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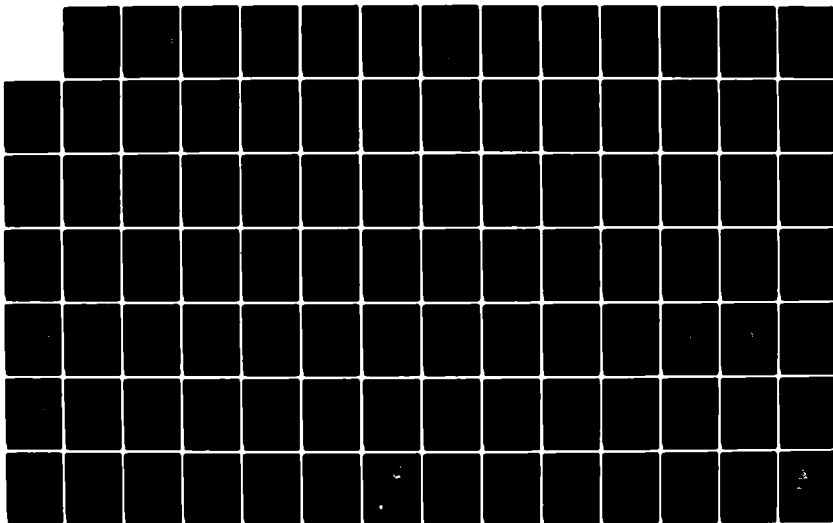
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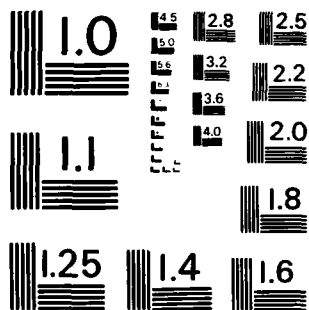
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UNITED STATES MILITARY RETIREMENT MIGRATION:
PATTERNS AND PROCESSES

Carroll Taylor Barnes, Ph.D.
Department of Geography
University of Illinois at Urbana-Champaign, 1984
Geoffrey J. D. Hewings

Department of Defense policy concerning the stationing of the military population has a direct impact on population redistribution patterns. The rate and volume of the movement of military personnel and their dependents represents an important element in this redistribution. There is, however, an important additional population redistribution impact resulting more indirectly from Defense Department actions. With a strength in excess of 1.3 million persons, the geographic patterns of the retired military population reflect the long term effects of governmental relocation policy. Each year approximately 45,000 to 50,000 military members retire from active military service and select a retirement location. These retirees have considerable impact on the areas in which they choose to live. However, because of a dearth of published information on the location and movement of military retirees, the magnitude of their impacts is unknown.

The purpose of this research is to analyze the spatial aspect of the military retirement process in order to determine the factors contributing to the selection of a retirement lo-

cation and the impact of that process on population redistribution within the United States. The model for the research is based on the premise that retirees select a specific retirement location as a result of their military and/or civilian experiences. This experiential base model is tested at an aggregate and individual level using regression, chi-square, and probit analytical models.

The findings of the research indicate that military retirees are making their retirement location decisions based on their experiences resulting from a military career rather than from pre-military or civilian experiences. First, they have a high propensity to retire near a military installation, preferably one to which they have been assigned previously. Secondly, birthplace or place of origin is not a significant pull factor. Retirees are not returning "home" upon retirement from military service. Friendship ties, economic factors, and environmental amenities are significant variables when selecting a retirement location. Consequently, the implicit military assignment policies of the Department of Defense are in effect acting as catalysts in redistributing the United States' population.



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PATTERNS AND PROCESSES

BY

CARROLL TAYLOR BARNES

B.S., University of Missouri, 1967
A.M., University of Missouri, 1969

THESIS

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Geography
in the Graduate College of the
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PATTERNS AND PROCESSES

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Geoffrey J D Hewings

Director of Thesis Research:

Geoffrey J D Hewings

Head of Department

Committee on Final Examination†

Geoffrey J D Hewings

Chairman

Harold F. Wilkerson

James O. Huff

† Required for doctor's degree but not for master's.

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1984

ABSTRACT

Department of Defense policy concerning the stationing of the military population has a direct impact on population redistribution patterns. The rate and volume of the movement of military personnel and their dependents represents an important element in this redistribution. There is, however, an important additional population redistribution impact resulting more indirectly from Defense Department actions. With a strength in excess of 1.3 million persons, the geographic patterns of the retired military population reflect the long term effects of governmental relocation policy. Each year approximately 45,000 to 50,000 military members retire from active military service and select a retirement location. These retirees have considerable impact on the areas in which they choose to live. However, because of a dearth of published information on the location and movement of military retirees, the magnitude of their impacts is unknown.

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research is based on the premise that retirees select a specific retirement location as a result of their military and/or civilian experiences. This experiential base model is tested at an aggregate and individual level using regression, chi-square, and probit analytical models.

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CHAPTER I

INTRODUCTION

"It is basically very simple. Retirees select a retirement location based on the desires of their wives!"

Changes in the growth, composition, and distribution of population are major sources of concern for both local and national governments. They are also, at least partially, the result of governmental actions. Some governmental population policies are clearly explicit, such as family planning programs to aid in the control of fertility; public health programs aimed at improving health and reducing mortality; and population control programs directed at regulating international migration (Bock, et al., 1971; Morrison, 1975). Although the United States has not adopted policies specifically designed to affect population redistribution, some indirect measures are contributing to population shifts, which in the future may require governmental response. An example is the effect of differential welfare benefits on the interstate movement of low income persons, especially into New York and California (Weisbrod, 1970). To impede the perceived growth of the number of welfare

recipients, state governments responded by enacting legislation instituting welfare residency requirements.

Another policy area that has a direct impact on population redistribution patterns involves Department of Defense decisions concerning the stationing of the military population. This population includes persons on active duty as well as those entering and leaving military service. The rate and volume of the movement of military personnel and their dependents represents an important element in the redistribution of population. Department of Defense policies act as catalysts in this redistribution and effect considerable short and long term social and economic impacts. The patterns of military migration are the direct result of defense installation location policies and subsequent governmental decisions to close bases, realign military missions, or even site new installations, such as in the case of the proposed "MX" weapon system.

There is however an important additional population redistribution impact resulting more indirectly from installation location policies. With a strength in excess of 1.3 million persons, the retired military population living in the United States reflects the long term effects of government relocation policy. Each year approximately 45,000 to 50,000 military members retire from active duty, usually following 20 to 30 years of service, and select a retirement

location. These "retirees" have a considerable impact on the areas in which they choose to live. They are considerably younger than other retirees in the population, typically develop second careers, are receiving retirement pay, and often have dependents in school.

Problem Statement

During the last decade, social scientists have shown increasing interest in the impact of military migration on the distribution of the population within the United States (Weinstein and Firestone, 1978). Despite this increasing interest in military migration, relatively little inquiry into its role in shaping population patterns has been made. Although there is considerable impact literature concerning base closures, the military retirees' impact is not addressed. Except for the work of Barnes and Roseman (1981) there is an absence of research concerning the impact of the military retiree on population patterns. Similarly, because of a dearth of published information on the location and movement of military retirees, the magnitude of their impacts on population redistribution is not known. Their initial location choices, subsequent migration patterns and impacts on local communities have been ignored in the

literature. Because so little is known concerning the role of the military retiree in shaping population redistribution, this research seeks to determine the spatial pattern of military retirees within the United States and explain the processes contributing to the pattern.

Benefits of the Study

This study will benefit the United States Department of Defense by providing information on retirement patterns of U.S. military personnel. In event of base closure or realignments, this information will be invaluable in determining regional employment multipliers as required in environmental impact statements. This research on military retirees is a pioneering effort. As such, it will extend the threshold of migration theory.

A side benefit will be its usefulness to military members contemplating retirement and to state planning agencies and local city governments in determining the social and economic structure of their communities. Military installation commanders will also benefit from this research. Base agencies are staffed to serve the active duty population and their dependents, with little if any consideration given the retired military personnel living

nearby. However, by law, commanders are required to provide for the "health, morale and welfare" needs of all military personnel, regardless of their duty status. Consequently, with the retired military strength exceeding the active duty strength in many localities, commanders are becoming concerned with the impact military retirees are having on base services. For example, Major General Norma E. Brown, former Commander of Chanute Technical Training Center, Illinois, used the results of this research to project future in and out patient care requirements for the base hospital.

Personal Interest In The Research

As a career Air Force officer, I have witnessed the socio-economic impacts that military installations have on local communities. The economic shock of base closures is often devastating, sometimes even fatal to a community's well being. Often a considerable number of "locals" are dependent on the base for employment as well as social services, either directly or indirectly. One such civilian group is the military retired populace. During the past few years I have developed a keen interest in the process whereby a military retiree selects a retirement location. What geographic factors influence a military member's selec-

tion of a retirement location? Is there a tendency for retirees to "settle" near military installations? Having been exposed to 14 years of military experiences and countless numbers of military retirees, I feel compelled and qualified to search for an answer to these and other questions.

Purpose

The purpose of this research is to analyze the spatial aspect of the military retirement process in order to determine the factors contributing to the selection of a retirement location and the impact of that process on population redistribution within the United States. The model for the research is based on the premise that retirees select a specific retirement location as a result of their military and/or civilian experiences. This experiential base model is tested at an aggregate and individual level.

The research objectives are to:

- 1) Describe the current spatial pattern of military retirees in the United States.
- 2) Explain the process underlying the pattern of military retirement migration through the specification of the factors contributing to the aggregate

distribution of military retirees.

3) Explain the process underlying the pattern of military retirement migration through specification of the factors influencing the selection of a retirement location at the individual level. This includes factors contributing to the selection of the initial retirement location; identification of the factors impacting on the decision to make subsequent moves; and factors contributing to intentions of moving in the future.

Justification For The Study

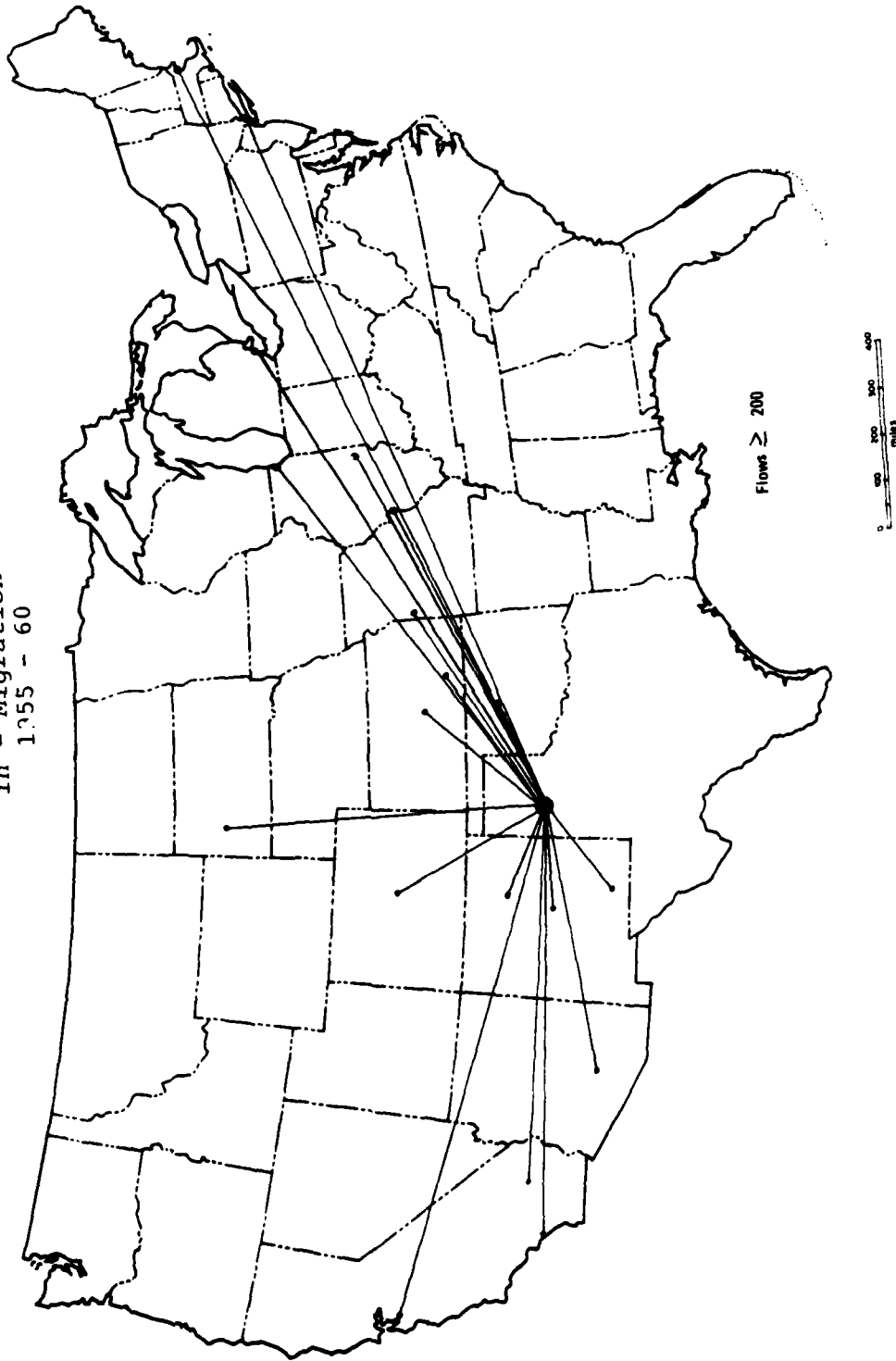
Morrison (1975) notes that public policies seem to be arbitrarily influencing the attractiveness of areas. He further states that agencies which award defense contracts and site federal installations are simultaneously redistributing employment growth and exerting a powerful migratory influence, some of which may be permanent.

It is common knowledge that military installations close or have their mission realigned due to national defense requirement changes. Technology often dictates requirements for new facilities with the result that older, less sophisticated systems are phased out. In the early

1960's manned bomber inventories began to be reduced in favor of the more potent Titan and Minuteman missile systems. Today, the Peacekeeper system is being recommended as the defense strategy of the twenty-first century. Because of changing defense missions and a relatively peaceful past decade, United States military strengths as well as number of installations has decreased since 1968. In 1969, during the height of our Southeast Asia involvement, approximately 3.6 million Americans were in uniform. Currently, we have slightly more than two million persons serving in our armed forces. This decline in personnel strength was also reflected in the closing of over 1400 military sites, stations, depots, and bases since 1968.

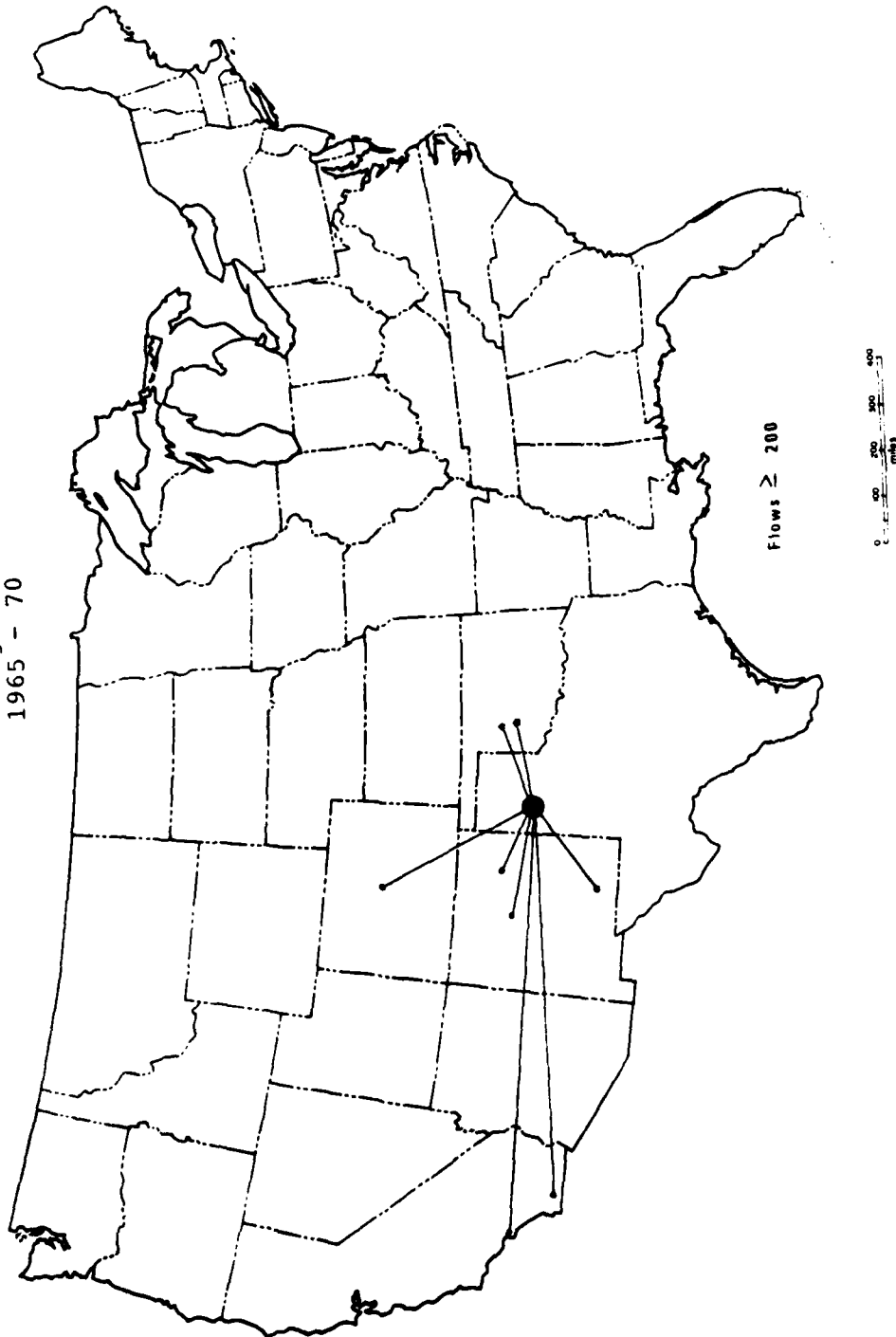
The closure of these defense sites often had devastating economic consequences on nearby communities. As a result of the realignments, many military members and dependents were forced to move. Evidence of the impact of base closings on the movement of persons is reflected in the in and out migration patterns of the Amarillo State Economic Area, Texas. Amarillo, Texas was the site of a large Strategic Air Command (SAC) base until its closure in the mid 1960's. Comparing flows of in-migrants for the periods 1955 to 1960 and 1965 to 1970 (Maps 1 and 2), it is evident that the salient flows of the latter period are localized and quite restricted, reflecting the influence an active

MAP 1
AMARILLO SEA
In - Migration
1955 - 60



MAP 2

AMARILLO SEA

In - Migration
1965 - 70

military base has on population flow.

Moreover, there is evidence to suggest that the military personnel policies for manning defense installations have affected the spatial distribution of this country's population. According to Long (1976), the impact of military migration appears to have a strong regional effect on population distribution. Using state to state flow data for the period 1965-1970, he found that military personnel comprised 11.6 percent of all interstate migrants and 14.2 percent of all interregional migrants in the United States. More specifically, 39 percent of all migrants from Wisconsin to North Carolina were entering military service whereas 23 percent of the migrants from South Carolina to Pennsylvania and 28 percent of the migrants from Georgia to Minnesota were exiting the armed forces. In relation to these findings, Long notes that interstate migrants entered military service in proportion to the population in the state of origin, a phenomenon quite likely associated with the conscription policies of the federal government.

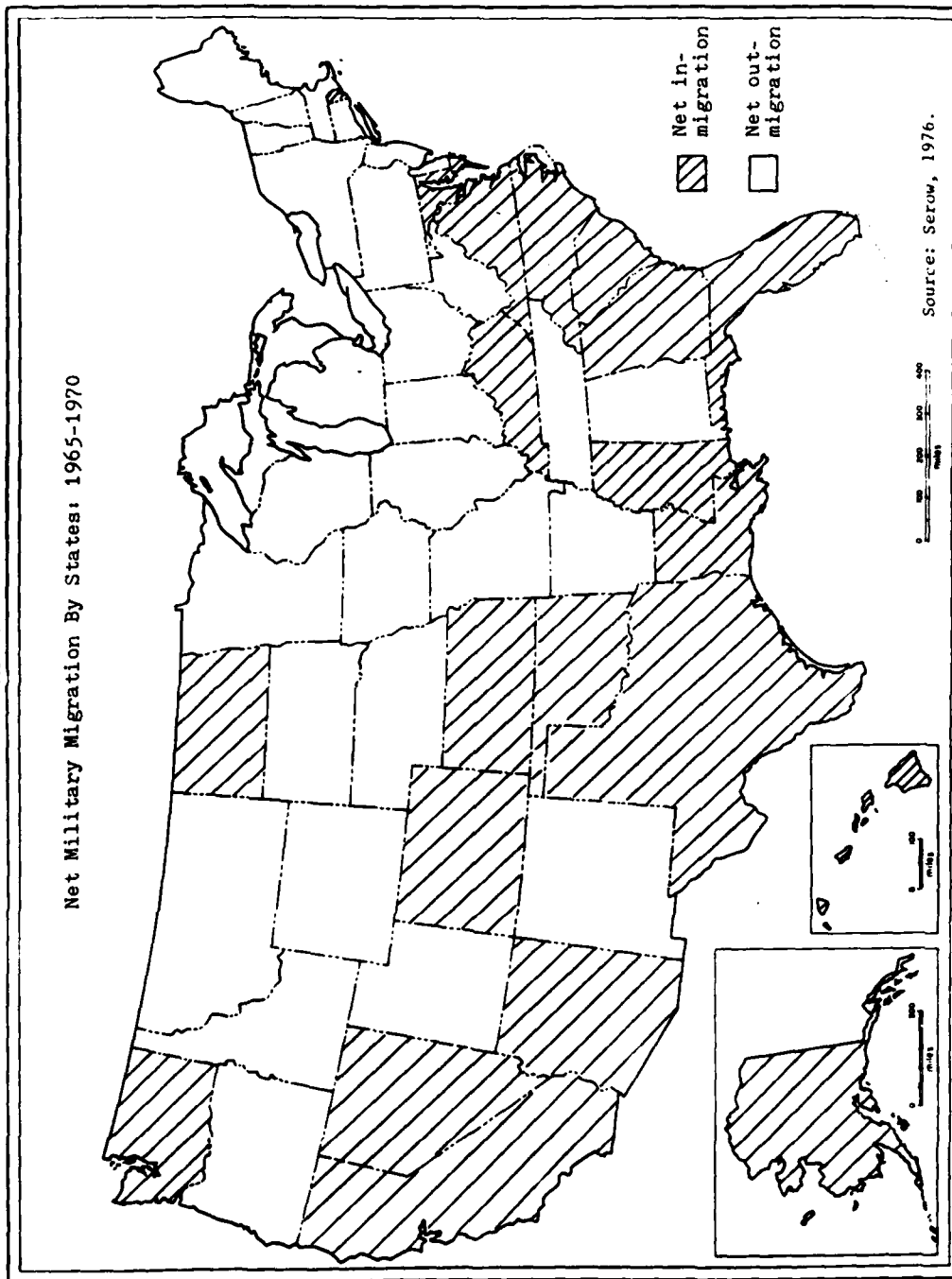
The regional impacts of military migration are significant. With an average strength in excess of two million persons, military migration has the potential of affecting long term population distribution patterns. Serow (1976) reported that between 1965 and 1970, the loss of population from the Northeast and North Central regions through persons

entering the armed forces was not compensated for by the gain of in-migrants leaving military service. Armed forces migration for the period 1965 to 1970 resulted in a net loss of over 365,000 people in these regions, while the South and West experienced a net gain of over 365,000 military migrants. This redistribution may not be surprising when one considers that approximately 80 percent of the Army training centers, 65 percent of the Air Force technical training installations, and 50 percent of the Naval/Marine Corps schools are located in the West and South.

The impacts of these movements on individual states reflect considerable regional variation (Map 3). States experiencing a net gain in military migrants from '965 to 1970 were primarily in the South and West. The largest net gains were experienced by California (101,000), Virginia (74,000), Texas (39,000), and North Carolina (37,000). Net losses were concentrated in the northern tier of states with the exception of Rhode Island and North Dakota, which had net gains of 13,000 and 2,000 respectively. The largest net losses were in the Middle Atlantic (-128,000) and East North Central (-168,000) regions. The primary contributors to these losses were the states of New York (-64,000), Pennsylvania (-60,000), Ohio (-56,000), and Michigan (-40,000). These net "loss" states are states having a high population

MAP 3

Net Military Migration By States: 1965-1970

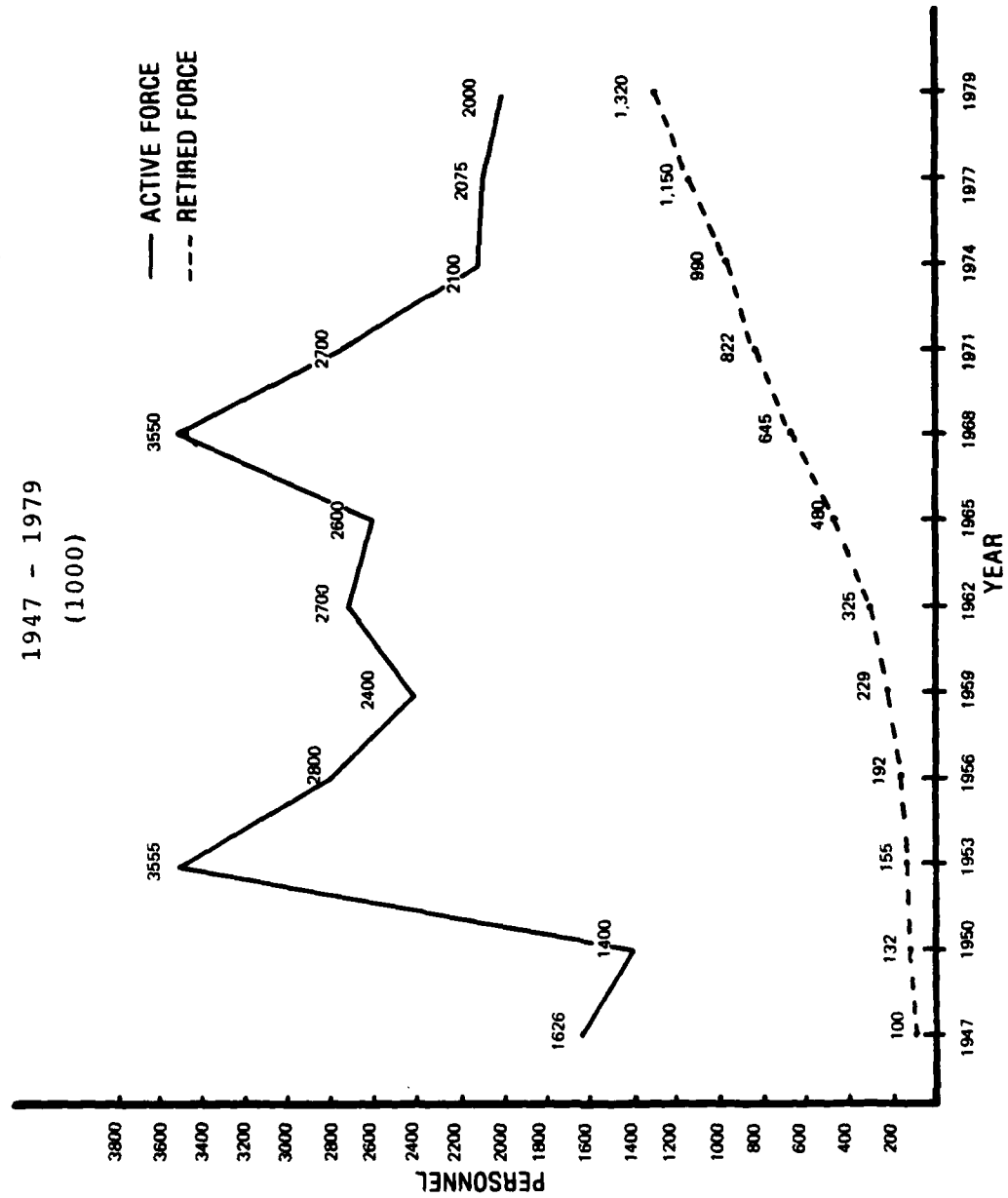


at risk for military service, i.e. large numbers of 18 to 26 year olds, yet having few if any major military installations to attract military immigrants. In total, these four states contain fewer than 50,000 active duty military personnel or about one and one-half percent of the total military force.

The large net gainer states have several large military reservations. California alone has over forty Army, Navy and Air Force assignment locations. During the 1965 to 1970 time period, Camp Pendleton, California maintained an average strength in excess of 2,000 active military personnel. Other net gaining states also had one or two large installations: Norfolk Naval Station (89,000 personnel) in Virginia; Ft Hood (40,000 personnel) and Lackland Air Base (22,000 personnel) in Texas; and Ft Bragg (38,000 personnel) in North Carolina.

A corollary to this movement of active duty military personnel is the process of selecting a retirement location by a military retiree. With a strength approaching equilibrium with the active force (Figure 1), retired military personnel are becoming significant actors in the population redistribution process. The above aggregate statistics imply that first term military recruits may not be returning "home" upon separation. After twenty plus years, are military retirees returning to their pre-military locations or

FIGURE 1
ACTIVE DUTY and RETIRED MILITARY FORCES
1947 - 1979
(1000)

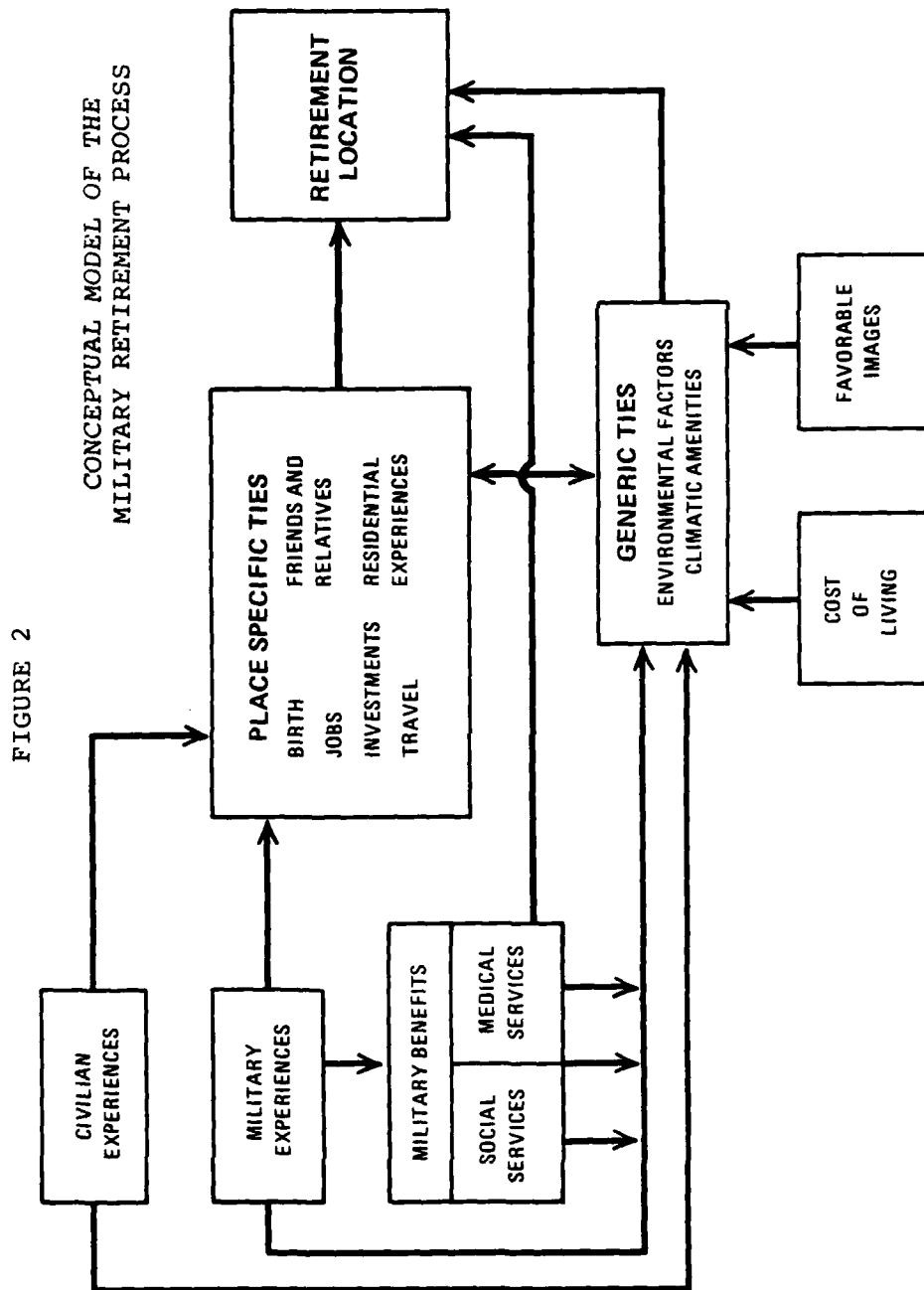


are they funneling out to other more attractive locations?

Considerable research has been done on the impacts of base closures on community environments (Bock, 1971; Breeze, 1965). However, like all base closure impact statements prepared for the Department of Defense, they generally only consider the impact of mission realignments on active duty military and government civilian workers. The military retirees living within base closure impact areas are invisible to most researchers. Yet, because of continuing base service privileges and other benefits, retirees appear to be agglomerating near major military installations.

Conceptual Model of the Military Retirement Process

Military installations often serve as filters through which populations pass, are redistributed and then return to their previous places of residence. Alternatively, military retirees may not return to their pre-military residential locations. Instead, they might "retire" to locations where they have established ties through personal or economic channels, while in military service. The framework guiding this research is based on a conceptual model of the factors influencing the military retiree's selection of a retirement location (Figure 2).



The model posits two broad categories of factors which may influence the selection of a retirement location: civilian experiences and military experiences. Civilian experiences, those prior to entry into the armed forces, relate to the categories of place specific ties and generic or non-place specific ties, both of which can influence the selection of a retirement location. Military experiences also relate to both of the above mentioned categories. Place specific ties or location specific capital (Roseman 1977; DaVanzo and Morrison 1978) include a set of ties which have been acquired by an individual during his or her lifetime. These factors include relatives, friends, economic investments and travel experiences, and reflect strong attachments to specific places which have been acquired from either civilian or military experiences. A subgroup of the military experience category, military benefits, relates to benefits resulting from a military career and could influence, independently or in conjunction with military experiences, the selection of a retirement location. The other broad category, generic ties, includes attributes which might influence the selection of a broad region, such as environmental factors, climatic amenities, and/or economic factors broadly defined as "cost of living". As military members progress through their careers they are amassing information concerning the attributes of potential

retirement locations based on direct as well as indirect experiences. Most of these potential destinations, i.e., the places where he or she has been stationed, have facilities and services which would enhance their attractiveness to retirees: on base services such as the exchange, commissary, hospital or medical facility to include dental and optometry services, and social organizations such as clubs and volunteer societies. For most retirees, therefore, there is an advantage in locating near a military base, a factor which highlights the role of government base location policies in ultimately influencing this aspect of population redistribution.

When retirement from military service draws near, will these place specific utilities resulting from military experiences be instrumental in selecting a retirement location? Is there a relationship between military experiences and the retirement location? How important are military experiences in the selection of a broad destination region such as the sunbelt or snowbelt? Is the selection of a specific retirement destination the result of location specific ties such as friends, relatives, economic investments, travel and/or residential experiences which were accumulated through military moves and assignments? Or, are military members retiring from active duty and returning to their birthplace or their pre-military locations? In

reference to the quote at the beginning of this chapter of one of the military retirees surveyed in this study, how important are familial considerations in selecting a retirement site? Also are generic ties such as environmental factors, climatic amenities, economic aspects, and favorable images of an area or region significant factors in explaining the military retirement process?

Also, following the selection of an initial retirement location, do military retirees have a high propensity for subsequent migrations? If so, are they precipitated by life cycle changes and quality of life variables or are they job related? What factors would contribute to intentions for future migration? Would retirees have a proclivity to move if the base near them closed?

This research addresses these questions and in the process, specifies some of the components relating to the spatial distribution of military retirees.

Hypotheses

The research objectives relating to the military retirement process are accomplished through the testing of the following hypotheses:

1. The spatial pattern of military retirees is a

function of an experiential base derived from prior military experiences with the retirement area.

2. The spatial pattern of military retirees is a function of military experiences, civilian experiences, and generic factors.

3a. The propensity for a military member to retire in the area of his or her terminal military assignment (TMA) is a function of military experiences, civilian experiences, and generic factors.

3b. Military retirees who do not retire at their TMA will have a propensity to retire near a military base of previous assignment because of ties acquired from previous military and civilian experiences with the area, and generic factors.

3c. The propensity for military retirees who do not retire at either their terminal military assignment or near a base of previous assignment to select a retirement location in close proximity to a military installation is a function of military experiences and generic factors.

3d. The propensity to migrate subsequent to the initial retirement move is a function of life cycle characteristics and quality of life variables.

3e. The anticipation of future migration is a function of work related factors, life cycle

characteristics, and quality of life considerations.

3f. Subsequent to a base closure, the propensity of military retirees in the impact region to migrate is a function of place specific ties and generic factors, and is inversely related to length of residence in the area.

Methodology

The military retirement location process, as outlined in the conceptual model, will be tested at both an aggregate and individual level. Data pertaining to military retiree strength by state and the District of Columbia was obtained from the Department of Defense, Manpower Data Center as well as the Department of Commerce, Bureau of Census.

At the macro level data were collected for each state and the District of Columbia concerning:

- a) Number of military installations
- b) Active duty military strength
- c) Number of draft registrants, aged 18-26 years
- d) Home state of the active duty force
- e) Number of heating degree days

- f) Number of physicians per 1000 population
- g) Recreation acres per 1000 population
- h) Median family income

These data were used to test the aggregate level hypotheses. The results of the above macrolevel analyses are discussed in chapter four.

The individual level hypotheses used to test the model of the retirement migration process are based on data derived through a questionnaire survey of Air Force retirees. The population sampled included all Air Force military personnel who retired from active military duty subsequent to 31 December, 1969 and are currently residing in the United States. A probability sample of 455 retirees was selected using a proportional stratified sampling technique. The sample was drawn by the Air Force Office of Survey Research from data maintained by the Military Personnel Center, Randolph Air Force Base, Texas.

The questionnaire employed in the individual level survey (Appendix A contains a copy of the questionnaire) was constructed in coordination with the University of Illinois Survey Research Laboratory. The questionnaire and its pre-testing are discussed in Chapter V.

Data Analysis

The model of the military retirement migration process will be tested at both an aggregate and individual level. At the aggregate state level, descriptive analyses employing maps and comparative statistics are performed. Additionally, ordinary least squares regression is used to test the aggregate level hypotheses.

The model of the retirement migration process is also tested at an individual level. Because the individual level data are categorical rather than continuous, the classical regression model is not appropriate. In the individual level analyses, both the response and explanatory variables are categorical. Consequently, these individual level hypotheses are tested using a probit probability model (Ashton, 1972).

Thesis Overview

Subsequent chapters will address the research questions outlined above. Chapter II will examine the location and movement of American military personnel. Then in Chapter III the relevant geographic factors impacting on the military retirement migration process will be specified. The

conceptual model of the military retirement migration process outlined in the chapter will be tested at an aggregate macro level in Chapter IV. Chapter V examines the research design used in testing the conceptual model at an individual level. Aggregate models infer individual behavior but do not measure it. Consequently, in Chapter VI, chi-square and probit probabilistic models are used to test these patterns at an individual level. Chapter VII is devoted to a summary of the findings and implications of the military retirement process on subsequent population redistribution.

CHAPTER II

LOCATION AND MOVEMENT
OF AMERICAN MILITARY PERSONNEL

"Frankly, sir, I think our policy of base choice is getting a little out of hand!"

The Active Military Population

Military retirees are, by definition, the terminal product of the military personnel system. Their recent experiential base has been derived largely from active duty experiences. Consequently, an examination of the patterns of the active military population, past and present, could provide evidence of the processes of military retirement migration. In 1979, some two million military personnel were serving on active duty in the Army (.8 million), Navy (.5 million), Air Force (.55 million) and Marines (.15 million). Not included in these figures are 2,879,000 dependents of active military personnel. Since record keeping began, the strength levels of the military forces have fluctuated considerably, reaching a peak of over 12,000,000 persons in May, 1945 (Department of Defense, 1980). Similarly,

since World War II strength levels have continued to be relatively unstable, especially when viewed in relation to particular branches of service (Figure 3). Since 1945, active duty military strength has varied from a post World War II low of 1.4 million troops in 1948 to a peak of over 3.6 million personnel in 1952, during the Korean Conflict. During the 25 years following our Korean involvement, the military personnel system expanded and contracted in synchronization with United States involvement in Southeast Asia. In late 1960, United States' military strength reached a post Korean War low of 2.5 million persons. During the zenith of our involvement in Southeast Asia (1968), military personnel strength had grown to a peak of 3.5 million. However, by 1979, a twenty-nine year record low of two million men and women were serving under arms. Table 1 contains the total military strength for all branches of service beginning in 1948.

With a commitment to preserve world peace and protect national interests, U.S. forces are located in more than one hundred countries. At the height of our involvement in Vietnam, over one million uniformed personnel were serving overseas with almost half of them assigned in Southeast Asia. As of 1979, seventy-seven percent of all active military personnel were stationed in the continental U.S. as opposed to twenty-three percent in foreign areas.

FIGURE 3
ACTIVE DUTY MILITARY PERSONNEL STRENGTH LEVELS - TRENDS BY SERVICE
 FISCAL YEARS 1949 - 1979

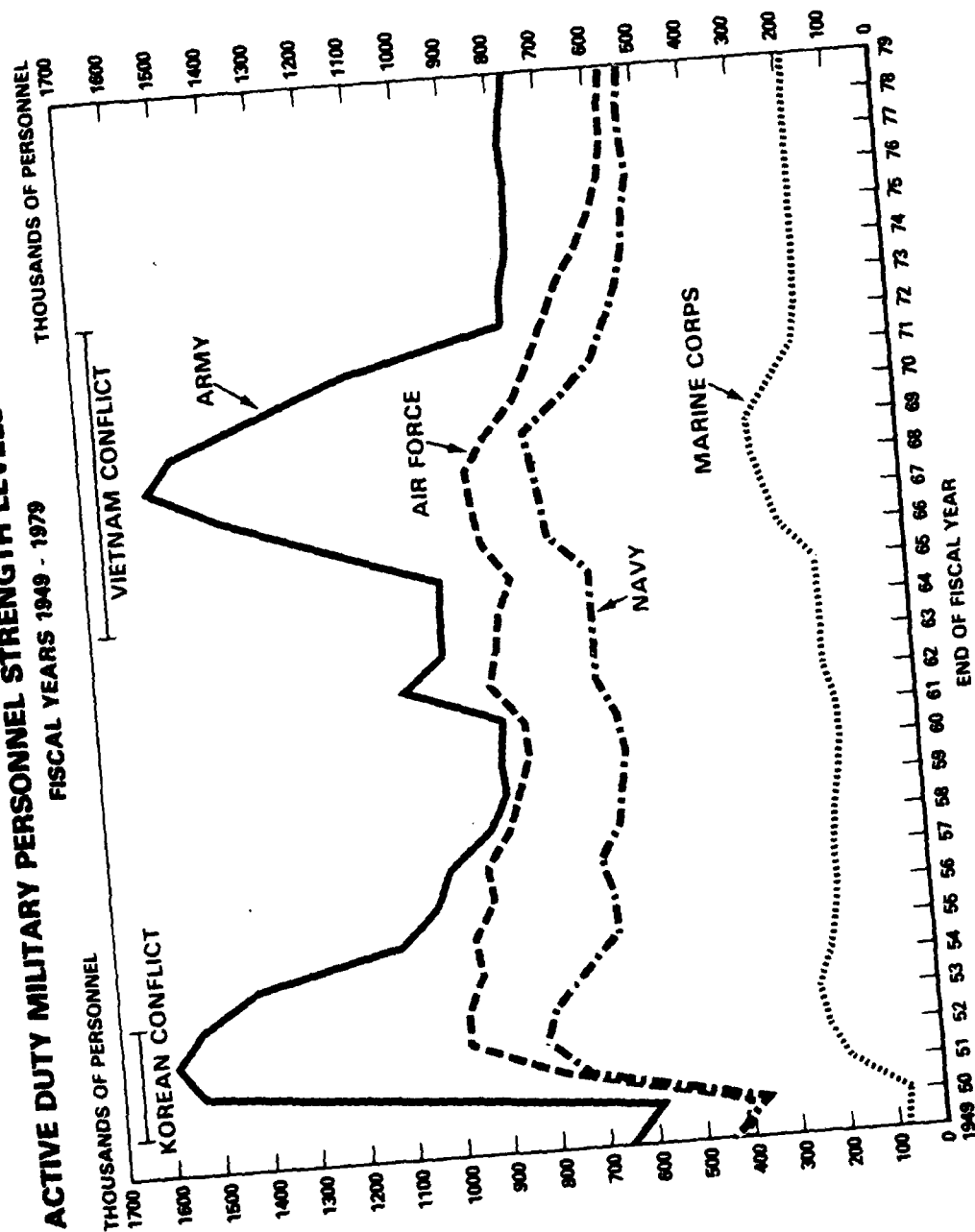


TABLE 1

ACTIVE DUTY MILITARY PERSONNEL

1948-1979

(1000)

<u>Year</u>	<u>Military Personnel</u>
1948	1,399
1949	1,420
1950	1,460
1951	3,250
1952	3,685
1953	3,555
1954	3,425
1955	3,178
1956	2,888
1957	2,794
1958	2,674
1959	2,565
1960	2,489
1961	2,490
1962	2,725
1963	2,702
1964	2,693
1965	2,668
1966	2,854
1967	3,297
1968	3,435
1969	3,446
1970	3,293
1971	2,891
1972	2,510
1973	2,323
1974	2,207
1975	2,145
1976	2,098
1977	2,073
1978	2,068
1979	2,045

The Overseas Military Population

In 1979 there were over 450,000 U.S. military personnel assigned in 113 foreign countries and territories (Department of Defense, 1980). The Department of Defense maintained 309 military installations in foreign locations. The Army was the host unit for 212 of these posts while the Air Force and Navy maintained 47 and 46 overseas bases respectively. Western and Southern European locations accounted for about seventy percent of all overseas personnel. These persons were concentrated in the North Atlantic Treaty Organization (NATO) nations with 245,000 servicemen alone assigned in West Germany. The second leading regional recipient of U.S. personnel was Eastern Asia and the Pacific region. Over 120,000 persons were located in this region with the largest numbers located in Japan (46,000) and Korea (39,000). The remaining few thousand troops were located predominately in Africa, South Asia and Latin American countries (Table 2). With the length of a typical overseas tour ranging between 18 months and three years, hundreds of thousands of U.S. military members are gaining knowledge of foreign areas. This knowledge will be called upon when, at the end of military service, a different residential location is contemplated. Currently there are approximately 20,000 United States military retirees residing in overseas

TABLE 2

DEPLOYMENT OF MILITARY PERSONNEL
IN FOREIGN AREAS

<u>Region/Country</u>	<u>Military Strength</u>
Western/Southern Europe	*325,000
East Asia/Pacific	122,000
South Asia	1,000
Africa	3,000
Latin America	7,000
Eastern Europe	200

* includes 291,000 NATO assigned personnel.

locations. Over two-thirds of these retirees live in Puerto Rico, the Philippine Islands, Germany and the United Kingdom (Department of Defense, 1980).

Active Duty Military Personnel in the United States

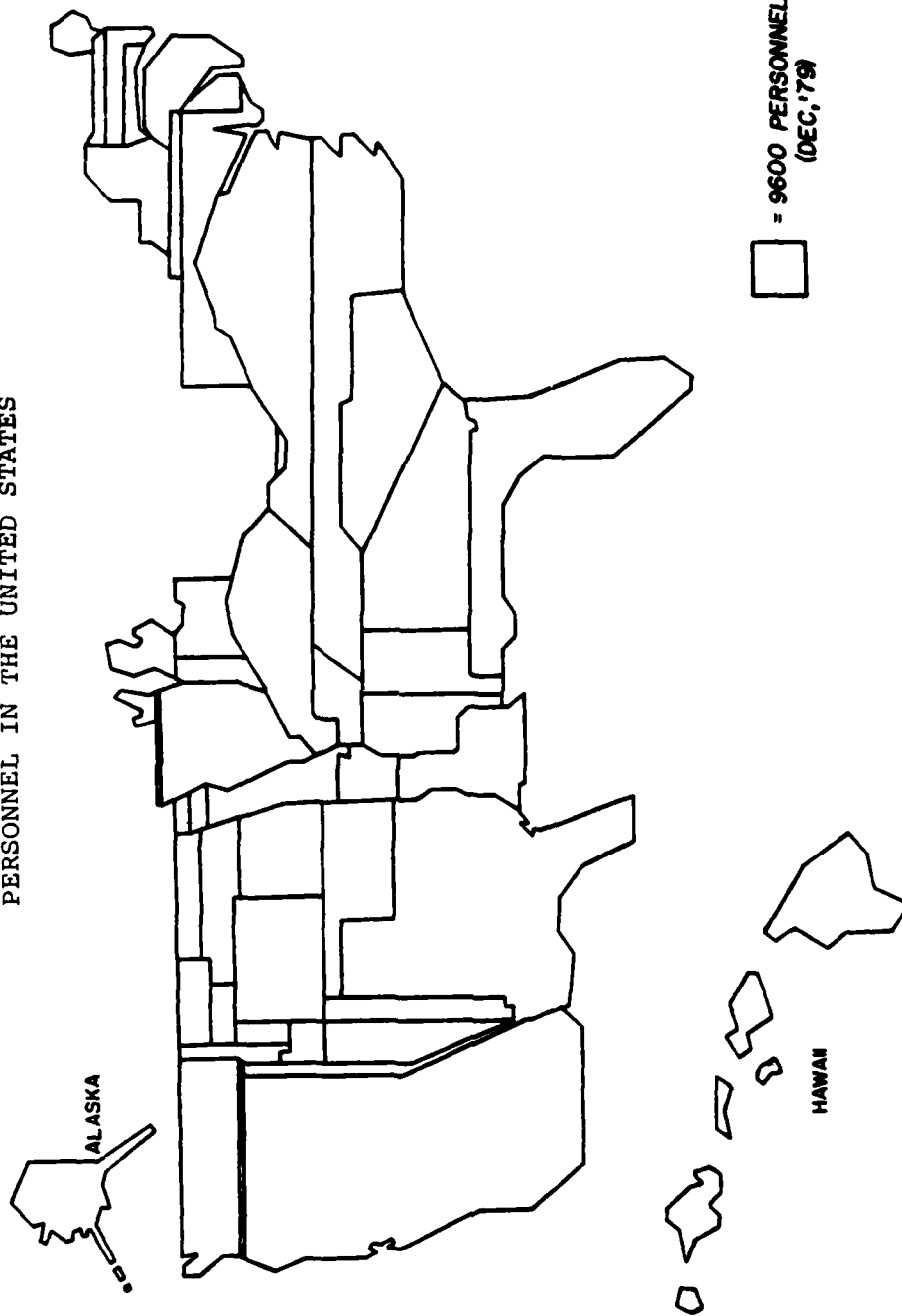
Seventy-seven percent, or 1.5 million persons, of the active military forces is stationed in the United States (Department of Defense, 1980). These personnel are assigned to over 200 major military installations and their spatial pattern reflects concentrations in the West, South and Southeastern portions of the United States. Although somewhat in jest, the quote at the beginning of this chapter fairly accurately reflects our current personnel policy of guaranteeing base of choice as a condition for enticing first term airman re-enlistments. For many young re-enlistees, the lure of fun and sun in the South and Southwest is too great to pass up. The results of these policies are illustrated in the cartoon on page 33 (Figure 4) and by the cartogram on page 34. Even though we make light of the increasing regional concentration of military personnel, in the long term, Department of Defense policies are contributing to the redistribution of our population. Only the extent of this influence remains unknown. The area

FIGURE 4



"Frankly, sir, I think our policy of base choice
is getting a little out of hand!"

MAP 4

DISTRIBUTION OF ACTIVE DUTY MILITARY
PERSONNEL IN THE UNITED STATES

cartogram on page 34 (Map 4) depicts these regional variations by showing the size of each state in proportion to the number of military members living in the state. California, Texas, Florida and the Southeastern states of Georgia, North and South Carolina and Virginia are especially prominent. California and Texas have the largest number of active duty personnel assigned with 191,000 and 136,000 respectively. Together they contain fifty-three installations of at least 500 military personnel. They also contain two of the largest Army posts in the nation: Ft Hood, Texas is the Army's largest base with over 45,000 military personnel and Ft Ord, California has over 25,000 troops. In total, there are eight states containing over 50,000 active duty military personnel. They account for about a third of the total U.S. strength. The cartogram depicts a relative absence of military personnel in the northern tier of states. Twenty Northern, Upper Mid-West and New England states have a combined military strength of less than eight percent of the total United States military force level. Vermont, Iowa, West Virginia and Wisconsin have fewer than 1,000 active duty servicemen, with Vermont and Wisconsin containing no military installations. Table 3 shows the active duty population for the states having over 50,000 servicemen and the states having fewer than 5,000 military members.

TABLE 3

ACTIVE DUTY POPULATION BY STATE

1979

<u>States Having Over 50,000</u> <u>Military Personnel</u>	<u>States Having Less Than</u> <u>5,000 Military Personnel</u>
California (191,000)	Vermont (96)
Texas (136,000)	Iowa (374)
North Carolina (87,000)	West Virginia (413)
Florida (69,000)	Wisconsin (835)
Georgia (62,000)	Rhode Island (3100)
Washington DC (56,000)	Wyoming (3700)
Virginia (52,000)	New Hampshire (3900)
South Carolina (50,000)	Montana (4700)

Movement of Active Duty Military Personnel

There is a dearth of literature examining military migration and its role in shaping population patterns. Similarly, the absence of research on United States military retirement migration has indicated a need for the examination of the relationship between active duty migration flows and the selection of a retirement location in effecting long term population redistribution.

By their very nature, military installations serve as redistribution nodes for a once civilian populace. These "military" experiences could have a lasting impact on the members' location decision following termination of his or her military obligation. Because of the long term nature of a military career, these military experiences could prove more influential in the case of a military retiree.

With a December, 1979 strength in excess of two million persons, military migration has the potential of effecting long term population distribution patterns through the interrelatedness of the military network. A Department of the Army publication (1968) notes that during the period March, 1967 through February, 1968, sixty percent of all Army personnel experienced one permanent move. During this period Army strength averaged 1.4 million personnel. With a dependent to military member ratio of 1.8, Army moves alone

could have involved two and one-half million persons during this twelve month period.

Also in a state to state analysis of migration patterns, Flynn (1978), using transactional flow analysis to identify salient streams, concluded that strong, salient flows between certain areas (not identified) might be attributable to government or institutional considerations. Similarly, in his exhaustive work on hierarchical patterns among State Economic Areas (SEAs) based on 1965 to 1970 migration flows, Slater (1976) found strong ties among a few SEAs, all of which contained large military populations. In particular he identified ties between Norfolk, Virginia, and Newport, Rhode Island, each containing a large naval station. In reference to spatial variations among military migrants and their civilian counterparts, Miller (1969) found that the proportion that military male migrants dominate all male migrants varies sharply with distance migrated. Military males constitute 2.5 percent of intra-state migrants, 8.6 percent of migrants to contiguous states and 25.4 percent of migrants to non-contiguous states. Miller also notes that military conscription, as well as voluntary enlistments, produces a more constant ratio of military to total for the outmigrants than for the immigrants. Also, Serow (1976) states that military migration tends to be more selective of age (few persons under 18 or

over 50), sex (primarily male), and race (more heavily nonwhite) than migration in general. In 1965, three-fifths of all military personnel were between 17 and 26 years of age. By 1970, seventy percent of all servicemen were in this category and the median age decreased from 23.9 years in 1965 to 23 years in 1970 (Department of Defense, 1980).

To demonstrate the influence of military members on population distribution twenty-one SEAs having high concentrations of active duty military personnel were identified using 1970 census sources. These military "rich" areas were identified using the location quotient (L.Q.) technique (Alexander, 1954). The location quotient measures the degree to which a region has more or less than its share of some phenomenon in relation to a benchmark region, which in this case is the United States.

The military L.Q. for each SEA was determined by:

$$\frac{\text{SEAs military strength} / \text{SEAs total employment}}{\text{U.S. military strength} / \text{U.S. total employment}}$$

The L.Q. and major military installations of each of these SEAs are contained in Table 4. It should be noted that the 1965 to 1970 SEA census data have certain unavoidable limitations. An individual could have entered military service, experienced multiple moves and separated from active duty,

TABLE 4

SELECTED STATE ECONOMIC AREAS:
LOCATION QUOTIENTS AND MAJOR MILITARY INSTALLATIONS (1970)

<u>SEA</u>	<u>LQ</u>	<u>Major Military Installation(s)</u>
RH 1	12.1	Newport Naval Station
MO 5	11.3	Ft Leonard Wood
KA 5	7.1	Ft Riley
MD 3	5.8	Naval Test Center (Lexington Park)
VA D	10.3	Norfolk Naval Station
NC 9	10.5	Ft Bragg
SC C	7.9	Charleston Naval Station
GA C	12.6	Ft Benning
GA D	10.5	Ft Gordon
FL 1	7.1	Eglin AFB, Tyndall AFB
FL D	6.6	Pensacola Naval Station
KY 3	7.4	Ft Knox
LA 8	15.8	Ft Polk
OK 4	9.5	Ft Sill, Altus AFB
TX A	5.5	Ft Bliss
TX F	5.5	Ft Sam Houston, Lackland AFB, Randolph AFB
CO B	11.8	Ft Carson, Ent AFB
WA B	8.2	Ft Lewis, McCord AFB
CA G	8.2	Camp Pendleton, San Diego Naval Station
Alaska	8.9	Ft Richardson, Elmendorf AFB
HA A	6.8	Schofield Barracks, Pearl Harbor Naval Base, Hickam AFB, Kaneohe Marine Station

and not surface as a military migrant, thus under representing the magnitude of flows.

This analysis is concerned with identifying the inter-relatedness or ties between those twenty-one military dominated SEAs, thus reflecting the strength of the military influence in SEA migration flows. It is hypothesized that strong channelized flows will be apparent between SEA's containing installations of similar functions. Transactional flow analysis (Roseman, 1971) will be used to isolate larger than expected or salient flows between SEAs. The degree of salience can be measured using the relative acceptance index (RA) which is computed by:

$$RA_{ij} = (A_{ij} - E_{ij}) / E_{ij}$$

Where:

A_{ij} = actual number of migrants from SEA i to SEA j

E_{ij} = expected number of migrants from SEA i to SEA j.

A measure of the absolute difference between the actual and expected can be derived:

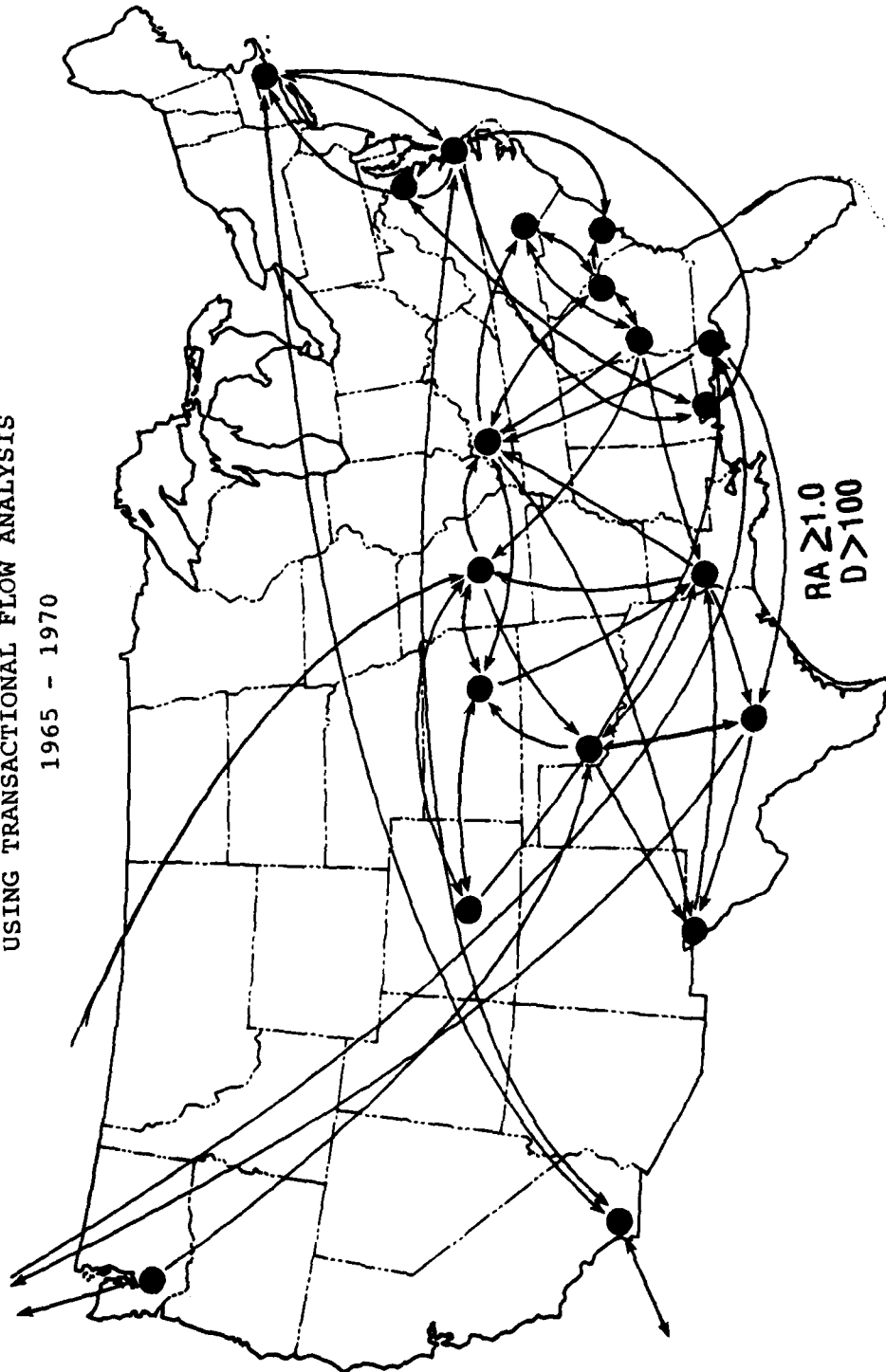
$$D_{ij} = A_{ij} - E_{ij}$$

A positive value for RA_{ij} indicates a greater than expected migration flow between i and j, and a negative RA_{ij} value indicates a less than expected flow.

Both RA and D indices were calculated for all 420 links (21 origins to 20 destinations). Map 5 reflects the salient flows, $RA > 1.0$ and $D > 100$, between 21 SEAs containing high concentrations of military personnel. Refer to Table 4 for a key to the SEAs and their major military installations. Strong salient flows among installations of similar function (Army, Navy, Air Force) are identified. Map 5 shows channelized flows among east coast naval stations (SEAs RI 1, MD 3, VA D, SC C, FL D) and San Diego Naval Station (CA G). Also there seems to be a strong connection between major Army installations (CO B, KA 5, MO 5, KY 3, NC 9, GA D, GA C, LA 8, OK 4) with weaker links to TX F, TX A and WA 3. The Air Force linkages, although only one way, reflect a distinct connectedness between SEAs Alaska, CO B (Ent AFB and the A.F. Academy), FL 1 (Eglin and Tyndall A.F. Bases), TX F (Lackland Basic Training Center), and OK 4 (Altus AFB which is a major pilot training center).

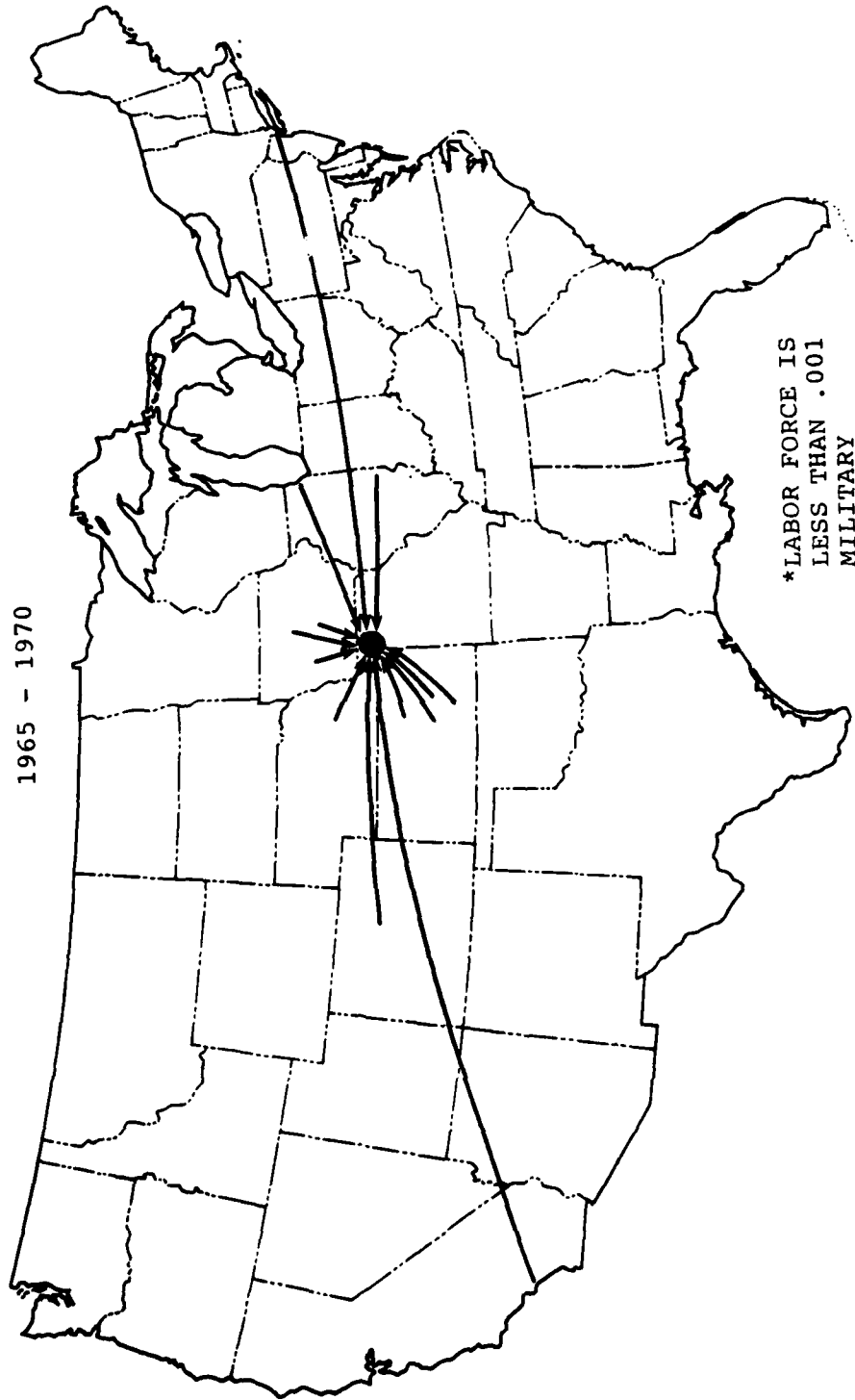
In his study of interstate migration flow patterns, Serow (1976) suggested that states having a large number of military installations will have disproportionately large migration streams. This research supports Serow's contention. State Economic Areas with a high proportion of military members reflect a broader in and out migration field than SEAs without a military presence. Maps 6 and 7 contain

MAP 5
MIGRATION BETWEEN "MILITARY RICH" SEA'S
USING TRANSACTIONAL FLOW ANALYSIS
1965 - 1970



MAP 6

SEA MO 1*
IN - MIGRATION FLOWS > 200
1965 - 1970

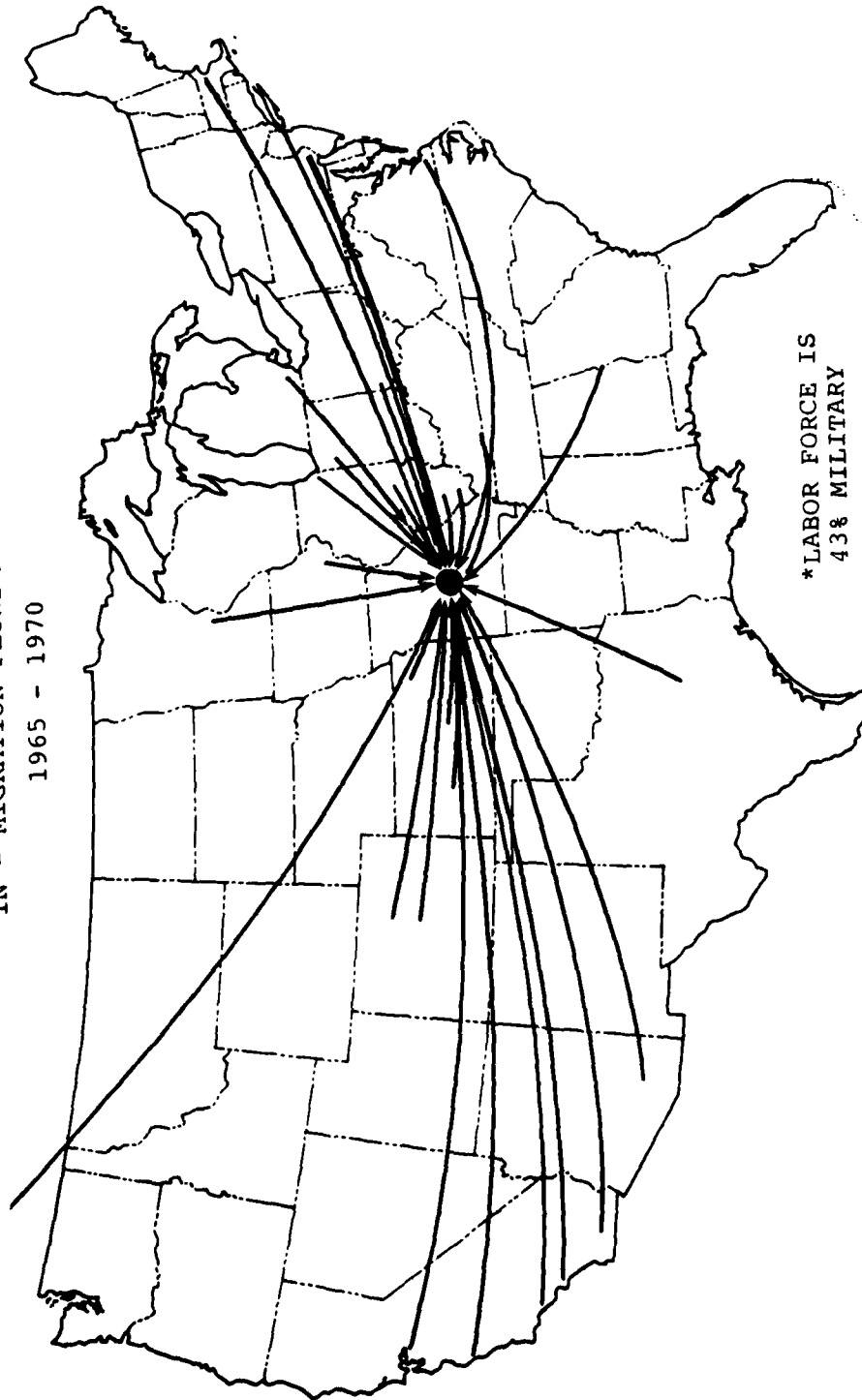


MAP 7

SEA MO 5*

IN - MIGRATION FLOWS > 200

1965 - 1970

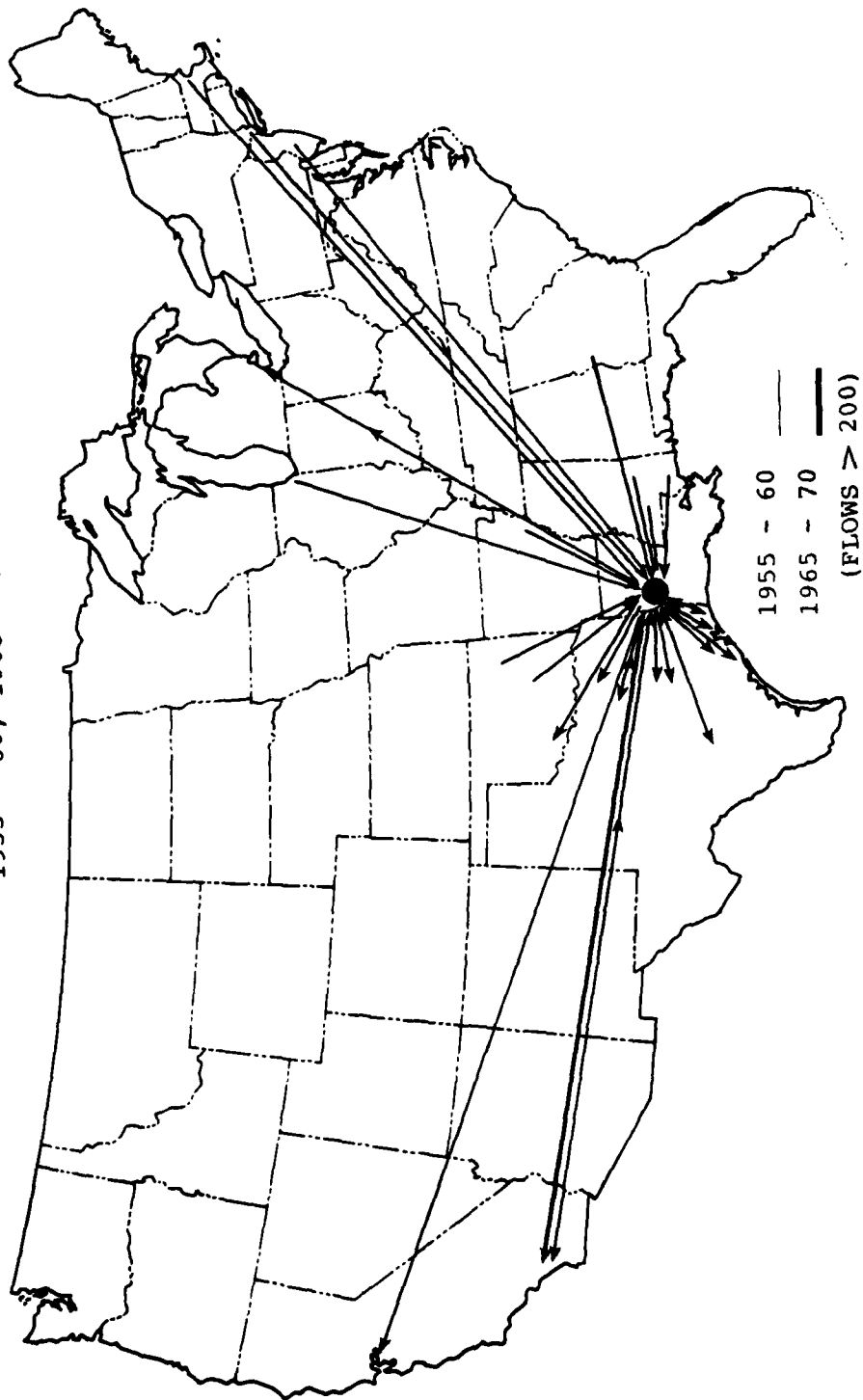


an example of a military "poor" SEA, MO 1, and a military "rich" SEA, MO 5, which will serve to compare these two types of SEAs. Each SEA had similar labor force strengths: 66702 for MO 1 and 62029 for MO 5. However, MO 1, centered on St. Joseph, has less than one tenth of one percent of its labor force in the military. Conversely, MO 5, centered on Ft. Leonard Wood, has almost half of its labor force in the military sector. The maps contain in-migration flows greater than or equal to 200 for the 1965 to 1970 period. Although not shown, the out-migration field for MO 1 was almost symmetrical to its in-migration field. A similar situation existed in the case of MO 5. However, note the strong flows into it from other military "rich" SEAs (VA D, TN 4, KY 4, GA C, KA 5, CO B). Similar channelized flows to military "rich" SEAs existed in MO 5's out-migration field.

Another example showing the effect a military installation has on the migration field of an SEA involves a base that was closed but later reopened. Ft. Polk, Louisiana (SEA 8) was deactivated following the Korean War. In 1960 there were less than one-hundred military members in the entire SEA. However, because of the United States commitment in Southeast Asia the base was reopened in 1964 and grew in strength to approximately 10,000 personnel by 1970. Map 8 contains the in and out migration flows for the Ft.

MAP 8

IN - OUT MIGRATION FIELDS FOR SEA LA 8
1955 - 60, 1965 - 70



Polk SEA during the two periods 1955 to 1960 and from 1965 to 1970. Only flows in excess of 200 migrants are mapped. During the 1965-1970 period, when the Army post was active, many of the reciprocal flows were to and from other areas containing major Army posts. For example, strong salient flows were evident between the Ft. Polk SEA and the San Francisco area (containing Ft. Ord); the San Antonio area (Ft. Sam Houston); the Kileen, Texas area (Ft. Hood); and the Lawton, Oklahoma area (Ft. Sill). A strong one way flow from the Columbus, Georgia (Ft. Benning) area was also evident. Worth noting, a common functional tie between each region is the presence of relatively large mechanized infantry divisions. Again, in the absence of a military presence, migration flows are fewer in number and much more constricted.

Although simple and perhaps not conclusive, these analyses support the thesis that military members have a considerable impact on migration flows between regions having high investments of military members. These unique migration fields reflect movements which are quite responsive to changes in governmental policy. During periods of international conflict, areas containing defense training installations impacted considerably on in and out migration flows. Similarly, during peacetime, there are distinct differences between the migration patterns of SEAs with high

concentrations of military personnel compared to SEAs without a military sector. The military flows appeared less constrained by distance decay functions than did their civilian counterparts. Consequently, the gravity model should not be expected to be an accurate indicator of flows between military installations. Military "rich" areas reflected much broader and generally stronger flow patterns while military "poor" areas were characterized by more constricted, localized flows, thus depicting the relative importance of military movements in the overall population redistribution patterns of the United States.

The pattern and magnitude of government action is evident through the movement of military personnel. The implicit military deployment policies of the United States have affected the spatial distribution of this country's population. Some of this redistribution is long lasting or permanent! At the end of a military career the retiree may not return to his or her "home of record" or place of origin. Indeed, they might "settle out" at their last active duty military location, or return to an area near a base where they were previously stationed. To what extent have government policies such as assignment practices impacted on the spatial arrangement of military retirees living in the United States? What are the processes effecting selection of a retirement location? These and other questions will be

addressed in subsequent chapters relating to aggregate and individual level military retiree behavior.

In Chapter III the retirement migration literature in relation to the conceptual model of the military retirement process will be examined (Figure 2, page 17). For both military and pre-military experiences, the role of kin and friendship ties in the selection of a retirement location will be discussed. Similarly, other location specific capital variables will be examined along with generic variables, or non place specific factors, such as climate and other environmental amenities.

CHAPTER III

VARIABLES INFLUENCING THE SPATIAL
PATTERN OF MILITARY RETIREES

"The ideal retirement location has favorable climate, low living costs, good medical services and other military people for companionship."

The Military Retirement Location Decision

Upon retirement, a military member's location is no longer explicitly prescribed by governmental authority. Nevertheless, the retiree's destination may be implicitly biased by institutional policies. A priori knowledge suggests that armed forces retirees tend to settle near military installations, in part to take advantage of on-base retail facilities and medical privileges. Additionally, military retirees may desire to settle near defense establishments to maintain social and friendship ties with people who share common background experiences.

In general, active duty military personnel do not make migration destination choices on their own. Reassignment decisions are made by defense department authorities in accordance with the national security mission and with

minimal direct costs to the individual service member. However, when retiring from military service the individual is faced with the decision of selecting a retirement location. Like his civilian counterpart, the military retiree's decision will be twofold: first, the decision to move or stay at the place of current residence, and secondly, if the decision is to move, the retiree must select a particular retirement location. Although they expressed preferences among a set of alternative location assignments while on active duty, for most retirees this is the first migration location decision they have had an opportunity or responsibility to make.

Military retirees, like many other persons who are in a position to make a migration decision, choose among a relatively small set of possible alternatives to which they have established some form of social and/or economic tie. Lansing and Mueller (1967), in a survey of migration of civilian persons in the labor force, found that 64 percent of the migrants seriously considered only one possible destination. Similarly, Roseman and Williams (1980) found that many retirement migrants leaving metropolitan areas for nonmetropolitan places are either retiring to a place where they have roots, or are going to places to which they have established ties through vacation or other experiences. Like his civilian counterpart, the military retiree also tends to

establish strong ties to a few specific places. However, military retirees differ from their civilian counterparts in terms of their breadth of residential locational experiences. Generally speaking, the military retiree comes from a more mobile subset of the general populace. The typical military retiree has been assigned in six to eight stateside locations as well as several overseas sites during his or her twenty plus years of military service. It is not known whether or not they select from a small subset of these assignment locations. A purpose of this research is to determine the influence of previous military assignments on the selection of a retirement location.

Retirement Initiated Migration

There is considerable literature concerning elderly and retirement migration (Wiseman, 1978). For example, Lansing and Mueller (1967) report that retiree migration is strongly influenced by a set of critical life events and social ties. Similarly, Cebula (1975) found that economic variables are not closely associated with elderly migration. His research indicated that medical care, climate, and recreation availability are important factors in the migration of elderly persons. Cebula reported that push-pull factors for

retirees are likely to be influenced by a distinct set of critical life events, amenities, recreation, and social ties. Goldstein (1967) and Svart (1976) also conclude that environmental conditions, health facilities, and social relations are the most influential factors in an older person's decision to move. Svart, in his study of elderly migration between 1965-1970, noted that over 75 percent of all elderly net immigration was to Florida, Arizona, Texas and New Mexico. Fifty percent of all net out-migration was from the frostbelt states of Illinois and New York. Svart theorized this was the result of the impact of sunshine on man's psyche. In his study of mobility, Morrill (1978) used state economic area migration for 1965-1970 and post 1970 net migration estimates for counties, to distinguish between economic, environmental, social, and technological factors as reasons for the shifting migration patterns observed in the 1970s. He categorizes retirement migration as responding to environmental factors, such as climate and general quality of life.

Likewise, in his classic work concerning amenities and regional growth, Ullman (1954) concludes that elderly people like warm climates and when freed from job constraints will attempt to move to more favorable environments. He noted that "living conditions", i.e., climate, instead of narrowly defined economic conditions are the precipitators of

migration. As early as the 1940's he identified the growing importance of the elderly migrant in population redistribution. The expanding Social Security system plus almost nationwide auto ownership allowed people to travel more widely and thus contributed to the discovery of amenable living areas. Ullman noted that in spite of their "economic isolation and remote location" the three fastest growing states were California, Arizona, and Florida. He attributes this growth largely to their being "nice places to live."

In one of the earlier studies of elderly migration, Mauley (1954) found that post-retirement migration was greater for retirees of higher income and occupational status. Elderly migrants have also been found to have higher educational levels than elderly non-migrants, a condition seemingly related to income and occupational status (Biggar, 1980). Law and Warnes (1973) tie retirement migration to non-economic factors. In their survey of 1000 civilian retirees they find that for the first time in their mature lives, retirees find themselves in a position where their place of residence is no longer determined by jobs. The retirees can now be oriented to their own needs as consumers rather than to the demands of being producers. They found that upon retirement, individuals moved to areas where they had previous experiences through vacations or friends telling them what a wonderful place it was.

Similarly, Cribier (1975), in his study of retirees found that retirement migration is not linked to the labor market. Those who migrate following retirement do so for a wide variety of reasons, the least of which is economic. Through a survey of elderly migrants to Clare County, Michigan, Koebernick and Beegle (1978) report that pre-migration perceptions were important reasons for migrants to select Clare County. Their associations with the area were derived through vacation experiences, the advice of friends, and ownership of property. In his study of the effect of retirement migration on small towns, Lemon (1973) found that retired people are beneficial to the economic and social life of their communities. They spend money locally, pay taxes, and consume specialized services while placing few if any demands on schools and neighborhood parks. In effect they are perceived as "givers" to the community rather than "takers".

Military Retirement Migration

Military retirement migration would not be categorized as elderly migration, or even retirement migration in the classic sense. At the termination of his/her military career, on the average a military retiree is about 43 years

of age and has completed about 25 years military service (Department of Defense, 1979). The average age of retiring officers in 1979 was 45.7 and for enlisted persons was 39.6. The average years of service for each was 26 and 24 years, respectively. Although retired from armed forces duty, Pentagon officials estimate that over 90 percent of all military retirees who are ineligible for social security benefits are employed either full or part-time.

Although military retirees may not be responding to the same migration forces as civilian retirees, they may be responding to factors similar to those of non-retirement age civilian migrants. For example, place specific ties to factors such as birthplace, location of friends and relatives, employment, and prior experiences have been identified as determinants of civilian migration. Of these factors, employment opportunities seems to be the most important influence. Also generic ties such as climate, environmental factors, and regional amenities have been found to be important reasons for moving.

Family and Friendship Ties

A considerable amount of research has been reported on the relationship between family and friendship ties and

migration. Campbell and Strangler (1977), in their study of in-migration to Arkansas and Oklahoma, found that the desire to be closer to relatives was a major motivation for return migration. They also reported that the nonreturn in-migrants were economically motivated and were better educated as well as younger than the return migrants. Similarly, Long and Hansen (1979) report that six percent of the movers between 35 and 54 years of age moved to be closer to their relatives. Schwarzweller, et al. (1971) cite the strong influence of family and friends in the migration of persons leaving Appalachia and moving to Ohio. Choldin (1973) and Lee (1974) highlight the importance of friends and kinship ties in the propensity to migrate. Also, in his work on kinship as a factor in migration, Bidder (1973), in a historical analysis of Benzonia, Michigan, found that return migration was based on kinship as well as economic ties.

Research by Ritchey (1976) indicates that various intrafamily relationships must be considered when examining the migration process. He posits that family ties impact the decision to migrate by providing information to the prospective migrant as well as actually assisting in the move itself. Within the "military family" members or sponsors at a potential destination provide information about the place to potential migrants. These military kinship

ties often produce strong "family" bonds and help give rise to slogans such as, "We are an Air Force Family;" or "The Army takes care of its own." Among military members the concept of family ties translates into friendship linkages. The importance of the military family is reflected in the quote of a military retiree at the beginning of this chapter: "The ideal retirement location has...other military people for companionship." During conversations with retirees a comment common to most relates to the importance they placed on military friendship ties when selecting a retirement location. In the following chapters, we will examine the importance retirees place on these friendship ties at the aggregate and individual levels.

Economic Determinants of Migration

The migration literature has extensive references concerning the economic determinants of migration (Greenwood, 1975). Prior to Lowry's (1966) findings, migration was thought of as an equilibrating process whereby humans moved in response to economic pushes at places of origin and economic pulls at places of destination. In examining place utility, Gustavus and Brown (1977) relate the pull force of the "push-pull" hypothesis to economic factors such as wage

rates and employment opportunities. However, Lowry (1966), in his study of Albany, New York, and San Jose, California, found that in-migration appeared to be a function of high wage rates and low unemployment whereas out-migration seemed to be a function of non-economic considerations. Although there has been much discussion concerning the economic determinants of migration, DaVanzo (1980a) reports that most attempts to model economic decision making are based on the premise that people move "in the expectation of being better off by doing so." It is the perception of being better off that is important. Spear (1971) reports that real costs and benefits of migration are seldom calculated. Inherent in this "human capital approach" is the knowledge that these benefits accrue over some period of time (Sjaastad, 1962), helping to explain why migration rates decline with age. Sjaastad's model of migration was in the form:

$$M_{ij} = (Yd_j - Y_i) - T / N(1 + r)^j$$

Where:

M_{ij} = migration from region i to j

Yd_j = earnings in nth year at destination

Y_i = earnings in nth year at origin

T = cost of moving

N = number of years earnings are expected

r = discount rate on future earnings

According to Okun and Richardson (1961), his investment approach involves a cost to migration as well as an accrued return. Costs are not necessarily entirely monetary such as those incurred by moving household goods or those related to opportunity costs. Some involve social dimensions, such as leaving the neighborhood and workplace with their associated relatives, school friends, back fence neighbors, and business associates. These social costs are usually unmeasurable in terms of dollars but can affect every member of the family.

In aggregate level studies, economic reasons seem to be one of the most important determinants of migration, especially for migrants between 20 and 55 years of age. Long and Hansen (1979) found that 60 percent of the persons between 35 and 54 years of age cited job related reasons as causes for their moving. Similarly, the Bureau of the Census (1966), in its study of why people move, identified job or employment related reasons as the single most important determinant of migration for individuals between the ages of 24 and 55.

The impact of jobs or other economic factors on the retirement location decision of military retirees is not known. Because of their relatively young age and other life cycle characteristics, such as having children in school, it is likely that continuing economic well being will be an

important consideration when selecting a retirement location. In Chapters IV and VI, The importance of specific economic variables to the military retirement location process at both the aggregate and individual levels will be examined.

Return Migration

Return migration or the act of moving back to a place of previous residence, has been found to be a significant factor in population redistribution within the United States. In relation to the military retirement migration process (outlined in Figure 2, page 17) return migration for the military retiree would refer to moving back to a place of residence prior to entry into military service. In this sense, return migration would be influenced by civilian rather than military experiences.

Lee (1974), in her work on return migration in the United States during the 1950's and 1960's, related demographic characteristics with propensities for return migration. Addressing sex differences, she found females more likely to return than males except for the 25 to 29 year male cohort. She attributes this difference to military members separating from active duty and returning home.

Using data from a national sample of 5000 families, DaVanzo and Morrison (1978) concluded that the propensity for return migration is inversely related to the interval of absence. However, they found it to be greater for returns to the place of upbringing. In Chapters IV and V, the propensity for the military retiree to return to his or her "home" state, or state of origin, upon completion of a military career will be examined.

Generic Factors as Determinants of Migration

In addition to place specific ties, generic factors have been found to be influential in the decision to migrate. Porell (1980), in his study of intermetropolitan migration from 1965 to 1970, found that quality of life indicators such as climate and environmental amenities were important in explaining migration trends. Similarly, Long and Hansen (1979), in their study of interstate migration, found that climate was among the six most important reasons cited for interstate migration of household heads. Cebula and Vedder (1973, using SMSA migration data, found a positive association between net migration and climate. Through a questionnaire survey of 800 immigrants to Tucson and Phoenix, Gibson (1969) found climate to be a strong stimu-

lant to in-migration. Similarly, Bright and Thomas (1941), in their early work on interstate migration and intervening opportunities, found that migration to California prior to 1930 far exceeded expectations predicted by Stouffer's intervening opportunity model. They concluded that flows to California were more motivated by climate and legend than by non-amenity considerations. Consequently, climate and other amenity factors seem to be influential factors in migration patterns.

The importance of military and civilian experiences and the role of amenities in the selection of a retirement location are examined in the next chapter.

CHAPTER IV

GEOGRAPHIC FACTORS CONTRIBUTING TO THE
AGGREGATE DISTRIBUTION OF MILITARY RETIREES

"We live near a base because we need the association with military people. Most of our adult life was spent serving Uncle Sam."

Aggregate Level Hypotheses

The model (Figure 2, page 17) of the process through which military retirees select a retirement location is the framework for the aggregate and individual level analyses. This conceptualization attempts to explicate the variables involved in the retirement migration decision making process. Furthermore, the model presupposes a division of a military member's pre-retirement experiences into three categories: civilian experiences, military experiences, and non-place specific experiences such as environmental factors and climate amenities.

The research objective relating to the aggregate macrolevel military retirement process is accomplished through the testing of three hypotheses:

1. The spatial pattern of military retirees is a function of an experiential base derived from prior military

experiences with the retirement area.

2. The spatial pattern of military retirees is a function of civilian experiences, or experiences gained prior to entry into military service.

3. The spatial pattern of military retirees is a function of generic ties such as environmental factors, climatic amenities or economic aspects.

Spatial Pattern of Military Retirees

The spatial pattern of military retirees residing in the United States as of June 30, 1979 is reflected on Map 9. Actual numbers of retirees by state are listed in Table 5. On a regional basis the Northeast and North Central States account for only 25 percent of the retirees. Sixty-seven percent of the retirees, or two out of every three, live in the South and Southwest. California, Texas, Florida, and Virginia rank first through fourth in terms of total retirees. California, Florida, and Texas contain more than 30 percent of the one and a third million retirees. These are also the four largest states in terms of military installations. Together, these three states contain 66 installations each of which contains over 500 military members.

MAP 9

MILITARY RETIREES, 1979

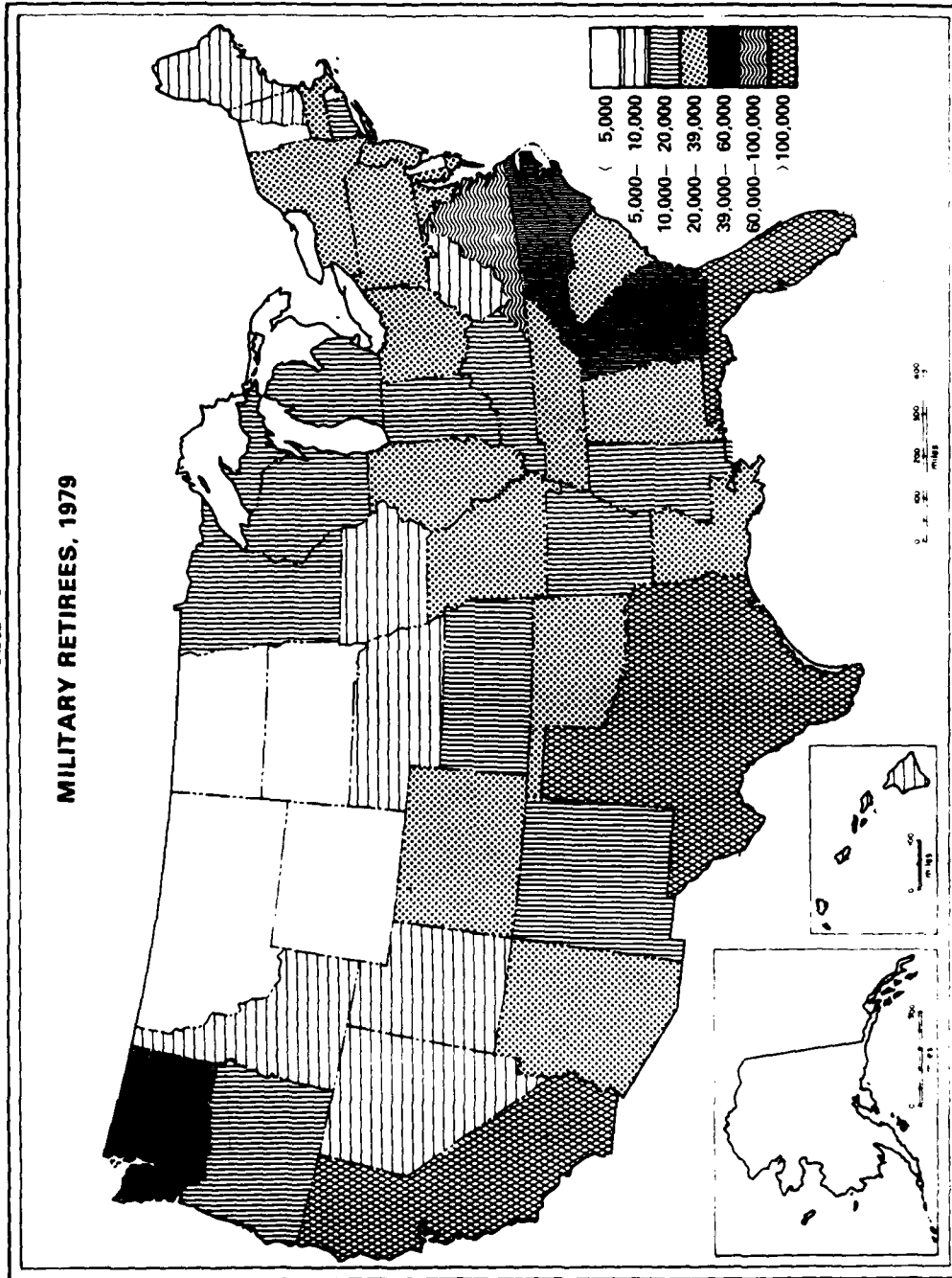


TABLE 5
 Military Retirees by State
 June, 1979

AL	30,108	MO	22,953
AK	4,109	MT	4,012
AZ	27,693	NE	7,754
AR	17,636	NV	10,290
CA	207,979	NH	7,146
CO	30,198	NJ	24,945
CT	11,068	NM	12,440
DE	4,045	NY	34,743
DC	9,085	NC	39,895
FL	118,002	ND	1,705
GA	46,872	OH	29,754
HA	9,757	OK	23,063
ID	5,427	OR	16,408
IL	26,267	PA	37,078
IN	14,953	RI	7,052
IO	6,896	SC	32,273
KA	12,965	SD	2,653
KE	15,774	TN	27,276
LA	22,775	TX	117,076
ME	8,069	UT	6,063
MD	29,188	VT	2,254
MA	22,569	VI	72,296
MI	19,860	WA	43,297
MN	10,852	WV	7,539
MS	16,687	WI	11,024
		WY	2,447

They have a combined strength in excess of one-half million active duty personnel, or about 25 percent of the U.S. uniformed strength. North Dakota, Vermont, and Wyoming contain the fewest number of retirees. Tables 6 and 7 reflect slight regional variations in retiree strength by service. With the exception of the Air Force, California, Texas, Florida, and Virginia are among the top four states in retiree strength for all branches of service. California, with 208,000 retirees, is the first choice of Navy and Marine retirees (99,000) over the next popular state of Florida (45,000) by more than a two to one margin. By comparison, Texas contains a mere 16,000 Navy and Marine retirees. The number of Air Force retirees living in first place California and second ranking Texas is fairly close, 64,00 and 53,000 respectively. Army retirees are selecting Texas as their number one retirement location. Slightly more than 48,000 former Army troops live there, compared to about 44,000 in California and 31,000 in Florida. There is a similar association among the services in terms of states having the fewest military retirees. These low penetration states contain few military installations and thus do not offer many of the services the retiree came to depend on during his or her active career. Consequently, they have not been attractive retirement locations for career military members.

TABLE 6

States with the Largest Number of
Military Retirees, by Service (1979)

<u>ARMY</u>		<u>AIR FORCE</u>		<u>NAVY/MARINE C.</u>	
Texas	40,000	California	58,000	California	92,000
California	38,000	Texas	53,000	Florida	37,000
Florida	27,000	Florida	42,000	Virginia	30,000
Virginia	23,000	Colorado	15,000	Texas	16,000

TABLE 7

States with the Fewest Number of
Military Retirees, by Service (1979)

<u>Army</u>		<u>Air Force</u>		<u>Navy/Marine C.</u>	
North Dakota	500	Vermont	700	North Dakota	285
Wyoming	525	Rhode Island	720	South Dakota	400
South Dakota	618	North Dakota	800	Alaska	410
Vermont	800	Wyoming	1300	Wyoming	468
Montana	900	South Dakota	1350	Vermont	500

While California is the leading state in total number of military retirees, its growth has slowed in relation to other, seemingly more attractive locations. Between September, 1975 and September 1979, California's retired military population increased by about ten percent while Texas and Florida grew by 23 and 21 percent respectively. However, the growth rate of these states was exceeded by the southern and western states of Idaho (61 percent), South Carolina (41 percent), Nevada (39 percent), Arkansas (35 percent) and Mississippi (32 percent).

Other regions did not fare as well. Some states actually experienced a net loss of military retirees or had negligible growth during this period. The retired military population of Rhode Island declined by 17 percent between 1975 and 1979 and the District of Columbia's retired strength decreased by two percent. Illinois, Maryland, New Jersey, New York, Ohio, and Pennsylvania had negligible military retiree growth during this period.

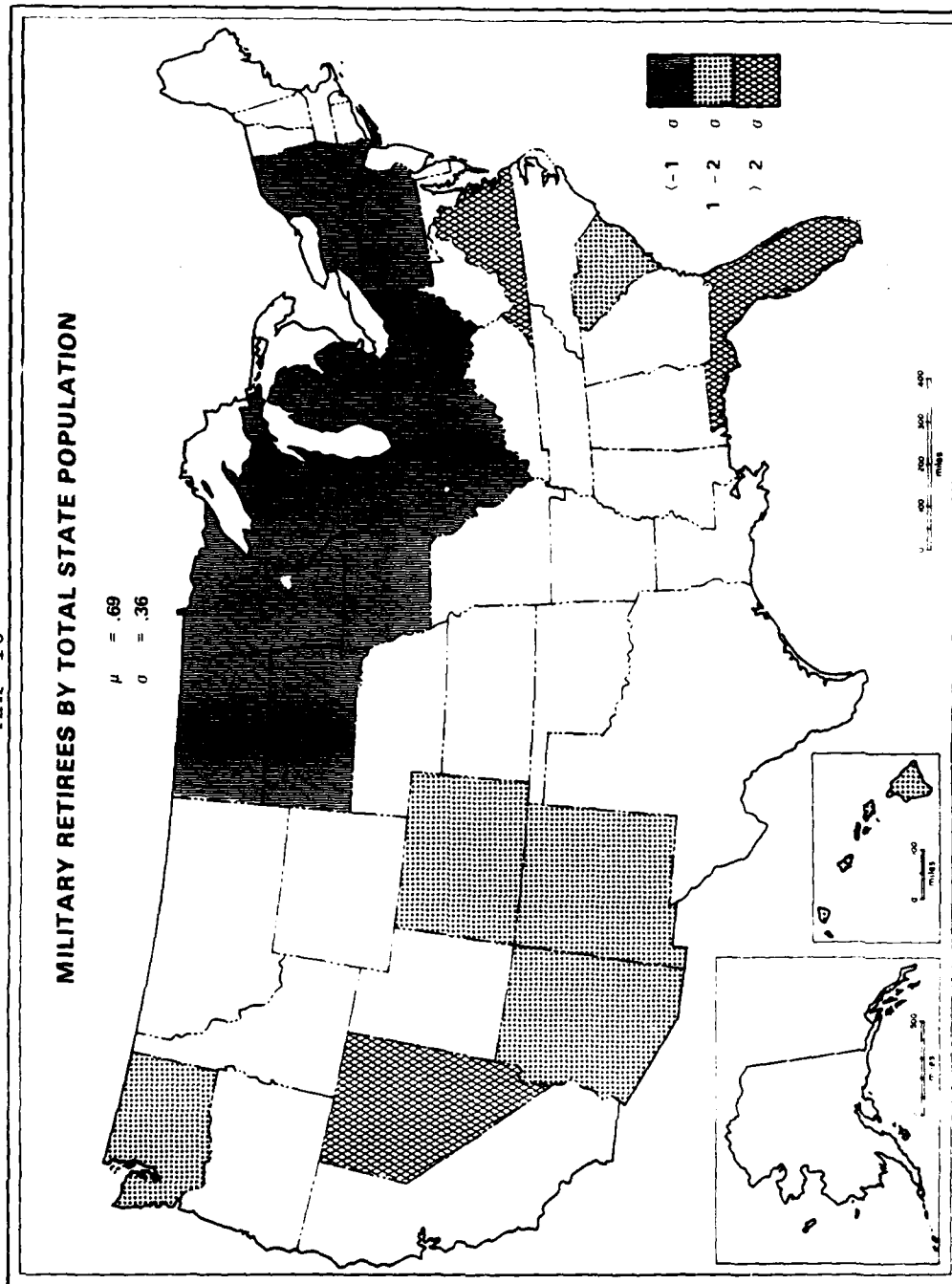
Although there appears to be some correspondence among states having large and small concentrations of military retirees between the various branches of service, there is very little correlation between the location of Air Force, Army, and Navy retirees on an aggregate state level. In 1979 there was a .51 correlation between the location of Air Force and Army retirees; a .21 correlation between Air Force

and Navy retirees; and a .17 correlation between the location of Army and Navy retirees. The sunbelt-frostbelt dichotomy is not only highly apparent in the spatial arrangement of the Department of Defense active military force but is also evident in the distribution of military retirees.

Military retirees as a percent of total state population are depicted on Map 10. California and Texas drop in importance, while Florida, Virginia, and Nevada reflect a high concentration of military retirees relative to population. Other high penetration states are concentrated in the sunbelt region. Again, the states with the lowest penetration of military retirees form a broad band from North Dakota through Pennsylvania and New York. Although the point has been made previously, it is again worth mentioning that these low military retiree penetration states reflect a sparse concentration of active military defense installations. Later analyses will reflect the importance of active bases in the retiree's selection of a retirement site. This sparsity of Air Force installations in the low military retiree penetration states is depicted on the map of active United States Air Force Installations, 1977 (Map 11, page 75). The spatial pattern of Army Posts, Navy Stations, and Marine bases is even more highly concentrated in the southeastern, southern, and western United States.

MAP 10

MILITARY RETIREES BY TOTAL STATE POPULATION

 $\mu = .69$
 $\sigma = .36$


AD-A145 432

UNITED STATES MILITARY RETIREMENT MIGRATION: PATTERNS
AND PROCESSES(U) AIR FORCE INST OF TECH
WRIGHT-PATTERSON AFB OH C T BARNES 27 MAR 84

1/ NS

2/3

UNCLASSIFIED

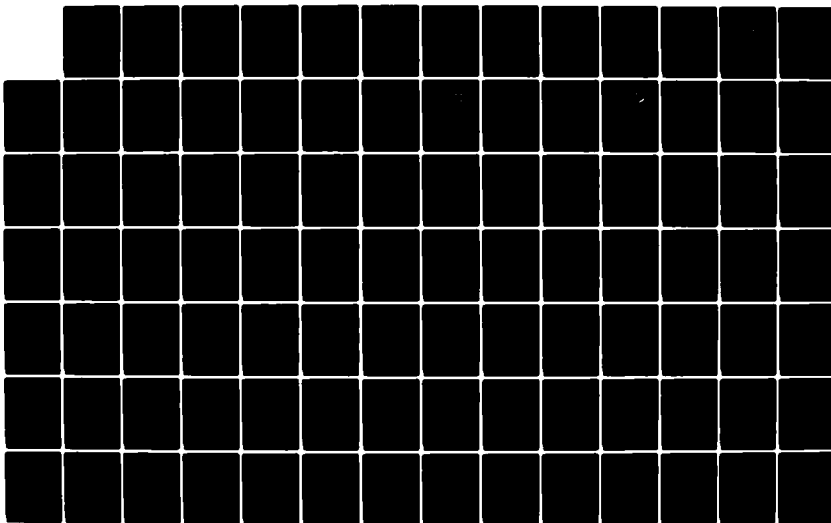
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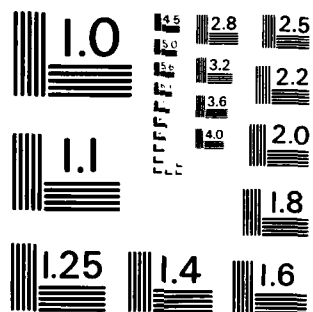
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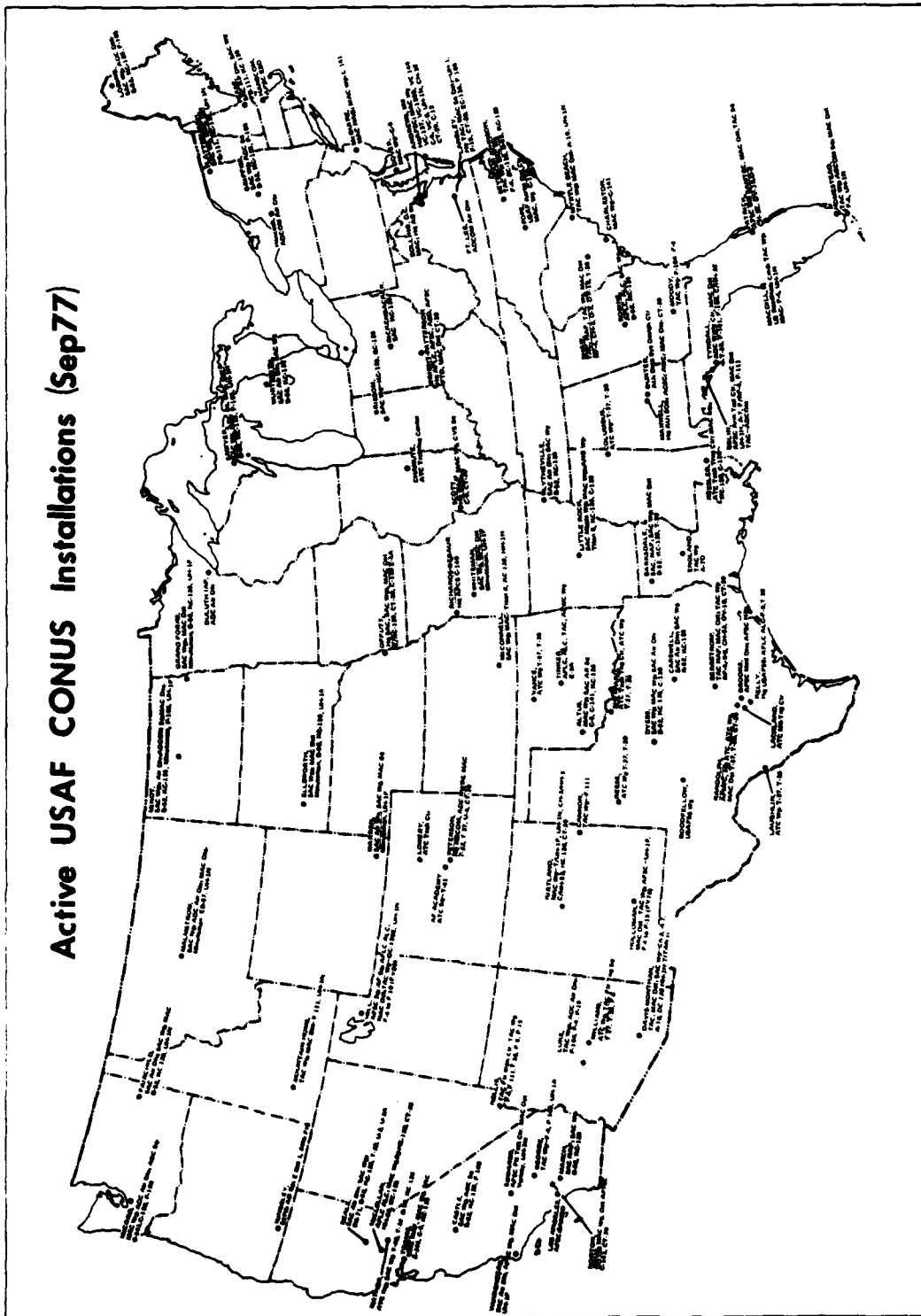
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

MAP 11

Active USAF CONUS Installations (Sep77)

Factors Influencing the Selection of a Retirement Location

In addition to identifying the spatial arrangement of military retirees (Maps 9 and 10) this research attempts to identify some of the factors contributing or relating to this pattern. The conceptual model outlined in Figure 2 suggests that the military retirement location is a function of pre-military (civilian) experiences or experiences resulting from armed service, or some combination of both. For example, upon retirement a military member might "return" to his or her place of birth or to the area in which they lived prior to entry into military service. If the parents of the retiree were nonmilitary this retirement location decision could be considered to be a function of civilian experiences. However, given the presence of a military installation in the area, military experiences might also be a secondary contributing factor. Also the military retiree could select a retirement location in response to climatic or environmental amenities based on residential experiences, vacations, or indirect knowledge of "high amenity" communities. Such decisions could result from either civilian or military experiences.

Employing aggregate state level data on United States armed forces retirees living in the fifty states and the District of Columbia (Table 5), three research hypotheses

were tested to determine the relationship between military retirement location and civilian/military experiences. First, it was hypothesized that the location of retirees in 1979, by state, is a function of childhood experiences and ties to places of residence prior to entering the military. In essence, the hypothesis suggests that upon retirement, military people return to an area to which they were exposed prior to entering the military. If this were the case, the location of military installations would have little effect upon the population redistribution of career military personnel. The second hypothesis is that the location of military retirees is a function of the location of their previous military experiences, i.e., a choice is made among the places where he or she was stationed. The last hypothesis is that the location of military retirees is a function of a climatic amenity. The hypotheses are tested using least square regression analysis. In each analysis the dependent variable is the number of military retirees by state and the independent variables are civilian experiences, military experiences, and climatic measures, respectively.

In testing the first hypothesis, civilian experiences are measured by using the surrogate state of origin of all active duty military members as of 1 July 1958. The year 1958 was selected because it represents the latest date a person could have entered military service and meet minimum

retirement eligibility requirements by 1979. The relationship between the number of military retirees by state (Y_1) and the state of origin of military members on active duty in 1958 (X_1) is estimated by the following equation:

$$Y_1 = a + b_1 X_1$$

where a and b_1 are parameters. The results of the analysis are illustrated below.

<u>Hypothesis</u>	<u>R</u>	<u>R²</u>	<u>F Statistic</u>	<u>Significance</u>
$Y_1 = f(X_1)$	.61	.37	29	>.001

Although significant, the analysis showed only a moderate relationship between retirement location and pre-military experiences. The state of origin of active duty persons in 1958 only accounted for 37 percent of the variation in retirement location. A similar analysis was conducted using as a surrogate for civilian experiences the state of origin of active duty personnel in 1952 (the height of the Korean conflict). Active duty strength in 1952 by state of origin was less explanatory, only accounting for 25 percent of the variance in state of retirement location.

The second hypothesis was tested using least squares regression in the form:

$$Y_1 = a + b_2 X_2$$

Where Y_1 is the observed location of military retirees in 1979 by state and X_2 is the independent variable, military experiences. Military experiences are measured as a moving average of active duty military strength by state for the years 1955, 1965, 1975 (dates which span the time frame of military experiences representative of 1979 retirees). The results of the regression analysis indicate a strong positive relationship between state of retirement and active duty military strength of the state. With an F statistic of 187, the R^2 of .79 was significant at a greater than .001 level. The analysis indicated that over three quarters of the variation in military retirement locations could be accounted for by active duty military strength of the state.

In the third analysis, the climatic variable, number of degree days by state was used as a measure of climatic amenities. Although Map 9 reflects a definite bias of military retirees toward sunbelt states, this climate variable only explained 22 percent of the variation in retirement location. Because of the low explanatory power of the number of degree days it was thought that another surrogate for climate and environmental amenities might exhibit a greater relationship to the location of military retirees. A similar analysis was performed using as surrogates state measures of average yearly temperature and percent sunshine days. Both measures exhibited considerably less explanatory

power, 16 and 9 percent respectively, than did the measure degree days.

Following the examination of the results of the three simple regression analyses, a stepwise multiple regression equation of the form:

$$Y_1 = a + b_1X_1 + b_2X_2 + b_3X_3$$

was derived to test the combined relationship of the three independent variables: civilian experiences (X_1): military experiences (X_2): and climatic amenities (X_3) with the dependent variable state of residence of military retirees in 1979 (Y_1). No collinearity problems were apparent. The correlation between the military and civilian experience variables was .46. The results of the stepwise multiple regression procedure are listed below.

<u>Step</u>	<u>Variable Entered</u>	<u>R</u>	<u>R²</u>	<u>Significance</u>
1	Military Experiences	.89	.792	.001
2	Civilian Experiences	.61	.821	.008
3	Climatic Amenities	-.47	.827	.229

By employing the stepwise ordinary least squares regression procedure the variables were entered according to their importance in "explaining" the spatial location of military retirees. Also the procedure identifies the independent variables which do not have critical causal effects and therefore do not make a valid contribution toward accounting for the variance in the dependent variable. The simple correlation coefficients of .89, .61, and -.47 indicate the dominant role of the military experience variable (measured by active duty military strength by state) as a predictor of the location of military retirees. The variable civilian experiences was added at the second step since it had the next largest partial correlation coefficient. However with the added variable, the percentage of the explained variance of the dependent variable, location of military retirees, increased by only three percent. Although the negative sign of the coefficient was as expected, with the addition of the climate amenity variable in the third step the increased value of R^2 was negligible and for the first time the significance value of the new variable suggests its insignificance as an extra predictor of retirement location. Table 8 (page 82) contains the values of the beta coefficients, standard errors, the t statistics, along with the expected versus actual signs of the coefficients for the analysis.

TABLE 8

DEPENDENT VARIABLE: NUMBER OF MILITARY RETIREES BY STATE, 1979

	INDEPENDENT VARIABLES		
	STATE OF ORIGIN MILITARY PERSONNEL, 1958	ACTIVE DUTY STRENGTH BY STATE, 1955-1975	HEATING DEGREE DAYS
BETA COEFFICIENT	.19316	.61773	-1.3637
STD ERROR	.06636	.0664	1.119
T STATISTIC	2.91 ***	9.29 ***	-1.218
EXPECTED / ACTUAL SIGN	+ / +	+ / +	- / -

82

 $R^2 = .82$ $F_{3,47} = 74.85$

CONSTANT: 5335.7

* ** *** DENOTES SIGNIFICANCE AT THE .1, .05, .01 LEVEL, RESPECTIVELY

By using a multiple regression stepwise procedure it can be determined that only the first two independent variables are significant "explanators" of the location of military retirees. The military and civilian experiences variables appear to be good predictors of retirement location at the aggregate level.

Change in Military Retiree Strength, 1975-1979

As discussed in Chapter III, classical economic theory posits that the higher the income level, a measure of economic well being, in an area the greater propensity for migration into that region. Since "economic man" is assumed to be rational, he always attempts to maximize his well-being. And historically well-being has been translated into economic terms. In reference to Petersen's Typology (1958), George (1970) posits that any meaningful typology must differentiate between migration caused by economic and non-economic factors. In an effort to determine the significance of economic factors on recent military retirement location decisions at the macrolevel, a multiple regression analysis was performed. The dependent variable: percent change in military retirees, by state for the period 1975 - 1979, was regressed using the following three independent

variables:

- 1) 1975 average unemployment rate by state
- 2) 1975 median family income by state
- 3) Per capita state and local taxes, 1975

Map 12 reflects the percentage change in military retiree strength, by state, for the period 1975 thru 1979. The change in retired military strength from 1900 to the present is depicted in Table 9, page 86.

Unemployment as a Predictor

The average unemployment rate was felt to be a good economic measure because it is assumed that areas with high unemployment rates will not be attractive to migrants, including military retirees who retire at a relatively young age and seek employment in pursuit of a second career. Although recent studies by Long and Hansen (1975) and Heaton, et al. (1980) on elderly migration report that economic factors such as unemployment and wage rates are not important to the elderly, I believe they do influence the selection of a military member's retirement location. Even though they are "retired", their life cycle stage characteristics are like civilian members of similar age.

MAP 12

MILITARY RETIREES

Percent Change, 1975-1979

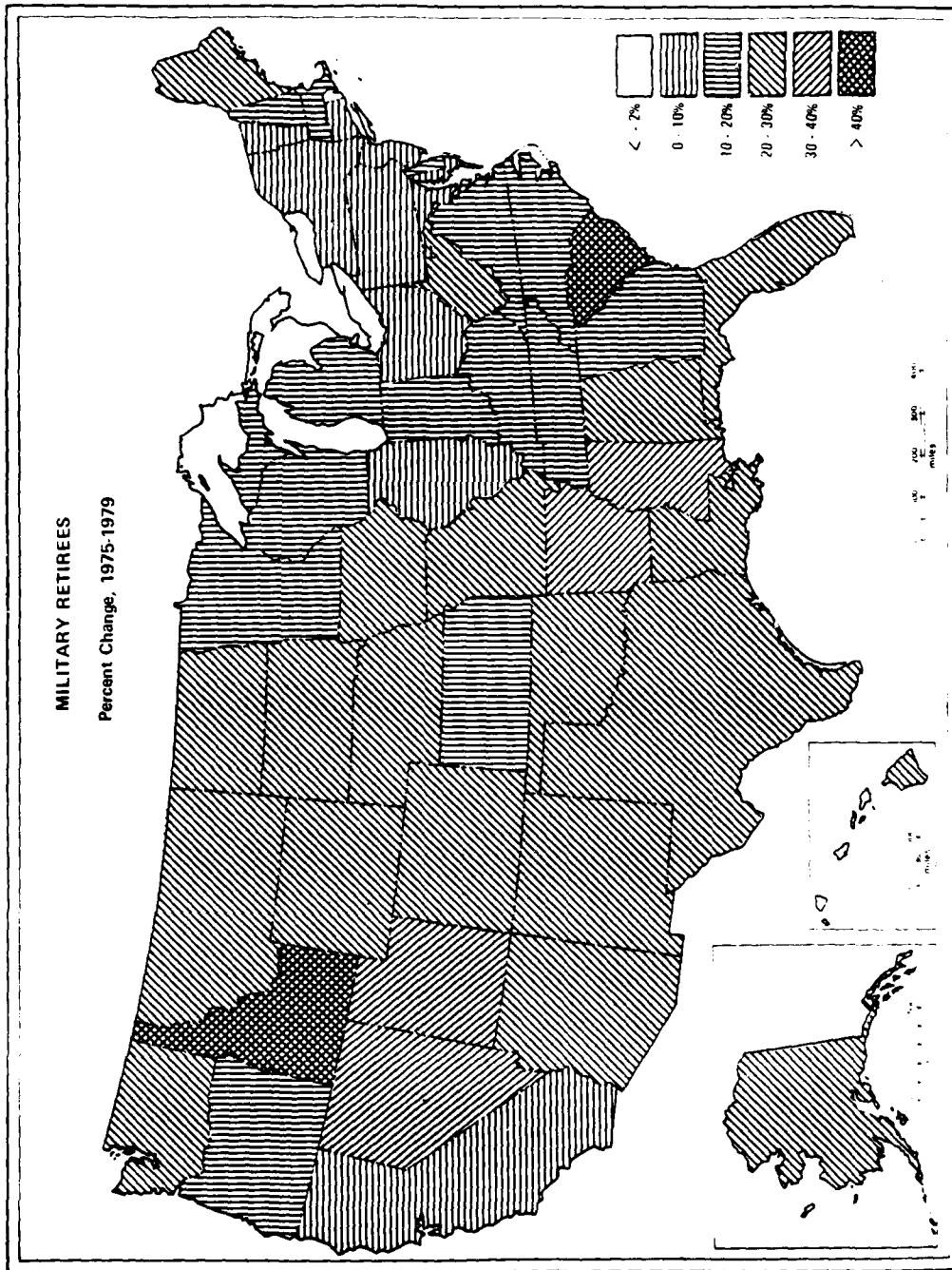


TABLE 9

Retired Military Personnel

1900 - 1979

<u>Year</u>	<u>Retiree Strength</u>
1900	3,000
1905	4,000
1910	5,400
1915	6,700
1920	10,000
1925	19,000
1930	33,000
1935	37,000
1940	48,000
1945	64,500
1950	132,000
1955	180,000
1960	255,000
1965	480,000
1970	1,000,000
1979	1,230,000

Median Family Income as a Variable

Median family income is often used as a surrogate measure of affluence or well being. Several studies have indicated that persons in search of jobs migrate to areas having higher wage rates, thus improving their relative well being. Cebula and Vedder (1973), using results from 39 SMSA's found that migrants were interested in long term benefits such as high income and potential for growth in earnings. Fabricant (1970) also found the migration of labor to be an important factor of production and that labor migrated to areas of higher wage rates. Military retirees, although younger than their civilian counterparts, often have children in school and are searching for employment. However, because of retired income and other retirement benefits, they would not be expected to respond to high wage rates in the same manner as a non-retiree. Nevertheless, a negative relationship between median family income and retiree growth rates is expected.

State and Local Taxes as a Variable

Reasons for moving surveys have highlighted the importance of economic variables such as living costs and job

opportunities (Lansing and Mueller, 1967; Chapman, 1975; Glaser, 1978). However little definitive work has been done on the effect of state and local taxes as a factor in migration. In a study of intermetropolitan migration, Porell (1980) found local taxation a consideration when selecting a destination. Similarly, cost of living variables have been found to be important to civilian retirees in selecting a retirement home (Law and Warnes, 1973).

Findings

The percent change in military retirees from 1975 to 1979 was extremely high for most of the southern and western states. Idaho and South Carolina led the states with growth rates of 61 and 41 percent respectively. Rhode Island and the District of Columbia experienced a net loss of retirees during this period.

The results of the correlation analyses are reflected in Table 10. The independent variables were not significant explanators of the change in number of military retirees. The greatest correlation coefficient (r) was $-.29$ between the dependent variable, percent change in military retirees, 1975-1979, and median family income. An examination of the

TABLE 10

DEPENDENT VARIABLE: PERCENT CHANGE IN NUMBER OF MILITARY
RETIREES BY STATE, 1975 - 1979

	INDEPENDENT VARIABLES		
	UNEMPLOYMENT 1975	MEDIAN FAMILY INCOME, 1975	PER CAPITA STATE, LOCAL TAX, 1975
BETA COEFFICIENT	-1.110	-.002	.022
STD ERROR	.658	.001	.013
F STATISTIC	2.45	.56	.35
EXPECTED/ACTUAL SIGN	- / -	- / -	- / +

89

$$F_{3,47} = 1.15$$

(NOT SIGNIFICANT AT .1 LEVEL)

beta values which represent the slope of the multivariate figure, again reveals no significant explanations. The only surprise in the analysis was the positive sign of the coefficient for the state and local tax variable. Although positive, the relationship was insignificant. At the macrolevel, military retirees do not appear to be selecting a retirement site because of taxation policies. Although insignificant, there was a weak negative relationship between the variables unemployment and median family income with growth in military retirees. These results do not indicate that economic factors are unimportant to the military retiree when selecting a retirement location, but may reflect a response to other economic factors unmeasured in this analysis. In the microlevel analyses in chapter five we will examine additional economic variables and their impact on the spatial pattern of military retirees.

Residuals from Regression

The above analyses demonstrate that approximately 80 percent of the variation in the location of military retirees can be accounted for by the location of the active duty military population. The remaining 20 percent can be attributed to an association with factors not included in

this investigation. Within a spatial context a residual from the above regression analyses is defined as that part of the magnitude of the number of retirees by state which is independent of the areal association between number of retirees and the independent variables used in the research. These residuals may represent deviant cases or they could suggest additional factors which should be considered. Consequently, further analyses of the residuals are performed in order to identify the locations which contain more or fewer military retirees than predicted by the regression equation. One method of expressing the spatial distribution of the residuals is by mapping them (Thomas, 1968). In this research the residuals from the regression equations (the difference between the observed number of military retirees by state and the number of retirees predicted by the independent variables) are standardized by dividing the residuals by the standard error of the estimate (SSE). The resulting expression is the magnitude of the difference between the observed and estimated number of military retirees in terms of the standard error of the estimate for the set of observations (50 states and Washington D.C.). Because they are standardized, normal distribution principles can be applied in determining the frequency of occurrence of individual residual values. For example, a standardized residual value equal to or greater than one

will occur about 32 percent of the time; a magnitude equal to or greater than two will occur only approximately eight percent of the time; and a value equal to or greater than three will occur less than .5 percent of the time, by chance.

Map 13 reflects the spatial distribution of the standardized residuals resulting from the regression of the dependent variable, number of military retirees, on the independent variable, number of military retirees, and on the independent variable, state of origin in 1958 (civilian experiences). This map can be interpreted as portraying considerably fewer military retirees in the four East-Northcentral and Middle Atlantic states of Illinois, Michigan, Pennsylvania, and New York than expected given the number of the states' residents in the armed forces in 1958. Conversely two states, California and Florida, reflect substantially more retirees in relation to the number of service members originating there.

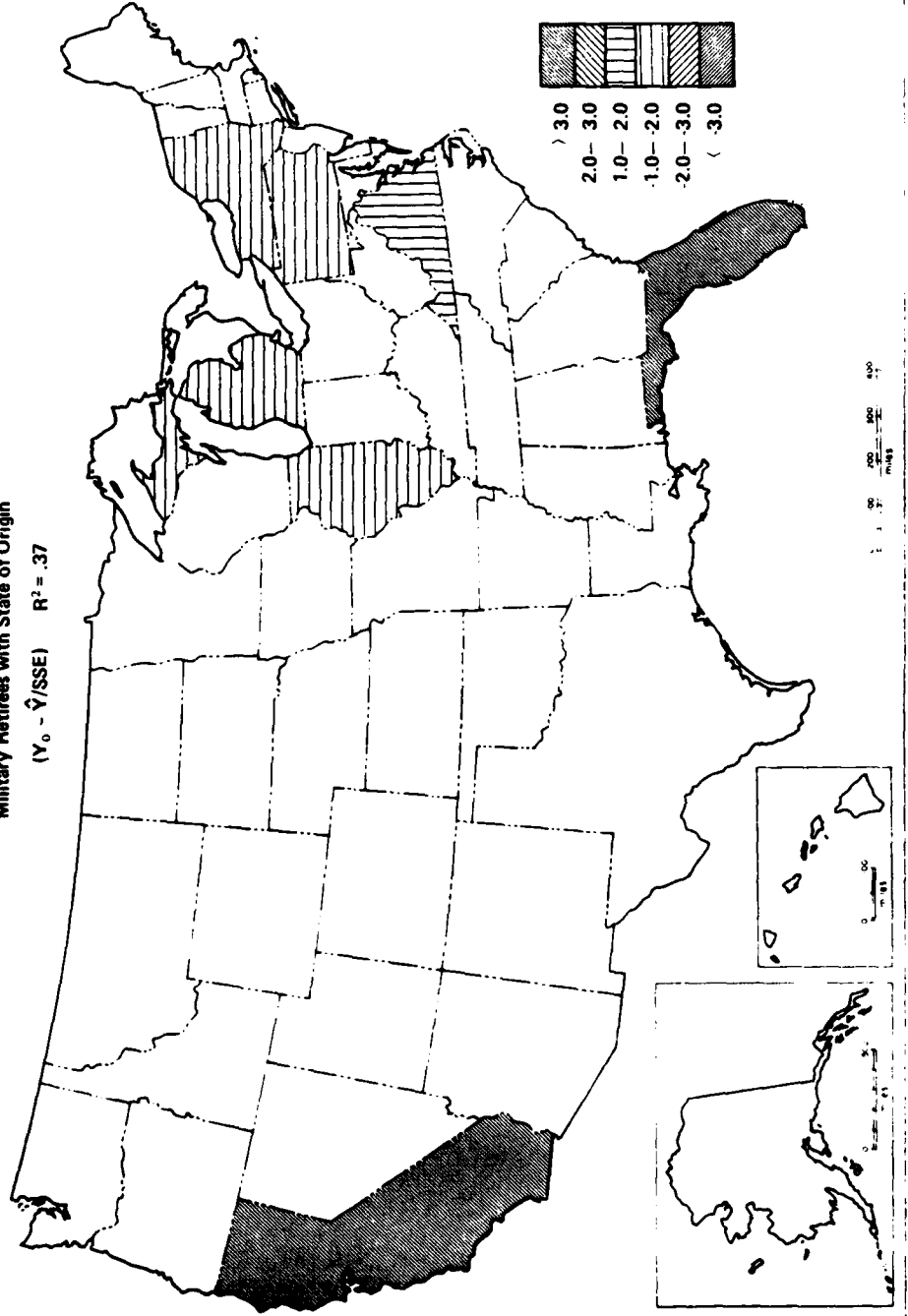
The residuals from the regression of military retirees on active duty population by state are depicted on Map 14. Kansas, Kentucky, and North Carolina have significantly fewer retirees than predicted based on their active duty military populations. Closer examination of these deviant cases indicates that a possible areal relationship exists between number of retirees and the stage of the career cycle

MAP 13

RESIDUALS FROM REGRESSION

Military Retirees with State of Origin

$$(Y_o - \hat{Y})/SSE \quad R^2 = .37$$

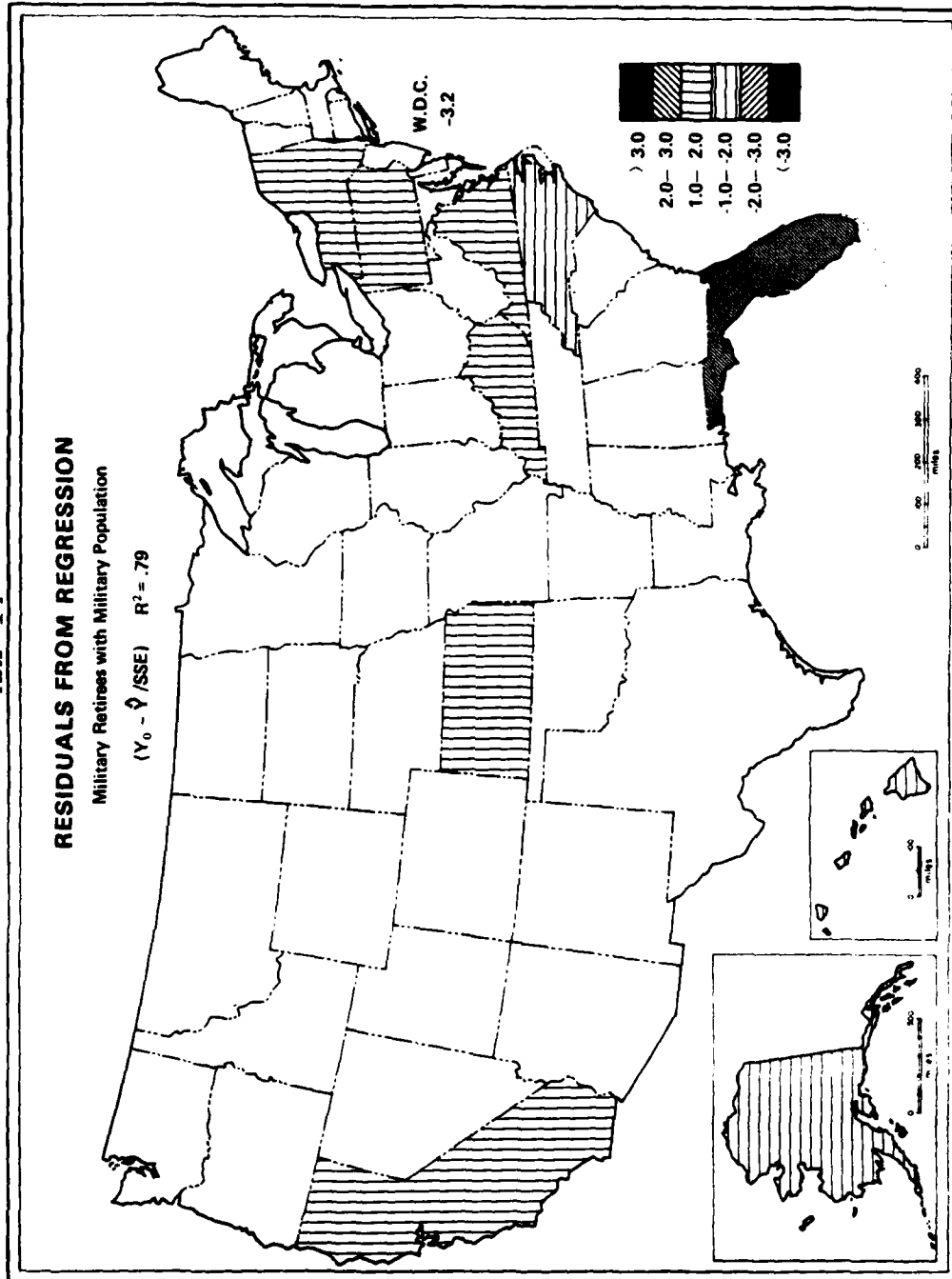


MAP 14

RESIDUALS FROM REGRESSION

Military Retirees with Military Population

$$(Y_0 - \hat{Y}) / \text{SSE} \quad R^2 = .79$$



of the active duty population of the state. Each of the above states contains at least one large installation in excess of 20,000 personnel whose mission is directed toward training basic recruits and/or technical school students. If a potential retiree's only association with an area is through experiences gained during training situations, characterized by minimal pay, family separation and low rank, it is quite probable he or she will have less than a positive image of the place, thus reducing the propensity to select the area for a retirement location.

New York and Pennsylvania have high positive residuals from the regression of retirees with military population, reflecting more retirees than predicted based on military population. Note that in the previous analysis of retirees with state of origin (Map 13), these two states exhibited negative residuals. Because of their relatively large populations at risk in 1958, their greater than expected number of retirees in relation to active duty populations can most likely be attributable to return or state of origin relationships.

The pattern of the residuals from regressing military retirees (Map 14) with military population gives evidence of the possibility of spatial autocorrelation. Virginia has considerably more retirees than predicted based on its active duty military population whereas its micro neighbor,

Washington D.C., has considerably fewer retirees than predicted. Because of economic factors it is quite possible that some of Virginia's retirees are reflective of Washington D.C. military strength, thus suggesting a spatial explanation for the pattern of military retirees. Their active duty military experiences and resultant ties were in Washington D.C., but because of economic factors associated with living in the Washington area, they retired in nearby Virginia while still maintaining economic and or social ties with Washington D.C.

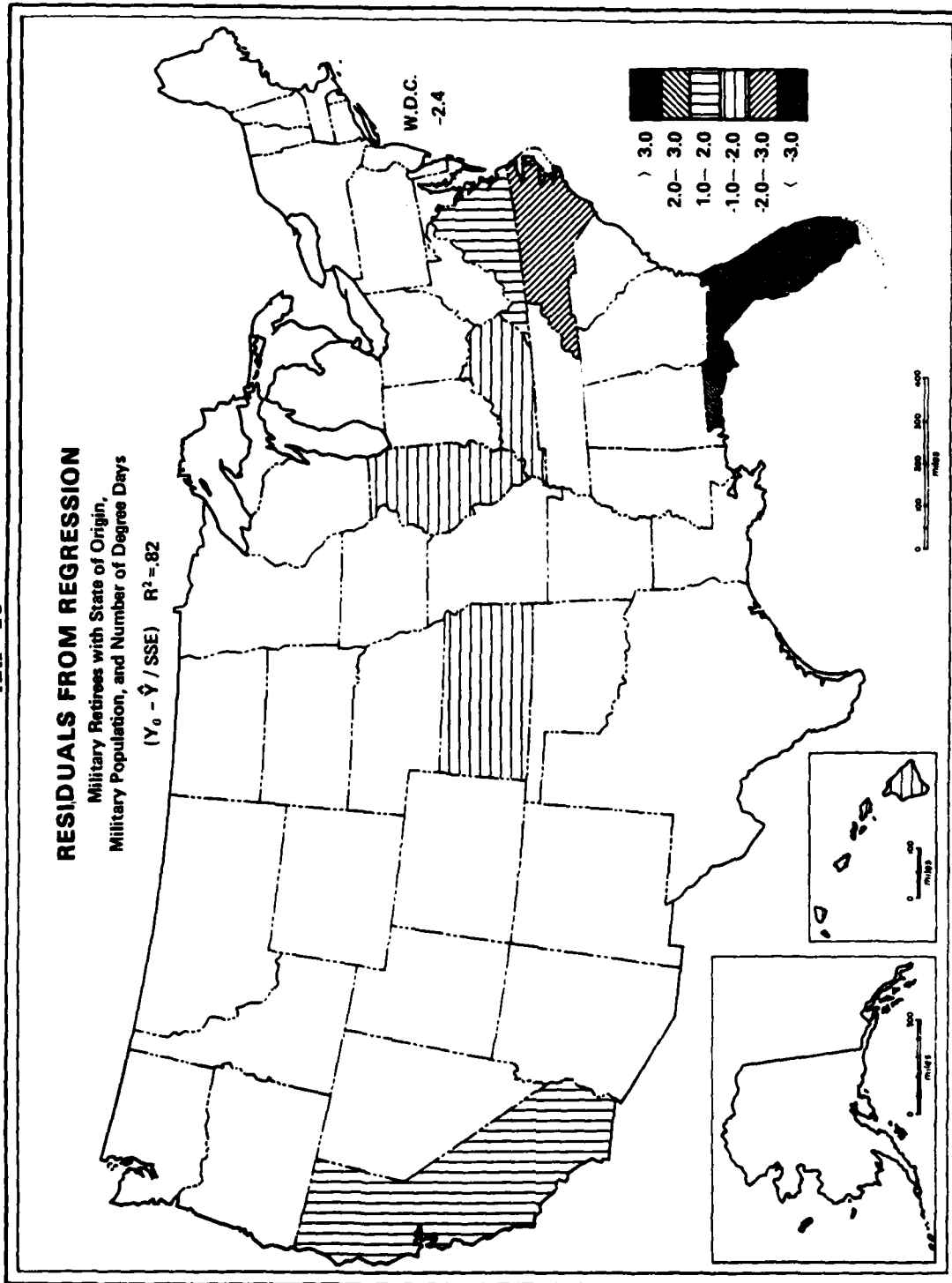
Map 15 portrays the residuals from the multiple regression of the dependent variable, military retirees, with the independent variables, state of origin, military population and a climatic or amenity variable, number of heating degree days. Although surrogate measures of climate have been found to be important determinants of migration, as mentioned previously the climatic amenity variable was insignificant as a predictor of retirement location. Similarly Map 15 reflects no additional high residuals as a result of its inclusion in the regression equation. There is no apparent pattern in the spatial distribution of the larger residuals. However, closer examination of these non-normal cases might identify additional factors which could be tested for their contributions to improved prediction accuracy. For example,

MAP 15

RESIDUALS FROM REGRESSION

Military Retirees with State of Origin,
Military Population, and Number of Degree Days

$$(Y_o - \hat{Y} / \text{SSE}) \quad R^2 = .82$$



Florida, which has surfaced as a consistently large residual in all analyses, has no state income tax on retired military pay.

Conclusion

The pattern and magnitude of governmental policy is evident through the movement of military personnel. A corollary of this movement of the active military force is its effect on the location of the retired military member. Military members are presumed to select a retirement location based on their civilian or military experiences. This experiential theory of migration was tested at an aggregate level using least squares regression. The results of the analysis indicate a high positive relationship between the location of the active duty force and the location of military retirees. Military experiences appear to be excellent predictors of retiree locations at an aggregate level. In terms of aggregate level growth in military retirees during the period 1975-1979, economic factors do not appear to be significant actors. However, further research on an individual level is required in order to fully comprehend the role of military experiences in the selection of a retirement location. Chapter VI addresses these relationships at an

individual level. An understanding of these associations will enable policy makers to more fully comprehend the impacts of their actions on the retired military population and on the communities in which they live. In the following chapter, Chapter V, the research methodologies and framework for analyzing the individual level data are presented.

CHAPTER V

RESEARCH DESIGN FOR THE INDIVIDUAL
LEVEL ANALYSES

"My primary disappointment about retiring was I simply missed the Air Force way of life. The friendship and camaraderie just don't exist in civilian life the way they do in the service. The only thing that saved me was I retired near a base. Once a soldier, always a soldier!"

In the previous chapter, a high positive relationship between the location of military retirees and the presence of a military installation was demonstrated at an aggregate level. In reference to the conceptual model (Figure 2, page 17) military experiences appear to be excellent predictors of the pattern of military retiree settlement. Most evident of the military experiences was the high correlation between retirement location and the location of military installations. Conversely, those experiences which were not place specific, such as climate and amenities, did not surface as important in the selection of a retirement site. Similarly, surrogate measures of the civilian experience variable were also relatively unimportant as predictors of retirement

location. In this chapter, using the conceptual model as a framework, the research design to be used in the subsequent individual level analyses discussed in Chapter VI will be specified. The hypotheses to be tested as well as the individual methodologies will be examined. Data collection procedures to include the sampling design and the associated survey instrument will be discussed.

Hypotheses

In an attempt to gain evidence of the micro-level processes giving rise to the locational pattern of military retirees, the following hypotheses were tested.

1. The propensity for a military member to retire in the area of his or her terminal military assignment (TMA) is a function of military experiences, civilian experiences, and generic factors.
2. Military retirees who do not retire at their TMA will have a propensity to retire near a military base of previous assignment because of ties acquired from previous military and civilian experiences with the area, and generic factors.
3. The propensity for military retirees who do not retire at either their terminal military

assignment or near a base of previous assignment to select a retirement location in close proximity to a military installation is a function of military experiences and generic factors.

4. The propensity to migrate subsequent to the initial retirement move is a function of life cycle characteristics and quality of life variables.

5. The anticipation of future migration is a function of work related factors, life cycle characteristics, and quality of life considerations.

6. Subsequent to a base closure, the propensity of military retirees in the impact region to migrate is a function of place specific ties and generic factors, and is inversely related to length of residence in the area.

Consequently, these hypotheses reflect three levels of association between retirees and military bases: those who retire and remain at their last base of assignment; those who retire and locate near a base of previous assignment; and those retirees who locate near a base, but not near one of previous assignment. Additionally, following the retiree's selection of a retirement location, his propensity

for subsequent migrations, actual or planned, will be examined. The above hypotheses posit a high degree of association between military experiences and the selection of a retirement site. As the quote at the beginning of this chapter implies, home is near a military installation!

Individual Level Methodologies

These individual level hypotheses will be tested using chi-square analyses and a probit maximum likelihood model.

Chi-Square Test

The chi-square (x^2) procedure employed in testing these hypotheses is classified as a nonparametric test because it does not require knowledge of any parameter of the population. It is distribution free, hence there is no need to assume the data came from a normal distribution. As such the test requires categorical or nominal scale variables representing frequencies rather than discrete values. It provides a test based on the difference between observed and expected frequencies across various categories. In testing the hypotheses outlined above, we will be testing the null hypotheses of no dependence between the variables. The data

consist of the frequency with which different categories of conditions occur. The chi-squared statistic is specified as:

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

where: O represents the observed frequencies
E represents the expected frequencies

and ranges in value from zero to plus infinity. The degrees of freedom (d.f.) are equal to the number of columns minus one (c-1) times the number of rows minus one (r-1). Thus they are not a function of sample size. As the chi-square statistic increases in value, the more likely we are to reject the null hypothesis of no dependence between the variables in the underlying population. Conversely, if the deviations between the observed (actual) and expected (predicted) covariances are small, the lower the value of the statistic and the less likely we are to reject the null hypothesis that the observed data can be described by the estimated model. Thus, when chi-square is small, it indicates the absence of a relationship between the variables. We can therefore say the variables exhibit statistical independence.

In the absence of other measures, the chi-square statistic only enables us to determine whether or not the

variables are independent. We are unable to discern the strength of the relationship. However, when chi-square is adjusted for the size of the contingency table, several statistics become avenues for assessing strength of relationship. These additional statistics are the phi statistic, the contingency coefficient, and lambda.

The phi (ϕ) is primarily used to measure the strength of relationship between two variables in the form of a two by two contingency table. It adjusts the chi-square value by correcting for the proportional relationship between the x^2 statistic and the size of the sample (N). Phi is specified as:

$$\phi = \left(\frac{x^2}{N} \right)^{1/2}$$

The value of phi ranges from zero to plus one, with one signifying a perfect dependence between the two variables. A value of zero, on the other hand, indicates complete independence of the variables.

Like the phi statistic, the contingency coefficient (C) is also a measure of the degree of association between variables. However, unlike the phi, it can be used with any size contingency table. It is specified as:

$$C = \left(\frac{x^2}{x^2 + N} \right)^{1/2}$$

where: x^2 is the chi-square statistic

The contingency coefficient has a minimum value of zero when no relationship is present. Its maximum value depends on the size of the table. Similarly, as evident from its specification, it is valid only when comparing symmetrical tables, i.e., those having the same number of rows and columns.

Lambda is the third measure of association we will use in testing for independence between the location of military retirees and independent variables representing military experiences, civilian or pre-military experiences and non-place specific factors such as climate. The value of the lambda ranges from zero to one and its value reflects the percentage of improvement in the ability to predict the value of the dependent variable from the known value of the independent variable (Nie, et al., 1975).

The Probit Model

The ordinary least squares regression model employed in the analysis of the aggregate level retiree data is inappropriate for use with categorized response variables of the type generated from the individual level data. For this

analysis the probit model is appropriate because it can accommodate dichotomous dependent and independent variables (Wrigley, 1976). The response variables relate to whether or not the retiree located near a military installation and the independent variables are surrogate measures of civilian experiences, military experiences, and non-place specific factors (reference the model of the military retirement process on page 17).

The probit transformation is specified as:

$$P_i = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{t_i - 5} e^{-1/2 u^2} du$$

The probit of P_i is defined as t_i , where t_i is the normal equivalent deviate (NED). The value u represents the normal distribution equation. Some proportion of P_i is to the left of NED. Consequently, to avoid negative values, five is added to the normal equivalent deviate (Wrigley, 1976). Following from the definition of a probit, the probit regression model can be written:

$$P_i = t_i = \alpha + b_1 X_{i1} + b_2 X_{i2}$$

The test statistic is distributed similar to chi-square with

degrees of freedom equal to the number of independent variables.

Data Collection

The data employed to test the individual level hypotheses were collected through a questionnaire survey of Air Force retirees. Retirement data on individual members are maintained by the Office of Manpower Affairs, Military Personnel Center, Randolph Air Force Base, Texas. Air Force retirees were the focus of study because the author of this thesis is an active duty Air Force officer and the data on Air Force retirees were obtainable for the purposes of this research. A basic underlying assumption, and one which has legitimacy, is that the factors influencing the selection of a retirement location are similar for Army, Navy, and Air Force retirees. The population sampled included all Air Force military personnel who retired from active duty after 31 December 1969 and who currently reside in the United States. The eligible population contained only retirees who had served a minimum of twenty plus years on active duty. Upon retirement from military service, these retirees began receiving retirement pay at a rate of approximately thirty percent of their active duty salary.

Sampling Procedure

A probability sample of 700 retirees was selected using a stratified systematic sampling technique. The eligible population was grouped into two strata based on rank, officer and enlisted. Each group was sampled in proportion to the groups representation in the population. For example, of the 251,766 retirees in the population, twenty-three percent (or about 58 thousand) were officers and the remaining 77 percent maintained enlisted rank while on active duty. To be reliable, the sample should mirror the population. Consequently the sampling procedure was designed to have twenty-three percent and seventy-seven percent of the sample drawn from the population of officer and enlisted retirees, respectfully. Both samples were systematically collected in that the first observation was selected at random and then every nth observation was sampled until the sampling was completed. A limitation to systematic sampling is that it can result in biased results if the observations to be sampled are arranged in a particular order, i.e., by state or area, or are subject to periodic fluctuations. The sample used in this research was not biased by the above conditions. The population of Air Force retirees is in itself random. It is not alphabetic nor is it by state. The master list is randomly generated with the initial order

established by date of retirement. In view of this, an initial concern was whether the sample was biased in favor of recent retirees over those who had retired eight to ten years ago. The data do not reflect a bias. In fact, only about a third of the sample had been in retirement status in excess of eight years. Thirty percent had been retired less than three years and 36 percent had between four and seven retirement years.

Not only was impartiality required between the strata, but areal equity was also a concern. Military retirees are spatially distributed in a nonrandom pattern. If this were not evident from a priori knowledge, an examination of the results of the aggregate level analyses (Chapter IV) would dispel any thoughts to the contrary. To ensure validity, the sample and population should reflect similar spatial variation. Table 11 contains spatial and demographic characteristics of the sample in relation to the population. The table reflects few spatial inequities. The four states with the largest number of retired military personnel in the population, California, Texas, Florida and Virginia, also ranked one through four in terms of number of retirees in the sample. Similarly, those states with low retiree penetration were correspondingly minimally represented in the sample. Only one state, Wisconsin, was not represented by any retirees in the sample.

Table 11

Spatial and Demographic Characteristics
of the Sample of Air Force Retirees

<u>State</u>	<u>Expected Sample Size</u>	<u>Actual Sample Size</u>	<u>Number Returned</u>
AL	17	21	18
AK	4	5	1
AZ	22	23	14
AR	11	9	4
CA	91	94	66
CO	23	26	17
CN	3	5	4
DE	4	5	2
WDC	6	3	0
FL	70	68	51
GA	20	18	12
HA	3	1	1
ID	4	4	2
IL	13	15	11
IN	7	4	0
IO	4	2	1
KA	8	9	3
KE	6	5	2
LA	15	17	10
ME	4	8	6
MD	9	10	8
MA	11	13	10
MI	10	6	4
MN	5	2	1
MS	12	13	9
MO	13	17	7
MT	3	4	3
NE	7	7	4
NV	9	9	6
NH	4	2	1

Table 11 (Cont)

<u>State</u>	<u>Expected Sample Size</u>	<u>Actual Sample Size</u>	<u>Number Returned</u>
NJ	7	5	1
NM	10	13	7
NY	14	15	10
NC	16	19	13
ND	1	1	1
OH	19	15	6
OK	14	13	6
OR	8	5	4
PA	14	9	2
RI	1	1	1
SC	17	16	10
SD	2	1	1
TN	12	8	7
TX	86	90	70
UT	5	6	3
VT	1	5	4
VA	22	27	18
WA	22	21	12
WV	4	1	0
WI	5	0	0
WY	2	3	1
Total	700	700	455

The Sample Questionnaire

The questionnaire used to collect the individual level data on the military retirement process is included as Appendix A. It was planned and designed with the assistance of Jutta Sebestic, University of Illinois Survey Research Laboratory. In addition to reflecting sound questionnaire development practices, it also reflects the constraints imposed by the Department of Defense. The Department of the Air Force approved the study and associated questionnaire in the fall of 1980. Subsequent to final approval the questionnaire was pretested in December, 1980.

Pretest Results

The preliminary results of the questionnaire pretest were encouraging. The areal extent of the pretest survey was within an approximate 150 mile radius of Champaign, Illinois and included the following three digit zip code areas: 609, 617, 618, 619, 624, 625, 626, 478 and 479. The initial mailing consisted of 83 questionnaires. Following three mailings, seventy retirees had returned their completed questionnaire, for an extremely high response rate of eighty-four percent. Few, if any, problems with question

construction or clarity were evident. The respondents answered all questions and several wrote detailed narratives describing why and how they selected their retirement location. From the clarity of their responses, they appeared to understand what was being asked as well as why the information was important. The cover letter, which states the importance of the survey and the need for their cooperation, is included as Appendix B. Most respondents indicated they were able to complete the questionnaire in 15 to 20 minutes. Consequently, because of the success of the pretest, the revisions to the questionnaire were primarily of a cosmetic nature. A statistical tabulation of the questionnaire pretest is included as Appendix C.

The Survey Instrument

Following the positive results of the pretest, the final questionnaire was mailed to the 700 Air Force retirees comprising the sample. The initial mailing began in March 1981 and two additional mailings to the non-respondents were made at two week intervals. The cutoff date for receiving the responses was May 1, 1981. Questionnaires returned after this date were not used in the analyses. Of the initial 700 mailings, 52 (7%) were non-deliverable due to

incorrect addresses or death of the retiree subsequent to drawing the sample. After eliminating the non-locatable retirees, the sample size was reduced to 648. A summary of the response to the mail questionnaire survey is portrayed below.

Sample Size	Returned 1st Mailing (%)	Returned 2nd Mailing (%)	Returned 3rd Mailing (%)	Total Returned (%)
648	312 (48)	107 (17)	36 (5)	455 (70)

The overall response rate of 70 percent was considerably higher than is normally expected from a mail survey (Sudman, 1976). However, the population sampled was a very unique group, one that understood the need for this type of information and also one that had considerable experience completing questionnaire surveys while on active duty.

The next chapter will examine the results of the analyses of the individual level data.

CHAPTER VI

FACTORS AFFECTING THE SELECTION OF A RETIREMENT
LOCATION AT THE INDIVIDUAL LEVEL

"Although I'm originally from New Hampshire, I retired in San Antonio to be near other military people who went through Korea and Viet Nam. I'm disabled and spend my time relaxing, playing golf and telling lies about the war!"

Variable Specification

In this chapter, the individual level hypotheses will be examined using chi-square analysis and a probit function. The processes giving rise to the spatial pattern of military retirees at an individual level are identified. The dependent and independent variables used in these analyses are specified as follows.

Dependent Variables

<u>Variable Name</u>	<u>Description</u>
TMA	The retirees' terminal military assignment; the last assigned location while on active duty
BTB	The retirees select a retirement location near a base they

	have been assigned to before (while on active duty)
NBNBTB	The retirees select a retirement location near a base but near one that they have never been assigned to before
MOVER	A retiree who migrated subsequent to the initial selection of a retirement location
ITCHFT	A retiree who anticipates moving sometime in the near future
MOVBC	A retiree who would move subsequent to the closure of a nearby base

Independent Variables

<u>Variable Name</u>	<u>Description</u>
BIRTH1	Whether or not the retiree was born near the terminal military assignment (TMA)
BIRTH2	Whether or not the retiree was born near the retirement location
FRIREL1	Whether or not the retiree had friends and/or relatives near the TMA
FRIENR2	Whether or not the retiree had friends and/or relatives near the retirement location
OWNTMA	Whether or not the retiree owned property at the TMA which was purchased prior to retirement
JOBVAL	Whether or not the availability of a job was a consideration in

	selecting the retirement location
SCHOL1	Whether or not the retiree had dependents in school at time of retirement
CLIMATE1	Whether or not the number of heating degree days at the TMA exceeds the median number for the U.S.
CLIMATE2	Whether or not the heating degree days at the retirement location exceeds the median number for the U.S.
COSTLIV	Whether or not the cost of living for a four person family at the retirement location exceeds the median for the U.S.
OWN2	Whether or not the retiree owns property near a base of previous assignment (non TMA) purchased while on active duty
GENERIC	Whether or not the retiree selected the location because of environmental or climatic amenities
RETIRE	Whether or not the military retiree has "retired" for a second time
SCHOOL2	Whether or not the retirees' dependents had graduated from school subsequent to retirement
FAMILY	Whether or not there was a change in family status due to a divorce or death subsequent to retirement
LENGTH	The length of stay of the retiree at the initial retirement location
WORK	Whether or not the retiree was employed full-time

AGE	Retiree's current age
RENT	Whether the retiree rented or owned a home
DURATION	The number of years the retiree has lived at current location
BENNIES	Whether or not the retiree considered the base hospital, commissary, and/or exchange important

Individual Level Chi-Square Analyses

The Terminal Military Assignment as the Retirement Location

Hypothesis One

The propensity for a military member to retire in the area of his or her terminal military assignment (TMA) is a function of military experiences, civilian experiences and generic factors.

Dependent variable: Military retirees who retired at their TMA

Independent variables: BIRTH1, FIREL1, OWNTMA, JOBAVAL, CLIMATE1, COSTLIV, SCHOL1

Findings

Table 12, page 128, contains the results of the chi-

square analysis of the factors giving rise to the selection of the TMA as the retirement location. Of the 455 retirees responding, 210, or about 46 percent retired at their TMA. Civilian experiences do not appear to significantly impact on the decision to retire near one's terminal military assignment location. Ownership of property, the presence of friends and relatives, and having dependents in school were significant in the selection of the TMA as the retirement home. In addition to these "military experiences" factors, a favorable climate, or generic tie, also surfaced as significant.

A Previous Military Assignment Location as the Retirement Site

Hypothesis Two

Military retirees who do not retire at their TMA will have a propensity to retire near a military base of previous assignment because of ties acquired from previous military and civilian experiences with the area, and generic factors.

Dependent variable: Military retirees who did not retire at their terminal military assignment but did retire near a military base of previous assignment.

Independent variables: BIRTH2, FRIENR2, OWN2,
CLIMAT2, GENERIC

Findings

Table 13, page 129, contains the results of the chi-square analysis of the factors influencing the selection of a retirement location near a base of previous assignment. One-hundred and eleven of the 245 retirees who did not retire at their TMA retired near a base of previous assignment. This figure represents almost half of the remaining group of retirees. Again, military experience variables are predominant. The ownership of property which was purchased prior to retirement and the "pull" of friendship and family ties represent the importance of location specific capital (DaVanzo, 1976). Similarly, although less significant, a favorable climate appears to be a non-place specific factor in the selection of a retirement location. As early as three decades ago, researchers were citing the importance of weather and sunshine in elderly migration (Ullman, 1954). Even though the "place of birth" variable is significant at the .05 level, it does not represent a pull factor. Of the one hundred and eleven retirees who returned to a base of previous assignment, only 13 were born in the area. Thus, civilian experiences do not seem to be influential in the selection of a retirement site.

The "Generic" Military Base as the Retirement Location

Hypothesis Three

The propensity for military retirees who do not retire at either their terminal military assignment or near a base of previous assignment to select a retirement location in close proximity to a military installation is a function of military experiences and generic factors.

Dependent variable: Military retirees who retire near a base they have not been assigned to previously.

Independent variables: BIRTH2, FRIENR2, JOBAVAL, GENERIC

Findings

The results of this chi-square analysis are contained in Table 14, page 130. Again, the military experience variables predominate. Ties to friends and/or relatives with whom the retiree had communicated with prior to retirement appears to be a significant determinant of the retirement location. Similarly, the presence of job opportunities at the retirement site reflects the positive influence of an economic tie. As in the previous analysis, the birth vari-

able is significant, but only in the sense that it is unimportant as a determinant of the retirement location when military experience variables are present. Additionally, climatic or environmental factors did not appear as significant factors in this analysis.

Factors Contributing to Retiree Mobility

Hypothesis Four

The propensity to migrate subsequent to the initial retirement move is a function of life cycle characteristics and quality of life variables.

Dependent variable: Military retirees who moved subsequent to their initial selection of a retirement location.

Independent variables: JOBAVAL, GENERIC, RETIRE, SCHOOL2, FAMILY, LENGTH

Findings

The propensity to move subsequent to the initial selection of a retirement home is a function of life cycle characteristics and climate. Those retirees who experienced the trauma of a family breakup through the death of a spouse or a divorce exhibited a high rate of mobility. Similarly,

those retirees with the least amount of time invested in a location showed a higher propensity to make a subsequent move than did those with roots in the community. The length variable consisted of three categories based on length of stay at the initial retirement location: zero thru three years; four thru seven years; and over seven years. The economic pull of job availability was also a significant factor in secondary moves. As one would expect, life cycle characteristics and changes in family status were significant contributors to the propensity for subsequent moves. The results of these analyses are reflected in Table 15, page 131.

Military Retirees with Itchy Feet

Hypothesis Five

The anticipation of future migration is a function of work related factors, life cycle characteristics and quality of life considerations.

Dependent variable: Military retirees who plan to move in the future.

Independent variables: COSTLIV, BIRTH2, CLIMAT2, SCHOOL2, WORK, AGE, RENT, DURATION

Findings

Life cycle characteristics such as age and length of stay at current location were significant factors in retirees intending to make future moves. As expected, the older the retiree, the less the propensity for future moves. Similarly, those who had more time invested in a location were less inclined toward future moves. The duration variable also consisted of three categories based on length of stay at the current retirement location: zero thru three years; four thru seven years; and over seven years. These relationships are contained in Table 16, page 132. Additionally, those retirees with weaker location specific capital ties would be expected to show increased propensities for moving. Thus, it is no surprise to see the "rent" variable is significant in intentions of moving. Whether the retiree was employed full-time or part-time had no significant impact on future plans to move. Similarly, cost of living did not seem to be a factor influencing future migration. The relative unimportance of living costs could partially be attributed to the fact that retirees usually have three incomes in the household: their military retirement income, their spouse's income, and their current, post retirement, civilian employment income. Also, retirees are overwhelmingly located in the south and southwest, areas

which have historically had lower costs of living. Climate, as a measure of quality of life, is also significant. Of those planning future moves, two-thirds were leaving their locations for climatic reasons.

Military Retirees and Base Closure

Hypothesis Six

Subsequent to a base closure, the propensity of military retirees in the impact region to migrate is a function of place specific ties and generic factors, and is inversely related to length of residence in the area.

Dependent variable: Military retirees who would move if the base near them closed.

Independent variables: BIRTH2, FRIENR2, RENT, DURATION, AGE, WORK, LENGTH, BENNIES

Findings

Table 17, page 133, contains the results of the chi-square analysis of the variables impacting upon a retirees decision to move if the base near him closed. Of the 412 retirees surveyed who were living near a base, 146, or about a third, said they would move if the base near them closed.

According to the survey respondents, military retirees place considerable value on retirement benefits. In fact, the only variable to significantly impact on the decision to move was the military benefit measure. The length of residence variable was not significant. Similarly, although those retirees who had lived at their location for over seven years had less of a propensity to migrate upon base closure than those with less than seven years residency, twenty-five percent said they would move if their medical and other earned benefits were terminated through base closure. Other place specific ties such as birthplace, presence of friends and relatives, age and work status were unimportant in relation to military benefits.

Again, it is highly evident that military experiences in the form of medical benefits, commissary and exchange services, and social contacts impact heavily on the selection of a retirement location. If these earned benefits were terminated through base closure, it is highly probable that most retirees would move to locations near other defense installations so as to continue receiving their total retirement benefits, accrued through twenty plus years of government service.

Tables 12 through 17 are contained on pages 128-133.

TABLE 12

CHI-SQUARE TEST OF INDEPENDENCE
 TERMINAL MILITARY ASSIGNMENT

Dependent Variable: Military retirees who retired at
 their terminal military assignment (TMA)

Independent Variables	χ^2	ϕ	c	λ
BIRTH1	2.04	.06	.06	.02
FRIREL1	63***	.37	.35	.31
OWNTMA	227***	.70	.57	.67
JOBVAL	.83	.04	.04	0
CLIMATE1	42***	.30	.29	.21
COSTLIV	.24	.02	.02	0
SCHOL1	5.2*	.10	.10	0

significant at .05 *
 .01 **
 .001 ***

TABLE 13

CHI-SQUARE TEST OF INDEPENDENCE
BASE OF PREVIOUS ASSIGNMENT

Dependent Variable: Military Retirees who did not retire at their terminal military assignment but did retire near a military base of previous assignment.

Independent Variables	χ^2	ϕ	c	λ
BIRTH2	6.2*	.11	.11	0
FRIENR2	40.3***	.30	.29	0
OWN2	63.6***	.37	.35	.18
CLIMAT2	3.91*	.09	.09	0
GENERIC	.49	.03	.03	0

significant at .05 *
.01 **
.001 ***

TABLE 14

CHI-SQUARE TEST OF INDEPENDENCE
NEAR ANY MILITARY BASE

Dependent Variable: Military retirees who retire near
a base they have not been assigned to previously.

Independent Variables	χ^2	ϕ	c	λ
BIRTH2	4.3*	.09	.09	0
FRIENR2	25**	.23	.23	0
JOBVAL	5.3*	.10	.10	0
GENERIC	3.2	.08	.08	0

significant at .05 *
.01 **
.001 ***

TABLE 15

CHI-SQUARE TEST OF INDEPENDENCE
RETIREES WHO ARE MOVERS

Dependent Variable: Military retirees who moved subsequent to their initial selection of a retirement location.

Independent Variables	χ^2	ϕ	c	λ
JOBVAL	7.6**	.12	.12	0
GENERIC	5.0*	.10	.10	0
RETIRE	.007	0	0	0
SCHOOL2	.84	.04	.04	0
FAMILY	21***	.21	.21	.05
LENGTH	60.2***	-	.34	0

significant at .05 *
.01 **
.001 ***

TABLE 16

CHI-SQUARE TEST OF INDEPENDENCE

RETIREEES WHO PLAN TO MOVE

Dependent Variable: Military retirees who plan to move
in the future.

Independent Variables	χ^2	ϕ	c	λ
COSTLIV	2.7	.07	.07	0
BIRTH2	.16	.01	.01	0
CLIMAT2	16.2***	.18	.18	.10
SCHOOL2	.39	.02	.02	0
WORK	1.58	.05	.05	0
AGE	10.5**	-	.15	0
RENT	13.2***	.17	.16	.08
DURATION	7.4*	-	.12	.04

significant at .05 *
.01 **
.001 ***

TABLE 17

CHI-SQUARE TEST OF INDEPENDENCE
IMPACT OF BASE CLOSURE

Dependent Variable: Military retirees who would move
if the base near them closed.

Independent Variables	χ^2	ϕ	c	λ
BIRTH2	1.03	-	.04	0
FRIENR2	2.30	-	.07	0
RENT	2.32	-	.07	0
DURATION	4.99	-	.10	0
AGE	4.29	-	.09	0
WORK	38	-	.03	0
LENGTH	5.13	-	.10	0
BENNIES	98***	-	.42	0

significant at .05 *
.01 **
.001 ***

Individual Level Probit Analyses

The preceding six individual level hypotheses were also tested using a probit transformation function. The probit model and its specification was discussed in Chapter V. The probit program used in this analysis is designed for data where both the response and explanatory variables are categorical. Consequently, although regression type coefficients are generated, they cannot be interpreted in the same manner as regression coefficients because the basic assumptions of regression are violated. A "t" statistic, which is the probit coefficient divided by the standard error, is generated which identifies the significance of the explanatory variables in the equation. Tables 18 through 23 (pages 139-144) reflect the relative order of importance of the independent categorical variables in relation to the dichotomous response variable. The probit analysis employs an iterative process whereby the least significant variables are removed from the equation. Consequently, in some of the analyses the independent variables may not correspond with the chi-square analyses of the same hypotheses.

Also, the tables contain a "psuedo" R^2 statistic. Because the probit model employs nominal scaled response and explanatory variables, this R^2 statistic must be interpreted with caution. Although it does not represent explained

variance as in the least squares regression model, it can be used to predict the probabilities of responding positively based on the conditional values of the predictor variables (Wrigley, 1976).

The Terminal Military Assignment Hypothesis

The ownership of property which was purchased prior to retirement was the single most influential factor in the selection of the terminal military assignment as the retirement location (Table 18). Friends and kinship ties were also important, as was the generic factor, a warm climate. The military experience variables were significant. Civilian experiences, such as return to birthplace, were insignificant.

Retirement Near A Military Base Hypotheses

Three explanatory variables were significant in the selection of a retirement location near a base of previous assignment or near a base, regardless of prior experiences there. These factors were the ownership of property which was purchased prior to retirement; the presence of friends and/or relatives with whom the retiree had communicated with

regularly during the last five years of military service; and job availability at the retirement site. Again, the presence of military experiences was predominant. These relationships are evident in Tables 19 and 20.

The Mover Hypothesis

Military retirees who moved subsequent to their initial selection of a retirement location were responding primarily to life cycle changes. Changes in family status which included the death of a spouse or divorce were significant factors in subsequent moves. In fact, over 90 percent of the retirees who had experienced a change in family status subsequent to retirement, had also moved following the selection of their initial location. Similarly, the graduation of a dependent from school was influential in the decision to relocate. This "empty nest" syndrome not only reduces the place specific ties to an area, but it also results in more capital being available for moving and setting up another household. As expected, the propensity for subsequent moves was inversely proportional to length of stay at the initial retirement site. The explanatory variables and their probit coefficients are contained in Table 21.

The Itchy Feet Hypothesis

Military retirees who plan to move in the future are doing so primarily because of quality of life variables. The desire to live out the golden years in a more agreeable environment was a significant reason for planning future migrations. Life cycle characteristics such as experiencing the graduation of a dependent from school were insignificant. Similarly, economic variables relating to employment and cost of living appeared to be relatively unimportant in the planning of future moves. Those retirees who rented, rather than owned, their homes displayed a greater propensity for future moves. Their footloose status is understandable, considering their lack of location specific capital ties. Table 22 contains the results of these analyses.

Impact of Base Closure

Military retirees consider base exchange facilities, commissary services, and medical care to be important when selecting a retirement location. For retirees, base closure means the loss of these earned military benefits. Table 23 contains the results of the probit analyses of the relationship between military experiences, civilian experiences and

generic ties and base closure. It is not surprising that the most significant impetus to moving is the loss of military benefits through base closure. Civilian ties, such as birthplace, and employment status are insignificant. Life cycle characteristics are important. Those retirees with fewer years invested in a location reflect a higher propensity to move. Similarly, the older the retiree, the greater propensity to move. This phenomenon is quite likely related to the military experience variable, i.e., military benefits. As one ages, there is usually increased need, perceived or real, for medical and health care services. Cost of living considerations are also important factors in the decision to move. As with the life cycle factors, they are closely tied to the loss of military services which are viewed as "free goods" by retirees.

TABLE 18

PROBIT TRANSFORMATION
 TERMINAL MILITARY ASSIGNMENT

Dependent Variable: Military retirees who retired at
 their terminal military assignment (TMA)

Independent Variables	Coeff	T Test	Prob	Pseudo R ²
BIRTH2	.26	.79	.43	.05
FRIREL1	.76	4.32**	.00	.17
OWNTMA	2.13	12.31***	.00	.64
JOBVAL	.02	.17	.86	.01
CLIMATE1	-.59	-3.62**	.00	.12
SCHOL1	.21	1.11	.27	.04

Significant at .05 *
 .01 **
 .001 ***

TABLE 19

PROBIT TRANSFORMATION
BASE OF PREVIOUS ASSIGNMENT

Dependent Variable: Military retirees who did not retire at their terminal military assignment but did retire near a military base of previous assignment.

Independent Variables	Coeff	T Test	Prob	Pseudo R ²
BIRTH2	-.04	-.17	.86	.02
FRIENR2	.81	4.92**	.00	.24
OWN2	1.62	6.31***	.00	.52
CLIMAT2	.27	1.60	.11	.07
JOBVAL	-.53	-3.63*	.00	.13

Significant at .05 *
 .01 **
 .001 ***

TABLE 20

PROBIT TRANSFORMATION
NEAR ANY MILITARY BASE

Dependent Variable: Military retirees who retire near
a base they have not been assigned to previously.

Independent Variable	Coeff	T Test	Prob	Pseydo R ²
BIRTH2	.19	.77	.44	.06
FRIENR2	.76	4.76**	.00	.24
JOBVAL	.38	2.82*	.00	.10
GENERIC	-.11	-.82	.41	.03

Significant at .05 *
.01 **
.001 ***

TABLE 21

PROBIT TRANSFORMATION
RETIREEES WHO ARE MOVERS

Dependent Variable: Military retirees who moved subsequent to their initial selection of a retirement location.

Independent Variables	Coeff	T Test	Prob	Pseudo R ²
JOBVAL	.23	1.51	.13	.05
GENERIC	.10	.59	.55	.10
RETIRE	.85	1.51	.13	.15
SCHOOL2	.48	3.02*	.00	.11
FAMILY	1.43	4.28**	.00	.41
LENGTH	-.27	-8.28***	.00	.06

Significant at .05 *
 .01 **
 .001 ***

TABLE 22

PROBIT TRANSFORMATION
RETIREES WHO PLAN TO MOVE

Dependent Variable: Military retirees who plan to move
in the future

Independent Variables	Coeff	T Test	Prob	Pseudo R ²
COSTLIV	.03	.23	.82	.01
BIRTH2	-.01	-.05	.95	.01
CLIMAT2	.55	3.63**	.00	.21
SCHOOL2	.21	1.67	.10	.08
WORK	.11	.63	.53	.04
AGE	-.02	-1.73	.09	.01
RENT	-.76	-3.30**	.00	.28
DURATION	-.02	-.96	.33	.01

Significant at .05 *
.01 **
.001 ***

TABLE 23

PROBIT TRANSFORMATION
IMPACT OF BASE CLOSURE

Dependent Variable: Military retirees who would move
if the base near them closed.

Independent Variables	Coeff	T Test	Prob	Pseudo R ²
BIRTH2	.44	1.79	.07	.14
RENT	.31	1.31	.19	.10
DURATION	-.08	-3.81**	.00	.03
AGE	.04	2.49**	.01	.01
WORK	-.10	-.60	.55	.04
BENNIES	.74	4.10**	.00	.61
COSTLIV	-.29	-2.29*	.02	.10

Significant at .05 *
.01 **
.001 ***

Summary

The individual level analyses highlight the considerable impact that military experiences has on the selection of a retirement location. Extremely noteworthy as a determinant is the presence of location specific capital ties. Foremost among these factors is the ownership of property which was a significant variable in both the chi-square and probit analyses. An illustration of the importance of this type tie is that of the 170 retirees sampled who owned property at their terminal military assignment, only 14 or less than six percent did not retire there. Entire communities, consisting primarily of military retirees have sprung up near military installations. A prime example of the military retirement community is Windcrest, Texas, located midway between Ft. Sam Houston and Randolph Air Force Base. Its population of 5000 includes over 50 retired general officers. These retirees are not only congregating near five large bases and the associated camaraderie, but they are also adjacent to the largest medical facility in the Air Force. Others of equal import exist throughout the southern tier of the country, luring future retirees with promises of "within commuting distance of military services you have come to depend upon and deserve."

CHAPTER VII

CONCLUSION

"I considered retiring to California or Arizona, but settled on Phoenix because my wife and I had made many friends here during my active duty days."

The conceptual framework which guided this research was built around hypothetical factors which could possibly influence the military retiree's selection of a retirement location. A myriad of factors was synthesized into two broad categories: civilian experiences and military experiences. For a detailed discussion of these categories, refer to Chapter I, pages 16 to 20. This thesis posits that the pattern and magnitude of governmental policy is evident through the movement of military personnel. Implicit Department of Defense policies concerning the manning of military installations are simultaneously redistributing armed forces personnel and are also exerting a powerful influence on the location of military retirees, thus contributing to long term population distribution.

Upon retirement from military service, will place specific ties resulting from military experiences be instru-

mental in selecting a retirement location? Is the selection of a specific retirement destination the result of location specific ties such as friends, relatives, and economic investments which were accumulated through military moves and assignments? Or, are military members retiring from active duty and returning to their birthplace or their pre-military locations? Also are generic ties such as environmental factors, climatic amenities, and economic aspects significant factors in explaining the military retirement process?

Military retirees are not randomly selecting their retirement locations. Ordinary least squares regression, using aggregate state level data, indicated a high positive relationship between the location of the active duty force and the location of military retirees. At this level of analysis it is evident that military retirees are not going back "home." They are settling out near military installations, quite likely near those they have been assigned to previously! The long term effect of this retirement pattern is a shift in United States population from the northern and eastern states, which are relatively void of military installations, to the south and southwest which have an abundance of military establishments.

To fully comprehend the role of military experiences in the selection of a retirement location, individual level

analyses employing chi-square and probit transformations were performed. Again, military influences were paramount in the retirement location decision. Of the 455 retirees in the sample, 210, or about 46 percent, retired at their last base of military assignment. Prior ownership of property at the future retirement site was the most influential factor impacting on the decision to remain at the terminal military location. Other location specific capital ties included the presence of friends and relatives and a non-place specific tie: favorable climate. Birthplace or other pre-military experience ties were not important in determining the retirement location. In fact, only thirty (six percent) of the 455 retirees sampled selected an area near their birthplace or place where they grew up as their retirement location. Of these 30 "return migrants", eleven were near a base to which they had been assigned previously.

Of those retirees not locating at their last active duty location, one hundred and eleven, or about another 45 percent, retired near a base to which they had been assigned previously. Again, the military experience ties of property ownership and friendship ties were significant predictors. Civilian experiences did not surface as significant variables impacting on the retirement location decision. In isolation, generic or non-place specific factors such as environmental amenities and climate were of secondary

importance. However, when combined with military experience variables their significance increased. Furthermore, the importance of being near a military base to military retirees is evidenced by the fact that 419 of the 455 retirees sampled (92 percent) retired near a defense installation!

Also, once retired, there is a strong proclivity to remain dependent on military services, especially medical care. This "military" dependency is much more pronounced in the enlisted than in the officer retired ranks. The 146 retirees who stated they would move if the base near them closed represented 41 percent of the enlisted sample and only nine percent of the retired officers. Because of military pay differentials and potential earning power, this dichotomy was expected. However, this disparity was not as apparent when examining the primary reason for retiring near a base. Eighty-two percent of the enlisted retirees and 71 percent of the officer retirees surveyed said military benefits were very important when selecting the retirement location. This was also evident from the individual level analyses. In the other analyses, differences based on rank were not evident.

It is clear from the analyses referenced in this thesis that the migration behavior of military retirees is not similar to their civilian counterparts in like age groups.

First, military retirees have a much broader experiential base to call upon when choosing a "retirement" location. Secondly, military retirees are not constrained as much by economic factors as are their civilian counterparts. Because their final move is at government expense, the friction of distance is not present. And lastly, military retirees do not return home upon completion of their active duty commitment. Thus, Department of Defense policies concerning the stationing of military personnel are, in effect, redistributing the nation's population.

The findings of this research support the thesis that military members retire near military installations because of strong "military family" ties acquired during a lifetime of service to country. In closing, the importance of military experiences to the selection of a retirement location is summed up in the following statement of an Air Force retiree:

"If Chanute (AFB) closes, I'd say the hell with it, and move to San Antonio. They wouldn't close all five of those bases!"

Department of Defense officials are not fully informed when making decisions concerning the closing and realignment of military installations. Federal officials seriously underestimate the impact of base closures on a community and

surrounding region because of their lack of knowledge concerning the symbiotic relationship between a military base and the military retirees dependent on it for services. Already, the results of this research has enabled policy makers to understand the processes giving rise to the spatial pattern of military retirees in the United States. I have been fortunate to have had the opportunity to share these ideas and concerns with Defense Manpower personnel as well as members of the Air Force Legislative Liaison Office, Department of Defense. Hopefully, through the legislative process we will see consideration given the military retiree when determining the impact of defense realignments on a region.

APPENDIX A

OFFICE USE ONLY

ID # _____

USAF SCN 80-116

THE MILITARY RETIREMENT LOCATION

Privacy Act Statement

AUTHORITY: 5USC 301, 10 USC 8012

PURPOSE: To determine the factors contributing to the Air Force retiree's selection of a retirement location and the long term impact of military retirees on a region's economy.

ROUTINE USES: Information gathered through this survey will be used in support of Department of Defense objectives and to assist in environmental impact analyses to determine the impact of the military retiree on a region's economy.

STATUS OF RESPONDENT PARTICIPATION: Participation is voluntary.

ACTIONS TO BE TAKEN IF ALL OR PART OF THE REQUESTED INFORMATION IS NOT PROVIDED: No action will be taken if the members do not wish to complete this questionnaire.

Please answer the following questions:

- | | Town or County | State or Country |
|--|----------------|------------------|
| 1. a. Where were you born? | _____ | _____ |
| b. Where did you live during most of your childhood? | _____ | _____ |
| (1) How many years did you live there? | _____ | |
| c. Where were you living when you graduated from high school or left school? | _____ | _____ |
| (1) In what year did you graduate or leave school? | | _____ |
| d. Where did you live just before entering military service? | _____ | _____ |

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2. a. Please list the six stateside places where you spent the most time while in military service (list them in chronological order) b. Dates assigned (months & year) c. Did you own a house at this location? (please circle)

	<u>City/Installation</u>	<u>State</u>	<u>From</u>	<u>To</u>	<u>Yes</u>	<u>No</u>
#1	_____	_____	_____	_____	1	2
#2	_____	_____	_____	_____	1	2
#3	_____	_____	_____	_____	1	2
#4	_____	_____	_____	_____	1	2
#5	_____	_____	_____	_____	1	2
#6	_____	_____	_____	_____	1	2

If your last two assignments prior to retiring are listed above, please indicate them by placing an asterisk (*) beside them.

3. If they are not listed above, please list your last two stateside assignments prior to retiring.

	<u>Installation</u>	<u>State</u>	<u>Dates Assigned</u>
Next to last assignment	_____	_____	_____
Terminal assignment	_____	_____	_____

4. a. Do you currently own: (please circle) b. If you answered yes to #4a, in what city and state is it located? If you own property in more than one location, please list them all below. c. In what year did you buy it?

	<u>Yes</u>	<u>No</u>		
(1) a house	1	2	_____	_____
(2) business	1	2	_____	_____
(3) land	1	2	_____	_____

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5. Please list the location of stateside friends with whom you communicated (visited, wrote to, telephoned) the most during the last five years of your active duty career. List the place where these friends lived at the time of your retirement.

	<u>City/Installation</u>	<u>City/State</u>	<u>Year the friendship began</u>	<u>Frequency of contact (daily, weekly, monthly, yearly, etc.)</u>
a.	_____	_____	_____	_____
b.	_____	_____	_____	_____
c.	_____	_____	_____	_____
d.	_____	_____	_____	_____

6. Please list the location of relatives with whom you communicated (visited, wrote to, telephoned) the most during the last five years of your active duty career.

	<u>Relationship of relative</u>	<u>City/County</u>	<u>State</u>	<u>Frequency of contact (daily, weekly, monthly, yearly, etc.)</u>
a.	_____	_____	_____	_____
b.	_____	_____	_____	_____
c.	_____	_____	_____	_____
d.	_____	_____	_____	_____

7. Is your current location within commuting distance to a military base containing a commissary, exchange, and medical facility? (please circle your response)

Yes 1

No 2

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8. Please list the places in which you have lived since retiring from active duty. Place them in chronological order with the last entry being your current location.

Retirement Location	City or County	State	Dates lived Here		Reason(s) for locating here* (Use #s below)	Reason(s) for leaving here* (Use #s below)
			FROM	TO		
First	_____	_____	_____	_____	_____	_____
Second	_____	_____	_____	_____	_____	_____
Third	_____	_____	_____	_____	_____	_____
Fourth	_____	_____	_____	_____	_____	_____
Current Location	_____	_____	_____	_____	_____	_____

* From the list below, select as many reasons as applicable. Place the corresponding number in the blanks in the columns labeled: Reason(s) for locating here and Reason(s) for leaving here. If you have not moved from your initial retirement location, you would not fill in the space in the last column. A reason may be used more than once.

- | | |
|---|---|
| 1. Climate | 6. Job related |
| 2. Heard it was a nice place to live | 7. Proximity to relatives |
| 3. Cost of living | 8. Property investments |
| 4. It was near a military base to which I had been previously assigned | 9. It was near my birthplace or near where I lived during childhood |
| 5. It was near a military base to which I had NOT been previously assigned, but one where I could receive military benefits | 10. I had vacationed here and liked it |
| | 11. Schooling for dependents |
| | 12. Change in marital status |
| | 13. A death in the family |
| 14. Other (specify) _____ | |

9. a. In general, how important was the availability of the following military services in the selection of your current retirement location? Please circle a number for each service.

	<u>Very Important</u>	<u>Important</u>	<u>Not Very Important</u>	<u>Not at All Important</u>
Commissary	1	2	3	4
Exchange	1	2	3	4
Medical facility	1	2	3	4
Military clubs	1	2	3	4

- b. How often do you or your family go to a military base? Place an X in the space corresponding to the frequency of going to a base.

more than once a week	weekly	two-three times/month	monthly	less than monthly	seldom if ever
_____	_____	_____	_____	_____	_____

- c. If the military installation nearest you closed, would you move?

Yes	Probably	Probably Not	No
_____	_____	_____	_____

10. a. How long do you expect to be at your current location?

less than one year. 1	
about one to two years. 2	
several years 3	(please circle one)
rest of my life 4	

If you circled #4, skip to question #11 on the next page.

- b. If you do not expect to be at your current location for the rest of your life, what factors might influence you to move?

(1) _____

(2) _____

- c. Where do you think you might go to live and why?

City _____	State _____	Reason _____
------------	-------------	--------------

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11. a. Are you currently employed? (please circle)

Yes 1 No 2 No, but looking for work 3

b. Please specify type of work you do or are looking for:

c. Is this work:

Fulltime 1

(please circle)

Parttime 2

d. Have you retired from a second career? (please circle)

Yes 1

If yes, in what year did you retire
from your second career?

No 2

12. Do you own or pay rent on your place of residence?

Own 1

(please circle)

Rent 2

13. a. What was your retired military income before taxes last year, 1980?

under \$5,000 1

\$5,000 to \$8,999 2

\$9,000 to \$12,999 3 (please circle)

\$13,000 to \$16,999 4

\$17,000 to \$20,999 5

\$21,000 or more 6

b. What was your total family income, including your retirement pay, before
taxes last year, 1980?

under \$15,000 1

\$15,000 to \$19,999 2

\$20,000 to \$24,999 3

\$25,000 to \$29,999 4

\$30,000 to \$34,999 5

\$35,000 to \$39,999 6

\$40,000 or more 7

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14. a. Approximately what percentage of your total family income is spent on a military installation (commissary, exchange, etc.)?

_____ %

- b. Approximately what percentage of your total family income is spent in the local civilian community? This is income that is not spent on base or mailed outside the community.

_____ %

15. What is your racial background? _____

16. What is your retired rank? _____

17. In what year were you born? _____

18. How long have you been retired from active duty? _____ years

19. What is your marital status? Are you currently: (please circle)

Married 1

Separated . . . 2

Divorced 3

Widowed 4

Never married.. 5

20. a. Were any dependents in your household in school at the time of your retirement?

Yes 1 No 2 (please circle)

- b. How many children are currently living with you? _____

Please list their ages: _____, _____, _____, _____, _____, _____.

- c. Have any of your children graduated from school since you have been retired from military service? (please circle)

Yes 1 No 2

THANK YOU FOR YOUR COOPERATION

Please return only the completed questionnaire in the enclosed stamped pre-addressed envelope. Thank you.

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APPENDIX B

Preliminary Results From The Questionnaire Pre-Test

Questionnaires sent = 83

Number returned = 70

Rate of response = 84%

	<u>Yes</u>	<u>NO</u>
1. Retirement location near a base	68	2
2. Retirement location same as place of birth	10	60
3. Retirement location same as place of childhood experiences	16	54
4. Was retiree ever assigned at the retirement location	35	35
5. Was the retirement location the terminal military assignment	25	45
6. Did the retiree communicate with friends at the retirement location during the last five years of service	10	60
7. Did the retiree communicate with relatives at the retirement location during the last five years of service	29	41

8. Reasons for moving to the retirement location:

<u>Reason</u>	<u>#</u>	<u>Reason</u>	<u>#</u>
Climate	1	Heard nice place	3
Low cost living	1	Near a base	56
Friends were here	13	Job was available	47
Relatives were here	26	Owned property here	17
Lived here before	40	Vacationed here & liked area	1

9. Frequency of going to the base:

<u>More than once a week</u>	<u>weekly</u>	<u>two-three times month</u>	<u>monthly</u>	<u>less than monthly</u>	<u>seldom if ever</u>
6	9	33	14	5	3

10. Importance of base facilities:

	<u>Very Important</u>	<u>Important</u>	<u>Not Very Important</u>	<u>Not at all Important</u>
Commissary	19	32	14	5
Exchange	16	30	19	5
Medical facility	30	24	12	4
Military clubs	3	2	22	43

11. How long do you expect to be at your current location?

<u>Only a few months</u>	<u>Only a few years</u>	<u>Rest of my life</u>	<u>Don't know</u>
2	16	34	18

12. Number of retirees who were employed:

<u>Yes, fulltime</u>	<u>Yes, part-time</u>	<u>No</u>
46	5	19

13. Number of retirees owning or renting their place of residence:

<u>Own</u>	<u>Rent</u>
67	3

14. Number of years the retiree has been retired from military service:

<u>Over 20</u>	<u>15 - 20</u>	<u>10 - 15</u>	<u>5 - 10</u>	<u>Less than 5</u>
10	18	14	16	12

15. Total family income:	Less than \$10,000	1
	10,000 to 12,999	0
	13,000 to 15,999	1
	16,000 to 18,999	1
	19,000 to 21,999	3
	22,000 to 24,999	3
	25,000 to 27,999	8
	28,000 or more	53

APPENDIX C

March 1981

Dear Retiree:

Why did you decide to retire in your present geographical area? What impact do retirees have on a region's economy? The answers to these and similar questions can be of particular benefit to community leaders and to Department of Defense officials in assessing the impact of a military career on retirement location decisions.

I am an active duty Air Force officer who is involved in studying the factors which influence a military retiree in his or her selection of a retirement location. Also, I am interested in determining the impact of military retirees on a region's economy.

In order to realize the above objectives I need your help. Your name has been selected as part of a random sample of Air Force retirees, and I am therefore writing to ask that you give me the benefit of your experiences by completing the enclosed questionnaire. Completion of the questionnaire should take about twenty to twenty-five minutes of your time.

Be assured that the information you supply will be treated in absolute confidence. Your answers will be totally anonymous. Your name and address will not be recorded. The identification number in the upper right hand corner of the questionnaire is for accounting purposes and allows me to compute a response rate for the study. The Survey Control Number is 80-116 and indicates that the Air Force has approved the study and the questionnaire.

Since the accuracy of the findings depends on a high rate of response from the sample of retirees, I urge you to take time to fill out the questionnaire at your earliest convenience. Please return the completed questionnaire in the stamped enclosed envelope as soon as you can.

Please note the privacy act statement on the questionnaire.

Thank you very much for your cooperation. As a token of my appreciation for your help I have enclosed a map of active United States Air Force installations as of 1977. I hope you find it useful.

Carroll T. Barnes

CARROLL T. BARNES, Major, USAF
Air Force Institute of Technology

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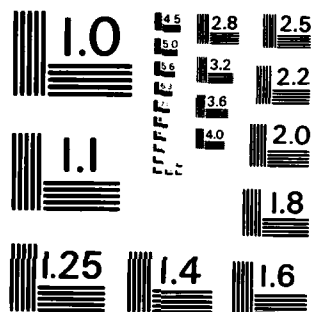
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VITA

Carroll T. Barnes was born in Boone County, Missouri on April 14, 1945. He attended primary and secondary schools in Columbia, Missouri and graduated from Hickman High School in 1963.

Mr. Barnes was a resident student at the University of Missouri, Columbia, Missouri from 1963 through 1969. He received a B.S. in Education with a major in Geography in 1967 and was awarded a Master of Arts degree in Geography from the University of Missouri in 1969. In August, 1978, he began a program of study toward the Ph.D. degree in Geography at the University of Illinois, Urbana-Champaign, Illinois.

Mr. Barnes has taught geography at the Air Force Academy and in the European Division of the University of Maryland, Karamursel, Turkey.

Mr. Barnes was an officer in the Arnold Air Society and served as Administrative Officer of the Air Force ROTC unit at the University of Missouri. He was commissioned a Second Lieutenant in the United States Air Force in 1969. He currently holds a teaching position in the Office of Geography at the United States Air Force Academy in Colorado.