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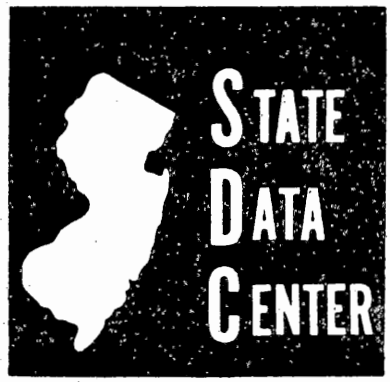
IMPACT OF MIGRATION ON THE NEW JERSEY LABOR FORCE: 1970 TO PRESENT AND SHORT-TERM FUTURE OUTLOOK



State of New Jersey
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Division of Planning and Research
Office of Demographic and Economic Analysis
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CHAPTER I

INTRODUCTION

The decade of the 1960s was one of growth for New Jersey in terms of population (18 percent), employment (29 percent), and labor force (21 percent). Population increased due to positive netmigration, which accounted for about 44 percent of 1960-70 overall growth in population, with the remaining 56 percent due to a surplus of births over deaths. Total births peaked in the state in 1961, but remained at near record levels until the end of the decade. The labor force grew due to the early cohorts of the baby boom generation becoming of working age, as well as the increase in labor force participation, particularly of women. The labor force grew less rapidly than employment, so the 1960s was also a time of fairly low unemployment. Because of this trend of higher employment growth than labor force growth, there existed an economic incentive for New Jersey residents to remain in the state and for nonresidents to locate within the state's borders. During the sixties, migration was in a net positive direction.

On the other hand, the period from 1970 to 1978 has been one of overall slower growth with respect to population (2.5 percent) and employment (13.9 percent), while at the same time the labor force has continued to grow (15 percent) at a pace only slightly less than that of the 1960s (when the exponentially derived average annual rates are compared). The slowdown in population growth is accounted for by the reverse in netmigration trends to a -1 percent and declining birth rates. The sustained increase in the labor force is attributed to the major portion of the baby boom cohorts being of working age and the continual increases in labor force participation. The change in the ratio of the growth of the labor force to that of employment, from .72 in the 1960 to 1970 period to 1.07 in the 1970 to 1978 period, also explains, in part, the reversal in netmigration as well as an increase in unemployment.

New Jersey is not alone with respect to these patterns (and, in fact, may be faring better than some of its neighbors); the Northeast Region, in particular the Middle Atlantic Division, and the North Central Region states have been suffering population and employment slowdowns or declines in conjunction with increased labor force participation rates in the recent past. At the same time, the South and West Regions have been experiencing higher levels of population and employment. If the scenario of a regional redistribution of employment and population away from aging industrial centers and toward newer areas in the "sunbelt" (Sternlieb and Hughes, 1978) continues, then large northern areas could undergo even further population and employment declines. Moreover, if the outmovement from these older areas is selective of their most skilled and highly educated residents then these areas will become economically disadvantaged in comparison to those of the growing "sunbelt" areas. (Frey, 1979)

Thus, it becomes important to assess the impact of New Jersey's post-1970 migration on its labor force. Particularly since, as confirmed by the history of New Jersey's industrial development, New Jersey has maintained a highly skilled, highly educated labor force, which predisposed the state's economy towards sophisticated and high-skill industries. (Broner, Nagle and Bearse, 1975)

STATEMENT OF PURPOSE

The purpose of this report, then, is to attempt to examine, within the constraints of data availability, the impact of migration on the New Jersey labor force during the 1970s. This is accomplished by analyzing the extent to which the overall redistribution of population due to migration is reflected, or perhaps even magnified, for New Jersey's labor force. Additionally, changes in the characteristics of New Jersey's labor force in the post-1970 period will be examined to assist in determining whether the labor force has the attributes to retain and attract industry similar to the type it has in the past. Finally, the outlook for the short-term future will be briefly discussed.

COORDINATION OF RESEARCH

This project was undertaken in the Division of Planning and Research by the Office of Demographic and Economic Analysis (ODEA) and the Office of Labor Market Information (LMI). The ODEA was responsible for collecting and analyzing published and unpublished data, as well as developing data on characteristics of the population, labor force, migrants and workforce migrants. The LMI was responsible for conducting a survey to identify the occupations of workers who migrate out of the State of New Jersey as a result of business relocation. The LMI monitored the results of the survey, classified the occupations by Standard Industrial Classification (SIC) and Dictionary of Occupational Titles (DOT) codes, and analyzed the results.

DATA SOURCES, ASSUMPTIONS AND LIMITATIONS

In lieu of direct measurements of the impact of migration on New Jersey's labor force, which will not begin to be available until the early 1980s with the release of sample statistics from the 1980 Census of Population, various data sources were consulted and assumptions about relationships were made. The major sources of data for the analysis prepared by ODEA were U.S. Bureau of Census publications and special files, and Bureau of Economic Analysis (BEA) publications and Continuous Work History Sample (CWHS) tabulations. Information was also secured from National Center for Education Statistics publications, Annual Reports of the New Jersey Economic Policy Council, and various professional studies and journals. Other data were available from primary sources within the Division of Planning and Research. Also, ODEA adapted its population projection model to develop estimates of netmigration by age and sex for the post-1970 period.

The Office of Labor Market Information (LMI) conducted a survey through the local Unemployment Insurance offices in conjunction with ES-235 Significant Layoff reports to gather information on workers migrating out of the state due to companies closing or leaving the state.

Many of the assumptions made in preparing this report were developed due to limitations of the data. The time span examined is the 1970 to 1978 period. Unfortunately, not all of the data were available for the entire period. Some data were available for all the years from 1970 to 1978 (estimates of the total population of the state and other national geographic areas); some were available

for only two years (e.g., data on the characteristics of the population and labor force from Census Bureau publications were for the years 1970 and 1976). Origin and destination migration data for the state's population were available for two time periods (1969 to 1972 and 1975 to 1976), while origin and destination gross migration data for the state's workforce were available for two different time periods (1970 to 1973 and 1973 to 1976). Characteristics data of netmigration at the regional level were available, in some cases, for the time spans 1970 to 1973 and 1973 to 1976, but at the state level were available only for the period 1971 to 1973.

In addition to the limiting effect of the timing of the data, there are definitional problems. In all of the analyses in this report, population refers to the number of people living in an area. This is straightforward. The problem arises in discussing the labor force. With the exception of data used from the Bureau of Economic Analysis (BEA) CWHS tabulations, labor force refers to those people living in an area, e.g., New Jersey, who are in the labor force, whether employed or unemployed, regardless of where they work. The BEA data, on the other hand, pertain to the workforce, which is defined as the people who are only employed in an area, but may live either in that area or commute to their job from out of the area. (In 1970, the most recent year for which we have data, about 259,000 New Jersey residents commuted to jobs in other states, while about 91,000 residents of other states worked in New Jersey. More up-to-date information on this subject of interstate commutation must await the 1980 Census of Population.) In this report, the term "labor force" refers to resident labor force and "workforce" refers to employment by establishment.

Because of the reasons stated above and because the exact relationships between different variables are unknown -- e.g., do people follow jobs, jobs follow people, both, or neither?, and is there a lag in these relationships? -- the analysis is limited. While not providing definitive answers, the data can, however, indicate general patterns from which deductions can be made as to what impact (if any) migration has on the structure of the labor force.

ORGANIZATIONAL FORMAT

The remainder of this report is divided into six chapters, two appendices and the bibliography. Chapter II presents a summary of the findings of ODEA's study. Chapter III is a brief discussion of the methodology employed by the Office of Demographic and Economic Analysis (ODEA) and the Office of Labor Market Information (LMI). Appendix A-1 at the end of the text specifies, in more detail than Chapter III, the method utilized by ODEA to develop post-1970 estimates of netmigration by age and sex. The major data sources and their limitations are covered in Chapter IV. A more detailed coverage of this latter topic is given in Appendix A-2, which follows the main body of this report. Chapter V consists of the detailed analyses of the data collected and developed by ODEA and upon which much of the summary of findings were based. The findings of LMI's survey are presented in Chapter VI. Finally, Chapter VII is a presentation of the conclusions drawn from the analyses.

CHAPTER II

SUMMARY OF FINDINGS

The post-1970 period brought with it abrupt changes in long-standing patterns of migration. At the national scale, the traditional South to North flows of population were reversed; concurrently, New Jersey shifted from a net in- to outmigration position. At present, the ramifications for New Jersey of this new phenomenon have yet to be analytically explored in depth. The purpose of this study is to investigate the possible consequences of the new pattern in the state's population, labor force, and workforce.

Migration is a highly selective process and affects not only the number of people in an area, but also their composition. Where an area gains or loses significant numbers of migrants, migration adds or subtracts distinctive types of people. By and large, people who migrate tend to be more highly qualified members of the labor force -- the young, the educated, and the skilled. Their arrival tends to improve the stock of human capital in their places of destination. At the same time, they diminish that stock in the places they leave. Declining areas lose their most productive members, leaving a labor force that tends to be overaged, undereducated, and underskilled -- the "people left behind." (DaVanzo, 1978)

Additionally, migration is a major cause of differentials between states in terms of overall population and labor force growth, as well as compositional differences.

As noted above, prior to the 1970s, New Jersey experienced positive netmigration rates -- 12 percent from 1950 to 1960 and 8 percent from 1960 to 1970. During the 1970s this pattern was reversed with a 1970 to 1978 rate of -1 percent. This -1 percent represents a net outflow of only about 84,000 persons. The absolute number is relatively small and, perhaps more importantly in terms of the impact of migration on the state's labor force, the age groups which experienced net outmigration were the 15 to 24 year olds and the 55 years of age and older. Of the former group, college students contributed to a major portion of this net outmigration. Similarly, retirees moving to the sunbelt accounted for much of the net outmigration of the 55 years of age and older population. The most active labor force age groups, those between 25 and 54 years of age, have traditionally exhibited positive migration patterns to the State of New Jersey. These and other major findings of this study follow. The specific objective was the determination of the impact on the labor force of the negative netmigration, albeit slight, to New Jersey in the post-1970 period, and whether this netmigration is resulting in a diminishing of the quality of the labor force.

I. Population and Labor Force Characteristics

A. Population Characteristics

Population change is a function of two components: net natural increase (births minus deaths) and netmigration (inmigration minus outmigration). As a result of declining birth rates, migration has been thrust into a more prominent role of determining population growth in an area. Before migration is examined in detail, it is useful to examine the overall age structural profile of New Jersey's population in relation to its immediate environment, other regions of the country, and the nation.

Population by Age:

1. Over the 1970 to 1978 period the age structure of the State converged toward that of the Middle Atlantic Division (which comprises New York, New Jersey, and Pennsylvania). Nonetheless, changes in the age structure closely paralleled those of the United States.

2. Nationally, the population between 18 and 44 years of age is experiencing a resurgence of growth, as the "baby boom" cohorts move into this age group -- the 1970 to 1978 growth rate was 20.6 percent. However, New Jersey's young adult population increased by only 12.2 percent, while New York showed an increase of only 7.2 percent and Pennsylvania's 18 to 44 year olds increased by 15.9 percent. In the 1980s this group will not grow at such a fast pace as the "baby bust" generation become young adults. This age group is highly mobile and the amount of educational and employment opportunity available in an area can have a significant impact on the direction, scale, and structure of migration.

3. Significant to this group in the 1980's will be those presently between the ages of 5 and 17. Since this sector contains the "baby bust" generation, it is declining in size on the national level. However, it is declining even more rapidly in New Jersey, but not to the extent of New York and Pennsylvania.

4. Thus, the potential for new labor force entrants in the near future is more favorable for New Jersey than its neighbors, although migration may alter this pattern during the 1980s.

5. The overall impact of the changing age structure on New Jersey and the attendant implications for the labor force are not necessarily negative. Although there is a higher percentage of older persons and fewer 18-20 year olds in New Jersey than at the national level, from which the labor force can be drawn, there has been an increase in the number of persons of labor force participation age. Therefore, from the labor force supply side, the demographic trends in New Jersey are promising. The increase in the prime working age years should heighten productivity and lower unemployment due to the

experience gained by the labor force through the maturation process. And as the bulges in the youth population decrease, the large adult bulge is favorable in terms of aggregate demand for housing, appliances, furniture and related products, in turn creating more employment opportunities.

Population with Income by Education:

1. There have been continued increases in the educational levels of the American population during the 1970 to 1976 period.

2. The proportion of New Jersey's 25 years of age and over population with income and at least a high school education increased from 52.2 percent in 1970 (approximately the same as that for the U.S. as a whole) to 63.0 percent in 1976 (slightly less than that for the U.S.).

3. The proportion for New Jersey with at least 4 years of college grew from 13.2 percent to 17.1 percent in this time period, both levels higher than those for the nation.

4. The change in educational levels have been and will be influenced by migration. Even though New Jersey had net outmigration in the 1970's, it was not of sufficient magnitude to alter the advantageous position of the state's educational levels relative to the nation. This position was also maintained despite the fact that New Jersey was a net exporter of college students.

5. These elements strongly suggest that there will be little diminution of the quality of the State's labor force over the next decade.

B. Labor Force Characteristics

The size of the labor force of an area, in general, is a function of the population between the ages of 16 and 64 years and labor force participation rates. An area experiencing little or no population growth can still have an expanding labor force if participation rates increase.

Labor Force Participation by Sex:

1. While the national population 16 years of age and over increased by 8.8 percent over the 1970 to 1976 period, the size of the labor force increased by 21.1 percent. Although both male and female labor force participation grew, the increase in female participation outpaced that of males.

2. The change in New Jersey's labor force participation lagged behind that of the United States, but was greater than that of either New York or Pennsylvania.

3. Therefore, it appears that even though there has been a negative netmigration in the State of New Jersey during the 1970s, the combined effects of the growth of the 16 years of age and over population and increases in labor force participation rates have produced an estimated growth in the labor pool of between 300,000 and 420,000 during the period of 1970 to 1976.

4. Even if net outmigration were to cause the stabilization of the state's population of labor force age, gains would probably be registered in the absolute size of the labor force as a function of population aging and labor force participation rates increasing during the 1980s.

Employed Persons by Industry:

1. The percent distribution of employed persons for the years 1970 and 1976 show strong national growth in the proportion of persons employed in professional and related services, and substantial decreases in the percent employed in manufacturing industries.

2. The decrease in the share of employment accounted for by manufacturing was geographically widespread and was particularly substantial in terms of loss in percentage points for the State of New Jersey -- from 32.2 percent in 1970 to 25.1 percent in 1976. However, the state exhibited among the highest increases in the services sector.

3. While in 1976 New Jersey was still mired in the aftermath of the recession, the gains in manufacturing up to the present have not been sufficient to offset these losses. Thus, the changes exhibited in 1976 probably accurately depict changes in the state's industrial structure.

4. This shift in industrial structure in New Jersey is reflected in patterns of workforce migration, i.e., there was a net outmigration of the manufacturing workforce during the first half of the 1970s. In general, there appears to be correspondence between the changing industrial composition of the state and patterns of workforce migration.

Employed Persons by Occupation:

1. The well documented movement toward a white-collar and service labor force in the United States was replicated in New Jersey during the 1970 to 1976 period.

2. In comparison to its neighbors, New Jersey had the greatest increase in the proportion of persons employed as nonfarm managers and administrators, while the proportional gain for professional, technical, and kindred workers exceeded that of Pennsylvania, but was less than that of New York.

3. On the other hand, the proportion employed as operatives and craft workers dropped more in New Jersey than in New York, but less than in Pennsylvania.

4. These changes in the State's occupational profile reflect the corresponding changes in industrial composition. This shift may be linked to migration, e.g., manufacturing declines have diminished employment in operative and craft occupations probably leading to outmigration of some of these workers while others changed occupations/industries.

II. Migration of the Resident Population and Workforce[1]

A. Migration of the Population

The preceeding changes were not only the consequence of the aging of the state's population, but also patterns of migration. While the overall structures are extremely complex, several major elements stand forth.

Total Net Migration of the Resident Population:

1. As is by now the conventional wisdom, the South and West Regions of the nation experienced positive netmigration during the post-1970 period, while the Northeast and North Central Regions experienced negative netmigration.

2. Although New Jersey experienced an average annual negative netmigration from 1970 to 1977 (-0.12 percent), it fared better than the region and division in which it is encompassed, as well as its immediate neighbors -- New York (-0.65 percent) and Pennsylvania (-0.32 percent).

3. What appears to have been happening as the decade has commenced is that, while the magnitude of both inmigration to and outmigration from New Jersey has increased, outmigration has grown at a faster pace. This appears to contradict the findings on workforce migration, to be discussed later in this chapter, and can be explained, in part, by the fact that the workforce data exclude the retirement and college populations.

4. However, the magnitude of net outmigration experienced by the state, both in terms of absolute numbers and rates, is small. Additionally, the largest net outflows were exhibited by the college age and retirement age groups. The prime labor force participation age groups, as in the past, continued to migrate into the state in larger numbers than they migrated out of the state, producing a net inmigration.

5. The New Jersey migration patterns were not uniform over the decade of the 1970s, i.e., the migration rate was not constant. It appears that at the later stages of the decade the rates of net outmigration were higher than those during the initial portions of the decade.

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[1] In this context, "population" refers to the people living in the area of analysis. "Labor force" refers to the people who are in the labor force, whether employed or unemployed, who live in the area of analysis and, if working, work in that area or outside that area. "Workforce" refers to the people who are employed in the area of analysis and who live in that area or outside that area.

6. Independently developed projections indicate that these trends could continue into the 1980s. This may well have important ramifications for the state's labor force.

Origin and Destination of New Jersey Migrants:

1. The patterns of origins and destinations of New Jersey's migrants did not differ substantially between 1969-1972 and 1975-1976. The bulk of the net inmigration to New Jersey originated from its neighboring states.

2. Although there was a positive netmigration to New Jersey from the Northeast Region, the negative netmigration from New Jersey to all other areas of the nation, particularly the South Region and the State of Florida, offset this influx. Much of the migration to Florida can be attributed to retirees. Hence, at least at present and for the short-term future, this migration to Florida may not be of major importance in terms of having a substantial impact on New Jersey's labor force.

Net Migration by Age and Sex: New Jersey:

1. Since 1970 New Jersey has had a net loss of population due to migration of the 15-19 and 20-24 year olds, those groups which can serve to rejuvenate the state's labor force.

2. At the same time, the state experienced a net inmigration of persons aged 25-34 and 35-54 years; this could constitute an influx to the labor force of experienced persons drawn to the state because of employment opportunities.

3. Whether the inmigration of this latter group represents a return of those persons who left the state in a previous time period for educational and/or early employment experience cannot be discerned from available data.

4. Persons 55 years of age and over tended to migrate out of New Jersey more than into the state, resulting in a net outmigration. The labor force is not particularly affected by this loss since most of this migration is due to these persons retiring to other parts of the nation.

5. In general, however, these patterns of migration by age and sex are a continuation of trends established in earlier decades.

B. Migration of the Workforce

The economic consequences of population migration are partially manifested by the patterns of workforce migration. In turn, the parameters of workforce migration may influence the industrial base of the State.

In the following analysis, it should be kept in mind that the net flows discussed are fairly small. Gross flows are much larger, but are still of limited magnitude. Thus, the severity of the issues raised are not substantial at present.

Origin and Destination of New Jersey Workforce Migrants:

1. Data on New Jersey's workforce migration for the periods 1970 to 1973 and 1973 to 1976 show that the changing direction of netmigration resulted more from declining inmigration than increasing outmigration. This appears to contradict the gross flow pattern exhibited by the total population. The discrepancy is due largely to the exclusion of college students and retirees from the workforce data.

2. The overall patterns of interchange of workforce migrants between New Jersey and other areas are very similar to those exhibited by all migrants. The greatest amount of workforce mobility occurred within the Northeast Region, while the South Region, Florida in particular, was the recipient of the second largest proportion of migrants.

Workforce Migration by Race and Sex:

1. For the period 1971 to 1973 the workforce outmigration from New Jersey only slightly offset the inmigration, and was caused by a small surplus of white male outmigrants over white male inmigrants (-2,500 persons).

2. All the other groupings for the state show positive netmigration, with the netmigration of white females being very similar to that for black females.

3. In this time period, New Jersey fared better than either New York, which exhibited a much larger magnitude of total negative netmigration, as well as negative netmigration for all groupings, or Pennsylvania, which also experienced a greater degree of negative netmigration.

Workforce Migration by Age:

1. The patterns of workforce migration by age during the 1971 to 1973 period were fairly similar to those reflected by all New Jersey-related migrants during other periods of the 1970s.

2. The most mobile group of persons in the workforce was the 25 to 34 year olds, who exhibited a positive netmigration to the state.

3. There was a small negative netmigration for the under 25 years of age group, as well as for the 35 to 64 years of age group.

4. Thus, except for the 25-34 years of age group, every other workforce age category experienced net outmigration during the early 1970s.

5. These differential patterns reflected across the workforce age partitions offer significant public policy issues. For example, the net outmigration of the under 25 years of age workforce, if continued may lessen the requirement for higher numbers of entry level employment positions, particularly in the context of the impending entrance of the baby bust generation into their workforce years.

6. Nonetheless, this and similar concerns should be tempered by the extremely small magnitude of the outmigration totals.

Workforce Migration by Industry:

1. The restructuring of the economy in the post-1970 period -- an increasing representation of nonmanufacturing jobs, particularly in the service sectors, and a decreasing representation of manufacturing jobs -- is exemplified somewhat for the three Middle Atlantic States by the 1971 to 1973 workforce migration data.

2. Of these states, New Jersey experienced the greatest net outmigration of persons employed in the manufacturing sector and slight net inmigration of persons employed in the finance, insurance and real estate sector.

3. These patterns are, in many respects, analogous to those exhibited by the change in the distribution of employed persons by industry and the findings of the Office of Labor Market Information special survey, undertaken in the late 1970s, based on a very limited number of observations, dealing with workforce outmigration and companies closing or leaving the state. This congruence may indicate a healthy balance between a mobile workforce and an evolving industrial structure, i.e., through workforce migration unemployment (labor force surplus) or unfulfilled industrial demand (labor force shortages) may be kept to a minimum.

Workforce Migration by Wage Class:

1. The median wage of New Jersey's inmigrants was higher than that for outmigrants during the 1971 to 1973 period.

2. The data appear to suggest that the 1971 to 1973 migration trends of New Jersey were characterized by losses in the number of medium- and low-wage workers in manufacturing and by relative gains in the number of workers in high-wage professional and managerial jobs.

3. This income "surplus" -- of inmigrants having higher incomes than those that have departed -- if continued, may serve to mitigate some of the potential negative consequences of net workforce outmigration in the future.

III. Summary

All of the preceeding dimensions of workforce migration should be viewed in the context of other forces affecting workforce changes in order to assess its significance. Table II-1 provides a summary of the impact of migration on New Jersey's workforce, according to selected characteristics, in comparison to the change caused by net entrants-exits to the workforce. As can be seen in the table, the workforce increased by 113,100 (4.9 percent) over the 1971-1973 period. Of this change, migration accounted for only -300 workers, while the net surplus of entrants over exits to the workforce accounted for 113,400 workers. Thus, in total, the impact of migration appears to be of only minor consequence.

When the workforce is partitioned via the characteristics reviewed above the same general pattern of the relationship of migration to net entrants-exits can be observed. The major exception is the manufacturing workforce, as well as those of the higher income wage classes ($10,000 and over). In the former case, the migration was four times as important as net entrants-exits to the workforce (a loss of 12,200 versus a loss of 3,400). Yet its importance should not be overemphasized, since of the total change in the manufacturing workforce (a loss of 41,000 workers) only 12,200 workers were a consequence of migration.

The same phenomenon is evident in the upper income wage classes. While netmigration in the $10,000 and over categories far exceeds the net entrants-exits, netmigration accounts for only a small proportion of the total change in the wage categories. In this case, the bulk of the change is a function of nonmigrant workers changing wage class.

At the same time, the impact of migration should not be underestimated. The data are for a fairly short time period and the time period preceeded the mid-decade recession. Thus, the data of Table II-1 may represent only the initial stages of a new and growing phenomenon. If this is the case, then what could be perhaps significant at present is not the absolute magnitude of the trendline, but its direction, with New Jersey becoming more like the region.

IV. Short-Term Future Outlook

As the population at the national level continues to exhibit slow growth due to declines in fertility, migration will play an increasing role in population and labor force/workforce growth at the subnational level. Projections of New Jersey's population into the 1980s show slow growth and imply negative netmigration. If the lessening of inmigration is sustained into the future and the present magnitude of outmigration continues, the quality of the labor force/workforce of the state could suffer. The combined effects of a lessening inmigration of the 25 to 34 year olds, a continuance of large outmigrations of young adults below the age of 25, and the decrease in the pool of persons becoming of working age due to the baby bust, could result in a labor force/workforce which is stagnant and suffering from a "brain drain" due to the lack of rejuvenation provided by an influx of newly educated and skilled persons.

Table II-1
SUMMARY
IMPACT OF MIGRATION ON THE WORKFORCE[1]
BY SELECTED CHARACTERISTICS
NEW JERSEY
1971-1973

(Numbers in Thousands)

	1971 Workforce		1973 Workforce		Change 1971-73		Net Migration	Net
	Number	Percent	Number	Percent	Number	Percent	1971-73	Entrants-Exits
TOTAL	2,329.1	100.0%	2,442.2	100.0%	113.1	4.9%	- 0.3	113.4
By Race & Sex								
White Males	1,214.0	52.1	1,241.9	50.9	27.9	2.3	- 2.5	30.4
Nonwhite Males	167.0	7.2	178.6	7.3	11.6	6.9	0.6	10.9
White Females	822.0	35.3	880.5	36.1	58.5	7.1	0.8	57.7
Nonwhite Females	126.1	5.4	141.4	5.8	15.3	12.1	0.8	14.4
By Age[2]								
Less than 25	310.4	13.4	496.0	20.3	185.6	59.8	-0.6	186.3
25-34	520.4	22.3	534.4	21.9	14.0	2.7	2.6	11.4
35-54	944.6	40.6	952.9	39.0	8.3	0.9	-1.8	10.0
55-64	400.7	17.2	360.6	14.8	-40.1	-10.0	-0.6	-39.5
65 and over	151.0	6.5	96.4	3.9	-54.6	-36.2	0.2	-54.8
By Industry[3]								
Construction	98.1	4.2	106.9	4.4	8.8	9.0	1.3	1.6
Manufacturing	792.6	34.0	751.6	30.8	-41.0	-5.2	-12.2	-3.4
Transportation & Pub. Util.	144.2	6.2	144.4	5.9	0.2	0.1	0.5	-2.1
Wholesale & Retail Trade	515.8	22.1	552.9	22.6	37.1	7.2	-1.1	62.2
Finance, Insurance & Real Estate	110.3	4.7	115.9	4.7	5.6	5.1	1.2	1.8
Services	521.2	22.4	562.9	23.0	41.7	8.0	0.1	33.4
Government	129.4	5.6	139.8	5.7	10.4	8.0	0.8	5.1
Other[4]	17.6	0.7	67.9	2.8	50.3	285.8	9.3	14.8

(Continued)

Table II-1 (Continued)
IMPACT OF MIGRATION ON THE WORKFORCE[1]
BY SELECTED CHARACTERISTICS
NEW JERSEY
1971-1973

(Numbers in Thousands)

	1971 Workforce		1973 Workforce		Change 1971-73		Net Migration 1971-73	Net Entrants-Exits
	Number	Percent	Number	Percent	Number	Percent		
By Wage Class[3,5]								
Under $2,000	400.5	17.2%	390.2	16.0%	-10.3	-2.5%	-14.6	70.5
$2,000-3,999	323.6	13.9	300.2	12.3	-23.4	-7.2	-5.4	33.1
$4,000-5,999	414.5	17.8	346.4	14.2	-68.1	-16.4	-2.8	9.7
$6,000-7,999	364.4	15.6	351.2	14.4	-13.2	-3.6	2.6	3.6
$8,000-9,999	292.8	12.6	282.6	11.6	-10.2	-3.5	1.7	-2.3
$10,000-14,999	356.8	15.3	479.0	19.6	122.2	34.2	6.8	1.6
$15,000-24,999	140.8	6.0	237.5	9.7	96.7	68.7	8.9	-3.0
$25,000 and over	35.6	1.5	54.4	2.2	18.8	52.8	2.6	0.2

NOTES: Numbers may not add due to rounding.
[1]See footnote 1, Table V-10 for definition of workforce data.
[2]Age is as of 1973.
[3]The sum of netmigration and net entrants-exits does not equal the 1971-73 change in workforce because this change is also due to nonmigrants changing their status (individual sector and wage class) from one year to another.
[4]Includes agriculture, mining and unclassified.
[5]Wages are in current dollars and are for the year the worker was in New Jersey. Dollar amounts for in-migrants are as of 1973 and dollar amounts for outmigrants as of 1971.

SOURCE: Bureau of Economic Analysis, Social Security Continuous Work History Sample (10%), First Quarters of 1971 and 1973.

However, offsetting these potential negative effects, there are some positive implications for New Jersey of the changes in the labor force age mix. A rise in the overall age of the labor force should result in an increase in productivity as well as a decrease in unemployment due to the experience gained by the labor force through the maturation process.

Additionally, there would appear to be no shortage of total workers available to New Jersey employers in 1985. Bureau of Labor Statistics' projections of civilian labor force indicate that, depending on the growth path assumed, the size of the national labor force in 1985 could be either 117.0, 113.0, or 108.9 million persons. If the convergence of New Jersey's labor force participation rates to those for the nation continues into the 1980s and become equal in 1985, and using population projections for the state the size of the labor force could be 4.0, 3.8, or 3.7 million persons -- a gain representing between 300,000 and 600,000 persons over the 1978 estimate of 3.4 million. This compares to a gain of approximately 550,000 over the 1970 to 1978 period.

The policy ramifications of the continuation or acceleration of these migration trendlines are exceedingly varied and complex. Nonetheless, three prominent considerations stand out.

1. Pressures may be considerably eased in terms of entry level employment opportunities as the decade proceeds. The shrinking size of the cohorts entering the labor force years imply that the problem of finding employment for the underskilled and undereducated will diminish. This offers the state's urban areas the opportunity to more adequately focus efforts on its minority and undereducated citizenry.

2. While the preceeding situation may become more manageable in terms of size and scope, the possibility exists for the need to retrain some older workers in order to maintain a competitive and technically up-to-date labor force.

3. In addition, attention on the state's job base may have to persist in the short-term future. The labor force parameters, as they will merge in the 1980s will probably not diminish the state's attractiveness to those employers presently within the state. However, the entrance of new firms and new industries into New Jersey, an important component of the maintainence of a viable state economic base, may be hindered by the labor force contours. While the latter is obviously speculative, it would appear that the attention of the state's policymakers is warranted in regards to labor force changes.

CHAPTER III

METHODOLOGY

The focus of this chapter is to discuss briefly the methodology used by the Office of Demographic and Economic Analysis (ODEA) and the Office of Labor Market Information (LMI) to prepare this report. Because each office developed its own methodology, each will be presented separately.

OFFICE OF DEMOGRAPHIC AND ECONOMIC ANALYSIS (ODEA)

The Office of Demographic and Economic Analysis had as its objective the preparation of a report concerning the impact of migration on the New Jersey labor market. In this effort, ODEA was responsible for defining the scope of the project, assessing data sources in coordination with other units in the Division of Planning and Research, and preparing an outline for implementation. As discussed elsewhere in this report (Chapters I and IV), various sources were consulted to secure information and data relevant to the topic. Where data were unavailable, but required, as was the case for post-1970 estimates of New Jersey netmigration by age and sex, ODEA developed a technique for producing such estimates.

This latter task involved adapting ODEA's population projection model. A brief description of the modification is given in Chapter III and a more detailed technical presentation is provided in Appendix A-1. The data for this phase of the project were obtained from a combination of sources. A submodel to the ODEA projection model was computerized, incorporated into the main model, and compiled for testing purposes. Once the programming was debugged, the program was run and the results were analyzed. To determine the reasonableness of the output, special tabulations, containing data similar to that produced by ODEA, were provided by the Bureau of the Census. Although the Census Bureau's and ODEA's results were not precisely the same, primarily due to slight variations in technique, the general overall pattern was the same. Since both techniques (Census Bureau's and ODEA's) resulted in estimates and not actual counts, and much of the data inputs were estimates, it could not be determined which set of results were more accurate.

The next stage of the project involved coordinating all of the data collected and developed, and preparing the data for analysis. Additionally, producers of source data were contacted to secure information on the usefulness and limitations of their data. Some of this material was available in published form, while some was provided by the producers either in the form of conversations or inhouse memoranda.

Finally, the data were analyzed and a follow-up literature search undertaken to obtain additional background information. A draft report was prepared, incorporating ODEA's work, as well as the work of the Office of Labor Market Information (LMI), conclusions were drawn, and the findings were summarized.

OFFICE OF LABOR MARKET INFORMATION (LMI)

The objective of the Office of Labor Market Information (LMI) was to identify the occupations of workers who migrate out of the State of New Jersey as the result of business relocation. As a first step, OFS designed a survey and reporting system for use by this division's outstationed field analysts. Since the LMI keeps tract of industry changes via the weekly '210 Report (Report of Permanent Layoffs and Establishment Closing), a new reporting system was added to the '210 Report to determine what occupations were affected by companies leaving the state or going out of business.

The field analysts were requested to contact the personnel officer, administrator, etc. at a company once they became aware the firm was relocating or closing to obtain the following information:

1. New location (unless company was closing)
2. Confirmation of estimated loss of jobs
3. How many employees staying? How many relocating? In the case of permanent shutdown, what types of jobs are going to be lost?
4. What types of jobs do the people have that are staying? What types of jobs have those individuals who are relocating?

The material collected by the field analysts was submitted as a supplement sheet to the '210 Report in either tabular or narrative form. If there was no activity, a "negative activity report" was submitted.

Data on company shutdowns and plant locations, according to local UI offices and ES-235 Significant Layoff reports, were summarized by LMI. The data covered the period December 1978 through August 1979 and included changes in employment of 50 workers or more. Occupations relocating with an establishment and work skills lost were recorded at the one-digit DOT level. More detailed information on skills and abilities was not available from ES-235 Surveys.

LMI analyzed the results of their survey, drew conclusions, and submitted their report to ODEA for incorporation into this study.

CHAPTER IV

DATA SOURCES AND LIMITATIONS

An overview of the major data sources consulted for this report is presented in this chapter. The sources are grouped according to the producer, i.e., U.S. Bureau of the Census, Bureau of Economic Analysis, New Jersey Office of Demographic and Economic Analysis, and other. For each source, the following information is provided: data secured for this report; general information, including how the data were originally developed, limitations of data, and comparability with other sources.

U.S. BUREAU OF THE CENSUS

CENSUS OF POPULATION

The 1970 Census of Population was the source of data on population by age, population with income by education, labor force participation by sex, employed persons by industry, and employed persons by occupation as of April 1, 1970 for the United States, four census regions, Middle Atlantic Division, New York, New Jersey, and Pennsylvania.

In compliance with constitutional requirements, a count of the U.S. population has been taken every 10 years since 1790 as a basis for apportionment of members of the House of Representatives. During this period the procedure has changed from a very simple enumeration of persons in families by broad age groups to a 400-question survey form in 1890, to, starting in 1940, a short form supplemented by additional questions asked of a sample of the population. The additional questions, asked of 5, 15 or 20 percent of the population in 1970, cover items for which small area data are not needed. The restriction of these items to a sample of the population reduces respondent burden and data collection and processing costs. Collection methods have changed from registration with U.S. Marshalls, to visits by census enumerators, to extensive use of the mail in 1970 with the opportunity for householders to respond on a self-marked form.

The census is conducted after extensive pretests, which use questions recommended and evaluated by a number of major user groups and advisory committees. In 1970, all persons were required to supply name, age, sex, race, marital status, and relationship to head of household. Persons selected in the samples were asked a substantial number of additional questions.

Limitations of Data and Comparability

Human and mechanical errors occur in any mass statistical operation such as a decennial census. Errors during the data collection phase can include failure to obtain required information from respondents, obtaining

incorrect or inconsistent information, and recording information in the wrong place or incorrectly. Errors can also occur during the field review of the enumerator's work, the clerical handling of the questionnaires, and the various stages of the electronic processing of the material.

The estimates from the 20-, 15-, and 5- percent sample tabulations are subject to sampling variability. The standard error of these estimates can be approximated using the data in tables published in the 1970 Census of Population reports. The sampling errors may also be obtained by using the factors shown in the same reports. These tables reflect the effect of sample response variance, but not of bias arising in the collection processing and estimation steps nor of the correlated errors enumerators introduce.

The data obtained from the decennial censuses are subject to undercount errors created by the difficulties inherent in locating all persons during the enumeration process. Persons of some socioeconomic characteristics are more difficult to count than others. For example, young adult black males have among the highest probabilities of being missed during a census. For the 1970 Census, the national overall undercount error has been calculated at 2.5 percent, while for the State of New Jersey, it has been calculated to fall between 0.6 and 1.5 percent.

Additionally, in the U.S. Census, each person is counted as an inhabitant of his usual place of residence. This practice means that persons were not always counted as residents of the place where they happened to be found by the census enumerators. Persons without a usual place of residence were, however, counted where they were enumerated. Residence rules are established for certain categories of persons whose usual place of residence is not immediately clear, such as members of the Armed Forces, college students, inmates of institutions, and Americans overseas for an extended period.

Therefore, due to undercount errors and problems with residence definitions, the numbers from a census do not represent the "true" resident population. In a similar vein, data from the sample questions deviate from "true" figures, owing to the incomplete coverage of the population.

The comparability of the data from the 1970 Census with other sources of data utilized in this report depends on the particular data. The data on population by age from the 1970 Census were based on enumeration, while the 1975 and 1978 population by age data from the Current Population Reports are estimates. All the other data obtained from the census were derived from the 20 percent sample data collected; the corresponding updates of these data were collected from approximately 150,000 households in the nation and 4,700 in New Jersey, as part of the 1976 Survey of Income and Education (SIE). Some of the trends implied by comparison of the 1970 Census of Population and Survey of Income and Education data may be overstated or understated. Such analytic problems arise because of known inconsistencies between labor force collected in sample surveys. If the extent of such inconsistencies varies by area, then comparisons of trends between areas could be affected. For other comparability problems, see the following section on the Survey of Income and Education.

SURVEY OF INCOME AND EDUCATION (SIE)

Updates of 1970 Census data were obtained from the Survey of Income and Education, with the exception of population by age.

The SIE was undertaken to fulfill a legislative requirement mandated by Congress for estimates in each state of the number of children 5 to 17 years of age in poverty families. The SIE also satisfies another requirement mandated by Congress, which directs the Department of Health, Education, and Welfare (HEW) to estimate from a survey the number of children and other persons in the state who, because of limited English-speaking ability, are in need of bilingual education, guidance, and counseling.

In addition to these legislative requirements, this opportunity was also used to gather additional income-related information including data on school enrollment, child and adult disability, health insurance coverage, and several population and labor force characteristics.

Approximately 191,500 households were selected for the SIE sample and were spread through every state in the nation and the District of Columbia. Interviewers made personal visits to the sample households. Interviews were conducted with a responsible adult in the household and lasted approximately 45 minutes. Nationally, the final interview rate for the approximately 158,500 occupied housing units was 95.4 percent. In New Jersey the final interview rate for approximately 5,000 occupied housing units was 93.6 percent.

Limitations of Data and Comparability

There are two types of possible errors associated with estimates based on data from a sample survey--sampling and nonsampling error. The following is a description of the sampling and nonsampling errors associated with the SIE.

In general, nonsampling errors can be attributed to many sources: inability to obtain information about all cases; definitional difficulties; differences in the interpretation of questions; inability or unwillingness to provide correct information on the part of respondents; mistakes in recording or coding the data; and other errors of collection, response, processing, coverage, and estimation for missing data.

It should be pointed out that steps used in the estimation procedure to reduce errors due to nonresponse and coverage deficiencies introduce nonsampling errors of their own. However, the errors introduced are believed to be smaller than the errors due to nonresponse and coverage deficiencies.

The particular sample used for this survey is one of a large number of possible samples of the same size that could have been selected using the same sample design. Even if the same schedules, instructions, and enumerators were used, estimates from each of the different samples would differ from each other. The deviation of a sample estimate from the average of all possible samples is defined as the sampling error. The standard error of a survey estimate attempts to provide a measure of this variation among the

estimates from the possible samples and, thus, is a measure of the precision with which an estimate from a sample approximates the average result of all possible samples.

As calculated for the SIE, the standard error also partially measures the variation in the estimates due to response and enumerator errors (nonsampling errors), but it does not measure, as such, any systematic biases in the data. Therefore, the accuracy of the estimates depends on both the sampling and nonsampling errors, measured by the standard error, and biases and some additional nonsampling errors not measured by the standard error.

The SIE data are comparable to that from the 1970 census to the extent that data from a 20 percent sample of the entire population (all of the data items from the 1970 census used to examine trends against SIE data are from the 20 percent sample questions) is comparable to a survey of a much smaller sample. Both sets of data are subject to undercount errors and sampling variability, but the data are consistent definitionally.

Additionally, the Survey of Income and Education (SIE) was a single-time survey conducted over a 4-month period (April through July of 1976 with the bulk of the interviewing in May and June) and therefore has a somewhat indefinite reference period for employment classification. The Current Population Survey (CPS), on the other hand, is a recurring monthly survey with a very definite reference period in each month (the week including the 12th of the month). Quarterly average data from the CPS are calculated as the average of three monthly surveys. Even if almost all interviews for the SIE were conducted in the second quarter of 1976, the SIE would still not be comparable with second quarter 1976 CPS data because of the problem of seasonal variation.

Therefore, although data on the civilian labor force and employment status are provided in this report, these data should be used with caution. In general, they are not comparable with the official estimates released by the Department of Labor, Bureau of Labor Statistics. The official estimates are based on the CPS conducted for the Bureau of Labor Statistics by the Bureau of the Census. Reasons for potential differences between these two sources include the different reference periods, differences in the major purpose of the survey, vehicles, and differences in survey methodology.

Finally, the Survey of Income and Education was a household survey and employment by industry data from such a survey differ from similar type data from an establishment survey. Industrially detailed data from a household survey measure wage and salary workers, self-employed persons, and unpaid family workers in both agricultural and nonagricultural industries. In a household survey, each employed person is counted once and counted at his/her place of residence. On the other hand, establishment surveys, in general, cover only wage and salary employees on the payrolls of nonagricultural establishments. Persons who worked in more than one establishment during the reporting period are counted each time their names appear on payrolls and are counted at his/her place of employment.

INTERNAL REVENUE SERVICE (IRS) MIGRATION FILE

Data on the origin and destination of New Jersey migrants by regions, divisions and selected states for the periods 1969 to 1972 and 1975 to 1976 were derived from tabulations of the Census Bureau from IRS tax return files.

The Census Bureau and ODEA utilizes IRS tax return files in their intercensal population estimates program. The change between two years is estimated for each functioning governmental unit by matching the IRS files for these two years by Social Security number. In order to relate this change to the appropriate governmental units, both returns in each matched pair must be assigned a geographic code which identifies the state, county, minor civil division, and city, borough, or village of the tax filer's residence.

The assignment of geographic codes was made on the basis of the response to the revenue sharing question on the IRS tax returns. This question asked for the county, township, and city, borough, or village of the filer's residence. These responses were cross-referenced with mailing addresses from the returns to form a geographic coding guide. This coding guide is the primary tool for the determination of migration rates used in creating intercensal population estimates by the Administrative Records Method.

Limitations of Data and Comparability

The scope of the IRS data is limited to those residents of an area who file tax returns for both years in the time period of analysis. The data covers the population filing and are tabulated from the number of exemptions recorded on the tax forms less special exemptions, e.g., over 65 years of age, blindness, etc. It should be noted also that the IRS data may not be representative of an area's population to the extent that the filers' dependents may not reside in the same area as the filers.

The quality of the coding guide used in the estimates program depends almost solely on the accuracy of the response to the revenue sharing question and on the accuracy with which these responses were clerically coded to state, county, minor civil division, and place.

Since it can be assumed that all tax filers know what state they live in, the state level errors are evidently coder errors. Two types of systematic code errors were observed which contributed to state level miscoding. The first consisted of coders looking under the wrong state to find the Geographic Reference Identification Number (GRIN) code. The second type of error occurred in cases where the state of the mailing address is different from the actual state of residence.

The effects of miscoded tax returns on the migration rate of a particular place can have two aspects. The first occurs when returns from other places are mistakenly coded to the place in question for one or both of the two years for which the migration rate is being calculated. The error from this occurrence will depend on the number of such miscodings to the place in question and on the differential migration rates between the place and the returns that were miscoded to it. The second aspect of miscoding is that the migration rate of a place will be affected by the returns which should have been coded to it but instead were coded somewhere else. The magnitude of the effect will depend on the number of such returns and the differential migration rate between these returns and the place in question.

The IRS data on migration differ from other data on migration in this report in two major respects. First, the time periods covered are not consistent with those of the other series, e.g., the Continuous Work History Sample (CWHS) and the results of the ODEA model. This presents problems in comparing the data from the various sources, particularly when the length of the time periods vary. In these data sources only those persons whose residences (IRS, ODEA) or workplaces (CWHS) at the beginning and end of the period were different are counted as migrants. Migrants who died during the period may be omitted from the classification altogether, and those who returned during the period to their residence or workplace at the beginning of the period are classified as nonmigrants. Furthermore, only one move per person can be counted or estimated during the period; the longer the time period, the more migrants/moves not accounted for in the data. And, the movement exhibited during a five year period by a group of people with like socioeconomic characteristics may vary from that exhibited during a two year period by persons with the same characteristics. For example, the data on white males who were aged 25 to 34 in 1975 may show a substantial negative netmigration during the 5-year period 1970 to 1975. However, the data on white males who were aged 25 to 34 in 1973 may show a small positive netmigration during the 2-year period 1971 to 1973. This finding is not necessarily inconsistent. The persons who were between the ages of 25 and 34 in 1975 are not the same as those of the same age grouping in 1973. The 2-year period falls within the 5-year period and there may have between return movement to the area after 1973 and/or substantial inmigration prior to 1971 and after 1973 to compensate for the 2-year period net outmigration. The IRS data cover time periods of lengths of 3 years (1969-1972) and 1 year (1975-1976); the CWHS data cover different time periods spanning three years (1970-1973), three years (1973-1976), and two years (1971 to 1973); and, the results of the ODEA model reflect patterns for other time periods--five years (1970-1975) and three years (1975-1978).

The second major difference between the IRS migration data and that from other sources deals with the scope of the data. The IRS data cover those persons (and their dependents) residing in a state who filed federal tax returns in the years for which the data are tabulated. The CWHS data, on the other hand, refer to only the workforce migrants, i.e., the people employed in an area regardless of their residence. The ODEA model migration data cover the total resident population based on estimates.

OTHER CENSUS BUREAU DATA

Several Census Bureau publications were consulted for data necessary to this report on post-1970 estimates of various components and characteristics of population. These include: Current Population Reports, Series P-25, from which data were secured on post-1970 estimates of total populations of areas and estimates of state populations by age; and Statistical Abstract(s) of the United States, which were the source of data on the number of births and deaths for the period April 1, 1970 to July 1, 1975 used to calculate estimates of total netmigration for that period for geographic areas.

These publications, which are cited in the appropriate tables in Chapter V and in the bibliography, should be consulted for a discussion of estimating procedures and limitations.

BUREAU OF ECONOMIC ANALYSIS

CONTINUOUS WORK HISTORY SAMPLE (CWHS)

The Social Security Administration's (SSA) Continuous Work History Sample (CWHS) was a source of information on workforce characteristics and the components of workforce change for states and substate areas for intercensal years.

The CWHS is a sample of workers' earnings records from employers' quarterly reports to the SSA. The sample is based on specific digits in workers' social security numbers. Because the same social security numbers are included in the sample for each period, work histories for workers in the sample can be assembled by linking the data files for successive periods. Work histories include data on sex, race, year of birth, and, for each time period, the state, county, and industry of employment, as well as an estimate of wages earned from each social-security-covered job.

The area workforce and migration data available from these administrative records can be assembled less expensively and updated more frequently than equivalent data from special surveys. Moreover, with year-by-year data for the same workers, the CWHS has capabilities for tracing the processes by which workforce changes occur. Although CWHS data cover fewer persons (the working population with social-security-covered jobs rather than total population) and fewer demographic characteristics than census data, they are free of the memory biases often found in survey responses.

The CWHS is a micro-data file in that it contains information for individual workers. Inferences can be made from this file about the processes through which economic and demographic changes take place in areas.

Limitations of Data and Comparability

There are a number of limitations in the CWHS. Among the major limitations is sampling variability, which indicates how much a sample estimate can be expected to deviate from the "true" (total population) result. The variation associated with CWHS estimates depends principally on the size of the sample--the larger the sample, the smaller the variation. The variation associated with estimates of numbers of persons, for example, tends to be only about one-third as large in the 10-percent sample as in the 1-percent sample. In this report, data from both the 1- and 10-percent CWHS samples were used.

Another major limitation is the incomplete coverage of workers. Almost 10 percent of the workers in paid employment are excluded from the social security system, including most federal civil servants, some state and local government employees (for New Jersey about 98 percent of these workers are included), certain agricultural and domestic workers, and certain employees of nonprofit organizations. Among other restrictions are reporting errors, which, if undetected, permit erroneous conclusions to be drawn. For example, faulty reporting by multiestablishment firms of the locations of individual establishments can result in "spurious" migration flows. When workers are unclassified by state, county, and/or industry, local area estimates of total workforce and gross migration can be understated.

Other limitations include the lack of state and county information on the employment of military and military reserve personnel and the lack of migration data on entrants and exits. Gross migration flows are underestimated by the extent of the migration of those entering and leaving the work force. Net migration may be biased in either direction, depending upon the magnitude of the number of entrants versus the number of exits.

The CWHS data on migration differ from other data on migration in this report in two major respects. First, the time periods covered are not consistent with those of the other series, e.g., the IRS migration file and the results of the ODEA model. (See the discussion under "Internal Revenue Service Migration File.") Second, the scope of the data from the CWHS is not the same as that of the other sources. The CWHS data refer to only social-security covered workforce migrants, i.e., employed persons in an area regardless of their residence, while the IRS and ODEA model data cover resident population.

OTHER

The Bureau of Economic Analysis publication, Survey of Current Business, was a source of additional CWHS data. The publications, as cited in the bibliography, should be consulted for a discussion of coverage, procedures, and limitations.

OFFICE OF DEMOGRAPHIC AND ECONOMIC ANALYSIS (ODEA)

ODEA MODEL

The ODEA model was developed by the Office of Demographic and Economic Analysis, Division of Planning and Research, Department of Labor and Industry to project population to the year 2000 for the State of New Jersey and its 21 counties. The model was adapted for this study to determine netmigration by age and sex for the periods 1970 to 1975 and 1975 to 1978.

The model is a cohort-component, demographic-economic linked method, and is premised on the recognition that population change is a function of natural increase and migration. Simply put, a population is survived, netmigration is determined, and births are calculated by applying fertility rates to female populations. A detailed description of the model is presented in Appendix A-1.

Because this study deals primarily with estimates for the 1970 to 1978 period, the migration subroutine of the ODEA model was modified. The model originally projected netmigration for the under 65 years of age civilian population as a function of economic factors, including projected levels of employment, unemployment rates, labor force participation rates, and various other factors, such as commutation and residential preference. For the analysis presented here, the 1970 to 1975 net migration was obtained from the age and sex distributions for July 1, 1970 and July 1, 1975 developed experimentally by the U.S. Census Bureau and published by the Department of Labor and Industry in August 1978. For the 1975 to 1978 period, total net migration

was determined by adding the number of births, subtracting the number of deaths for this interval from the July 1, 1975 estimate, and subtracting the result from the July 1, 1978 estimate. The 1975 to 1978 total netmigration was disaggregated by sex and age utilizing routines of the ODEA model.

Limitations of Data and Comparability

The estimates of netmigration are subject to estimation error. Variations from actual population trends are inherent in the estimating procedures, stemming from the fact that the correlation between the data series and population is not perfect. The data series being used to reflect population change are all affected to some degree by factors other than population movement and, in addition, they are part of reporting systems that are subject to administrative alteration.

The subroutines developed in the ODEA model to produce 3-year migration trends (1975-1978) were based on the 5-year (1970-1975) historical experience in the State of New Jersey. As was discussed under "Internal Revenue Service Migration File," migration trends for time periods of different length vary. Thus, the migration patterns from 1975-1978 resulting from the ODEA model are likely to be less reliable than those for the 1970-1975 period. However, independently derived estimates of the components of population change (births, deaths, total netmigration) for the 1975-1978 period were incorporated into the subroutines. These controls should serve to improve the quality of the results. It is recognized that this is an area which needs further research, but at present is beyond the scope of this report. Other limitations are presented in Appendix A-1.

The ODEA model results on migration differ from other data on migration in this report in two major respects. First, the time periods covered are not consistent with those of the other sources, e.g., the IRS migration file and the CWHS data. (See the descussion under "Internal Revenue Service Migration File.") And secondly, the scope of the data from the model is not the same as that of the other sources. The model results covers the entire resident population of the state. The IRS data, on the other hand, cover only the population and dependents who filed federal income tax returns in the years for which the data are tabulated. The CWHS data refer to only the covered workforce, i.e., the people covered by Social Security and who are employed in an area regardless of their residence.

OTHER

Additional sources were consulted as required to provide supplementary data and information for this report. Data on the migration of college students were obtained from the National Center for Education Statistics, Digest(s) of Education Statistics, from the American Demographic journal, and from the "Student Resource Survey of Selected New Jersey Residents Attending College in Another State" report by the New Jersey Commission on Financing Postsecondary Education. Annual Report(s) of the New Jersey Economic Policy Council and various issues of Demography and other professional studies were the source of background material. All of these publications are cited in the bibliography.

CHAPTER V

THE IMPACT OF MIGRATION ON THE LABOR FORCE: 1970 TO PRESENT DETAILED ANALYSES

INTRODUCTION

Migration is the most difficult component of population change to estimate or project. Moreover, it is equally difficult to precisely ascertain its impact on the economic and social structure of an area. Nevertheless, attempts must be made to specify migration and its effects, within the constraints of data availability, because of the recent reversal of traditional migration patterns in the United States, i.e., from South to North to North to South, and in New Jersey from net inmigration to net outmigration. For, in restructuring an area's population, netmigration may alter its labor pool, replenishing or depleting its stock of human capital. Skilled workers may depart from an area, to be replaced by less skilled in-migrants (Morrison, 1978).

The purpose of this chapter is to examine the data collected and developed by the New Jersey Office of Demographic and Economic Analysis (ODEA), in order to determine the impact of migration on the New Jersey labor force during the post-1970 period when, for the first time in several decades, more people moved out of New Jersey than moved into it. These analyses may be useful in ascertaining whether any characteristic changes of the labor force related to migration will affect the state's ability to retain and attract industries of a type similar to that presently in place or whether the state should attempt to attract industries of a different type. Also, the analyses may assist in determining whether policies should be considered which would attempt to alter migration patterns of the labor force and/or which would change the quality of the labor force of the state, e.g., through training.

The analyses are partitioned into three sections. The first presents the baseline changes in population and labor force characteristics for New Jersey and national geographic areas since 1970. Although these changes are influenced by many nonmigration factors--including aging of the population, exits and entrances to the labor force, career shifts, and changes in the nation's and/or an area's economy--migration can be significant in altering the structure of the population and labor force.

The second section examines the characteristics of migrants for the state and national geographic areas. The third attempts to summarize the impact of migration on the state's labor force and provide a short-run outlook for the 1980s.

Two important limitations to the analyses should be mentioned. One, the time periods examined are not comparable across all data sets due to limitations of data availability. Two, total migration statistics refer to the resident population of an area, while data on workforce migration pertain to persons employed in an area regardless of their place of residence.

POPULATION AND LABOR FORCE CHARACTERISTICS

POPULATION CHARACTERISTICS

POPULATION BY AGE

Changes in the age distribution of an area's population, whether temporary or lasting, have important economic as well as social implications. Two major contributors to the changing age pattern of an area are: (1) the long-term pattern of births and (2) the movement of population into and out of an area.

The national patterns of fertility change--low births during the depression and war years (1930s and early 1940s); baby boom (1947 to late 1950s - early 1960s in New Jersey); and, decline in births since 1961--are echoed in the changes in the age distribution at the state level. However, changes in age distribution at the subnational level do not exactly replicate those at the national level due not only to some differences in fertility rates, but also the impact of differential migration patterns by age.

Table V-1 shows the total resident population and percent distribution by age for the United States, the four regions, and the areas immediately surrounding the State of New Jersey for the years 1970, 1975, and 1978. The age groups chosen for this table are the only ones for which comparable data for all areas could be obtained.

The table reveals several interesting points. In all three time periods, as average age moved upward nationally in line with fertility trends, the Middle Atlantic Division was characterized by an older age structure than the United States. There also appeared to be a tendency between 1970 and 1978 for New Jersey to become somewhat more like its neighbors, as the percentage point differences by age group narrowed slightly between New Jersey and the Middle Atlantic Division.

Because the population age groups from which the labor force has been and will be drawn are of primary concern to this study, the specifics of the under 65 years of age population will be examined.

There have been general declines in the number of persons under 5 years of age and 5 to 17 years of age, as a reflection of the drop in the annual number of births after the post-war "baby boom" ended in the late 1950s. The population under 5 years old has been declining since 1960; for the nation as a whole, it has decreased by 10.5 percent since 1970, while the total population grew 7.3 percent. The general reduction in the number of births has resulted in declines in the population under 5 in most states. The Northeast and North Central States, as the slowest growing regions of the United States, showed the greatest declines in the population under 5 years, 25.3 percent and 15.6 percent respectively. Within the Middle Atlantic Division, New Jersey's population under 5 years dropped by 23.4 percent, a decrease not as great as that experienced by the surrounding state of New York (26.3 percent decrease) and slightly more than Pennsylvania (23.0 percent decrease).

TABLE V - 1
RESIDENT POPULATION BY AGE
UNITED STATES, REGIONS, NEW ENGLAND DIVISION, MIDDLE ATLANTIC DIVISION
NEW YORK, NEW JERSEY, PENNSYLVANIA
1970, 1975, 1978

(Numbers in Thousands)

	Total	Less than 5 Years	5-17	18-20	21-44	45-64	65 Years & Over
				April 1, 1970			
United States	203,302	17,169	52,543	10,828	60,934	41,850	19,979
Northeast Region	49,061	3,995	12,045	2,421	14,507	10,915	5,177
New England	11,847	990	2,965	625	3,477	2,526	1,264
Middle Atlantic	37,213	3,005	9,080	1,796	11,030	8,389	3,912
New York	18,241	1,488	4,358	886	5,519	4,039	1,951
New Jersey	7,171	590	1,797	323	2,153	1,613	694
Pennsylvania	11,801	928	2,925	587	3,357	2,737	1,268
North Central Region	56,590	4,840	15,015	3,001	16,527	11,503	5,704
South Region	62,813	5,392	16,463	3,512	18,923	12,507	6,015
West Region	34,838	2,940	9,020	1,895	10,977	6,924	3,083
				July 1, 1975			
United States	213,051	15,879	50,372	12,415	68,427	43,537	22,420
Northeast Region	49,422	3,290	11,379	2,685	15,529	10,978	5,561
New England	12,183	802	2,865	702	3,860	2,580	1,374
Middle Atlantic	37,239	2,487	8,514	1,982	11,670	8,398	4,187
New York	18,081	1,215	4,106	958	5,775	3,988	2,039
New Jersey	7,336	492	1,728	377	2,298	1,671	769
Pennsylvania	11,822	781	2,680	648	3,596	2,739	1,379
North Central Region	57,583	4,296	13,929	3,405	18,269	11,554	6,129
South Region	68,141	5,405	16,171	4,043	21,929	13,460	7,133
West Region	37,905	2,889	8,892	2,281	12,701	7,545	3,597

Continued

TABLE V - 1 (Continued)
RESIDENT POPULATION BY AGE
UNITED STATES, REGIONS, NEW ENGLAND DIVISION, MIDDLE ATLANTIC DIVISION
NEW YORK, NEW JERSEY, PENNSYLVANIA
1970, 1975, 1978

(Numbers in Thousands)

	Total	Less than 5 Years	5-17	18-20	21-44	45-64	65 Years & Over
				July 1, 1978			
United States	218,059	15,361	48,015	12,752	74,031	43,845	24,054
Northeast Region	49,081	2,983	10,543	2,722	16,255	10,747	5,831
New England	12,256	721	2,668	726	4,135	2,554	1,451
Middle Atlantic	36,825	2,262	7,875	1,996	12,120	8,193	4,380
New York	17,748	1,096	3,795	966	5,924	3,873	2,095
New Jersey	7,327	452	1,603	382	2,418	1,648	824
Pennsylvania	11,750	715	2,477	647	3,779	2,672	1,461
North Central Region	58,251	4,084	13,097	3,488	19,647	11,490	6,445
South Region	70,626	5,259	15,712	4,145	23,967	13,737	7,807
West Region	40,100	3,036	8,664	2,398	14,162	7,870	3,971

(Percent Distribution)

				April 1, 1970			
United States	100.0	8.4	25.8	5.3	30.0	20.6	9.8
Northeast Region	100.0	8.1	24.6	4.9	29.6	22.2	10.6
New England	100.0	8.4	25.0	5.3	29.3	21.3	10.7
Middle Atlantic	100.0	8.1	24.4	4.8	29.6	22.5	10.5
New York	100.0	8.2	23.9	4.9	30.3	22.1	10.7
New Jersey	100.0	8.2	25.1	4.5	30.3	22.5	9.7
Pennsylvania	100.0	7.9	24.8	5.0	28.4	23.2	10.7
North Central Region	100.0	8.6	26.5	5.3	29.2	20.3	10.1
South Region	100.0	8.6	26.2	5.6	30.1	19.9	9.6
West Region	100.0	8.4	25.9	5.4	31.5	19.9	8.8

Continued

TABLE V - 1 (Continued)
RESIDENT POPULATION BY AGE
UNITED STATES, REGIONS, NEW ENGLAND DIVISION, MIDDLE ATLANTIC DIVISION
NEW YORK, NEW JERSEY, PENNSYLVANIA
1970, 1975, 1978

(Percent Distribution)

	Total	Less than 5 Years	5-17	18-20	21-44	45-64	65 Years & Over
				July 1, 1975			
United States	100.0	7.5	23.6	5.8	32.1	20.4	10.5
Northeast Region	100.0	6.7	23.0	5.4	31.4	22.2	11.3
New England	100.0	6.6	23.5	5.8	31.7	21.2	11.3
Middle Atlantic	100.0	6.7	22.9	5.3	31.3	22.6	11.2
New York	100.0	6.7	22.7	5.3	31.9	22.1	11.3
New Jersey	100.0	6.7	23.6	5.1	31.3	22.8	10.5
Pennsylvania	100.0	6.6	22.7	5.5	30.4	23.2	11.7
North Central Region	100.0	7.5	24.2	5.9	31.7	20.1	10.6
South Region	100.0	7.9	23.7	5.9	32.2	19.8	10.5
West Region	100.0	7.6	23.5	6.0	33.5	19.9	9.5
				July 1, 1978			
United States	100.0	7.0	22.0	5.8	33.9	20.1	11.0
Northeast Region	100.0	6.1	21.5	5.5	33.1	21.9	11.9
New England	100.0	5.9	21.8	5.9	33.7	20.8	11.8
Middle Atlantic	100.0	6.1	21.4	5.4	32.9	22.2	11.9
New York	100.0	6.2	21.4	5.4	33.4	21.8	11.8
New Jersey	100.0	6.2	21.9	5.2	33.0	22.5	11.2
Pennsylvania	100.0	6.1	21.1	5.5	32.2	22.7	12.4
North Central Region	100.0	7.0	22.5	6.0	33.7	19.7	11.1
South Region	100.0	7.4	22.2	5.9	33.9	19.5	11.1
West Region	100.0	7.6	21.6	6.0	35.3	19.6	9.9

Note: Numbers may not add due to rounding.

Sources: 1. 1970 & 1975: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 734 "Estimates of the Population of States, by Age: July 1, 1971 to 1977," U.S. Government Printing Office, Washington, D.C., 1978.
2. 1978: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 794, "Estimates of the Population of States, by Age: July 1, 1977 and 1978," U.S. Government Printing Office, Washington, D.C., 1979.

The following table shows the decline in New Jersey's under 5 years of age population from 1970 to 1978, as well as its share of the national total for this group.

Under 5 Years of Age Population

	Percent Change 1970-1978	Percent Share of U.S. 1970	1978
United States	-10.5	100.0	100.0
Northeast Region	-25.3	23.3	19.4
New York	-26.3	8.7	7.1
New Jersey	-23.4	3.4	2.9
Pennsylvania	-23.0	5.4	4.7

The school-age population (5-17 years of age) in the United States represented 25.8 percent of the total population in 1970, but dropped to 22.0 percent by 1978, as the birth cohorts of the 1965-73 period replaced the larger cohorts born during the middle and late 1950s. The Northeast's decline (24.6 percent to 21.5 percent) in the school-age population parallels that of the North Central Region (26.5 to 22.5 percent) as well as the more rapidly growing South (26.2 to 23.7 percent). Again, as with the population under 5 years of age, New Jersey declined less (a decrease of 10.8 percent in the school-age population between 1970 and 1978) than its neighbors; New York showed a decrease of 12.9 percent and Pennsylvania showed a decrease of 15.3 percent. Thus, the potential for new labor force entrants in the near future are more favorable for New Jersey than for some areas. This can be seen more clearly from the data below, which illustrates New Jersey's slight advantage vis a vis the regional context.

5-17 Years of Age Population

	Percent Change 1970-1978	Percent Share of U.S. 1970	1978
United States	- 8.6	100.0	100.0
Northeast Region	-12.5	22.9	22.0
New York	-12.9	8.3	7.9
New Jersey	-10.8	3.4	3.3
Pennsylvania	-15.3	5.6	5.2

Nationally, the population in ages 18 to 44 is experiencing a resurgence of growth as the "baby boom" cohorts move into this age group. In 1970 this sector accounted for 35.3 percent of the total population; by 1978, its share increased to 39.7 percent, representing a 1970 to 1978 growth rate of 20.9 percent. This pattern of expansion is evident in each of the nation's geographic subareas. In 1970 about 34 percent of the Northeast and North Central Regions' population were between 18 and 44 years of age; by 1978 the proportion increased

to 38.6 percent and 39.7 percent respectively. With higher percentages of the South Region's (35.7 percent) and West Region's (36.9 percent) total population in these age groups in 1970, it is not surprising, given their overall growth, that these percentages increased to 39.8 percent and 41.3 percent by 1978. New Jersey's young adult population increased by 13.1 percent from 1970-1978 while New York showed an increase of only 7.6 percent and Pennsylvania's 18 to 44 year olds increased by 12.2 percent.

18-44 Years of Age Population

	Percent Change 1970-1978	Percent Share of U.S. 1970	1978
United States	20.9	100.0	100.0
Northeast Region	12.1	23.6	21.9
New York	7.6	8.9	7.9
New Jersey	13.1	3.5	3.2
Pennsylvania	12.2	5.5	5.1

This obscures what's been happening in percentage terms to 18-20 year olds. While the number of persons 18 to 20 years of age increased by 17.8 percent at the national level, this group in New Jersey grew by 18.3 percent. New Jersey's rate of growth substantially exceeded that of its neighbors--New York (9.0 percent) and Pennsylvania (10.2 percent). However, 18 to 20 year olds represented 4.5 percent of New Jersey's population in 1970 and 5.2 percent in 1978; but, for the nation, this group accounted for 5.3 percent in 1970 and 5.8 percent in 1978. The national/state differential is due, in large part, to New Jersey being a net exporter of college students, historically and during the 1970's.

18-20 Years of Age Population

	Percent Change 1970-1978	Percent Share of U.S. 1970	1978
United States	17.8	100.0	100.0
Northeast Region	12.4	22.4	21.3
New York	9.0	8.2	7.6
New Jersey	18.3	3.0	3.0
Pennsylvaina	10.2	5.4	5.1

The overall impact of the changing age structure on New Jersey and the attendant implications for the labor force are not necessarily negative. Although in New Jersey there is a higher percentage of older persons and fewer 18-20 year olds than at the national level from which the labor force can be drawn, there has been an increase in the number of persons of labor force participation age. Therefore, from the labor force supply side, the demographic trends in New Jersey are promising. The increase in the prime working age years should heighten productivity and lower unemployment due to the experience gained by the labor force through the maturation process. And, as the bulges in the youth population decrease, the large adult bulge is favorable in terms of aggregate demand for housing, appliances, furniture and related products, thereby creating more employment opportunities.

In analyzing the impact of migration on the labor force, the changes in the population aged 18 to 44, compared to the other age groups, are perhaps the most important. As a result of the maturing of the baby boom generation, the population aged 18 to 44 will continue to increase in size into the near future. However, in the 1980s the number of young new entrants to the labor force will decline as the baby "bust" generation become young adults. The under 17 population of today declined most sharply in the Middle Atlantic States; in New Jersey, this decline was not quite as bad. In addition, the magnitude of growth to be experienced by any one area in this age bracket is, in part, a function of migration. As will be discussed later, this age group is highly mobile, relocating as it passes through several stages of the life cycle -- post-high school education and/or entrance into the labor force. The amount of educational and employment opportunity available in an area can have a significant impact on the direction, scale, and structure of migration.

POPULATION WITH INCOME BY EDUCATION

Table V-2 presents data on the resident noninstitutional population 25 years of age and over, with income by education for the State of New Jersey and other grographic areas of the United States, for the years 1970 and 1976. In this analysis, it is assumed that population with income is representative of the labor force, although, in fact, population with income can include those persons not in the labor force who receive income from other sources, such as trust funds, and can exclude persons in the labor force with no income, e.g., unpaid family workers or unemployed not receiving compensation.

As the data in Table V-2 show, there have been continued increases in the educational levels of the American population during the early part of the 1970s. Over the six years spanning 1970 to 1976, the proportion of the U.S. population 25 years old and over with at least a high school education rose from 52.3 percent to 63.7 percent. The percent of adults with 4 years of college or more also increased substantially at the national level -- from 11.9 percent in 1970 to 16.2 percent in 1976 -- and for most areas.

All areas showed an increase in the proportion of their populations with at least a high school diploma. The level of educational attainment varied considerably in 1976 among the four major geographic regions. The proportion of high school graduates reported in the West was substantially higher than that reported for the South. However, the percentage point increase since 1970 was greater in the South than in any other region and smallest in the West, implying a trend toward convergence among regions.

TABLE V - 2
RESIDENT NONINSTITUTIONAL POPULATION 25 YEARS OF AGE AND OVER
WITH INCOME BY EDUCATION
UNITED STATES, REGIONS, NEW ENGLAND DIVISION, MIDDLE ATLANTIC DIVISION,
NEW YORK, NEW JERSEY, PENNSYLVANIA
1970 AND 1976

(Numbers in Thousands)

	NUMBER						PERCENT DISTRIBUTION					
	Years of School Completed						Years of School Completed					
	Total 25+	Elementary	High School Total	High School 4 Yrs.	College Total	College 4 Yrs.+	Total 25+	Elementary	High School Total	High School 4 Yrs.	College Total	College 4 Yrs.+
						April 1, 1970						
United States	89,700	25,779	43,657	26,659	20,257	10,633	100.0	28.8	48.7	29.7	22.6	11.9
Northeast Region	22,614	6,330	11,369	6,994	4,915	2,810	100.0	28.0	50.3	30.9	21.7	12.4
New England	5,458	1,377	2,782	1,747	1,301	716	100.0	25.2	51.0	32.0	23.8	13.1
Middle Atlantic	17,156	4,953	8,588	5,247	3,615	2,093	100.0	28.9	50.1	30.6	21.1	12.2
New York	8,481	2,381	4,136	2,513	1,964	1,127	100.0	28.1	48.8	29.6	23.2	13.3
New Jersey	3,304	948	1,624	990	732	435	100.0	28.7	49.2	30.0	22.2	13.2
Pennsylvania	5,371	1,624	2,828	1,744	919	531	100.0	30.2	52.7	32.5	17.1	9.9
North Central Region	24,678	7,031	12,516	7,986	5,132	2,648	100.0	28.5	50.7	32.4	20.8	10.7
South Region	27,090	9,268	12,221	6,734	5,601	2,962	100.0	34.2	45.1	24.9	20.7	10.9
West Region	15,318	3,150	7,551	4,945	4,609	2,213	100.0	20.6	49.3	32.3	30.1	14.4
						March 1976						
United States	103,334	21,781	49,872	34,142	31,693	16,731	100.0	21.1	48.3	33.0	30.7	16.2
Northeast Region	24,487	4,947	12,320	8,308	7,219	4,192	100.0	20.2	50.3	33.9	29.5	17.1
New England	6,097	1,102	2,953	2,064	2,041	1,150	100.0	18.1	48.4	33.9	33.5	18.9
Middle Atlantic	18,391	3,846	9,368	6,244	5,178	3,043	100.0	20.9	50.9	34.0	28.2	16.5
New York	9,065	1,804	4,436	2,909	2,825	1,649	100.0	19.9	48.9	32.1	31.2	18.2
New Jersey	3,572	730	1,808	1,218	1,034	611	100.0	20.4	50.6	34.1	28.9	17.1
Pennsylvania	5,754	1,312	3,123	2,116	1,318	782	100.0	22.8	54.3	36.8	22.9	13.6
North Central Region	27,383	5,493	14,168	10,028	7,722	4,006	100.0	20.1	51.7	36.6	28.2	14.6
South Region	33,140	8,646	15,189	9,873	9,304	4,919	100.0	26.1	45.8	29.8	28.1	14.8
West Region	18,334	2,693	8,195	5,932	7,447	3,613	100.0	14.7	44.7	32.4	40.6	19.7

Notes: Numbers may not add due to rounding.

Source: 1970: U.S. Bureau of the Census, Census of Population: 1970, U.S. Government Printing Office, Washington, D.C., 1973.
1976: U.S. Bureau of the Census, Current Population Reports, Series P-20, No. 334, "Demographic, Social, and Economic Profile of States: Spring 1976," U.S. Government Printing Office, Washington, D.C., 1979.

The proportion of New Jersey's 25 years of age and over population with income with at least a high school education increased from 52.2 percent in 1970 (approximately the same as that for the U.S. as a whole) to 63.0 percent in 1976 (slightly less than that for the U.S.). The proportion for New Jersey with at least 4 years of college grew from 13.2 percent to 17.1 percent in this time period, both levels higher than those for the nation. The corresponding levels and patterns for the State of New York are very similar to those for New Jersey, although the proportion for New York with at least 4 years of college grew faster than that of New Jersey. In general, Pennsylvania's levels of attainment were lower than New Jersey's and showed a smaller gain in percentage points.

Although the educational attainments of New Jersey's population in 1976 appear reasonably competitive with other areas of the nation, this does not mean that there might not be some adverse, underlying migration trends at work. Changes in the educational level of an area's population can be caused by various factors, including the aging of the population, national and regional attitudes toward the perceived value of education, types of jobs available in a region, and migration. The latter is perhaps one of the more significant variables in explaining the differentials in changes of educational attainment between areas. A study of New Jersey's migration for the period 1965 to 1970 showed that "the educational level of the New Jersey population is shifting adversely as an outgrowth of migration." (Meltzer and Malz, 1976) The same report also found that "a 'brain drain' of significant proportions took place in the late 1960's." All this was at a time (1970) when the overall educational levels of New Jersey's population compared favorably with the U.S. as a whole and other Middle Atlantic States. The data in Table V-2 differ from that in the Meltzer and Malz study (they used Migrants by Age and Education, 1965-70 from the 1970 Census of Population Public Use Sample - 15% group, updates of which will not be available until after the 1980 census).

To further investigate this issue, data were compiled on the residence and migration of college students and are shown in Table V-3. Of the areas examined in the table, New Jersey exports the largest number of college students to other areas. When the New Jersey Commission on Financing Post-Secondary Education analyzed their survey results of selected New Jersey residents attending college in another state, it found that "too little attention had been paid to the capabilities of the students leaving the state and their reasons for leaving and too much attention had been called to the fact that a large portion of the students going on to college leave the state."

Forty-five percent of the respondents in the sample indicated the primary reason for leaving the state is that other institutions had a better academic reputation. Nearly 60 percent of those going to school in other states reported obtaining a majority of A's in high school; this compares to just under 50 percent for Rutgers, 26 percent at state colleges, 13 percent at the county colleges and 39 percent in the independent sector in New Jersey.

Additionally, it was found that only one in eight students indicated a preference to live in New Jersey after college graduation, although over 50 percent were undecided about where they would live. Two-thirds of the respondents who would not return to New Jersey cited the social environment, geography and climate of the state, or the absence of job opportunities as reasons for not returning. "This permanent outmigration represents a potential loss of educated

TABLE V-3
RESIDENCE AND MIGRATION OF COLLEGE STUDENTS
UNITED STATES, REGIONS, NEW ENGLAND DIVISION,
MIDDLE ATLANTIC DIVISION, NEW YORK, NEW JERSEY
AND PENNSYLVANIA
1975

(Numbers in Thousands)

	Fall 1975					
	Students Enrolled[1]	Student Residents[2]	Students Remaining[3]	Migration of Students		
				Out Of	Into	Net
United States	11,162.6	10,961.1	9,262.4	1,698.7	1,900.2	218.5
Northeast Region	2,483.4	2,644.4	2,082.1	562.3	401.3	-161.0
New England	708.9	683.7	518.3	165.5	190.7	25.2
Middle Atlantic	1,774.5	1,960.6	1,563.9	396.9	210.6	-186.2
New York	1,007.3	1,067.2	898.3	169.0	109.0	- 59.9
New Jersey	296.7	395.5	268.0	127.6	28.7	- 98.9
Pennsylvania	470.5	497.9	397.6	100.3	72.9	- 27.4
North Central Region	2,757.7	2,785.3	2,331.0	454.4	426.8	- 27.6
South Region	2,806.9	2,555.7	2,320.2	235.5	486.7	251.2
West Region	3,114.6	2,975.6	2,529.1	446.4	585.5	139.1

Notes: [1]"Students Enrolled" are students enrolled in the State.

[2]"Student Residents" are those with residence in the State, and studying either in or out of the State.

[3]"Students Remaining" are students studying in their home State.

Source: U.S. Department of Health, Education and Welfare, Education Division, National Center for Education Statistics, Digest of Education Statistics, 1976 Edition, U.S. Government Printing Office, Washington, D.C. 1977.

manpower in the state particularly if inmigration of educated manpower is not equivalent." (U.S. Department of Health, Education and Welfare, 1976)

However, New Jersey has heen a net exporter of college students since the 1950s and the magnitude, in terms of absolute numbers, does not appear to have increased significantly -- the rate of net exportation has been decreasing in recent years. The growth of the post-college age population in New Jersey, combined with the facts that educational levels in the state are higher than those nationally (as well as those of its neighbors) and that the rate of net exportation has been declining, indicate that this net exportation is not necessarily crippling the quality of the state's labor force. Outmigration for educational purposes need not be a permanent migration, nor have a negative impact. Persons may be receiving their education at the expense of other areas and may reduce the burden on New Jersey's economic sector to provide jobs for inexperienced youth.

LABOR FORCE CHARACTERISTICS

LABOR FORCE PARTICIPATION BY SEX[1]

As already noted, the growth in the labor force from 1970 to 1976 in all areas of the nation is, in part, due to the expansion of the population 18 to 44 years of age. However, the shifts in participation rates of people of both sexes in specific age groups may be more consequential than the absolute growth of the particular age group.

Table V-4 presents the growth of the noninstitutional working-age population (sixteen years of age and over) and the civilian labor force participation for 1970 and 1976 for the United States, regions, New Jersey and its surrounding areas.

While the U.S. population 16 years of age and over increased by 8.8 percent, the labor force increased by 21.1 percent. As can be seen from the table, although male labor force participation increased by 6.5 percent, the increase in female labor force participation (19.6 percent) accounted for more of the differential between population growth and labor force growth than the increase in male participation.

At the subnational level, differences in the growth of the labor force are due not only to differences in population growth, which as previously discussed is a function primarily of fertility and migration differentials, but

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[1]Although the data on labor force participation from the SIE are presented along with similar information from the 1970 decennial census, some of the trends implied may be overstated or understated. Such analytic problems arise because of known inconsistencies between labor force data collected in sample surveys. If the extent of such inconsistencies varies by area, then comparisons of trends between areas could be affected. Additionally, these data, in general, are not comparable to estimates based on the Current Population Survey due to different reference periods, differences in the major purpose of the survey, and differences in survey methodology. See section on Survey of Income and Education, Chapter IV.

TABLE V - 4

LABOR FORCE PARTICIPATION BY SEX
UNITED STATES, REGIONS, NEW ENGLAND DIVISION, MIDDLE ATLANTIC DIVISION,
NEW YORK, NEW JERSEY, PENNSYLVANIA
1970 AND 1976

(Numbers in Thousands)

	April 1, 1970						March 1976					
	Population 16 Years and Over			Percent in Civilian Labor Force			Population 16 Years and Over			Percent in Civilian Labor Force		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
United States	141,087	67,236	73,862	56.7	73.7	41.3	153,570	72,533	81,037	63.1	78.5	49.4
Northeast Region	34,731	16,260	18,470	57.7	75.8	41.8	36,230	16,955	19,275	62.4	78.4	48.4
New England	8,306	3,911	4,395	59.4	76.0	44.7	8,880	4,243	4,638	65.8	80.9	52.0
Middle Atlantic	26,425	12,350	14,075	57.2	75.7	40.9	27,350	12,712	14,637	61.3	77.6	47.3
New York	13,010	6,047	6,963	57.4	75.2	41.3	13,351	6,131	7,220	61.1	77.1	47.5
New Jersey	5,035	2,379	2,656	59.0	77.5	42.5	5,324	2,526	2,798	63.7	79.2	49.7
Pennsylvania	8,379	3,923	4,456	56.2	75.4	39.4	8,675	4,055	4,620	60.3	77.2	45.4
North Central Region	38,868	18,530	20,338	58.2	76.6	41.4	41,246	19,662	21,583	64.4	80.6	49.6
South Region	43,321	20,666	22,654	54.8	70.3	40.6	48,912	22,873	26,039	62.0	76.7	49.2
West Region	24,168	11,779	12,389	56.6	72.3	41.6	27,182	13,043	14,140	64.1	78.6	50.8

Note: Numbers may not add due to rounding.

Source: U.S. Bureau of the Census, Current Population Reports, Series P-20, No. 334, "Demographic, Social, and Economic Profile of States: Spring 1976," U.S. Government Printing Office, Washington, D.C., 1979.

also to the differences in labor force participation. And differences in labor force participation may influence or be influenced by migration differentials, as well as many other factors.

All areas across the nation exhibited an increase in labor force participation in total and of males and females. In general, the labor force participation rates of the Northeast and North Central Regions did not increase as fast as those of the nation, while the rates of the South and West Regions grew faster than the nation. The change in New Jersey's labor force participation rates in total and for males and females was greater than those of either New York or Pennsylvania.

Therefore, although there has been a negative net outmigration in the State of New Jersey during the 1970s, the combined effects of the growth of the 16 years of age and over population and of labor force participation rates have produced an increase of approximately 420,000 in the labor pool between the years 1970 and 1976.* Lack of an adequate labor supply in New Jersey during the 1970s would not appear to have been a problem to potential employers. On the contrary, the challenge for policy makers was to provide and encourage sufficient job opportunities for all those in the state's labor force.

The future of the labor force in New Jersey depends on population growth -- which, in large part, may be a function of migration -- as well as the future levels of labor force participation. The growth of the labor force is influenced both by the demand for labor, which reflects investment and employers' hiring decisions, and by several demographic trends, of which one of the most spectacular has been the rapid influx into the workforce of women, especially wives and mothers in their twenties and thirties. The changing pattern of retirement also affects labor force projections. In recent years participation rates for men 55 years old and over have declined, reflecting the growing attraction of early retirement. But, with the advent of legislation restricting mandatory retirement and the squeeze of inflation on retired workers who live on fixed pensions, participation rates could well increase for older workers. And, during the 1980s, the baby boom generation will be of prime working age; even with all other variables remaining the same, there will be an increase in the labor force. Thus, even if the net outmigration of the state's population continues at the present levels, which are not particularly significant and will be addressed shortly, the near term future prospect of New Jersey's labor force supply in terms of size may be one of moderate increase, if not substantial growth.

EMPLOYED PERSONS BY INDUSTRY[2]

The percent distribution of employed persons for the years 1970 and 1976 by geographic area are presented in Table V-5. The Census-SIE comparisons for industries show strong national growth in the proportion of persons employed in

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*420,000 according to SIE data (basis for Table V-4). CPS data indicate an increase of slightly more than 300,000. The discrepancy is due to differences in the surveys' structures and sampling variability.

[2]Caution should be exercised when interpreting industrial employment trends as implied by a comparison of 1970 Census data and SIE data. Decennial censuses historically have classified fewer persons as working in agriculture than is true for interview surveys, very often a function of the month of enumeration. Also, these data from the SIE, a household survey, differ from establishment survey data. See section on Survey of Income and Education in Chapter IV.

TABLE V - 5
EMPLOYED PERSONS BY INDUSTRY
UNITED STATES, REGIONS, NEW ENGLAND DIVISION, MIDDLE ATLANTIC DIVISION
NEW YORK, NEW JERSEY, PENNSYLVANIA
1970 AND 1976

	Total Number (000's)	(Percent Distribution) Agriculture, Forestry, & Fishing	Mining	Construction	Manufacturing	Transportation & Public Utilities	Wholesale & Retail Trade	Finance, Insurance, & Real Estate	Services	Government
					April 1, 1970					
United States	76,554	3.7	0.8	6.0	26.1	6.7	20.0	5.0	26.1	5.5
Northeast Region	19,271	1.4	0.3	5.3	29.4	6.8	19.3	6.0	26.5	5.1
New England	4,751	1.5	0.1	5.7	31.7	5.2	19.5	5.4	26.1	4.8
Middle Atlantic	14,520	1.4	0.4	5.1	28.8	7.4	19.3	6.2	26.2	5.2
New York	7,124	1.3	0.2	4.8	24.2	8.0	19.5	7.5	29.0	5.5
New Jersey	2,859	0.9	0.2	5.4	32.2	7.6	19.1	6.1	23.7	5.1
Pennsylvania	4,537	1.8	0.9	5.4	34.0	6.4	18.9	4.2	23.7	4.7
North Central Region	21,650	4.8	0.5	5.2	29.8	6.4	20.3	4.5	24.6	4.2
South Region	22,797	4.5	1.4	7.3	22.9	6.8	19.8	4.4	26.2	6.4
West Region	12,836	4.1	1.0	5.9	19.2	7.2	21.3	5.6	29.0	6.7
					March 1976					
United States	89,066	4.1	0.8	5.9	21.4	6.3	20.8	5.6	28.7	5.5
Northeast Region	20,425	1.8	0.3	4.7	24.9	6.7	20.3	6.1	29.7	5.5
New England	5,314	1.8	0.1	4.9	27.4	5.2	20.3	6.2	29.0	5.1
Middle Atlantic	15,111	1.8	0.4	4.7	24.1	7.2	20.3	6.0	29.8	5.7
New York	7,304	1.5	--	4.1	21.4	8.0	20.3	6.6	32.4	5.8
New Jersey	3,054	1.5	0.1	5.3	25.1	7.3	20.6	6.5	27.7	5.8
Pennsylvania	4,753	2.5	1.2	5.2	27.7	5.8	20.1	4.8	27.4	5.4
North Central Region	24,651	5.6	0.4	5.5	25.6	5.9	20.9	4.7	27.2	4.2
South Region	28,082	4.3	1.3	6.9	21.1	6.3	20.9	5.2	27.8	6.1
West Region	15,907	4.5	0.9	6.0	16.3	6.4	21.0	6.8	31.6	6.4

Note: Numbers may not add due to rounding.

Source: U.S. Bureau of the Census, Current Population Reports, Series P-20, No. 334, "Demographic, Social, and Economic Profile of States: Spring 1976, "U.S. Government Printing Office, Washington, D.C., 1979.

professional and related services, and substantial decreases in the percent employed in manufacturing industries. The decrease in the share of employment accounted for by manufacturing was geographically widespread and was particularly substantial in terms of loss in percentage points for the State of New Jersey (from 32.2 percent in 1970 to 25.1 percent in 1976) and Pennsylvania (from 34.0 percent to 27.7 percent). The smallest decreases were experienced by the South Region (a loss of 1.8 percentage points), the State of New York (a loss of 2.8 percentage points), and the West Region (a loss of 2.9 percentage points). The areas with largest losses had the highest percentage of persons employed in manufacturing in 1970, while the areas with the smallest losses had the lowest percentages.

The percentage of persons employed in Transportation and Public Utilities declined between 1970 and 1976 for all areas in Table V-5, with the exception of the New England Division and New York State where it remained the same. New Jersey's share dropped only slightly from 7.6 percent in 1970 to 7.3 percent in 1976, which varies little from that of the nation as a whole. With the exception of the West Region, all areas showed an increase in the proportion of persons employed in the Wholesale and Retail Trades sector. New Jersey exhibited the largest increase in percentage points (1.5 points from 1970 to 1976).

The proportion of persons employed in Finance, Insurance and Real Estate (FIRE) increased from 1970 to 1976 for all the areas with the exception of the Middle Atlantic Division as a whole and New York State. Although the proportion of persons in New Jersey employed in FIRE increased marginally by 0.4 percentage points, that for Pennsylvania increased by slightly more, at 0.6 percentage points.

All areas showed an increase in the percentage of persons employed in Services, with New Jersey exhibiting the highest increase, from 23.7 percent to 27.7 percent and the South Region showing the least increase from 26.2 percent to 27.8 percent.

Changes in the industrial distribution of employed persons in an area are a function of several factors at the national and local levels, which balance industry's demand for labor against cyclical or structural changes in the national economy and/or changes in the structure of an area's economy. Influencing the demand side is new or expanding industrial development, the decline or closing of an industry, and movement of industries from one area to another. The overall size of the national and local labor pool, persons changing their industry or location of employment, their skills or experience level, and their availability for specific types of work in different areas influence the supply size.

The data in Table V-5 seem to indicate that, although most areas exhibit patterns similar to the national trends, there was a redistribution from 1970 to 1976 of industries from one area to another. This, of course, is evidenced by the differentials between the pattern for the U.S. as a whole and areas within the U.S. Although New Jersey exhibited one of the largest decreases in the proportion of persons employed in manufacturing, in other sectors, particularly services, the state had among the highest gains. But, in general, there appears to be a tendency for the industrial structures of the areas encompassed by Table V-5 to converge toward that of the nation, i.e., less differentiation

among areas. If this is the case, it would appear that one possible force causing migration, i.e., certain unique industrial concentrations or specializations in particular geographic settings, may become less significant.

This shift in industrial structure in New Jersey is reflected in patterns of workforce migration. Although it will be analyzed in more detail subsequently (see Table V-13), suffice it to note here that the manufacturing workforce experienced a net outmigration of over 12,000 in the 1971 to 1973 period, while the finance, insurance and real estate sector experienced slight net inmigration. In general, there appears to be correspondence between the changing industrial composition of the state and patterns of workforce migration.

EMPLOYED PERSONS BY OCCUPATION

The well documented movement toward a white-collar and service labor force in the United States is shown by the 1970 to 1976 overall increase in the proportion of the work force in professional and service occupations and the corresponding decrease in the percentage employed in operative and craft jobs (Table V-6). This pattern was replicated by most areas for which data are provided in the table.

In comparison to its neighbors, New Jersey's proportion of persons employed as nonfarm managers and administrators increased the most, while the proportion of professional, technical, and kindred workers gained more than that of Pennsylvania but less than that of New York. On the other hand, the proportion employed as operative and craft workers dropped more in New Jersey than in New York, but less than in Pennsylvania.

These patterns and differences in patterns of changes in the industrail and occupational structure of employed persons may be caused by a combination of several factors. In terms of migration, it is difficult to assess the exact relationships between migration and industrial and occupational changes. Whether an industry moves into an area because of the inplace occupational structure of the area, or whether the occupational structure is affected by industrial development, or both cannot be explained by the data. Later in this report, data on New Jersey migrants by industry will be presented and analyzed. The interrelationship between industrial development and occupational structure changes, unfortunately, will still not be clear. However, there is a tendency for the industrial and occupational structure of an area's economy to reinforce each other. If New Jersey has the appropriate jobs it can attract those seeking employment in professional, managerial, etc. positions. But, the state will not attract manufacturing workers if the jobs are not present.

SUMMARY

The decline in New Jersey's population since 1970 has not adversely affected the size of the state's labor force. The population decrease, as will be discussed in the following section, is attributable to a not particularly significant net outmigration. At the same time, the aging of the population, particularly those born during the baby boom years, and the increase in labor force participation, especially of females, has resulted in an increasing labor force supply. The state's future labor force may differ from that in the past.

TABLE V - 6
EMPLOYED PERSONS BY OCCUPATION
UNITED STATES, REGIONS, NEW ENGLAND DIVISION, MIDDLE ATLANTIC DIVISION,
NEW YORK, NEW JERSEY, PENNSYLVANIA
1970 AND 1976

(Numbers in Thousands)

	Total Number	Professional, Technical, & Kindred Workers	Nonfarm Managers & Administrators	Sales Workers	Clerical Workers	Craft & Kindred Workers	Operatives, Including Transport	Nonfarm Laborers	Farm Workers	Service Workers
					April 1, 1970					
United States	76,554	14.8	8.3	7.1	18.0	13.9	17.6	4.5	3.1	12.8
Northeast Region	19,271	15.9	8.2	7.2	20.0	13.5	18.2	3.9	1.1	12.1
New England	4,751	16.6	8.5	6.8	18.6	14.0	18.8	3.8	1.0	12.1
Middle Atlantic	14,520	15.7	8.1	7.4	20.4	13.3	17.9	4.0	1.0	12.2
New York	7,124	16.7	8.5	7.5	22.4	12.2	15.1	3.6	1.0	13.0
New Jersey	2,859	16.1	8.8	7.7	20.2	13.7	18.6	3.8	0.6	10.7
Pennsylvania	4,537	13.8	7.0	7.0	17.3	14.9	21.8	4.9	1.4	12.0
North Central Region	21,650	13.8	7.7	6.9	17.4	14.1	18.8	4.3	4.3	12.7
South Region	22,797	13.6	8.4	6.9	16.4	14.3	18.4	5.1	3.7	13.1
West Region	12,836	17.0	9.4	7.6	18.7	13.3	13.4	4.5	3.1	13.3
					March 1976					
United States	89,066	15.6	10.8	6.1	17.5	12.9	15.0	4.8	3.3	13.9
Northeast Region	20,425	17.6	10.8	5.9	19.2	12.4	15.0	4.3	1.3	13.6
New England	5,314	17.9	10.9	5.8	17.6	13.0	15.7	4.8	1.0	13.5
Middle Atlantic	15,111	17.5	10.7	6.0	19.7	12.2	14.8	4.1	1.4	13.6
New York	7,304	18.8	11.3	5.8	21.4	11.2	13.0	3.6	1.3	13.8
New Jersey	3,054	17.9	11.8	6.6	19.5	12.4	14.5	4.2	0.9	12.2
Pennsylvania	4,753	15.1	9.3	5.8	17.3	13.7	17.8	4.9	1.9	14.2
North Central Region	24,651	14.3	9.8	5.8	16.6	13.5	16.1	4.6	5.1	14.2
South Region	28,082	14.1	11.0	6.1	16.7	13.4	16.1	5.4	3.5	13.8
West Region	15,907	17.6	12.1	6.9	18.3	12.0	11.3	4.8	3.1	13.9

Note: Numbers may not add due to rounding.

Source: U.S. Bureau of the Census, Current Population Reports, Series P-20, No. 334, "Demographic Social, and Economic Profile of States: Spring 1976," U.S. Government Printing Office, Washington, D.C., 1979.

It may be better educated and larger in size. There may be more females, and there may be fewer men over 55. The average age of the labor force will be increasing. There may be a more stable labor force as the surge of youth seeking their first jobs diminishes and as the labor force becomes more experienced. The industrial and occupational structure of the state may change to meet the demands and supply of the labor force and population.

The following section attempts to examine more closely the impact of migration on the labor force in New Jersey. In order to get a complete picture of the state's recent migration trends and the relationship to those of other areas, several aspects of the migration of the population will be discussed -- total netmigration, the origin and destination of migrants, and netmigration by age and sex. Because of data constraints, workforce migration data are used in lieu of labor force migration data in the analysis of movements of workers.[3] Throughout the text on workforce migration, comparisons will be made, where feasible, to population migration patterns.

MIGRATION OF THE RESIDENT POPULATION AND WORKFORCE

MIGRATION OF THE POPULATION

TOTAL NET MIGRATION OF THE RESIDENT POPULATION

Before examining the migration of the New Jersey labor force, it is useful to briefly outline the pattern of total netmigration of the resident population across the nation. In the recent past considerable attention has been paid to the post-1970 migration patterns, particularly the movement away from the Northeast and North Central Regions toward the South and West Regions. For New Jersey, the net flow out of the state has not been substantial during the 1970s, according to estimated data. What appears to have been happening as the decade has commenced is that while the magnitude of both the inmigration to and outmigration from the state has increased, outmigration has grown at a faster pace. But the overall magnitude of the net outmigration in the 1970s is much smaller than the positive netmigration of the 1960s. This appears to contradict the findings on workforce migration, to be discussed later in this chapter. This can be explained, in part, by the fact that the workforce data exclude the retirement and college populations, which are highly mobile groups.

Table V-7 displays the total netmigration of the resident population of the four regions of the nation, the two divisions of the Northeast Region, and the three states, including New Jersey, of the Middle Atlantic Division for the periods 1970-1975 and 1970-1977. Annual average netmigration rates for both time frames were calculated to determine whether the post-1975 pattern differed from the 1970-1975 one.

As is by now the conventional wisdom the South and West Regions of the nation experienced positive netmigration during the post-1970 period, while the

[3]Labor force refers to the number of workers living in an area plus the number of persons living in that area looking for work. Labor force data are by place of residence. Workforce refers to the number of persons working in an area, regardless of where they live.

TABLE V - 7
TOTAL NET MIGRATION OF THE RESIDENT POPULATION
UNITED STATES, REGIONS, NEW ENGLAND DIVISION, MIDDLE ATLANTIC DIVISION,
NEW YORK, NEW JERSEY, PENNSYLVANIA
1970-1975 AND 1970-1977

(Numbers in Thousands)

	April 1, 1970 Population	Number of Net Migrants		Annual Average[3] Net Migration Rate	
		1970-1975[2]	1970-1977	1970-1975	1970-1977
United States	203,302	2,454	3,185	0.23	0.22
Northeast Region	49,061	-726	-1,168	-0.28	-0.33
New England	11,847	56	35	0.09	0.04
Middle Atlantic	37,213	-781	-1,202	-0.40	-0.44
New York	18,241	-578	-863	-0.60	-0.65
New Jersey	7,171	-18	-67	-0.05	-0.12
Pennsylvania	11,801	-186	-272	-0.30	-0.32
North Central Region	56,590	-971	-1,271	-0.33	-0.30
South Region	62,813	2,664	3,390	0.81	0.74
West Region	34,838	1,487	2,234	0.81	0.88

Notes: Numbers may not add due to rounding.

[1]The data for the period 1970-1975 represent data for the period April 1, 1970 to July 1, 1975; and the data for the period 1970-1977 represent data for the period April 1970 to July 1977.

[2]The number of net migrants for the period 1970 to 1975 was calculated as follows:

$$NM_{1970\text{-}1975} = POP_{1975} - \left[POP_{1970} + \frac{3}{4}\left(B_{1970} - D_{1970}\right) + \sum_{t=1971}^{1974}\left(B_t - D_t\right) + \frac{1}{2}\left(B_{1975} - D_{1975}\right) \right]$$

where: B = Births
D = Deaths

[3]The annual average net migration rates were calculated as follows:

$$NMR = \left[\frac{NM_{t,\ t+x}}{POP_t} \right] \left[\frac{12}{X} \right] \cdot 100$$

where: NMR = Annual average net migration rate
NM = Number of net migrants for time period
POP = April 1, 1970 population
t = Base date = April 1, 1970
x = Number of months between base date and end date

Sources:

1. U.S. Bureau of the Census, Statistical Abstract of the United States: 1978. (99th edition.) Washington, D.C., 1978. Also 95th and 97th editions of the same publication.

2. U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 799, "Revised 1977 and Provisional 1978 Estimates of the Population of States and Components of Change," U.S. Government Pringing Office, Washington, D.C., 1979.

Northeast and North Central Regions experienced negative netmigration. The data, particularly the annual average netmigration rates, in Table V-7, seem to indicate that the net inmigration to the West Region increased in the post-1975 period, while the opposite pattern occurred in the South Region.

In the Northeast Region, only the New England Division as a whole showed positive netmigration. The North Central Region experienced negative netmigration very similar to that of the Northeast Region during 1970-1975 and 1970-1977, both in terms of absolute numbers and rates. However, the difference in average annual netmigration rates for the 5-year and 7-year period indicates that net outmigration may have worsened between 1975 and 1977 for the Northeast Region at a pace faster than that for the North Central Region. New Jersey fared better than the region and division in which it is encompassed, as well as the other two states in the Middle Atlantic Division, over both time periods.

Because the data for the post-1970 years in the table are based on estimates, the migration figures are subject to error and may be over or understated. But the general patterns should be reasonable. And, although New Jersey has not experienced positive netmigration since 1970, the annual average netmigration rate for the 1970 to 1977 period (-0.12 percent) was much lower than for its immediate neighbors -- New York (-0.65 percent) and Pennsylvania (-0.32 percent).

From various sets of independently developed population projections, (U.S. Census Bureau, U.S. Bureau of Economic Analysis and N.J. Office of Demographic and Economic Analysis) it appears that the patterns of migration exhibited during the post-1970 period, in general, could continue into the 1980s. Many of the projections were based on the 1970 to 1975 pattern, and did not incorporate information for the years after 1975. Additionally, they are baseline projections and do not incorporate any policy or intervention strategies. Furthermore, only the projections developed by the New Jersey Office of Demographic and Economic Analysis for the State of New Jersey take into consideration such exogenous, nontrend factors as the impact of casino gambling, the construction moratorium in the Pinelands, and development in the Hackensack Meadowlands. The projections can only serve as guidelines as to what could occur if the assumptions of the projection methodologies hold and the patterns of the recent past continue into the future. If these assumptions are valid, New Jersey may have more people move out of the state than into it in the short-term future and this would represent only a small part of the state's population base. It should be remembered that, even with this loss of population to migration, the labor force supply will probably not decline; the total number of persons between the ages of 25 and 54 will probably increase as the baby boom generation ages; and, labor force participation rates will probably continue to increase, if only slightly. Additionally, as this large post-World War II generation ages, a more experienced labor force may be residing in the state.

In the next few sections the origins and destinations of the state's migrants and their characteristics will be examined in an attempt to determine further the impact of migration on the state's labor force.

ORIGIN AND DESTINATION OF NEW JERSEY MIGRANTS

Where are New Jersey migrants coming from and going to? Data comparable in time frames to that in Table V-7 were unavailable for analyzing the origin and destination of New Jersey migrants. However, data were available for the 1969-1972 and 1975-1976 periods from the Bureau of the Census migration file developed from the matching of individual federal income tax files.[4] These data are summarized in Table V-8 by Regions, Divisions, New York and Pennsylvania to show where people were coming from and going to with respect to New Jersey.

The majority of New Jersey's inmigrants during both time periods were coming from the Northeast Region (63.1 percent in 1969-1972 and 60.6 percent in 1975-1976) and, in particular, from New York State (36.8 percent in 1969-1972 and 36.6 percent in 1975-1976). The share of New Jersey outmigrants going to other areas in the Northeast Region (36.5 percent in 1969-1972 and 36.9 percent in 1975-1976) was very similar to those leaving for states in the South Region (37.9 percent in 1969-1972 and 37.9 percent in 1975-1976). Pennsylvania (12.2 percent and 12.8 percent) and New York (14.4 percent and 15.8 percent) were the destination of most of New Jersey's outmigrants within the Northeast Region, while Florida (15.9 percent and 14.1 percent) was the recipient of most of the migrants to the South Region. Probably, a large part of the movement to Florida can be credited to the retirement age population.

The patterns of origins and destinations of New Jersey's migrants during 1969-1972 and 1975-1976 did not differ substantially. The bulk of the net inmigration to New Jersey originated from its neighboring states, and although there was a positive netmigration to the state from the Northeast Region, the negative netmigration from New Jersey to all the other regions of the nation offset this influx.

Later in this chapter the origin and destination of New Jersey's workforce migrants will be discussed and comparisons will be made between that data and Table V-8.

NET MIGRATION BY AGE AND SEX: NEW JERSEY

One way to examine the impact of migration on New Jersey's labor force is to consider the age and sex structure of New Jersey's migrants. For the post-1970 period, this can only be estimated. Table V-9 shows the results of an attempt to estimate netmigration by age and sex for the State of New Jersey for the periods 1970-1975 and 1975-1978. (Again, these time periods do not match those of the previous tables, but the purpose of presenting data for two time periods is to indicate whether the patterns differ substantially and the changes are increasing or decreasing at a faster or slower pace during the more recent past than in the early post-1970 years.) Unfortunately, the data are for netmigration, which does not show the magnitude of inmigration and outmigration.

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[4]The problem in comparing data for time periods of differing length should be recognized. The data for the period 1969-1972 will miss more return moves than that for 1975-1976.

TABLE V - 8
ORIGIN AND DESTINATION OF NEW JERSEY MIGRANTS
BY REGIONS, DIVISIONS, AND SELECTED STATES
1969-1972 AND 1975-1976

	ABSOLUTE NUMBERS						PERCENT DISTRIBUTION			
	1969-1972 Migration			1975-1976 Migration			1969-1972 Migration		1975-1976 Migration	
	Into NJ	Out of NJ	Net to NJ	Into NJ	Out of NJ	Net to NJ	Into NJ	Out of NJ	Into NJ	Out of NJ
TOTAL[1]	410,419	452,834	-42,415	150,600	198,684	-48,084	100.0	100.0	100.0	100.0
Northeast Region	259,062	165,365	93,697	91,274	73,400	17,874	63.1	36.5	60.6	36.9
New England	25,917	45,020	-19,103	10,199	16,721	-6,522	6.3	9.9	6.8	8.4
Middle Atlantic	233.145	120,345	112,800	81,075	56,679	24,396	56.8	26.6	53.8	28.5
New York	151,083	65,075	86,008	55,162	31,307	23,855	36.8	14.4	36.6	15.8
Pennsylvania	82,062	55,270	26,792	25,913	25,372	541	20.0	12.2	17.2	12.8
North Central Region	43,635	52,498	-8,863	14,871	20,876	-6,005	10.6	11.6	9.9	10.5
East North Central	33,715	39,841	-6,126	11,423	15,802	-4,379	8.2	8.8	7.6	8.0
West North Central	9,920	12,657	-2,737	3,448	5,074	-1,626	2.4	2.8	2.3	2.6
South Region	77,904	171,604	-93,700	32,877	75,390	-42,513	19.0	37.9	21.8	37.9
South Atlantic	57,003	138,253	-81,250	25,213	58,642	-33,429	13.9	30.5	16.7	29.5
Florida	12,374	67,991	-55,617	8,185	27,937	-19,752	3.0	15.0	5.4	14.1
East South Central	7,624	10,456	-2,832	2,509	4,928	-2,419	1.9	2.3	1.7	2.5
West South Central	11,588	20,737	-9,149	4,637	10,990	-6,353	2.8	4.6	3.1	5.5
Washington, D.C.	1,689	2,158	-469	518	830	-312	0.4	0.5	0.3	0.4
West Region	29,818	63,367	-33,549	11,578	29,018	-17,440	7.3	14.0	7.7	14.6
Mountain	6,246	22,287	-16,041	3,098	9,782	-6,684	1.5	4.9	2.1	4.9
Pacific	23,572	41,080	-17,508	8,480	19,236	-10,756	5.7	9.1	5.6	9.7
California	18,258	33,917	-15,659	6,519	15,730	-9,211	4.4	7.5	4.3	7.9

Notes: Numbers may not add due to rounding.
[1]The total numbers represent the sum of the columns and do not include foreign, uncoded, and unmatched data.

Source: U.S. Bureau of the Census's migration file developed from the matched 1969-1972 and 1975-1976 individual Federal income tax files.

TABLE V - 9
NET MIGRATION OF THE RESIDENT CIVILIAN POPULATION BY AGE AND SEX
NEW JERSEY
1970-1975 AND 1975-1978

(Numbers in Thousands)

	POPULATION July 1, 1970			NET MIGRATION July 1, 1970-July 1, 1975			ANNUAL AVERAGE NET MIGRATION RATE July 1, 1970-July 1, 1975		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
Under 15	1,998.0	1,019.2	978.8	14.9	7.5	7.5	0.15	0.15	0.15
15-19	602.6	300.4	302.2	-37.0	-23.7	-13.3	-1.23	-1.58	-0.88
20-24	486.5	218.9	267.6	-49.5	-36.5	-13.0	-2.03	-3.33	-0.97
25-34	860.1	408.7	451.4	82.8	60.9	21.9	1.93	2.98	0.97
35-54	1,794.4	862.9	931.5	27.5	19.8	7.7	0.31	0.46	0.17
55-64	696.2	331.2	364.9	-13.6	-2.7	-10.8	-0.39	-0.16	-0.59
65 and over	695.7	284.7	411.1	-20.5	-11.7	-8.8	-0.59	-0.82	-0.43
	July 1, 1975			July 1, 1975-July 1, 1978			July 1, 1975-July 1, 1978		
Under 15	1,791.8	915.4	876.4	-2.3	-1.3	-1.0	-0.04	-0.05	-0.04
15-19	675.0	338.3	336.7	-37.7	-23.5	-14.2	-1.86	-2.32	-1.41
20-24	551.9	262.5	289.3	-53.2	-38.2	-14.9	-3.21	-4.85	-1.72
25-34	1,025.5	495.1	530.5	34.0	25.0	9.0	1.11	1.68	0.57
35-54	1,749.6	842.8	906.8	8.6	6.8	1.8	0.16	0.27	0.07
55-64	757.5	358.7	398.8	-13.7	-3.3	-10.5	-0.60	-0.31	-0.88
65 and over	764.9	305.1	459.8	-19.4	-11.0	-8.5	-0.85	-1.20	-0.62

Note: Numbers may not add due to rounding.

Source: Office of Demographic and Economic Analysis estimates. See Chapter IV and Appendix A-1.

Migration is often induced by transitions from one stage of the life cycle to another. Migration rates vary sharply, and with nearly universal regularity, according to age groups. As can be seen from Table V-9, the most mobile subgroup of New Jersey's total population are males aged 20 to 24 years, with the third most mobile group being the males aged 15 to 19 years. This reflects the changes, adjustments, and initial commitments that accompany early adulthood. Large numbers of these people are completing their formal schooling, entering the labor market for the first time, serving in the armed forces, and marrying and forming families. These activities predispose people to move frequently until they are well into their thirties. (DeVanzo, 1978) This latter statement appears consistent with the data in the table for males aged 25 to 34, which also showed high rates of netmigration, but are in a direction reverse to those for the 15 to 19 and 20 to 24 year olds. It cannot be determined from the data whether the positive netmigration of the 25 to 34 year olds represent a return migration of the 15 to 24 year olds who out-migrated in previous time periods, or whether they represent new migrants, or both.

After the flurry of migration by males in their early twenties passes its peak, the migration rates for those over 35 years of age generally decline with age. However, the rates increase again at retirement age, as males leave the labor force and relocate in other areas for nonemployment related reasons. New Jersey's overall net outmigration position is accounted for primarily by these two groups -- those in their early twenties and those exiting the labor force -- both of which show large outflows from the state.

The patterns of netmigration by age for males are, in general, paralleled by those for females, although the magnitudes of netmigration for the female population are not as great as those for males, which was also the pattern for the 1965-1970 period. Due to the increase in total netmigration during the 1975 to 1978 period and because of the algorithms of the method used to develop the estimates for this period, the data indicate that, for groups with negative net-migration in the earlier time span, the rates of negative netmigration increased. And, for the groups with positive netmigration in 1970 to 1975, the rates de-creased. In the future, as female labor force patterns converge toward those of males, the magnitude of female migration may more closely replicate that of males.

The data in Table V-9 show that, since 1970, New Jersey has had a net loss of population due to migration in those ages which can serve to rejuvenate the state's labor force. At the same time, the state experienced a net inmigration of 25-34 and 35-54 year olds; this could constitute an influx to the labor force of experienced persons drawn to the state because of employment opportunities. As pointed out elsewhere in this chapter, the migration of young adults is, in part, tied to the seeking of post-high school education, and New Jersey has been a net exporter of college students. Whether these persons are returning after their education and/or after they have had some work experience, cannot be dis-cerned from the data available.

As we proceed through the decade of the 1980s, it is possible that these basic migrational tendencies will persist in the absence of any unforeseen and/or dramatic social and economic shifts. Insights into this conclusion may be secured from a more detailed analysis of workforce migration.

MIGRATION OF THE WORKFORCE

In reviewing the following analyses of the data on workforce migration, two items should be kept in mind. The data in Tables V-10 through V-14 refer to the workforce covered by Social Security and the migration of that group, as opposed to the resident population data presented in previous tables. The major difference lies in that workforce refers to the persons employed in an area regardless of their residence, while population refers to the residents of that area and labor force refers to residents of that area who are in the labor force, either employed or unemployed. Additionally, the time periods examined in the following analyses are not consistent with those of the previous discussions.[5] Given these constraints on comparability, an attempt will be made to incorporate into the following analyses comparisons between the findings of the previous tabulations and those in Tables V-10 through V-14.

ORIGIN AND DESTINATION OF NEW JERSEY WORKFORCE MIGRANTS

Table V-10 shows that between 1970 to 1973 and 1973 to 1976, the direction of workforce netmigration reversed from 10,300 to -19,300. This change was associated with a decline of 28,700 in gross inmigration and an increase of less than 1,000 in gross outmigration. The data may be biased if more workers in one CWHS file are unclassified by state than another file. But even allowing for such a bias, the data suggest that the changing netmigration for New Jersey resulted more from declining inmigration than increasing outmigration. In any case, the gross flows are of limited magnitude and net flows, even less so.

However, this pattern of declining inmigration to New Jersey was not paralleled for all areas between the two periods covered in Table V-10. The data show that there was an increase in inmigration to New Jersey from Florida, the West South Central Division, the West Region, the Pacific Division, and California. And most of these same areas were the recipients of less of New Jersey's workforce during 1973 to 1976 than 1970 to 1973.

The data in Table V-10, which represent a compilation on the origin and destination of New Jersey workforce migrants for the time periods 1970 to 1973 and 1973 to 1976, can be compared, with the constraints of the data, to the data in Table V-8. From the percent distribution columns in these two tables, it can be seen that the overall patterns of interchange of migrants between New Jersey and other areas is very similar for total migrants (Table V-8) and workforce migrants (Table V-10). The greatest amount of workforce mobility occurred within the Northeast Region and represented over 50 percent of the movement in both directions for the two time spans. Within the region, over half of this interchange was between New Jersey and the State of New York. The pattern of workforce migration from New Jersey to other areas in the region is similar to that of total migration. In terms of inmigration to New Jersey, there is less similarity between the workforce and total migration components. This can be explained, in part, by the variation in the data series. Table V-10 does not include the college or retirement populations, which are highly mobile groups.

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[5]See Appendix A-2 for discussion of other differences.

TABLE V - 10
ORIGIN AND DESTINATION OF NEW JERSEY WORKFORCE[1] MIGRANTS
BY REGIONS, DIVISIONS, AND SELECTED STATES
1970-1973 AND 1973-1976

(Numbers in Thousands)

	ABSOLUTE NUMBERS						PERCENT DISTRIBUTION			
	1970-1973 Migration			1973-1976 Migration			1970-1973 Migration		1973-1976 Migration	
	Into NJ	Out of NJ	Net to NJ	Into NJ	Out of NJ	Net to NJ	Into NJ	Out of NJ	Into NJ	Out of NJ
TOTAL[2]	229.0	218.7	10.3	200.3	219.6	-19.3	100.0	100.0	100.0	100.0
Northeast Region	150.3	119.5	30.8	124.5	113.4	11.1	65.6	54.6	62.2	51.6
New England	15.3	15.6	-0.3	14.9	19.3	-4.4	6.7	7.1	7.4	8.8
Middle Atlantic	135.0	103.9	31.1	109.6	94.1	15.5	59.0	47.5	54.7	42.9
New York	90.4	71.0	19.4	76.1	61.5	14.6	39.5	32.5	38.0	28.0
Pennsylvania	44.6	32.9	11.7	33.5	32.6	0.9	19.5	15.0	16.7	14.8
North Central Region	23.1	23.0	0.1	22.9	24.6	-1.7	10.1	10.5	11.4	11.2
East North Central	17.6	16.9	0.7	17.6	19.3	-1.7	7.7	7.7	8.8	8.8
West North Central	5.5	6.1	-0.6	5.3	5.3	0.0	2.4	2.8	2.6	2.4
South Region	40.7	52.8	-12.1	36.8	59.2	-22.4	17.8	24.1	18.4	27.0
South Atlantic	25.8	40.7	-14.9	24.2	42.1	-17.9	11.3	18.6	12.1	19.2
Florida	6.3	20.9	-14.6	7.5	17.4	-9.9	2.8	9.6	3.7	7.9
East South Central	5.5	3.4	2.1	4.6	6.6	-2.0	2.4	1.6	2.3	3.0
West South Central	6.1	6.6	-0.5	6.2	8.6	-2.4	2.7	3.0	3.1	3.9
Washington, D.C.	3.3	2.1	1.2	1.8	1.9	-0.1	1.4	1.0	0.9	0.9
West Region	14.9	23.4	-8.5	16.1	22.4	-6.3	6.5	10.7	8.0	10.2
Mountain	3.1	5.1	-2.0	2.4	6.3	-3.9	1.4	2.3	1.2	2.9
Pacific	11.8	18.3	-6.5	13.7	16.3	-2.4	5.2	8.4	6.8	7.3
California	9.8	16.0	-6.2	11.6	14.0	-2.4	4.3	7.3	5.8	6.4

Notes: Numbers may not add due to rounding.

[1]Data for an area's workforce represent workers who work in that area regardless of where they live. Persons covered include workers whose participation in the Social Security program is mandatory -- employees in non-farm industries, certain farm employees, most domestic employees who work on a regular basis, and federal employees not covered by the Federal Retirement System; and those whose coverage is elective -- ministers, self-employed persons, and state and local government workers.

[2]Total numbers represent the sum of the columns and excludes the military.

Source: Bureau of Economic Analysis, Social Security Continuous Work History Sample (1%), First Quarters of 1970-73-76.

The South Region was the recipient of and origin of the second largest proportion of members of New Jersey's workforce. And, Florida was the destination of about one-third of these migrants. The proportions for total migrants (Table V-8) leaving New Jersey for the South are higher than those for workforce migrants (Table V-10) primarily due to the mobility of the retirement population being reflected in the tabulations of Table V-10.

As with the data for total migrants, there was negative netmigration of the workforce migrants between New Jersey and the North Central and West Regions, but not to as large an extent as that to the South Region.

It is difficult to foresee any substantial shifts in these patterns over the next decade, particularly since the changes of the 1970s were limited in scope and magnitude.

WORKFORCE MIGRATION BY RACE AND SEX

The time span of analysis on state workforce migration by race and sex is limited to the period 1971 to 1973 as shown in Table V-11. And, only data on netmigration by age and sex for two groups of regions for two time periods were readily available. Caution should be exercised when examining this data due to the small magnitude of the numbers.

At the regional level, the Southern-Western Regions gained 320,000 workers (on a net basis) from the Northern-Central Regions during the 1973 to 1976 period. Although the net inflow in 1973-76 was large, it was less than in 1970-73. The net inflow of workers to the Southern-Western Regions consisted of both men and women. For both races, the inflows of men were less than in 1970-1973. For both races, the inflows of women were about the same as in 1970-73. (See Renshaw, Friedenberg and Levine, 1978 for more detailed data and discussion by metropolitan and nonmetropolitan areas within the larger regions.)

For the period 1971 to 1973 the workforce outmigration from New Jersey only very slightly offset the inmigration, and was accounted for by a slight surplus of white male outmigrants over white male inmigrants (-2,500). All the other groupings for the State of New Jersey show very slight positive netmigration, with the netmigration of white females (800) being very similar to that for black females (700). In this time period, New Jersey fared better than either New York, which showed a much larger magnitude of total negative netmigration (as well as negative netmigration for all groupings), or Pennsylvania, which also experienced a greater degree of negative netmigration.

The data in Table V-11 are very difficult to compare with that of Table V-9 (Net Migration of the Resident Civilian Population by Age and Sex) due to inconsistencies in time periods and coverage. The noncoverage of the nonworking population, in particular college students and retirees, two groups which are highly mobile and have had an important negative impact on New Jersey's migration, imposes limitations to direct comparisons. Additionally, the short time period examined in Table V-11 was prior to the recessionary period, which is encompassed in Table V-9. Although Table V-11 shows only a slight total negative netmigration, it does indicate that, if the pattern of migration by race and sex from 1971 to 1973 continues, New Jersey could suffer from a slight net outmigration of white male workers.

TABLE V - 11
WORKFORCE[1] MIGRATION BY RACE AND SEX
SELECTED AREAS (1970-1973 AND 1973-1976)[2] AND SELECTED STATES (1971-1973)[3]

(Numbers in Thousands)

	NET MIGRATION				1971-1973								
	Northern-Central Regions		Southern-Western Regions		New York			New Jersey			Pennsylvania		
	1970-1973	1973-1976	1970-1973	1973-1976	Into NY	Out of NY	Net to NY	Into NJ	Out of NJ	Net to NJ	Into PA	Out of PA	Net to PA
TOTAL	-400.9	-319.8	400.9	319.8	349.4	423.0	-73.6	194.7	195.0	-0.3	195.8	216.9	-21.2
Males	-275.1	-191.7	275.1	191.7	233.8	278.0	-44.1	133.5	135.4	-1.9	143.0	150.6	-7.6
White	-261.9	-183.3	261.9	183.3	205.1	241.6	-36.4	115.8	118.3	-2.5	129.8	138.8	-9.1
Black[4]	-13.2	-8.4	13.2	8.4	22.9	28.4	-5.5	14.4	14.2	0.2	11.5	10.4	1.1
Other					5.8	8.0	-2.2	3.3	2.9	0.4	1.8	1.4	0.4
Females	-125.8	-128.1	125.8	128.1	115.6	145.2	-29.7	61.2	59.6	1.7	52.8	66.4	-13.6
White	-119.2	-119.8	119.2	119.8	98.9	125.0	-26.1	52.6	51.8	0.8	47.1	60.4	-13.3
Black[4]	-6.6	-8.3	6.6	8.3	13.9	17.5	-3.6	7.3	6.6	0.7	5.1	5.7	-0.6
Other					2.7	2.8	-0.1	1.3	1.2	0.1	0.7	0.4	0.3
	PERCENT DISTRIBUTION												
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0		100.0	100.0		100.0	100.0	
Males	68.6	59.9	68.6	59.9	66.9	65.7		68.6	69.5		73.0	69.4	
White	65.3	57.3	65.3	57.3	58.7	57.1		59.5	60.7		66.3	64.0	
Black[4]	3.3	2.6	3.3	2.6	6.5	6.7		7.4	7.3		5.8	4.8	
Other					1.7	1.9		1.7	1.5		0.9	0.6	
Females	31.4	40.1	31.4	40.1	33.1	34.3		31.4	30.6		26.9	30.6	
White	29.7	37.5	29.7	37.5	28.3	29.5		27.0	26.6		24.0	27.8	
Black[4]	1.6	2.6	1.6	2.6	4.0	4.1		3.7	3.4		2.6	2.6	
Other					0.8	0.7		0.7	0.6		0.3	0.2	

Notes: Numbers may not add due to rounding.
[1]See footnote 1, Table V - 10 for definition of workforce data.
[2]Only net migration data by race and sex for 1970-1973 and 1973-1976 were available for two large areas of the nation. The Northern-Central Regions represent the Northeast and North Central Regions and the Southern-Western Regions represent the South and West Regions.
[3]For the Selected States migration data by race and sex were available only for the time period 1971-1973.
[4]For the regions, the numbers and percents for Black and for both Black and Other.

Sources: 1. 1970-1973 and 1973-1976: Bureau of Economic Analysis. Social Security Continuous Work History Sample (1%).
2. 1971-1973: Bureau of Economic Analysis, Social Security Continuous Work History Sample (10%), First Quarters of 1971 and 1973.

WORKFORCE MIGRATION BY AGE

Table V-12 shows data on workforce migration by age 1971 to 1973 for New York, New Jersey and Pennsylvania. Caution should be exercised when examining this data due to the small magnitude of the numbers. The median age of outmigrants from New Jersey at 34.0 years was slightly higher than that for inmigrants to the state at 33.6 years. New York exhibited a similar pattern with the median age of outmigrants being 33.7 years and of inmigrants being 33.5 years. On the other hand, Pennsylvania had a higher median age for inmigrants (33.9 years) than outmigrants (32.6 years).

The data in Table V-12 show that one of the most mobile group of persons in the workforce correspond to the data in Table V-9 in terms of direction (positive) and age group (25 to 34 year olds). The data in Table V-12 also show that there was a very slight negative netmigration for the under 25 years of age groups in total (-600), which parallels, in terms of direction, the 15 to 24 years of age groups for both of the time periods examined in Table V-9. And, when the 35-54 and 55-64 years of age groups are combined, the direction of total netmigration was negative for both the civilian population in the two time periods of Table V-9 and the workforce of Table V-12.

As was the case in attempting to compare Table V-11 with Table V-9, it is not easy to make direct comparisons between Table V-12 and Table V-9, due to differences in time periods and coverage. However, both tables show positive netmigration for the 25 to 34 year olds. This may indicate an inflow of persons to New Jersey's population and workforce of those persons who have completed their post-high school education and/or obtained some work experience. This conclusion does not correspond directly to that drawn from the survey undertaken by the New Jersey Commission on Financing Post-Secondary Education -- i.e., that only one in eight students indicated a preference to live in New Jersey after college graduation. It must be remembered that several factors cause these discrepancies. The commission's findings were based on students' perceived plans, which can differ from what they actually do. Also, data are unavailable which would be similar to that in Tables V-9, V-11, and V-12 and which would show whether the positive migration of the 25 to 34 year olds in one time period is the result of the return of the 15 to 24 year olds who left the state in a previous time period. The turnaround from net outmigration of the 15 to 24 year olds to net inmigration of the 25 to 34 year olds represents a combination of occurrences -- the return of previous New Jersey residents or workers to the state who left for educational and/or employment purposes, and an inmigration of persons who never before lived in the state.

The net outmigration of the workforce under 25 years of age, if maintained, could present a serious public policy issue, particularly since the maturation of the baby bust in the 1980s will further reduce the number of entry level workers in the labor force. The combination of these two factors could have both beneficial and negative aspects. On the positive side, there will be less of a need to secure adequate employment opportunities for younger, particularly minority, unskilled workers. On the negative side, some industries may desire a young workforce.

TABLE V - 12
WORKFORCE[1] MIGRATION BY AGE[2]
NEW YORK, NEW JERSEY, PENNSYLVANIA
1971-1973

(Numbers in Thousands)

	NEW YORK				NEW JERSEY				PENNSYLVANIA			
	1971 Covered Workforce	Migration Into NY	Migration Out of NY	Migration Net to NY	1971 Covered Workforce	Migration Into NJ	Migration Out of NJ	Migration Net to NJ	1971 Covered Workforce	Migration Into PA	Migration Out of PA	Migration Net to PA
TOTAL	6,626.6	349.3	423.2	-73.9	2,329.2	194.7	195.1	- 0.4	3,633.7	195.9	217.1	-21.2
Under 19	26.4	1.5	1.9	- 0.4	11.2	1.0	0.9	0.1	19.4	0.7	1.0	- 0.3
19-21	304.1	25.3	29.9	- 4.6	132.2	14.8	15.1	- 0.3	205.2	13.5	18.1	- 4.6
22-24	462.0	41.6	50.9	- 9.3	167.0	23.0	23.4	- 0.4	269.7	22.1	28.8	- 6.8
25-34	1,578.3	121.0	144.2	-23.2	520.4	66.0	63.5	2.6	788.1	67.9	74.9	- 7.0
35-54	2,626.3	123.3	148.9	-25.6	944.6	69.4	71.2	- 1.8	1,441.5	70.6	72.8	- 2.2
55-64	1,137.3	30.2	38.6	- 8.4	400.7	16.9	17.5	- 0.6	657.2	17.8	17.8	--
65+	486.9	6.1	8.5	- 2.5	151.0	3.5	3.3	0.2	249.5	3.2	3.5	- 0.2
Unclassified	5.3	0.3	0.3	--	2.1	0.1	0.2	- 0.1	3.1	0.1	0.2	- 0.1
Median Age		33.5	33.7			33.6	34.0			33.9	32.6	
	PERCENT DISTRIBUTION											
TOTAL	100.0	100.0	100.0		100.0	100.0	100.0		100.0	100.0	100.0	
Under 19	0.4	0.4	0.4		0.5	0.5	0.5		0.5	0.4	0.5	
19-21	4.6	7.2	7.1		5.7	7.6	7.7		5.6	6.9	8.3	
22-24	7.0	11.9	12.0		7.2	11.8	12.0		7.4	11.3	13.3	
25-34	23.8	34.6	34.1		22.3	33.9	32.5		21.7	34.7	34.5	
35-54	39.6	35.3	35.2		40.6	35.6	36.5		39.7	36.0	33.5	
55-64	17.2	8.6	9.1		17.2	8.7	9.0		18.1	9.1	8.2	
65+	7.3	1.7	2.0		6.5	1.8	1.7		6.9	1.6	1.6	
Unclassified	0.1	0.1	0.1		0.1	0.1	0.1		0.1	0.1	0.1	

Notes: Numbers may not add due to rounding.
[1]See footnote 1, Table V - 10 for definition of workforce data.
[2]Age is as of 1973.

Source: Bureau of Economic Analysis, Social Security Continuous Work History Sample (10%), First Quarters of 1971 and 1973.

WORKFORCE MIGRATION BY INDUSTRY

The restructuring of the economy in the post-1970 period -- an increasing representation of nonmanufacturing jobs, particularly in the service sectors, and a decreasing share of manufacturing jobs -- is exemplified for the three Middle Atlantic States by the workforce migration data shown in Table V-13. With a slowing or decline in growth in the manufacturing sector, there was a concurrent net outmigration of those persons employed in manufacturing jobs. From 1971 to 1973, of the three states New Jersey experienced the greatest net outmigration of such workers (-12,200). However, with the exception of those persons employed in the wholesale and retail trade sectors, all other sectors showed a positive netmigration. In New York, all sectors had a negative netmigration for the time period and in Pennsylvania, only the construction and finance, insurance and real estate sectors exhibited positive netmigration. These latter two sectors in New Jersey experienced the highest levels, albeit slight, of net inmigration. Very high levels of "unclassified" migration in all three states, if not distributed randomly could bias the analysis.

The trends in Table V-13 are comparable to those in Table V-5, where it was found that New Jersey exhibited one of the largest decreases in the proportion of persons employed in manufacturing. It is to be expected that with a loss of resident jobs in a sector, there would be a concurrent loss of workforce employed in that sector.

WORKFORCE MIGRATION BY WAGE CLASS

Data on workforce migration by wage class from 1971 to 1973 for New York, New Jersey, and Pennsylvania are shown in Table V-14. All of the States exhibited a higher median wage for inmigrants than outmigrants; however, this is due in part, of course, to the fact that the dollar amount for inmigrants are as of 1973. When the national city average consumer price indexes (1967= 100) for 1971 (121.3) and 1973 (133.1) are applied to the appropriate median wages, the median wages become:

	1967 Dollars	
	Inmigrants	Outmigrants
New York	$5,782	$4,872
New Jersey	5,678	5,000
Pennsylvania	5,878	4,697

From the above data it can be seen that the median wage of New Jersey's inmigrants was 13.6 percent higher than that for outmigrants. The equivalent figures for New York and Pennsylvania are 18.7 percent and 25.1 percent respectively.

For all three states, the largest proportion of the 1971 covered workforce were in the $4,000 to $5,999 wage class; the largest proportion of inmigrants were in the $10,000 to $14,999 wage class; and, the largest proportion of outmigrants were in the under $2,000 wage class. In all cases, New Jersey's shares for these groups were higher than those for New York and lower than those for Pennsylvania.

TABLE V - 13
WORKFORCE[1] MIGRATION BY INDUSTRY
NEW YORK, NEW JERSEY, PENNSYLVANIA
1971-1973

(Numbers in Thousands)

	NEW YORK				NEW JERSEY				PENNSYLVANIA			
	1971 Covered Workforce	Migration Into NY	Migration Out of NY	Migration Net to NY	1971 Covered Workforce	Migration Into NJ	Migration Out of NJ	Migration Net to NJ	1971 Covered Workforce	Migration Into PA	Migration Out of PA	Migration Net to PA
TOTAL	6,626.4	349.5	422.9	-73.4	2,329.1	194.7	194.9	- 0.3	3,633.5	196.1	216.9	-20.8
Agriculture	11.0	0.4	1.0	- 0.6	5.5	0.4	0.4	--	9.0	0.5	0.6	- 0.1
Mining	11.3	1.2	1.6	- 0.5	2.7	0.2	0.1	0.1	40.6	1.5	2.0	- 0.5
Construction	244.5	17.9	19.4	- 1.5	98.1	12.9	11.6	1.3	171.0	19.8	15.6	4.2
Manufacturing	1,704.7	101.0	111.3	-10.3	792.6	58.5	70.7	-12.2	1,382.2	62.3	68.5	- 6.2
Transportation & Public Utilities	486.2	21.9	27.9	- 5.9	144.2	10.6	10.1	0.5	212.7	19.3	12.6	- 3.3
Wholesale & Retail Trade	1,380.7	76.2	110.7	-34.4	515.8	50.5	51.6	- 1.1	821.2	43.0	58.4	-15.4
Finance, Insurance, & Real Estate	571.9	30.0	45.3	-15.3	110.3	10.1	9.0	1.2	179.1	12.9	11.0	1.9
Services	1,803.8	76.9	95.4	-18.5	521.2	36.1	36.0	0.1	680.2	32.7	41.9	- 9.2
Government	385.4	6.6	7.7	- 1.1	129.4	4.6	3.8	0.8	121.7	2.3	5.1	- 2.8
Unclassified	27.0	17.3	2.7	14.7	9.4	10.9	1.7	9.2	16.0	11.7	1.1	10.6
					PERCENT DISTRIBUTION							
TOTAL	100.0	100.0	100.0		100.0	100.0	100.0		100.0	100.0	100.0	
Agriculture	0.2	0.1	0.2		0.2	0.2	0.2		0.2	0.3	0.3	
Mining	0.2	0.3	0.4		0.1	0.1	0.1		1.1	0.8	0.9	
Construction	3.7	5.1	4.6		4.2	6.6	6.0		4.7	10.1	7.2	
Manufacturing	25.7	28.9	26.3		34.0	30.0	36.3		38.0	31.8	31.6	
Transportation & Public Utilities	7.3	6.3	6.6		6.2	5.4	5.2		5.9	4.7	5.8	
Wholesale & Retail Trade	20.8	21.8	26.2		22.1	25.9	26.5		22.6	21.9	26.9	
Finance, Insurance, & Real Estate	8.6	8.6	10.7		4.7	5.2	4.6		4.9	6.6	5.1	
Services	27.2	22.0	22.6		22.4	18.5	18.5		18.7	16.7	19.3	
Government	5.8	1.9	1.8		5.6	2.4	1.9		3.3	1.2	2.4	
Unclassified	0.4	4.9	0.6		0.4	5.6	0.9		0.4	6.0	0.5	

Notes: Numbers may not add due to rounding.
[1]See footnote 1, Table V - 10 for definition of workforce data.

Source: Bureau of Economic Analysis, Social Security Continuous Work History Sample (10%), First Quarters of 1971 and 1973.

TABLE V - 14
WORKFORCE[1] MIGRATION BY WAGE CLASS[2]
NEW YORK, NEW JERSEY, PENNSYLVANIA
1971-1973

(Numbers in Thousands)

	NEW YORK			NEW JERSEY			PENNSYLVANIA		
	1971	Migration		1971	Migration		1971	Migration	
	Covered Workforce	Into NY	Out of NY	Covered Workforce	Into NJ	Out of NJ	Covered Workforce	Into PA	Out of PA
TOTAL	6,626.4	349.5	423.2	2,329.1	194.7	194.9	3,633.9	195.8	217.1
Under $2,000	1,041.0	38.5	79.7	400.5	22.9	37.5	625.4	21.3	44.8
$ 2,000- 3,999	895.7	39.0	62.7	323.6	21.5	26.9	589.5	22.5	32.6
$ 4,000- 5,999	1,143.5	51.6	72.3	414.5	29.4	32.2	705.4	28.4	36.2
$ 6,000- 7,999	1,097.1	53.5	61.0	364.4	29.8	27.2	621.4	28.1	31.8
$ 8,000- 9,999	803.1	42.6	44.4	292.8	23.6	21.9	444.4	23.3	22.2
$10,000-14,999	1,039.8	66.0	60.4	356.8	37.1	30.3	455.8	38.6	31.7
$15,000-24,999	461.4	41.7	31.5	140.8	23.9	15.0	148.4	26.7	14.1
$25,000 and over	145.3	16.6	11.2	35.6	6.5	3.9	43.6	6.9	3.7
Median Wage		$7,696	$5,910		$7,557	$6,065		$7,823	$5,698
				PERCENT DISTRIBUTION					
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under $2,000	15.7	11.0	18.8	17.2	11.8	19.2	17.2	10.9	20.6
$ 2,000- 3,999	13.5	11.2	14.8	13.9	11.0	13.8	16.2	11.5	15.0
$ 4,000- 5,999	17.3	14.8	17.1	17.8	15.1	16.5	19.4	14.5	16.7
$ 6,000- 7,999	16.6	15.3	14.4	15.6	15.3	14.0	17.1	14.4	14.6
$ 8,000- 9,999	12.1	12.2	10.5	12.6	12.1	11.2	12.2	11.9	10.2
$10,000-14,999	15.7	18.9	14.3	15.3	19.1	15.5	12.5	19.7	14.6
$15,000-24,999	7.0	11.9	7.4	6.0	12.3	7.7	4.1	13.6	6.5
$25,000 and over	2.2	4.7	2.6	1.5	3.3	2.0	1.2	3.5	1.7

Notes: Numbers may not add due to rounding.
[1]See footnote 1, Table V - 10 for definition of workforce data.
[2]Wages are in current dollars and are for the year the worker was in the area of analysis. Dollar amounts for inmigrants are as of 1973 and dollar amounts for outmigrants are as of 1971.

Source: Bureau of Economic Analysis, Social Security Continuous Work History Sample (10%), First Quarters of 1971 and 1973.

Thus, the information in Tables V-13 and V-14 seem to suggest that for the period 1971 to 1973 migration trends of New Jersey where characterized by losses in the number of medium- and low-wage workers in manufacturing and by relative gains in the number of workers employed in high-wage professional and managerial jobs. These perceived findings concur generally with the data provided in Tables V-5 and V-6, which show decreases in the percentage of persons employed in manufacturing and increases in the percentage of persons employed as professionals and managers.

SUMMARY

This chapter has presented analyses of the data collected to determine the impact of migration on the New Jersey labor force. Changes in the structure of the labor force, however, are not only a function of migration. Rather, changes also occur due to exits and entrants to the labor force. And, in the case of changes in industrial sector and wage class, structural changes are the results of workers changing their status from one industry to another and from one wage class to another. In order to assess the role migration plays in creating changes in the workforce in relation to the role these other factors play, Table V-15 was prepared. Table V-15 was constructed from data available from the Social Security Continuous Work History Sample and is consistent in definitional terms (workforce) and time period (1971 to 1973) with Tables V-11 through V-14.

The period from 1971 to 1973 was one of low netmigration of the workforce of New Jersey -- a net outflow of 300 workers -- but the patterns of migration by various characteristics appear to represent the highly selective process that migration is. From 1971 to 1973, major structural changes in the workforce occurred in two of the groupings shown in Table V-15 -- age and wage class. With respect to changes in age composition, the largest occurred at the extreme ends, particularly the under 25 years of age, which gained 185,600 workers. This group represented 13.4 percent of the workforce in 1971 and 20.3 percent in 1973. But, as can be seen from the table, netmigration was in a negative direction (-600). The increase in this group was not a function of migration; rather, it was caused by the increasing pool of persons of workforce age -- a result of the baby boom, increasing labor force participation and, for this time period, the ending of the Vietnam War. Migration had the most substantial impact on the age structure in the 25 to 34 and 35 to 54 years of age groups, and, for the young adult group, represented 18.6 percent of the total change in the number of workers 25 to 34 years old. From 1971 to 1973, however, the differential between entrants and exits accounted for the major share of changes in the age composition of the labor force.

It is difficult to assess the changes in the structure of the workforce by wage class, because the dollar amounts represent current dollars for each of the years. This should be kept in mind when examining the data, for the United States city average consumer price index (1967=100) changes from 121.3 in 1971 to 133.1 in 1973, and represents a difference of almost 10 percent. The change in the structure of the workforce by wage class is not only accounted for by migration and entrants and exits to the workforce, but also by nonmigrants having a change in their wage status. Although migration had a part in the redistribution of the workforce by wage class from 1971 to 1973, the changes shown in Table V-15 are primarily a function of the change in wages of nonmigrants.

Table V-15

SUMMARY
IMPACT OF MIGRATION ON THE WORKFORCE[1]
BY SELECTED CHARACTERISTICS
NEW JERSEY
1971-1973

(Numbers in Thousands)

	1971 Workforce Number	1971 Workforce Percent	1973 Workforce Number	1973 Workforce Percent	Change 1971-73 Number	Change 1971-73 Percent	Net Migration 1971-73	Net Entrants-Exits
TOTAL	2,329.1	100.0%	2,442.2	100.0%	113.1	4.9%	- 0.3	113.4
By Race & Sex								
White Males	1,214.0	52.1	1,241.9	50.9	27.9	2.3	- 2.5	30.4
Nonwhite Males	167.0	7.2	178.6	7.3	11.6	6.9	0.6	10.9
White Females	822.0	35.3	880.5	36.1	58.5	7.1	0.8	57.7
Nonwhite Females	126.1	5.4	141.4	5.8	15.3	12.1	0.8	14.4
By Age[2]								
Less than 25	310.4	13.4	496.0	20.3	185.6	59.8	-0.6	186.3
25-34	520.4	22.3	534.4	21.9	14.0	2.7	2.6	11.4
35-54	944.6	40.6	952.9	39.0	8.3	0.9	-1.8	10.0
55-64	400.7	17.2	360.6	14.8	-40.1	-10.0	-0.6	-39.5
65 and over	151.0	6.5	96.4	3.9	-54.6	-36.2	0.2	-54.8
By Industry[3]								
Construction	98.1	4.2	106.9	4.4	8.8	9.0	1.3	1.6
Manufacturing	792.6	34.0	751.6	30.8	-41.0	-5.2	-12.2	-3.4
Transportation & Pub. Util.	144.2	6.2	144.4	5.9	0.2	0.1	0.5	-2.1
Wholesale & Retail Trade	515.8	22.1	552.9	22.6	37.1	7.2	-1.1	62.2
Finance, Insurance & Real Estate	110.3	4.7	115.9	4.7	5.6	5.1	1.2	1.8
Services	521.2	22.4	562.9	23.0	41.7	8.0	0.1	33.4
Government	129.4	5.6	139.8	5.7	10.4	8.0	0.8	5.1
Other[4]	17.6	0.7	67.9	2.8	50.3	285.8	9.3	14.8

(Continued)

Table V-15 (Continued)

IMPACT OF MIGRATION ON THE WORKFORCE[1]
BY SELECTED CHARACTERISTICS
NEW JERSEY
1971-1973

(Numbers in Thousands)

	1971 Workforce		1973 Workforce		Change 1971-73		Net Migration 1971-73	Net Entrants-Exits
	Number	Percent	Number	Percent	Number	Percent		
By Wage Class[3,5]								
Under $2,000	400.5	17.2%	390.2	16.0%	-10.3	-2.5%	-14.6	70.5
$2,000-3,999	323.6	13.9	300.2	12.3	-23.4	-7.2	-5.4	33.1
$4,000-5,999	414.5	17.8	346.4	14.2	-68.1	-16.4	-2.8	9.7
$6,000-7,999	364.4	15.6	351.2	14.4	-13.2	-3.6	2.6	3.6
$8,000-9,999	292.8	12.6	282.6	11.6	-10.2	-3.5	1.7	-2.3
$10,000-14,999	356.8	15.3	479.0	19.6	122.2	34.2	6.8	1.6
$15,000-24,999	140.8	6.0	237.5	9.7	96.7	68.7	8.9	-3.0
$25,000 and over	35.6	1.5	54.4	2.2	18.8	52.8	2.6	0.2

NOTES: Numbers may not add due to rounding.
[1]See footnote 1, Table V-10 for definition of workforce data.
[2]Age is as of 1973.
[3]The sum of netmigration and net entrants-exits does not equal the 1971-73 change in workforce because this change is also due to nonmigrants changing their status (individual sector and wage class) from one year to another.
[4]Includes agriculture, mining and unclassified.
[5]Wages are in current dollars and are for the year the worker was in New Jersey. Dollar amounts for in-migrants are as of 1973 and dollar amounts for outmigrants as of 1971.

SOURCE: Bureau of Economic Analysis, Social Security Continuous Work History Sample (10%), First Quarters of 1971 and 1973.

There are some differences in the composition of the workforce by race and sex between 1971 and 1973, with the least being for white males (2.3 percent) and the most for nonwhite females (12.1 percent). The differences are due almost totally to the differential between entrants and exits to the workforce.

As was the case in trying to discern the impact of migration on the wage class of the workforce, a similar problem arises in attempting to discern its role in the redistribution of the workforce by industrial sector. Differences are due not only to migration and entrants and exits, but also to nonmigrants changing the industry in which they were employed. And, the number of workers whose industry was unclassified was much larger in 1973 than 1971. In most cases, about half of the total absolute change in the number of workers employed in an industry was accounted for by changes in industrial sector by nonmigrants.

The data in Table V-15 show that migration did not have some impact on structural changes in New Jersey's workforce between 1971 and 1973, but in most instances other factors, including the differential between entrants and exits, had a larger role. However, the impact of migration should not be underestimated. The data in the table are for a fairly short time period; the time period just preceeded the slowdown in employment growth in the state, while, at the same time, there was an increase in population of young working ages and an increase in labor force participation, particularly females. As the baby bust generation (those persons born in the 1960s and later) matures into the labor force ages, the number of persons available to be entrants to the labor pool will decline. Therefore, the relative importance of migration will increase.

As has been shown in this chapter New Jersey has fared better in most cases than its neighbors -- New York and Pennsylvania. However, negative netmigration from the state has been increasing during the post-1970 period. It has been pointed out that migration is a highly selective process and the principal factors are those concerned with the life cycle, the person's educational attainment, occupation and employment status. As negative netmigration increased, it appears that, in some cases, those groups which exhibited positive netmigration did so to a lesser extent, and those which exhibited negative netmigration did so to a greater extent. However, workforce migration data showed that the turnaround in the direction of netmigration for New Jersey was more of a function of a lessening in inmigration than an increase in outmigration.

SHORT-TERM FUTURE OUTLOOK

During the late 1970s in New Jersey, the last of the baby boom generation matured to labor force age. Into the 1980s the pool of persons old enough to enter the labor force (the baby bust generation) will be smaller in relation to that of the mid-1970s Labor force participation will probably continue to increase for females under 54 years of age, but at a slower rate, and remain fairly stable or decrease slightly for most male age groups. As the population at the national level continues to exhibit slow growth due to declines in fertility, migration will play an increasing role in population and labor force/workforce growth at the subnational level. Projections of New Jersey's population into the 1980s show slow growth and imply negative netmigration.

TABLE V - 16
POPULATION PROJECTIONS BY AGE
UNITED STATES AND NEW JERSEY
1980, 1985

(Numbers in Thousands)

	1976		1980		1985	
UNITED STATES[1]	Number	Percent	Number	Percent	Number	Percent
TOTAL	215,118	100.0	222,159	100.0	232,880	100.0
Under 15	52,507	24.4	49,916	22.5	51,629	22.2
15-24	40,850	19.0	41,527	18.7	38,517	16.5
25-34	32,044	14.9	36,172	16.3	39,859	17.1
35-54	46,719	21.7	48,419	21.8	53,833	23.1
55-64	20,064	9.3	21,198	9.5	21,737	9.3
65+	22,934	10.7	24,927	11.2	27,305	11.7
NEW JERSEY[2]						
TOTAL	7,358.0	100.0	7,411.0	100.0	7,852.0	100.0
Under 15	1,744.8	23.7	1,617.8	21.8	1,670.4	21.3
15-24	1,260.1	17.1	1,237.2	16.7	1,193.3	15.2
25-34	1,056.8	14.4	1,136.7	15.3	1,295.2	16.5
35-54	1,746.3	23.7	1,753.3	23.7	1,883.7	24.0
55-64	769.5	10.5	811.9	11.0	836.3	10.7
65+	780.6	10.6	854.4	11.5	973.1	12.4

Note: Numbers may not add due to rounding.
The population for the United States includes armed forces abroad.

Sources:
1. U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 704, "Projections of the Population of the United States: 1977 to 2050," U.S. Government Printing Office, Washington, D.C., 1977.
2. New Jersey Department of Labor and Industry, Division of Planning and Research, Office of Demographic and Economic Analysis, "County Total Resident Population Estimates by Age, Race, and Sex 1976 (July 1)," Experimental Data, October 1979; and, "New Jersey Revised Total and Interim Age and Sex Population Projections, July 1, 1980-2000," April, 1979.

Table V-16 shows the population projections by age for the United States and New Jersey for 1980 and 1985. These data are projections, not forecasts or predictions, and are subject to revision, and, they are not to be interpreted as goal or policy oriented. The projections for New Jersey are based primarily on identifiable demographic and economic secular trends which have been implicitly or explicitly incorporated into the model, and secondarily on a few explicitly defined, documented structural changes, whose impacts are currently being felt in the state -- the Pinelands construction moratorium, the institution of casino gambling, and the development in the Hackensack Meadowlands. The greatest value of these projections is as a reference framework for planning, policy evaluation, and considerations of alternative growth scenarios which could be achieved through greater or less resource development.

As the data in Table V-16 imply, the number of persons aged 15 to 24 in New Jersey may decline faster than in the nation from 1976 to 1980, but may decline slower than in the nation from 1980 to 1985. The number of New Jersey residents aged 25 to 34 may increase more slowly than those for the nation from 1976 to 1980, but more quickly from 1980 to 1985. For the 35 to 54 years of age group, New Jersey may experience very little growth in the proportion of these persons, while the proportion at the national level for this group will increase more rapidly from 1980 to 1985. And, the growth of the 55 to 64 year olds in New Jersey may exceed that at the national level.

If the 1970s migration patterns of New Jersey -- in total and by age, race, sex, industry, wage class, etc. -- continue into the 1980s, the state's population could be top-heavy in some categories and lacking in others. the 1980s the population age 25 to 34 could represent an increasing share of the total population, due not only to the bulk of the baby boom cohorts comprising the major portion of this age group, but also due to this age group's net positive attraction to New Jersey. This could bode well for New Jersey's labor force, if those attracted to New Jersey represent people migrating into the state once they have obtained educational and/or employment experience. At the same time, however, the proportion of persons of working ages under 25 years and available for entry-level jobs could decrease as the baby bust cohorts secure a larger share of this group, provided negative netmigration of the group continues.

There would appear to be no shortage of total workers available to New Jersey employers in 1985. Bureau of Labor Statistics' projections of civilian labor force indicate that, depending on the growth path assumed, the size of the national labor force in 1985 could be either 117.0, 113.0, or 108.9 million persons. (Flaim and Fullerton, 1978) If the convergence of New Jersey's labor force participation rates to those for the nation continue into the 1980's and become equal in 1985, and using the projected population numbers in Table V-16, the size of New Jersey's labor force could be 4.0, 3.8, or 3.7 million persons -- a gain representing between 300,000 to 600,000 persons over the 1978 estimate of 3.4 million.[6] This compares to a gain of approximately 550,000 over the 1970 to 1978 period.

[6]The 1978 estimate was obtained from data maintained by the New Jersey Department of Labor and Industry. The projections of New Jersey's 1985 labor force were derived by assuming that New Jersey's labor force participation would

(Continued)

Yet, there are some disquieting trends. If the lessening of inmigration is sustained into the future and the present magnitude of outmigration continues, the quality of the state's labor force/workforce could suffer. The combined effects of a diminishing inmigration of 25 to 34 year olds, a continuance of large outmigrations of young adults below the age of 25, and the decrease in the pool of persons becoming of working age due to the maturing baby bust (who would be available for entry-level jobs) could result in a labor force/workforce which, although growing in size, is stagnant and suffering from a "brain drain" due to the lack of rejuvenation provided by an influx of newly educated and skilled persons.

The basic trendlines depicted above offer a wide range of challenges and opportunities for the policymakers of New Jersey. While their exact form and structure may be difficult to delineate precisely at present, several ramifications and/or potential policies appear significant.

1. Pressures may be considerably eased in terms of entry level employment opportunities as the decade proceeds. The shrinking size of the cohorts entering the labor force years imply that the problem of finding employment for the underskilled and undereducated will diminish. This offers the state's urban areas the opportunity to more adequately focus efforts on its minority and undereducated citizenry.

2. While the preceeding situation may become more manageable in terms of size and scope, the possibility exists for the need to retrain some older workers in order to maintain a competitive and technically up-to-date labor force.

(Footnote 6 Continued)

converge to that projected for the nation for 1985 by the Bureau of Labor Statistics and the following equation was applied:

$$LF^{NJ}_{1985} = \frac{LF^{US}_{1985}}{LPOP^{US}_{1985}} \cdot LPOP^{NJ}_{1985}$$

where: LF = the projected number of persons in labor force in the nation or State

LPOP = the projected number of persons in the nation or State aged 15 to 64

This method is very simplistic and ignores various factors; however, this crude technique was employed to derive numbers which could serve as guidelines to the potential growth of the state's labor force.

3. In addition, attention on the state's job base may have to persist in the short-term future, the labor force parameters as they will merge in the 1980s will probably not diminish the state's attractiveness to those employers presently within the state. However, the entrance of new firms and new industries into New Jersey, an important component of the maintainence of a viable state economic base, may be hindered by the labor force contours. While the latter is obviously speculative, it would appear that the continued attention of the state's policymakers is warranted in regards to labor force changes.

CHAPTER VI

WORKFORCE OUTMIGRATION BY OCCUPATION

COMPANIES CLOSING OR LEAVING THE STATE

Forty companies of 50 or more workers closed down or left the state from December 1978 to August 1979, according to information received by local UI offices and ES-235 Significant Layoff Reports. Thirteen of these establishments either left completely or relocated certain divisions out of New Jersey, while the remainder went out of business. The closings or relocations resulted from economic instability, fires, unresolved labor disputes, antiquated equipment, and high labor and operating costs.

More than half of the companies reported were in the manufacturing sector, with 17 companies closing and 11 leaving the state. In nonmanufacturing 12 companies closed and two left the state. The following is an industrial breakout:

	Number of Companies* Moved	Number of Companies* Closed
Manufacturing		
Food (SIC 20)	0	4
Textiles (SIC 22)	1	1
Apparel (SIC 23)	0	2
Paper Products (SIC 26)	2	1
Chemicals (SIC 28)	1	5
Rubber and Plastic Products (SIC 30)	1	0
Fabricated Metals (SIC 34)	2	2
Nonelectrical Machinery (SIC 35)	3	0
Electrical Machinery (SIC 36)	0	2
Miscellaneous Manufacturing (SIC 39)	1	0
Nonmanufacturing		
Wholesale Trade, durables (SIC 50)	2	0
Wholesale Trade, nondurables (SIC 51)	0	5
General Merchandise Stores (SIC 53)	0	3
Food Stores (SIC 54)	0	1
Restaurants (SIC 58)	0	3

* Includes divisions of companies that relocated. Remainder of establishments is still in operation in New Jersey.

TABLE VI - 1

EMPLOYMENT LOSSES FROM PLANT CLOSINGS
IN NEW JERSEY

SIC 20

JOBS OFFERED AT ANOTHER LOCATION*[1/]			JOBS LOST*		
DOT CODE	TITLE	NUMBER	DOT CODE	TITLE	NUMBER
			1	Professional	
			2	Clerical & Sales	
			5	Processing	
			6	Machine Trades	
			9	Miscellaneous	
Total		0	Total		277

SIC 22

			1	Professional	30
			2	Clerical	65
			5	Processing	104
Total		0	Total		199

SIC 23

			1	Professional	70
			2	Clerical	34
			3	Service	25
			7	Benchwork	200
			9	Miscellaneous	30
Total		0	Total		359

SIC 26

			1	Professional	
			2	Clerical	
			5	Processing	
			6	Machine Trades	
			7	Benchwork	
			9	Miscellaneous	
Total		0	Total		95

(Continued)

TABLE VI - 1 (Continued)

EMPLOYMENT LOSSES FROM PLANT CLOSINGS
IN NEW JERSEY

SIC 28

JOBS OFFERED AT ANOTHER LOCATION*[1/]			JOBS LOST*		
DOT CODE	TITLE	NUMBER	DOT CODE	TITLE	NUMBER
1	Professional		1	Professional	
2	Clerical		2	Clerical	
		10	3	Service	
			5	Processing	
			6	Machine Trades	
			8	Structural Work	
			9	Miscellaneous	
Total		10	Total		648

SIC 34

1	Professional	3	1	Professional	30
2	Clerical	2	2	Clerical	78
			3	Service	
			5	Processing	
			6	Machine Trades	
			7	Benchwork	
			8	Structural Work	
			9	Miscellaneous	225
					300
Total		5	Total		633

SIC 39

			1	Professional	
			2	Clerical	
			5	Processing	
			6	Machine Trades	
			9	Miscellaneous	
Total		0	Total		100

SIC 51

			1	Professional	
			2	Clerical & Sales	50
			9	Miscellaneous	180
					350
Total		0	Total		580

(Continued)

TABLE VI - 1 (Continued)

EMPLOYMENT LOSSES FROM PLANT CLOSINGS
IN NEW JERSEY

SIC 53

JOBS OFFERED AT ANOTHER LOCATION*1/			JOBS LOST*		
DOT CODE	TITLE	NUMBER	DOT CODE	TITLE	NUMBER
			1	Professional	
			2	Clerical & Sales	5
			3	Service	
			9	Miscellaneous	150
					325
Total		0	Total		480

SIC 54

			1	Professional	
			2	Clerical & Sales	
			3	Service	
			9	Miscellaneous	
Total		0	Total		904

SIC 58

			2	Clerical	
			3	Service	
			9	Miscellaneous	
			Total		241

* Breakout not available on all titles.
1/ Employees given jobs at another company facility.

OCCUPATIONS LEAVING WITH ESTABLISHMENT RELOCATION

In the 13 companies that left the state during the period, the professional, technical, and managerial occupations were the most likely to relocate. Although no detailed breakout of professional jobs was available, it can be assumed that only key personnel in upper management were asked to move. Many times, professionals did not relocate, as can be seen on Table VI - 2, indicating the reluctance of middle and first-line managers to move, or the failure of the company to include them in relocation plans.

In only three instances where occupations were identified did clerical employees participate in the move. Workers with benchwork, machine, or miscellaneous skills were even less likely to change locations, except for one company which moved from Newark to Fairless Hills, Pa.

Table VI - 2 overwhelmingly shows the majority of workers did not leave with their companies. Of the establishments moving out of state, 90.5% of the workers were left behind or chose not to relocate. Certainly many older workers, those with union affiliations, or those with good prospects of reemployment in the area, may have deliberately remained in New Jersey.

From the very limited data available, it would seem that New Jersey has not lost large numbers of skilled workers directly through relocation. The possibility exists, however, that workers may have voluntarily migrated from the state in search of "greener" employment pastures. The lure of lower living costs, less congestion, and a more rural lifestyle may have enticed workers to leave the state. More realistically, however, skilled individuals may have been forced to leave, when furloughed from their jobs, simply because the State's manufacturing base could no longer absorb large numbers of workers, or stayed in state but changed industry and occupation.

TABLE VI - 2

EMPLOYMENT LOSSES FROM RELOCATION OF ESTABLISHMENTS OUT OF NEW JERSEY

SIC 22

JOBS LEAVING WITH RELOCATION*			JOBS LOST*		
DOT CODE	TITLE	NUMBER	DOT CODE	TITLE	NUMBER
			1	Professional	12
			2	Clerical	46
			9	Miscellaneous	34
Total		0	Total		92

SIC 26

1	Professional		1	Professional	30
2	Clerical		2	Clerical	
7	Benchwork		7	Benchwork	80
			9	Miscellaneous	
					60
Total		0	Total		170

SIC 28

			2	Clerical	7
			3	Service	12
			5	Processing	15
			6	Machine Trades	21
			8	Structural Work	3
			9	Miscellaneous	435
Total		0	Total		559

SIC 30

1	Professional	12	1	Professional	29
			2	Clerical	16
			3	Service	35
			5	Processing	30
			6	Machine Trades	30
			8	Structural Work	18
			9	Miscellaneous	85
Total		12	Total		243

(Continued)

TABLE VI - 2 (Continued)

EMPLOYMENT LOSSES FROM RELOCATION OF ESTABLISHMENTS OUT OF NEW JERSEY

SIC 34

JOBS LEAVING WITH RELOCATION*			JOBS LOST*		
DOT CODE	TITLE	NUMBER	DOT CODE	TITLE	NUMBER
1	Professional	32	2	Clerical	50
			6	Machine Trades	59
			7	Benchwork	45
			9	Miscellaneous	51
					327
Total		32	Total		532

SIC 35

1	Professional	7	1	Professional	15
			2	Clerical	10
			3	Service	6
			5	Processing	6
			6	Machine Trades	61
			7	Benchwork	3
			8	Structural Work	2
			9	Miscellaneous	7
					123
Total		7	Total		233

SIC 50

1	Professional	3	1	Professional	6
2	Clerical	16	2	Clerical	14
7	Benchwork	1	7	Benchwork	2
9	Miscellaneous		9	Miscellaneous	
		65			35
Total		85	Total		57

* Breakout not available on all titles.

CHAPTER VII

CONCLUSION

Concern has been expressed over the potential impact of migration on New Jersey's labor force, particularly in light of the reversal in trends from a net positive direction in the 1960s to a net negative direction in the 1970s. The foregoing analysis, based on the best data available for this purpose, provided an overview of the migration effects on the population, labor force, and workforce of New Jersey during the post-1970 period. The analysis was limited by a lack of gross flow data by characteristics for some groups, definitional problems, and inconsistencies in time periods covered; however, general patterns were discernable.

Differentials in growth and composition of New Jersey's population and labor force from those of the nation and other states are, in large part, a function of migration. In some cases, New Jersey has fared better than the nation and other states, while in other instances it has not. In terms of total netmigration, New Jersey exhibited a lower rate of net outmigration during the 1970s than either of its neighbors, New York and Pennsylvania, and this net loss is not yet significant. The majority of New Jersey's inmigrants originated from the Northeast Region and, in particular, from New York State and the State of Pennsylvania. Fewer persons migrated from New Jersey than to New Jersey from these states, resulting in a net inmigration to New Jersey. However, these net inmigrations were offset by the surplus of outmigrants over inmigrants between New Jersey and other areas in the nation, particularly the South Atlantic Division (Florida) and the Pacific Division (California). This origin-destination pattern was replicated by both New Jersey's total population and workforce.

The most mobile group in terms of age and sex are males of the younger working ages. During the 1970s there was a net outmigration from New Jersey of males aged 15 to 24 and net inmigration to New Jersey of males aged 25 to 34. The pattern was the same for females, although the magnitude of migration was lower. These trends were somewhat similar for both the total population and workforce. However, in absolute terms, the netmigration of the younger grouping was much less than for the workforce, due, in part, to the noncoverage of the movement of college students. This latter group plays a substantial role in the outmigration of New Jersey's population, as New Jersey is one of the largest net exporters of college students in the nation. The net inmigration of the 25 to 34 year olds may represent an influx to the state of persons who have obtained post-high school education and/or initial work experience at the expense of other areas. As with the nation as a whole, the educational level of New Jersey's population with income (a surrogate for the labor force) has increased during the 1970s, and in some cases the state has fared better than the nation and its neighbor states.

For the total population, those persons aged 35 to 54 exhibited a net inmigration from 1970 to 1978, but the corresponding workforce grouping had a small surplus of outmigrants over inmigrants from 1971 to 1973. This descrepancy is due primarily to the data limitations and comparability.

The data suggest that changes in the structure of the workforce by industry is more a function of workers changing the industry in which they are employed than of migration. In part, a similar phenomenon may be responsible for the differences in the structure of the workforce by wage class -- workers experiencing wage increases. However, inmigrants to New Jersey tend to have higher wages than outmigrants.

Therefore, it does not appear that the quality of the labor force/workforce of New Jersey has suffered substantially, at least with respect to its neighbor states, during the 1970s due to the negative netmigration experienced by the state. But, should netmigration continue into the 1980s, in a negative direction and at a faster pace than in the 1970's -- which could result even if the magnitude of outmigration does not increase, but the magnitude of inmigration continues to decrease -- the composition of the labor force/workforce could be adversely affected. Therefore, in order for the state to maintain its appeal to sophisticated and high-skill industries, New Jersey during the 1980s must continue to provide the type of work and living environment necessary to retain and attract a skilled and educated labor force.

APPENDIX A - 1
DETAILED METHODOLOGY OF ESTIMATING NET MIGRATION BY AGE AND SEX

Estimates of netmigration of the population by age and sex for the state of New Jersey for the post-1970 period were derived using a modification of the Office of Demographic and Economic Analysis (ODEA) population projection model. This technique is a cohort-component method, and is premised on the recognition that population change is a function of natural increase and migration. These components are usually modeled by the following expression:

(1) $P_{t+n} = P_t + NI + NM$

where: P_{t+n} = future population at time t+n

P_t = initial base population at time t

NI = net natural increase (births minus deaths)

NM = netmigration (inmigration minus outmigration)

The term "cohort" indicates that the computational procedure is applied to age categories (rather than gross population totals), with the identity of each age group retained as it is carried forward through time. (Irwin, 1977) In the model, the cohorts span five years and define the age profiles of two subpopulations -- the males and females.

Cohort component analysis is the descriptive term for describing the overall model process. Simply put, a base population is survived to a later date, births are determined by applying fertility rates to female populations, and netmigration is derived.

In this model, two groups of populations are handled separately: the civilian population and the military. As constructed for population purposes, the model projected the migration component of the civilian population under 65 years of age on the basis of economic factors (employment, unemployment rate, labor force participation rates, commutation and residential preference patterns), while migration of the 65 and over population is based on trends from recent rates. As modified for this study, the migration of the civilian population was derived as the residual of survived base population (1970 or 1975) plus births and the later population (1975 or 1978).

(2) $NM_{t,t+n} = P_{t+n} - (P_t + B_{t,t+n} - D_{t,t+n})$

where: $NM_{t,t+n}$ = netmigration for the time period t,t+n

$B_{t,t+n}$ = births during the time period t,t+n (1970 -1975 and 1975-1978)

$D_{t,t+n}$ = deaths during the time period 5,5+n (1970 -1975 and 1975-1978)

The military population, based on estimates maintained in the Office of Demographic and Economic Analysis, was subtracted from the state's total population estimates, prior to the determination of the netmigration for a time period.

POPULATION ESTIMATES

The population estimates for July 1, 1970 and July 1, 1975 were available by age and sex and secured from the U.S. Bureau of the Census' experimental data prepared for the National Cancer Institute. (Office of Demographic and Economic Analysis, 1978a) The state total for 1975 was published prior to revisions made to that year's estimate and published by the Office of Demographic and Economic Analysis (ODEA). (Office of Demographic and Economic Analysis, 1978b) The Experimental Data for 1975 was therefore adjusted proportionally such that the state total matched the official state estimate published by ODEA. For 1978 only an estimate of the total state population was available at the time of this study. (Office of Demographic and Economic Analysis, 1979)

BIRTHS

The number of births for the years 1970 to 1978 were available from the New Jersey Department of Health. (New Jersey Department of Health, 1971-1979) Because the estimates of the total population for New Jersey are as of July 1, of the respective years, the following equation was employed to calculate the number of births for a time period:

$$(3) \quad B_{t,t+n} = \tfrac{1}{2} (B_t + B_{t+n}) + \sum_{1=t+1}^{t+n-1} B_i$$

For the period July 1, 1970 to July 1, 1975, the above equation was

$$B_{1970,1975} = \tfrac{1}{2} (B_{1970} + B_{1975}) + \sum_{i=1971}^{1974} B_i$$

For the period July 1, 1975 to July 1, 1978, the equation became

$$B_{1975,1978} = \tfrac{1}{2} (B_{1975} + B_{1978}) + \sum_{i=1976}^{1977} B_i$$

The number of births for a time period was incorporated into the model as a control for the number of births which were estimated in the model by applying state-specific general fertility rates to base female populations.

DEATHS

The number of deaths for the years 1970 to 1978 were available from the New Jersey Department of Health. (New Jersey Department of Health, 1971-1979) Because the estimates of the total population for New Jersey are as of July 1, of the respective years, the following equation was employed to calculate the number of deaths for a time period:

$$(4) \quad D_{t,t+n} = \tfrac{1}{2} (D_t + D_{t+n}) + \sum_{i=t+1}^{t+n-1} D_i$$

For the period July 1, 1970 to July 1, 1975, the above equation was

$$D_{1970,1975} = \tfrac{1}{2} (D_{1970} + D_{1975}) + \sum_{i=1971}^{1974} D_i$$

For the period July 1, 1975 to July 1, 1978, the equation became

$$D_{1975,1978} = \tfrac{1}{2} (D_{1975} + D_{1978}) + \sum_{i=1976}^{1977} D_i$$

The total number of deaths for a time period was incorporated into the model as a control for the total number of deaths which were estimated in the model by applying age, sex, and race-specific national census survival rates to the appropriate base population cohorts.

The number of deaths secured from the New Jersey Department of Health were not available in the age and sex detail necessary as input to the model to determine the survived population by age and sex. Therefore, the age, sex, and race-specific national census survival rates were first applied to the appropriate base population cohorts. The total number of deaths for a time period in the model was estimated by summing the differences between the base population cohorts and the survived population cohorts. The ratio between the total number of deaths derived from the model was applied to deaths by age, sex and race calculated in the model. This procedure resulted in deaths by age, race, and sex which sum to the total number of deaths for a time period developed from New Jersey Department of Health's data.

NET MIGRATION BY AGE AND SEX

Netmigration by age and sex was determined differently for the two time periods examined for this report -- 1970 to 1975 and 1975 to 1978 -- due to data availability.

1970 TO 1975

Because estimates for July 1, 1970 and July 1, 1975 for the State of New Jersey were available by age and sex, the development of estimates of netmigration by age and sex for the civilian population 5 years of age and over were based on the following equation:

$$(5) \quad {}_{x+n}NM_x^s = {}_{x+n}P_x^{*,s} - ({}_xP_{x-n}^s - {}_xD_{x-n}^s)$$

The subscripts in this equation refer to the five-year age groups, the * refers to the later date population, and the superscript "s" refers to the sex. For example, to determine the netmigration between the July 1, 1970 and July 1, 1975 for males age 5 to 9 in 1970, the equation was

$${}_{14}NM_{10}^m = {}_{14}P_{10}^{1975,m} - ({}_9P_5^m - {}_9D_5^m)$$

For the civilian population under 5 years of age, the equation was

$$(6) \quad {}_{x+n}NM_x^s = {}_{x+n}P_x^{*,s} - ({}_xP_{x-n}^s + B^s - {}_xD_{x-n}^s)$$

1975 TO 1978

The above equations (5) and (6) could not be applied to develop estimates of the 1975 to 1978 netmigration by age and sex because estimates of the July 1, 1978 population were not available by age and sex corresponding to those for July 1, 1970 and July 1, 1975. However, an estimate of the total netmigration for the period July 1, 1975 to July 1, 1978 was calculated using equation (2).

The 1975 to 1978 total net migration was allocated to the age and sex groupings based on the structure of the distribution of the 1970 to 1975 netmigration. Because netmigration can be either positive or negative, the "plus-minus" technique (Shryock and Siegel, 1975) was used for the allocation. This technique was formulated as follows:

$$(7) \quad R = \frac{NM_{1975\text{-}1978} - NM_{1970\text{-}1975}}{ANM_{1970\text{-}1975}}$$

where: NM = total netmigration for the subscripted period

AM = sum of the absolute values of 1970-1975 netmigrants by age and sex

Net migration for 1975 to 1978 for each age and sex cohort was then derived individually according to its 1970 to 1975 sign -- either positive or negative.

For positive 1970 to 1975 migration:

$$(8) \quad NM_{1975\text{-}1978} = (1+R)\ (NM_{1970\text{-}1975})$$

For negative 1970 to 1975 migration:

$$(9) \quad NM_{1975\text{-}1978} = (1-R)\ (NM_{1970\text{-}1975})$$

The distribution of netmigration by age and sex for 1975 to 1978 was thus predicated on that for the 1970 to 1975 period, but the sum of the netmigrants by age and sex for 1975 to 1978 equaled the number of total netmigrants derived from equation (2) above.

LIMITATIONS OF MODEL

In fulfillment of a contract with the National Cancer Institute, the Bureau of the Census prepared experimental population estimates by age, sex, and race for July 1, 1970 and July 1, 1975 for all United States counties. The Census Bureau has requested that it be noted that these estimates were prepared for the purpose of analyzing indices of cancer mortality, and the data may prove useful for that purpose. However, although the results have been screened thoroughly, indicate reasonable patterns, and have been tested against special census and auxiliary data as available, an exhaustive evaluation cannot be made until the 1980 census counts are available. As a result, the expected accuracy of the data cannot be established with any degree of precision. The race detail is problematic, since no independent control by race for each county is available.

The estimates of netmigration, as well as most of the data inputs to the model, are subject to estimation error. Variations from actual population trends are inherent in the estimating procedures, stemming from the fact that the correlation between the data series and population is not perfect. The data series being used to reflect population change are all affected to some degree by factors other than population movement and, in addition, they are part of reporting systems that are subject to administrative alteration.

Additionally, the "plus-minus" procedure suffers from at least three weaknesses. First, the detail of the given distribution (1970 to 1975) affects the results (1975 to 1978); that is, that a combination of cells adjusted separately would not show the same result as when the combined category is adjusted directly. A second weakness of the procedure is that zero cells

in the distribution cannot receive any of the adjustment. A third weakness is that, in the event that the net amount of adjustment required in the numerator of equation (7) -- $NM_{1975-1978} - NM_{1970-1975}$ -- exceeds the sum of the absolute values in the distribution of the demoninator of equation (7) -- $ANM_{1970-1975}$ -- one of the adjustment factors will have a negative sign and, hence, will cause all the items in the distribution to which it is applied to reverse signs. The larger positives could become the larger negatives or the larger negatives could become the larger positives. This is untenable since the pattern of the original distribution would thereby be sharply altered. (Shryock and Siegel, 1975).

The 1975-1978 estimates of netmigration by age and sex were developed based on the assumption that the 3-year pattern by characteristic was similar to that of the 5-year period, 1970-1975. Other than the problems inherent in the "plus-minus" procedure given above, this assumption presents theoretical problems. As used in this report, only those persons whose residences/workplaces at the beginning and end of the period were different are counted as migrants. Migrants who died during the period are omitted from the classification altogether, and those who returned during the period to their residence/workplace at the beginning of the period are classified as nonmigrants. Only one more per person can be counted during the period. The longer the period, the more moves that are missed. To obtain a count of all moves, including those of subsequent decedents, data would need to be extracted from a continuous population register, which is beyond the scope of this report.

Also, it is not necessarily true that the movement of a group of people over a 5-year period is similar to the same group's movement over a 3-year period. The group's propensity to migrant may be the same, but the net magnitude and direction may vary. This raises the issue of the problem of dealing only with netmigration rather than gross flows. Estimates of netmigration mask the magnitude of gross flows.

APPENDIX A - 2

DETAILED DESCRIPTION OF MAJOR DATA SOURCES

SURVEY OF INCOME AND EDUCATION (SIE)

Intercensal estimates of the demographic, social, and economic characteristics of the population of all states generated directly from a single sample survey have become available, for the first time, as a result of the 1976 Survey of Income and Education (SIE). As a Federal legislative requirement mandated by Congress, the SIE was conducted in the spring of 1976 to estimate the number of children 5 to 17 years of age in each state who were living in families classified below the poverty level. Information was collected on a variety of topics including: basic demographic characteristics of the population (e.g., age, sex, race, and marital status), household and families, educational attainment, migration, family and personal income, ethnicity, and labor force characteristics.

AVAILABILITY OF DATA FROM THE SIE

Several reports, which present some data from the SIE, have been published by the Bureau of the Census. "Demographic, Social, and Economic, Profile of States: Spring 1976," Current Population Reports, Series P-20, No. 334 presents statistics for the total United States, regions, divisions, and each of the 50 states and the District of Columbia based upon the 1976 SIE. The tables included provide a set of basic summary measures profiling the social and economic characteristics of individual states and serving as general updates of similar measures based on the 1970 census. Examples of data presented are family status, age, race, education, employment status, migration, income, and poverty.

Another report containing estimates of 1975 household income from the SIE has been published as Current Population Reports, Series P-60, No. 108. This report updates 1970 census household money income estimates for states, divisions, regions, and the United States. The primary focus of this report was to show income distributions by housing tenure and type of residence, cross-classified by age of head and other key characteristics of households. Added emphasis has been placed on showing summary statistics; in addition to mean and median incomes, average household size and per capita income are shown along with each income distribution.

Four additional reports were published in the Current Population Reports, Series P-60, Nos. 110-113. These reports contain income distributions for families, unrelated individuals, and persons and data on the poverty population for the Northeast, North Central, South, and West regions. Each regional report contains income distributions cross-classified by a broad range of socioeconomic and demographic characteristics. The same set of income distributions are shown for each state and division within the region, and for the region and the total United States.

Other topical reports have been published by the Bureau of the Census in Current Population Reports, as well as by the National Center for Education Statistics and the U.S. Bureau of Labor Statistics.

The Census Bureau also has made available computerized microdata (individual respondent records) from the SIE. In order to protect the confidentiality of the respondents, no names or addresses are included in the file and geographic information is sufficiently limited to preclude the identification of any specific individual. Each state and 119 standard metropolitan statistical areas are identified on the file. Otherwise, virtually all of the information collected in the survey -- from demographic characteristics, such as age and race to income, poverty status, bilingualism, and disability characteristics -- is made available in a form which allows the user to design his or her own tabulations. The file contains records for 151,170 households nationwide. Various New Jersey state agencies, including the Department of Labor and Industry and the Department of Higher Education, have utilized microdata from the SIE.

SOURCES

The estimates for the Survey of Income and Education (SIE) are based on data collected from personal interviews conducted mostly in May and June of 1976 with a small number occurring in April and July. This survey was conducted by the Bureau of the Census acting as collection agent for the Department of Health, Education, and Welfare.

Approximately 158,500 households, selected independently in the 50 states and the District of Columbia, were eligible for interview in SIE. Of this number, 7,300 interviews were not obtained because the occupants were temporarily absent, refused to be interviewed, or, after repeated callbacks, no one could be found at home. In addition to the 158,500 households, there were about 33,000 sample units which were visited and found to be vacant, condemned, unfit, demolished, etc., and therefore were ineligible for review. In New Jersey, a total of 5,684 households were selected; of these, 5,007 were eligible for interview and 4,694 were interviewed, for a noninterview rate of 6.3 percent.

SAMPLING PROCEDURES

The sample design for the SIE was a stratified multi-stage cluster design. Each state was divided into areas made up of counties and independent cities referred to as primary sampling units (PSUs). These PSUs were then grouped to form strata within each state according to the proportion of persons who were children 5 through 17 years old living in poverty families at the time of the 1970 census. Some strata consisted of only one PSU (generally the larger metropolitan areas and some larger nonmetropolitan PSUs) which came into sample with certainty and which were called self-representing. In nine states (Connecticut, Delaware, District of Columbia, Hawaii, Maryland, Massachusetts, New Hampshire, Rhode Island, and Vermont) every PSU was made self-representing. In the remaining states, the PSUs which were not self-representing were grouped into strata according to regression estimates. In each of these strata, two PSUs were selected without replacement. These sample PSUs are called non-self-representing PSUs.

Within selected PSUs a sample of housing units enumerated in the 1970 Census of Population and Housing was selected. In addition, a sample of new construction building permits was also selected to represent the units constructed in areas under the jurisdictions of building permit offices (permit-issuing areas) since the 1970 census. Further, a sample of units constructed since the 1970 census in areas not under the jurisdiction of building permit offices (nonpermit-issuing areas) and units from mobile home parks established since the 1970 census were selected.

ESTIMATION PROCEDURES

The first step in the estimation procedure involved the inflation of the sample data by the reciprocal of the probability of its selection. Next, adjustments were made to account for occupied households in which interviews were not obtained because the occupants were temporarily absent, refused to be interviewed, or, after repeated callbacks, no one could be found at home. This adjustment was made separately to households in different race of head-residence-1970 census poverty level categories.

In order to obtain more reliable estimates, various stages of ratio estimation were employed, which made extensive use of available auxiliary data on characteristics of the survey population. The source of most of this auxiliary data was geographic information about the sample units, 1970 census data and current independent population counts.

The first stage of ratio estimation was employed for sample households from non-self-representing (NSR) PSUs only. This procedure adjusted for the differences that existed at the time of the 1970 census in the distribution of persons by race and residence, as estimated from the sample NSR PSUs and from the NSR population in each state. This ratio estimation was designed to reduce the variance attributable to the sampling of PSUs.

Additional stages of ratio estimation were employed to adjust for coverage problems and to bring the distribution of the sample population into agreement with the distribution of the population from which the sample was selected. The second stage of ratio estimation was only employed for new construction sample units (i.e., sample units built April 1, 1970 or later) in permit-issuing areas. The sample estimate of new construction in these areas was ratio-adjusted to agree with an independently derived estimate form the Survey of Construction (SOC), a survey of building permits conducted monthly by the Bureau of the Census.

In the third stage the national sample, estimates of civilian persons were controlled to independently derived national estimates for various age, race, and sex categories. To these totals were added the population estimates of those in the Armed Forces living off post or with their families on post. The fourth stage adjustment was made so that the husband and wife of a family received the same weight. Finally, the last stage adjusted the state sample estimates of civilian persons to agree with independently derived estimates of state population for three age categories in each state.

The last three stages in the estimation procedure were repeated in an iterative procedure, in order to bring the SIE estimates into close agreement with both the national and state independent estimates. The effect of these

final stages of ratio estimation, as well as the overall estimation procedure, was to reduce the error for most statistics below what would have been obtained by simply weighting the results of the SIE sample by the inverse of the probability of selection.

LIMITATIONS OF SIE DATA

Coverage

It was mentioned previously that the SIE sample was selected from four frames: (1) the 1970 census, (2) new construction in permit-issuing areas, (3) new construction from nonpermit-issuing areas, and (4) mobile home parks established since the 1970 census. These four frames do not completely cover the total housing unit inventory, and hence, there are some coverage deficiencies in the SIE sample.

It has been estimated that the 1970 census missed about 2½ percent (i.e., about 1.7 million units) of the total 1970 housing inventory. These units have also been missed by SIE.

During the sampling of building permits, only those permits issued between January 1, 1970 and November 1975 inclusive, were eligible to be sampled to represent new construction in permit-issuing areas. It had been assumed that units with permits issued prior to 1970 would have been completed by the time of the 1970 census (i.e., April 1970) and, therefore, would have been represented in the sample selected from the 1970 census units. Due to time constraints, it was not possible for units whose permits were issued after November 1975 to be selected in time to be interviewed during the SIE interview period. It has been estimated that the new construction misses were about 8 percent (i.e., about 900,000 units) of all new construction units.

In addition to the above missed units, mobile homes that were not in parks and that were either placed in their current site after the 1970 census or were vacant at the time of the census, housing units that were converted from nonresidential to residential use since the census, and housing units that have been moved since the census had no chance of being selected for the SIE sample. No estimate currently exists of the total number of missed units in these categories.

The ratio estimation procedure discussed above has partially corrected the survey data for these coverage deficiencies. That is, the ratio estimation has tended to bring the survey estimates to the appropriate levels, though there still may remain a small error in the distribution.

Sampling Variability

The particular sample used for this survey is one of a large number of possible samples of the same size that could have been selected using the same sample design. Even if the same schedules, instructions, and enumerators were used, estimates from each of the different samples would differ from each

other. The deviation of a sample estimate from the average of all possible samples is defined as the sampling error. The standard error of a survey estimate attempts to provide a measure of this variation among the estimates from the possible samples and, thus, is a measure of the precision with which an estimate from a sample approximates the average result of all possible samples.

As calculated for the SIE, the standard error also partially measures the variation in the estimates due to response and enumerator errors (nonsampling errors), but it does not measure, as such, any systematic biases in the data. Therefore, the accuracy of the estimates depends on both the sampling and nonsampling errors, measured by the standard error, and biases and some additional nonsampling errors not measured by the standard error.

In the published Current Population Reports presenting SIE data, standard errors are supplied for estimated numbers in the SIE tabulations. Also, the procedure to construct interval estimates such that a known proportion of the intervals would contain the average of all possible samples is illustrated in the publications.

The average result of all possible samples either is or is not contained in any particular computed interval. However, for a particular sample one can say with specified confidence that the average result of all possible samples is included in the constructed interval.

The figures presented in the tables in the SIE publications are preliminary standard errors of various estimates based on data and assumptions used to design the survey. The tables of standard errors provide an indication of the order of magnitude of the standard errors rather than the precise standard for any specified item.

The reliability of an estimated percentage, computed by using sample data for both numerator and denominator, depends upon both the size of the percentage and the size of the total upon which the percentage is based. Estimated percentages are relatively more reliable than the corresponding absolute estimates of the numerators and denominators of the percentages, particularly if the percentages are 50 percent or more.

Nonsampling Variability

In general, nonsampling errors can be attributed to many sources: inability to obtain information about all cases; definitional difficulties; differences in the interpretation of questions; inability or unwillingness to provide correct information on the part of respondents; mistakes in recording or coding the data; other errors of collection, response, processing, and coverage; and estimation for missing data. As can be seen from the above list, nonsampling errors are not unique to sample surveys since they can, and do, occur in complete censuses as well.

It should be pointed out that steps used in the estimation procedure to reduce errors due to nonresponse and coverage deficiencies introduce nonsampling errors of their own. However, the errors introduced are believed to be smaller than the errors due to nonresponse and coverage deficiencies.

CONTINUOUS WORK HISTORY SAMPLES (CWHS)

The CWHS is a system of multipurpose research files assembled and maintained by the Office of Research and Statistics of the Social Security Administration (SSA); it is used by the SSA for the evaluation of existing and proposed social insurance programs.

FILES AVAILABLE FROM THE SOCIAL SECURITY ADMINISTRATION

1-Percent Annual Employee-Employer File. This is the primary file used for regional work force analysis. It is available for the years 1957-72. A new file is available approximately 2½ years after the end of each year, and it contains one record for each job held for each individual during that year. Basic data elements include:

1. personal characteristics -- sex, race, and year of birth,
2. wage information -- quarterly taxable and a total estimate, and
3. employer information -- state and county and industry; coverage group indicator (farm, household, state and local government, other).

1-Percent Annual Self-Employed File. This file contains records of self-employed individuals who filed Schedule SE of Internal Revenue Service (IRS) Form 1040. Basic data elements include:

1. personal characteristics -- year of birth, sex, and race, and
2. self-employment data -- taxable income, net earnings, taxable earnings (including wages, if any), farm or nonfarm indicator, state, county, and industry.

The 1-percent annual self-employed file is usually available concurrently with the annual employee-employer file.

1-Percent Longitudinal Employee-Employer Data (LEED) File. This file (for 1957 forward) is assembled from data derived from the 1-percent sample annual employee-employer file. The original records are skeletonized, resequenced, and merged, so that all records associated with an employee over the file's timespan appear together.

Major data elements are identical to those in the 1-percent sample annual file.

1-Percent 1937-to-Date Continuous Work History Sample File. Initially designed to provide information for the administration of the social security system, it contains more information for all workers and for a longer period of time than does the annual employee-employer file. The major limitation is that the file does not contain information on the state, county, or industry of employment and, therefore, can be used only for national work force analyses. It is the largest file in the CWHS system.

0.1-Percent 1937-to-Date Continuous Work History Sample File. This file contains only one-tenth the social security numbers of the 1-percent file and, being smaller, is more adaptable for many national work force analyses. It also contains more detailed earnings information.

First Quarter Files. In addition to the previously mentioned annual files, two others were created at the request of the Bureau of the Census and the BEA -- the 1-percent and 10-percent first quarter files. (They are not, however, part of the regular CWHS system.) Their major advantage is their availability nearly 1½ years before the annual file. Disadvantages, however, include the absence of farm workers (who are included in the annual file) and of late reports (whose data are incorporated into the annual file) and a high incidence (6 percent of the 1973 file) of workers unclassified by state and county (most of whom are classified in the annual file).

10-Percent Sample. The Department of Housing and Urban Development (HUD), together with the Economic Development Administration, the Bureau of the Census, the Department of Health, Education, and Welfare (HEW), and other federal agencies, have sponsored a joint project by the BEA and the SSA to construct a 10-percent CWHS file for the first quarters of 1971 and 1973. This file provides estimates with much greater accuracy for states and local areas than data from the 1-percent sample.

The 10-percent file was first developed by the SSA, utilizing the procedures established for the comparable 1-percent sample employee-employer file. The completed file, with scrambled social security and employer identification numbers, was then forwarded to the BEA for further processing. A comparable 10-percent sample for the first quarter of 1975 is available.

SOURCES

Data on earnings and employment are derived from reporting forms submitted to the SSA by employers and self-employed persons. The taxable wages of employees are reported quarterly on Form 942 by household employers, on Form OAR-S3 by state and local government employers, and on Form 941 by most remaining employers. Farm employers report annually on Form 943, and self-employed persons annually on Schedule SE of Form 1040.

Employers list employees by social security number and name and report the amount of taxable wages paid to each worker during the reporting period.

Data on the age, sex, and race of employees are obtained from applications for social security numbers (Form SS-5). These data constitute the "personal characteristics file." No guidelines are provided on the form for choosing among the race categories ("white," "Negro," and "other"), and problems sometimes arise due to personal interpretations. Variations frequently occur among Spanish-Americans, some of whom place themselves under the "other" category, while others place themselves under the "white" category.

Geographic and industrial data for employers are obtained from applications for identification numbers (Form SS-4) and from other forms used periodically to update these applications (Forms OAA-100, OAA-103, and SSA-5019), as well as from periodic updates with data from the most recent economic census. The information derived from these forms is referred to as the "employer identification file." Employers are assigned classifications based on the location and nature of their businesses.

SAMPLING PROCEDURES

The population, or sampling frame, from which the CWHS is selected consists of the one billion possible nine-digit social security numbers. These numbers have the following digital arrangement:

Area in which number assigned (three digits)	Group number (two digits)	Serial number (four digits)
XXX	XX	XXXX

In the issuance of social security numbers, each state is assigned one or more area numbers. Each area number, in combination with a given group number, defines a stratum. The population assigned social security numbers is thus stratified geographically (by place of application for social security number) and chronologically (by the process of assigning these numbers). Each number is an element of a given stratum, and the population represented by the possible one billion elements constitutes the sampling frame.

The CWHS is a longitudinal sample of persons with covered employment. The sample consists of all persons who have social security numbers with specified digits in certain of the serial-number positions and who have covered employment during any defined reference period. The digital selection pattern remains constant. The employment and earnings histories for persons in the sample are available from 1957 forward, with limited additional earnings data going back to 1937.

The 1-percent CWHS may be described as a stratified cluster probability sample of all possible social security numbers. A stratum consists of all social security numbers with the same area-group number. In a stratum for which all numbers have been issued, the 1-percent sample consists of 100 of the 9,999 social security numbers issued. (Numbers ending in 0000 are not assigned.)

The clustering within a stratum arises from the particular digital selection procedure used, in combination with past methods of assigning social

security numbers. Because of the clustering, sampling errors of estimates from the 1-percent CWHS are slightly larger than those that would result from a stratified random sample of the same size.

The present design of the 1-percent sample evolved from earlier sample designs -- an initial 20-percent sample and a later 4-percent sample. All past designs have used the same stratification modes as are used in the present design.

The 10-percent CWHS is equivalent to a stratified random sample. The strata are the same as those used for the 1-percent sample, and the digital selection procedure within strata is such that there is no clustering effect. Therefore, sampling errors of estimates from the 10-percent CWHS are about the same as or slightly smaller than those that would result from a simple random sample of the same size.

LIMITATIONS OF CWHS DATA

Coverage

No major changes in the coverage provisions of the social security system have taken place since 1957, even though social security benefits and taxes have increased substantially in recent years. Currently, the system covers over 90 percent of workers in paid employment. Major groups covered are:

1. federal civilian employees, who are covered under the civil service retirement system;

2. employees of state and local governments who have not been covered by a federal-state agreement;

3. certain agricultural and domestic workers; and

4. employees of those nonprofit organizations which have not arranged for the social security coverage of their employees.

Certain types of employment are excluded from social security coverage altogether:

1. newsboys under 18 years of age;

2. agricultural employees who neither receive $150 or more from one farm employer during the year nor receive wages from one farm employer for 20 or more days during the year;

3. employees of nonprofit organizations who are paid less than $50 for work performed in a calendar quarter, student nurses, and students employed by colleges or universities where they regularly attend classes;

4. employees of nonprofit organizations, as specified in section 501(c)(3) of the Internal Revenue Code, who fail to request coverage;

5. members of religious orders which do not elect coverage;

6. domestics who receive $50 or less in a calendar quarter from all household employers;

7. persons under federal civilian retirement system;

8. policemen under the retirement system of 29 states;

9. state and local employees not under federal-state agreements;

10. employees under the railroad retirement system;

11. self-employed persons who have less than $400 net earnings and less than $600 gross income from self-employment;

12. self-employed persons who have reached the taxable maximum in wage and salary employment; and

13. clergymen who have obtained an exemption from coverage or whose combined net (or gross) incomes from the ministry and self-employment are less than the amounts shown in item 11.

Persons engaged in these activities, however, may be covered by social security due to employment in other, "covered" categories.

The effects of total or partial coverage exclusions vary widely by state. CWHS data will not, for example, produce accurate work force or migration data for the District of Columbia because of the exclusion of federal civilian workers. This problem could be alleviated, however, by including data from the sample of Civil Service personnel records.

Another inadequacy is the lack of participation of state governments in the Establishment Reporting Plan (ERP). In some states, all state employees are reported as working in the county in which the capital is located, even though many may actually be working in other counties.

Similarly, agricultural data from the BEA first quarter system must be interpreted with caution, since self-employed workers are not included in the BEA migration analysis files, and most paid farm workers are reported on an annual basis.

Sampling Variability

The accuracy with which the CWHS measures work force characteristics depends, in part, on the sampling variability associated with the estimates. Generally, variation is expressed as the "standard error" of the estimate (or "relative standard error"--standard error divided by the estimate) and can be used to place "confidence limits" on the estimate.

As in many probability samples, the relative variation associated with CWHS estimates depends mainly on the size of the sample. Thus, for example, the relative variation associated with an estimate of the percentage of workers aged 20-24 generally will be larger for a state than for the nation as a whole.

The Social Security Administration (SSA) has continuous studies designed to measure the sampling variability of selected items from the CWHS. The accuracy of the percentage estimates increases with either an increase in the sampling fraction (from 1 percent to 10 percent) or an increase in the size of the base from which the estimates are derived.

The design of a sample may affect the variation of the estimates. The 1-percent CWHS is not a simple random sample but, rather, a stratified sample (stratified by the first five digits of the social security number, indicating the State and time period in which the number was issued) of "clusters" (consisting of blocks of social security numbers). Because this sampling procedure assigns numbers within a block in random order, the sample design should only minimally affect variation. The 10-percent CWHS, however, can be considered a stratified random sample. The sample design should have little effect on the expected variation because there is no clustering.

Using the specific formulae associated with stratified cluster sampling, an SSA study computed the standard errors of estimates of numbers of persons. The standard error of a given estimate is about 3.31 times larger in the 1-percent than in the 10-percent sample. Also, while the absolute size of the standard error increases with the size of the estimate (in both samples), the relative standard error diminishes steadily; this reflects the greater relative accuracy associated with higher percentage shares.

The sample estimate and an estimate of its standard error permit one to construct interval estimates with prescribed confidence that the interval includes the average result of all possible samples drawn with the same specifications.

The SSA study also computed the relative standard errors associated with estimates of average total earnings. Because the size of the relative error is primarily related to the size of the sample, these results are shown for various population bases. The results can be used to assess the accuracy of average earnings estimates for areas of various sizes.

The above-noted standard error tables show that the greater the number of observations in a particular frame of reference the smaller the standard error, relative to the number of observations, and the higher the statistical reliability.

As an additional assessment of the validity of the CWHS, the SSA has measured the differences between data tabulated from 100 percent of social security records and sample statistics from the 1-percent CWHS, for selected categories, at the national level. The sample results are generally within 1 percent of the figures for the total statistical population. The largest differences in the number of workers are for those in the 72+ and "unknown" age categories; these disparities are probably due to timing differences between the population and sample statistics used. (Age changes to social security records are filed most frequently by workers applying for retirement benefits.)

Reporting Errors

Reporting errors are perhaps the most serious limitations to the use of CWHS data for work force mobility analysis. A single error in establishment location or in assignment of workers to establishments may cause numerous errors in estimates of inmigrants, outmigrants, and nonmigrants.

Most of the reporting errors appear to be associated with multi-establishment employers. Under the social security program an employer is legally required to report only by firm. When a multi-establishment firm applies for an identification number, it is asked to supply an individual report for each establishment, under the Establishment Reporting Plan (ERP). Relatively few employers refuse to comply with the ERP, but some comply incorrectly.

Sources of reporting errors include:

1. failure of employers to file revised Form 5019, after implementing new numbering arrangements for establishments;

2. assignment of all employees of a multi-establishment firm to a single location;

3. erroneous groupings of employees by establishments on Form 941;

4. processing errors; and

5. erroneous establishment location codes in the SSA employer file.

SSA experience indicates that errors occurring after a firm begins using the ERP are usually due to changes in the firm's organizational structure, major revisions in the firm's payroll and record-keeping system, or new personnel inexperienced with ERP requirements.

The two types of editing procedures help identify and correct reporting errors:

1. The SSA has been testing a program for incorporating information on place of residence into the CWHS files. In these tests, workers who have inconsistent

place-of-residence and place-of-work codes (that is, codes for areas which are not within the same BEA economic area) have been flagged and investigated to determine if reporting errors are involved.

2. During the BEA's annual update of the first quarter longitudinal file, worker records with the same employer codes, but different state and county codes, are flagged. (Most of these reflect true inter-establishment moves within firms.) Potential errors --an excess of inter-establishment moves or a move to a single establishment by a firm's entire work force (indicating discontinuance of the ERP)--are forwarded to the SSA, where they are checked against related data and corrected, if necessary.

The corrections for 1970-71 affected 6.6 percent of all interstate migrants and influenced the flows for all states; in 6 states the corrections amounted to more than 10 percent of the inmigrants total, and in 5 States they were more than 10 percent of the outmigrant total.

Other Limitations

While coverage, sampling variability, and reporting error limitations affect all CWHS data, other limitations affect particular data files or particular uses. The unclassified worker problem, for example, primarily affects the preliminary first quarter files; problems associated with military workers and new entrants, in contrast, mainly affect the use of the data for population migration estimation.

Unclassified by State, County, and Industry. Information on state, county, and industry of employment is obtained by matching wage records for the current period with the employer identification (EI) file. If a record for a current establishment is not in the EI file, the workers reported for that establishment are unclassified by state, county, and industry.

Many more workers are unclassified by state, county, and industry in the first quarter CWHS files than in the annual files, because the 1½ year span separating the creation of the two files provides time for new employer information to be incorporated and for errors to be identified and corrected. The number of workers unclassified by state, county, and industry increased from approximately 3 percent of the 1970 first quarter file to 6 percent of the 1973 first quarter file; this increase, however, reflected unusual circumstances which are not expected to recur.

The unclassified worker problem will cause local area estimates of total work force and gross migration, based on the preliminary first quarter file, to be understated. However, the characterization of an area's work force, in terms of demographic and economic variables, is unlikely to be significantly affected.

Unclassified workers appear to be more mobile than the rest of the work force; thus, both migration rates and migration gross flows based on the preliminary first quarter file will be biased downward. The overall migration rate of formerly unclassified workers is more than twice that of the total work force.

Lack of Timeliness. A key limitation of the annual employee-employer files is their unavailability until approximately 2½ years after the end of the subject year. To reduce this time lag, the BEA, through a special agreement with the Bureau of the Census, acquires a preliminary first quarter file about 15 months after the end of the subject quarter.

Lack of Geographic Data for Military Personnel. Information on state and county of employment for federal military and military reserve personnel is not available. When a military worker enters an area's civilian work force, he is considered an inmigrant to that area from a hypothetical pool of "military and unclassified" workers.

For 1971-72, data on the movements to and from the military indicate a strong bias in the direction of migration from the military. For any area and time period, military outmigrants greatly outnumber inmigrants, because new military workers tend to be new entrants to the work force rather than migrants from other jobs. Because of this bias, the flows to and from the military are shown separately in the BEA's migration summary tabulations.

Lack of Migration Data on Entrants and Exits. Workers who receive wages reported to social security in only one of the two time periods of a given migration study are considered new entrants to (worked in the ending period only) or exits from (worked in the beginning period only) the covered work force. CWHS gross migration flows are underestimated by the amount of these groups' migration. However, to the extent that entrants and exits migrate at the same rate as the rest of the work force, the migration rates may not be underestimated, and the gross flows can be adjusted by applying the rates (exclusive of entrants and exits) to the total work force.

GLOSSARY

(The definitions are in general terms suited for nontechnical use.)

Cohort: a group of persons born in a specified year or period. Demographic analysis traces statistics for a cohort through time. For example, the survivors of a cohort born April 1, 1950 to April 1, 1955 are 5 to 9 years of age on April 1, 1960, and 15 to 19 years of age on April 1, 1970.

Cohort-component method: a method of carrying forward the population by age (and if desired, by sex and race) and by component (births, deaths, migration), maintaining cohort identity.

Commutation: the movement of a person from his/her place of residence to place of work and return.

Component: the components or parts that make up population change are births, deaths, and migration.

Demographic-economic projection: a population projection obtained by using both demographic components of population change (births, deaths, and migration) and economic factors, which are used in obtaining migration projections.

Employment: the number of jobs in a geographical unit.

Estimate: a population figure representing some date in the past, derived by carrying forward the immediately preceding census count, using statistics for elements related to population change.

Forecast: a type of projection which represents a judgement about probable future change rather than merely the consequences of a set of hypothetical assumptions.

General fertility rate: the number of births in a year divided by the mid-year number of women of childbearing age (usually 15 to 44 years of age). Generally expressed per 1,000 population.

Gross migration: data which identify separately out- and in-migrants for each geographical unit.

Inmigration: the migration of population into a geographical unit.

Labor force: the number of workers and persons looking for work (the unemployed) living in a geographical unit.

Labor force participation rate: the proportion of a population in the labor force, usually specified by age and sex.

Migration: a permanent change of residence from one geographical unit to another.

Negative netmigration: the net balance of in- and outmigration for a geographical unit when there is more outmigration than inmigration.

Net census undercount: the net balance of errors in census counts for age groups due to the combined effect of failure to enumerate all persons, and misreporting of age.

Netmigration: the net balance of in- and outmigration for a geographical unit.

Outmigration: the migration of population out of a geographical unit.

Place-to-place migration: migration statistics identifying separately the origin and destination of migrants.

Positive netmigration: the net balance of in- and outmigration for a geographical unit when there is more inmigration than outmigration.

Plus-minus adjustment: a technique whereby a set of numbers with both positive and negative values is adjusted so as to sum to a new predetermined total.

Prediction: an unequivocal statement about a future value.

Projection: a figure for a future date obtained by carrying forward assumed trends, without modification of the projected numbers once the assumptions are defined and established.

Survival rate: a rate which represents the proportion of the population of a specified age surviving for a specified period of time.

Underenumeration: the failure to enumerate numbers of a population in a census or survey, as distinct from net census undercount, which includes the effect of misreporting of characteristics, particularly age.

Workforce: the number of persons working in a geographical unit who could live either in that unit or outside of it.

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