by mover occupation and industry for each mover age group and each state. Altogether, Tables 9 through 12 represent 200 separate crosstabulations and calculations of the Chi-square statistic.

Tables 9 and 10 show the Chi-square test results by state from the crosstabulation of mover direction by mover industry. The industrial sectors used in Tables 9 and 10 include:

1. Agriculture, Forestry, and Fisheries
2. Manufacturing
3. Transportation, Communication, and Public Utilities
4. Wholesale Trade
5. Retail Trade
6. Finance, Insurance, and Real Estate
7. Services, All Kinds
    a. Business and Repair Services
    b. Personal Services
    c. Entertainment and Recreation Services
    d. Professional and Related Services
8. Public Administration

Table 9 shows the results for migrants 21 to 29 years old. Table 10 shows the results for migrants aged 30 to 59. Thirty-eight (38) states show a statistically significant relationship between mover industry and mover direction for movers aged 21 to 29. Forty-one (41) states showed a statistically significant relationship between mover industry and mover direction for movers aged 30 to 59. Thus, for both age groups, mover direction is related to industry. Industry may be more important for the older migrants than for the younger group based on the observation

that there are a larger number of statistically significant relationships for industry for the older group.

Tables 11 and 12 show the Chi-square test results from the crosstabulation of movement direction by mover occupation by state. The occupation categories for Tables 11 and 12 include:

1. Managerial and Professional
2. Technical Sales and Administrative Support
3. Service
4. Farming, Forestry, and Fishing
5. Precision Production, Craft, and Repair
6. Operators, Fabricators, and Laborers

Table 11 is for movers 21 to 29 years old. Table 12 is for movers 30 to 59 years old. Forty (40) states show a statistically significant relationship between movement direction and mover occupation for age 21 to 29. Thirty-seven (37) states showed a statistically significant relationship between movement direction and mover occupation for age 30 to 59. For both age groups there is a relationship between movement direction and mover occupation. Occupation may be more important for younger migrants than for older migrants based on the observation that there were a larger number of significant relationships for the younger age group.

It is apparent that direction of movement (entering or leaving a state) between 1975 and 1980 is not independent of occupation or industry in 1980. Tables 9 through 12 show that this dependency relationship exists in the vast majority of states. The first hypothesis is supported. It is supported for both age groups although the younger migrants may be more affected by occupational considerations and the older migrants may be more affected by industrial considerations based on the differences in their patterns of statistically significant results. The younger migrants had a larger number of significant relationships for occupational sectors than the older migrants. The older migrants had a larger number of significant relationships for industrial sectors than did younger migrants. This would be expected from Sarben's (1964) finding that intra-company transfers were more common in migrants ages 25 to 64 years old. It may also be that the younger migrants, with less time to acquire work experience, may be choosing work primarily on the basis of their training or education which may have been more directed toward an occupation than toward an industry.

Table 9

Chi-square Statistics for Migrant Industry by Movement Direction by State for age 21 to 29.

State	Chi-square	State	Chi-square
Alabama	29.75***	Montana	8.50
Alaska	77.27***	Nebraska	8.28
Arizona	18.90**	Nevada	86.19***
Arkansas	8.86	New Hampshire	20.79**
California	49945.00***	New Jersey	94.49***
Colorado	19.69**	New Mexico	57.94***
Connecticut	14.74*	New York	363.50***
Delaware	7.49	N. Carolina	29.91***
Florida	96.44***	N. Dakota	15.89*
Georgia	23.16**	Ohio	50.45***
Hawaii	89.68***	Oklahoma	11.78
Idaho	17.76*	Oregon	20.33**
Illinois	123.07***	Pennsylvannia	39.48***
Indiana	20.67**	Rhode Island	29.97***
Iowa	20.70**	S. Carolina	12.67
Kansas	22.37**	S. Dakota	4.35
Kentucky	34.63***	Tennessee	5.96
Louisiana	56.72***	Texas	52.32***
Maine	4.45	Utah	12.51
Maryland	109.00**	Vermont	11.51
Massachusetts	83.53***	Virginia	126.50***
Michigan	78.50***	Washington	21.96**
Minnesota	24.86***	W. Virginia	30.39***
Mississippi	9.69	Wisconsin	38.98***
Missouri	9.82	Wyoming	79.73***

* significant at the .05 level
** significant at the .01 level
*** significant at the .001 level

Table 10

Results of Chi-square Analyses for Movement Direction by Migrant Industry by State for age 30 to 59.

State	Chi-square		State	Chi-square	
Alabama	8.43		Montana	15.71	*
Alaska	60.70		Nebraska	18.22	*
Arizona	7.72		Nevada	156.70	***
Arkansas	21.87	*	New Hampshire	16.18	**
California	157.20	***	New Jersey	74.36	***
Colorado	20.80	*	New Mexico	22.44	**
Connecticut	71.41	***	New York	114.40	***
Delaware	5.14		N. Carolina	38.55	***
Florida	129.80	***	N. Dakota	29.07	***
Georgia	8.67		Ohio	49.38	***
Hawaii	37.26	***	Oklahoma	14.57	*
Idaho	18.80	**	Oregon	43.70	***
Illinois	89.59	***	Pennsylvannia	48.28	***
Indiana	48.65	***	Rhode Island	22.30	**
Iowa	9.79		S. Carolina	16.69	*
Kansas	18.65	**	S. Dakota	7.16	
Kentucky	24.82	***	Tennessee	8.45	
Louisiana	16.44	*	Texas	52.45	***
Maine	19.82	**	Utah	9.17	
Maryland	108.50	***	Vermont	9.32	
Massachusetts	115.80	***	Virginia	132.80	***
Michigan	90.06	***	Washington	52.16	***
Minnesota	27.79	***	W. Virginia	24.72	***
Mississippi	7.90		Wisconsin	33.50	***
Missouri	22.86	**	Wyoming	31.48	***

* significant at the .05 level
** significant at the .01 level
*** significant at the .001 level

Table 11

Chi-square Statistics for Migrant Occupation by Movement Direction by State for age 21 to 29.

State	Chi-square	State	Chi-square
Alabama	31.52***	Montana	3.44
Alaska	47.00***	Nebraska	24.75***
Arizona	6.55	Nevada	46.90***
Arkansas	37.57***	New Hampshire	22.56***
California	18616.00***	New Jersey	77.56***
Colorado	21.97***	New Mexico	7.23
Connecticut	36.30***	New York	68.78***
Delaware	11.96*	N. Carolina	12.05*
Florida	37.97***	N. Dakota	10.69
Georgia	6.45	Ohio	85.23***
Hawaii	39.97***	Oklahoma	24.92***
Idaho	14.97*	Oregon	18.88**
Illinois	135.30***	Pennsylvannia	137.30***
Indiana	73.32***	Rhode Island	81.15***
Iowa	14.53*	S. Carolina	5.66
Kansas	17.45**	S. Dakota	16.25**
Kentucky	9.04	Tennessee	13.86*
Louisiana	10.97	Texas	35.60***
Maine	19.23**	Utah	40.37***
Maryland	21.44***	Vermont	10.21
Massachusetts	36.74***	Virginia	50.70***
Michigan	51.40***	Washington	14.44*
Minnesota	8.56	W. Virginia	19.50**
Mississippi	11.03	Wisconsin	109.00***
Missouri	19.54**	Wyoming	16.43**

* significant at the .05 level
** significant at the .01 level
*** significant at the .001 level

Table 12

Chi-square Statistics for Movement Direction by Migrant Occupation by State for age 30 to 59.

State	Chi-square	State	Chi-square
Alabama	10.27	Montana	23.53 ***
Alaska	25.64 ***	Nebraska	15.57 **
Arizona	8.82	Nevada	40.31 ***
Arkansas	9.57	New Hampshire	4.93
California	63.56 ***	New Jersey	86.93 ***
Colorado	8.75	New Mexico	7.12
Connecticut	22.80 ***	New York	204.70 ***
Delaware	7.99	N. Carolina	34.75 ***
Florida	49.24 ***	N. Dakota	23.18 ***
Georgia	9.94	Ohio	40.27 ***
Hawaii	29.06 ***	Oklahoma	20.92 ***
Idaho	6.27	Oregon	12.85 *
Illinois	95.33 ***	Pennsylvannia	46.61
Indiana	33.59 ***	Rhode Island	22.07 ***
Iowa	4.03	S. Carolina	19.87 **
Kansas	8.06	S. Dakota	17.70 **
Kentucky	19.28 ***	Tennessee	34.31 ***
Louisiana	21.97 ***	Texas	35.34 ***
Maine	15.29 ***	Utah	14.56 *
Maryland	19.70 **	Vermont	5.30
Massachusetts	67.30 ***	Virginia	16.73 ***
Michigan	27.49 ***	Washington	19.44 **
Minnesota	10.70	W. Virginia	14.47 **
Mississippi	30.05 ***	Wisconsin	50.68 ***
Missouri	60.11 ***	Wyoming	15.42 **

* significant at the .05 level
** significant at the .01 level
*** significant at the .001 level

RESULTS FOR HYPOTHESES II(A) AND II(B):

The analyses for Hypothesis I included eight categories of industry. The analyses for Hypotheses II(A) and II(B) did NOT include as many of the industrial sectors as did the analysis of Hypothesis I. Hypotheses II(A) and II(B) use only four sectors: wholesale, retail, service, and manufacturing. Hypotheses II(A) and II(B) are a direct assessment of the effect of growth in number of four types of industrial establishments on movement direction of people employed in those four types of industrial establishments. In this paper, **GROWTH NEVER** REFERS TO **MIGRATION**; GROWTH **ONLY** REFERS TO NUMBER OF **ESTABLISHMENTS.**

The categorization of states into growing versus non-growing categories will follow the 26/24 split described in the Data and Methods section. The twenty-six (26) states with the greatest gains in number of industrial establishments will be categorized as growing. The identification of the states with the largest increases was determined separately for each of four industrial sectors: manufacturing, wholesale, retail and service.

Hypothesis II(A): The average number of in-migrants employed in a given industry in 1980 will be higher in states that are increasing in number of establishments of that industry. This analysis will be done separately to control for age and to allow comparison of results between the age groups.

Younger Migrants

Table 13 presents the results for eight separate one-way ANOVAs. There is one ANOVA for each industrial sector and each direction of movement of people employed in that industrial sector. Examples:

Sample Table 1

	States Growing in Manufacturing Establishments	States Not Growing in Manufacturing Establishments
In-movers in manufacturing sector		

Sample Table 2

	States Growing in Manufacturing Establishments	States Not Growing in Manufacturing Establishments
Out-movers in manufacturing sector		

For migrants 21 to 29 years old, growth in number of establishments had a significant effect on both in- and out-migration in the manufacturing and service sectors (see Table 13). For the 26 states that were growing in manufacturing compared to other states, the average number

of in-migrants who worked in manufacturing was 545.23. For the 24 states that were not growing in manufacturing compared to other states the average number of in-migrants was 310.75. Clearly, the average number of in-migrants who worked in manufacturing was higher in states that were growing in manufacturing compared to other states. The F statistic for this comparison is 5.001 and is sigificant at the 0.030 level.

For states that were growing in manufacturing, the average number of out-migrants was 451.23. For states that were not growing in manufacturing, the average number of out-migrants was 279.04. The F statistic for this comparison is 4.035. It is significant at the 0.050 level. This result was not expected. I did not expect average out-migration to be higher in states that are growing in industrial establishments than in states that are not growing in industrial establishments. It is particularly suprising in light of the fact that the establishments and the migrants are assumed to be in the same industry. Migrant industry was observed in 1980. Establishment industry was observed from 1972 to 1977. This finding is anomalous if we assume that migrant industry was the same in 1975 as it was in 1980. If migrant worked in manufacturing in 1975 and the state was growing in number of manufacturing establishments between 1972 and 1977, why did the migrant migrate? This will be explored more after presentation of the service

sector results because the service sector results show the same pattern.

The same pattern of results was observed for the service sector. The average number of in-migrants and the average number of out-migrants who worked in service in 1980 was higher in states that were growing in number of service establishments compared to other states between 1972 and 1977 (see Table 13). There were no statistically significant results in the 21 to 29 age group in the wholesale or retail trade sectors.

This means that, if a state was growing in number of manufacturing (or service) establishments between 1972 and 1977, it was more likely than non-growing states to have more manufacturing (or service) workers both enter and leave. I expect people who work in an industry to enter a state that is growing in that industry, but why would people who work in an industry leave a state that is growing in that industry? There are two possible explanations. The first is that migrant industry may have changed between 1975 and 1980. If some people did not work in manufacturing or service in 1975, then change in number of manufacturing or service establishments between 1972 and 1977 would not have influenced their behavior. The second possibility takes advantage of the two year overlap between period of establishment change and migration period. Change in

establishments is observed from 1972 to 1977. Inter-state migration is observed from 1975 to 1980. Migration and change in establishments overlap from 1975 to 1977. The potential migrant may have worked briefly in the growing industry before leaving in order to make himself more employable at another location which was desired for some unknown reason.

Table 13

Number of States, Average Number of Migrants, and ANOVA Results by Establishments Growth Category and Migrant Industry and Type, Age 21 to 29.

Migrant Industry and Type:	Non-Growth Average (N)	Growth Average (N)	ANOVA F (p)
Manufacturing			
In-migrants	310.75(24)	545.23(26)	5.001(.030)*
Out-migrants	279.04(24)	451.23(26)	4.035(.050)*
Wholesale			
In-migrants	67.67(24)	107.62(26)	3.069(.086)
Out-migrants	75.13(24)	83.42(26)	0.182(.671)
Retail			
In-migrants	265.96(24)	434.54(26)	3.872(.055)
Out-migrants	304.54(24)	330.08(26)	0.099(.754)
Service			
In-migrants	278.33(24)	1042.38(26)	48.593(.000)*
Out-migrants	247.54(24)	1028.54(26)	24.317(.000)*

Results for Older Migrants

Table 14 presents the same analysis as Table 13, but for the 30 to 59 year old movers. The average number of in-migrants who worked in manufacturing for states that were growing in number of manufacturing establishments was 891.31. The

average number of manufacturing in-migrants for states that were not growing in number of manufacturing establishments was 432.54. The F statistic for this comparison was 4.838. It was significant at the 0.033 level. The same pattern of results was found for states growing in number of wholesale and retail trade establishments. However, in the service sector we find the same pattern of results that we found in the service sector for the 21 to 29 year old age group. The average number of service in-migrants and the average number of service out-migrants are higher in states that are growing in number of service establishments (see Table 14). The possible reasons for this are the same as those offered for the 21 to 29 age group.

Hypothesis II(A) is supported, but the total picture is mixed. Younger migrants show significant effects in the manufacturing and service industries. The older migrants show significant effects for all four industries. In the results for hypothesis I, it was observed that there were more significant results in the analysis of industry for the older migrants. That observation is certainly consistent with the results of hypothesis II(A). There are more statistically significant results for the effect of industry growth for older migrants than for younger migrants. Further, the pattern of significant results is more interpretable for the older migrants, with the exception of the service sector. It was noted in the literature review

that in the 1970's the service sector of the economy grew enormously in all areas of the country. This may explain why growth in number of service establishments does not have a consistent effect.

Table 14

Number of States, Average Number of Migrants, and ANOVA Results by Establishments Growth Category and Migrant Industry and Type, for Migrants Age 30 to 59

Migrant Industry and Type:	Non-Growth Average (N)	Growth Average (N)	ANOVA F (p)
Manufacturing			
In-migrants	432.54(24)	891.31(26)	4.838(.033)*
Out-migrants	383.33(24)	539.35(26)	1.315(.257)
Wholesale			
In-migrants	95.04(24)	196.08(26)	4.515(.039)*
Out-migrants	106.96(24)	125.31(26)	0.337(.565)
Retail			
In-migrants	262.21(24)	537.23(26)	4.512(.039)*
Out-migrants	279.25(24)	324.58(26)	0.272(.604)
Service			
In-migrants	393.00(24)	1548.42(26)	22.050(.000)*
Out-migrants	294.21(25)	1185.69(26)	26.995(.000)*

II(B) The number of out-migrants from a given state who worked in a given industry in 1980 will correlate negatively with percent change in number of establishments in that industry in state of origin between 1972 and 1977. This analysis will be done separately for each age group to control for age and to permit comparison between the age groups.

Results for Younger Migrants:

Table 15 presents the results for movers age 21 to 29 years old. It is implicit in calculation of percent change in establishments for each state that we are comparing the present status of each state to its past status. This is a different conceptualization of growth than used in hypothesis II(A) and must be kept in mind when interpreting the results.

Reading down the first column of Table 15, the correlation between percent change in number of service establishments and number of service sector in-migrants is -0.1399. This is not statistically significant. However, the correlation between percent change in number of service establishments and number of service sector out-migrants is -0.2869 and this is statistically significant at the 0.022 level. This means that the states with the largest increase in number of service establishments (compared to the past number) had the smallest number of out-movers who worked in the service sector.

Moving through the rest of Table 15, percent change in number of service establishments was negatively correlated with out-migration in manufacturing and wholesale and with in-migration in manufacturing and wholesale. It is the significant negative correlations with number of in-migrants

that are counter-intuitive here. A negative correlation between percent change in number of service establishments and number of in-migrants means that the larger the states' percent change in number of establishments, the smaller number of in-migrants. This result was found even when the industries of the establishments and the industries of the migrants are the same. I want to finish describing Table 15 before I try to tackle this.

Continuing with Table 15 column two, percent change in number of manufacturing establishments was negatively correlated with out-migration in all industries. In column three, percent change in number of retail establishments was negatively correlated with out-migration in the service industry and in-migration in the maufacturing industry. In column 4, percent change in number of wholesale establishments was not correlated with in- or out-migration in any industry.

Negative correlations between out-migration and percent change in number of establishments means that number of out-migrants for a state decreased with an increase in percent change in number of establishments. This is what I expected. I did not expect a negative correlation between number of in-migrants and percent change in number of establishments. A negative correlation between in-migration and percent change in number of establishments means that as

percent change in number of establishments gets larger, the number of in-migrants gets smaller. This happened and was statistically significant for four out of twelve statistically significant correlations in Table 15. Although unexpected, it is consistent with the finding for hypothesis IIA that out-migration can be higher in states that have increased in number of establishments in comparison to other states. In both cases, these counter-intuitive findings are found in the 21 to 29 age group. If we assume that people 21 to 29 years old are just entering the labor market, it may be that an increase in demand for labor due to an increase in number of establishments is largely met by the 21 to 29 year olds newly entering the labor market at origin. If this is the case, there would be relatively little incentive for 21 to 29 year olds from other states to move in.

Other factors to consider interpreting these results is that persons may work at different jobs for different reasons at different times in life. One may take whatever one can get to earn money while concentrating on gaining training or education for some other occupation. The degree of experience one has in a particular industry may not matter much for entry level jobs, but may be essential for higher level jobs. Location and job may weigh differently for young single people compared middle-age married people who are in mid-career.

Not all increases in number of establishments will lead to a proportionate increase in number of jobs. A large increase in number of small establishments may not increase the number of jobs available as much as an increase in the number of large industrial establishments. Some jobs such as secretary or bookeeper can be practiced in a range of industries. Such occupations may not be as responsive to industrial establishment change as occupations which can only be practiced in a particular industry, e.g., shipwrights. Occupations which can only be practiced in particular industry require adaptation to their decline by migration or a change of occupation. If a person cannot practice his or her original occupation at origin or choose a new occupation at origin, then that person will have to migrate.

Table 15

Correlations of In- and Out-migration by Industry with Percent Change in Number of Establishments by Industry for Migrants 21 to 29 years (n=50) r, (p)*

	Establishment Industry Sectors:			
	Service	Manufacturing	Retail	Wholesale
Migrant Industry Sectors:				
Service				
In	-.1399	-.2048	-.0931	.0383
	(.166)	(.077)	(.260)	(.396)
Out	-.2869	-.4332	-.3021	-.1374
	(.022)*	(.001)*	(.017)*	(.171)
Manufacturing				
In	-.2927	-.3376	-.2580	-.0819
	(.020)*	(.008)*	(.035)*	(.286)
Out	-.2381	-.3649	-.2173	-.0714
	(.048)*	(.005)*	(.065)	(.311)
Retail				
In	-.1327	-.0769	.0162	.0954
	(.179)	(.298)	(.456)	(.255)
Out	-.2083	-.3294	-.1784	-.0481
	(.073)	(.010)*	(.108)	(.370)
Wholesale				
In	-.2381	-.1883	-.1474	.0376
	(.048)*	(.095)	(.154)	(.398)
Out	-.2754	-.3611	-.2200	-.0624
	(.026)*	(.005)*	(.062)	(.333)

Results for Older Migrants:

Table 16 presents the same analysis as Table 15, but is for movers 30 to 59 years old. Reading down the first column of Table 16, for migrants age 30 to 59, the correlation between percent change in number of service establishments and number of service sector out-migrants is -0.0183. This correlation is not statistically significant. The only statistically significant correlation in the first column of

results is the correlation between percent change in number of service establishments and number of wholesale sector out-migrants which is -0.2241 and significant at the 0.044 level. This means that the larger a state's percent change in number of service establishments, the smaller the number of out-migrants in the wholesale sector.

Moving through the rest of Table 16, in column two, percent change in number of manufacturing establishments is significantly negatively correlated with out-migration in all four industrial sectors. This means that the larger the state's percent change in number of manufacturing establishments, the smaller was the number of out-migrants in all four industrial sectors. In column three, change in number of retail establishments is not significantly correlated with number of out-migrants in any industrial sector, although it is close for the manufacturing and wholesale sectors. In column four, change in number of wholesale establishments is not significantly correlated with either in or out-migration in any industry. Unlike the younger migrants, this group does not show any statistically significant correlations with an unexpected sign. However, there are only five statistically significant correlations while the younger migrants had twelve.

It is quite interesting that some of the significant correlations are between percent change in number of establishments in a certain industry and migrants in another industrial sector. This could point to a 'domino effect' rippling through a location. It is also interesting that in this older group, percent change in number of establishments is only related to number of people who leave a state and has no relationship with how many people enter a state. It seems that the decision to migrate may be separate from the choice of destination. In the younger migrants (Table 15) the percent change in number of establishments had a relationship with number of in-migrants in four instances.

Table 16

Correlations of Number of In- and Out-migrants by Industry with Percent Change in Number of Establishments by Industry, for Age 30 to 59 (n=50), r (p)*

	Establishments Industry Sectors:			
	Service	Manufacturing	Retail	Wholesale
Migrants Industry Sectors:				
Service				
In	-.0183 (.450)	-.0637 (.330)	.0489 (.368)	.1358 (.173)
Out	-.1434 (.160)	-.2686 (.030)*	-.1487 (.151)	.0093 (.474)
Manufacturing				
In	-.1141 (.215)	-.1903 (.093)	-.0793 (.292)	.0465 (.374)
Out	-.2339 (.051)	-.3810 (.003)*	-.2260 (.057)	-.0592 (.342)
Retail				
In	-.0215 (.441)	.0235 (.436)	.1149 (.213)	.1593 (.135)
Out	-.1643 (.127)	-.2698 (.029)*	-.1258 (.192)	-.0007 (.498)
Wholesale				
In	-.0843 (.280)	-.0606 (.338)	-.0156 (.457)	.1372 (.171)
Out	-.2441 (.044)*	-.3706 (.004)*	-.2310 (.053)	-.0367 (.400)

Hypothesis III: The relationship between changes in industrial structure, as measured by change in number of establishments will vary with age.

Table 17 presents a brief comparison of the number and patterns of statistically significant results between the younger migrants and the older migrants from Tables 9

through 16. It appears that hypothesis III is supported. The migrants do show different results by age group.

Table 17

Comparing Results for In- and Out-migrants. Only Statistically Significant Results are Included.

		Age Group	
Test	Tables	21 to 29	30 to 59
X2 Occupation	(9 & 10)	41 significant	37 significant
X2 Industry	(11 & 12)	38 significant	41 significant
ANOVA	(13 & 14)	in- for service in- for manufacturing out- for service out- for manufacturing	in- all industries out- service
Correlation	(15 & 16)	8 signficant for out 4 significant for in	5 significant for out- None for in-

What they do for a living is about equally important for both age groups for influencing where they are going to go. Remember that the ANOVA uses a measure of growth that compares each state to all the other states while the correlation uses a measure of growth that compares each state to its previous condition. As Table 17 (reading down) shows, the older migrants are more consistently likely to leave a state that is doing worse than it used to and to move to a state that is doing better than other states than are younger migrants.

For the younger migrants, the pattern of results is less clear. States in which the number of establishments is changing appear to gain or lose 21 to 29 year olds regardless of the direction of the change. This could be due to older migrants being unwilling or unable to change the industry in which they work, or to older migrants possibly being more sophisticated in terms of seeking information about other places.

An additional possiblity, is that young migrants, who may have less work experience, have difficulty finding that first job and have to go where ever they can get one. Young migrants are moving to their first jobs. Older migrants are moving to continue their line of work. If one conceptualizes migration as niche seeking behavior and a line of work as a niche, it would appear that the type of niche which one seeks may grow less flexible over the course of the life span.

CONCLUSIONS AND DISCUSSION

I began this study by asking why the Sheppey Islanders didn't respond to increasing unemployment by migrating. I suggested that the questions usually asked about migration are not well formed questions and suggested an alternate point of view, adaptation.

Push-pull studies (Greenwood, 1975; Lee, 1966) typically study movement between an origin and a destination. The movement between origin and destination is then referred to as the migration stream. One or more migration streams may be examined, but each stream is considered separately from the others. To examine the adequacy of push-pull theory by first selecting an instance of migration and then asking what was bad about origin and good about the destination assumes that push-pull is a true and adequate explanation of migration behavior and would only accidentally let one discover whether it really was a true and adequate explanation of migration or not. A more adequate explanation of migration would lead to predictions about when it would not happen as well as when it would happen. The push-pull explanation doesn't predict when conditions might be bad in one place and better in another place, but migration doesn't happen or allow for the possibility that migrants may come from many places to a single destination

or come from a single origin to a variety of places. That the latter possibility is overlooked is hard to explain to residents of the U.S. since most of their ancestors came from several different places to the U.S..

The push-pull explanation is revealed as inadequate by the existence of a counter example such as Sheppey Island. If a lack of jobs causes people to move, then whenever there are not enough jobs people should move. If a situation is found where there are not enough jobs and people don't move, then there must be more to explaining migration.

Hawley (1950), Karp and Kelly (1971), and Howland (1988) argue that migration is a response to environmental change and a result of insufficient opportunities at origin. Karp and Kelly (1971) assert that migration is related to opportunities for functional expansion of activities. Clearly, decline in number of establishments represents a decline in the potential for functional expansion of activities. If there are fewer establishments, then there are fewer opportunities to earn a living and a person might have to move. The results of this study support all of them. A decline in number of establishments represents a change in the environment which directly lowers and eventually results in in-sufficent opportunities at origin. When the number of establishments decline, the older workers

move out. When the older workers move, they choose places that are increasing in number of establishments compared to other states.

Lowry (1969) asserts that migration depends more on conditions at destination than at origin. I do not agree with that. Significant relationships were found for both out-migration and in-migration. The older migrants left places that were declining and went to places that were growing. I would argue that conditions at destination are very important, but not necessarily more important than conditions at origin.

The results of this study would seem to imply that age, occupation, and industry of the potential migrants are all important factors. The different patterns of results for in- versus out-movement suggest to me that the decision to emigrate and the decision about specifically where to go are governed by separate considerations. The desire to emigrate for older workers may be chiefly governed by conditions at origin (hypothesis IIB), but it seems that the decision about where to go is based on comparison amoung alternate locations (hypothesis IIA).

At the very least, I have demonstrated that the factors that influence in-migration are not merely the mirror image of the factors that influence out-migration. While migrant

industry and/or occupation certainly do have a relationship with entering or leaving a particular place, the relationship is not nearly as simple as a push-pull perspective might suggest, especially for the younger migrants.

I suggest that age of migrant, probably because of its relationship to opportunity for experience, can make a difference in how relatively important conditions at origin or destination are. In hypothesis I, the younger migrants had more statistically significant relationships for the relationship between their occupations and the direction of their movement with respect to any particular state. In contrast, the older migrants had more statisically significant relationships between their industrial sectors and the direction of their movement with respect to a particular state. This may suggest that occupation is the most salient consideration for younger migrants, while industry is the most salient consideration for older migrants. If this difference does exist, it would imply that younger migrants ought to show fewer significant relationships between their movements and changes in number of industrial establishments, which is what I found.

In the analyses of hypotheses IIA and IIB, there were additional differences between young migrants and old migrants. Hypothesis IIA measured growth by comparing each

state to all other states. The younger migrants showed statistically significant relationships here, but did not seem to distinquish between moving in or moving out of a state that was undergoing change with respect to other states. In contrast, the older migrants had most of their significant relationships for in-migration. It seems very likely to me that the older migrants were choosing a destination based on how attractive one state was compared to another state, whereas it does not seem as if the younger migrants were making such a distinction. This again would be explained if younger migrants are looking for their first jobs and choosing more on the basis of their occupational education or training than on their industrial experience.

The analysis of hypothesis IIB used a definition of growth that compared each state to its own previous condition without regard for the condition of any other state. Again, age differences occured. The majority of significant correlations for young migrants are for out-migration. The majority of significant results for older migrants are for out-migration. For both groups, the correlations are negative. It just doesn't seem as if the younger migrants are responding to changes in number of establishments to the extent that older migrants do. The combined results of hypotheses IIA and IIB suggest to me that older migrants leave states that are not doing as well as they used to and enter states that are doing better than other states. This

behavior seems eminently rational. However, the most logical explanation for the younger migrant's behavior may be that changes in number of industrial establishments just don't determine their behavior as much as something else does. The results of hypothesis I suggest that the something else could be occupation. The direction of movement for 21 to 29 year olds is definitely linked to migrants' occupations more frequently than to migrants' industries.

Intuitively, it makes sense that 21 to 29 year olds might behave differently than 30 to 59 year olds if one considers the possibility that 21 to 29 year olds have just finished their training and/or their education and may not have much work experience related to the occupation they want to pursue or the industry in which they want to work. Additionally, it may be relatively easy to get an entry level job in an industry without specific work experience in that industry, but that higher level jobs require industry specific experience. This would have the consequence that industry experience or conditions are relatively unimportant early in one's work life, but become more critical over time. This would agree with and help explain Howland's (1988) finding that older displaced workers have a harder time adjusting to industrial change.

The different results for young migrants and migrants over 30, combined with Howland's finding that older migrants are less likely to be able to find new jobs after displacement suggests that niche seeking may indeed be a factor in-migration. Howland's findings imply that there is a difference in ease of finding a niche at different ages. In my study, it appears that older migrants were more likely to leave in response to change in number of establishments. This would certainly be consistent with a relative lack of ability to find or keep a suitable new niche at origin. I would agree that there is a difference in ease of niche finding at different ages.

The most intriguing finding is that out-migration of people 21 to 29 years who work in a given industry can be higher for states that are growing in that industry than in states that are not growing in that industry. If this result is confirmed by further research, it would certainly suggest that merely creating additional jobs in a state is not a panacea for slowing out-migration, especially of the younger migrants. The jobs must be the kinds of jobs that the pre-change population can be or is trained to do. If industry is confirmed by other research to be as critical for workers 30 to 59 as it is in my study, then it seems that the new jobs need to be in similar or compatible industries to the original industries. In the case of Sheppey Island, the pre-change population was composed primarily of carpenters.

The new industries did not use carpenters. It might have been more useful to the islanders if the new industries had been wooden furniture makers, wooden toy makers, pre-fab home builders, or makers of small wood products such as toothpicks, popsicle sticks, or wooden pallets used for stacking and shipping merchandise.

At present, education seems to tend toward development of specific technical skills. This may not be the best strategy in a rapidly changing world. Specific technical skills can become outdated. General skills such as organization, logical reasoning, and the ability to think and reason with numbers may be much less likely to become outdated and can be applied in a wide range of industries.

I would also suggest that we should provide opportunities for re-training of older workers. Learning new skills should be a life long activity. The idea that you can learn all you will ever need to know in the first part of your life and then just coast on that knowledge is antiquated.

People should be encouraged to develop a wide range of skills and to accquire new ones throughout their lives. Learning is a skill. The more things that you practice learning, the better you get at learning. The habit of life-long learning gives you the advantage of having a wider range of skills to fall back on if the environment changes

and the advantage of being better able to learn and use new information that comes along.

Future research in this area should further explore the relationship between age, industry of employment, changes in industrial structure, and migration. If it were possible to collect the data, it might be interesting to look at the kind of education and training the migrants had experienced and to do more detailed examination of the specific skills involved in the occupations and industries in which they worked.

It would be useful to repeat this study with the 1990 census data to confirm these findings, but it would be even more useful if the migrant occupational data could in some way be linked to data on changes in the opportunities to practice those occupations in the states entered and exited. The age analysis might to be extended by breaking down the 30 to 59 year old group into smaller age groups, perhaps a group for each decade. If the frequency and significance of industry in comparison to occupation continued or even increased, this would lend additional strength to the idea that individuals tend to get sort of 'frozen' into particular industries and find it increasingly difficult to change to new industries as they become older.

I have demonstrated that destination, origin, and migrant characteristics are all important to understanding migration. I have shown that an adaptation perspective is useful for understanding migration and provides more detailed and more focused understanding of migration than the push-pull approach. The success of the adaptation perspective rests in its consideration of the population and environment and the interaction between them.

I have produced a counter-example, Sheppey Island, to the predictions of the push-pull hypothesis. I have shown the greater explanatory, and thus predictive, power of the adaptation perspective. I have shown that the decision to migrate and the choice of destination are separate decisions. I have shown that the probabiltiy of movement and the factors which predict movement are related to age. I have shown that migration is a rational response to environmental change.

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APPENDICES

APPENDIX A

APPENDIX A

Industry Crosstabulation Cell Values for Each State.
Using Migrants Age 20 to 29.

Number of migrants who moved In or Out of each state
1975 to 1980 by Industries in which
those migrants worked in 1980.

Industry Abbreviations:

afm	agriculture, forestry, fisheries, and mining
mfg	manufacturing
t&c	transportation, communication, and other public utilities
whl	wholesale
ret	retail
fin	finance, insurance, and real estate
ser	service
puba	public adiministration

Alabama

state 1 / indus	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	150	357	106	71	242	75	401	91	1493
out	123	273	83	59	190	111	443	66	1348
totals	273	630	189	130	432	186	844	157	2841

expected values for each of the cells above

143.5	331.1	99.32	68.32	227.00	97.75	443.5	82.51
129.5	298.9	89.68	61.68	205.00	88.25	400.5	74.49

Chisq 29.75

Alaska

state 2 / indus	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	70	45	54	12	91	31	184	83	570
out	38	121	35	17	72	24	117	33	457
total	108	166	89	29	163	55	301	116	1027

chisq 77.27

Arizona

state	indus							
4	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	364	412	136	100	525	175	774	107	2593
out	215	322	107	56	276	103	484	72	1635
total	579	734	243	156	801	278	1258	179	4228

chisq 18.9

Arkansas

state	indus							
afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	140	249	63	40	148	48	265	35	988
out	135	209	78	35	170	62	261	36	986
total	275	458	141	75	318	110	526	71	1974

chisq 8.86

California

state	indus							
6	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	1542	3913	811	617	2632	1049	4411	518	15493
out	937	1487	553	302	1364	408	2139	376	7566
total	2479	5400	1364	919	3996	1457	6550	894	23059

chisq 49945

Colorado

state	indus							
8	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	544	526	257	139	651	294	1144	165	3720
out	333	368	155	96	371	126	626	100	2175
total	877	894	412	235	1022	420	1770	265	5895

chisq 19.69

Connecticut

state	indus							
9	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	83	490	98	60	215	146	519	51	1662
out	112	489	92	73	280	142	634	74	1896
total	195	979	190	133	495	288	1153	125	3558

chisq 14.74

Delaware

state indus 10 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in 43	89	27	13	69	19	116	20	396
out 32	82	28	10	68	19	154	24	417
total 75	171	55	23	137	38	270	44	813

chisq 7.491

District of Columbia

state indus 11 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in 30	39	39	12	85	53	405	215	878
out 37	75	69	20	97	67	362	167	894
total 67	114	108	32	182	120	767	382	1772

chisq 33.16

Florida

state indus 12 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in 872	914	486	274	1520	515	2129	261	6971
out 484	810	280	209	782	294	1270	175	4304
total 1356	1724	766	483	2302	809	3399	436	11275

chisq 86.44

Georgia

state indus 13 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in 209	531	258	159	540	200	979	157	3033
out 178	414	129	95	321	153	655	113	2058
total 387	945	387	254	861	353	1634	270	5091

chisq 23.61

Hawaii

state indus 15 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in 77	54	48	17	196	60	270	56	778
out 93	171	75	46	162	42	217	68	874
total 170	225	123	63	358	102	487	124	1652

chisq 89.68

Idaho

state	indus							
16	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	140	116	59	30	132	40	226	56	799
out	85	116	47	27	127	30	181	22	635
total	225	232	106	57	259	70	407	78	1434

chisq 17.76

Illinois

state	indus							
7	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	264	1312	333	251	704	325	1541	182	4912
out	392	858	307	191	747	331	1619	176	4621
total	656	2170	640	442	1451	656	3160	358	9533

chisq 123.7

Indiana

state	indus							
18	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	162	599	142	83	349	115	706	91	2247
out	182	492	130	98	390	144	716	74	2226
total	344	1091	272	181	739	259	1422	165	4473

chisq 20.67

Iowa

state	indus							
19	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	125	297	69	64	205	68	470	59	1357
out	141	286	102	65	256	110	594	43	1597
total	266	583	171	129	461	178	1064	102	2954

chisq 20.7

Kansas

state	indus							
20	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	155	349	108	64	239	73	411	65	1464
out	183	273	112	82	224	97	481	64	1516
total	338	622	220	146	463	170	892	129	2980

chisq 22.37

Kentucky

state	indus							
21	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	186	207	82	64	229	57	387	63	1275
out	126	295	96	72	245	100	415	72	1421
total	312	502	178	136	474	157	802	135	2696

chisq 34.63

Louisana

state	indus							
22	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	372	267	130	81	317	85	486	71	1809
out	185	276	114	46	203	97	438	62	1421
total	557	543	244	127	520	182	924	133	3230

chisq 56.72

Maine

state	indus							
23	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	56	131	18	21	96	27	207	24	580
out	50	132	24	11	86	27	197	25	552
total	106	263	42	32	182	54	404	49	1132

chisq 4.453

Maryland

state	indus							
24	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	166	255	148	67	342	143	962	410	2493
out	164	331	128	63	321	137	713	161	2018
total	330	586	276	130	663	280	1675	571	4511

chisq 109

Massachusetts

state	indus							
25	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	105	708	124	90	370	197	1196	126	2916
out	236	557	170	109	435	212	1142	130	2991
total	341	1265	294	199	805	409	2338	256	5907

chisq 83.53

Michigan

state 26	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	190	824	153	110	477	139	873	119	2885
out	319	630	179	124	544	203	1019	138	3156
total	509	1454	332	234	1021	342	1892	257	6041

chisq 78.5

Minnesota

state 27	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	160	423	140	100	290	136	689	68	2006
out	163	261	110	69	281	113	618	52	1667
total	323	684	250	169	571	249	1307	120	3673

chisq 24.86

Mississippi

state 28	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	111	206	55	37	136	47	211	44	847
out	136	233	88	56	163	74	329	61	1140
total	247	439	143	93	299	121	540	105	1987

chisq 9.694

Missouri

state 29	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	204	441	150	100	328	125	734	105	2187
out	245	433	159	114	357	167	732	95	2302
total	449	874	309	214	685	292	1466	200	4489

chisq 9.827

Montana

state 30	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	102	52	39	18	109	26	171	37	554
out	104	76	30	21	95	22	182	29	559
total	206	128	69	39	204	48	353	66	1113

chisq 8.508

Nebraska

state 31	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	97	133	71	49	121	56	283	44	854
out	105	143	65	39	152	68	330	33	935
total	202	276	136	88	273	124	613	77	1789

chisq 8.286

Nevada

state 32	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	147	91	69	31	204	66	594	59	1261
out	54	86	39	16	117	37	140	15	504
total	201	177	108	47	321	103	734	74	1765

chisq 86.19

New Hampshire

state 33	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	60	278	52	33	105	64	273	21	886
out	40	127	31	20	94	40	202	22	576
total	100	405	83	53	199	104	475	43	1462

chisq 20.79

New Jersey

state 34	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	150	815	199	160	438	280	1031	153	3226
out	194	560	218	135	576	217	1183	133	3216
total	344	1375	417	295	1014	497	2214	286	6442

chisq 94.49

New Mexico

state 35	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	191	66	62	31	184	45	327	62	968
out	127	149	54	33	144	57	247	58	869
total	318	215	116	64	328	102	574	120	1837

chisq 57.94

New York

state 36	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	270	1408	317	279	963	487	2208	191	6123
out	555	1296	440	298	1297	1045	4136	505	9572
total	825	2704	757	577	2260	1532	6344	696	15695

chisq 363.5

North Carolina

state 37	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	197	583	134	96	408	128	731	100	2377
out	243	541	171	106	355	172	809	151	2548
total	440	1124	305	202	763	300	1540	251	4925

chisq 29.91

North Dakota

state 38	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	72	36	34	21	85	23	125	25	421
out	64	73	41	22	102	45	198	30	575
total	136	109	75	43	187	68	323	55	996

chisq 15.89

Ohio

state 39	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	225	891	202	157	551	204	1017	145	3392
out	387	883	231	210	751	278	1405	156	4301
total	612	1774	433	367	1302	482	2422	301	7693

chisq 50.45

Oklahoma

state 40	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	330	347	132	81	295	98	474	64	1821
out	197	260	98	57	192	74	398	55	1331
total	527	607	230	138	487	172	872	119	3152

chisq 11.78

Oregon

state 41	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	314	523	127	90	433	112	696	96	2391
out	143	193	80	56	216	66	366	54	1174
total	457	716	207	146	649	178	1062	150	3565

chisq 20.33

Pennsylvannia

state 42	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	235	802	204	113	495	195	1170	130	3344
out	336	841	259	175	647	287	1636	246	4427
total	571	1643	463	288	1142	482	2806	376	7771

chisq 39.48

Rhode Island

state 44	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	19	157	15	20	54	18	139	18	440
out	36	102	17	22	77	35	183	21	493
total	55	259	32	42	131	53	322	39	933

chisq 29.97

South Carolina

state 45	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	124	337	85	52	252	89	424	64	1427
out	162	290	89	62	232	92	384	75	1386
total	286	627	174	114	484	181	808	139	2813

chisq 12.67

South Dakota

state 46	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	55	43	29	18	77	17	135	21	395
out	68	73	38	33	89	29	191	30	551
total	123	116	67	51	166	46	326	51	946

chisq 4.352

Tennessee

state 47	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	183	456	162	92	348	123	607	83	2054
out	161	410	113	78	297	102	571	82	1814
total	344	866	275	170	645	225	1178	165	3868

chisq 5.965

Texas

state 48	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	1511	1853	654	438	1443	585	2330	317	9131
out	570	767	270	143	602	215	1140	201	3908
total	2081	2620	924	581	2045	800	3470	518	13039

chisq 52.32

Utah

state 49	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	158	181	67	48	187	72	433	65	1211
out	96	92	49	33	103	44	196	49	662
total	254	273	116	81	290	116	629	114	1873

chisq 12.51

Vermont

state 50	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	41	98	15	13	75	19	138	13	412
out	33	63	9	15	66	31	140	14	371
total	74	161	24	28	141	50	278	27	783

chisq 11.51

Virginia

state 51	afm	indus mfg	t&c	whl	ret	fin	ser	puba	totals
in	293	425	206	93	553	225	1341	463	3599
out	285	565	210	103	484	188	947	225	3007
total	578	990	416	196	1037	413	2288	688	6606

chisq

126.5

Washington

state 53	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	435	672	231	155	565	185	963	139	3345
out	188	324	122	63	298	94	485	115	1689
total	623	996	353	218	863	279	1448	254	5034

chisq 21.96

West Virginia

state 54	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	120	113	55	24	122	24	219	35	712
out	80	172	46	19	125	51	236	33	762
total	200	285	101	43	247	75	455	68	1474

chisq 30.39

Wisconsin

state 55	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	128	493	99	66	242	89	574	67	1758
out	129	380	107	67	299	135	688	90	1895
total	257	873	206	133	541	224	1262	157	3653

chisq 38.98

Wyoming

state 56	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	308	37	72	22	141	25	168	27	800
out	65	44	36	21	46	25	96	22	355
total	373	81	108	43	187	50	264	49	1155

chisq 79.73

APPENDIX B

APPENDIX B

Industry Crosstabulation Cell Values for Each State.
Using Migrants 30 to 59 years old.

Number of migrants who moved in or out of each state 1975 to 1980 by industries in which those migrants worked in 1980.

Industry Abbreviations:

afm agriculture, forestry, fisheries,and farming
mfg manufacturing
t&c transportation, communication, and other public utilities
whl wholesale
ret retail
fin finance, insurance, and real estate
ser service
puba public administration

Alabama

state	indus 1 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	208	487	157	100	312	96	608	175	2143
out	157	294	99	71	183	74	471	113	1462
total	365	781	256	171	495	170	1079	288	3605

Chisq 8.438

Alaska

state	indus 2 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	99	39	58	13	76	38	220	111	654
out	130	103	61	33	96	34	193	58	708
total	229	142	119	46	172	72	413	169	1362

chisq 60.7

Arizona

state	indus 4 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	469	624	292	183	579	285	1217	248	3897
out	265	364	157	85	304	123	634	127	2059
total	734	988	449	268	883	408	1851	375	5956

chisq 7.715

Kansas

state indus 5	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	223	377	93	74	256	76	483	81	1663
out	157	254	76	68	154	73	251	53	1086
total	380	631	169	142	410	149	734	134	2749

chisq 21.87

California

state indus 6	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	1688	4480	1146	861	2456	1357	5919	813	18720
out	1104	2115	816	513	1595	728	3548	686	11105
total	2792	6595	1962	1374	4051	2085	9467	1499	29825

chisq 157.2

Colorado

state indus 8	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	468	575	319	192	477	286	1142	266	3725
out	327	413	157	136	348	172	825	146	2524
total	795	988	476	328	825	458	1967	412	6249

chisq 20.8

Connecticut

state indus 9	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	116	817	124	121	200	221	718	73	2390
out	127	443	123	86	201	183	650	89	1902
total	243	1260	247	207	401	404	1368	162	4292

chisq 71.41

Delware

state indus 10	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	35	154	30	33	62	21	155	14	504
out	43	129	33	27	55	22	142	21	472
total	78	283	63	60	117	43	297	35	976

chisq 5.139

District of Columbia

state	indus 11	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in		25	51	58	14	74	54	418	250	944
out		74	119	91	21	126	76	501	281	1289
total		99	170	149	35	200	130	919	531	2233

chisq 34.22

Florida

state	indus 12	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in		1321	1746	917	618	2180	1033	3607	554	11976
out		647	1124	434	255	795	387	1724	309	5675
total		1968	2870	1351	873	2975	1420	5331	863	17651

chisq 129.8

Georgia

state	indus 13	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in		322	850	342	249	551	306	1211	254	4085
out		238	500	193	147	372	202	785	170	2607
total		560	1350	535	396	923	508	1996	424	6692

chisq 8.668

Hawaii

state	indus 15	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in		102	76	89	46	175	74	405	111	1078
out		60	128	63	26	131	53	301	71	833
total		162	204	152	72	306	127	706	182	1911

chisq 37.26

Idaho

state	indus 16	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in		184	151	94	36	186	65	367	76	1159
out		126	123	54	27	91	54	189	35	699
total		310	274	148	63	277	119	556	111	1858

chisq 18.8

Illinios

state 17	indus afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	321	1587	367	340	616	352	1811	255	5649
out	555	1484	430	337	843	488	2097	275	6509
total	876	3071	797	677	1459	840	3908	530	12158

chisq 89.59

Indiana

state 18	indus afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	181	811	190	128	368	137	796	80	2691
out	260	641	144	120	369	182	759	104	2579
total	441	1452	334	248	737	319	1555	184	5270

chisq 48.65

Iowa

state 19	indus afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	116	313	100	88	198	90	495	85	1485
out	150	332	120	78	175	101	505	72	1533
total	266	645	220	166	373	191	1000	157	3018

chisq 9.793

Kansas

state 20	indus afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	182	418	112	95	243	124	589	78	1841
out	189	324	140	102	251	118	515	93	1732
total	371	742	252	197	494	242	1104	171	3573

chisq 18.65

Kenucky

state 21	indus afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	220	352	113	67	215	76	540	90	1673
out	139	335	119	90	208	96	467	90	1544
total	359	687	232	157	423	172	1007	180	3217

chisq 24.82

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Louisana

state	indus 22 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	379	362	182	109	324	121	630	107	2214
out	218	259	134	82	184	96	485	92	1550
total	597	621	316	191	508	217	1115	199	3764

chisq 16.44

Maine

state	indus 23 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	59	180	32	15	91	37	271	58	743
out	39	116	31	26	63	39	177	23	514
total	98	296	63	41	154	76	448	81	1257

chisq 19.82

Maryland

state	indus 24 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	222	351	216	100	378	248	1281	675	3471
out	209	463	209	140	383	203	1053	371	3031
total	431	814	425	240	761	451	2334	1046	6502

chisq 108.5

Massachusetts

state	indus 25 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	137	827	134	89	291	156	1127	133	2894
out	217	686	200	243	371	231	1242	169	3359
total	354	1513	334	332	662	387	2369	302	6253

chisq 115.8

Michigan

state	indus 26 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	193	1078	198	133	398	169	1193	146	3508
out	309	870	275	179	496	256	1200	147	3732
total	502	1948	473	312	894	425	2393	293	7240

chisq 90.06

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Minnesota

state	indus 27 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	142	485	114	106	250	159	682	97	2035
out	169	363	113	131	228	99	609	83	1795
total	311	848	227	237	478	258	1291	180	3830

chisq 27.79

Mississip

state	indus 28 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	168	321	111	56	186	68	414	85	1409
out	114	202	91	53	140	54	339	63	1056
total	282	523	202	109	326	122	753	148	2465

chisq 7.929

Missouri

state	indus 29 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	290	670	246	152	406	152	928	149	2993
out	206	533	217	150	359	185	907	137	2694
total	496	1203	463	302	765	337	1835	286	5687

chisq 22.86

Montana

state	indus 30 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	133	63	67	30	101	53	269	42	758
out	93	65	45	31	67	33	173	53	560
total	226	128	112	61	168	86	442	95	1318

chisq 15.71

Nebraska

state	indus 31 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	88	152	114	44	116	58	349	57	978
out	126	157	89	63	164	77	354	66	1096
total	214	309	203	107	280	135	703	123	2074

chisq 18.22

Nevada
state indus

32 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	208	134	149	50	302	126	893	118	1980
out	93	112	53	23	113	146	950	129	1619
total	301	246	202	73	415	272	1843	247	3599

chisq 156.7

New Hampshire
state indus

33 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	87	366	62	40	131	75	386	52	1199
out	59	149	28	31	76	43	226	37	649
total	146	515	90	71	207	118	612	89	1848

chisq 16.18

New Jersey
state indus

34 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	255	1599	495	335	578	434	1720	254	5670
out	307	1043	302	225	561	341	1361	196	4336
total	562	2642	797	560	1139	775	3081	450	10006

chisq 74.36

New Mexico
state indus

35 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	219	115	107	57	211	76	515	107	1407
out	145	130	88	45	151	49	302	73	983
total	364	245	195	102	362	125	817	180	2390

chisq 22.44

New York
state indus

36 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	304	1991	548	395	945	622	3007	317	8129
out	653	2105	802	485	1264	860	3571	464	10204
total	957	4096	1350	880	2209	1482	6578	781	18333

chisq 114.4

North Carolina

state 37	indus afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	260	957	213	146	383	180	1040	156	3335
out	232	559	162	129	336	174	778	129	2499
total	492	1516	375	275	719	354	1818	285	5834

chisq 38.55

North Dakota

state 38	indus afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	68	32	46	26	55	18	174	40	459
out	47	72	40	23	45	26	136	23	412
total	115	104	86	49	100	44	310	63	871

chisq 29.07

Ohio

state 39	indus afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	243	1262	277	205	513	226	1365	164	4255
out	421	1284	330	264	674	328	1636	238	5175
total	664	2546	607	469	1187	554	3001	402	9430

chisq 49.38

Oklahoma

state 40	indus afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	412	466	213	126	342	143	738	154	2594
out	222	265	111	102	213	112	430	80	1535
total	634	731	324	228	555	255	1168	234	4129

chisq 14.57

Oregon

state 41	indus afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	317	560	226	119	478	158	971	145	2974
out	180	68	123	83	186	91	441	78	1250
total	497	628	349	202	664	249	1412	223	4224

chisq 146.3

Pennsylvannia

state indus 42 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	285	1236	272	206	510	227	1515	241	4492
out	378	1025	286	258	574	282	1514	236	4553
total	663	2261	558	464	1084	509	3029	477	9045

chisq 48.28

Rhode Island

state indus 44 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	31	199	24	17	55	35	184	22	567
out	33	121	27	20	72	36	203	26	538
total	64	320	51	37	127	71	387	48	1105

chisq 22.3

South Carolina

state indus 45 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	215	607	123	71	266	115	654	101	2152
out	124	327	105	58	155	89	391	71	1320
total	339	934	228	129	421	204	1045	172	3472

chisq 16.69

South Dakota

state indus 46 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	52	43	33	19	67	22	128	25	389
out	65	57	27	12	63	32	132	31	419
total	117	100	60	31	130	54	260	56	808

chisq 7.16

Tennessee

state indus 47 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	242	710	269	174	393	152	959	140	3039
out	188	455	170	123	256	129	625	105	2051
total	430	1165	439	297	649	281	1584	245	5090

chisq 8.451

Texas

state	indus								
48	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	1665	2263	778	705	1582	738	3193	484	11408
out	653	917	369	224	575	303	1404	287	4732
total	2318	3180	1147	929	2157	1041	4597	771	16140

chisq 52.45

Utah

state	indus								
49	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	150	207	104	62	177	53	349	102	1204
out	95	128	64	30	95	51	243	69	775
total	245	335	168	92	272	104	592	171	1979

chisq 9.172

Vermont

state	indus								
50	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	33	111	24	11	51	23	178	14	445
out	39	78	24	13	43	14	119	17	347
total	72	189	48	24	94	37	297	31	792

chisq 9.326

Virginia

state	indus								
51	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	356	631	296	148	520	334	1734	871	4890
out	269	653	250	142	433	226	1174	373	3520
total	625	1284	546	290	953	560	2908	1244	8410

chisq 132.8

Washington

state	indus								
53	afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	541	996	338	240	549	321	1373	239	4597
out	209	296	179	94	253	97	624	128	1880
total	750	1292	517	334	802	418	1997	367	6477

chisq 52.16

West Virginia
state indus

54 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	196	178	77	29	120	37	269	66	972
out	94	143	58	36	83	44	225	40	723
total	290	321	135	65	203	81	494	106	1695

chisq 24.72

Wisconsin
state indus

55 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	188	506	101	95	249	97	715	96	2047
out	128	370	111	85	233	142	695	86	1850
total	316	876	212	180	482	239	1410	182	3897

chisq 33.5

Wyoming
state indus

56 afm	mfg	t&c	whl	ret	fin	ser	puba	totals
in	276	40	76	25	93	38	204	54	806
out	100	46	52	21	61	23	114	22	439
total	376	86	128	46	154	61	318	76	1245

chisq 31.48

APPENDIX C

APPENDIX C

Occupation Crosstabulation Cell Values for Each State.
Using Migrants 20 to 29 years old.

Number of migrants who moved in or out of each state 1975 to 1980 by Occupation in which they worked in 1980.

Occupation Abbreviations:

man	managerial and professional specialty
t&s	technical, sales, and administrative support
ser	service
a&f	farming, fishing, and forestry
p.pro	precision production, craft, and repair
o&f	operators, fabricators, and laborers

Alabama

. state occup

1	man	t&s	ser	a&f	p.pro.	o&f	totals
in	311	462	167	14	218	321	1493
out	383	415	155	15	142	238	1348
totals	694	877	322	29	360	559	2841

Alaska

state occup

2	man	t&s	ser	a&f	p.pro.	o&f	totals
in	153	181	96	16	60	64	570
out	72	158	75	23	92	100	520
totals	225	339	171	39	152	164	1090

chisq 47.00

Arizona

state occup

4	man	t&s	ser	a&f	p.pro.	o&f	totals
in	589	855	360	69	354	366	2593
out	385	532	200	31	246	241	1635
totals	974	1387	560	100	600	607	4228

chisq 6.55

Arkansas

state	occup						
	5 man	t&s	ser	a&f	p. pro.	o&f	totals
in	183	246	121	44	148	246	988
out	217	331	102	18	134	184	986
totals	400	577	223	62	282	430	1974

chisq 37.57

California

state	occup						
	6 man	t&s	ser	a&f	p. pro.	o&f	totals
in	3173	4893	2168	572	1826	2861	15493
out	1567	2284	1083	191	1112	1329	7566
totals	4740	7177	3251	763	2938	4190	23059

chisq 18616

Colorado

state							
	8 man	t&s	ser	a&f	p. pro.	o&f	totals
in	890	1229	511	68	527	495	3720
out	561	640	258	55	311	350	2175
totals	1451	1869	769	123	838	845	5895

chisq 21.97

Connecticut

state							
	9 man	t&s	ser	a&f	p. pro.	o&f	totals
in	571	500	146	20	167	258	1662
out	606	557	206	25	158	162	1714
totals	1177	1057	352	45	325	420	3376

chisq 36.3

Delaware

state	occup						
	10 man	t&s	ser	a&f	p. pro.	o&f	totals
in	125	104	52	14	38	63	396
out	114	143	46	5	48	61	417
totals	239	247	98	19	86	124	813

chisq 11.96

District of Columbia

state	occup						
11	man	t&s	ser	a&f	p.pro.	o&f	totals
in	375	341	92	3	29	38	878
out	301	372	100	3	44	74	894
totals	676	713	192	6	73	112	1772

chisq 24.29

Florida

state	occup						
12	man	t&s	ser	a&f	p.pro.	o&f	totals
in	1562	2280	1049	200	933	947	6971
out	962	1429	541	83	573	716	4304
totals	2524	3709	1590	283	1506	1663	11275

chisq 37.97

Georgia

state	occup						
13	man	t&s	ser	a&f	p.pro.	o&f	totals
in	868	1055	336	38	298	438	3033
out	555	682	243	34	223	321	2058
totals	1423	1737	579	72	521	759	5091

chisq 6.446

Hawaii

state	occup						
15	man	t&s	ser	a&f	p.pro.	o&f	totals
in	160	271	168	24	72	83	778
out	159	301	132	9	121	152	874
totals	319	572	300	33	193	235	1652

chisq 39.97

Idaho

state	occup						
16	man	t&s	ser	a&f	p.pro.	o&f	totals
in	186	212	105	57	111	128	799
out	138	217	71	25	89	95	635
totals	324	429	176	82	200	223	1434

chisq 14.97

Illinios

state	occup						
17	man	t&s	ser	a&f	p.pro.	o&f	totals
in	1343	1482	586	50	440	1011	4912
out	1413	1514	572	73	496	553	4621
totals	2756	2996	1158	123	936	1564	9533

chisq 135.3

Indiana

state	occup						
18	man	t&s	ser	a&f	p.pro.	o&f	totals
in	529	646	286	30	266	490	2247
out	683	734	241	33	226	309	2226
totals	1212	1380	527	63	492	799	4473

chisq 73.32

Iowa

state	occup						
19	man	t&s	ser	a&f	p.pro.	o&f	totals
in	398	385	161	43	153	217	1357
out	524	499	171	45	164	194	1597
totals	922	884	332	88	317	411	2954

chisq 14.53

Kansas

state	occup						
20	man	t&s	ser	a&f	p.pro.	o&f	totals
in	344	456	165	34	200	265	1464
out	444	479	147	25	191	230	1516
total	788	935	312	59	391	495	2980

chisq 17.45

Kentucky

state	occup						
21	man	t&s	ser	a&f	p.pro.	o&f	totals
in	306	373	149	36	184	227	1275
out	350	447	164	27	162	271	1421
totals	656	820	313	63	346	498	2696

chisq 9.04

Louisana

state	occup						
22	man	t&s	ser	a&f	p.pro.	o&f	totals
in	424	602	186	22	278	297	1809
out	388	446	155	8	196	228	1421
totals	812	1048	341	30	474	525	3230

chisq 10.97

Maine

state	occup						
23	man	t&s	ser	a&f	p.pro.	o&f	totals
in	159	142	78	26	74	101	580
out	139	183	76	7	62	85	552
totals	298	325	154	33	136	186	1132

chisq 19.23

maryland

state	occup						
24	man	t&s	ser	a&f	p.pro.	o&f	totals
in	815	947	285	36	166	244	2493
out	570	747	241	35	180	245	2018
totals	1385	1694	526	71	346	489	4511

chisq 21.44

Massachusetts

state	occup						
25	man	t&s	ser	a&f	p.pro.	o&f	totals
in	1037	930	350	17	210	372	2916
out	1126	897	326	46	290	306	2991
totals	2163	1827	676	63	500	678	5907

chisq 36.74

Michigan

state	occup						
26	man	t&s	ser	a&f	p.pro.	o&f	totals
in	740	842	343	49	310	601	2885
out	965	948	372	59	363	451	3158
totals	1705	1790	715	108	673	1052	6043

chisq 51.4

Minnesota

state	occup						
27	man	t&s	ser	a&f	p.pro.	o&f	totals
in	586	680	243	32	187	278	2006
out	487	573	207	42	167	191	1667
totals	1073	1253	450	74	354	469	3673

chisq 8.556

Mississippi

state	occup						
28	man	t&s	ser	a&f	p.pro.	o&f	totals
in	194	240	88	16	127	182	847
out	261	384	126	12	142	215	1140
totals	455	624	214	28	269	397	1987

chisq 11.03

Missouri

state	occup						
29	man	t&s	ser	a&f	p.pro.	o&f	totals
in	616	649	280	52	232	358	2187
out	680	773	233	34	239	343	2302
totals	1296	1422	513	86	471	701	4489

chisq 19.54

Montana

state	occup						
30	man	t&s	ser	a&f	p.pro.	o&f	totals
in	126	158	84	19	86	81	554
out	138	159	71	16	79	96	559
totals	264	317	155	35	165	177	1113

chisq 3.442

Nebraska

state	occup						
31	man	t&s	ser	a&f	p.pro.	o&f	totals
in	224	219	110	42	101	158	854
out	273	304	91	26	114	127	935
totals	497	523	201	68	215	285	1789

chisq 24.75

Nevada

state	occup						
32	man	t&s	ser	a&f	p.pro.	o&f	totals
in	260	316	371	19	151	144	1261
out	78	172	87	13	71	83	504
totals	338	488	458	32	222	227	1765

chisq 46.9

New Hampshire

state	occup						
33	man	t&s	ser	a&f	p.pro.	o&f	totals
in	206	305	88	9	114	164	886
out	181	189	68	8	64	66	576
totals	387	494	156	17	178	230	1462

chisq 22.56

New Jersey

state	occup						
34	man	t&s	ser	a&f	p.pro.	o&f	totals
in	993	1050	320	25	277	561	3226
out	1017	1136	420	35	276	332	3216
totals	2010	2186	740	60	553	893	6442

chisq 77.56

New Mexico

state	occup						
35	man	t&s	ser	a&f	p.pro.	o&f	totals
in	237	285	123	25	160	138	968
out	178	295	119	23	130	124	869
totals	415	580	242	48	290	262	1837

chisq 7.247

New York

state	occup						
36	man	t&s	ser	a&f	p.pro.	o&f	totals
in	1981	1888	796	62	471	925	6123
out	2461	2502	934	85	702	808	7492
totals	4442	4390	1730	147	1173	1733	13615

chisq 68.78

North Carolina

state	occup						
37	man	t&s	ser	a&f	p. pro.	o&f	totals
in	618	699	273	27	275	485	2377
out	608	789	311	37	344	459	2548
totals	1226	1488	584	64	619	944	4925

chisq 12.05

North Dakota

state	occup						
38	man	t&s	ser	a&f	p. pro.	o&f	totals
in	101	127	54	21	58	60	421
out	151	194	77	10	71	72	575
totals	252	321	131	31	129	132	996

chisq 10.69

Ohio

state	occup						
39	man	t&s	ser	a&f	p. pro.	o&f	totals
in	998	927	407	49	333	678	3392
out	1324	1426	482	73	453	553	4311
totals	2322	2353	889	122	786	1231	7703

chisq 85.23

Oklahoma

state	occup						
40	man	t&s	ser	a&f	p. pro.	o&f	totals
in	389	563	205	32	259	373	1821
out	371	413	133	28	176	210	1331
totals	760	976	338	60	435	583	3152

chisq 24.92

Oregon

state	occup						
41	man	t&s	ser	a&f	p. pro.	o&f	totals
in	504	698	329	127	293	440	2391
out	306	360	150	42	133	183	1174
totals	810	1058	479	169	426	623	3565

chisq 18.88

Pennsylvannia

state	occup						
42	man	t&s	ser	a&f	p.pro.	o&f	totals
in	961	977	416	46	357	587	3344
out	1645	1454	408	52	388	480	4427
totals	2606	2431	824	98	745	1067	7771

chisq 137.3

Rhode Island

state	occup						
44	man	t&s	ser	a&f	p.pro.	o&f	totals
in	119	116	34	4	51	116	440
out	176	150	70	4	42	51	493
totals	295	266	104	8	93	167	933

chisq 51.15

South Carolina

state	occup						
45	man	t&s	ser	a&f	p.pro.	o&f	totals
in	352	452	167	24	156	276	1427
out	317	467	146	19	179	258	1386
totals	669	919	313	43	335	534	2813

chisq 5.656

South Dakota

state	occup						
46	man	t&s	ser	a&f	p.pro.	o&f	totals
in	100	101	64	20	54	56	395
out	156	188	55	29	59	64	551
totals	256	289	119	49	113	120	946

chisq 16.25

Tennessee

state	occup						
47	man	t&s	ser	a&f	p.pro.	o&f	totals
in	513	652	213	29	230	417	2054
out	505	572	204	13	212	308	1814
totals	1018	1224	417	42	442	725	3868

chisq 13.86

Texas

state	occup						
48	man	t&s	ser	a&f	p.pro.	o&f	totals
in	2139	2854	972	127	1386	1653	9131
out	878	1205	460	105	530	730	3908
totals	3017	4059	1432	232	1916	2383	13039

chisq 35.6

Utah

state	occup						
49	man	t&s	ser	a&f	p.pro.	o&f	totals
in	271	369	172	21	189	189	1211
out	198	225	69	24	90	56	662
totals	469	594	241	45	279	245	1873

chisq 40.37

Vermont

state	occup						
50	man	t&s	ser	a&f	p.pro.	o&f	totals
in	128	98	69	18	42	57	412
out	130	102	40	9	45	45	371
totals	258	200	109	27	87	102	783

chisq 10.21

Virginia

state	occup						
51	man	t&s	ser	a&f	p.pro.	o&f	totals
in	1185	1251	420	50	321	372	3599
out	819	1040	329	41	351	427	3007
totals	2004	2291	749	91	672	799	6606

chisq 50.7

Washington

state	occup						
53	man	t&s	ser	a&f	p.pro.	o&f	totals
in	720	1013	465	131	508	508	3345
out	385	544	229	48	205	278	1689
totals	1105	1557	694	179	713	786	5034

chisq 14.44

West Virginia

state	occup						
54	man	t&s	ser	a&f	p.pro.	o&f	totals
in	177	211	79	13	110	122	712
out	212	227	83	9	67	164	762
totals	389	438	162	22	177	286	1474

chisq 19.5

Wisconsin

state	occup						
55	man	t&s	ser	a&f	p.pro.	o&f	totals
in	465	510	187	46	195	355	1758
out	623	676	217	42	164	173	1895
totals	1088	1186	404	88	359	528	3653

chisq 109

Wyoming

state	occup						
56	man	t&s	ser	a&f	p.pro.	o&f	totals
in	175	188	83	22	170	162	800
out	66	114	40	17	55	63	355
totals	241	302	123	39	225	225	1155

chisq 16.43

APPENDIX D

APPENDIX D

Occupation Crosstabulation Cell Values for Each State.
Using Migrants 30 to 59 years old.

Number of Migrants who moved into and out of each state 1975 to 1980 by occupation in which they worked in 1980.

Occupational Abreviations:

man	managerial, and professional specialty
t&s	technical, sales, and administrative support
ser	service
a&f	farming, fishing, and forestry
p.pro	precision production, craft, and repair
o&f	operators, fabricators, and laborers

Alabama

state	Occup 1 Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	724	578	171	40	282	348	2143
out	521	427	125	24	176	189	1462
totals	1245	1005	296	64	458	537	3605

Chisq 10.27

Alaska

state	Occup 2 Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	243	184	77	14	78	58	654
out	189	203	79	27	117	93	708
totals	432	387	156	41	195	151	1362

chisq 25.64

Arizona

state	Occup 4 Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1218	1204	409	67	564	435	3897
out	657	606	182	38	310	266	2059
totals	1875	1810	591	105	874	701	5956

chisq 8.822

Arkansas

state	Occup						
5	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	431	418	175	83	265	291	1663
out	309	302	89	26	165	195	1095
totals	740	720	264	109	430	486	2758

chisq 9.565

California

state	Occup						
6	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	6125	5271	2096	595	2162	2462	18711
out	3645	3243	1241	211	1436	1329	11105
totals	9770	8514	3337	806	3598	3791	29816

chisq 63.56

Colorado

state	Occup						
8	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1339	1196	338	53	461	338	3725
out	944	748	215	50	313	254	2524
totals	2283	1944	553	103	774	592	6249

chisq 8.751

Connecticut

state	Occup						
9	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1144	614	155	13	193	271	2390
tot	870	545	138	22	173	154	1902
totals	2014	1159	293	35	366	425	4292

chisq 22.8

Delaware

state	Occup						
10	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	184	148	34	7	66	65	504
out	208	109	30	9	62	54	472
totals	392	257	64	16	128	119	976

chisq 7.989

District of Columbia

state	Occup						
11	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	524	248	85	1	37	49	944
out	531	382	145	8	92	131	1289
totals	1055	630	230	9	129	180	2233

chisq 58.54

Florida

state	Occup						
12	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	3387	3951	1451	259	1557	1371	11976
out	1729	1713	575	94	812	752	5675
totals	5116	5664	2026	353	2369	2123	17651

chisq 49.24

Georgia

state	Occup						
13	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1481	1268	342	51	441	502	4085
out	1016	793	224	35	274	265	2607
totals	2497	2061	566	86	715	767	6692

chisq 9.935

Hawaii

state	Occup						
15	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	346	307	182	39	119	85	1078
out	271	288	99	7	97	71	833
totals	617	595	281	46	216	156	1911

chisq 29.06

Idaho

state	Occup						
16	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	358	309	117	60	157	158	1159
out	239	190	57	37	75	101	699
totals	597	499	174	97	232	259	1858

chisq 6.268

Illinois

state	Occup						
17	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	2152	1451	534	41	567	904	5649
out	2548	1899	563	107	678	714	6509
totals	4700	3350	1097	148	1245	1618	12158

chisq 95.33

Indiana

state	Occup						
18	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	892	714	246	28	342	469	2691
out	968	707	190	44	334	336	2579
totals	1860	1421	436	72	676	805	5270

chisq 33.59

Iowa

state	Occup						
19	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	580	399	134	35	150	187	1485
out	592	449	121	41	156	174	1533
totals	1172	848	255	76	306	361	3018

chisq 4.031

Kansas

state	Occup						
20	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	666	520	173	45	223	214	1841
out	667	502	151	29	174	209	1732
total	1333	1022	324	74	397	423	3573

chisq 8.06

Kentucky

state	Occup						
21	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	547	425	172	36	222	271	1673
out	555	445	139	16	184	205	1544
totals	1102	870	311	52	406	476	3217

chisq 19.28

Louisana

state	Occup						
22	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	759	580	212	37	351	275	2214
out	566	473	143	22	179	167	1550
totals	1325	1053	355	59	530	442	3764

chisq 21.97

Maine

state	Occup						
23	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1476	1063	368	30	255	279	3471
out	616	451	109	16	124	138	1454
totals	2092	1514	477	46	379	417	4925

chisq 15.29

Maryland

state	Occup						
24	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1476	1063	368	30	255	279	3471
out	1290	909	256	41	284	251	3031
totals	2766	1972	624	71	539	530	6502

chisq 19.7

Massachusetts

state	Occup						
25	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1260	716	244	25	244	405	2894
out	1461	906	273	32	334	253	3259
totals	2721	1622	517	57	578	658	6153

chisq 67.3

Michigan

state	Occup						
26	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1325	885	333	34	363	568	3508
out	1444	1040	348	45	402	453	3732
totals	2769	1925	681	79	765	1021	7240

chisq 27.49

Minnesota

state	Occup						
27	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	853	572	174	44	179	213	2035
out	698	567	164	39	173	154	1795
totals	1551	1139	338	83	352	367	3830

chisq 10.7

Mississippi

state	Occup						
28	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	395	369	153	41	185	266	1409
out	343	319	101	11	141	140	1055
totals	738	688	254	52	326	406	2464

chisq 30.05

Missouri

state	Occup						
29	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1043	830	282	101	328	409	2993
out	1085	817	228	35	261	268	2694
totals	2128	1647	510	136	589	677	5687

chisq 60.11

Montana

state	Occup						
30	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	276	194	81	37	91	79	758
out	186	147	50	20	84	111	598
totals	462	341	131	57	175	190	1356

chisq 23.53

Nebraska

state	Occup						
31	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	338	278	105	34	106	117	978
out	423	367	87	27	119	103	1126
totals	761	645	192	61	225	220	2104

chisq 15.57

New Hampshire

state	Occup						
32	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	472	567	490	26	240	185	1980
out	190	227	101	11	106	94	729
totals	662	794	591	37	346	279	2709

chisq 40.31

New Hampshire

state	Occup						
33	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	479	334	79	13	157	137	1199
out	286	181	43	7	71	61	649
totals	765	515	122	20	228	198	1848

chisq 4.925

New Jersey

state	Occup						
34	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	2283	1522	419	27	524	895	5670
out	1730	1315	322	35	497	437	4336
totals	4013	2837	741	62	1021	1332	10006

chisq 86.93

New Mexico

state	Occup						
35	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	486	410	116	47	200	148	1407
out	327	281	99	19	149	108	983
totals	813	691	215	66	349	256	2390

chisq 7.108

New York

state	Occup						
36	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	3036	2074	1056	73	649	1241	8129
out	4105	3032	945	83	996	1043	10204
totals	7141	5106	2001	156	1645	2284	18333

chisq 204.7

North Carolina

state	Occup						
37	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1160	902	299	62	347	557	3327
out	916	776	206	29	268	304	2499
totals	2076	1678	505	91	615	861	5826

chisq 34.75

North Dakota

state	Occup						
38	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	148	132	63	21	51	44	459
out	152	127	30	16	46	80	451
totals	300	259	93	37	97	124	910

chisq 23.18

Ohio

state	Occup						
39	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1760	1050	360	23	447	615	4255
out	2087	1485	384	46	584	589	5175
totals	3847	2535	744	69	1031	1204	9430

chisq 40.27

Oklahoma

state	Occup						
40	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	782	703	274	45	401	389	2594
out	533	439	131	37	203	192	1535
totals	1315	1142	405	82	604	581	4129

chisq 20.92

Oregon

state	Occup						
41	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	913	835	330	99	388	409	2974
out	515	392	131	51	178	183	1450
totals	1428	1227	461	150	566	592	4424

chisq 12.85

Pennsylvannia

state	Occup						
42	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1761	1139	392	51	514	608	4465
out	1923	1305	372	48	461	444	4553
totals	3684	2444	764	99	975	1052	9018

chisq 46.61

Rhode Island

state	Occup						
44	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	207	127	41	5	62	125	567
out	210	149	50	7	58	64	538
totals	417	276	91	12	120	189	1105

chisq 22.07

South Carolina

state	Occup						
45	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	665	615	201	40	270	361	2152
out	490	358	96	18	174	184	1320
totals	1155	973	297	58	444	545	3472

chisq 19.87

South Dakota

state	Occup						
46	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	122	102	39	18	62	46	389
out	152	107	45	15	63	108	490
totals	274	209	84	33	125	154	879

chisq 17.7

Tennessee

state	Occup						
47	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1000	817	290	33	364	535	3039
out	794	546	150	31	255	275	2051
totals	1794	1363	440	64	619	810	5090

chisq 34.31

Texas

state	Occup						
48	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	3725	3423	1012	180	1617	1451	11408
out	1713	1314	384	112	615	594	4732
totals	5438	4737	1396	292	2232	2045	16140

chisq 35.34

Utah

state	Occup						
49	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	413	326	117	16	158	174	1204
out	308	212	80	14	85	76	775
totals	721	538	197	30	243	250	1979

chisq 14.56

Vermont

state	Occup						
50	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	186	100	40	8	52	59	445
out	125	93	27	9	50	43	347
totals	311	193	67	17	102	102	792

chisq 5.304

Virginia

state	Occup						
51	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	2158	1467	428	66	409	371	4899
out	1485	1037	286	45	346	334	3533
totals	3643	2504	714	111	755	705	8432

chisq 16.73

Washington

state	Occup						
53	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	1504	1332	416	146	671	578	4647
out	667	548	172	47	203	243	1880
totals	2171	1880	588	193	874	821	6527

chisq 19.44

West Virginia

state	Occup						
54	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	286	215	99	18	183	171	972
out	230	203	66	7	112	105	723
totals	516	418	165	25	295	276	1695

chisq 14.47

Wisconsin

state	Occup						
55	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	781	515	235	73	217	226	2047
out	759	542	154	20	218	157	1850
totals	1540	1057	389	93	435	383	3897

chisq 50.68

Wyoming

state	Occup						
56	Man	T&S	Ser	A&F	P.Pro	O&F	totals
in	213	194	85	22	168	124	806
out	143	116	37	21	73	49	439
totals	356	310	122	43	241	173	1245

chisq 15.42