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# ELDERLY MIGRATION, RETIREMENT FUNCTION, AND COMMUNITY GROWTH IN NONMETROPOLITAN AREAS

By

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ABSTRACT

ELDERLY MIGRATION, RETIREMENT FUNCTION, AND
COMMUNITY GROWTH IN NONMETROPOLITAN AREAS

By

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One of the factors associated with the recent reversal of rural-urban migration is elderly migration to rural communities. This study explores the factors associated with elderly migration, community characteristics associated with the development of the retirement function, and impacts of elderly migration and retirement function on nonmetropolitan communities. Two phases of analysis are included. One is the analysis of the North Central Region counties for which elderly migration is examined. The other is the analysis of 42 counties not adjacent to metropolitan areas in Michigan for which the retirement function and community growth are examined. The major sources of data are census publications. The time period for the analysis is between 1960 and 1975. Factor analysis and Z-scores are used to construct composite indexes. Pearson correlation, partial correlation, regression and path analysis are applied.

It is found that the amenities in nonmetropolitan areas, particularly in remote areas, determine the inmigration of older people. However, the natural-environmental amenities exercise their influence on elderly migration through the development of social-recreational amenities. Urbanization is a crucial factor pushing the elderly away

from the community, but not because of higher living costs. When the past migration is taken into account, the original impact of amenities is reduced. It is concluded that the factors influencing elderly migration have been structured.

The immediate impact of elderly migration on the local community is to increase the number and proportion of elderly. A higher proportion of elderly was found in central places of rural areas, and the smaller the place the higher the proportion of older people. The proportion of elderly and rates of elderly migration are used to indicate the development of retirement function. The retirement function is found to be a specialized community function independent of agriculture, manufacturing, and services. The higher the retirement function the higher the proportion of the population with social security and self-employed non-farm incomes. Socio-economic status of the population, structural differentiation, and urbanization in communities specialized in retirement function is generally low. Without migration of younger people, it is also associated with low functional autonomy.

It is found that the retirement function has a negative effect on population growth but has a strong indirect effect on the growth through migration of younger people, and on wholesale and retail activities. Compared with other specialized functions (manufacturing and agricultural), it is more important in maintaining population growth and community structure.

It is also found that elderly migration contributes a positive net impact on population growth and structural development. Although

higher central place centrality (larger centers) determines a major part of access to the aging-related systems, population and structural growth occurred more in smaller centers of lower centrality. It is concluded that elderly migration to rural communities has a significant contribution to both population growth and structural development.

The turnaround of nonmetropolitan growth through elderly migration and the development of retirement function in rural communities has significant implications for the changing rural society, problems of older people in the post-industrial age, and services to the aged in the United States.

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# CHAPTER I

# INTRODUCTION

The purpose of this study is to examine elderly migration, to explore development of the retirement function in the community, and to ascertain the extent to which elderly migration and the retirement function affect community growth in nonmetropolitan areas. Two phases of analysis are included. One is the analysis of 1054 counties in the North Central Region of the U. S., identifying the community characteristics affecting elderly migration. The other is the analysis of 42 nonmetropolitan counties not adjacent to metropolitan areas in Michigan, investigating the community characteristics associated with the retirement function of the community, and the impact of elderly migration and the retirement function on community growth and development. This chapter describes the background of the problem, conceptualization of the problem, theories involved, and the procedure of investigation.

## The Problem and its Background

The historical trend of rural-urban migration in the U. S. has been reversed in recent years. Beale (1975) reported that, during 1970-1973, nonmetropolitan areas gained 4.2% in population compared with only 2.9% for metropolitan areas. Brown (1975) also found that a substantial number of counties declining in the 1960's (64%) have

turned around and experienced population growth during 1970-1973. It has also been noted that the recent nonmetropolitan growth has not gone disproportionately into counties with the largest employment centers or manufacturing industry (Beale, 1975:9). The attractiveness of rural and small town communities seems to have increased. However, it is evident that rural areas are dominated by extractive economic activities, especially by agriculture, which has become less attractive with shrinking employment opportunities. Rural-urban migration is inevitable when rural people are seeking sustenance. Thus, the turnaround poses the question: what kind of growth has taken place in nonmetropolitan areas?

Since 1960, the central cities of metropolitan areas have continued to experience net outmigration and the suburban part of metropolitan areas outside central cities has continued to gain population through net inmigration and experienced a higher growth rate than other areas. This suggests that the extension of urbanization or suburbanization played a major role in the turnaround. Hansen (1973) believes that the emergence of urban fields, industrialization of rural areas, and changes in employment structure influenced the turnaround in the 1960's. However, these factors seem to be less relevant to the recent turnaround because the annual shift in nonmetropolitan counties not adjacent to SMSAs is greater than that in adjacent counties. Furthermore, the recent nonmetropolitan population growth has not disproportionately gone into counties with the largest employment centers or manufacturing industry.

Beale (1975) suggests that the growth of recreation and retirement activities are important in explaining the recent turnaround phenomenon. Counties with a high net migration rate of elderly in the 1960 decade (15% or more of persons 60 years old and over) had the highest rate of growth in the 1970-73 period--12.3% as compared with an average of 4.2% for nonmetropolitan areas. Evidently, the recent turnaround is in part associated with the inmigration of elderly to nonmetropolitan areas.

The proportion of elderly in the population of the U. S. has been increasing. Until 1930, the proportion of the population aged 65 and over was below 5.4%. This proportion increased from 8.1% in 1950 to 9.9% in 1970. In 1975, the percentage is estimated to be 10.5%. During the 1970-75 period, the population aged 65 and over increased by 12.2%, much more rapidly than the population as a whole (4.5%).

Growing old in a youth oriented society is a problem which has only recently been receiving attention. For most people, old age brings with it a process of disengagement, particularly with respect to work and household roles. A reduced scale of living and a loss of status in the community and the family due to retirement, involves problems associated with living arrangements and a search for new roles. The strong emphasis on the work role and continuous commitment in the profession as the criterion of usefulness in society becomes a problem for older people in managing their feeling of usefulness. "Society cares for the individual only insofar as he is profitable," Maddox (1974) quoted in Simon de Beauvoir's The Coming of Age.

Further, he said:

> "Yet our familiarity with high productivity and affluence has generated some peculiar attitudes toward things and people. The beverage containers we marked 'no deposit, no return' symbolized an interesting tendency to view resources solely in terms of their usefulness to us. After one sucks the juice out, the bottle is thrown away. What about people? We are not sure and this is what makes us so uncomfortable." (Maddox, 1974:13)

If the peculiar attitudes toward things and people remain unchanged, the increasing number and proportion of older people means that more and more people are experiencing uncomfortable feelings. Thus, the problem of aging becomes increasingly important. Information about the status of older people must be sought and understood.

One of the important aspects of the older population is their geographic mobility and the environment in which the elderly are settled. Zuiches and Brown (1976) show that among movers from metropolitan to nonmetropolitan areas, 7.3% were age 65 and over, 57.4% were under 30; among those who moved from nonmetropolitan to metropolitan areas, 3.9% were age 65 and over, 67.8% were under 30 during 1970-75. In other words, migration rate of older people from metropolitan to metropolitan areas was higher than the rate from nonmetropolitan to metropolitan areas. As this migration pattern continues, along with the increasing proportion of older population, more and more elderly will be expected to move to nonmetropolitan communities. Furthermore, outmigration of younger people also brings about an increase in the proportion of older people in rural communities. Thus, the development of nonmetropolitan areas associated with the recent turnaround may become oriented toward the development of retirement functions.

Thus, the retirement function of rural communities may become increasingly important. Rural community settings associated with the retirement function must be understood because it has an important impact on the lives of many older people.

To understand the recent turnaround of nonmetropolitan growth and the problem of the development of the retirement function in rural communities, this study focuses on the following questions:

1. What are the characteristics of rural communities associated with elderly migration?

2. What are the characteristics of rural communities associated with the increasing proportion of the older population and the development of the retirement function in the community?

3. To what extent can elderly migration and the retirement function generate growth and development in rural communities?

## Conceptual Framework

The major concepts involved in the questions to be examined are elderly migration, the retirement functions of the community, and the growth and development of the community. The elderly are defined as those persons aged 65 and over. It is the traditional retirement age for Social Security and private pension plans (Riley and Foner, 1968:61). Although many people withdraw from the labor force before age 65 and later, the statistics show a peak of retirement at 65 (Barsby and Cox, 1975:1-2; Catau, 1973:132). Elderly migration is defined as the geographic mobility of older persons aged 65 and over across community boundaries. In this study, the community is operationalized as the county.

Migration, like many other social phenomena, is a function of structural factors and individual characteristics or psychological attributes. Structural factors place constraint on, and sometimes facilitate, individual behavior once the structured patterns of behavior have been developed. Theoretically, action is to maximize gratification and to minimize deprivation. The degree to which individual needs are satisfied reflects the result of the gratification-deprivation process. When communities cannot meet individual needs and it is perceived that those needs can be met in other communities, there is a tendency for the individual to move. However, the structural factors along with an individual's ability to move determine the outcome of mobility. As a consequence, we can see that some communities are constantly receiving more people, while others have people moving out. Thus, the characteristics of the community reflect certain structural factors to which individuals respond, and through which individual behaviors are conditioned.

Different age groups respond to the characteristics of the community differently. The economic factor, especially labor force participation, often the most important reason for individuals to migrate, may not be very important for the elderly. Because of retirement, place of work is no longer a constraint in the selection of preferred residential locations among the elderly. To identify the factors associated with elderly migration, examination of community characteristics is one of the necessary steps, in addition to the investigation of individual characteristics of elderly migrants. For the first question, elderly migration is treated as the dependent

variable and community characteristics are the independent variables.

The consequences of elderly migration for a community are concerned with the development of the retirement functions in the community, and possibly, the development of the retirement community. A retirement community is ordinarily considered the planned residential areas and housing arrangements for the elderly within a community, usually found in urban communities (Barker, 1966; Webber and Osterbind, 1961). This type of planned retirement community is seldom found in rural areas. However, the basic characteristics of the retirement community is a higher proportion of elderly in an area or a setting for the purpose of residence. The community provides a variety of functions to meet the needs of various groups of people. If the residential function for the elderly predominates all other functions, the retirement community can be recognized. This study does not attempt to examine the specific retirement community setting within a community. Only the development of the retirement function of the community is of concern here.

Accordingly, the retirement function of the community is defined as a community function which provides older persons a setting in which to reside and to carry out their daily requirements. The proportion of the population aged 65 and over can be used as a rough indicator of the retirement function. However, the increase in proportion of elderly in a community may be caused by inmigration of elderly, outmigration of younger people, or the combination of the both, (or just the demographic process of aging). Thus, to determine the degree of domination of the retirement function of a community, migration variables must be taken into account. An index of

retirement function is constructed based on proportion of the population aged 65 and over and the elderly migration rate. The general community characteristics related to the development of the retirement function are identified by a set of relationships between the index of retirement function and community characteristics.

In regard to the extent to which elderly migration and the retirement function can promote the development of rural communities, population growth and structural development of the community are examined. Population growth is usually used as the indicator of quantitative growth of the community. However, the quantitative growth and structural or qualitative growth are different, although sometimes they are highly correlated. A quantitative change may not necessarily cause a change in the structure; while, any change in the structure will always bring about quantitative change. When the community is viewed as a system, its structure is a set of the component parts and their patterned relationships. The growth of a system is conceptualized as the process of differentiation among the components and their interrelationships. According to the functional perspective and human ecological point of view, a community is essentially the organization of social units performing a variety of functions in a locality to meet people's needs. Thus, differentiation mainly refers to the complexity of establishments or organizations in the community. The structural development refers to the extent to which the social units of the community become more differentiated, or more complex. Therefore, the impact of elderly migration and the retirement function on community growth and change is

examined in terms of their effect upon population growth and structural development of the community.

Examination of community characteristics associated with elderly migration will reveal information about possible destination of elderly migration and the areas where the turnaround or nonmetropolitan growth most likely will occur. The relationships between elderly migration, the retirement function, and community characteristics give us a picture of the status of the communities, if they are developing toward the retirement function. Examination of population growth and structural change in relation to the retirement function and elderly migration will reveal the process of the development of the communities and the extent to which the communities can grow based on retirement functions. In the following section, a brief description of theoretical background for deriving community characteristics and the development process of community growth is presented. A detailed discussion of the theoretical background is presented in the subsequent chapters.

## Theoretical Background of the Study

Basic frameworks used in this study are related to the structural-functional perspective (social system approach), and the human ecological approach. Some demographic and social gerontological concepts are also used. In this section, the theoretical background from which variables are derived for the three analyses are briefly described.

Community characteristics to be examined in relation to elderly migration are derived from the studies done by Catau (1973),

Koebernick (1974), and Barsby and Cox (1975). Retirement is considered the most important factor causing elderly migration (Tibbitts, 1954; Barker, 1966). Amenity-seeking is the factor determining where the elderly migrate (Catau, 1973; Geist, 1968). Interstate migration to Florida, Arizona, and Texas is usually interpreted as due to warm climate (Smith, 1951). However, the intrastate migration of the elderly cannot be explained by climate. Other characteristics attached to rural communities such as quiet, peaceful and scenic, as contrasted to the noise, pollution, and crime often attributed to urban environments, serve to pull elderly migrants to rural communities (Koebernick, 1974). But, the natural environment alone cannot capture the migrant's attention unless recreational development of an area takes place and information about the area reaches the potential migrants through various channels, such as friends and relatives, mass media, or the advertisement of developers. Thus, the concept of amenity involves both natural and social amenities. To be specific, it includes environmental and recreational amenities. Environmental amenities must exercise their influences on elderly migration through recreational amenities. The two together produce a pull for elderly migration.

Urbanism as a way of life is more concerned with the population in the labor force concentrated in urban areas than the elderly. Because of the detachment from the labor force on the part of the elderly, urbanism as a way of life becomes less meaningful for them. The decay of urban centers has forced many people to move outside the cities. Older people are doing so at a slower pace (Goldscheider, 1966b). Those who are in the labor force are more likely to move to suburban areas at a commuting distance of urban centers. Older persons

cannot afford the high cost of living in the newly developed suburban area at a commuting distance, which is not necessary since they are not in the labor force. Thus, there is a tendency for older people either to stay in urban centers with older, cheaper housing or to move to a remote area. Hence, the high cost of living and the high degree of urbanization become the factors pushing older people away from the community.

The two sets of opposite forces will produce variations in the elderly migration among communities. However, when these factors operate overtime, there is a "snow-ball" effect in the migration process.[1] The original factors which affect the decision-making of migrants become less important for elderly, and the image or symbolic messages about places through contacts of relatives or friends, and other sources of information dominate the elderly's thinking. That is, once a structured pattern of migration is built up, people may simply just move without carefully considering the actual factors involved in the place of destination. Thus, the past migration pattern of the community becomes very important in influencing the migration rate of the present period (Barsby and Cox, 1975).

In summary, the variables to be examined in explaining elderly migration are natural-environmental amenity, recreational amenity, urbanization, cost of living and previous elderly migration rate.

Community characteristics associated with the development of the retirement function to be examined are derived from an ecological

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[1]The concept of "Snow-ball" effect is suggested by Professor Harry Schwarzweller. The concept is similar to what Professor Bernard Gallin of Anthropology called, "Momentum Migration."

perspective and the social system approach to the community. Warren's (1963) functional perspective of the community is also incorporated. The ecological perspective of the community focuses on the sustenance organization of a population in a geographic area. Recent literature indicates that the ecological approach involves an increased concern with the social organization in relation to sustenance activities (Micklin, 1973). However, in terms of the internal process of social organization and structure, the social system approach carries this concern further; and boundary maintenance in social system theory also touches the environmental issue, one of the major concerns in the ecological approach. Therefore, the convergence between the social system and ecological approaches is increasing (Murdock and Sutton Jr.,1974). With the ecological framework, county data can be justified as reflecting community characteristics, especially, when comparative study is carried out.

From a structural-functional perspective, the community essentially is the organization of social units which perform various functions to meet the needs of residents, and is characterized by the organization of these functions on a locality base (Warren, 1963:9). The efficiency of the organization of these functions is reflected by the degree to which people's needs can be met in the locality. In other words, the functional autonomy within the community is one of the important aspects of community structure.

Parallel with functional autonomy is the completeness of institutions (social units which perform various functions). The concept of differentiation has usually been used to describe the complexity

of the specialized roles and collectivities at the community level (Young and Young, 1973; Stuby 1975, 1976). Differentiation mainly refers to the complexity of establishments or organizations.

Based on this theoretical background, community characteristics to be examined in relation to the development of the retirement function are sustenance organization of the community (industrial composition, sources of income), degree of urbanization, settlement patterns of older people in the community, socio-economic status of the community, functional autonomy, and degree of structural differentiation.

The extent to which communities specialized in the retirement function can grow is assumed to follow the general pattern of community growth and development, The concepts related to community growth in economic base theory, symbolic structural theory, and central place theory are applied.

Economic base theory argues that the development of economic base in a community involves a multiplier of growth (Hoyt, 1954; Thompson, 1965). The basic export activities will bring more purchasing power to the community by exporting products outside the community, providing more jobs for the community, and generating growth of other sectors of the local economy. The concept of export industry is closely related to the key function of the community and specialization of sustenance organization proposed by the human ecologist (Hawley, 1973). In contrast to economic base activities, local service businesses are considered to depend on the export business, especially at the early stage of the development. When the export economic base is developed and local service business is generated,

population growth follows. The question to be examined in this respect is: what is the role of the retirement function and elderly migration in the process of the development of specialized sustenance activities?

The symbolic-structural approach provides a holistic view of community growth and development. Young and Young (1973) use the concept of differentiation, centrality, and solidarity in investigating community growth. They argue that a higher ratio of differentiation to centrality will generate a solidarity movement which causes an increase in centrality. In turn, centrality generates a higher degree of differentiation, and that elevates the ratio of differentiation to centrality. The growth process starts over again. In this process of development, centrality, which is defined as the access that the community has to a region, is an intermediate variable between solidarity and differentiation. Centrality can be used as an immediate predictor of differentiation.

Instead of using centrality, Eberts (1971) considers that the linkages of the community through larger formal organizations such as branches of larger corporations, government, and other types of voluntary institutions will stimulate the growth of nonmetropolitan communities. If this is the case, elderly migration must result in more linkages which may not necessarily be the branches of larger corporations, but take the form of governmental welfare programs, health programs, branches of voluntary organizations, and some industries which serve older people.

Based on this approach, the analysis is focused on the extent to which the retirement function and elderly migration affect the

access that the community has to larger systems concerned with services to the aged, and the extent to which the access to larger aging-related systems affect the growth and development of the community.

The symbolic structural approach is more concerned with the access to larger systems in the development process. Another theory which is more concerned with support from the hinterland is central place theory. Central place theorists (Christaller, 1933; Berry, 1967) argue that the functional importance of a place, in terms of how much goods and services are provided by a place in the region will determine the extent to which that place will grow. Differential importance of functions among places constitutes a hierarchical system in a region. The places of higher ranks will provide more goods and service which are not available in the places of lower ranks. Changes in population structure, advances in technology, improvement in transportation, and centralization of functions always produce a tendency for the smallest centers to vanish, the intermediate size places to suffer a relative decline, and only the larger centers to grow. Based on these ideas, the analysis is focused on the extent to which communities specialized in the retirement function are affected by the process, and the extent to which the aging-related services provided by larger systems are conditioned by the hierarchical system of places.

## Methodology

The county is used as the unit of analysis. Although county is not identical with the sociological community, the variations in county characteristics do suggest many direct measures of ecological variables and indirect measures of sociological variables. A county

may contain several cities, towns, or villages. These places will be centers of the respective communities. The overlapping boundaries of these communities make the delineation of a single community difficult, if not impossible. The relationship between central place and hinterland is so important that we cannot ignore the attributes of the population in the hinterland. By using county data, the two segments of population will be covered.

Counties in the North Central Region of the U. S. are used for the analysis of factors associated with elderly migration.[2] A total of 1054 counties give us a sufficient sample to include a wide range of variation in community characteristics in relation to elderly migration. Michigan is the only state in the North Central Region that had net inmigration to nonmetropolitan areas during 1960-70 (McNamara, 1974). This state also had the highest proportion of nonmetropolitan counties not adjacent to metropolitan areas having a higher than average net migration rate of elderly (see table 2-3). The 1970 definition of metropolitan areas is used. In terms of the community characteristics associated with the retirement function and the development process, only Michigan nonmetropolitan counties not adjacent to metropolitan areas are investigated. A total of 42 counties located in the Upper and the Northern Lower Peninsulas are included in the

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[2]Because this study is part of the project proposed by the North Central Region Population Committee (NC-97), this region is the target for our study. However, this region has lost population through outmigration since 1950. The Northeast Region began to lose population after 1960. The other two regions have gained population since 1950. Therefore, this region experienced a longer period of outmigration in the past few decades. Examination of revival of nonmetropolitan growth in this region will be more meaningful.

analysis. The counties involved are listed in appendix 1.

The major sources of data for this study are census publications: The County and City Data Book, Census of Population PC(1)-A, B, C. Current Population Reports (P-26), and Census of Business. Other sources include Rand McNally Road Atlas, Dun and Bradstreet Reference Book, Climatological Data, and information gathered from the Office of Services to the Aging, State of Michigan.

The time period for the analysis is between 1960 and 1975. Community characteristics in 1960 serve as independent variables to explain net inmigration of elderly in the period between 1960-70. Community characteristics in 1970 are analyzed in relation to the development of the retirement function which is measured in 1970. Population growth and structural change between 1970 and 1975 serve as dependent variables indicating the subsequent community change introduced by elderly migration and the development of the retirement function.

## Measurement of Variables

The methods to measure the variables for the study are discussed in subsequent chapters when particular variables are entered into the analysis. The mean, standard deviation, and skewness of variables are listed in appendix 2. In this section some principal techniques of developing indexes and general considerations are briefly described.

Net migration rates between 1960 and 1970 are derived from Bowles and Lee (1975). Net migration rates between 1950-60 are derived from Bowles and Tarver (1965). In addition to the 1960-70 net migration statistics which are available on tapes, all information

was coded and punched on computer cards, then stored on the tape.

An attempt is made to index each variable by several indicators. Standardized Z-scores, factor analysis, and Guttman scaling techniques are used to construct the composite index, when applicable. Any indicator which is not consistent with the concept of the variable to be measured is dropped or treated as a separate variable, depending upon the theoretical significance of the indicator.

Method of analysis

Pearson Correlation is used as the preliminary method to examine relationships among variables. Multiple regression analysis is then applied to identify the independent effect of independent variables on dependent variables. The standardized regression coefficient (beta) is recognized as path coefficient which tells us the amount of change in the dependent variable (in terms of standard deviation) accompanying a change of one standard deviation in the independent variables with all other independent variables held constant. This kind of analysis assumes an additive model of variables in linear regression equations. The simple zero-order correlation includes the direct and indirect effect of a variable on other variables. By using path analysis, the direct effect and indirect effect of a variable on the other variables can be determined (Land, 1969:20). The direct effect of an independent variable on the dependent variable is shown by the path coefficient. The indirect effect of each independent variable through its association with other independent variables is measured by the product of its correlation coefficient with other variables and the path coefficient of other independent variables.

A statistical significance test is used in this study. But, some caution in interpretation of results needs to be noted. Strictly speaking, significance tests of correlation coefficients and statistics related to regression analysis in this study should be ignored because the sample used is not drawn based on sampling procedures. The universe from which the sample is drawn cannot be precisely defined. The inference of sample statistics to the parameters in a population becomes meaningless. Thus, the results of this study should be considered to refer to the situation in the North Central Region.

However, the problem of significance tests mentioned above does not mean that the results of this study cannot be applied to any other regions. It means that when we infer to the parameters of a population, we must be careful about the potential errors. Although we cannot make a strong case to generalize the findings to cover all the U. S. counties, by using the significance test, we hope to indicate the tendency of the studied phenomena to be true in other parts of the country. Therefore, it was decided to include statistical significance tests in this study. For Pearson correlation coefficients, two tailed T-test is used. For multiple regression coefficients (regression correlation coefficients and standardized regression coefficients), the F-test is applied. All the coefficients are significant at .05 level unless specified.

The subprograms in the Statistical Package for the Social Science (SPSS) are the major tools used to carry out the analysis as well as for constructing composite indexes of variables. However, computer routines to process raw data, to construct the measures such

as the index of structural development, the settlement pattern (dispersion and dissimilarity indexes) before analysis were developed by myself.

For the analysis of the North Central Region counties, net migration rate of elderly is used as a dependent variable. Amenity measures, urbanization, cost of living, and net migration rate of the elderly in the previous period are used as independent variables. The 1054 counties are divided into metropolitan counties, nonmetropolitan counties adjacent to metropolitan areas, and nonmetropolitan counties not adjacent to metropolitan areas, based on the 1970 definition of Standard Metropolitan Statistical Areas. All the analyses are carried out based on the three groups of counties.

For the analysis of Michigan nonmetropolitan counties not adjacent to metropolitan areas, the correlations between the retirement function and community characteristics as of 1970 are examined. To control for the influence of migration of younger people, partial correlation is used. In terms of the impact of elderly migration and retirement function on community growth, population growth and structural change between 1970 and 1975 are treated as dependent variables. Multiple regression and path analysis are applied.

## Preview

This chapter introduced the problem and its background, and briefly described the conceptual framework to deal with the problem, the theories involved, and the methodology used. The following chapter deals with factors associated with elderly migration. Literature concerning elderly migration and aging are reviewed. The specific

factors are then laid out for the analysis. An overview of elderly migration in the North Central Region States is presented. Simple correlations and multiple regression results are analyzed. Finally, path diagrams of the factors affecting elderly migration are presented.

Chapter 3 deals with community characteristics related to the development of the retirement function. In the beginning, the theoretical background of community studies is reviewed and from which specific community characteristics to be examined are derived. Conceptualization of the retirement function and its measurement are discussed. Then, relationships between the retirement function and sustenance activities, urbanization, settlement patterns, socioeconomic status, functional autonomy, and structural differentiation are analyzed.

Chapter 4 examines the impact of the retirement function and elderly migration on community growth and structural development. The structural symbolic approach of community growth, central place theory, and economic base theory are reviewed, from which variables are derived. Centrality in terms of the access to the larger system of services to the aging, and in terms of the overall centrality proposed by central place theorists are examined in relation to the retirement function and community growth.

The final chapter summarizes the findings and reports the conclusions. Implications for the changing rural society, problems of the aging, and services to the aged are discussed. Future research is suggested.

# CHAPTER II

# ELDERLY MIGRATION TO NONMETROPOLITAN COMMUNITIES

## Introduction

Although the elderly are less mobile than younger people, it does not mean that older people do not move at all. According to the 1970 census, 23.4% of the population aged 65 and over had changed their residence since 1965. The immediate questions to be asked are why, how, and where do the elderly migrate? Labor force participation, often the most important reason for individuals to migrate, may not be highly important for the elderly. The general theories which are used to explain the migration of the whole population may not be applicable to elderly migration. As Catau (1973) notes, economic motives, the distance factor, or the phenomenon of stepwise migration fail to explain elderly migration to St. Petersburg, Florida.

However, many studies on migration have developed conceptual schemes which are useful in the examination of elderly migration. Sociologists examine the relationships between migratory behavior and social systems, that is, the social determinants and social consequences of the migration in the area of origin and the area of destination, and the adjustment, adaptation, integration of migrants in the process of migration. Economists focus on the economic determinants of migration in terms of employment opportunities, labor force, price system etc. Demographers and human ecologists are interested in

the overall picture of the volume and streams of migration in relation to the areal characteristics, sustenance organizations, and environments. Anthropologists and geographers also have their own particular foci on migration. Although the emphases are different, all the disciplines attempt to identify the factors associated with the area of origin, the factors associated with the areas of destination, the individual's social-psychological makeup and personal characteristics, the intervening obstacles, and the patterns of movements associated with these factors. Elderly migration can be examined from any of these perspectives. Since this study is concerned with the growth of nonmetropolitan communities in relation to elderly migration, it deals only with structural factors associated with areal characteristics of destination and origin.

The real impact of elderly migration on the development of the nonmetropolitan community is contributed by those who stay and those who move in, rather than by those who move out. Barsby and Cox (1975:31-32) argue that since met migration rates are just differences between gross migration rates, an understanding of net migration requires understanding of gross rates. In other words, they argue that we must examine those who move in and those who move out. However, since elderly migration is highly related to retirement activities, their relative detachment from the labor force and occupational roles have made them more related to the local services as consumers rather than as producers. The amount of demand of the elderly depends on the residual of those who move in minus those who move out.

Furthermore, even though the composition of those who move out and those who move in will be different, the net amount of the interchange between the two streams is important in the understanding of the development of the retirement function of the community. The volume of inmigration presumably indicates the favorable factors which produce a pull. The volume of outmigration, on the other hand, presumably indicates the factors which push people away from the community. Net migration, the difference between the two volumes, can be regarded as the result of the competition between the two sets of push-pull factors. Net migration rates of elderly indicate the importance of some factors in communities which are favorable to the elderly migrants. Thus, the net elderly migration rate is used as the dependent variable in this chapter.

In the following sections, a research framework, literature review, and the findings from the analysis of counties in the North Central Region will be presented. The measurement of variables and methods of analysis are discussed along with the presentation of the analysis.

## Factors Associated with Elderly Migration

In a broad perspective, migration is the function of structural effects and individual characteristics or socio-psychological attributes. Migration must be fulfilled by individual action, but individual action is conditioned by the structural factors. Theoretically, action occurs in order to maximize gratification and to minimize deprivation. It is reflected by the degree to which individual needs are satisfied. When communities cannot meet individual

needs and it is perceived that those needs can be met in other communities, there is a tendency for the individual to move. The question is what and how the community can provide for people on one hand, and what kind of needs the individuals have on the other hand. Since the needs of individuals are different, people respond to the same community differently. Individual needs or desires constitute a set of preferences about the environment. Realization of one's preferences is always conditioned by the structural constraints and the individual's ability. Thus, sometimes, individuals have to sacrifice some preferences in order to meet other needs. Some factors which are reflected by the structural characteristics dominate the movement of population from one area to another.

Economic opportunity

Economic needs and especially jobs have been the most important factor causing individuals to migrate. Goodrich, et al. (1936) show that in and outmigration reflect expanding or contracting economic opportunities. Shryock (1964) also shows that there were consistent flows of the population toward the areas that were undergoing economic expansion and metropolitan growth, and away from those areas where the economy had matured or was declining. McInnis (1971) found that differential migration by education and occupational classes is related to variations in the responses to the economic gains through migration. Lowry (1966) also argues that for out-migrants, the choice of alternative destinations is influenced by both distance and labor-market conditions at those destinations. Migration is encouraged by high wages at destination and discouraged by high unemployment rates

at destination and at greater distances. All of these arguments and findings based on economic opportunity are more concerned with the mobility of those in the labor force, and, less concerned with those not in the labor force such as retirees. Obviously, elderly migration is not a response to economic opportunity.

Retirement

Retirement itself is the most important factor causing the elderly to move from one area to another area. As Tibbitts (1954: 308) notes,

> "Retirement from family duties and from work creates problems of living arrangements for many older persons. Departure of children generally reduces the amount of space needed. Reduced income sometimes makes it essential to seek less expensive housing. Rural houses must often be vacated in favor of the young family taking over the farm. Illness, declining energy, or loss of spouse may also dictate a change in living arrangements. And for some, completion of family or career offers opportunity to migrate to a more attractive section of the country."

Barker (1966) also points out the problems encountered by retirees. He says that the elderly face potential embarrassment and loss of status upon retirement if he/she remains in the same community. Hence, elderly may experience mental depression brought on by living in the presence of former duties, responsibilities, and active associates. Therefore, "retirement creates built-in pressures on the elderly to change not only his types of housing, but also its location as well" (Barker, 1966:21).

The aged as a social group

The problems encountered by the aged or retirees are so complicated that social gerontology, a specialized area of study, has been developed to deal with them. So far a few theories have been proposed, such as the disengagement theory (Cumming et al., 1961), the quasi-minority theory (Barron, 1961), and the subculture theory (Rose, 1965). However, the problems involved in aging are mainly related to the adjustment of elderly in identifying new roles, living arrangements, maintenance of social contacts, health and others. The detachment from work roles, which are always used to evaluate the usefulness and status of individuals, has an especially serious impact on retirees in regard to management of their feelings of usefulness and dignity.

Rose (1965:13) argues that during the past two decades, there has been a new development that took the form of expanding the scope of the aging subculture in the United States. Older people have begun to identify themselves as a group, and to organize recreational or other expressive associations in which they can interact. They have begun to talk over their common problems and to take social action to improve the image of older people. In other words, group consciousness and group identification on the part of elderly has begun to emerge. From this perspective, the elderly tend to get together, segregated from other age groups, a process that involves residential mobility. But, this perspective is more concerned with mobility within the community. Thus, the explanation of elderly migration across communities must be sought elsewhere.

Amenity-seeking as a factor

It has been repeatedly shown that the majority of the American population prefers to live in small towns and rural areas, especially, within commuting distance of a larger city (Fuguitt and Zuiches, 1975). When the place of work is no longer a constraint in the selection of residential location after retirement, the elderly may feel free to seek the amenities found in small towns and rural areas. Thus, the elderly migration from urban to rural areas becomes evident. Amenity-seeking is the major factor determining why and where the elderly migrate (Catau, 1973). Ullman (1954:123) considers climate to be the most important regional amenity and a warm climate to be the most desirable for people to select as a characteristic of a place to live. Thus, in many studies, climate and health are given as the most important reasons for the elderly to migrate (Catau, 1973; Geist, 1968). The mass migration of the elderly to Florida, Arizona, California, and Texas is usually interpreted as due to the warm climate (Smith, 1951).

However, migration of elderly to rural areas in regions other than the south may not be necessarily associated with the warm climate. Among the reasons for selecting a community of destination in rural areas, Koebernick (1974) found that the pre-association of migrants (including previous visits and ownership of property) with the community accounted for most of the responses, but that the material environment including fresh air, scenery, and quiet was also frequently mentioned. The material environment of rural areas may be a necessary condition for elderly to migrate, but, it

is not a sufficient condition for the move. In Florida, nearly 85% of the retirees indicated that they were familiar with the place before they migrated there. Most of them had a good knowledge about the community through their visits to that area (Catau, 1973:167-168). Florida is recognized as a vacation state, and many vacationers visit there, especially in the winter. Thus, recreation centers are likely to attract tourists who may begin to become familiar with the area and may decide to move there at a later time.

It is clear that, besides the amenities of an area, people who move to a particular location have at least some knowledge about that area. The source of information includes mass media, advertisements by developers, contacts of friends or relatives, and personal visits to the area. The natural environment (lakes, mountains, etc.) alone can scarcely be expected to gain the attention of the mover unless development as a recreational area has taken place, and information about the area has been diffused through various channels. Thus, the concept of amenity involves the natural environment as well as man-made environment, that is, environmental and recreational amenities. The influence of environmental amenities on elderly migration, it would seem, must operate through recreational amenities.

Cost of living

Since the elderly do not often move to seek a job, their move can be seen as primarily residential mobility. They simply try to look for a suitable place to live. However, the realization of preference is always conditioned by their financial ability to move and the availability of housing in the preferred location. As Rossi

(1955) argues, the ability to move to a desired location and housing determines the ultimate outcome of the decision-making process about residential mobility. The financial ability of the elderly places constraints on the fulfillment of preferences, and determines the distances they will migrate and the type of community selected.

A majority of elderly interstate migrants to Florida had a higher income than those retirees remaining in the place of origin, and also higher than intrastate migrants. In Florida, 18% of the full-time residents, and 9% of the seasonal residents had pre-retirement incomes of less than $5,000 (Catau, 1973:135); in Wisconsin, 53% of the retirees fell into this income category (Honnen, Eteng, and Marshall, 1969:31). Thus, financial ability does affect choice of community for retirement.

Incomes of the elderly are lower than working age groups, and therefore, elderly may not be able to live in a place with a high cost of living. High cost of living will discourage the elderly from moving in, and at the same time will force older people to move away from the community. Cheap land and low cost of living in rural areas have an appeal to those who must rely on limited incomes.

Urbanization

In addition to a higher cost of living, urban areas and especially the larger urban centers often offer an environment characterized by noise, pollution, and congestion. These factors were most frequently mentioned as reasons for getting away from urban communities by elderly migrants to Clare County (Koebernick, 1974).

In a study of residential mobility within the Los Angeles metropolitan area, it was found that the majority of reasons old people gave for moving, planning, or desiring to move, were related to dissatisfaction with current housing and neighborhood (Goldscheider, 1966a:106). He also found that the population was moving away from areas of older housing and the metropolitan center. The older people were following the same pattern but were doing so at a slower rate. As a consequence, the older areas and the areas closer to the center had higher proportions of older people (Goldscheider, 1966b:83). The question becomes, what areas are the destinations to which urban dwellers migrate?

Those who participate in the labor force are likely to move to suburban areas at a commuting distance of urban centers. The living costs for the new residential areas tend to be higher than the older settlements. Because of lower income, the retiree may not be able to move to these new areas, and since they are not in the labor force, living in a residential location at a commuting distance is not necessary. Therefore, retirees in large urban areas will tend to move to locations far from urban centers if they are able to move, or they may simply remain in older parts of the cities.

Influence of past migration

When the factors influencing migration become structured, a "snow-ball" effect of the migration pattern emerges. People tend to follow the existing migration paths without considering the actual characteristics of the recipient or donor systems. Therefore, there is a strong relationship between the direction and magnitude of

population movements in one period and movements in subsequent periods (Barsby and Cox, 1975). Among the possible explanations as to why migration rates in one period influence the rates in the subsequent periods are the flow of information from actual migrants to potential migrants, the attractiveness of areas where friends and relatives of potential migrants reside, and the relatively slow rates of change in factors affecting migration patterns (Barsby and Cox, 1975:41). Hence, by examining the relationship between migration rate of one period and migration rate of the subsequent period, those factors may be captured.

Other factors

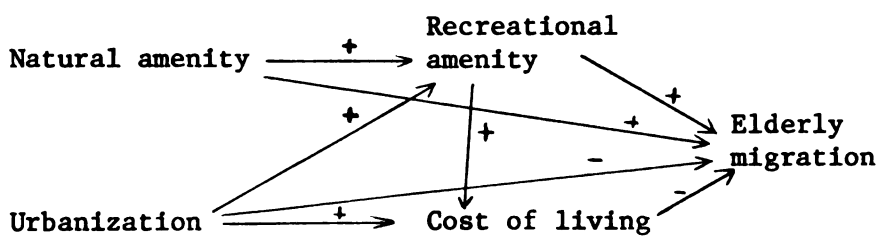
Barsby and Cox (1975) also examined income level, education, rental status, recreation and entertainment, and the public sector (Taxes, OAA benefit, etc.) in relation to elderly migration rates. It was found that higher income and education tend to have both higher inmigration and outmigration rates. Elderly persons do move away from states where costs of living are relatively high (measured by rent levels), and higher occupancy rates do reduce inmigration rates. However, availability of recreation and entertainment did not show a significant influence on the inmigration of the elderly. It was also found that elderly persons are not attracted to states with various advantages from the public sectors such as property tax exemption and high OAA benefits.

Since the mobility of the elderly is closely related to residential mobility, their move may be a shift of residence in the local community, or from the urban to rural areas in the same state. The

examination of interstate migration of elderly fails to account for the variations in elderly migration within the state. Income and education levels are the characteristics of the aggregate population, and to treat such characteristics as factors influencing elderly migration is meaningless. But, the rental status which indicates the living costs and the availability of recreation and entertainment which indicates amenities, should have some validity in explaining elderly migration.

## Factors to be Examined and Measurement of Variables

The basic factors associated with elderly migration to be examined in this study include amenity (environmental and recreational), urbanization, and cost of living, which form two sets of forces influencing elderly migration. One should produce a pull effect, generated by the natural-environmental amenity through the recreational amenity. The other set should produce a push effect, causing outmigration of elderly from the community generated by urbanization and cost of living. The combination of the effects of the two opposite forces determines the net migration rate of the elderly. These hypothesized relationships are diagrammed as follows:



Since recreational amenities are likely found in or supplied by urban centers, a positive impact of urbanization on social amenities is expected. A positive relationship between recreational amenity and cost of living is also expected.

After these factors operate for a certain period of time and when the structured migration patterns develop, the influence of past migration on current migration becomes more important than the original factors. To examine this "snow-ball" effect, later in our analysis, the elderly migration rate of the earlier period will be introduced into the model.

Measurement of the variables

Elderly migration rates are derived from Bowles and Lee (1975) and Bowles and Tarver (1965) for the population aged 65 and over between 1960-70 and between 1950-60. A positive net migration rate indicates the degree of net inmigration; a negative rate indicates the degree of net outmigration.[1]

Natural-environmental amenity is measured by a combination of two measures--presence or absence of a lake, and presence or absence of a national forest. Scores assigned to the counties are based on the following combinations: 3-presence of lake and forest; 2-presence of lake only; 1-presence of forest only; and 0-absence of lake and forest. Information about lakes and forests are coded from the Rand McNally Road Atlas, 1966.

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[1]For net migration rates between 1960-70, the expected population of 1970 is used as base to obtain the rates; for net migration rates between 1950-60, the population of 1950 is used as base to obtain the rates.

Climate index is considered another dimension of natural amenity. Because it is independent of the presence or absence of lakes or forests, it is used as a separate variable. The index takes January maximum temperature divided by July minimum temperature (Karp and Kelly, 1971:25-26). It is assumed that higher January maximums denote favorable climate and high July minimums denote unfavorable climate. If the winter is warm and summer is cool, the index will be high. Information about temperature is derived from U. S. Department of Commerce, Weather Bureau, Climatological Data Book, 1965.

Recreation amenity is defined as the level of development as a recreation area and/or availability of recreational facilities. It is indexed by number of hotels, motels, and tourist courts, and number of amusement and recreational services. The information is derived from the 1963 Census of Business.

Degree of urbanization is operationalized as the sum of the Z-scores for the following three measures: percent urban population, population density, and population of the largest place in the county in 1960;

Cost of living is operationalized as the sum of the Z-scores for two measures: median rent and median value of housing units in 1960.[2]

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[2]Cost of living index is usually constructed based on retail prices of various items consumed. The items consumed in daily activities include food, clothing, housing, health maintenance, recreation, socialization, transportation, etc. Among them, housing expense (rent, home ownership, and maintenance and repairs) costs average 20.2% of family budget in 1967 (Banerjee, 1975:19). If fuel and utilities, and household furnishings and operation are

Before the analysis is carried out, an overall picture of elderly migration in the North Central Region will first be presented. The counties are divided into three categories--metropolitan (metro), nonmetropolitan counties adjacent to metropolitan areas (nonmetro-adjacent), and nonmetropolitan counties not adjacent to metropolitan areas (nonmetro-nonadjacent). Of the counties, 143 are metro counties, 309 are nonmetro-adjacent, and 602 are nonmetro-nonadjacent counties. Analysis is carried out separately for each type.

## Elderly Migration in the North Central Region

During the 1960-70 period, about 763,700 persons of all ages moved from the North Central Region, and about 119,000 moved away in the period between 1950-60. In contrast, an estimated 254,545 elderly persons moved away from the North Central Region between 1960-70, and about 257,000 elderly persons moved away during the 1950-60 period, indicating a slight reduction in elderly outmigration. Every state in the region had a net outmigration of elderly in the 1950s, but several states had net inmigration of elderly in the 1960s. This indicates that the elderly had begun to halt their movement outside the region, despite a large outmigration for all ages.

As table 2-1 shows, the heavily populated and industrialized states of Illinois, Indiana, Michigan, Missouri, and Ohio had larger numbers of elderly outmigrants in the 1960s than in the '50s. Five states--Kansas, Minnesota, Nebraska, South Dakota, and Wisconsin--had net inmigration of elderly in the '60s. These data suggest that

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included, this percentage reached 33.1%. Thus, housing is a big item in cost of living.

Table 2-1.-- Net migration of all ages and persons age 65 and over in the North Central Region States

| State | 1950-1960 | | 1960-1970 | |
|---|---|---|---|---|
| | All ages | Age 65+ | All ages | Age 65+ |
| Illinois | 124,320 | -91,127 | -48,580 | -106,560 |
| Indiana | 63,459 | -14,972 | -14,575 | -23,563 |
| Iowa | -232,721 | -14,618 | -183,581 | -6,547 |
| Kansas | -43,832 | -1,972 | -132,079 | 523 |
| Michigan | 156,171 | -37,812 | 31,903 | -51,780 |
| Minnesota | -96,573 | -12,408 | -28,766 | 2,914 |
| Missouri | -128,976 | -6,163 | 2,594 | -8,493 |
| Nebraska | -116,930 | -6,560 | -72,710 | 2,186 |
| North Dakota | -105,006 | -6,069 | -95,290 | -1,163 |
| Ohio | 408,576 | -45,791 | -129,315 | -63,627 |
| South Dakota | -94,279 | -4,304 | -93,942 | 257 |
| Wisconsin | -53,202 | -15,415 | 631 | 1,308 |
| Total | -118,993 | -257,211 | -763,710 | -254,545 |

Source: Gladys K. Bowles and James D. Tarver (1965), Net Migration of the Population 1950-60, By Age, Sex, and Color. Vol.1, Part 2. U.S.D.A. Research Foundation, Oklahoma State University, and Area Development Administration, U.S. Department of Commerce.

Gladys K. Bowles and Everett S.Lee (1975), Net Migration of the Population 1960-70, By Age, Sex, and Color. Vol. 1, Part 2. U.S.D.A., University of Georgia, and National Science Foundation.

the elderly were more likely to move away from states with large population centers.

The migration of elderly to less populated areas becomes evident when we examine the distribution of elderly migrants for metro-nonmetro area types. As table 2-2 shows, nonmetropolitan-nonadjacent areas for the region as a whole gained more than 20,000 population through elderly migration in the 60s. Nonmetro-adjacent areas lost 5,000 older people, and metro areas lost about 270,000 persons. Thus, the reduction in outmigration of elderly is primarily due to inmigration of elderly to nonmetropolitan areas. However, the variations among the states are dramatic. Illinois, Indiana, and Ohio had net outmigration of elderly in all metro-and nonmetro areas. Iowa and Michigan had net outmigration in metro and adjacent areas. Kansas, Minnesota, Missouri, Nebraska, and Wisconsin had outmigration only from metro areas. North Dakota and South Dakota, on the other hand, show a reverse pattern, i.e., net outmigration from nonmetro-nonadjacent areas and net inmigration in metro and adjacent areas.

The nonmetropolitan areas are the focus of our attention. In order to examine the internal distribution of elderly migrants in each state's nonmetropolitan areas, counties having net migration of elderly are shown in table 2-3. The proportion of counties having net inmigration ranges from about 24% in Indiana to 88% in Wisconsin. Indiana, Ohio, North Dakota, and South Dakota have a lower proportion (less than 40%) of nonmetro counties having net inmigration of elderly. In Kansas, Michigan, Minnesota, Missouri, Nebraska, and Wisconsin, more than 60% of the nonmetro counties have net inmigration.

Table 2-2.— Net migration of elderly by metro-nonmetro areas and state in the North Central Region, 1960-1970

| State | Nonmetro-nonadjacent | Nonmetro-adjacent | Metropolitan areas * | Total |
|---|---|---|---|---|
| Illinois | -1,218 | -5,143 | -100,199 | -106,560 |
| Indiana | -1,997 | -4,350 | -17,216 | -23,563 |
| Iowa | 360 | -1,040 | -5,867 | -6,547 |
| Kansas | 2,062 | 30 | -1,569 | 523 |
| Michigan | 4,056 | -1,623 | -54,213 | -51,780 |
| Minnesota | 6,632 | 3,005 | -6,723 | 2,914 |
| Missouri | 6,993 | 3,022 | -18,508 | -8,493 |
| Nebraska | 2,953 | 1,122 | -1,889 | 2,186 |
| North Dakota | -1,457 | 201 | 93 | -1,163 |
| Ohio | -2,087 | -6,943 | -54,599 | -63,627 |
| South Dakota | -205 | 201 | 261 | 257 |
| Wsiconsin | 4,368 | 6,180 | -9,240 | 1,308 |
| Total | 20,460 | -5,338 | -269,667 | -254,545 |

* 1970 definition of Standard Metropolitan Statistical Areas

Source: Compiled from the source in Table 2-1.

Table 2-3.-- Percent counties having net migration of elderly in nonmetropolitan areas by state, 1960-1970

| State | Nonmetro Total | Nonmetro-adjacent Net migration rate More than 10% | Nonmetro-adjacent Net migration rate 0-10% | Nonmetro-nonadjacent Net migration rate More than 10% | Nonmetro-nonadjacent Net migration rate 0-10% |
|---|---|---|---|---|---|
| Illinois | 42.1 | 0 | 40.0 | 2.3 | 41.7 |
| Indiana | 23.9 | 2.0 | 23.5 | 0 | 18.8 |
| Iowa | 53.3 | 0 | 50.0 | 0 | 55.0 |
| Kansas | 67.0 | 5.0 | 50.0 | 3.7 | 66.2 |
| Michigan | 65.2 | 13.0 | 36.0 | 32.6 | 39.5 |
| Minnesota | 81.0 | 26.1 | 47.8 | 19.6 | 64.3 |
| Missouri | 69.9 | 17.9 | 57.1 | 25.3 | 42.7 |
| Nebraska | 65.1 | 8.3 | 66.7 | 6.5 | 57.1 |
| North Dakota | 38.5 | 20.0 | 60.0 | 0 | 34.0 |
| Ohio | 25.0 | 0 | 25.0 | 8.3 | 16.7 |
| South Dakota | 37.9 | 0 | 80.0 | 4.9 | 29.5 |
| Wisconsin | 87.7 | 25.0 | 64.3 | 17.2 | 69.0 |
| Total | 56.3 | 8.0 | 43.1 | 10.4 | 48.7 |

The rate of elderly inmigration to adjacent or nonadjacent nonmetro areas varies markedly among the states. For areas having a high rate of elderly inmigration (10% or more), the percentage of nonadjacent counties exceeds that of adjacent counties in Illinois, Michigan, Missouri, Ohio, and South Dakota. For areas having a lower rate of elderly migration (0-10%), the percentage of nonadjacent counties exceeds that of adjacent counties in Illinois, Iowa, Kansas, Michigan, Minnesota, and Wisconsin. Hence, while patterns of elderly inmigration may differ among the states, inmigration to more remote areas in the region is significant.

Among the states, the largest proportion of nonadjacent counties experiencing high rates of elderly inmigration is found in Michigan. About one-third of these counties (32.6% or 14 out of 43) have a higher net migration rate of elderly (10% or more). Thus, the importance of elderly migration in Michigan nonmetropolitan areas becomes evident.

## Correlations between Elderly Migration and the Variables

The variations in elderly migration among the states are remarkable, as shown above. The distribution of elderly migrants in each state also varies significantly. The variation is assumed to be related to natural-environmental amenity, social-recreational amenity, urbanization, cost of living, and influence of past migration. Table 2-4 shows the intercorrelations of these variables and elderly migration.

Table 2-4.-- Zero-order correlations of elderly migration rates and causal factors in the North Central Region

| Variable | Nonmetro-nonadjacent counties (N=602) | | | | | |
|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. Environmental amenity | -.20 | .31 | .14 | .00* | .08 | .18 |
| 2. Climate index 1965 | | -.09 | -.23 | .08 | .21 | .08 |
| 3. Recreational amenity 1963 | | | .29 | .27 | .28 | .33 |
| 4. Cost of living 1960 | | | | .56 | .32 | .15 |
| 5. Urbanization 1960 | | | | | .29 | -.03* |
| 6. Net migration rate 65+,1950-60 | | | | | | .62 |
| 7. Net migration rate 65+,1960-70 | | | | | | |

| | Nonmetro-adjacent counties (N=309) | | | | | |
|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 7 |
| 1.Environmental amenity | -.07* | .36 | .03* | .10* | .10* | .14 |
| 2. Climate index 1965 | | -.23 | -.24 | .15 | .25 | -.17 |
| 3. Recreational amenity 1963 | | | .35 | .34 | .06* | .02* |
| 4. Cost of living 1960 | | | | .59 | .10* | -.18 |
| 5. Urbanization 1960 | | | | | .08* | -.39 |
| 6. Net migration rate 65+,1950-60 | | | | | | .50 |
| 7. Net migration rate 65+,1960-70 | | | | | | |

| | Metropolitan counties (N=143) | | | | | |
|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. Environmental amenity | -.10* | .19 | .23 | .13* | -.01* | -.13* |
| 2. Climate index 1965 | | -.03* | -.29 | -.10* | .11* | -.02* |
| 3. Recreational amenity 1963 | | | .31 | .84 | -.26 | -.36 |
| 4. Cost of living 1960 | | | | .33 | .33 | .17 |
| 5. Urbanization 1960 | | | | | -.29 | -.44 |
| 6. Net migration rate 65+,1950-60 | | | | | | .74 |
| 7. Net migration rate 65+,1960-70 | | | | | | |

* Not significant at .05 level.

Nonmetro-nonadjacent areas

In nonmetro-nonadjacent areas, among the basic factors, recreational amenity correlates highest with elderly migration (.33). Natural-environmental amenity is also positively correlated with elderly migration (.18). Unexpectedly, living cost is positively correlated with elderly migration (.15). Older persons tend to move to the counties having higher, not lower cost of living. This may be because the elderly tend to move to the areas having better amenities which is associated with living costs. (Living cost correlates .14 with natural amenity, and correlates .29 with social amenity). The climate seems to be irrelevant with regard to elderly migration. However, its impact will be clear when other factors are held constant in the regression analysis.

The past experience of elderly migration in a county is highly correlated with current migration rate (.62). The natural-environmental amenity affects the elderly migration rate more in the period 1960-70 than 1950-60, while climate affects the migration rate more in 1950-60 than in 1960-70. This suggests that early in the '50s many places having better natural amenities had not yet developed recreational amenities, on one hand; and the amenity-seeking among the elderly is increasing, on the other hand. This tendency can also be seen in correlations of recreational amenity with elderly migration of the '50s and with that of the '60s (.28 vs. .33). The correlation between elderly migration of the '50s and cost of living is the highest among other factors (.32), followed by level of urbanization (.29). Thus is may be inferred that elderly migration in

nonmetropolitan areas somewhat contributes to an increase in cost of living and urbanization in the county.

Nonmetro-adjacent areas

For the nonmetro-adjacent areas, natural amenity is positively correlated with elderly migration, but no relationship is found between recreational amenity and elderly migration. Climate comfort, living cost, and level of urbanization are all negatively correlated with elderly migration. Higher cost of living and urbanization do cause outmigration of elderly. The past experience of elderly migration is found to be correlated with the current rate (.50).

Natural amenity correlates higher with elderly migration in the '60s than in the '50s. The opposite is true for climate index and elderly migration, but negatively in the '60s and positively in the '50s. This indicates that the importance of climate in explaining elderly migration has decreased.

Recreational amenity of the 1960s in the adjacent areas was not influenced by elderly migration of the '50s. Level of urbanization and cost of living in 1960s were slightly affected by elderly migration of the '50s. But the increased urbanization and cost of living did retard inmigration of elderly in the adjacent areas during the '60s, as shown by correlation coefficient of (-.39) for urbanization and of (-.18) for cost of living.

Metropolitan areas

In metropolitan areas, all the factors are negatively correlated with elderly migration in the '60s, except cost of living. Even

recreational amenities and natural amenities are negatively correlated with elderly migration. This is quite different from the findings for nonmetro areas. The very nature of urban centers in metropolitan areas is the crucial factor forcing elderly outmigration. The correlation between recreational amenity and urbanization in metro areas is so high that recreational amenity fails to contribute to elderly migration. On the other hand, recreational amenity in urban centers may be more relevant to younger than older people. The positive correlation between costs of living and elderly migration in metro areas is hard to interpret.

Net migration rate in the 1950s is highly correlated with that in the 1960s. Correlation between cost of living and elderly migration in metro areas is also higher in the '50s than the '60s. It may suggest that older people moved to metro areas that had higher costs of living in the '50s, but, the tendency for elderly to move to such areas declined in the '60s.

Comparison of metro and nonmetro areas

Natural amenity is more important in nonmetro areas, especially in remote (nonadjacent) areas. Recreational amenity in nonmetro-nonadjacent counties tends to attract elderly migrants. In contrast, it tends to cause outmigration in metro counties and to have no effect in adjacent counties. Climate comfort becomes less significant as the county becomes more urban. Higher cost of living in metro and remote areas tends to be positively associated with elderly migration; but in adjacent areas, it tends to be negatively associated with migration. This may be due to the fact that higher costs of living in newly

developed suburban areas are not favorable for older people.

Our simple correlation analysis reveals some causal relationships between the factors and elderly migration. In order to examine the independent effect of each variable, a multiple regression analysis is carried out and standardized regression coefficients of the variables are analyzed.

## Results from Multiple Regression Analysis

In the following regression analysis, the three types of counties (metro, nonmetro-adjacent, and nonmetro-nonadjacent), are analyzed separately. The analysis is divided into two stages. In the first stage, only those basic factors except migration during the previous period are analyzed. In the second stage, the elderly migration of the '50s is entered into the model.

### Basic model

The basic model is the regression of natural amenities, recreational amenities, climate, urbanization, and cost of living on elderly migration. After standardized regression coefficients (Beta Weight) of the variables are calculated, path diagrams are constructed based upon what we hypothesized in the early section (see figure 2-1). It is composed of two sets of relationships. One includes climate, natural amenity, and recreational amenity. This set of relationships, which is shown in the upper portion of each diagram, is assumed to contribute a positive effect on net inmigration of elderly. Another set of relationships includes urbanization and cost of living, shown in the lower portion of each diagram, which is assumed to

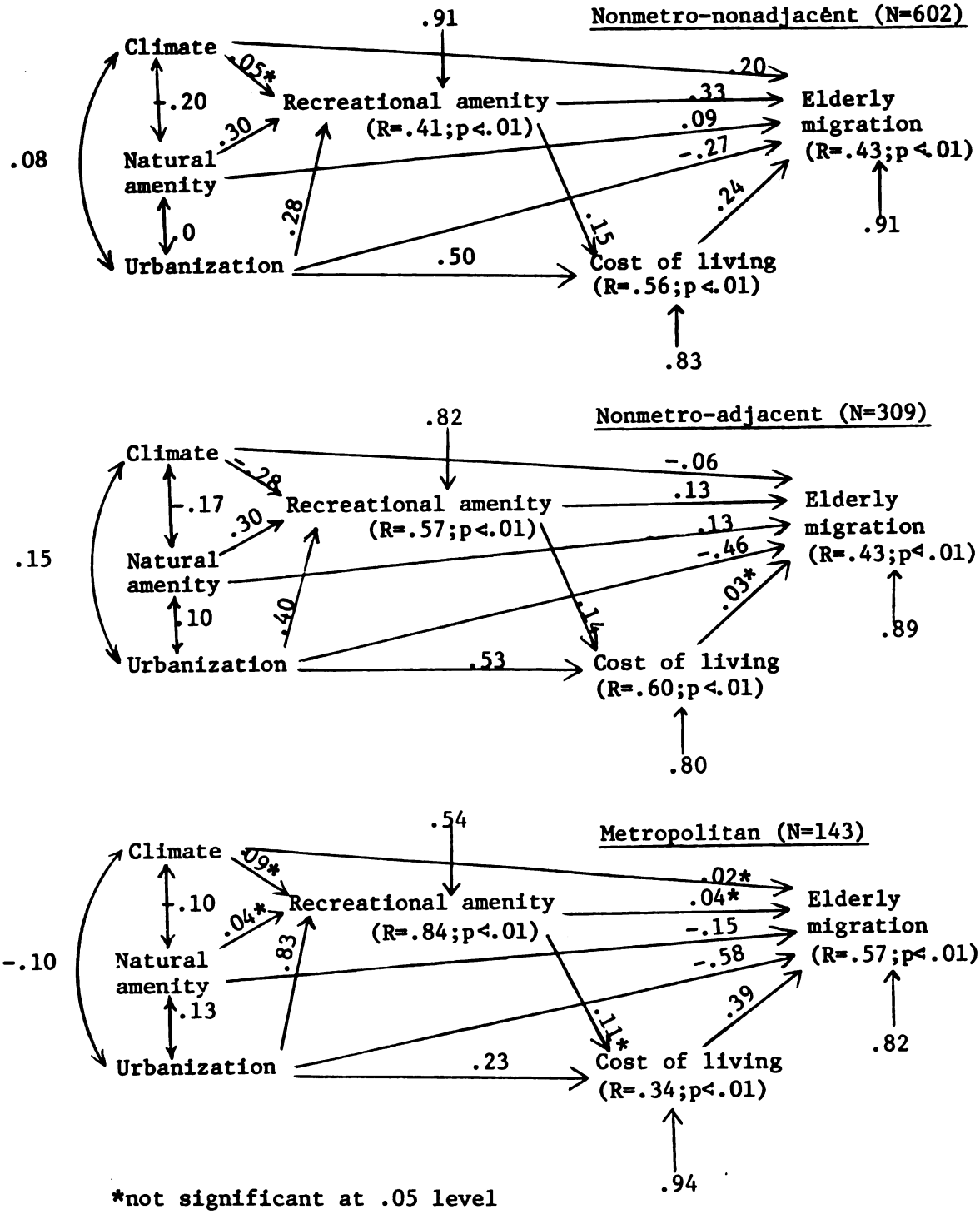



Figure 2-1. Path diagrams of the basic factors in explaining elderly migration, the North Central Region.

contribute a negative effect on elderly migration.

The model does not explain much of the variance in elderly migration. In nonmetro areas, less than 20% of the variance is explained, while in metro areas about one-third of the variance is explained. This difference is mainly because the net impact of urbanization on elderly outmigration in metro areas overwhelms the whole model.

Nonmetro-nonadjacent areas

In nonmetro-nonadjacent counties, the natural environment amenity (including climate), as hypothesized, contributes to net migration of elderly. As expected, the effect of natural amenities on elderly migration has been reduced from simple correlation coefficient of (.18) to a path coefficient of (.09) while the effect of recreational amenities remains the same (.33), and the relationship between recreational amenities and natural amenity is also about the same. The path from natural amenity through recreational amenity to elderly migration is stronger than any other paths in the model. Thus, it can be safely concluded that natural amenities do exercise influence on migration through recreational amenities.

Climate comfort also has a direct impact but does not contribute to recreational amenities. Its relationships with elderly migration rises from a simple correlation of (.08) to path coefficient of (.20). Thus, unlike other amenities, climate seldom relies on the development of recreational amenities.

Urbanization of the county in remote areas also contributes a negative effect on elderly migration. Its relationship with elderly migration rises from a simple correlation of (-.03) to a path

coefficient of (-.27). Urbanization does contribute to social amenities. Its path coefficient is about the same as the simple correlation. However, its indirect effect through recreational amenities (.09 = .27 x .33) is far weaker than its direct negative impact. Nevertheless, urbanization directly causes higher costs of living, which, unexpectedly, contributes a positive effect on migration. Therefore, living cost is not the intermediate variable of urbanization causing outmigration. The urban environment itself has a direct impact on outmigration of elderly.

Nonmetro-adjacent areas

In nonmetro-adjacent areas, natural environment is still important in determining elderly migration. Both natural and social amenities directly and positively contribute to elderly migration. But climate comfort becomes less important. Although natural amenities contribute to the development of recreational amenities (.30), recreational amenities do not affect elderly migration at the same magnitude as natural amenities to recreational amenities. Thus, natural amenities in the counties adjacent to metro areas do not necessarily exercise their effect on elderly migration through recreational amenities. They can act independently (.13).

Degree of urbanization in adjacent areas tends to push older people away from the community, as shown by the path coefficient of (.-46). Of course, urbanization causes the development of recreational amenities (.40), but, its indirect effect through recreational amenities is minor (.0422 = .34 x .13). Cost of living caused by urbanization does not show a significant impact on elderly migration.

Therefore, urbanization itself has the decisive effect on the mobility of elderly in the counties adjacent to metropolitan areas.

Metropolitan areas

The importance of urbanization in determining elderly migration becomes more evident when we look at the path diagram for metro counties. It is shown by a strong negative path coefficient (-.58) from urbanization to elderly migration. On the other hand, natural amenities and recreational amenities in metropolitan areas have no impact on the mobility of elderly. Even recreational amenities, which can be explained by natural amenities in nonmetro areas, is almost totally explained by the degree of urbanization in metropolitan areas (.83).

Cost of living in metropolitan areas appears to have a positive impact on elderly migration, independent of urbanization although urbanization strongly affects cost of living. Thus, the factor of cost of living may indicate something else. A tentative explanation is that migration of the previous period might have contributed to a higher cost of living and, at the same time, the past migration may have influenced the migration of the later period. Hence, it would seem that cost of living determines a fair amount of elderly migration.

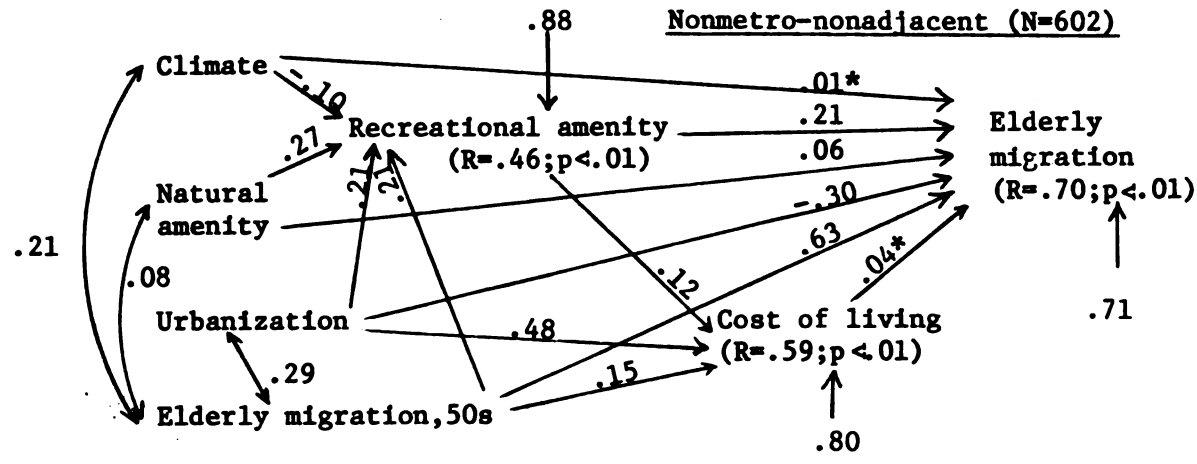
Comparison of metro-nonmetro areas

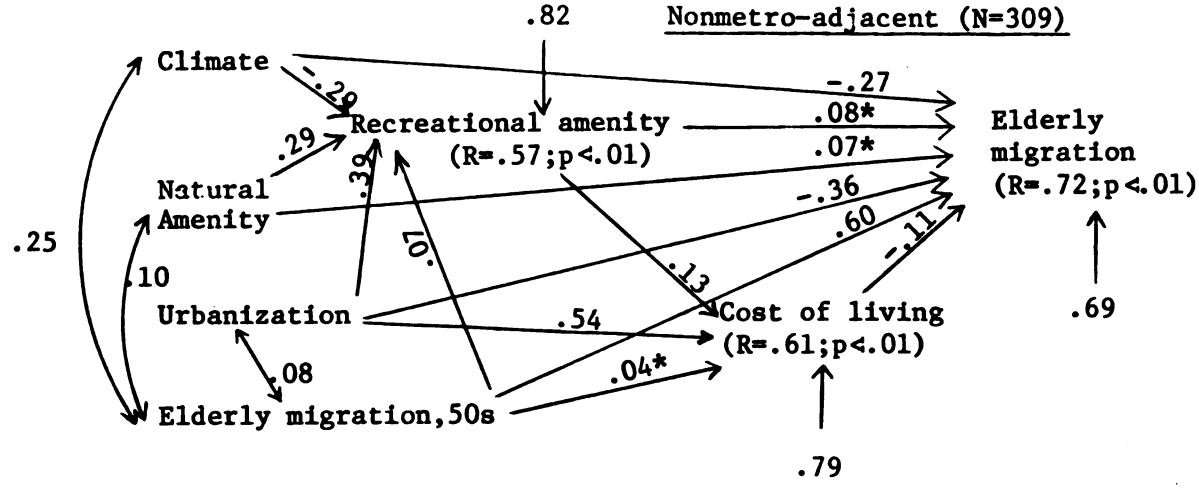
Comparing the three diagrams in figure 2-1 a clear pattern of the impact contributed by these factors on elderly migration emerges. Natural environment is the most important factor causing elderly migration to nonmetropolitan areas, and urbanization is the most important factor causing outmigration of elderly from metropolitan areas.

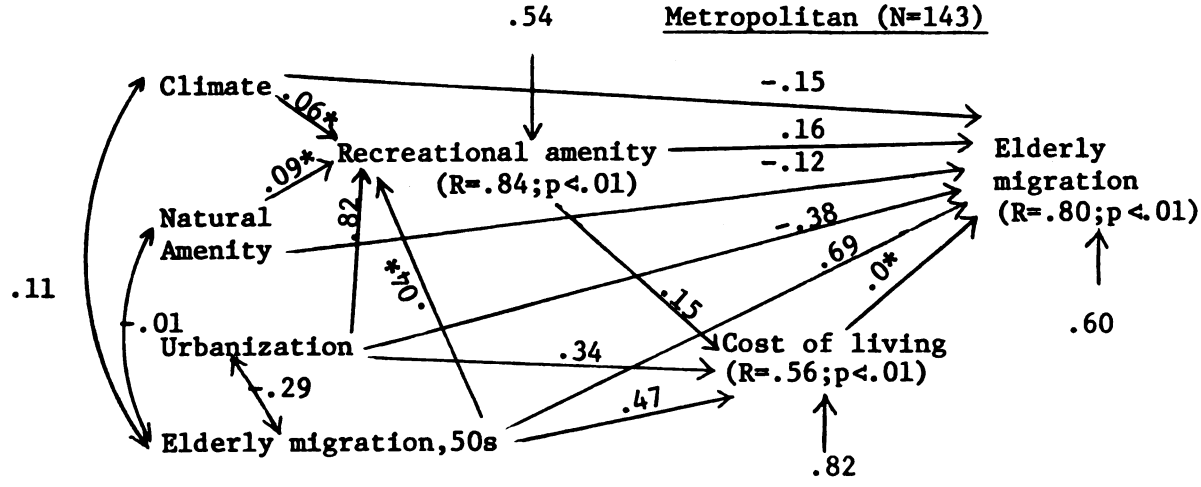
In nonmetropolitan areas, natural amenities of a county tend to influence the development of recreational amenities; which, in turn, affect inmigration of the elderly. In contrast, in metropolitan areas, natural amenities do not influence the development of recreational amenities and recreational amenities do not affect migration. It is also found that the influence of recreational amenities on elderly migration decreases as the county is located closer to a metropolitan area, the impact of urbanization on outmigration of elderly increases as the county is located closer to metropolitan areas, and the influence of urbanization on the development of recreational amenities also increases as the county is located closer to a metropolitan area.

Influence of past migration

Figure 2-2 shows the diagrams of the variables including net migration rate of elderly for 1950-60. We can immediately find the importance of the past elderly migration experience in explaining the migration rate for the current period. No path coefficient between migration rate of the '50s and that of the '60s in the three diagrams is less than (.60). Furthermore, the total variance explained by the model increases from 18% (R = .43) to more than 49% (R = .70 and higher). As expected, the impact of cost of living on elderly migration has been almost totally wiped out in metropolitan and nonadjacent areas. The negative impact of cost of living emerges in adjacent areas. The direct effect of urbanization on elderly migration of the '60s tends to be constant throughout the three diagrams (range from -.30 to -.38).




*not significant at .05 level

Figure 2-2. Path diagrams of the factors including net migration of elderly between 1950-60, the North Central Region.

Climate, which was important in explaining elderly migration in nonmetro-nonadjacent areas has almost no direct impact on elderly migration of the '60s. In metropolitan and adjacent areas, climate becomes one of the factors causing outmigration.

Recreational amenities, the intervening variable between natural amenities and elderly migration in nonmetro areas, still contributes a positive direct impact on elderly migration although the path coefficient has been reduced. Natural amenities still retain a direct impact on recreational amenities in nonmetro areas. The influence of urbanization on recreational amenities is slightly reduced in nonadjacent counties (from .28 to .21), but no change was found in metropolitan and adjacent counties. Elderly migration of the past decade has a positive effect on recreational amenities in nonadjacent counties but not in metro and adjacent counties. This indicates the importance of elderly migration in the development of remote areas.

## Conclusions

The North Central Region has experienced population loss through net outmigration since 1950. However, outmigration of the population aged 65 and over was slowed down in the 1960s as compared with the population as a whole. The major factor which made the net migration of older people slow down is migration of older people to nonmetropolitan areas, especially the remote areas. This chapter examines the factors affecting the variation in elderly migration among the North Central Region counties in order to identify the basic elements and processes involved in the migration of older people to nonmetropolitan areas. These factors examined are natural-environmental

amenity (including climate), recreational amenity, degree of urbanization, cost of living, and influence of past migration. The impact of these factors on elderly migration varies depending upon the area types--metropolitan, adjacent, and nonadjacent areas.

In the basic model, which contains all the variables except past migration, natural environment exercises its influence on elderly migration through the development of recreational amenities. However, this kind of relationship becomes less significant as the county is located closer to metropolitan areas, where natural amenity fails to influence elderly migration. Instead, urbanization as a push factor becomes an overwhelming determinant in causing outmigration of elderly people from metropolitan areas. Thus, urbanization tends to increase its negative impact as the county is located closer to the metropolitan areas.

When past migration of elderly is introduced into the model, the original impact of natural amenities through recreational amenities on elderly migration is reduced. The impact of urbanization becomes almost constant in the three area types, although the tendency to be more influential in metropolitan areas exists. It can also be concluded that older people do not likely move to a highly urbanized area. Even in the remote areas, smaller places are more attractive to older people.

Since the past migration of elderly is found to be the most powerful predictor of current migration, it can be inferred that the factors influencing elderly migration have been structured, producing a "snow-ball" effect on migration patterns. Thus, the mobility

of people is influenced more by the established patterns related to the social system than by actual environmental factors. The system may include the development of recreational amenities in rural areas which have gained some reputation. Information about areas has been diffused. The system may also include distribution of second homes in the region. Future study needs to focus more on this aspect.

# CHAPTER III

# THE RETIREMENT FUNCTION IN RURAL COMMUNITIES

## Introduction

All the consequences of elderly migration for the recipient community are related to how the retirement function is developed, what changes have been introduced by the elderly, and how the community adapts to change. In this chapter, community characteristics and structure associated with the development of the retirement function in the community are examined.

To select community characteristics for investigation, the human ecological and the social systems approaches are used. Major characteristics to be examined are sustenance activities (industrial composition of the community and sources of income), degree of urbanization (urban, rural farm and rural nonfarm residence), settlement patterns (distribution of elderly among subareas, and segregation by age), socio-economic status (income, occupation, and housing quality), functional autonomy (degree of accessibility to goods and services and labor force participation), and structural differentiation.

As indicated in the last chapter, the largest proportion of counties experiencing high rates of elderly migration to nonmetropolitan areas among the 12 states of the North Central Region is found in Michigan. Michigan nonmetropolitan counties are selected for the study of community characteristics related to the retirement function and the development of the retirement community. Forty-two

nonmetropolitan counties that are not adjacent to any metropolitan area and located in the Upper Peninsula and the Northern Lower Peninsula are investigated. Because of small sample size, Pearson correlation and partial correlation are used to analyze the relationships.

Few studies have attempted to examine the characteristics of the retirement community and the impact of elderly migration. Harlan (1954) examined the impact of inmigration of retired persons in St. Petersburg and concluded that the presence of retired persons is clearly reflected in demographic data, in the occupations of the younger population, and in the types of local business and professional activities. Among obvious findings reported were higher median age, higher proportion of the population aged 65 and over, smaller size of household, lower sex ratio, and lower percentage of labor force participation. In terms of business and professions, he found some interesting facts, namely a higher rate of real estate transaction, many pages of advertisements for new houses and retirement homes in the newspapers, a heavy demand for appliances and furniture, eating places, food stores, optical goods, drug stores, and medical related professions.

Since St. Petersburg is in a vacation state, many tourists visit it. The effects of the presence and increase of older persons upon the community is difficult to isolate from the effects of large numbers of tourists. Therefore, a comparison of a larger number of communities with different functions is necessary.

Most studies focus on the characteristics of the elderly or activities of retired persons, from which the community characteristics are inferred. Webber (1954) conducted a survey of 474 persons

in 1951 in Palm Beach and Orlando, Florida, and concluded that social participation declines with advancing age. Most types of organizations attended by the elderly are church related groups, some are related to fraternal associations (Odd Fellows, Eastern Star, Masons), recreational and social associations, and military and veteran's organizations (American Legion, Reserve Officers' Association, etc.). In a Michigan study (Beck, 1975), church groups were also found to be the most common social group among aging citizens. But, only one-fourth of the elderly (60 and over) belonged to any church group. Even those exclusively restricted to aging citizens such as senior citizens centers, senior citizen clubs, senior meals programs, senior citizen service groups such as Foster Grandparents, were attended by less than 9% of older people.

Older people who move to rural areas also have a low social participation rate. In Clare County, 29.7% of the sampled migrants did not engage in visiting as often as once a week; 63% did not do any recreational activity; 50% did not travel; and 65% did not attend any meetings. However, 32.7% participated in voluntary organizations, 73.7% voted, and 48.2% were members of a church (Kobernick and Beegle, 1976; 39, 47). Compared with Michigan as a whole, the elderly migrants to rural communities seem to have a higher rate of social participation than the older population as a whole. However, participation is generally low.

Complete and sudden retirement in industrialized societies is often the source of problems. A sharp reduction in income for most older persons generally forces them into low cost, poorly constructed

housing, or into mobile homes (Kafoglis, 1974), and also restricts the elderly's activities, traveling, and the sense of psychological freedom (Rose, 1967:9). Low income itself is a problem that contributes to the need of the elderly in rural communities, and is also a barrier to providing services.

Because of low social participation, low income, and reduced physical strength, the home is widely used by the elderly for maintaining social contact with the outside world (Riley and Foner, 1968:137). The activities of the older persons are more passive. The services reach them rather than the reverse. Private business will seldom be attracted to the area solely for the services available for the aging. Thus, government programs for the aging and voluntary organizations which are willing to reach the elderly become the major sources of services available to the older population in rural areas.

Given these facts associated with older persons, what are the characteristics of the community dominated by the retirement function? To what extent can the community, based on the retirement function, be developed? According to the ecological and social systems approach, this chapter deals with community characteristics associated with the development of the retirement function. The next chapter will focus on the impact of elderly migration and the retirement function on the development of rural communities.

In the following sections, the theoretical background of community structure and community characteristics are reviewed. Then the definition of retirement community and retirement function is

discussed. Based on an ecological approach, specialization of community functions are derived and the retirement function of the community (along with other specializations) are measured by a composite index derived by factor analysis. Using the composite index, community characteristics are examined.

## Theoretical Background of Community Characteristics

The general nature and characteristics of the retirement community in nonmetropolitan areas can be indicated by a set relationship between degree of the retirement function and socio-economic or structural characteristics of communities. However, some socio-economic characteristics of the community are associated with other functions rather than retirement activity and are related to the inmigration of younger people. In order to sort out the effects of elderly migration and retirement activities, the migration of younger people associated with other functions of the community must be controlled.

To derive a set of characteristics of the retirement community, we begin with an approach to general structure of the community. Community has been approached from various angles--spatial relationships, population composition or structure, shared institutions and values, interaction of people, power structure, and as a social system (Warren, 1963:21-51). Five different theoretical orientations of community research today summarized by Murdock and Sutton Jr. (1974) are: 1. the ecological approach; 2. the typological-shared meanings approach; 3. the social systems approach; 4. the inductive taxonomy approach; and 5. the interaction approach. Among them, the

ecological approach is of great flexibility and comprehensiveness, sharing extensive areas of overlap with other community frameworks. The convergence of these approaches toward the ecological framework suggests that this approach is a useful conceptual umbrella for community research and theory (Murdock and Sutton Jr., 1974:331).

The social system approach involves the inquiry into the functions and structure of the community social system and the adaptation of the system to external systems (such as boundary maintenance). Hence, it is quite relevant to what the ecological approach attempts to investigate. Therefore, this study draws upon both ecological and the social system approaches to examine characteristics of retirement communities.

The ecological approach

The classical ecological approach, as reflected in the work of Burgess, McKenzie, and Quinn, investigates only the subsocial or biotic relationships between population and environment, differentiated from socio-cultural relations. Emphasis is placed on the study of spatial organization and sustenance arrangement (Quinn, 1939). This emphasis is criticized as being peripheral in the study of large scale social structure because spatial patterns cannot be understood outside of a cultural context.

Hawley expands the framework of ecology and considers the community to be the basic unit of ecological investigation. He defines community as ". . . the structure of relationships through which a localized population provides its daily requirements" (Hawley, 1950: 180). The community is the basic form of organization in which a

population adapts to its environment. However, in human society, the struggle for existence and the adaptation of populations to their environments (to make a living in a given geographic area) becomes more concerned with the organization of the population than with a biological process. Therefore, community is considered as a symbiotic-commensalistic phenomenon (Hawley, 1950:209). And the socio-cultural aspect of behavior becomes the concern of ecological approach.

Duncan and Schnore (1959) make the organizational concern of the human ecological approach more explicit in that the ecosystem is composed of four interrelated components: population, organization, environment, and technology. Changes in one of them will cause changes in others. Micklin (1973) also places a special emphasis on the importance of social organization in ecological process. He argues that the relationships among the raw materials of the human ecological systems--i.e., populations and their environments--are mediated through and largely determined by certain aspects of social organization (Micklin, 1973:xiv). These aspects of social organization include science and technology as engineering mechanisms; ideology and culture as symbolic mechanisms; power, policy, social control as regulatory mechanism; and mobility of people and resources as distributional mechanisms. Therefore, the boundaries of the ecological approach are not simply limited to spatial realtionships, and the concept of sustenance organization is expanded to cover the cultural, ideological, political, and organizational aspects of society. The demographic characteristics of population,

geographical variables, the technological aspects of man's culture, and the different forms of sustenance organizations are the universe of inquiry for the human ecological approach (Gibbs and Martin, 1973: 48).

However, in most empirical research to date, the concept of sustenance organization is often defined in a more restricted sense as the organization of economic activities (Gibbs and Martin, 1973: 51). A sustenance activity is defined as any "expenditure of human energy in the direct pursuit of food or in the production of some goods or services" (Browning and Gibbs, 1971:233-234). The structure of sustenance organization essentially refers to the kinds or types of sustenance functions characteristics of areas, and is operationalized as the structure of industries and related activities (Frisbie and Poston, Jr., 1976).

In examining community characteristics, Duncan and Reiss Jr. (1955) used primarily size of community, spatial organization of communities (rural-urban), community growth and decline, and functional specialization of community (sustenance organization) to examine variations in characteristics such as age and sex composition, race and nativity composition, marital status, family characteristics, mobility, education, labor force and occupation, and income. The underlying assumption in using demographic variables is that population characteristics reflect the relative influence of different types of communities. Hence, the population characteristics are often used to describe community structure from an ecological perspective.

By using more sophisticated methods to examine community structure based on areal characteristics, Jonassen (1961), Munson (1968a, 1968b), and Bonjean et al. (1969) attempt to summarize the community characteristics or structure by using several factors or dimensions derived from factor analysis. The names and the number of the factors are different from one study to another. However, Munson (1968b:459) concluded that three factors were found to be essentially parallel in the studies he reviewed. They are urbanism (population size, density, heterogeneity, social complexity, economic base, etc.), socio-economic level or level of living (income, education, occupational status, quality of housing, etc.), and population growth (migration, vital variables, age composition, etc.). Certainly urbanism is closely related to the ecological arrangement of the population. Socio-economic status or level of living reflects the efficiency of the sustenance organization of the community. However, some characteristics such as occupational status, stratification system, relationships among people in the community have no direct connection with sustenance organization. Thus, community characteristics include sustenance phenomena as well as non-sustenance phenomena.

The social systems approach

Some research attempts to examine the community as a social system. The basic concept of this approach is the structured interaction between two or more units which lasts over a period of time. The emphasis is placed on the structure of interaction rather than on interaction itself. The structural-functional perspective in the

social systems approach is closely related to the ecological approach in terms of the adaptation of a system to its external system (environment). However, since the ecological approach is focused on the relationship between environment and the aggregate population, the internal structure of the organization of the population is beyond its scope although some concerns have been indicated. Thus, the social systems approach, based on an holistic view of the social system may fill the gap in the understanding of community characteristics.

The social systems approach is concerned with the structure and functions of the system. The structure of a system is that set of properties of its component parts and their patterned relations (Parsons, 1961:221). A social system might be an individual family, a formal organization, a football team, a community, or even an entire society, in which status-roles are assigned to perform certain functions. According to Parsons, all social systems are characterized by four major functions: 1. goal attainment, or the gratification of the units of the system; 2. adaptation, or the manipulation of the environment in the interests of goal attainment; 3. integration or the attachment of member units to each other; and 4. latent pattern-maintenance and tension-management. Goal attainment and adaptation mechanisms are more related to the external structure of the system and integration and latent-maintenance are more concerned with the internal structure of the system.

Loomis and Beegle (1950) apply nine elements and six processes to the analysis of rural social organization. These elements are belief, sentiment, end (goal, objective), norm, status-role, power,

rank, sanction, facilities, and territoriality. These processes include communication, boundary maintenance, systemic linkage, socialization, social control, and institutionalization. It is considered that, with such a set of elements and major processes, any system can be analyzed and understood. These elements and processes are also related to a system's functions, units, patterned behavior, and relation with environment.

Sanders (1966) also examines the composition of community social systems. He considers that the basic unit of analysis for the study of a community is the subsystem and that the behavior of a community as a total system is greatly dependent upon the interaction among these subsystems. The clustering of those subsystems form major systems, such as family, economy, government, religion, education, health, welfare and recreation. Within each major system, there are subsystems, such as political party in the government system; industries, commerce, agriculture in the economic system; Methodist subsystem in the religious system. Within these subsystems, there are social groups and persons. Clearly, the "systems within systems" relationship is the crucial concept in system analysis as applied to the community. However, in Sanders' approach, we do not know the difference between community and society.

Warren (1963) views community structure in terms of the horizontal and vertical systems. He notes that social units involve horizontal ties with local community and vertical ties with extracommunity systems. "The performance of the local-relevant functions tends to relate the community's constituent units to extracommunity

systems. The maintenance of the community as a system, however, involves the relation of these units to each other" (Warren, 1963:308). The great change which has taken place in American communities is to strengthen the vertical ties for task performance and to weaken the horizontal ties for system maintenance. Thus, whether a community can provide a full range of functions to residents depends heavily upon extracommunity systems.

The major functions which have locality relevance carried out by social units are production-distribution-consumption, socialization, social control, social participation, and mutual support. All of these activities are not necessarily controlled by local communities since the vertical ties with extra-community systems are stronger than the horizontal ties within local communities. The organization of society to perform these functions at the community level includes a strong tie between local units (such as business, schools, government, and voluntary associations), and social systems extending far beyond the confines of the community. The community is especially characterized by the organization of these functions on a locality basis. Therefore, he defines community as "that combination of social units and systems which perform the major functions having locality relevance. . . .'community' we mean the organization of social activities to offer people daily local access to those broad areas of activity which are necessary in day-to-day living" (Warren, 1963:9). From this perspective the concept of the community is parallel to organization of sustenance activities with which the ecological approach is concerned.

In general, the structure of the community essentially is the organization of social units which perform various functions. When the community is viewed as a system, its structure is a set of the component parts and their patterned relationships. Social structure includes a set of roles, collectivities, and their institutionalized patterns of behavior. The concept of differentiation has usually been used to describe the complexity of the specialized roles and collectivities. At the community level, differentiation mainly refers to the complexity of establishments or organizations. Young and Young (1973) use the concept of differentiation, centrality, and solidarity to examine the community structure and development process. Differentiation is parallel to Warren's concept of the horizontal system of social units or internal structure. Centrality, which is defined as the access community to the larger system is also parallel to Warren's concept of the vertical system of social units, or external structure. Solidarity is primarily concerned with the mobilization of the symbolic system (ideology) maintained by the community. Thus, structurally, differentiation and centrality are two major dimensions of the community.

The structural relationship among differentiated social units within a community involves the problem of system-maintenance. Landecker's (1951) four types of integration are applicable to the community. They are 1. cultural integration--consistency among cultural standards, varying from extreme consistency to extreme inconsistency; 2. normative integration--agreement between cultural standards and the behavior of individuals, varying from high

conformity to high violation of cultural standards; 3. communicative integration--an exchange of meanings or communication, varying from a high degree of intercommunication to prevalence of barriers to communication within the group; and 4. functional integration--the degree to which the functions of members of the group constitute mutual services. Obviously, community differentiation in terms of diversity of organizations and establishments is closely related to functional integration. The increasing importance in vertical systems of social units in the community has weakened normative and cultural integration, and has strengthened communication and functional integration, especially the latter. In other words, organic solidarity becomes more important than mechanical solidarity in Durkheim's terms. The psychological identity with locality and community cohesiveness has been declining in contemporary American communities.

The increasing orientation of the local community units toward larger systems leads us to reconsider the conception of community. It is parallel to what has happened to the family system. Many functions which were originally performed by the family have been taken over by many social units outside the families. Therefore, the nature or characteristics of families have changed and the same has happened to the community. The question is what functions are still left for the community?

At this point, the ecological approach becomes important because the major functions of the community left are connected with the activities related to the daily requirements of the population in the community (residential, day-to-day living, etc.). Social

interaction among individuals may not be the basic criterion of the community. That people live in the same location is because their needs can be met in the same geographic area. Thus, as formulated in human ecology, the concept of community is "to denote the territorially oriented complex of human relationships through which a more or less localized population meets its sustenance and residence requirements" (Duncan and Reiss, Jr., 1956:xiii). The ecological approach makes the concept of functional integration of the community in the social system approach more explicit.

## Community characteristics to be examined

Based on the ecological and the social systems approach reviewed above, this study focuses on the functions of the community, population characteristics, ecological arrangement, and structural differentiation of the community.

### A. Sustenance organization and specialized functions of the community

From the ecological point of view, the sustenance organization of a population which reflects labor force participation in the community characterizes the community structure. The industrial composition of a community can be regarded as the way a population maintains itself in a given area. However, the industrial composition or sustenance organization involves two major types of functions. One is the so-called "key function" or the specialization of the community. Another is the internal differentiation of social units providing the immediate necessities for the population within the community. Specialization of the community in certain sustenance

activities will be reflected by a higher proportion of the population engaging in certain activities in order to earn a livelihood. The retirement function is considered another type of community specialization because such a community provides a setting for elderly persons as the way the population maintains itself in a given area. The differentiation of social units providing immediate necessities can be viewed as the consequence of these specializations. The two concepts of sustenance organization—specialization and differentiation--are parallel to the concepts of economic base (export activities) and local services or consumption business. Specifically, agriculture, manufacturing, wholesale and retail trade, and services in relation to the retirement function will be examined.

B. Degree of urbanization

One ecological and social phenomenon of population redistribution is the degree of agglomeration of the population at certain geographic locations. Urbanization may be due to the principle of geographic economy or other socio-political factors. Nevertheless, it is certainly related to types of sustenance organization of the community. Communities specializing in the retirement function may exhibit a different relationship to urbanization and type of residence.

C. Settlement patterns

As mentioned in the last chapter, there is a considerable amount of segregation between the aged and the rest of the population. The theories of aging, such as the disengagement theory, the quasi-minority theory, and subculture theory all suggest that the elderly tend

to form their own social groups. The spatial distribution of the population in the community will be altered if a significant number of older people move in. The degree of segregation between the aged and the rest of the population and the distribution of the degree of aging within the community will be examined.

D. Socio-economic status

Given that the sustenance functions of the community are organized to meet the needs of the population, level of living and socio-economic status of the community become relevant consequences of sustenance activities. Occupational status, income level, educational attainment, and housing conditions are among the characteristics of the community.

E. Functional autonomy

Since the community functions to meet the needs of the population, the extent to which the needs are met is also a crucial aspect of community structure. Functional autonomy is defined as the degree to which the community performs a variety of functions for the residents. According to Warren (1963), community is characterized by the organization of the functions such as production-distribution-consumption, socialization, social control, social participation, and mutual support on a locality basis. From an ecological perspective, sustenance organization is the most important aspect of community. Thus, the basic needs of the residents, besides residence, are job opportunities and the availability of goods and services.

F. Structural differentiation

The structure of the community is, in essense, the organization of the social units which perform various functions. Functional autonomy depends on the number and kind of social units. The more social units with various functions in the community the more likely people can obtain what they want within the community. If institution is defined as social units, establishments or organizations which perform various functions, differentiation can be viewed as institutional completeness or institutional complexity. However, complexity is meaningful only in the context of larger systems. In other words, without comparison with other communities, degree of complexity cannot be understood. Thus the question to be examined in this section is the extent of complexity developed by communities specializing in the retirement function.

The next section will deal with the conception of the retirement community and the retirement function, as well as the operationalization of the retirement function used in this study.

## The Retirement Community vs. Retirement Function

Retired persons can be found in any community. Some communities in which retirement activities predominate such as those in Florida can be easily identified. Most retirement communities are considered to be the residential area or housing arrangement for the elderly within a community. Webber and Osterbind (1961:4) consider a retirement village ". . . to be a small community, relatively independent, segregated, and non-institutional, whose residents are

mainly older people separated more or less completely from their regular or career occupation in gainful or nonpaid employment." Accordingly, three types of retirement communities are distinguished: 1. real estate developments; 2. supervised and planned communities (dispersed-dwelling community, trailer village, and retirement hotels); and 3. full-care homes and communities. Barker (1966:ix) defines the retirement community in a more restricted sense as ". . . a planned low density development or permanent building designed to house active adults over the age of 50 and equipped to provide a range of services and leisure activities." It is clear that most people refer to the retirement community as planned residential areas and housing arrangement for the elderly in a community. However, this type of planned retirement community is seldom found in rural areas. This study does not attempt to investigate the typical retirement community.

The housing and residential arrangement for the elderly in rural communities is a natural development rather than a planned one. One common pattern of retirement on the part of farmers involves moving to the town or village that has served the farm family (Bauder and Doerflinger, 1967). Some of the retired farmers may find part-time wage work, but many of them purchase a small business or make some investments as their retirement activities. The concentration in villages is viewed as primarily the result of the retirement of farmers from surrounding areas (Cowgill, 1965:282; Sheldon, 1967:138).

The development of the aging characteristic of the rural community has been accelerated by the outmigration of younger people

from rural areas. Only a few rural areas were affected by inmigration of the aged during 1950-60 (Cowgill, 1965). Since 1940, the number of farms has been declining everywhere in rural America. Improved technology and mechanization of agricultural production has raised productivity and reduced manpower. The expansion of the nonfarm economy and the ease of physical access to the cities have drawn people from rural areas (Beale, 1964:266). Hence, counties dominated by the extractive industries are those losing more population (Frisbie and Poston, Jr., 1975). The retirement community which develops based on this process of outmigration of younger people is a declining community. Its development will be limited. This characterizes the early development of the retirement function in rural areas.

However, the development of the retirement function in the recent revival of nonmetropolitan areas is mainly channeled through the inmigration of the elderly from larger urban centers. In Clare County, Michigan, it was found that 77.6% of the retired migrants were from urban places (Koebernick, 1974:122). The cheap land and lower living costs in rural areas have been favorable to those who must rely on limited incomes (mainly social security and pensions) to migrate to rural areas.

In the last chapter, it was found that elderly migrants are attracted to those areas having more social amenities and having smaller centers, or are less urbanized. However, those who migrate from urban areas where they are accustomed to a variety of goods and services will find locations close to the community centers

more attractive. Hence, they will still tend to move to these towns, villages or locations where there is easy access to goods and services. Thus, both the farm retiree, and the elderly from urban areas will concentrate in the existing small trade centers, small towns, or villages. Therefore, in this study there is no attempt to identify the typical retirement community as usually defined. Rather, the degree of development of the retirement function is examined.

Since most people retire around 65, the degree of retirement function of the community can be identified in terms of proportions of population aged 65 and over. The greater the proportion of population 65 and over, the greater the tendency for a community to develop a retirement function relative to other functions of the community. Particularly, when the number and the proportion of the elderly in the community becomes large enough to alter the community structure (economic base, industrial composition, occupational composition, patterned behavior of social units, etc.), the increasing importance of retirement activity may gradually become the major function of the community. The proportion of elderly in the community can be used to indicate the degree of the development of retirement function of the community.

However, when we examine the proportion of elderly in communities which are regarded as retirement communities in many studies, this criterion is not sufficient. In Webber's study (1954), Orlando and West Palm Beach were chosen as retirement communities. Only 13.5% of the population in Orlando and 11.8% in West Palm Beach were aged 65 and over. In Eteng and Marshall's study (1970), the

proportion of elderly in the communities they chose ranged from 12% to 28%. Of course, the typical retirement community such as St. Petersburg had more than 30% elderly (Catau, 1973). In counties of the North Central region, the average percentage of population aged 65 and over was 13.3% in 1970. In nonmetropolitan counties of the region not adjacent to SMSA, the average was 14.5%. In Michigan, there were 88 places of 2,500 or more having 12% or more elderly in 1970 and some places had 20% elderly, higher than most communities in previous studies. The retirement function in the region especially the rural part should be very significant. Therefore, migration rate of the elderly is the most important indicator of potential growth of the retirement community. To determine retirement function, elderly migration must be taken into account.

## Retirement Function as a Specialized Function of the Community

A retirement community essentially provides a setting for the elderly to carry out their daily needs--residence, recreation, material subsistence, and/or spiritual enrichment. As Warren (1963) suggests, the community mainly performs such major social functions as production-distribution-consumption, socialization, social control, social participation, and mutual support. The retirement function of the community can also be recognized in the extent to which the community performs these functions for the elderly. Since the demand structure of the elderly is different from the rest of the population, the community structure required to perform these functions will be different from other types of communities. Because

of data limitations, this study deals only with the function of production-distribution-consumption from the perspective of human ecology.

Sustenance organization as a community function is the major concern in human ecology. That is, how do population aggregates cope with a concrete environment to satisfy subsistence needs and maximize conditions favorable to the persistence of the aggregate. As discussed earlier, the "key function" of the system is among the principles of ecological organization. In every system of relationships among diverse functions, the connection of the system to its environment is mediated primarily by one or a relatively small number of functions (Hawley, 1973:33-34). For instance, some activities extract the principal sustenance from local resources, and the product or a substantial part of it, is exchanged for other sustenance materials, whether through trade or other distribution mechanisms. Thus, the key function is determined by the comparative importance of production and of trade as sources of sustenance. The activities of the sustenance organization are reflected in the labor force participation in the community. Industrial composition of the community is an indicator of sustenance organization.

Since labor force participation reflects sustenance activities (Frisbie and Poston, Jr., 1975, 1976), different kinds of key functions will require different amounts and kinds of workers. Manufacturing industries need more factory workers and professional persons, agriculture needs farmers, wholesale and retail trade and service industries need sales clerks and white collar workers. What

about those who are not needed by the system because of retirement? The communities which perform the retirement function provide a key function for those who retire from the labor force. Thus, the retirement function is one facet of a community's functions.

To measure the key functions, the proportions of the labor force participating in agriculture, manufacturing, wholesale and retail trade, and services are used to indicate the importance of particular industries in the community. But, census information concerning labor force participation by industry is based on residence, not the location of the industries. In order to capture the structure of local industries, information about wage and salary of employment in the establishment of particular industries as a percentage of total county employment is also used. The proportions of the population aged 65 and over and net migration rate of the elderly are used to indicate the extent of a community's retirement function. To understand the structure of these key functions, factor analysis of these indicators is carried out.[1]

As table 3-1 shows, the major industries, percent of population aged 65 and over, and net migration rate of population 65 and over between 1960-70 form four factors--agriculture, manufacturing,

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[1]The principal-component solution is used with orthognal rotation of maximizing the variance of the squared loadings in each column. Since the method extracts the principal components which are defined as exact mathematical transformations of original variables, the factor score coefficients for each variable can be derived. The factor loadings in a given row represent regression coefficients of factors to describe a given variable. That is, the original variables are treated as dependent variables, the extracted factors are the independent variables, and the factor loadings are the regression coefficients of the factors on variables. The square of the loadings means the proportion of variance in a

Table 3-1.-- Factor loading of community functions, 42 Michigan nonmetropolitan counties

| Variable | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|---|---|---|---|---|
| % employed in agriculture 1970 | .90 | * | * | * |
| % wage and salary in agriculture 1973 | .91 | * | * | * |
| % employed in wholesale and retail trade 1970 | -.60 | -.48 | .40 | * |
| % wage and salary in wholesale and retail trade 1973 | -.56 | * | * | .44 |
| % employed in manufacturing 1970 | * | .95 | * | * |
| % wage and salary in manufacturing 1973 | * | .95 | * | * |
| % employed in services 1970 | * | * | * | .72 |
| % wage and salary in services 1973 | * | * | * | .87 |
| % population age 65 and over 1970 | * | * | .78 | * |
| Net migration rate 65 and over 1960-70 | * | * | .88 | * |
| Eigenvalue | 2.69 | 1.87 | 1.72 | 1.37 |
| Cumulated % variance explained | 26.9 | 45.6 | 62.9 | 76.6 |

Notes: 1. Minimum eigenvalue is one; factor loading less than .30 are not shown in the table.
2. Information about the percent employed in various industries in 1970 is derived from 1970 Census of Population.
3. Information about wage and salary in various industries as a percentage of total county employment 1973 is derived from Michigan Statistical Abstract 1976, Division of Research, Graduate school of Business Administration,Michigan State University.

services, and retirement functions--with eigenvalue greater than 1. The percentage of employment in wholesale and retail trade and percent of wage and salary in wholesale and retail trade do not form a factor. They are loaded on all four factors, negatively on the agricultural and manufacturing function, positively on the retirement and service function. In other words, wholesale and retail trade are the most common sustenance activities penetrating all types of communities, and always depend on the development of other functions. Since the analysis here is based on county level, the effect of central places, where most wholesale and retail trade is located, is concealed. If the analysis is based on place level, wholesale and retail trade may form another factor. However, this is not the major point in the present analysis. The important thing here is the emergence of a single retirement function factor. In order to simplify the factor loading, another factor analysis is performed without wholesale and retail trade, shown in table 3-2. The proportion of variance explained by the four factors--agriculture, manufacturing, retirement function, and services--increases from 76.1% in table 3-1 to 82.5% in table 3-2. The emergence of the retirement function of the community is therefore evident.

In order to make sure that wholesale and retail trade measures do not form a single factor, another factor analysis is carried out without the retirement function, as shown in table 3-3. The factor loading of this sector of industry is the same as that shown in table 3-1. Therefore, it is evident that, at the county level, the

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particular variable accounted for by a particular factor.

Table 3-2.-- Factor loading of community functions without wholesale and retail trade, 42 Michigan nonmetropolitan counties

| Variable | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|---|---|---|---|---|
| % employed in agriculture 1970 | .94 | * | * | * |
| % wage and salary in agriculture 1973 | .95 | * | * | * |
| % employed in manufacturing 1970 | * | .95 | * | * |
| % wage and salary in manufacturing 1973 | * | .97 | * | * |
| % employed in services 1970 | * | * | * | .83 |
| % wage and salary in services 1973 | * | * | * | .82 |
| % population age 65 and over 1970 | * | * | .85 | * |
| Net migration rate 65 and over 1960-70 | * | * | .85 | * |
| Eigenvalue | 2.26 | 1.77 | 1.40 | 1.18 |
| Cumulated % variance explained | 28.2 | 50.3 | 67.8 | 82.5 |

Notes: see Table 3-1.

Table 3-3.-- Factor loading of community functions without retirement function, 42 Michigan nonmetropolitan counties

| Variable | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| % employed in agruculture 1970 | .91 | * | * |
| % wage and salary in agriculture 1973 | .91 | * | * |
| % employed in wholesale and retail trade 1970 | -.59 | -.51 | * |
| % wage and salary in wholesale and retail trade 1973 | -.53 | * | .48 |
| % employed in manufacturing 1970 | * | .94 | * |
| % wage and salary in manufacturing 1973 | * | .95 | * |
| % employed in services 1970 | * | * | .72 |
| % wage and salary in services 1973 | * | * | .86 |
| Eigenvalue | 2.67 | 1.79 | 1.43 |
| Cumulated % variance explained | 33.4 | 55.8 | 73.7 |

Notes: see Table 3-1.

four major community specialized functions are agriculture, manufacturing, services, and retirement.

Using factor score coefficients of the variables in each factor (table 3-2), the composite indexes of each function are developed. For the retirement function, the index is obtained by adding the factor scores of percent population 65 and over and net migration rate of the elderly.[2] The composite index of other specialized functions, agriculture, manufacturing, and services are obtained by the same procedure. The analyses following are based on the four indexes of community specialization. Indexes of specialized functions for each county under study are listed in appendix 3. For the retirement function, the index is also shown on map in figure 3-1. If the index is greater than 1.5 it approximates to net migration rate of greater than 50% or percent old people greater than 17%. Roscommon, Oscoda, Alcona, Clare, and Lake are in this group. The second group includes the indexes between .04 and 1.4, which is approximately equal to net migration between 15% and 49%, and percent old people between 14% and 16.9%. This group includes Ogemaw, Kalkaska, Antrim, Montmorency, Benzie, Iron, and Dickinson. The third group includes indexes between -.4 and .3 which are almost equivalent to net migra-

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[2]The factor scores are derived from factor-score coefficient matrix (F), which indicates the weights to estimate factors from variables. The factor score is obtained by the formula: $f = FZ$, where z is the vector of standardized values of the variables which have been factor analyzed (or simply called, Z-score). $Z = (x_i - \bar{x})/\sigma_i$. In this study, only those variables that have substantial loadings on a given factor are included in constructing the composite index of particular factor variable. In this case, only the percent of population aged 65 and over and net migration rate are included in constructing the composite index of retirement function.

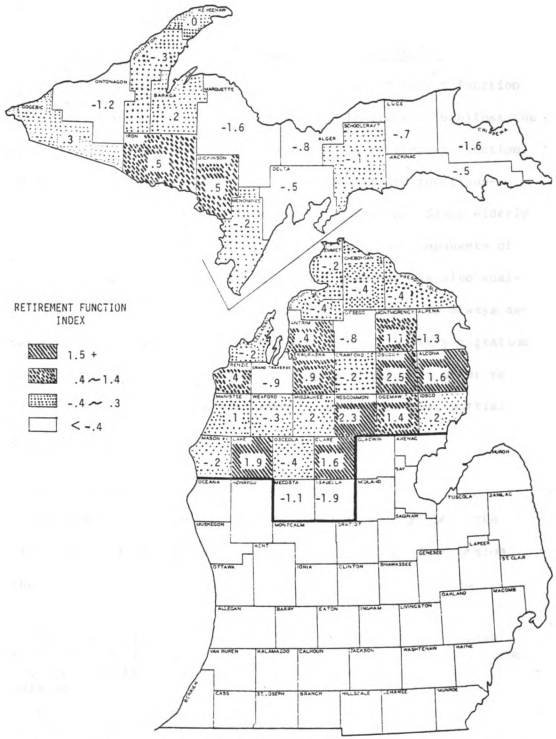


**Figure 3-1. Retirement function index of nonmetropolitan counties in Upper Peninsula and Northern Lower Peninsula.**

migration rate of 3% - 14.9%, or percent old people more than 10%. The fourth group has net outmigration of old people or percent older people below 10%.

## Retirement Function and Community Characteristics

In this section, the relationship between retirement function and community characteristics are examined. In order to manifest the characteristics of communities dominated by the retirement function, the characteristics associated with other specialized functions--agriculture, manufacturing and services are compared. Since elderly migration and the proportion of older people are two components of the retirement function, the impact of each component is also analyzed. The aging process of communities in rural areas is always associated with the outmigration of younger people. Elderly migration may be accompanied by inmigration of younger people. In order to control for the influence of migration of younger people, partial correlation is used.[3]

### Retirement function and sustenance activities

Sustenance organization, as discussed before, includes the specialized activites or functions, and the immediate consumption in the locality. The specialized functions are identified as

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[3]Partial correlation is analogous to cross tabulations with control variables to remove the effect of the control variable from the relationship between independent and variables. The basic formula used is,

$$r_{ijk} = (r_{ij} - r_{ik}r_{jk}) \Big/ \sqrt{(1-r_{ik})\ (1-r_{jk})}$$

where, k. is the control variable, and i, j are the independent and dependent variables.

agriculture, manufacturing, and services. Wholesale and retail trade can be considered as activities related to immediate consumption in communities for sustenance-maintenance. The specialized activities are not necessarily exclusively performed for export--some of them may be consumed in the local community. Specialization is a relative term. To gain access to these immediate necessities, the population must have resources or income. Thus, source of income is another important aspect of sustenance organization. In this section, sustenance organization to be examined is measured by three sets of indicators--industrial composition of the residents local industrial structure, and sources of income of the residents.

As indicated earlier, information concerning labor force participation, by industry, in the U. S. Census of Population is based on the residence of the population which will also include those who commute to other communities. In order to capture the industrial structure of the local community, information about industrial establishments within local communities must be taken into account. In addition to, industrial composition of residents and local industrial structure, information about sources of income of residents is especially important because it reveals a rough picture of how the sustenance activities are organized and how the population earns its living. In particular, most elderly are not in the labor force and the source of income is not directly related to local industrial structure. Industrial structure only cannot reveal the sustenance organization of retirement communities.

The relationships between the three sets of indicators of sustenance organization and retirement function are shown in table 3-4. The two components of the retirement function index--percent population aged 65 and over and net migration rate of elderly--are also shown in this table. For purposes of comparison, the table also includes net migration rate of the population aged 30-54.

Correlations between industrial composition of residents and retirement function are generally very low. However, there is a tendency that counties with higher retirement function have higher proportion of the labor force engaged in agriculture and wholesale and retail trade; those counties with higher inmigration of younger people have higher proportion of the labor force in manufacturing and services. Elderly migration is also slightly associated with manufacturing and services. This relationship may be due to a higher correlation between elderly migration and migration of the younger population (.82). When migration of the younger population is controlled, the spurious relationship may disappear.

In terms of local industrial structure, retirement function is slightly related to proportion of wage and salary in agriculture (.25) and in wholesale and retail trade (.15). The relationship is mainly due to the influence of elderly migration, which correlated with agriculture at (.24) and with wholesale retail trade at (.21). Percent of elderly correlated with agriculture at (.19) and is unrelated to wholesale and retail trade. Net migration rate of younger people is slightly correlated with all the indicators of local industrial composition of residents, ranging from (.15) to (.20).

Table 3-4.-- Correlations between retirement function and sustenance organization, 42 Michigan nonmetropolitan counties

| Variable | Retirement index | Percent age 65+ | Net migration rate 65+ | Net migration rate 30-54 |
|---|---|---|---|---|
| Industrial composition of resident | | | | |
| % employed in agriculture | .23 | .20 | .20 | .13 |
| % employed in manufacturing | .14 | .09 | .16 | .38* |
| % employed in wholesale and retail trade | .23 | .15 | .25 | .12 |
| % employed in services | .09 | -.01 | .17 | .31* |
| Local industrial structure | | | | |
| % wage salary in agriculture | .25 | .19 | .24 | .19 |
| % wage salary in manufacturing | .01 | .06 | -.05 | .20 |
| % wage salary in wholesale and retail trade | .15 | .05 | .21 | .20 |
| % wage salary in services | -.04 | -.03 | -.04 | .15 |
| Source of income | | | | |
| % wage and salary income | -.89*<br>(-.83)* | -.75*<br>(-.71)* | -.75*<br>(-.67)* | -.50* |
| % self-employed nonfarm income | .63*<br>(.38)* | .46*<br>(.33)* | .62*<br>(.30)* | .58* |
| % social security income | .85*<br>(.87)* | .87*<br>(.85)* | .58*<br>(.52)* | .38* |
| % self-employed farm income | .02 | -.09 | .13 | .09 |
| % public assistance and welfare | .01 | .25 | -.24 | -.40* |

* significant at .05 level.

Note: 1. Partial correlation coefficients controlling for migration of younger people (30-54) are shown in parentheses.
2. Industrial composition of resident and source of income are derived from 1970 Census of Population.
3. Local industrial structure is derived from Michigan Statistical Abstract 1976, Division of Research, Graduate School of Business Administration, Michigan State University.

When industrial composition of residents and local industrial structure in relation to the retirement function and migration measures are compared, the intervention of the commuting factor in the relationship between these indicators and retirement function may be involved. For example, there is a higher proportion of the labor force in wholesale and retail trade in retirement communities, but some of them may commute to other communities. Hence, the correlation between local wholesale and retail trade and retirement function is reduced from (.23) to (.15).

In terms of source of income, all the correlations are very high and a clear pattern among them emerges. The major sources of income in higher retirement function counties is social security income, and self-employed non-farm income in that order. Low proportions of families with salary and wages are found in retirement communities. Public assistance and public welfare income, and self-employment in farming are not significant as compared to other sources.

Counties having higher proportions of elderly are more dependent on social security income (.87) than on self-employed non-farm income (.46); counties with higher net migration of the elderly, on the other hand, are just slightly reversed (.58 vs. .62). However, when the migration of younger people is controlled (shown in parentheses), the counties having a higher net migration of elderly also exhibit the same pattern of income sources as those having a higher proportion of the elderly (.52 vs. .30). This indicates that without the influence of migration of younger people, the major source of income in communities specializing in retirement function

is social security income. This also suggests that the migration of younger people to these communities will influence a higher proportion of self-employed non-farm income.

However, the general growth of nonmetropolitan communities may not be too dramatic because the source of income in counties with higher net migration of younger people are also more dependent upon self-employment and not upon salary and wage income. In other words, small scale business still dominates most parts of nonmetropolitan areas. Since migration of younger people is also related to social security as sources of income, it may be inferred that many younger people are drawn to nonmetropolitan communities because of the in-migration of older people.

What patterns emerge in other types of communities specializing in agriculture, manufacturing, and services? Table 3-5 shows inter-correlations of specialized functions and their relation with source of income and retirement function. The four major community specializations--agriculture, manufacturing, services, and retirement--are not significantly correlated as expected, because of their independent factored structure. However, the retirement function is correlated modestly with agriculture (.25). Wholesale and retail trade, not an independent factor, cuts across each specialized function and correlated with all the specializations, ranging from (.25) to (-.44). Counties specializing in agriculture tend to have less wholesale and retail trade, and those specializing in manufacturing also show the same tendency. Only services and retirement function have a positive correlation with wholesale and retail trade.

Table 3-5.-- Correlations between specialized functions,retirement function, and source of income, 42 Michigan nonmetropolitan counties

| Specialized functions | Agriculture | Manufact-uring | Services | Wholesale and retail |
|---|---|---|---|---|
| Agriculture | - | - | - | -.44* |
| Manufacturing | .07 | - | - | -.15 |
| Services | -.04 | .06 | - | .25 |
| Retirment function | .25<br>(.19) | .08<br>(-.18) | .03<br>(-.23) | .19<br>(.07) |
| Net migration rate 65 + | .23<br>(.17) | .06<br>(-.35)* | .08<br>(-.28) | .25<br>(.15) |
| Percent Population 65 + | .20<br>(.16) | .08<br>(-.03) | -.02<br>(-.14) | .08<br>(.11) |
| Net migration rate 30-54 | .17 | .30 | .28 | .21 |
| % wage and salary income | -.38* | -.04 | .20 | .14 |
| % self-employed nonfarm income | .31* | -.04 | .22 | .08 |
| % social security income | .17 | .06 | -.16 | .08 |

*significant at .05 level.

Note: 1. The figures in the parentheses are partial correlation coefficients controlling for migration of younger people (30-54).
2. The composite indexes of agriculture,manufacturing, and services are derived from factor score coefficients based on Table 3-2.
3. Since wholesale and retail trade does not form a factor, a crude composite index for this variable is obtained by adding together the Z-scores of percent employed in wholesale and retail trade,and percent wage and salary in wholesale and retail trade.

When retirement function is viewed from its two components, both percentages, elderly and elderly migration are only slightly correlated with the agricultural function, but not correlated with other specializations. Only migration of older people correlates with wholesale and retail trade. When migration of younger people is controlled, all the correlations between retirement function measures and other specialized functions are either reduced or changed from positive to negative. For example, elderly migration has very low correlation with manufacturing (zero-order correlation coefficient of .08). After migration of younger people is controlled, their correlation becomes negative (partial correlation coefficient of -.35). In other words, without inmigration of younger people communities with a higher rate of elderly migration tend to have less manufacturing function. Therefore, migration of younger people is the link between retirement function and other sustenance activities.

In terms of source of income, counties specializing in the agricultural function tend to have lower proportion of families with wage and salary income (-.38), but tend to have higher self-employed income (.31). The specialized manufacturing function does not show a clear pattern in relation to source of income, but the service function is slightly correlated with wage and salary income and self-employment income. Its association with wholesale and retail trade may reflect the development of the tourists industry in rural areas, where small scale business predominates and more people are employed in this sector of the economy.

Compared with other types of community functions, the retirement function is more unique and is clearly reflected by larger proportions of families with social security income, lower proportions with salary and wage income, and higher proportions with self-employment in wholesale and retail trade.

Retirement function and degree of urbanization

One important phenomenon in the ecological arrangement of sustenance organization is urbanization. As Hawley (1970) argues, urbanization represents a growth of sustenance activities that is based on a center of settlement. Increasing specialization or division of labor within the community causes an increase in the amount of time that must be devoted to exchange and communication. "A characteristic solution to that problem has been a close concentration of the people engaged in high-frequency exchanges, forming villages, towns, or cities" (Hawley, 1971:14). From the viewpoint of urban economy, the spatial structure is very important in influencing households, business, and public agencies in deciding where and when to make investments. Thus, many specialized distribution activities are tied to the region's points of maximum accessibility, such as the central business district. This section focuses on the relationship between the retirement function and the degree of urbanization and the next section will deal with the distribution of older people.

Table 3-6 shows that the higher the degree of urbanization the lower the retirement function (-.61). Especially, the larger population centers discourage the development of the retirement function

Table 3-6.-- Correlations between retirement function and degree of urbanization, 42 Michigan nonmetropolitan counties

| Retirement function and other functions | Urbaniza-tion | % rural nonfarm population | % rural farm population | Population of largest place |
|---|---|---|---|---|
| Retirement function | -.61* | .50* | .34* | -.64* |
| | (-.50)* | (.30) | (.11) | |
| Percent population 65+ | -.60* | .45* | .18 | -.60* |
| | (-.53)* | (.35)* | (.05) | |
| Net migration rate 65+ | -.46* | .42* | .42* | -.51* |
| | (-.22) | (.09) | (.17) | |
| Net migration rate 30-54 | -.42* | .45* | .39* | -.48* |
| Agriculture | -.32* | .25 | .85* | -.31* |
| Manufacturing | -.02 | .03 | .01 | -.08 |
| Services | .02 | -.00 | .07 | -.05 |
| wholesale and retail trade | .20 | -.15 | -.36* | .17 |

* significant at .05 level.

Note: 1. The composite index of urbanization is the sum of Z-scores of percent urban population, population density, and population of the largest place.

(-.64). Rurality indicated by percent rural non-farm population is closely related to the retirement function (.50); but, percent rural farm population is correlated with the retirement function to a lesser degree than is rural non-farm population. This is especially true for percent population age 65 and over--higher correlation with percent non-farm population (.45), and lower correlation with percent farm population (.18), but not for elderly migration, which yielded correlation with rural farm and rural non-farm population of the same magnitude (.42).

Table 3-6 also shows the partial correlation coefficients between the retirement function and degree of urbanization and residential status, controlling for net migration rate of younger people, shown in parentheses. All the correlation coefficients are generally reduced when migration of younger people is held constant. However, the retirement function is still negatively correlated with urbanization. As expected, proportion of elderly also correlated with percent rural non-farm population (partial correlation of .35), but, tends to be unrelated to percent rural farm population. This suggests that local retirees tend to live in villages.

When net migration of younger people is held constant, net migration of elderly tends to be less strongly correlated with urbanization, although the correlation is negative. Especially, there is almost no relationship between elderly migration and percent rural non-farm population. The correlation is reduced from a zero-order coefficient of .42 to partial coefficient of (.09). This suggests that the influence of elderly migration on increasing proportions

of non-farm population is more indirectly through the migration of younger people.

In table 3-6, it is noted that the agricultural function is highly correlated with percent rural farm population, and negatively correlated with degree of urbanization; but manufacturing and service functions do not show any significant relationship with urbanization. In other words, manufacturing industry in nonmetropolitan areas are not necessarily found in highly urbanized locations. The services, which include hotels, motels, and other recreational services in the nonmetropolitan areas may be located around the recreation areas or along highways, etc. The influence of urban centers on location of services may be cancelled out by these factors. Nevertheless, wholesale and retail trade tends to associate with degree of urbanization and disassociate with rural population (farm or non-farm).

Retirement function and settlement patterns

One important aspect of spatial relationship in the ecological approach is the geographic distribution of the population. Although the geographic distribution is related to the ecological arrangement, it has many sociological implications. Migration is the major factor influencing the redistribution of the population. Usually, migration from rural to urban areas involves younger people and the elderly stay behind. In urban areas, the younger families move to the suburban areas, leaving the elderly and the blacks in the central city (Kafoglis, 1974:89). Racial segregation is mainly due to racial discrimination and/or socio-economic status of blacks. In regard to

older people, age discrimination may play a crucial role in the segregation by age.

As Rose (1967:7) says, "the condition of being an older person is not merely a function of relatively immutable biological characteristics but also of cultural characteristics." On one hand, retirement involves the loss of social roles--family and occupation; on the other hand, attitudes of the younger people toward aging and their perception of self has forced a negative image of aging. The disengagement theory (Cumming and Henry, 1961) suggests that aging involves an inevitable withdrawal from interactions with others and that this withdrawal is associated with important changes in the goals, attitude orientations, and personality of the aging person. As aging proceeds, the social life space of the elderly tends to constrict and they experience a general curtailment of involvement in the social system, a process which is beneficial to the society and to the individual. Rose (1965) considers that the process of disengagement is not inevitable and not beneficial to the individual, but that American culture forces the development of disengagement. He argues that the growing proportion of older people and common interests and problems among them has caused the development of a subculture of the aged. "Senior Power" has emerged relatively recently. All of these arguments suggest that the elderly tend to segregate from other age groups socially.

Hochschild (1973) and Rosow (1967) found that large residential concentrations of older people are highly functional for their sociability in groups and that the integration of the aged often

leads to social isolation. One previous study indicates that the aged tend to congregate near downtown areas and in those parts of the city where the housing is old (Sheldon, 1958). In rural areas, it was found that there was a definite gradient (low to high) in the percentage of the population 65 and over in three segments--rural population in metropolitan counties, rural population in nonmetropolitan counties with some urban population (2,500 - 10,000), and rural population in nonmetropolitan counties with no urban population (Sheldon, 1967). It was also shown that the concentration of older persons is higher in villages than in the open country in each segment; the concentration of older people increases as the proximity to the urban areas declines; and villages tend to serve as retirement centers for the surrounding rural population. Thus, the segregation by age in rural areas is also considerable.

In this section, the distribution of older population within counties will be analyzed. Based on townships and places as subareas of analysis, two measures are developed.

1. Index of Dispersion: This index is used to measure the distribution of proportions of elderly among subareas in a county. It is operationalized as standard deviation coefficient of percent elderly of subareas from the county average.[4] Subareas of a county

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[4]The formula for calculating index of distribution of degrees of aging is as follows:

$$\frac{\sqrt{\Sigma(X_i-\bar{X})^2/N}}{\bar{X}},$$

Where, $X_i$ = % age 65 and over for townships, villages, towns, or cities:
$\bar{X}$ = % age 65 and over for the county;
N = number of subdivisions.

include incorporated places and townships, thus allowing us to differentiate central places, peripheries of central places, and open country. The population of places is subtracted from the population of the townships. If the township has incorporated places, the remaining population of the township is treated as the population of the peripheries of central places. The townships without any incorporated places are treated as open country. The higher the coefficient the greater the uneven distribution of the elderly (or uneven distribution of aging) in the county. The data for subdivisions are derived from the 1970 census. Information about percent of population age 65 and over for places of less than 2,500 was retrieved from B file of 1970 census first count summary tapes.

2. Index of Dissimilarity[5]: This index is used to measure degree of segregation of older people from the rest of the population. It is operationalized as half of the sum of differences between the population age 65 and over as percentage of total elderly, and the population age 64 and below as percentage of total younger population in the subdivisions. This index means that the proportion of the population has to move from one area to other areas in order to obtain an even distribution. The index is usually used to measure residential segregation (Duncan and Duncan, 1955). It can be used

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[5]The formula to calculate index of dissimilarity is as follows:

$\Sigma(|X_i - Y_i|)/ 2$ where, $X_i$ = population age 65 and over of subdivisions as percentage of county population age 65 and over;
$Y_i$ = population age 64 and below of subdivisions as percentage of county population age 64 and below.

to compare the degree to which the population 65 and over is geographically segregated from the population age 64 and below.

The index of dispersion (aging distribution) uses the population of individual subdivisions as the base to observe the relative concentration of elderly in the county. It does not take into account the number of older people of subdivisions in relation to the county total. It mainly focuses on the comparison of degree of aging among subdivisions. Index of dissimilarity uses the total population of the county as the base to observe the distribution of the elderly in relation to the distribution of younger people. So, it takes into account the number of older people of the subdivisions in relation to the county total. It reflects the overall distribution of older people in the county but does not tell us the degree of aging of subdivisions. Thus, the two measures should capture the settlement patterns of elderly in the counties.

Table 3-7 shows the relationship between types of subdivisions and percent population age 65 and over (or degree of aging). The proportion of the population age 65 and over in the 42 counties was 11.6% in 1970. This percentage is substantially higher than the state average (8.5%) and higher than nonmetropolitan counties as a whole (10.5%). It also shows that the proportion of the population age 65 and over in central places (all incorporated places) is higher than peripheral areas (townships with incorporated places) and open country (townships without incorporated places); and that this proportion in open country is higher than the periphery of centers. There is a clear gradient (low to high) in degree of aging among

Table 3-7.-- Population and percent population age 65 and over by type of subdivisions in Michigan nonmetropolitan counties

| Types of subdivisions | Total population | Population age 65+ | Percent population age 65+ | |
|---|---|---|---|---|
| Township - open country | 258,545 | 28,560 | 11.05 | |
| Township with incorporated place less than 2,500 | 72,933 | 8,971 | 12.30 | |
| Township with incorporated place 2,500 - 10,000 | 43,313 | 4,137 | 9.55 | 10.30 |
| Township with incorporated place 10,000 and more | 32,753 | 2,105 | 6.43 | |
| Incorporated places less than 2,500 | 65,036 | 10,131 | 15.58 | |
| Incorporated places 2,500 - 10,000 | 124,685 | 17,131 | 14.14 | 12.56 |
| Incorporated places 10,000 and more | 137,561 | 13,841 | 10.06 | |
| Total | 734,826 | 85,379 | 11.62 | |

Note: 1. The township categories do not include the population within incorporated places.
2. Township-open country includes unincorporated places.

three types of central places--incorporated places 10,000 and more, incorporated places 2,500 - 10,000, and incorporated places of less than 2,500 people. The same pattern holds true among the three types of periphery ranging from 6.4% to 12.3%. This strongly supports the notion that many villages tend to serve as retirement centers for the surrounding rural population. The smaller the village the higher the proportion of elderly, and the larger the central place the lower the proportion of elderly residing in the periphery.

Table 3-8 shows the relationship between distribution of elderly and community functions. The retirement function tends to be negatively related in the uneven distribution of aged within counties, but is not related to segregation by age. In other words, counties with higher retirement function tend to have an even distribution of aged (proportion of the older population) among subareas. It also shows that if the county has a higher proportion of elderly, all the subareas in that county also tend to have about the same proportion of elderly. But a higher migration rate of elderly is not necessarily associated with uneven distribution of aged. These relationships held true even when migration of the younger population is controlled. Segregation by age does not seem to correlate with the retirement function. Only percent of elderly exhibits a negative sign and elderly migration shows a positive sign. Thus, if any relationship between the retirement function and segregation by age exists, the local elderly tend not to segregate from the younger people, but the migrant elderly tend to be segregated from the rest of the population. This may be true when a retirement village

Table 3-8.-- Correlations between retirement function and distribution of the older population,42 Michigan nonmetropolitan counties

| Retirement function and other functions | Distribution of degree of aging | Degree of segregation by age |
|---|---|---|
| Retirement function | -.24 | -.02 |
| | (-.27) | (-.10) |
| Percent population 65+ | -.33* | -.14 |
| | (-.33)* | (-.17) |
| Net migration rate 65+ | -.09 | .10 |
| | (-.06) | (.08) |
| Net migration rate 30-54 | -.07 | .07 |
| Agriculture | .01 | .04 |
| Manufacturing | -.11 | -.31* |
| Services | .04 | .04 |
| Wholesale and retail trade | -.22 | -.10 |
| Distribution of degree of aging | - | .61 |

* significant at .05 level.

Note: 1. The figures in the parentheses are partial correlation coefficients controlling for migration of younger people (30-54).

is built by developers. Those who move there likely are older people.

Whether the development of other specialized functions has some influence on the distribution of elderly is a question to be asked. Table 3-8 also shows the relationship between other specialized functions and distribution of the elderly. The agricultural and service industries seem to be unrelated to the distribution of elderly, although a positive correlation sign is shown. Manufacturing and wholesale and retail trade tend to correlate negatively with the uneven distribution of the elderly. Especially, a higher manufacturing function tends to associate with a lower degree of segregation. This may be due to migration of younger people to the counties specializing in manufacturing (see table 3-4). Overall, sustenance organization does not exert influence on the distribution of elderly within nonmetropolitan communities.

In conclusion, the overall settlement pattern of the older population in nonmetropolitan areas shows that a higher proportion of elderly live in central places and a lower proportion in the periphery. In either periphery or central places, the smaller the place the higher the proportion of elderly or the higher the degree of aging. However, the unequal distribution of the elderly is not influenced by the sustenance organization of the community nor by the degree of the retirement function. At the same time a higher retirement function of the community tends to associate with lower segregation and lower unequal distribution of degrees of aging. Since higher elderly migration tends to have a slight association with degree of segregation, the segregation may be increased when

more elderly migrants move to the community. But this trend is not yet clear.

Retirement function and socioeconomic status of the community

An important aspect of community characteristic is level of living and/or socioeconomic status of the population. Occupation, education, and income are usually used to indicate individual socioeconomic status (Reiss, Jr. et al., 1961; Blau and Duncan, 1967). Munson (1968) factor analyzed 113 community variables with data from Ohio counties and found one factor which he named "level of living" including many variables concerning educational attainment, quality of housing, good business and economic conditions, occupational level, and good employment opportunities. Bonjean, et al. (1969) also used factor analysis to analyze 79 variables of community structure in all U. S. counties. A socioeconomic status factor emerged. It includes family income, per capita income, several educational variables, white collar occupations, and a number of variables indicative of the quality of housing. In this analysis socioeconomic status of the community will be measured by indicators of income, education, occupation and quality of housing.

Table 3-9 shows correlations between the retirement function and socio-economic measures. The retirement function is negatively correlated with family income and positively correlated with poverty level. The communities specializing in the retirement function tend to have lower educational attainment and lower occupational status (measured by percent managerial and percent sales and clerical occupations). In terms of housing quality, higher retirement function

Table 3-9.-- Correlations between retirement function and socioeconomic measures, 42 Michigan nonmetropolitan counties

| Socioeconomic characteristics | Retirement function | Percent age 65+ | Net migration rate 65 | Net migration rate 30-54 |
|---|---|---|---|---|
| Median family income | -.63* | -.62* | -.46* | -.11 |
| % families below low income | .60* | .56* | .47* | .16 |
| % persons 65+ below low income | .01 | .08 | -.06 | -.09 |
| Median school years completed 25+ | -.37* | -.47* | -.16 | .01 |
| % professional managerial occupation | -.21 | -.16 | -.21 | -.28 |
| Median value of owner occupied housing | -.21 | -.46* | .11 | .36* |
| % sales and clerical occupation | -.27 | -.31* | -.16 | -.12 |
| % persons in housing built in 1960 and later | .36* | -.06 | .68* | .70* |
| % dwelling units having all plumbing facilities | .20 | -.32* | .08 | -.15 |

* significant at .05 level.

Table 3-10.-- Factor loading of socioeconomic status measures, 42 Michigan nonmetropolitan counties

| Socioeconomic measures | factor 1 | factor 2 | factor 3 |
|---|---|---|---|
| Median family income | .92 | * | * |
| % family income below low income | -.97 | * | * |
| Median school years attained 25+ | .80 | * | * |
| % professional and managerial occupation | * | * | .86 |
| % sales and clerical occupation | * | .30 | .76 |
| Median value of owner's occupied housing | .55 | .71 | * |
| % persons in housing built in 1960 and later | * | .90 | * |
| % dwelling units having all plumbing | .54 | .64 | * |
| Eigenvalue | 3.62 | 1.47 | 1.24 |
| Cumulated % variance explained | 45.3 | 63.7 | 79.2 |

* Factor loading less than .30 are not shown in the table.

tends to associate with less expensive housing, and with higher proportions of people living in housing units built in 1960 or later. The communities with higher proportions of elderly tend to have cheaper housing, and smaller proportion of dwelling units with all plumbing facilities. But, communities with a high elderly migration rate tend to have more people living in newly built housing units and not necessarily having all plumbing facilities and not necessarily having expensive housing. The median housing value is more closely related to plumbing facilities than to new housing units (.66 vs. .53). Percent persons in newly built housing units correlates only with percent dwelling units having all plumbing facilities at (.37).

Migration of younger people, on the other hand, does not show a significant relationship with income and education level of the community. And it also tends to associate with low occupational status. In terms of housing quality, migration of younger people is highly related to percent persons in newly built housing, and higher housing value, and again tends to associate with inadequacy of plumbing facilities. Therefore, in fact, the recent migration to nonmetropolitan areas does not serve to raise the level of living and/or economic status of the communities.

In order to understand the structure of socioeconomic status of the community, factor analysis is carried out. The percent of persons 65 and over having low income alone forms a very weak factor and it is dropped from the analysis. As table 3-10 shows, three factors of socioeconomic status emerge with eigenvalue greater than 1. Income and education form a strong factor; housing measures form a

single factor; and surprisingly, white collar occupations form a separate factor. Using factor score coefficients of the three factors, three new variables are developed to indicate socioeconomic status of the community--income, housing and occupation. Then partial correlations between the three variables and retirement function, controlling for migration of younger people are computed.

Table 3-11 shows zero-order and partial correlations between the retirement function and three major factors of socioeconomic status (income, housing, and occupation). The zero-order correlations indicate that the more communities are specialized in the retirement function the lower the income level and the lower the occupational status. Communities having a higher proportion of elderly tend to have a lower housing quality but those having a higher net migration rate of elderly tend to have better housing.

When net migration of younger people is controlled, all three major factors of socioeconomic status are negatively correlated with the retirement function. The correlation between the retirement function and income level is changed from (-.59) to (-.72); and between retirement function and housing quality from (.09) to (-.52). Even the correlation of elderly migration with housing quality is reduced from (.45) to (-.07). Correlation between percent elderly and housing quality is also changed from (-.29) to (-.65). The negative correlation between elderly migration and income level is also strengthened from (-.42 to -.59). It is obvious that the positive correlation between the retirement function and socioeconomic status of the community in some instances is essentially influenced

Table 3-11.-- Correlations between retirement function, three socio-economic status factors,42 Michigan nonmetropolitan counties

| Retirement function and other functions | Income education | Housing quality | Occupation status |
|---|---|---|---|
| Retirement function | -.59* | .09 | -.29 |
| | (-.72)* | (-.52)* | (-.17) |
| Percent population 65+ | -.61* | -.29 | -.27 |
| | (-.61)* | (-.65)* | (-.20) |
| Net migration rate 65+ | -.42* | .45* | -.23 |
| | (-.59)* | (-.07) | (-.04) |
| Net migration rate 30-54 | -.10 | .58* | -.25 |
| Agriculture | -.29 | .08 | -.50* |
| Manufacturing | .10 | -.04 | -.59* |
| Services | .22 | .34* | .29 |
| Wholesale and retail trade | .13 | .35* | .40* |

* significant at .05 level.

Note: 1. The composite index of income and education is obtained by adding the factor scores of factor 1 in Table 3-10 with highest loading (median income, percent low income, and median school years completed).
2. The composite index of housing quality is derived from the factor scores of factor 2 in Table 3-10, composed of three housing variables.
3. The composite index of occupational status is derived from the factor scores of factor 3 in Table 3-10, composed of two white collar occupations.

by the migration of younger people. If no migration of younger people occurred, communities specializingin retirement function would have low socioeconomic status. Occupational status is negatively correlated with the retirement function, but when younger migration is controlled, the negative correlations are reduced. This is hard to interpret because we do not have information about occupational composition of the younger migrants and local residents.

In Table 3-11, correlations between other specialized community functions and socioeconomic status are shown. Communities specializing in agriculture tend to have lower income levels and occupational status. The manufacturing function is also associated with lower occupational status. Both agriculture and manufacturing seem to have no relationship with housing quality. For services and wholesale and retail trade, the correlations with socioeconomic status are generally higher than for agriculture and manufacturing. Housing quality for communities specializing in services and for those with more wholesale retail trade is about the same; but, services tend to associate with higher income and wholesale and retail trade tends to associate with higher occupational status.

In conclusion, communities specializing in the retirement function generally have lower socioeconomic status than communities specializing in other functions. Without migration of younger people, retirement communities would have lower socioeconomic status than otherwise.

Retirement function and functional autonomy

Functional autonomy is defined as the degree to which the community performs a variety of functions for the residents. According to Warren (1963), community is characterized by the organization of functions such as production-distribution-consumption, socialization, social control, social participation, and mutual support on a locality basis. An ideal measure of functional autonomy is to summarize these functions in one or more index. Based on the ecological perspective, sustenance organization is emphasized. Due to data limitations, only the degree to which the residents can obtain goods and services and labor force participation are used to measure functional autonomy. Three measures are developed for this purpose.

1. Index of sufficiency.[6] This index is intended to measure the degree to which residents can obtain goods and services within the community without traveling to other communities. It is measured by taking goods and services per capita for a county, divided by goods and services per capita for the region to which the county belongs. In other words, it is the per capita sales of retail trade and services of the community as a proportion of the average of the per capita sales of retail trade and services in the region. The retail sales and services receipts in 1972 Census of Business and

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[6]The formula to calculate the index of sufficiency is as follows:

$(t_i/p_i)/(T/P)$, where, $t_i$ = sum of county's retail sale and services receipts,

$p_i$ = county's population;

$T$ = sum of region's retail sale and services receipts;

$P$ = region's population

1972 population estimates (Series pc-26) are used to calculate this index. The index is composed of a numerator and a denominator. The numerator indicates the amount of goods and services sold per capita in the county. The denominator indicates the amount of goods and services sold per capita in the region as a whole, which also indicates the average amount of goods and services for the population in the region. If the index is greater than one, there is a surplus of goods and services in the community. If it is equal to one, there is just about the same as the region's average. If it is less than one, there is a deficit of goods and services.

2. Job efficiency: This measure represents the percent of all workers who worked in the county of residence. It indicates the degree to which a community serves as the place of work for residents. The higher the percentage the higher the efficiency of the community in producing jobs.

3. Job opportunities: This measure is simply the percent of civilian labor force unemployed. It indicates the adequacy of employment opportunities in the community. Theoretically, the lower the percentage the higher the functional autonomy of the community in job participation. However, unemployment rate is highly affected by inmigration and the availability of employment opportunities outside the community at a commuting distance.

As table 3-12 shows the retirement function is not associated with the index of sufficiency, but is negatively related to percent of resident working in the county of residence, and positively related to unemployment rate. The percent population age 65 and over

Table 3-12.-- Correlations between retirement function and community's functional autonomy, 42 Michigan nonmetropolitan counties

| Retirement function and other functions | Index of sufficiency | Job efficiency | Job insufficiency |
|---|---|---|---|
| Retirement function | -.04 | -.43* | .24 |
| | (-.32)* | (-.37)* | (.27) |
| Percent population 65+ | -.14 | -.37 | .27 |
| | (-.26) | (-.32)* | (.21) |
| Net migration rate 65+ | .07 | -.36* | .19 |
| | (-.28) | (-.30) | (.27) |
| Net migration rate 30-54 | .27 | -.24 | .05 |
| Agriculture | -.40* | -.59* | -.08 |
| Manufacturing | -.03 | -.06 | -.28 |
| Services | .44* | -.05 | .17 |
| Wholesale and retail trade | .70* | .24 | .04 |

* significant at .05 level.

Note: 1. Index of sufficiency indicates the degree of sufficiency in goods and services.
2. Job efficiency is measured by percent workers working in the county of residence.
3. Job insufficiency is measured by percent civilian labor force unemployed.

and elderly migration have the same pattern of relationship with the autonomy measures, except that there is a positive sign between elderly migration and sufficiency.

However, when the net migration of younger people is controlled, all the relationships are negative. Correlation between the retirement function and index of sufficiency changes from (-.04) to (-.32). Correlation between percent older population and sufficiency changes from (-.14) to (-.26). Even the relationship between elderly migration and sufficiency index is changed from positive to negative (.07) to (-.28). This suggests that without migration of younger people, the residents of retirement communities would have a deficit of goods and services.

With respect to job efficiency in the communities, correlations between the retirement function and percent of residents working in the county of residence are slightly reduced when the migration of younger people is controlled. This suggests that some younger people who move to the counties dominated by the retirement function may commute to other counties to work. In terms of job sufficiency, correlations between the retirement function and percent unemployed are slightly increased as the migration of younger people is controlled. Again it suggests that migration of younger people to retirement communities may reduce the unemployment rate, not because of an increase in job opportunity in retirement communities but because they have jobs outside the community. One exception is that the correlation between percent elderly and unemployment is decreased when migration of younger people is controlled. It may be interpreted that the

outmigration of younger people reflects a high unemployment rate in the community and results in a higher proportion of elderly left behind. Hence when the migration of younger persons is not controlled the correlation between percent older population and unemployment is higher than when migration of younger people is controlled.

Communities specializing in agriculture are those lacking autonomy in access to goods and services and in providing jobs within the community. The agricultural function correlates with the index of sufficiency at (-.40) and with percent residents working in the county of residence at (-.59). The manufacturing function does provide more jobs for the community, shown by the correlation coefficient between manufacturing and unemployment rate (-.28). However, there is almost no relationship between manufacturing and degree of sufficiency in goods and services and job efficiency of the community. In other words, some workers still commute even when their communities have a higher manufacturing function. Services and wholesale and retail trade are correlated with index of sufficiency in goods and services (.44 and .70 respectively). But, service function tends to associate with high unemployment, and wholesale and retail tends to associate with higher proportions of residents working in the local community.

Overall, wholesale and retail trade can be considered as the key variable in determining the functional autonomy of a community, and specialization in agriculture reduces functional autonomy. Hence, more people have to travel to other communities to obtain goods and services, and more people have to commute to other communities to work. Without inmigration of younger people, communities

specializing in the retirement function are in an even worse position because besides less sufficiency in goods and services and less effectiveness in job participation, they are also associated with unemployment.

Retirement function and structural differentiation of the community

According to Warren (1963), the community is the combination of social units and systems which perform major social functions and characterized by the organization of these functions on a locality basis. In other words, community structure is the organization of the social units that perform various functions. Community refers to the structure of relationship through which a localized population provides its daily requirements (Hawley, 1950). The structure of these relationships, from the perspective of social systems, involves the component parts and their patterned interconnections. Changes in certain component parts will alter their patterned relationships, and new relationships will be developed to adjust to the new situation. According to the social system (Parsons, 1961) and ecological approaches (Hawley, 1973), the more prevalent phenomenon of social units change in performance of community functions is the process of differentiation.

Differentiation involves a static condition and a dynamic process. As a state, differentiation refers to the degree to which units in a system are structurally distinct and functionally specialized. As a process, it is the emergence of more distinct units to fulfill more distinct functions. To illustrate the concept, we may take the

physiological processes in the structure and function of cells during the development of an organism--from the simple and resemble cells to the more complex and specialized units. When this conception is applied to the social system, differentiation in the structure and function of certain social units demonstrates the process of society. In terms of community structure, the degree of structural development can also be understood in terms of differentiation of organizations and service agencies. Social phenomena are not as concrete as biological phenomena. The state and the process of development cannot be easily observed. Development is highly dependent upon the definition and criteria used. Nevertheless, the basic concepts involved in differentiation are "units" and "functions." Thus, the question becomes how to define units and functions of the system under study. When all the communities are ranked, based on certain criteria of development, a growth pattern may be discovered. A common method to discover the growth pattern of community social units is Guttman scale of organizations or establishments (Young and Young, 1973). A Guttman scale of structural differentiation for all U. S. counties was developed by Stuby (1976) based on County Business Patterns Data File, 1969 and 1973. The scale contains 16 commercial functions, ranging from automative equipment (wholesale) at the bottom end of the scale to furriers and fur shops at the top end of the scale. According to the County Business Patterns Data, the scale scores for the 42 counties under study were calculated by assigning the value "one" to each function represented by one or more establishments in a county and value "zero" to each function not represented. Each

county's total score was the summation of the zero-one value across the 16 commercial functions in the scale. The scale is shown in table 4-3 in the next chapter in which a detailed discussion of measurement and its problems in examining development process in the community is presented.

Since a Guttman scale is constructed based on the idea of a cumulative hierarchy, each item represents the existence of all lower valued items plus the item itself. A general growth pattern must be able to interpret the static structure and dynamic process of development. However, the usefulness of Guttman scale in understanding dynamic process is limited. In the description of static structure, however, it still has some merits. The scale scores used in this section indicate the institutional complexity of the community in reference to the pattern of all U. S. counties.

In the discussion of functional autonomy in the last section, it was concluded that communities highly specializing in the retirement function have low sufficiency in goods and services, have fewer job opportunities, and a low proportion of people working in their own communities. Hence, low structural differentiation is expected. Table 3-13 shows the number of counties by degree of retirement function and structural differentiation. The development of communities highly specializing in the retirement function reach only the fifth step--paint, glass and wallpaper stores, shoe stores, jewelry stores, women's wear stores, and automotive equipment. One of them does not even have any of these functions. Among eleven counties specializing in retirement function (within one standard deviation), one county

Table 3-13.-- Number of counties by retirement function and structural differentiation, 42 nonmetropolitan counties

| Degree of retirement function | Scale steps of differentiation 1969 | | | | |
|---|---|---|---|---|---|
| | 0 | 1-5 | 6-10 | 11-14 | total |
| Highly sepcialized | 1 | 6 | 0 | 0 | 7 |
| Specialied | 1 | 8 | 2 | 0 | 11 |
| Not specialized | 0 | 11 | 8 | 5 | 24 |
| Total | 2 | 26 | 10 | 5 | 42 |

Note: 1. Highly specialized in retirement function if retirement function index greater than one standard deviation from mean; specialized if retirement function index greater than mean within one standard deviation.
2. Differentiation scale is based on Stuby's (1976) Guttman scale of commercial differentiation. See Table 4-3.

Table 3-14.-- Correlations between retirement function and structural differentiation, 42 Michigan nonmetropolitan counties

| Retirement function and other functions | Guttman scale of differentiation | |
|---|---|---|
| | 1969 | 1973 |
| Retirement function | -.48* | -.46* |
| Percent population 65+ | -.46* | -.48* |
| Net migration rate 65+ | -.37* | -.31* |
| Net migration rate 30-54 | -.28 | -.22 |
| Agriculture | -.39* | -.45* |
| Manufacturing | -.04 | .01 |
| Services | .16 | .18 |
| Wholesale and retail trade | .43* | .42* |

* significant at .05 level.
Note: 1.Guttman scale of differentiation see Table 4-3.

reaches step 10 (Dickinson county), and one reaches step 6 (Gobebic County). All of the rest remain in the step 5 category and below. In contrast, some counties not specializing in the retirement function reach the step of development beyond 10 in the national scale. It is clear that the retirement communities in nonmetropolitan areas tend to be less differentiated.

Although scale scores derived from Guttman scale are not continuous, the Pearson correlation can still show the direction of the relationship. Table 3-14 shows Pearson correlation coefficients between the scale scores of differentiation (1969, 1973), and specialized community functions. The result is the same as shown in table 3-13. Retirement function is negatively associated with differentiation. Surprisingly, net migration of younger people is also negatively correlated with structural differentiation. As expected, agriculture is negatively associated with differentiation. Manufacturing does not show a clear relationship and only wholesale and retail trade has comparatively high correlations with differentiation.

## Differential importance of the community characteristics related to the retirement function

Since the correlations between retirement function and each community characteristic discussed above are different, there is a differential importance among variables to characterize the community specializing in the retirement function. Table 3-15 summarizes the zero-order correlation coefficients in rank order of these variables in relation to the retirement function, percent population age 65 and over, and elderly migration. The lower the number the higher

Table 3-15.-- Rank orders of relationships between retirement function and community characteristics,42 Michigan nonmetropolitan counties

| Community characteristics | Retirement function | % population 65+ | Net migration rate 65+ |
|---|---|---|---|
| 1.Agriculture | 11 | 13 | 12 |
| 2.Manufacturing | 16 | 17 | 19 |
| 3.Services | 18 | 19- | 17 |
| 4.Wholesale and retail trade | 14 | 17 | 11 |
| 5.% social security income | 2 | 1 | 3 |
| 6.% self-employed nonfarm income | 3 | 5 | 2 |
| 7.% salary and wage income | 1- | 2- | 1- |
| 8.Degree of urbanization | 4- | 4- | 4- |
| 9. % rural nonfarm population | 6 | 5 | 6 |
| 10. % rural farm population | 9 | 14 | 6 |
| 11.Distribution of degree of aging | 12- | 9- | 16- |
| 12.Segregation by age | 19- | 15- | 15 |
| 13. Income and education | 5- | 3- | 6- |
| 14.Housing quality | 15 | 10- | 5 |
| 15.Occupational status | 10- | 11- | 12- |
| 16.Sufficiency in goods and services | 17- | 15- | 18 |
| 17.% resident workers | 8- | 8- | 10- |
| 18.% unemployment | 12 | 11 | 14 |
| 19.Structural differentiation | 7- | 5- | 9- |

Note: Negative sign denotes negative correlation.

the rank of correlations. A negative sign is shown for those having negative correlation. The source of income can be considered the most important variable which can be used to characterize retirement community, followed by degree of urbanization, income, and percent rural non-farm population. Structural differentiation, job efficiency (percent of resident workers), and percent rural farm population are also important. The ranks below 15 (housing quality)which are those correlated with the retirement function less than .10 can be considered not important in characterizing the retirement communities in nonmetropolitan areas. These include manufacturing, services, sufficiency in goods and services, and segregation by age.

For communities having higher proportions of older people and not necessarily having elderly inmigration, source of income is also very important in characterizing the community; but, urbanization and income level are more important than self-employed non-farm income; and structural differentiation is as important as self-employed non-farm income and as percent rural non-farm population. Those not important include manufacturing services, sufficiency in goods and services, wholesale and retail trade, and segregation by age.

For communities having higher rates of elderly migration and not necessarily having a higher proportion of elderly, all sources of income are important although social security income is less important than self-employed income. Housing quality, urbanization, percent rural population, and income level are of almost the same importance. Manufacturing, services, distribution of degrees of aging, sufficiency in goods and services, and segregation by age can

be ignored in characterizing the communities with higher rates of elderly migration.

## Conclusions

This chapter is focused on the general characteristics of the communities specializing in the retirement function. Based on ecological and social systems approaches to community, six major categories of community characteristics are examined--sustenance organization, urbanization, settlement pattern, socioeconomic status, functional autonomy, and structural differentiation. The relationships between retirement function and these characteristics are used to indicate the community characteristics associated with the retirement function. Thus, the characteristics derived are not used to describe a particular retirement community in nonmetropolitan areas, but rather, they represent a general tendency or a set of general characteristics for this community type. By using correlation coefficients between retirement function and the major characteristics, the degree to which the characteristics are relevant to the development of retirement function can be identified.

It is found that the retirement function is one facet of specialized community functions, independent of agriculture, manufacturing, and services. A slight correlation between the retirement function and agricultural and wholesale and retail trade suggests that the retirement function tends to develop in the areas with a higher degree of rurality and with some trade centers. This is confirmed by the settlement pattern of older population--higher proportion of older people in central places; and the smaller the place

the higher the proportion. Even the peripheries of central places (villages, towns, and cities) also show that the smaller the place the higher the proportion of elderly in the peripheries. Although central places have a higher proportion of older persons than peripheries and open country, open country has higher proportions than peripheries.

Accordingly, retirement communities in nonmetropolitan areas are characterized by a lower degree of urbanization and higher proportion of non-farm and farm population. However, when migration of younger people is controlled, a higher proportion of elderly tend to be associated with higher proportion of non-farm population but not with rural farm population; while elderly migration does not show a clear pattern of relation. This suggests that locations for elderly inmigration are more selective.

The tendency for the development of the retirement function in remote areas is not associated with a higher degree of unequal distribution of older people and degree of segregation from the rest of the population within communities. Only communities with higher proportions of elderly show a more even distribution of aging among subareas. Although the retirement function is not associated with segregation by age, the proportion of elderly shows a negative relation and elderly migration shows a positive relation with segregation. Segregation may increase if more elderly migrants move to the community.

Social security income is an important source of sustenance for the population in communities specializing in the retirement

function. Self-employed non-farm income is also very important. On the other hand, lower proportion of wage and salary income is associated with a higher degree of retirement function. This suggests that small scale business dominates the economy.

Therefore, socioeconomic status of communities specializing in the retirement function are generally characterized by lower income and educational levels, lower occupational status, and poorer housing conditions. Although elderly migration is positively correlated with housing quality, the relationship is purged when migration of younger people is controlled.

Communities specializing in the retirement function are also characterized by a lower structural differentiation. However, the retirement function does not show a clear relationship with functional autonomy, although generally the relationship is negative. The community cannot be characterized by a low degree of sufficiency in goods and services, but, can be characterized by a lower job efficiency because a higher proportion of people commute to other communities to work, and there is a slight relationship between the retirement function and unemployment rate. When migration of younger people is controlled, all the functional autonomy measures become negatively correlated with the retirement function. Among other sustenance activities, wholesale and retail trade stands out as the most important variable in determining the functional autonomy and structural differentiation. Thus, migration of younger people and wholesale and retail trade are the important intervening variables between the retirement function and community characteristics.

However, to characterize communities specializing in the retirement function we must allow the intervening variables to operate because in reality we are not able to isolate their impact. By using zero-order correlation, the communities specializing in retirement function can be characterized by sources of income, degree of urbanization, income, rurality (percent rural non-farm and farm population), structural differentiation, and percent resident workers (job efficiency), but cannot be characterized by other specialized functions (manufacturing, services), housing quality and segregation by age.

# CHAPTER IV

# IMPACT OF THE RETIREMENT FUNCTION ON THE DEVELOPMENT OF RURAL COMMUNITIES

## Introduction

Given the community characteristics associated with the retirement function discussed in the last chapter, to what extent can communities specializing in this function develop? This is the question to be examined in this chapter. Based on the characteristics discussed in the last chapter, we may immediately jump to the conclusion that communities specializing in the retirement function in rural areas cannot experience substantial development and growth because their functional autonomy, socioeconomic status, and differentiation are low, and sources of income are more associated with social security than wage and salary. In fact, as you can see later in this chapter, the retirement function (especially elderly migration) is an important factor influencing the growth of rural communities between 1970-75. In other words, the disadvantageous base in 1970 did not impair their development in the '70s.

Changes in community characteristics over time cannot be justified as representing development or growth. For example, change in sources of income which is important in retirement communities cannot be used to indicate the development or growth of the community. Thus, conceptualization of development and growth must be different from general characteristics of the community. In this chapter two

aspects of the development of the community examined are population growth and changes in structural differentiation.

According to the structural functional perspective, the concept of development or growth of a community can be analogous to the biological process of growth in an organism. Growth refers not only to a quantitative increase but also a qualitative structural change. A quantitative change may not necessarily cause a change in the structure, while any change in the structure will always bring about a quantitative change. Therefore, structural change is considered a real change. The structure of a system is a set of component parts and their patterned relationships. The growth of a system is conceptualized as the process of differentiation among these components. Since a community is the combination of social units and systems which perform major social functions and is characterized by the organization of these functions on a locality basis, as defined by Warren, development of a community is essentially related to the process of differentiation among those social units performing social functions.

Parsons (1961) considers that the primary conditions for differentiation are the opportunity factor, a demand or need factor (source of disturbance), restructuring of the local community, and the development of more general complexes of institutionalized norms which apply not only to one collectivity structure but to many. That is, there is a tendency toward growing "systemness" in standards of performance or achievement, and in normative control. From an ecological perspective, population itself constitutes a need or demand structure in the community and can be the source of disturbance.

However, changes in population can also be regarded as a demographic response to variation in sustenance organization or in the social system in general. Thus, population growth or decline is an indicator of change in socioeconomic, ecological or other social factors when demographic variables are controlled. An examination of population growth and structural development should capture the major aspects of the development of a community.

Elderly persons are different from the rest of the population. The increasing proportion and number of the older population should have a profound impact on community structure, the functions which social units perform, and the ways these social units are organized. The influence of the retirement function on community development and growth has to be mediated through the organization of social units and the functions they perform. To understand the growth or development process, these intermediate variables must be examined. Economic base theory, central place theory, and structural symbolic theory are used to derive intermediate variables related to the development process.

## Theoretical Background of Community Development and Change

From an ecological perspective, sustenance activities are the major concern of the community, and these activities are closely related to the economic pursuits of the population. Areal specialization in certain sustenance activities (key function) and internal specialization in the community (differentiation) are the most common features in ecological systems. Economic base theory is

developed to understand how specialized export industries affect community growth. Central place theory is focused on the formation of the central place system based on trade between central place and the hinterland. The two theories should capture the impact of sustenance activities on community growth. However, the two theories do not take into account the impact of social systems, and social structure in general. A structural-symbolic approach proposed by Young and Young (1973) attempts to examine the development process in terms of internal structural differentiation, solidarity movement, and relationship with larger systems. Thus, the synthesis of the three theories should provide an holistic and comprehensive view of community growth.

Economic base theory

For the community as a whole, it is argued that basic export industry is the key to economic strength of the community and expansion along basic lines usually causes a further growth in service activities, and thus growth in the total economy (Isard and Kavesh, 1961). The development of economic base in community involves a multiplier of growth effect (Hoyt, 1954). The reason is very simple. The existence of institutions or establishments requires the support of residents. Income is the most important factor determining the purchasing power of the residents, and employment determines the main source of income. If all the population in a community engages in the supply of goods and services only for local consumption, (that is, the production and exchange in the sustenance organization is carried out only among units within the community), the

purchasing power of the community cannot be increased because demand and supply tend to be fixed at a certain level due to the constant population and limited resources in a given period of time. While the basic export sustenance organizations can stimulate an increase in the purchasing power of residents by producing goods and services for exchange with the outside and by providing more employment, the demand for the goods and services is not limited to the local population and the return from the exchange brings in new money to stimulate further growth. Therefore, in the regional development, especially the urban economy, the basic export industries play an important role (Thompson, 1965).

Among basic export industries, manufacturing is considered the most important factor which causes economic growth in a community. The importance of industrialization in an area is emphasized because increased population and diminishing returns extractive industries have forced a shift to manufacturing, which along with the advance of technology and innovation of new production, can expand again and again. Thus, it seems to be the only way to maintain sustained growth.

Only basic export business alone, however, cannot guarantee further growth. A sustained growth can be maintained when the local service activities are developed along with the development of basic export activities. The expansion in local services, when differentiated enough to meet the needs of the residents, permits the purchasing power to be maintained within the community. Once the sector develops further and can provide goods and services not only

for the local population but also for the hinterland, the economic strength can be well maintained.

According to Thompson (1965:15-16), the development of a community's economy includes four stages: export specialization (a single firm); export complex (diversed industries); economic maturation (the principal expansion of local activity is the direction of replacing imports and local economy fills out the range and quality of both business and consumer services); and regional metropolis (the local economy tends to control neighboring cities and to export business service which becomes a major economic function). The maturing industries in which the production process becomes rationalized and routinized, and economic elasticity is low, begin to filter-down to the smaller areas with cheaper labor. This is what Thompson calls, "A filtering-down theory of industry location" (Thompson, 1968, 55-57).

Since rural areas are dominated by extractive activities, especially by agriculture, the export industry is unable to generate the multiplier effect on the growth of the community. The filtered-down manufacturing industries may contribute a certain level of development. However, these decentralized industries have routinized activities and are always controlled by the regional metropolis. Their contribution to rural communities is not comparable with urban centers. Therefore, economic base theory is more applicable to the growth of urban than rural communities.

Central place theory

Central place theorists (Christaller, 1933; Berry, 1961, 1967) argue that the functional importance of a place in terms of how much goods and services are provided by the place in the region will determine the extent to which a place will grow. Differential importance of functions among places constitutes a hierarchical system in a region. This hierarchical system produces constraints on the development and growth of places of lower rank.

The major concepts in the theory are central functions (goods and services), economic distance, the range of goods or services, and population. Central functions refer to goods and services the central place provides in a region. Central place is not merely the amount of people and area but also the combined efforts of inhabitants with which the town exercises control over functions in the region. Among the central functions of a place, a part must be carried out for the place itself and another part for the region. Those for the surrounding region become the surplus of importance of the central place and indicates the degree to which the place is central. In other words, a place is central because there is a surplus of functional importance. The opposite of surplus of importance is deficit of importance. Places or areas with a deficit of importance make up the complementary region which relies on the supply from the places with surplus of importance. The greater the surplus of importance of a central place, the larger the size of its complementary region. The relationship between central place and hinterland constitutes a hierarchical system of central places.

Each type of central goods has its own typical range and economic distance. Economic distance is the distance up to which the dispersed population will still be willing to purchase a good offered at a central place. It involves transportation cost, time, security and convenience. The range of a good refers to the extent to which goods or services can be served. The minimum amount of consumption of central goods needed to pay for the production, or the minimum number of consuming units necessary to support its sales, set what Christaller called the lower (or inner) limits of the range of a good. In contrast to lower limit of the range, an upper (or outer) limit of the range is determined by the farthest distance (economic distance) from which the central goods can be obtained from this central place. If only the population of town and inner range are attracted to the particular goods or services, then income will just cover expenditures, and there will be no profits. The profits are created only by the purchase by the population in the area between lower and upper limits of the range. It is these profits which are decisive for the development and growth of a central place. The complementary region in the difference between higher and lower limits of the range significantly influences the development of a central place. Thus, the population structure of the hinterland which determines the economic distance becomes an important factor influencing the development of central places.

Changes in the offering of central goods, population of the region, production costs, organization of central goods, and transportation facilities have a significant impact on the system of

central places because these changes will alter the economic distance and range of the central goods. For example, if there is a general decrease in income of the population in a region, the purchasing power will be lowered and the consumption of central goods will be reduced. A decrease of population will cause smaller places to decline or even die out, while the importance of other central places might be increased because of the increase in demand of central goods following the death of smaller central places. This may be the reason why some central places in the declining counties are still growing.

Increase in production costs and in scale of operation, (therefore, high capital investment), always force a higher centralization of production and move the central goods to the places of higher order. Technological progress, accompanied by an increase in division and specialization of labor, and substitution of more efficient labor for human and animal labor, force a shift of the more individual type of production at dispersed places to the more centralized and mechanical type of production of central goods. Increasing specialization generates a need for exchange. The larger places with more goods and services become more favorable for exchange than smaller places. Along with the technical progress, the improvement in transportation facilities, better roads, and faster automobiles, enable people in the dispersed areas to journey to larger centers to obtain more types of central goods. Thus, the economic distance is shortened. The small places are most vulnerable in this process of change. Therefore, as Berry (1967) noted,

the increased scale of retailing and emergence of chainstore operation plus improvement of transportation, has fostered the centralization of central goods, which has generated a process of differential growth of places: the smallest centers vanish, the intermediate size places suffer a relative decline, and only the larger centers grow.

This development is not only because of increased scale of operation and improvement of transportation, but also because people are attracted to larger centers and are willing to travel longer distances. If most people are not willing to travel to purchase goods and services at larger centers, no matter how the transportation is improved, the centralization of operations may not be necessary because people still buy their goods and services in the local community. If this is the case, the small centers can be maintained. Older people are less mobile than younger people. The economic distance for goods and services demanded by older people will be shorter. Therefore, the communities specialized in the retirement function, even if it is a small town or village can be maintained without following the same pattern of growth as proposed by central place theorists. The development of the retirement function in rural communities may be the only hope of maintaining small towns or villages in the process of great change.

## The structural-symbolic approach to community growth

Young and Young (1973) have formulated a comprehensive scheme to study community growth, based on what they call a symbolic approach. In general, symbolic structure contains three dimensions:

focus, diversity, and inclusiveness of symbols. In any social system, the three dimensions are translated into solidarity, differentiation, and centrality to maintain or handle the symbols. When the three concepts are applied to community growth, differentiation is defined as the number of specialized social symbols maintained by a community. Centrality is viewed as the access that the community has to a region, or the degree to which the symbols of the subsystem are "congruent" with those of the system. Solidarity is seen as the state of mobilization and focus of social symbols in the community.

The Youngs treat differentiation as the growth dimension of a system, or the end result of the system. The growth dimension is conceptualized as cumulative or developmental, something related to the concept of evolution. The basic assumption is that development follows certain steps, every step represents a particular type of structure. When a community grows from one step to another, its original structure must be changed, and new elements, roles, and collectivities are added. With the concept of cumulative growth, Guttman scale of social symbols (institutions and organization items) is used and becomes the typical mode of measurement in this approach.

Differentiation has been explored in a variety of aspects such as institutional specialization, institutional standardization, and institutional linkages. But, emphasis is placed on institutional specialization. Information about the presence or absence of a hardware store, post office, a high school, etc. is collected. A scale of specialization within each institutional sector--economic,

political, recreational, and health--can be developed.

Centrality is considered the immediate cause of community growth. The degree of centrality determines the degree to which the community has access to the collective strength of all communities in the region. Thus, centrality not only represents the position of a community in a network of communities, but it also implies certain dominance or subordinance in a hierarchical system among communities. The measure of centrality is divided into subsystem-oriented and system-oriented. Subsystem-oriented refers to the network consisting of the linkages among communities. System-oriented refers to an assessment of the degree to which each community is represented in a larger system. The centrality of symbolic inclusion is distinguished from locality centrality (or network of communication). The degree to which institutions which are particularly important in the regional structure such as agricultural extension offices, branch of a national bank or industry appear in the communities are indicators of centrality.

Solidarity is the degree of focus of social symbols maintained by a community, and mainly refers to the solidarity movement of particular groups of people or the whole community. It serves as an explanation for the continuing differentiation and the mobilization of the symbols to focus. The appearance of a fence around the village (boundary identification), strikes (mobilization of symbols by labor union), protests, and social movements, for example, are considered the indicators of solidarity of the community.

When communities are considered as subsystems and region as the system, using the three variables, a development process or sequence is formulated as follows: a higher ratio of differentiation to centrality will generate the solidarity movement which causes an increase in centrality; in turn, centrality generates a higher degree of differentiation; and this raises the ratio of differentiation to centrality. The growth process starts over again. When differentiation is relatively higher than centrality in the subsystem, the appearance of a subgroup with a diversified symbolic structure gives a greater capacity for handling a wide range of social communication. But low relative centrality makes it impossible to achieve an adequate range of communication. The subsystem turns to internal communication among its own sectors. This leads to intensification of communication among the social units in the subsystem. The solidarity of the subsystem then increases to identify a particular enemy or target, and to gain recognition in the regional system. Thus, the communication between subsystem and system increases (centrality increases). When the subsystem is placed into communication with a wider range of institutions in other communities, the process of diversification must occur. In order to handle the transaction of symbols with outsiders, specialization develops within the community. An increase in subsystem differentiation contributes to the stock of specialized institutions that constitute the differentiated structure of the regional system. Once the level of differentiation of the system increases, all the subsystems will benefit and develop further.

In general, the symbolic structural theory is an holistic approach to community growth. But the abstraction of the concepts create a lot of difficulty in their operationalization. Whether an increase in level of differentiation of the system will benefit all the subsystems without taking into account the distribution of benefits is still questionable. However, the basic concepts of differentiation, centrality, and solidarity provide a useful guideline for case study and for the comparative study examining the initiation of the institutions or social units that perform the functions in communities. With this framework, it can be inferred that if elderly migration and the increasing proportion of older population cause awareness among local people, the solidarity movement reflected in the emergence of planning units for the elderly or the appearance of information about elderly migrants in local newspapers, will generate the development process. The question of why some communities are aware of the problem of elderly and initiate action programs, as the theory suggests, can be explained as due to a higher ratio of differentiation to centrality.

In the Youngs' formulation, centrality in terms of linkages with the larger system is emphasized, although some concern of subsystem-oriented linkages are indicated. Eberts (1971) makes this emphasis more explicit which fits a middle-range approach. Instead of using centrality, he considers that the linkages of the community through the larger formal organizations such as branches of larger corporations, government, and other types of voluntary institutions will stimulate the growth of nonmetropolitan communities. He

insists that the fundamental stimulus to social change in nonmetropolitan communities is the appearance of new formal organizational linkages between communities. If this is the case, elderly migration must bring about more linkages which will not likely be the branches of larger corporations, but will likely take the form of governmental welfare programs, health programs, branches of voluntary organization, and industries which are supposed to serve older people. These formal linkages with outside systems cause an increase in community's centrality (access to the larger systems), and thus an increase in differentiation. In other words, more support from outside systems or larger systems will generate further development of the communities. This will be especially true for communities specialized in the retirement function.

Summary of variables to be examined

The theories of community growth and development reviewed above provide the conceptual scheme for selecting variables to be examined. Although economic base theory is more concerned with the growth of urban economy, one concept derived from this theory can be used in examining the growth of rural communities, namely, specialization of certain export industries, which is exactly the same as what human ecologists try to investigate--sustenance organization, discussed in chapter 3, includes specialization of community function in agriculture, manufacturing, services, and retirement. Wholesale and retail trade is more dependent on these functions. All of these constitute the economic base activities and local consuming activities. With these specializations as independent variables,

population growth and structural differentiation will be examined.

Central place theory is largely concerned with differential growth of communities in rural areas because it places a special emphasis on trade centers and consuming goods and services. It provides the concept of hierarchical system of places which suggests that the growth of a place is conditioned by the hierarchical system and influenced by the population in surrounding areas. All of the strength derived from surrounding areas is reflected in the population size of the central place. In other words, population size of the central place is the result of the operation of the central place system.

Another dimension of central place is the kinds of function and services central places can provide. The greater the variety of functions a place can provide the greater the tendency for the place to grow. The increasing proportion and number of elderly in the community will affect the growth of a central place. At the same time, the hierarchical system of central places will also place a constraint on the development of the communities specialized in the retirement function. Thus, the overall centrality of the largest place in the county will be used as an intervening variable in examining the impact of the retirement function and elderly migration on community growth.

Symbolic-structural theory provides a holistic view of the community development process. It suggests what we should look at in terms of major dimensions of community structure. Will the increasing proportion and number of elderly in the community cause an

increase in the awareness of local people's awareness of the problems of aging and cause them to try to initiate action programs? To what extent do those kinds of solidarity movements raise levels of centrality and linkages, and therefore generate the differentiation process? Because of data limitations this study does not attempt to examine these questions. Instead, by using these questions as underlying assumptions, the impact of retirement function on structural change is examined.

According to the symbolic-structural theory, centrality or linkages is the direct cause of differentiation, and centrality is mainly derived from the access that the community has to the larger system. However, centrality emphasized by the central place theorists is the strength or support derived from the hinterland by providing goods and services. Thus, centrality itself has two major sources: one is from the access to the larger system, and the other is from the access to other subsystems. Because of the detachment of elderly from labor force participation, the community specializing in the retirement function has a curtailed ability to provide goods and services for its hinterland. The major source of income of the retired person is social security payments, pensions, and savings, which are not derived from the subsystems, but from the larger system. Also, communities specializing in the retirement function tend to have access to service programs for the aging from the state and federal governments and from voluntary organizations at national and regional levels. In other words, the development of retirement communities depends upon the support from larger systems. Thus,

this study will focus only on the linkages or centrality derived from larger systems related to services to the aging, and examine how this aspect of the community contributes to the growth of the community.

The peculiarity of the retirement community in its deviation from the process of central place system, of course prevents it from following the same pattern of growth as proposed by central place theorists. Since incomes of elderly are usually lower and their living scale has been reduced, larger scale businesses such as hospitals and other industries may not be attracted to the retirement community in rural areas. The small, self-employed business is the major form of business in such communities. Although the demand for housing will attract real estate business to the area, such services may be an extension of the business in larger centers. An increase in the elderly population in the villages may contribute to the growth of larger centers providing these services which are not available in smaller centers. Thus, the communities with a larger center will benefit more than those without larger centers. Elderly inmigration and increasing proportion of elderly which will increase the centrality derived from the larger systems, will maintain the population growth in the community, but will not necessarily cause an increase in structural differentiation in that locality.

In summary, the intermediate and intervening variables to be examined in the relation between the retirement function and community growth are specialization of economic base, centrality of central places, and aging-related centrality.

## Population Growth and Structural Development

### Population growth in nonmetropolitan Michigan

Population growth and change in structural differentiation are used as dependent variables in the examination of development of communities specializing in the retirement function. In Michigan, the population growth rate between 1960 and 1970 was 13.5% (1.4% yearly). This rate between 1970 and 1975 was reduced to 3.1% (.6% yearly). For nonmetropolitan areas (based on 1970 definition), the growth rate was 11.2% in 1960-70 and 9.5% in 1970-75. For the 42 counties under study, nonmetropolitan not adjacent to a metropolitan area, the growth rate for 1960-70 was 9.8% and for 1970-75 was 12.8% (2.5% yearly). This reflects the reversal of the population growth in remote areas, which has been documented in many studies (Fuguitt and Beale, 1976; Beale, 1975). The extent to which the recent growth in nonmetropolitan nonadjacent counties was affected by the development of the retirement function will be examined in this chapter.

The growth rate of the population between 1970 and 1975 are treated as the dependent variable. The retirement function which is measured by percent population age 65 and over in 1970, and net migration rate of elderly in 1960-70 is used as the major independent variable. The sustenance organization related to the specialized economic base are used to compare their independent effect on population growth. The population of 1975 (July, 1975) is derived from Current Population Report P-26, #75-22, prepared by Office of the Budget, Michigan Department of Management and Budget, in cooperation with U. S. Bureau of the Census. Because of the simplicity

of the measurement, no further discussion of the variable is necessary.

Structural development in nonmetropolitan Michigan

Differentiation is both a state and a process. As a state, differentiation can be defined as the number of structurally distinct and functionally specialized units in a system. A social system is, therefore, internally differentiated to the extent that it has numerous specialized roles and collectivities. As a process, it is the emergence of more distinct organizations to fulfill more distinct functions. When differentiation is applied to community structure and development, as a state, it refers to the number of structurally distinct and functionally specialized social units (organizations, establishments, or many people call institutions). As a process, it refers to the emergence of new social units performing specialized functions. According to symbolic structural theory, differentiation refers to specialized social symbols maintained in the community, and is conceptualized as cumulative in nature.

In Warren's discussion of community units and functions, the locally relevant functions are emphasized. The discussion of sustenance organization and social system concluded that community is the organization of social units performing social functions which involve the specialization of key functions of community for the exchange for other sustenance, and the internal differentiation of social units in performing major social functions for the residents of the community. Specialization of key functions is essentially related to the concept of economic base. As a matter of fact,

community units include those performing the function of economic base and those performing the function of local consumption or system maintenance. According to economic base theory, local service businesses are dependent upon the basic export business. Symbolic-structural approach taken by the Youngs shows a greater tendency of differentiation toward commercial activities in the community. And central place theory also tends to focus on goods and services for immediate consumption in the locality and hinterlands. Factor analysis in the last chapter also indicates that wholesale and retail trade is dependent on other specialized activities such as agriculture, manufacturing, and services. All of these suggest that the end result of development is focused on the growth of locally relevant functions--stores, shops, and service centers, but not factories, farms, or some organizations which serve the larger systems or the societal level in general. Those performing local functions are the outlets of production or functions of those performing for the larger society. Hence, in constructing differentiation scale and process of development at community level only the locally relevant activities (local service business) will be used as indicators. To measure differentiation, this study will use a simple count of types of establishments or institutions listed in Dun and Bradstreet Reference Book in 1970 and 1975. Locally relevant functions are indicated by the types of establishments in construction, transportation and communication, wholesale and retail trade, and service business. Because of the lack of data, those locally relevant functions such as mutual support, social control, socialization, and social participation suggested by Warren (1963) are not measured. In the

last chapter, it was shown that service industry is one of the specialized functions of the community. But, intrinsically, some service functions are more locally-relevant such as laundries, auto repair and service, etc. Hence, only those locally-relevant are selected, and as a consequence, motels, hotels, sport and recreation camps are excluded.

Only the largest places in the counties are used as the geographic units for collecting the data. It is assumed that central places are the loci of most institutions or establishments. Changes in the community will be reflected by changes in community centers. Hawley (1950:180) notes that community refers to the structure of relationships through which a localized population provides its daily requirements; and community center becomes a settlement specializing in services and administrative functions. The community center is the nucleus or point of concentration for interrelationships among social units in the community. Thus, we focus on the investigation of the largest place in the county.

In addition, a Guttman scale of commercial differentiation developed by Stuby (1976) based on the data from County Business Patterns, 1969 and 1973, for all counties in the U. S. will be compared. Both Dun and Bradstreet Reference Book and County Business Patterns classify the business based on Standard Industry Codes published by U. S. Department of Management and Budget.

By using 4 digit Standard Industry Codes, types of functions are counted. Table 4-1 shows means and standard deviations of a number of locally relevant industries, which is the total count of

Table 4-1.-- Mean and standard deviation of number of functions in locally relevant industries, 42 Michigan nonmetropolitan counties

| Industry* | July 1970 | | July 1975 | |
|---|---|---|---|---|
| | Mean | Standard deviation | Mean | Standard deviation |
| Construction | 6.38 | 3.27 | 7.29 | 4.66 |
| Transportation communication | 3.52 | 2.75 | 4.19 | 3.34 |
| Wholesale | 9.50 | 8.03 | 11.07 | 8.95 |
| Retail trade | 30.79 | 12.28 | 30.81 | 12.21 |
| Services | 8.29 | 5.69 | 7.64 | 5.97 |

* Total county of all types of industries listed in Dun and Bradstreet Reference Book, July 1970 and July 1975.

Table 4-2.-- Frequency of functions added and dropped during 1970-1975 Michigan nonmetropolitan counties

| Industy | Number of selected functions | Functions dropped | | | Functions added | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3=1/2 | 4 | 5 | 6=4/5 |
| Construction | 9 | 17 | 6 | 2.9 | 1 | 1 | 1 |
| Transportation & communication | 10 | 9 | 3 | 3.0 | 20 | 7 | 2.9 |
| Wholesale | 25 | 35 | 10 | 3.5 | 26 | 12 | 2.4 |
| Retail trade | 54 | 73 | 21 | 3.5 | 73 | 23 | 3.2 |
| Services | 17 | 20 | 7 | 2.9 | 22 | 8 | 2.7 |
| Total | 115 | 154 | 47 | 3.3 | 142 | 51 | 2.8 |

Note: (1) and (4) indicate frequency of decrease or increase of the functions in particular industry;
(2) and (5) are the number of functions dropped or added;

(3) and (6) are the average frequency per function dropped or added.

types of industries listed in Dun and Bradstreet Reference Book. In 1970, the 42 largest places in the counties had an average of 6.4 types of construction business, 3.5 types of transportation and communication establishments, 9.5 types of wholesale establishments, 30.79 types of retail trade, and 8.3 types of service business. The importance of retail trade in the local community is evident. By 1975, the overal number of functions in each type of industry seems to have increased. But a problem in comparison of the two points of time is involved. In 1972, Standard Industry Codes were revised. Old codes were modified and new codes were added. Industrial codes for 1970 were based on the revision of 1967 SIC. The codes for 1975 were based on the 1972 revision. Thus, the data of the two points of time raises the problem of comparability. After going through the examination of differences and relationships between 1967 and 1972 SIC, the 1975 SIC are translated back to 1970 SIC when possible. Finally, only 115 functions, or types of business are considered relevant to this study and comparable at the two points of time. They are listed in appendix 4. Since 115 functions do not cover all the SIC listed in Dun and Bradstreet Reference Book, it is not meaningful to obtain means and standard deviations. Hence, the presence or absence of the functions in the largest places of the county is counted for 1970 and 1975. A summary of the results is shown in table 4-2.

For construction functions, six types of function disappeared from one or more places which originally had the function and only one function was added to one place. Among 25 wholesale functions

in 1970, 10 disappeared from one or more places, and 12 functions were added to one or more places. Transportation and communication functions seem to increase in many places. Even retail trade shows the same pattern--21 decrease, and 23 increase. However, when the frequency of decrease and increase are taken into account, (see column 4, and column 7), the average frequency of decrease of each function is higher than the average frequency of increase.[1] For the total, average 3.3 counties (times) have one function disappeared, while, only 2.8 counties (times) have one function added (see the last row). In other words, the decline rate of functions is faster than the growth rate of the functions.

Functions that disappeared from five or more places during the five year period are fuel oil dealers, tire battery and accessory dealers, plumbing, heating and airconditioning contractors, camera and photo shops, and even jewelry stores. The functions added to 4 or more places were mail order business, radio broadcasting stations, sporting goods stores and bicycle shops, fruit stores and vegetable markets, florists, bookstores and even engraving and architectural services. The functions of grocery stores, motor vehicle dealers, hardware stores, men's and boys' clothing and furnishing stores, eating and drinking places, and bottled gas dealers remained unchanged between 1970-75.

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[1]Some counties lost one or more functions in particular industry. Some counties gained one or more functions. When all the frequency of gain or loss are counted together, it indicates the amount of increase or decrease of functions in particular industry. That is, the number of counties gained or lost the functions in particular industry. When this amount is divided by number of functions in that particular industry, the result indicates the average of number of counties in which every function is added or dropped.

Measurement of changes in structural differentiation

1. Guttman Scale of Differentiation: Many studies of growth or development are focused on structural differentiation and attempt to find the underlying growth pattern. Young and Young (1973) use structural differentiation as the growth dimension, and argue that differentiation is a single growth dimension and that the concept of growth is cumulative. For example, a community that has a television station will have a radio station, a high school, and so on down the line. However, the concept of development assumes that the community will develop past certain phases and will drop out certain items because they have been substituted for specialties. The Guttman Scale techniques are considered as being able to capture this kind of process and to demonstrate the stages of development. Thus, many studies have applied this method to measure community growth or development (Wakeley, 1961; Young, 1966, 1970; Young and Young, 1975; Flora, 1971; Stuby, 1975, 1976).

In Stuby's study (1975), Guttman scales of functions in wholesale and retail trade for 3072 U. S. counties, 1969, based on Dun and Bradstreet Data are constructed, and it is shown that the scales have reasonable internal validity and inter-regional stability. They discriminate across, as well as within, urbanization categories based on population characteristics. They also correlate moderately with indicators quality of life (poverty, disease, social disorganization, etc.). In order to measure the changes in structural differentiation, a scale for a later point of time must be constructed.

Stuby (1976) also constructed scales of commercial differentiation for 1969 and 1973 based on County Business Pattern data file, which covers a 4 year period. For this study, one of the measures of structural change will simply use the difference in county scores between 1969 and 1973. The scale is shown in table 4-3, which includes 16 items ranging from furriers and fur shops as the highest step to automotive equipment (wholesale) as the lowest step in the scale. The reproducibility and scalability coefficients are above the range of acceptable levels (.90 for reproducibility and .60 scalability). However, a theoretical question is, what are the theories or logical connections between items forming the scale? For example, why is automotive equipment wholesale ranked lower than women's wear stores? What is the connection between the two items? One peculiar item, miscellaneous home furnishing stores, which is ranked at the 15th step of the scale (see table 4-3) is not a specifically classified item. Its appearance at the higher rank of the scale does not follow the concept and principle of differentiation. However, empirically, according to the Guttman scale, it fits the scale very well. Thus, there must be some principle or principles behind these items that determine the scale. In order to explore this problem, Guttman scaling of 115 business establishment types for the largest places in the counties listed in Dun and Bradstreet Reference Book for 1970 and 1975 was conducted. It turns out some meaningful items did not fit the scale while some items of

Table 4-3.-- Stuby's Guttman scale of commercial differentiation, County Business Patterns Data, The U.S. 1969,1973

| Scale steps | Items | Cumulated % cases included 1969 | 1973 |
|---|---|---|---|
| 16 | Fruuiers and fur shops | 5 | 5 |
| 15 | Misc. home furnishing stores | 8 | 8 |
| 14 | Electric appliances,T.V. & radio(wholesale) | 10 | 11 |
| 13 | Air cond. & regrigerator (wholesale) | 13 | 14 |
| 12 | Camera and photographic stores | 17 | 17 |
| 11 | Electronic parts and equipment(wholesale) | 20 | 21 |
| 10 | Electric apparatus and equipment(wholesale) | 23 | 25 |
| 9 | Paper products (wholesale) | 27 | 28 |
| 8 | Department stores | 32 | 33 |
| 7 | Commercial machine and equipment(wholesale) | 37 | 39 |
| 6 | Music stores | 44 | 45 |
| 5 | Paint,glass, and wallpaper stores | 52 | 53 |
| 4 | Shoes stores | 62 | 63 |
| 3 | Jewelry stores | 72 | 73 |
| 2 | Women's wear storew | 82 | 82 |
| 1 | Automotive equipment (wholesale) | 91 | 90 |
| 0 | None of the above | 100 | 100 |
| | N | 3,073 | 3,074 |
| | Reproducibility | .91 | .91 |
| | Minimum marginal reproducibility | .74 | .74 |
| | Percent improvement | .17 | .17 |
| | Scalability | .65 | .65 |

Source: Richard G. Stuby(1976), "The relationship between structural differentiation and selected population variables." A paper presented to the Annual Meeting of the Rural Sociological Society, New York, August 26-29.

less theoretical meaning tend to fit the scale better.[2]

Another problem encountered by the Guttman scale is its discrete nature which squeezes the variation of growth into several steps. The variation in between steps cannot be differentiated, and it is misleading when the correlations are based on the assumption of normal distribution which is not applicable to the Guttman scale (Ebert and Young, 1971). Therefore, further exploration of the Guttman scale is abandoned and another method to measure structural change is sought.

2. Measures of structural change. As a process differentiation is viewed as the emergence of more distinct organizations to fulfill more distinct functions. The process of differentiation is not necessarily cumulative. Some old parts may gradually disappear as their functions are taken over by other more specialized units; and some specialized units may lose their functions as the organization of functions change (department store or larger shopping complex under one roof, etc.). Thus, a count of the presence or absence of social units with distinct functions and structure in a period of time at least will approximate structural change.

Based on 115 functions selected from Dun and Bradstreet Reference Book in 1970 and 1975, indexes of structural change are developed.

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[2]The 115 items are classified into several groups in terms of food, housing, transportation, household maintenance, recreation, health, and communication. Guttman scaling is carried out for each group. Then the scales are combined into one scale. It is assumed that the connection between the items of the scale is mediated through a battery of subitems (establishments) which are not in the scale. Thus, another attempt is to examine the relationships between the items in Stuby's Scale (table 4-3) and these subscales. But no relationships are found. The underlying connections between items are still mysterious.

The indexes use the distribution of functions among the largest places of the county in 1970 as base and count the kind of functions added or dropped by 1975.

a. Number of functions added to the community ($\Sigma a_i$);

b. Number of functions dropped from the community ($\Sigma b_j$);

a. and b. denote a simple count of new functions added to the community and older functions dropped from the community. Although the difference between a. and b. indicates a net gain or net loss of number of functions, functions dropped and added are different in their importance (rank orders of functions in the region) in the process of development. Thus, scores (or rank orders) are given to each type of function based on distribution of functions among the largest places of the counties in the region. For example, only 3 counties in the region under study have furriers and fur shops listed in Dun and Bradstreet Reference Book. A score of 39 (42-3) is given to this function. A score of zero is given to the function of grocery stores because all the communities have grocery stores. If the ($f_i$) denotes score of $_i$th function added, ($f_j$) denotes $_j$th function dropped, the weighted structural change toward development is measured as follows:

c. Total score of net change ($=\Sigma a_i f_i - \Sigma b_j f_j$);

d. Index of structural development (= total score of net change divided by total number of functions in the community in 1970)

Index of structural development is a relative rate of weighted change of functions. Total score of net change is the absolute change in

functions. It should be noted that function indicates the type of establishment listed in the Dun and Bradstreet Reference Book. Changes in structure are indexed by changes in type of establishments which are classified by functions.

According to the total score of net change, Mt. Pleasant (Isabella) has the greatest gain in the growth of institutions, followed by Marquette, Charlevoix, Grayling, St. Ignace (Mackinac), Traverse City, Iron River (Iron). The greatest loss in functions is in Manistique (Schoolcraft), and surprisingly, Alpena (Alpena). In terms of rate of change or index of structural development, Hillman (Montmorency) stands out as the highest rate of net gain, followed by St. Ignace, Oscoda, Grayling, Kalkaska, and Charlevoix. The highest rate of net loss (or decline) was found in Schoolcraft, Manistee, and Antrim counties. Some communities which show no significant change are in Otsego, Mason, Leelanau, Gogebic, Emmet, Lake, and Missaukee (index of structural development around $\pm$.25).

3. Intercorrelations of the measures of structural change. Table 4-4 shows intercorrelations of the measures of structural change. Number of functions added to the community is positively correlated with all other measures. The opposite is true for number of functions dropped. The total score of net change which indicates the absolute amount of net gain or net loss in functions weighted by the rank orders of functions, correlates (.88) with the index of structural development (relative rate of net change). This suggests that many of those counties having a higher score of change also have a higher rate of change. Both total score of net change

Table 4-4.-- Intercorrelations of the measures of structural change 42 Michigan nonmetropolitan counties

| Measures | 2 | 3 | 4 | 5 | Mean | Standard deviation |
|---|---|---|---|---|---|---|
| 1.Number of function added | .34 | .63 | .56 | .17* | 8.31 | 3.73 |
| 2.Number of function dropped | | -.46 | -.47 | -.16* | 8.45 | 3.56 |
| 3.Total score of net change | | | .88 | .18* | 20.95 | 105.87 |
| 4. Index of structural development | | | | .24* | .67 | 2.56 |
| 5.Change in Stuby's differentiation scales 1969-73 | | | | | .21 | 3.86 |

* not significant at .05 level.

and index of structural change are negatively correlated with number of function dropped and positively correlated with number of function added. This indicates that the structural change is oriented toward the direction that new functions of higher orders are added, and older functions of lower orders are replaced. Changes in Stuby's differentiation scale in 1969-1973 bear weaker relationships with other measures of structural change, which indicates less sensitivity of change in the scale.

Relationship between structural development and population growth

If the major function of social units in the community is to meet the needs of the population, then population size will determine a demand for a variety of goods and services. Population growth, theoretically, will be highly correlated with structural change. However, since it was found in previous studies that population was not the causal predictor of community differentiation, it was seen as a necessary but not sufficient condition for differentiation (Luloff and Stokes, 1975; Stuby, 1976). The commuting and central place system may play an important role in the relationship between population and differentiation. This question needs to be explored further, but is not attempted in this study.

Table 4-5 shows the intercorrelations between measures of structural differentiation and population growth. The differentiation scale of 1969 correlates (.79) with population size and correlates (.88) with total number of functions of 1970 (types of establishment listed in Dun and Bradstreet Reference Book). Total

Table 4-5.-- Intercorrelations of the measures of structural differentiation and population growth, 42 Michigan nonmetropolitan counties

| Variable | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 1. Stuby's differentiation scale 1969 | .89* | .79 | -.28 | -.05 | .48* | -.15 | -.22 |
| 2. Total number of functions 1970 | | .75* | -.17 | -.09 | .36* | -.19 | -.22 |
| 3. Population size 1970 | | | -.12 | .18 | .65* | -.03 | -.24 |
| 4. Change in Stuby's differentiation scale | | | | .18 | .06 | .24 | .10 |
| 5. Total score of net change | | | | | .32* | .88* | .28 |
| 6. Population change 1970-75 | | | | | | .15 | .43* |
| 7. Index of structural development 1970-75 | | | | | | | .41* |
| 8. Population growth rate 1970-75 | | | | | | | |

* significant at .05 level.

Note: Variable (1),(2),and (3) are the static variabes in the beginning the period;
Variable (4),(5),and (6) are the absolute change between 1970 and 1975 or 1969 and 1973; and
Variable (7) and (8) indicated the relative rates of change.

number of functions also correlates (.75) with population size. Thus, the three indicators of structural differentiation are intercorrelated. However, in terms of change in the three variables, the correlations become very low. Changes in differentiation scale score, 1969-73, correlates (.18) with total score of net change, and correlates (.06) with population change between 1970-75. The correlation between population change and total score of net change is higher (.32). Nevertheless, change in Guttman scales only indicate the absolute amount of change which is less significant in comparison. Relative rates of change in the structure is emphasized in this study. Since change in steps of Guttman scales has problems in converting into relative rates of change, it is dropped from further analysis.

The relationship between structural change and population growth can be seen from the correlation between the index of structural development, 1970-75, and population growth rates (.41). It is not as high as expected. Thus, the relationship between structural change and population growth involves other intervening factors that are not dealt with in this study. In the following analysis, population growth and structural development are treated as separate dependent variables.

## Specialization of Sustenance Activities, Retirement Function, and Community Growth

Economic base theorists argue that the specialization in basic export business will generate a multiplier in community growth. Human ecologists also argue the demographic response to sustenance organization. In this section, the functional specialization of

sustenance activities along with the retirement function of the community in relation to population growth and community structural change are examined.

Table 4-6 shows correlations between specialization variables and growth measures. Wholesale and retail trade is somewhat dependent on the other types of sustenance functions. It is treated as the dependent variable. Retirement function is positively correlated with wholesale and retail trade, population growth and structural change, and especially with the migration rate of younger people (.68). Agriculture is negatively correlated with wholesale and retail trade, but positively correlated with migration of younger people and population growth rate. Manufacturing is negatively correlated with all variables except migration of younger people. Service shows a constant relationship with all variables. Migration of younger people is the most important variable related to population growth (.71). In terms of structural development, a weak correlation was found in relation to all the independent variables. Agriculture and manufacturing tend to reduce the structural development. Services, wholesale and retail trade, retirement function, and migration of younger people tend to promote structural development. This pattern will be clear when multiple regression analysis is conducted.

Table 4-7 shows multiple regression coefficients of sustenance specialization on dependent variables. Again, the retirement function has a direct effect on the migration of younger people and on wholesale retail trade. However, its direct effect on population

Table 4-6.-- Correlations between specialization of sustenance acitivities retirement function, and community growth,42 Michigan nonmetropolitan counties

| Variable | 5 | 6 | 7 | 8 |
|---|---|---|---|---|
| 1. Retirement function ** | .23 | .68* | .49* | .15 |
| 2. Agriculture ** | -.50 | .17 | .19 | -.10 |
| 3. Manufacturing ** | -.28 | .30* | -.03 | -.21 |
| 4. Services ** | .19 | .28 | .19 | .19 |
| 5. Wholesale and retial trade | | .20 | .31* | .17 |
| 6. Net migration rate 30-54 | | | .71* | .20 |
| 7. Population growth rate 70-75 | | | | .41* |
| 8. Index of structural development | | | | |

* significant at .05 level.
** Intercorrelations of these variables see Table 3-5.

Table 4-7.-- Standardized regression coefficients of specialized functions, retirement function on population growth and structural change, 42 Michigan nonmetropolitan counties

| Independent variables | Wholesale retail trade | Net migration rate 30-54 | Population growth rate | Structural development index |
|---|---|---|---|---|
| Retirement function | .39* | .61* | -.17 | .03 |
| Agriculture | -.57* | .06 | .24 | -.16 |
| Manufacturing | -.26 | .29* | -.21** | -.31** |
| Services | .13 | .26 | -.08 | .10 |
| Wholesale and retail trade | - | .12 | .27** | -.08 |
| Net migration rate 30-54 | - | - | .82* | .29 |
| R | .69 | .78 | .78 | .39 |
| $R^2$ | .47 | .61 | .61 | .15 |
| P (F-test) | .00 | .00 | .00 | .42 |

* significant at .05 level.
** significant at .10 level.

growth becomes negative (-.17) and its impact on structural change is reduced to almost zero. This may be because the increasing proportion of elderly itself impairs the growth and development of the community. Thus, its influence on community growth and structural development is more indirect through other variables.

The most significant variable in determining population growth is migration of younger people (.82), followed by wholesale and retail trade (.27). Migration of younger people is also the most important variable in explaining structural changes (.29). Since the retirement function is highly correlated with migration of younger people, its indirect effect on population growth may have to be exercised through the migration of younger people, and only slightly through wholesale and retail trade. The significance of the indirect effect of the retirement function through migration of younger people is shown by the coefficient (.56 = .68 x .82), far greater than its direct effect. Its indirect effect on structural change through migration of younger people is also somewhat significant (.20 = .29 x .68). Thus, it is evident that the impact of the retirement function on community growth and development is more largely indirect through the migration of younger people.

Let us look at other types of sustenance specialization. Agriculture shows a slight impact on population growth, but undermines structural development. Its indirect effect on population growth through the migration of younger people (.14 = 82 x .17) is totally cancelled out by its indirect effect through wholesale and retail trade (-.14 = .27 x -.50). Its indirect effect on structural

development is almost zero.

Manufacturing not only generates no population growth and structural development, but undermines the growth and development in rural communities as well. This is shown by the path coefficient of (-.21) with population growth and (-.31) with structural development. A positive indirect impact through migration of younger people and wholesale and retail trade (.13 = .30 x .82 + .27 x -.28) does not help growth very much.

Overall, the sustenance specialization, retirement function, and migration of younger people explain 61% of the variance in population growth between 1970-75. But these variables only explain 15% of the variance in structural change between 1970-75. It is obvious that the variables influencing structural change are quite different from those influencing population growth. Thus, to explain structural change, other structural variables are sought.

In order to see the independent effect of elderly migration on community growth and development, the retirement function is broken into elderly migration and proportion of elderly, and multiple regression analysis is carried out, as shown in Table 4-8. It is clear that elderly migration is the major factor determining the impact of the retirement function of the community on the growth of wholesale retail trade and on the attracting young migrants, shown by the standardized regression coefficient or path coefficients of (.39) and (.83).

In population growth and structural development, two regressions for each dependent variable are carried out. One includes

Table 4-8.-- Standardized regression coefficients of specialized functions,migration measures on population growth and structural development,42 Michigan nonmetropolitan counties

| Independent variables | Wholesale retail trade (1) | Net migration rate 30-54 (2) | Population growth rate (3) | (4) | Structural development (5) | (6) |
|---|---|---|---|---|---|---|
| Net migration rate 65 and over | .39* | .83* | .69* | .17 | .41* | .41* |
| Percent population 65 and over | .07 | -.05 | -.23** | -.20 | -.13 | -.13 |
| Agriculture | -.57* | -.04 | .19 | .21 | -.21 | -.21 |
| Manufacturing | -.26* | .26* | .00 | -.16 | -.25 | -.24 |
| Services | .12 | .23 | .10 | -.04 | .15 | .15 |
| Wholesale and retail trade | - | -.02 | .22 | .23 | -.13 | .13 |
| Net migration rate 30-54 | - | - | - | .62* | - | .00 |
| R | .71 | .89 | .75 | .80 | .43 | .43 |
| $R^2$ | .50 | .80 | .56 | .64 | .19 | .19 |
| P (F-test) | .00 | .00 | .00 | .00 | .27 | .38 |

* significant at .05 level.
** significant at .10 level.

net migration of younger people, and the other does not. Because elderly migration and migration of younger people are highly correlated at (.82), multicollinearity of the two variables may be involved when they are in the same regression. Table 4-8 gives us an idea about the extent to which this kind of multicollinearity is involved.

Columns (3) and (5) show the regression without net migration of younger people in the equation. Elderly migration stands out as the primary factor influencing the growth and development of the community. It is shown by the regression coefficients of (.69) and (.41) respectively. However, when net migration of younger people is added to the equation, shown by column (4) and (6), the effect of elderly migration on population growth is reduced substantially from (.69) to (.17), but, its impact on structural development remains unchanged (.41). This suggests that elderly migration and migration of younger people are conceptually and empirically different from each other. The multicollinearity does not affect this difference. It also suggests that the impact of elderly migration on population growth is channeled mostly through the migration of younger people; its impact on structural development is mostly direct.

Overall, the regression on structural development only explains less than one-fifth of the variance. Other structural variables have to be taken into account. Since elderly migration is the important variable in explaining structural development, the access of the community to the larger system or linkages may be

introduced by elderly migrants and affects the structural development. In the following section, centrality of services to the aging in relation to community growth and development will be examined.

## Centrality of Retirement Communities-- Services to the Aging

According to symbolic structural theory of community growth, centrality is the immediate cause of structural development, especially access to the larger systems. As discussed before, the development of communities dominated by the retirement function is quite closely related to the access to the larger system because most residents in the community depend on social security, pensions, or welfare. The elderly are mostly retired from the labor force. Thus, their impact on the development of the community is channeled indirectly from the outside, particularly through governmental efforts. This is the subject to be discussed in this section.

### The larger systems related to the aging

Besides voluntary organizations, the larger systems outside the communities related to aging involve federal, state, and regional levels. On the Federal level, the Older American Act was passed in 1965. The Act established the Administration on Aging (AOA), which is responsible for national programs and concerns for problems and services to senior citizens. In Michigan, the first Michigan Commission on Aging was created in 1960 and functioned until 1973. Since then, a new temporary commission and an office of services to the aging (OSA) were established to document the problems and needs of Michigan elderly and to make specific recommendations.

A permanent Commission and the Office of Services to the Aging were created in 1975. Thus, the formal larger systems related to aging at Federal and State levels grew up quite recently.

The Office of Services to the Aging administers the Older American Act funded programs, monitors and evaluates state policies and programs affecting the elderly. Major tasks in the office are: 1. job training for persons serving the state's elderly at state, area, and local levels (Title IV-A funds of Older American Act); 2. channel through Area Agencies on Aging (AAA), supervising senior community services (Title III fund); 3. directly supervising the nutrition services program for the elderly (Title VII program); 4. providing technical assistance to application for building multi-purpose senior centers (Title V); and 5. model projects to work with local organizations to decrease the isolation of residents of nursing homes and provide information about nursing homes.

Michigan is divided into 13 planning and service areas. Within each area, a public or private non-profit Area Agency on Aging (AAA) is designated. The AAA is to develop a coordinated and comprehensive service delivery system within its region but does not provide direct services to the elderly. They subcontract with local service providers, agencies and organizations to provide needed services. They are the link between the Michigan Office of Service to the Aging and local communities. Basic services subcontracted are transportation, home services, repair and renovational programs, and legal counseling. In fiscal year 1974-75, Michigan received a total of more than 2 millions in federal funds for planning and

delivery of services.

The nutrition program operates five days a week without charge at different site locations and at different times. Nutrition sites are located in church halls, school lunchrooms, senior centers, and other locations convenient to senior citizens. A small proportion of meals are delivered to those who are unable to come to a nutrition site. Supportive services such as transportation, recreation, and shopping assistance are also provided along with the nutrition program. In our visit to the nutrition site in Remus, participants indicated that they were very pleased with the program not because of the meal alone, but because of the opportunities to see other people and friends. In the 1975 fiscal year, 3.5 million was spent on the nutrition program. In 1976 fiscal year, the figure increased to 5.8 million. Currently, 40 nutrition projects are operating at some 500 nutrition sites throughout the state.

In terms of facilities for the elderly in local communities, congress funded it for the first time in July, 1976. Interested communities submit the application to the Office of Services to the Aging. Decision is made by the Commission based on the ability of local communities to meet the regulation mandated by the Administration on Aging and the availability of the 25% local matching funds. Seven applicants were funded in 1976, three of them are in the area under study--Marquette, Manistee, and Dickinson.

Model projects are developed to serve elderly in four areas--housing, mental health, legal, and information and referral. The funds pay all or part of the cost of developing or operating

statewide, regional, metropolitan area, county, city or community model projects. During fiscal year 1974-75, the Office of Services to the Aging received about 320,000 in Federal funds and made direct grants for state model projects.

Training activities are conducted in institutions of higher education, OSA, area agencies, and others offered a wide range of training and material. For example, about $87,000 contract was given to Michigan State University for service provider assessment and training.

The increasing operation of these programs should have a profound impact on the community development and growth in population and institutions. In order to receive the funding from Federal and State agencies, some specialized organizations in communities have to be established, and financial support may stimulate certain development in the community.

Measurement of centrality related to services to the aging

The measurement of centrality related to services to the aging used here is a crude indicator because programs for the aging operated by the government just began in 1973. A full scale operation was actually carried out between 1974-75. However, the significance of the programs in community development and growth deserves our attention. Five indicators are initially used. They are presence or absence of area agencies on aging within the county; presence or absence of headquarters of nutrition program grantee within the county; number of commissioners on services to the aging residing in

county; number of representatives of region to state advisory council residing in county; and frequency of the county mentioned in a newsletter called, "Aging in Michigan" (AIM) reporting the activities related to aging, published by the Office of Services to the Aging. Eleven issues were available from February 1974 through October 1975. However, only three of them, presence or absence of area agency, presence or absence of nutrition program grantees, and appearance of name in AIM, form an acceptable Guttman scale. Thus, scores are given as follows: 3--presence of all the three items (3 counties); 2--presence of nutrition and AIM (12 counties); 1--presence of AIM only (23 counties); 0--none of the above (4 counties).

In order to take into account the frequency of the county reported in AIM, the centrality scores are transformed into Z-scores which are added to the Z-scores of frequency in AIM. This new index correlated with the original score of centrality at (.92). In the following analysis, centrality of services to aging will refer to this new index.

Retirement function, aging-related centrality, and structural development

To what extent are the governmental programs for the aging related to the development of the retirement function of the community, and to what extent do these programs from larger systems influence further growth and structural development of the community? The results in table 4-9 are not very promising. Although not very significant, the retirement function is negatively correlated with aging-related centrality which, in turn, bears no relationship with

Table 4-9.-- Intercorrelations between retirement function, aging-related centrality, and measures of structural change, 42 Michigan nonmetropolitan counties

| Variable | 2 | 3 | # of function dropped | # of function added | Total function | Stuby's differentiation 1973 |
|---|---|---|---|---|---|---|
| 1.Retirement function | -.17 | .15 | -.32* | -.20 | -.52* | -.46* |
| 2.Aging-related centrality | | .00 | .16 | .23 | .39* | .42* |
| 3.Structural development | | | -.47* | .56* | -.19 | .07 |
| Net migration rate 65+ | -.23 | .26 | -.21 | -.00 | -.41* | -.31* |
| Percent population 65+ | -.07 | -.01 | -.33* | -.33* | -.48* | -.48* |
| Net migration rate 30-54 | -.23 | .20 | -.12 | .04 | -.30* | -.22 |

* significant at .05 level

Table 4-10.-- Standardized regression coefficients of Migration variables, aging-related centrality on structural development,number of functions added and dropped,42 Michigan nonmetropolitan counties

| Independent variables | Aging-related centrality | Structural development | # of function added | # of function dropped |
|---|---|---|---|---|
| Net migration rate 65+ | -.16 | .41* | .20 | -.15 |
| Percent population 65+ | .06 | -.18 | -.44* | -.30 |
| Net migration rate 30-54 | -.12 | -.06 | .09 | .14 |
| Aging-related centrality | - | .07 | .26 | .13 |
| R | .25 | .31 | .45 | .37 |
| $R^2$ | .06 | .10 | .21 | .14 |
| P (F-test) | .48 | .42 | .06 | .23 |

* significant at .05 level.

structural change between 1970 and 1975. This means that communities specializing in the retirement function may tend to have a weaker link with larger systems that provide services to the aging. Furthermore, strong link to the aging-related larger systems does not necessarily promote a higher rate of structural development of the community. Perhaps the relationship between aging-related centrality and structural development is too early to tell because the programs just began in 1973 and 1974, and a time lag between centrality and development may be involved.

In order to further examine the relationship, number of functions (types of business) added to the community, number of functions dropped from the community, total number of functions and Stuby's Guttman scale of differentiation are taken into account. Their relationships with centrality and retirement function are shown in the same table. Aging-related centrality is positively associated with all of these variables. In contrast, the retirement function is negatively correlated with all of them. Aging-related centrality does slightly influence the increase in number of functions added to the community (.23). Communities with higher differentiation or a greater variety of business tend to have a higher aging-related centrality (.39 between centrality and total number of functions; and .42 between centrality and differentiation scale).

Retirement function tends to be negatively associated with structural differentiation. The higher the retirement function the fewer number of functions found in the community (-.52) and the lower in the differentiation scale (-.46). Although it is slightly

negatively related to number of functions added to the community (-.20), it does maintain certain amount of business, indicated by a negative correlation with number of functions dropped from the community (-.32). Therefore, retirement function shows a positive sign in its relation to rate of structural development.

Index of structural development is positively correlated with number of functions added to the community (.56), but negatively associated with number of functions dropped from the community (-.47). Thus, the overall picture of structural change is that, the higher order of goods and services (functions or institutions) are added and the lower order of goods and services are replaced.

In the bottom half of table 4-9, relationships between centrality and the components of retirement function and migration of younger people are shown. Elderly migration and proportion of elderly are negatively related to the measures of centrality and differentiation. However, elderly migration tends to correlate with structural development. A higher proportion of elderly is associated with fewer number of new functions added, and also associated with fewer functions dropped. Thus, its relationship with structural development is balanced out. In regard to elderly migration no relationship is found with number of functions added, and only a slight negative correlation with number of functions dropped is found. Surprisingly, migration of younger people also shows the same pattern as elderly migration in relation to centrality and structural development.

In order to see the independent effect of the migration variables and aging related centrality on structural development, multiple regression is carried out. Results are shown in table 4-10. It is obvious that aging-related centrality is not the intermediate variable between elderly migration or retirement function in general, and structural development at the present time. When other variables are held constant, only elderly migration has a direct impact on structural development shown by the standardized regression coefficient of (.41), which is about the same magnitude as shown in table 4-8. In other words, its independent effect remains unchanged no matter how other variables change. Even aging-related centrality does not alter the relationship with structural development. Its relationship with number of functions added to the community shown by the coefficient (.20) greater than its zero-order correlation coefficient. All of these suggest that elderly migration does have a potential impact on community's structural development.

In contrast, the negative relationship between percent population age 65 and over and structural development becomes explicit in the regression analysis (-.18). A negative regression coefficient of (-.41) with number of functions added to the community, and a negative regression coefficient of (-.30), suggest that although higher proportions of the older population in the community does not bring in more functions it still can maintain certain amount of functions in the community because fewer functions are dropped. Thus, with elderly migration and proportion of elderly persons in the community, the retirement community will have potential for structural

development on one hand, and will have potential factor maintaining certain functions, on the other hand.

However, these potential impacts of the retirement function do not directly channel through centrality related to the services to the aging. Although aging-related centrality slightly causes an increase in number of functions added (.26), the overall impact of aging-related centrality on structural development is still insignificant. Therefore, the general centrality proposed by central place theorists is examined in the following section.

## Centrality of Central Places and Community Growth and Development

The aging-related centrality is more concerned with the access to larger systems. The impact of this source of centrality has not been manifested. Another type of centrality proposed by central place theorists in terms of central functions (goods and services) may have some impact on the relationship between the retirement function and community growth. According to the theory, centrality of a community is dependent upon how much goods and services the community can provide for the region. When the amount of goods and services exceeds the needs of local population, there is a surplus of goods and services which are purchased by the population in surrounding areas or peripheries. The more goods and services can be provided by the locality for peripheries, the higher the growth potential for the community. An index of sufficiency in goods and services developed in the last chapter can be used as the centrality of goods and services. It refers to the amount of goods and services

sold per capita as a proportion of the regional averaged per capita goods and services sold.

Central places in rural areas are dependent upon the support of its complementary region or peripheries. Population change in peripheries will affect changes in central places, which are usually reflected in their populations and institutions. It is assumed that size of largest place of the county and number of functions in the place can be considered as an indicator of centrality derived from the support of hinterland as well as an indicator of the place's status in the hierarchical system. The larger the population size or the more the functions, the greater the centrality of the place. Thus, size of the largest place of the county, number of functions, and degree of sufficiency in goods and services are used to examine relationships between the centrality of central place and structural development.

To begin with, let us look at the relationship between size of largest place, retirement function, and community growth. Table 4-11 shows means of aging related centrality, structural development, and population growth by size of places and the retirement function. Retirement function is classified into low, medium, and high. Low retirement function denotes that the index is below the average, medium denotes that the index is greater than the average within one standard deviation, and high retirement function denotes that the index is greater than one standard deviation.

In the first panel of the table, means of aging-related centrality increase as size of largest place increases (see the last

Table 4-11.-- Mean of aging-related centrality, structural development, population growth by size of the largest place and retirement function, 42 Michigan nonmetropolitan counties

| Size of the place [1] | Retirement function [2] Low | Median | High | Total |
|---|---|---|---|---|
| I. Mean of aging-related centrality (Z-scores) | | | | |
| Less than 2,500 | -.46 (5)[3] | -.13 (6) | -.31 (6) | -.29 (7) |
| 2,500 - 5,000 | -.40 (6) | .65 (2) | -1.17 (1) | -.25 (9) |
| 5,000 - 10,000 | -.13 (5) | .55 (3) | - (0) | .12 (8) |
| 10,000 and more | .78 (8) | - (0) | - (0) | .78 (8) |
| Total | -.04 (24) | -.01 (11) | -.43 (7) | .00 (42) |
| II. Mean of index of structural development | | | | |
| Less than 2,500 | .48 | .09 | 2.33 | .93 |
| 2,500 - 5,000 | .95 | 2.28 | 1.46 | 1.30 |
| 5,000 - 10,000 | -.28 | -1.75 | - | -.83 |
| 10,000 and more | .88 | - | - | .88 |
| Total | .57 | -.11 | 2.21 | .67 |
| III. Mean of population growth rate 1970-75 | | | | |
| Less than 2,500 | 14 | 19 | 28 | 21 |
| 2,500 - 5,000 | 11 | 3 | 27 | 11 |
| 5,000 - 10,000 | 12 | 4 | - | 9 |
| 10,000 and more | 12 | - | - | 12 |
| Total | 12 | 12 | 28 | 15 |

Note:
1. The size category includes lower limit.
2. Low retirement function - lower than average; median retirement function - greater than average within one standard deviation; high retirement function - greater than the average and greater than one standard deviation.
3. Numbers in the parentheses denote counties included in the category.

column). But, it does not show a clear pattern in relation to degree of retirement function. In those counties of lower retirement function, size of largest place determines the variation of aging-related centrality. Those counties of median retirement function do have a higher centrality of services to the aging than average if the counties have largest place between 2,500 - 10,000. All the counties of higher specialization in retirement function have lower access to the direct links of aging-related systems.

As shown in panel 2 of the table, structural development is higher in the counties with the largest place between 2,500 - 5,000. Those between 5,000 - 10,000 tend to decline. However, the places over 10,000 and those less than 2,500 are all growing in their structure. The counties highly specialized in the retirement function are also growing in structure (2.21), especially those counties having smaller places grew at the highest rates (2.33). Counties having the largest place of 2,500 - 5,000 moderately specialized in retirement function also grew at a faster rate (2.28). However, neither the retirement function nor the size of the largest place has a decisive effect on the structural development.

The last panel of the table shows the relationship between largest place, retirement function and population growth in 1970-75. Overall growth is concentrated in counties having places less than 2,500. Counties with the largest place between 5,000 - 10,000 have the lowest rate of population growth. Again, the retirement function tends to have a profound impact on population growth (28% for those highly specialized in the retirement function). The lowest

rates of growth are concentrated in the counties having median size of the largest place 2,500 - 10,000) and specialized moderately in retirement function (3% - 4% average).

In summary, information above suggests that communities having largest or smaller places were growing in population and structure during the 1970-75 period. But, those having the median size (5,000 - 10,000) tend to decline in structure and tend to have a lower rate of population growth. Small communities specializing in the retirement function are also growing in population and structure. Nevertheless, the programs or services to the aging are still directly linked to the largest places of the region. Since the small sample does not allow further cross-tabulation of variables for examining their relationships, Pearson correlations and multiple regression analysis are carried out and presented in the following sections.

Table 4-12 shows zero-order correlations between retirement function, central place measures, and structural change. Retirement function is highly negatively correlated with population of largest places (-.64). But aging-related centrality is positively correlated with population of largest place (.48). Population of largest place also highly correlated with total number of functions and differentiation scale (.85) and (.77). Therefore, it is evident that aging related centrality is higher in the counties with larger places which are already highly differentiated. Because the larger places were already highly differentiated, the increased number of functions does not help the community, and hence, the rate of structural development is not influenced.

Table 4-12.-- Correlations between retirement function,central place measures, and structural development, 42 Michigan nonmetropolitan counties

| Variable | Population of largest place | Number of functions | Index of sufficiency |
|---|---|---|---|
| Population of largest place | - | .85 | .16* |
| Total number of functions | - | - | .50 |
| Retirement function | -.64 | -.52 | -.04* |
| Aging-related centrality | .48 | .39 | -.03* |
| Index of structural development | -.05* | -.15* | .08* |
| Number of function added | .38 | .41 | .38 |
| Number of function dropped | .35 | .63 | .38 |
| Differentiation scale 1973 | .77 | .85 | .45 |

* not significant at .05 level.

From the relationship between retirement function, aging related centrality and largest places, a general pattern can be drawn: the retirement function tends to develop in remote areas away from larger centers and from highly differentiated places, but service providers are more likely to be located in larger and highly differentiated communities.

Although larger places do not show a higher rate of change, it experiences a dramatic change. Some functions are added and some functions are dropped. But because correlations between number of functions added and the size of largest place, and between number of functions dropped and the largest place are about the same (.38; .35), the net change balances out. The net change becomes insignificant.

Total number of selected functions listed in Dun and Bradstreet Reference Book indicates kinds of goods and services available in locality. Number of functions is highly correlated with population of largest places (.85). It follows almost the same pattern as population of largest place in relation to the retirement function, aging related centrality, and structural development. The greater the number of functions the lower the retirement function, and the higher the aging-related centrality. In regard to structural change, number of functions tends to be highly correlated with number of functions dropped and moderately with number of functions added. In other words, the community with more functions tends to add more functions, but at the same time more functions are dropped from the community. The net result leans toward a decreasing number of functions. Therefore, its relationship with rate of structural development becomes negative. Perhaps, the decentralization of some central

functions is occurring. For example, Alpena gained five new functions but lost 11 functions. Iron Mountain gained 9 functions and lost 13 functions. Escanaba gained 8 functions but lost 11 functions. However, Marquette and Traverse City do have a net gain in functions.

As shown in Table 4-12, no relationship is found between degree of sufficiency in goods and services and retirement function, aging-related centrality, and even structural development. Since correlation of degree of sufficiency with number of functions added and with number of functions dropped are the same, a low rate of development is expected. Degree of sufficiency does correlate with total number of functions and differentiation. However, the size of largest places only slightly correlates with degree of sufficiency. This may be because the services and goods some larger places provide may only reach the areas within the county. In addition, the index of sufficiency used in the study involves the problem of distribution of goods and services in the community. The larger the place the more people to share the total goods and services in the index. It fails to reflect the centrality of the central place. Thus, the index of sufficiency is dropped from the further analysis.

A composite index of central place's centrality is derived by adding Z-scores of the size of the largest place and total number of functions of the place. This composite index correlates (.96) with size of largest place, and (.96) with total number of functions. The index indicates the degree a largest place of the county serves as a central place in the region. Using this index, multiple regression analysis is carried out. The results are shown in table

4-13. It can be seen that centrality of central places determines the largest part of access to programs related to the aging (.57). Proportion of older people also exerts a certain degree of influence on the access to these governmental programs. Migration of younger people and older persons tend to have no direct impact on aging-related programs.

Structural development cannot be predicted very well in the model. Only 12% of variance is explained. However, elderly migration does show a direct impact on structural development (.39). But, proportion of older people and central place centrality tend to cause a decline in structure. Aging related centrality also shows a slight impact (.14). This suggests that if there was no other intervening variables, aging-related centrality would have a positive effect on structural development.

Centrality of central place has a strong impact on the increase of functions (.35). But, at the same time, it has the strongest impact on the decline of functions (.53). This confirms that the largest places in the counties are experiencing a dramatic change and lean toward a decline of functions.

Population growth rate is not influenced by either central place centrality or aging-related centrality. Most of the variance in population growth is explained by migration of younger people and older persons simultaneously.

As shown in table 4-14, the retirement function shows a positive effect on the access to aging-related larger systems, but has no relationship with either population growth and structural

Table 4-13.-- Standardized regression coefficients of retirement function measures,aging-related centrality,central place centraltiy on structural development,number of function added,number of function dropped, and population growth, 42 Michigan nonmetropolitan counties

| Independent variables | Aging-related centrality | Structural develop-ment | # of function added | # of function dropped | population growth rate |
|---|---|---|---|---|---|
| Net migration rate 65+ | -.06 | .39* | .24 | -.09 | .45* |
| percent population 65+ | .31** | -.27 | -.28 | -.06 | -.21 |
| Net migration rate 30-54 | -.06 | -.07 | .11 | .17 | .42* |
| Central place centrality | .57* | -.18 | .35* | .53* | -.03 |
| Aging-related centrality | - | .14 | .13 | -.07 | .07 |
| $R$ | .52 | .34 | .52 | .52 | .75 |
| $R^2$ | .27 | .12 | .27 | .27 | .57 |
| P (F-test) | .02 | .48 | .02 | .02 | .00 |

* significant at .05 level.
** significant at .10 level.

Table 4-14.-- Standardized regression coefficients of retirement function aging-related centrality,central place centrality on structural development and population growth, 42 Michigan nonmetropolitan counties

| Independent variables | Aging-related centrality | Structural develop-ment | Population growth rate |
|---|---|---|---|
| Retirement function | .31 | -.05 | .04 |
| Net migration rate 30-54 | -.22 | .21 | .71* |
| Centrality of central place | .55* | -.11 | .04 |
| Aging-related centrality | - | .09 | .02 |
| $R$ | .50 | .22 | .71 |
| $R^2$ | .25 | .05 | .50 |
| P (F-test) | .01 | .75 | .00 |

* significant at .05 level.

development. Net migration of younger people becomes the factor determining the largest part of population growth, and central place centrality determines the largest part of the access to the aging-related larger systems.

Table 4-15.--Correlations between proportion of elderly, elderly migration, migration of younger people, centrality of central place, and regression of proportion of elderly

| | 2 | 3 | Percent population 65+ | Regression on percent population 65+ |
|---|---|---|---|---|
| 1. Net migration rate 65+ | .82 | -.48 | .48 | .40 |
| 2. Net migration rate 30-54 | | -.41 | .36 | -.15* |
| 3. Centrality of largest place | | | -.57 | -.43 |
| | | | | $R = .62$ |
| | | | | $R^2 = .39$ |
| F-test | | | | $p < .00$ |

*not significant at .05 level

Compared with table 4-13, it is clear that the impact of the retirement function on the access to the aging-related larger system is mostly determined by the proportion of the older population in the community. But, the development of the retirement function does not have a significant contribution to the growth in population and structure because the positive impact of elderly migration of population and structural growth is cancelled out by the negative effect of proportion of elderly. The increase in proportion of elderly and elderly inmigration are quite different in their impact on community structure and growth. However, proportion of elderly is also influenced by the inmigration of older people. The extent

to which elderly migration contributes to population growth and structural development is somewhat curtailed by its effect on the increase of proportion of the older population in the community.

Table 4-15 shows the relationship between elderly migration, migration of younger people, centrality of largest places, and proportion of elderly (zero-order correlation and standardized regression coefficients on proportion of elderly). The simple correlations show that elderly migration and migration of younger people all contribute to an increase in proportion of older people. But, when other variables are held constant, elderly migration maintains a strong effect on proportion of elderly; and migration of younger people shows a negative impact on proportion of older people. This confirms our understanding that the more the younger people move into an area, the lower the proportion of elderly; the more the elderly move in, the higher the proportion of elderly. Centrality of central place does not cause an increase in either elderly migration or migration of younger people.

Migration of younger people is more related to elderly migration than to centrality of larger places. However, the population base in the communities with larger centers has been younger; hence, the net impact of centrality of largest places is negative.
If the negative relationship between younger migration and centrality continues, we may expect an increasing proportion of elderly in larger centers. On the other hand, the outmigration of older people from larger centers becomes a counter force which reduces the proportion of older people in larger centers.

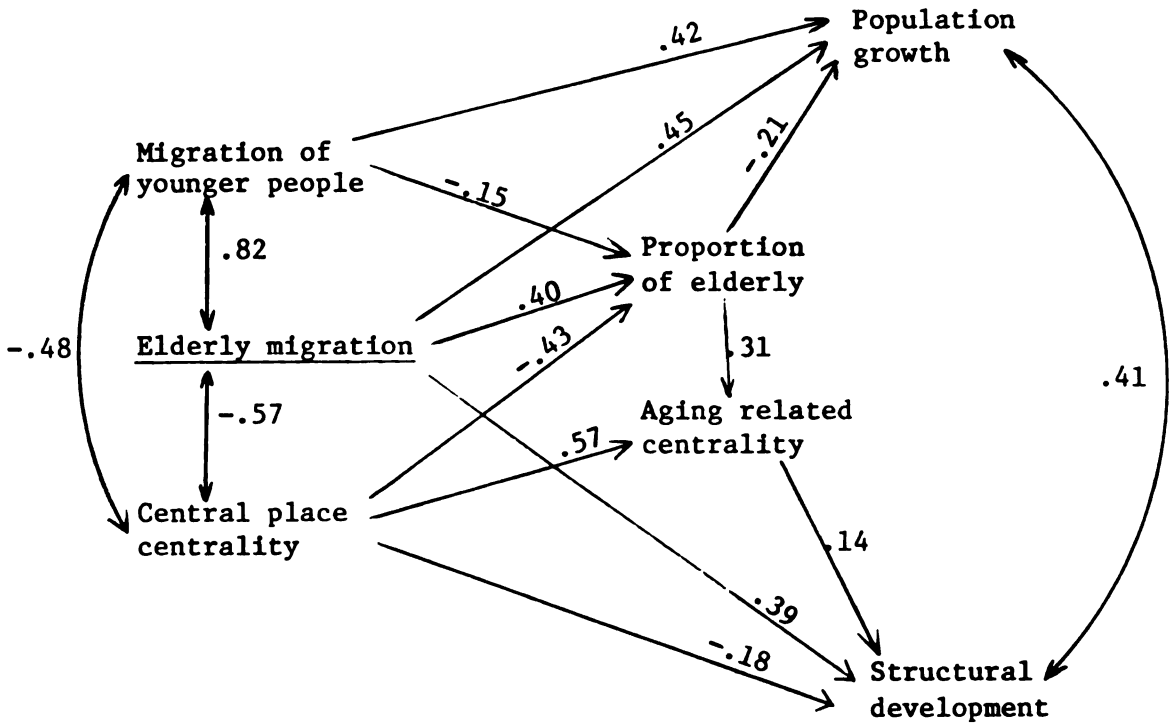
## Summary

The relationships of retirement function, elderly migration and proportion of elderly with aging-related centrality, central place centrality, population growth, and structural development can be summarized in the following path diagrams (based on table 4-13, 4-14, and 4-15).

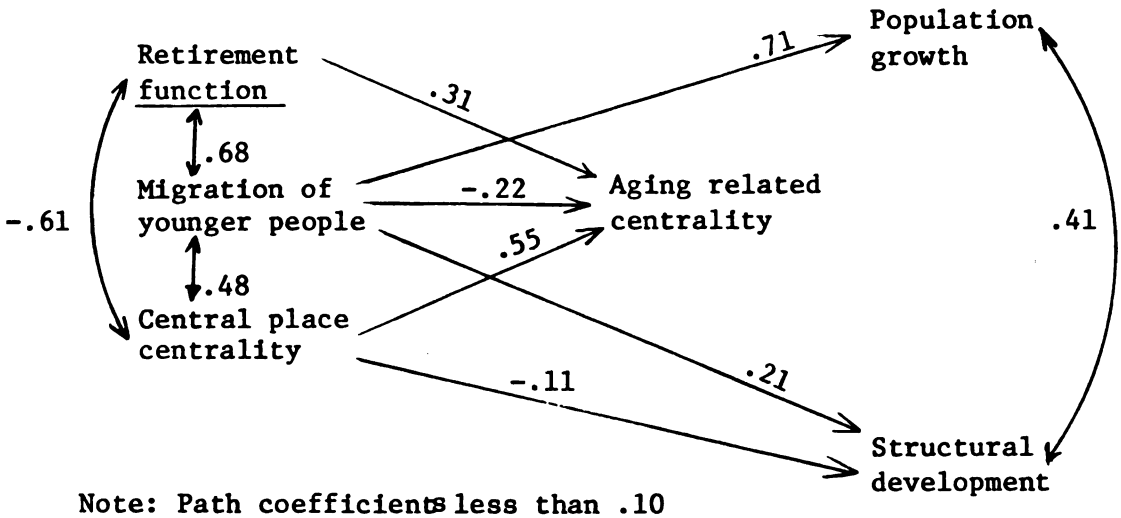
The primary interest of this chapter is focused on the paths from elderly migration and retirement function. Elderly migration contributes a positive net impact on population growth, and structural development. Its indirect effect through migration of younger people contributes to population growth, but its impact on the increase in the proportion of elderly tends to reduce the growth rates. Elderly migration has no direct impact on the access to the larger systems of services to the aging. Its indirect effect through centrality of central place reduces the aging-related centrality, but the effect through increases in proportion of elderly contributes to the aging-related centrality. However, the effect of elderly migration through the centrality of central place also contributes to structural development. In other words, elderly migrants more likely move to a community of lower centrality, and lower centrality of the place tends to contribute a positive effect on structural development between 1970-75. Thus, it can be concluded that elderly migration to rural communities will contribute to a great deal of population growth and structural development as well.

However, when we look at the impact of retirement function on community growth in the second diagram, immediately we can find that

I.




II.




Note: Path coefficients less than .10 are not shown in the diagrams

Figure 4-1. Path diagrams of elderly migration, retirement function, centrality measures on population growth and structural development, Michigan nonmetropolitan counties.

one condition for the development based on elderly migration must be considered. That is, if rural communities are developed toward a highly specialized retirement function and without migration of younger people, the chance to promote structural development and population growth will be slim. The impact of the retirement function on population growth and structural development relies more on migration of younger people. Although the retirement function does promote the centrality of services to the aging, so far, the centrality of aging-related larger systems does not contribute very much to structural development.

Nevertheless, compared with other specialized functions, retirement function along with services can be considered the important factor maintaining community structure (see table 4-7). While manufacturing and agriculture tend to frustrate the structural development of the community, and agriculture still maintains some population growth.

## Conclusions

This chapter has examined impacts of the retirement function and elderly migration on population growth and structural development during the 1970-75 period. Economic base theory, symbolic structural theory, and central place theory are used as the theoretical background to derive the intermediate variables influencing the dependent and independent variables.

Specializations in the economic base of the communities, agriculture, manufacturing, and services are used to compare the extent to which retirement function, one of the specializations of community

functions, influence community growth. It is concluded that although the retirement function has almost no direct impact on structural development it does not hurt community growth. That is, it maintains a certain degree of structural differentiation. It is unlike manufacturing specialization, which frustrates not only population growth but also structural development. Of course, the highly specialized retirement function has a slight direct cause of the decline of population in the community. The impact of retirement function on community growth is more dependent upon the inmigration of younger people and wholesale and retail activities. But, when there is elderly migration to the community, the direct impact of inmigration of younger people becomes insignificant. Elderly migration itself becomes the major factor influencing structural development. But, again, part of its indirect effect is channeled through migration of younger people.

It was found that economic base factors explained population growth better than structural development. Other structural variables derived from symbolic structural and central place theory such as centrality of aging-related larger systems (programs, services to the aging provided by state government) and centrality of central places (hierarchical system of central places) are examined. It was found that the retirement function still has no direct contribution to the structural development of the community although it did promote a higher degree of aging-related centrality. The access to aging-related services is mostly determined by centrality of central places, which tend to have no significant contribution to the

structural development. Because the retirement function is more likely to develop in remote areas with smaller central places and the smaller central places are experiencing a slight increase in structural development, the hierarchical system of central place does not restrict the growth of smaller centers but gives the retirement function a chance to cause a slight indirect impact on the growth of smaller centers. Especially, when the elderly migrants move to the communities, not only is population growing through the direct contribution of elderly migration and indirectly through migration of younger people, but also the rate of structural development is directly promoted by elderly migration. Thus, it can be concluded that elderly migration is more favorable to the development of rural communities than the specialization of retirement functions. In other words, if retirement function is too specialized in a locality without migration of younger people and other functions, community growth is very limited. But, elderly migration can have its own direct effect on population growth and structural development although some indirect effects through the migration of younger people are also significant.

It should be noted that elderly migration also causes an increase in higher proportion of elderly in the community, and therefore, a higher degree of the retirement function is expected. Then, the development relies more on the migration of younger people. To maximize the development, it would seem to have to maintain a higher level of elderly migration and, at the same time, to keep proportion of elderly lower. To keep the proportion of elderly lower, requires

more young people to move in. Thus, the overall growth of the communities in nonmetropolitan areas is still dependent upon inmigration of younger people.

As a specialized function, the retirement function had impact on inmigration rate of younger people stronger than other specialized functions. Therefore, it can be concluded that the recent growth and development in nonmetropolitan areas was, at least in part, influenced by the development of the retirement function and elderly migration.

# CHAPTER V

## CONCLUSIONS AND IMPLICATIONS

The historical trend of rural-urban migration, caused by the shrinking opportunities in extractive economic activities, has been the major factor influencing population loss in rural communities. However, the recent turnaround in nonmetropolitan areas is not due to a substantial change in the employment structure of rural communities. It is found that elderly migration to nonmetropolitan areas is the major factor determining the recent population growth in nonmetropolitan areas. In the migration streams between metropolitan and nonmetropolitan areas, there is still a higher rate of outmigration of younger people from nonmetropolitan areas. We may anticipate that more and more elderly will reside in rural communities, and there will be more retirement communities created in the process of the revival of population growth in nonmetropolitan areas. Rural communities will face another challenge which is quite different from the problems of depopulation due to the outmigration of younger people. To understand this challenge, this study has attempted to examine factors influencing elderly migration and the impacts of elderly migration and retirement function on community growth in nonmetropolitan areas.

The increasing proportion and number of the population age 65 and over has drawn public attention to the problems of aging. One

of the important aspects of the elderly population concerns their living arrangements and environment. Information concerning elderly migration and the development of the retirement function will reflect the problem of aging in the U. S. Thus, in this concluding chapter, in addition to a summary of the findings and the implications for changing rural communities, some implications related to aging will be discussed.

## Summary

### Elderly migration

Three questions asked in this study were dealt with separately in the three previous chapters. The first question concerns the factors affecting the decision of older people to migrate to nonmetropolitan areas. The factors examined include areal characteristics such as amenities (climate, natural environment, and recreation activities), degree of urbanization, cost of living, and the migration rate of the previous decade. It is found that the amenities in the nonmetropolitan areas, particularly in remote areas not adjacent to large urban centers, determine the inmigration of older people. However, the natural-environmental amenities (lakes, mountains, forests, etc.), exercises its influence on elderly migration through the development of social-recreational amenities (recreation areas, and facilities). But, the impact of amenities on elderly migration becomes less important as the counties are located closer to larger urban centers. Climate in the remote areas also contributes directly to elderly migration, but it has no effect in the metropolitan and adjacent areas. As the counties are located close to the highly

urbanized areas, urbanization takes over as an overwhelming factor pushing the elderly away from the community. The reason urbanization produces a push force is not because of living costs. Living cost itself tends to have a positive impact on the elderly migration, which is contradictory to our understanding that older people move to communities with lower costs of living due to their reduced income. It is obvious that the individual response to structural factors is not always consistant with the structural correlations. The degree of urbanization, which is associated with problems such as noise, pollution, and congestion, has a potential impact on the outmigration of elderly. In addition, urban centers are created based on the economic, political, and social activities of the larger system, and can be recognized as the battlefield of younger people who pursue prestige and status in the system, either for survival or for self-fulfillment as defined by the system. Elderly persons in the urban centers will help to reinforce the negative image held of the aged as being powerless, useless and lonely. Thus, urbanization itself has a decisive impact on the migration of older people.

When the factors influencing migration behavior operate over time and people tend to follow the existing path or flow of migration without seriously considering the actual factors, people simply respond to symbols or stereotypes. When this kind of structured pattern develops, the past migration experience of an area has an important impact on the migration rate of the current period. It is found in this study that the elderly migration in the '50s is the most powerful predictor of the migration in the '60s. When the past migration is taken into account, the original impact of natural-

environment amenities through social-recreational amenities on elderly migration is reduced. The impact of urbanization becomes relatively constant in the three area types of counties, although a tendency for it to be more influential in metropolitan areas exists. The cost of living becomes irrelevant to the migration of elderly. It can be inferred that the factors influencing elderly migration have been structured. Thus, the social systems causing the structured patterns of elderly migration are one of the important aspects to be investigated in the future.

Retirement function

The second question concerns community characteristics associated with the development of the retirement function. The immediate impact of elderly migration on the local community of course is the increase in the proportion of elderly in the community. A higher proportion of elderly and a higher rate of elderly migration can indicate the development of the retirement function. In the factor analysis, along with other specialized community functions such as agriculture, manufacturing, and services, the retirement function emerges as one of the specialized community functions. Thus, development of the retirement function in nonmetropolitan communities becomes evident. In keeping with ecological and social system approaches, community characteristics examined include sustenance activities, urbanization, settlement patterns, socioeconomic status, functional autonomy, and structural differentiation. It is found that retirement function is slightly associated with agricultural and wholesale retail trade activities, which reflect the tendency that

retirement function is developed in areas with a higher rurality and with some trade centers. The major source of sustenance in retirement communities is social security income, followed by self-employed non-farm income. Since urbanization discourages inmigration of the elderly, retirement function is developed in the areas having a lower degree of urbanization. However, the settlement pattern of older people exhibits a tendency for a higher proportion of elderly to be found in central places, and the smaller the place the higher the proportion of older population. In other words, the overall urbanization of a community or area will force the elderly to move away; but in terms of the distribution of the older people within the community, there is a higher proportion of elderly in central places, particularly the smaller ones.

Although there is a higher proportion of older people in central places, it is not accompanied by segregation from the rest of the population. On the contrary, the higher the retirement function of a community the more even the distribution of the degree of aging among subareas. Aging discrimination in rural areas seems less explicit than in urban areas. However, the elderly migration shows a positive sign in relation to the index of dissimilarity. It suggests that although the segregation is not obvious at this moment, a continuing increase in elderly migration to rural communities may begin to make the segregation explicit. For example, the Canadian Lake developer in Mecosta County plans to build more than 2,000 housing units exclusively for retirees. It will be equipped with security guards, recreational facilities, and socio-cultural enrichment programs. When this kind of community is fully developed, segregation in the

area will become significant.

Overall socio-economic status of the population in the communities specialized in retirement function is generally very low. Even elderly migration is also negatively correlated with socio-economic status, particularly income level. Although elderly migration is positively correlated with housing quality, when migration of younger people is controlled, elderly migration shows no relationship with housing quality. This suggests that better housing associated with elderly migration is basically related to the migration of younger people. In other words, the socio-economic condition of older people is generally lower than the rest of the population.

Communities specializing in the retirement function always have a lower structural differentiation in social units performing various functions. But, it is not necessarily accompanied by a lower functional autonomy in regard to accessibility of goods and services. However, it does show that there were more people commuting to other communities to work, and a slightly higher rate of unemployment. But, without migration of younger people, retirement function tends to have a lower functional autonomy in access to goods and services, job efficiency, and job sufficiency. Elderly migration itself, if there is no migration of younger people, is also associated with lower functional autonomy in the three aspects.

To characterize the retirement community in nonmetropolitan areas, the source of income is the most important, followed by degree of urbanization, socio-economic status, structural differentiation, and functional autonomy. The other sustenance activities fail to

characterize the retirement community. In other words, the retirement function in nonmetropolitan areas does not always accompany other specialized functions, including agriculture, manufacturing, and services. Although we do not have the direct evidence to show whether retirement function always develops in recreational areas, the relationship between services and the retirement function seems to suggest that this may not always be true in nonmetropolitan areas.

Community growth

Any changes in community characteristics may indicate certain changes in community structure. However, changes do not necessarily mean growth and development. In order to capture the growth of the community, population growth and structural development are used to indicate community growth. Population growth is a self-explanatory variable. Structural development refers to the emergence of new social units performing distinct functions, or to the differentiation process of social units. Social units within a community include those performing functions for the larger society and those for the locality. In other words, some organizations or establishments are developed at the societal (regional) level, and some are primarily developed for the local community. The locally relevant commercial activities are used to construct an index of structural development for the community.

The functions performed by organizations and establishments at the societal level become the key function or specialization of the community. The specialized functions constitute the economic base for the community. According to economic base theory, the basic

export functions can generate the growth of locally relevant functions. The economic base is the decisive factor determining the sustained growth of the community. Central place theory emphasizes the importance of local service business in determining the community growth as central places in terms of how much and how many kinds of goods and services they can provide for the region. The support of the hinterland will stimulate the growth of the centers; and the distribution of goods and services among centers forms a hierarchical system which tends to foster the decline of smaller places and the growth of larger centers, as population structure of hinterland, technology, and organization of functions change. Symbolic structural theory suggests that community growth in terms of structural differentiation is directly caused by the access that the community has to the larger system (centrality). The increase in centrality is caused by the solidarity movement of the community. With this theoretical background, this study examined specialization of the community function, centrality of services to aging from the larger system, and the centrality of central place in relation to retirement function and community growth.

It is found that retirement function has a negative direct effect on population growth but has a stronger indrect effect on the growth through the migration of younger people and wholesale and retail trade activities. In terms of structural development, retirement function does not have a significant impact either. Its effect on structural development is more indirectly channeled through the migration of younger people. Although retirement function does

promote the centrality of services to the aging, the centrality does not contribute very much to structural development. It is also found that the retirement function and services are more important than manufacturing and agricultural activities in maintaining population and community structure. Manufacturing and agriculture tend to frustrate the structural development of the community although agriculture still maintains a small amount of population growth. When the retirement function is broken into elderly migration and proportion of elderly, different relationships emerge. Elderly migration contributes a positive net impact on population growth and structural development. Its indirect effect through migration of younger people contributes to population growth, but its impact on structural development is more direct. Elderly migration has no direct impact on the access to the larger system of services to the aging, but the proportion of elderly itself tends to cause an increase in aging-related centrality. Because centrality of central places determines the major part of access to the aging-related systems, and the elderly tend to move to the communities of lower centrality, the indirect effect of elderly migration on the access to aging-related services becomes negative. However, the indirect effect of elderly migration through centrality of central place tends to contribute a positive effect on the structural development in the locality, particularly the smaller centers. Thus, it is concluded that elderly migration to rural communities has a significant contribution to both population growth and structural development.

The effects of retirement function and of elderly migration are different. Elderly migration is more favorable to community

growth in rural areas than the development of retirement function. Once the retirement function is developed and becomes highly specialized, the community growth will be frustrated if there is no migration of younger people. However, if the aging-related centrality increases its effect on structural development in the future, the influence of retirement function on community growth will be increased. At that time the importance of the retirement function in rural communities will increase. Furthermore, compared with other specialized community functions, the retirement function has more contribution to the community although not as strong as elderly migration itself. Thus, it can be concluded that both retirement function and elderly migration are the potential factors that maintain and generate communities in the future.

## Implications

The findings in this study have indicated that the revival of nonmetropolitan growth in recent years is highly related to the migration of older people to rural communities, and rural communities are likely to develop toward retirement communities. The findings also show that retirement function in general, and elderly migration in particular have a greater impact on the current community growth than other specialized functions. Thus, elderly migration and the development of the retirement function have a significant implication for rural development and for our changing rural society.

Changing our rural society

Larson and Rogers (1964) suggest the following seven rural social changes: increased farm productivity and fewer farmers needed; increased farm and non-farm linkages (increasing centralized organization); increased specialization of farm production (reduce the need for economic services from a local community center); decreased rural-urban differences in values and moving toward mass society; increased cosmopolitan social relationships; centralization of decision-making; and increased importance of secondary relationships. Warner (1974) also sketches some of the dimensions and processes of rural transformation in a post industrial age in the following words:

> "Increasingly, the decisions and actions of consequences in society are controlled and made by corporate actors - both private corporations and public bureaus. These actors tend to be concentrated in metropolitan places. They develop and control the technologies and their applications in society" (Warner, 1974:309).

These technologies and organizations tend to destroy the existing rural social system and lead rural society out to diverse metropolitan centers. Many lines of interdependency and social bonds go to remote centers rather than the nearby ones. Increasing division of labor and differentiation of interests and association with the increasing systemic relationships to the larger society have fostered a decline in community cohesiveness and autonomy, a trend Warren (1963) refers to as the "great change."

All of these arguments are concerned with the relationships between rural communities and the larger society in terms of functional specialization, differentiation, interdependency, and centralization caused by technological advance and related organizations,

which form the major social system in American society. The communities which participate in the system are affected by this kind of process and change. If communities do not participate in the system, such as the Amish, the impact may not be so severe as those in the system. Since elderly are mostly retired from the labor force, the major link to the larger system, the involvement of retirement communities in the larger system may be less significant than for other types of communities. Older people may not be like younger people who are so anxious to participate in the larger system beyond the confines of the local community in order to gain recognition by the larger system. Thus, rural communities dominated by the retirement function may be saved in the process of the great change. The evidence in this study indicates that retirement function in the community with a higher proportion of elderly tends to be able to maintain certain institutions, on one hand, and elderly migration tends to promote structural development on the other hand. The smaller the community, the more important the retirement function in maintaining community structure.

However, retirement communities cannot be isolated from the larger system because the major sources of sustenance are still provided by the system, such as social security payments and services to the elderly. Although the services to the aging are mostly located in larger centers, these services do not constitute a central function to which the older people travel. Instead, the services go to local communities to serve the elderly. This becomes an important factor maintaining the population in the community.

Although the retirement function of the community can retain population in the community, retirement communities are generally characterized by having lower socio-economic status (low income and poor housing quality), and lower functional autonomy (access to goods and services, and job effectiveness). This implies some problems for rural communities. Because the income of elderly is usually lower and their living scale has been reduced, larger scale businesses such as hospital and other industries may not be attracted to the communities. The general goods and services are always subject to the operation of the market mechanism. Thus, the need of older persons for various services is highly dependent upon the efforts of the public sector and voluntary organizations. The extent to which this sector contributes to local communities and the elderly has not been fully demonstrated in this study. However, the limited information about the centrality in terms of access to the aging-related larger system (State government) suggests that the impact at the present time is still minimal.

When a substantial number of older people move to rural communities with their experience and skills, elderly migrants can form a useful reservoir of human experiences and manpower. Since retirees are regarded as retreating from the larger society and since the system no longer cares about their usefulness and past contribution to the larger system, they no longer need to struggle to gain recognition. They begin to give their attention to their own living arrangement. Thus, if retirees are organized in local communities, their concern about local affairs should be very substantial. The development of

the retirement function in rural communities should be a valuable source for the community in restoring community consciousness and cohesiveness, and to contribute to community growth. The evidence in this study shows the contribution of elderly migration to community growth. The development due to elderly migration deserves more attention.

Copp (1964) suggests seven opportunities for rural sociologists in the changing of rural society. These opportunities include a continuation of current research; analysis of the changing structure of agriculture; to aid in agricultural adjustment; correcting the follies of the unplanned, inadequately controlled expansion of the preceding years; examining the problem of declining communities and aid communities to adjust to changing circumstances; examining the problems of rural people in cities; and extending our work to the developing world. To these I must add another opportunity for rural sociologists, namely, to examine the factor of population retention contributed by the older population and the growth caused by the development of the retirement function and elderly migration. In the past, rural communities have been perceived as declining, losing their autonomy, and frustrated; hence the theories and attention are concentrated on the problem of decline. Now it is the time for us to look at the reverse, and give attention to the growth and developmental perspective.

The rural environment has been an important factor in recent growth. Thus, for rural development, it is important to preserve the natural amenities and to prepare a comprehensive plan to develop

possible sites for the development of retirement communities and to correct the follies of the unplanned, inadequately controlled expansion of urban uses of rural land, as Copp (1964:346) suggested.

Older people in the post-industrial age

Migration of the older population to rural communities in recent years also has some implications for the status of older people in the post-industrial age. In the preceding decades, the process of urbanization and industrialization attracted an enormous number of people to urban areas and converted a large proportion of them into wage and salary workers. To find a job, people were forced to move around from one place to another. In the process, the functions of the family system eroded and the work role became more important in identifying an individual's status in society than the family role. When workers retired, they lost their identity and no family role and status can compensate the loss.

Weinberg (1963:230) classified individuals into three types--"the individual who is concerned with the feelings, impulses, and desires of the moment, called the 'being' type; the one who is principally concerned with action, achievement, and getting things done, called the 'doing' type; and the individual referred to as the 'being and becoming' type who is most interested in inner development and the fullest realization of aspects of personality." He argues that Americans are typical of the "doing" type. The "doing" orientation leads to an intensive comparison and competition. Because of aging, the elderly are often unable to compete with younger groups and often stop "doing."

The emphasis on "doing" is also reflected by the school system. Turner (1960) considers that in the U. S. the upward mobility is according to norm of contest. In the contest system, the contestants have a wide latitude in the strategies they may employ. The idea of success is to beat the others, and to demonstrate that one is sharper than others. Anyone in the elite group will be beaten some day; so, he should keep on competing with others. Those who strongly follow the norms of the contest system may find themselves exhausted and no longer are able to continue to run. Finally they retreat from the contest. Since their children are also socialized to participate in the contest, they are so busy "running" that no energy and attention is left to care for their older folks. The whole value system and attitude toward aging leaves the impression that the older person is the least desired member of the group (Weinberg, 1963:229).

However, the past contribution to society made by the elderly must be appreciated. The extent to which social system can take care of older persons can be used to indicate the degree of the health of a society (Weinberg, 1963:232). One aspect of the treatment of older people by the society is how to give them a choice of living arrangement in the years of retirement. Thus, elderly migration to rural communities illustrates the need of older persons for better living arrangements.

The deterioration of urban centers has made the urban environment less suitable for living. As Fuguitt and Zuiches (1975:499) report, those who still prefer to live in larger cities are those who seek higher wages or salaries, better schools, and recreation or

cultural facilities. Most of those who prefer rural locations as places to live consider the quality of life associated with the country and stress such qualities as fresh air and water, and better place for children. The reasons for preferring to live in larger cities are related to labor force participation and socialization, which would not coincide with the reasons for elderly to live in larger cities.

By using the data taken from 1973 sample survey by National Opinion Research Center, Hynson (1975) examines rural-urban differences in satisfaction among the elderly and found that, besides satisfaction with family which was not related to city size, the rural elderly were more satisfied with their community, expressed greater general happiness, and had less fear than the urban elderly. The larger the urban place the higher the proportion of elderly who answered "yes" to the question: "Is there any area right around here--that is, within a mile--where you would be afraid to walk alone at night?" In addition, urban communities exhibit a tendency to be compact physically, but socially and psychologically isolated. Urbanism as a way of life, in fact, is not an ideal way of life for older people. Thus, there is a strong need to develop retirement communities in rural areas.

In many ways cities can be likened to a race track. The whole structure of cities seems to be designed to force people to run. In any large city, we find that people in the street are hurrying back and forth. They hurry for this and that because they are located on the race track to achieve sustenance, a niche in the complex system. Because everybody is running, dust, noise, and waste by-products are

generated on the track. Those who run slower will absorb a lot of these by-products. Older people are among those who cannot run faster, even though they may want to. They can of course lock themselves in a retirement hotel room because they are afraid of going outside. It is inhuman for a society to leave those who are incapable of joining the race to inhale the "dust" behind others.

Services to the aging

The main reason for the elderly to stay in cities is the availability of a variety of facilities to serve the population there and which cannot be easily found elsewhere. The social system does not prepare living arrangements suitable for the elderly. The findings in this study indicate that services to the aging are more likely located in larger centers, but retirement function tends to develop in remote areas. The philosophy behind the planning of services for aging is based on the absolute distribution of the population. Since more elderly people live in cities, the planning and services delivery are focused on urban areas; and that tends to compel older people to stay in cities because the system does not provide a better alternative in rural communities. Those older persons who migrate to rural communities mainly manage their living arrangement by themselves.

In order to provide better services to the aging and to be human by barring vulnerable older people from the racetrack, policy makers not only should provide services based on the distribution of the older population but also should create alternative situations to which the elderly can respond and choose, such as developing

retirement communities with necessary services in rural areas.

The services to the aging provided by the government are not the only solution to the problem of aging. The whole problem is rooted in the value system and attitude of the American society concerning the aged. Furthermore, it is rooted in, shall we say, a capitalistic mode of political economy. The relationships between older people and young adults in the family illustrates the problem. Riley (1976:92) suggests, that the American family is characterized by "sequential relations" (or a one-way street) among generations. The proportions of older people who give help to their offspring appears to exceed the proportions who receive help from their offspring. It is not a reciprocal relationship in terms of the exchange of material support. Since the pattern has been institutionalized, the elderly generation does not expect repayment, and the young adults do not feel that the care of their older kin is an obligation. Many middle-aged parents only pay attention to their children and some of them only pay attention to themselves because the racetrack of life is so hectic. Thus, one of the solutions to the problem is to modify the system in order to push people less hard on the race track, and to allow them to have time to ponder the purpose of life, and to change their "doing" to "being and becoming."

## Future Research

The revival of nonmetropolitan growth in recent years is related to elderly migration to rural communities. The findings in this study indicate that elderly migration and the development of the retirement function had stronger impact on the community growth

than other types of specialized functions. Since this study only investigated the North Central Region and Michigan in particular, the extent to which the results can be applied to the whole country is open to question. And since this study only examined the changes between 1970 and 1975, whether the impact of elderly migration and the retirement function on rural communities is temporary or a significant trend in the future is also open to question. I believe that the impact of elderly migration on rural communities will persist in the future; and, the importance of the development of the retirement function in rural communities will be increasing as long as the life expectancy of the population increases and more people move out from cities. The development of rural communities toward the retirement community will be evident in most parts of the country. To verify these assumptions, future study is proposed as follows:

1. To conduct a comparative study of elderly migration and its impacts on other parts of the country;
2. To carry out the same study as the present one at a later point of time, in 1980 for instance;
3. To identify the specific retirement communities in rural areas of the entire U. S.

In investigating the retirement communities, the foci should be placed on characteristics of younger people as well as of older people. It was found in this study that although migration of younger people was highly correlated elderly migration was an important intervening variable causing population growth, it had less impact on structural development. This is contradictory to our understanding

that the migration of younger people is the most important factor determining overall community growth. Since this study deals only with the general community characteristics, it does not provide answers to the questions: why are younger persons drawn to the community along with elderly migrants, and what are these young people doing in the communities specializing in the retirement function? Thus, future research should also examine the characteristics of the young people migrating to the retirement communities.

# APPENDICES

# APPENDIX I

## LIST OF COUNTIES IN MICHIGAN NONMETROPOLITAN AREAS FOR THE STUDY

## APPENDIX I

### LIST OF COUNTIES IN MICHIGAN NONMETROPOLITAN AREAS FOR THE STUDY

| County (Largest Place) | County (Largest Place) |
|---|---|
| Alcona (Harrisville) | Kewenaw (Mohawk *) |
| Alger (Munising) | Lake (Baldwin) |
| Alpena (Alpena) | Leelanau (Northport) |
| Antrim (Mancelona) | Luce (Newberry) |
| Baraga (L'anse) | Mackinac (St.Ignace) |
| Benzie (Frankfort) | Manistee (Manistee) |
| Charlevoix (Charlevoix) | Marquette (Marquette) |
| Cheboygan (Cheboygan) | Mason (Ludington) |
| Chippewa (Sault Ste Marie) | Mecosta (Big Rapid) |
| Clare (Clare) | Menominee (Menominee) |
| Crawford (Grayling) | Missaukee (Lake City) |
| Delta (Escanada) | Montmorency (Hillman) |
| Dickinson (Iron Mountain) | Ogemaw (West Branch) |
| Emmet (Petoskey) | Ontonagon (Ontonagon) |
| Gogebic (Ironwood) | Osceola (Reed City) |
| Grand Traverse (Traverse City) | Oscoda (Mio*) |
| Houghton (Houghton) | Otsego (Gaylord) |
| Iosco (East Tawas) | Presque-Isle (Rogers City) |
| Iron (Iron River) | Roscommon (Roscommon) |
| Isabella (Mount Pleasant) | Schoolcraft (Manistique) |
| Kalkaska (Kalkaska) | Wexford (Cadillac) |

*Unincorporated places

# APPENDIX II

## MEAN, STANDARD DEVIATION, AND SKEWNESS OF VARIABLES

## APPENDIX II

### MEAN, STANDARD DEVIATION, AND SKEWNESS OF VARIABLES

Central tendency and dispersion of characteristics are indicated by the mean and standard deviation. Skewness coefficients [1] is used to determine the degree to which a distribution of cases approximates a normal curve because it measures deviations from symmetry. If cases tend to be concentrated toward the lower values of the scale with the curve tailing off to the right, the curve is positively skewed. If cases tend to be concentrated toward the higher value of the scale, the curve is negatively skewed. According to Cowden (1957), the curve is significantly skewed if the coefficient is outside the range, between +2 and -2.

Appendix Table 1 and 2 show mean, standard deviation, and skewness coefficient of variables used in this study. For Michigan nonmetropolitan counties under study, no skewness coefficient is beyond the range between + 2 and -2. For the North Central Region counties, recreational amenity and degree of urbanization are concentrated toward lower value (end)of the scale. This suggests that population and recreational facilities and services are concentrated in fewer localities in the region. Since whole region is examined, no sample error is involved. Nevertheless, Michigan nonmetropolitan areas represent the upper end of the scale in the whlole region in terms of the development of the retirment function. The average rate of net migration of elderly in the region's nonmetropolitan areas as a whole was 1.44, while in Michigan, the average was 10.2 with a standard deviation of (18.9). Although Michigan nonmetropolitan counties connot exactly represent the whole region, examination of Michigan data will suggest a tendency of development in nonmetropolitan areas if community is specialized in the retirement function.

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[1] The formula used for the calculation of skewness coefficient is as follows:

$$SK = (\Sigma ((X_i - \bar{X})/S)^3)/N,$$ where, $X_i$ = Values of the variable;
$\bar{X}$ = Mean;
S = Standard deviation;
N = Numver of Cases

Appendix Table 1.-- Mean,standard deviation, and skewness coefficient of variables for the North Central Region Counties

| Variables | Metro (143) | | | Adjacent (309) | | | Nonadjacent (602) | | |
|---|---|---|---|---|---|---|---|---|---|
| | mean | standard deviation | skewness | mean | standard deviation | skewness | mean | standard deviation | skewness |
| Net migration rate 65+, 1960-1970 | -1.59 | 6.83 | .76 | .89 | 6.71 | .79 | 1.44 | 10.23 | 1.17 |
| Net migration rate 30-54,1960-70 | 6.44 | 16.26 | 1.08 | 2.25 | 10.12 | 1.00 | -3.53 | 12.49 | .84 |
| Natural amenities | 1.07 | 1.03 | -.02 | 1.04 | 1.04 | .13 | 1.27 | 1.08 | -.09 |
| Presence of lakes(%) | 53.2% (n=75) | | | 48.5% (n=150) | | | 55.8% (n=336) | | |
| Presence of forest(%) | 2.0% (n=3) | | | 6.8% (n=21) | | | 15.1% (n=91) | | |
| Climate Index,1965 | .51 | .10 | -1.23 | .55 | .13 | -.82 | .53 | .17 | -.43 |
| Recreation Amenities | 159 | 305 | 6.63 | 32 | 33 | 2.82 | 24 | 36 | 5.71 |
| # of hotels,motels | 54 | 85 | 6.07 | 18 | 26 | 3.95 | 16 | 32 | 6.53 |
| # of amusement | 105 | 223 | 6.64 | 14 | 13 | 2.25 | 8 | 7 | 2.10 |
| Urbanization (Z-1960) | .00 | 2.40 | 3.28 | .00 | 2.69 | 1.16 | .00 | 2.63 | 1.60 |
| % urban population | 63.95 | 23.86 | -.63 | 30.31 | 20.09 | -.03 | 23.00 | 24.54 | .52 |
| Population density | 518 | 1133 | 5.48 | 53 | 41 | 2.05 | 24 | 23 | 2.69 |
| Largest place size | 121,248 | 347,941 | 7.56 | 8,822 | 9,353 | 1.89 | 5,419 | 6,949 | 2.84 |
| Cost of living (Z-1960)* | .00 | 2.40 | .31 | -.05 | 1.92 | -.14 | -.54 | 2.25 | .01 |
| Median rent | 74.11 | 10.69 | .58 | 62.48 | 8.63 | -.11 | 53.27 | 14.68 | -.70 |
| Median value of housing | 11,876 | 2,679 | .22 | 8,280 | 1.957 | .59 | 7,220 | 1,930 | .77 |
| Net migration rate 65+, 1950-1960 | -1.24 | 10.64 | 1.79 | -3.32 | 6.06 | .35 | -6.72 | 11.99 | -1.46 |

*The missing values in median rent are assigned as 25.00; the missing values in median value of housing units are assigned as 5,000.

Appendix Table 2.-- Mean, standard deviation, and skewness of variables for Michigan Nonmetropolitan Counties (42)

| Variable | mean | standard deviation | skewness |
|---|---|---|---|
| Index of retirement function | .00 | 1.02 | .61 |
| Net migration rate,65+, 1960-70 | 10.20 | 18.91 | 1.25 |
| Percent population,65+, 1970 | 12.75 | 2.92 | .18 |
| Net migration rate,30-54, 1960-70 | 9.97 | 18.22 | .34 |
| Index of agricultural function | .00 | 1.00 | 1.30 |
| % employed in agriculture,1970 | 4.81 | 3.05 | 1.30 |
| % wage and salary in agriculture 1973 | 7.20 | 6.00 | 1.42 |
| Index of manufacturing function | .00 | 1.00 | .43 |
| % employed in manufacturing,1970 | 21.57 | 9.48 | .28 |
| % wage and salary in manufacturing 1973 | 15.68 | 9.63 | .53 |
| Index of service function | .00 | .99 | .47 |
| % employed in services,1970 | 7.09 | 2.47 | 1.24 |
| % wage and salary in services,1973 | 12.51 | 4.87 | .38 |
| Index of wholesale and retail trade | .00 | 1.63 | -.03 |
| % employed in wholesale and retail | 21.72 | 3.70 | .16 |
| % wage and salary in wholesale and retail trade, 1973 | 15.77 | 4.33 | -.23 |
| Sources of income, 1970: | | | |
| % wage and salary income | 79.61 | 6.14 | -.84 |
| % self-employed nonfarm income | 12.98 | 3.06 | .84 |
| % social security income | 26.82 | 5.31 | .30 |
| % public assistance and welfare | 4.66 | 2.20 | 1.48 |
| Urbanization, 1970 (Z-scores) | .00 | 2.61 | .68 |
| % urban population | 27.02 | 24.06 | .12 |
| Population density | 25.83 | 18.32 | 1.35 |
| Population of the largest place | 5,737 | 5,847 | 1.28 |
| % rural population - nonfarm | 62.56 | 20.99 | .07 |
| % rural population - farm | 10.45 | 6.47 | .86 |
| Index of dispersion of proportion of elderly | .36 | .14 | .90 |
| Index of dissimilarity between elderly and younger | .11 | .05 | 1.79 |

Appendix Table 2 (continued)

| | | | |
|---|---|---|---|
| Index of income and education | .00 | .89 | -1.02 |
| Family median income,1969 | 7684.21 | 1039.12 | -.57 |
| % family income below low income | 13.45 | 3.97 | .81 |
| Median school years attained,25+ 1970 | 11.53 | .71 | -1.40 |
| Index of occupational status | .00 | 1.01 | .43 |
| % professional and managerial | 7.09 | 2.79 | .60 |
| % sales and clerical occupations | 20.69 | 3.38 | -.06 |
| Index of housing quality 1970 | .00 | 1.00 | -.25 |
| % median value of housing units | 10,978 | 2,707 | .05 |
| % dwelling units having all plumbing facilities | 91.11 | 4.24 | -1.16 |
| % persons in housing built in 1960 and later | 22.68 | 9.17 | .33 |
| Functional autonomy: | | | |
| Index of sufficiency in goods and services | .98 | .31 | .91 |
| % workers working in the county of residence | 76.55 | 10.87 | -.85 |
| % labor force unemployed | 9.72 | 2.63 | .23 |
| Structural differentiation: | | | |
| Stuby scale, 1969 | 4.62 | 3.86 | .81 |
| Stuby scale, 1973 | 4.83 | 3.72 | .67 |
| Population size 1970 | 17,530 | 12,832 | 1.55 |
| Total number of selected functions 1970 | 47.26 | 22.08 | .31 |
| Number of functions added,1975 | 8.31 | 3.73 | .09 |
| Number of functions dropped,1975 | 8.45 | 3.56 | .00 |
| Total score of net change 1970-75 | 20.95 | 105.87 | -.43 |
| Index of structural development 1970-75 | .67 | 2.56 | .39 |
| Centrality of aging-related services | .00 | .95 | 1.04 |
| Centrality of central places | .00 | 1.93 | .73 |
| Population growth rate 1970-75 | 14.73 | 11.39 | 1.01 |

# APPENDIX III

## INDEXES OF SPECIALIZED FUNCTIONS IN MICHIGAN NONMETROPOLITAN COUNTIES

## APPENDIX III

### INDEXES OF SPECIALIZED FUNCTIONS IN MICHIGAN NONMETROPOLITAN COUNTIES

| COUNTY | RETIREMENT FUNCTION | AGRICULTURE FUNCTION | MANUFACTURING FUNCTION | SERVICES FUNCTION |
|---|---|---|---|---|
| Alcona | 1.55 | .99 | -.43 | -1.15 |
| Alger | -.84 | .12 | 1.07 | -.18 |
| Alpena | -1.28 | -.59 | .88 | -.21 |
| Antrim | .45 | .68 | 1.60 | .07 |
| Baraga | .16 | -.29 | 1.00 | -1.16 |
| Benzie | .44 | .75 | -.11 | .43 |
| Charlevoix | -.43 | -.40 | 1.25 | 1.02 |
| Cheboygan | -.36 | -.49 | .41 | .39 |
| Chippewa | -1.55 | -.80 | -1.58 | -.27 |
| Clare | 1.62 | -.15 | .16 | -.24 |
| Crawford | -.23 | -1.28 | .08 | 2.35 |
| Delta | -.51 | -.68 | .57 | .14 |
| Dickinson | .49 | -.88 | .07 | -.44 |
| Emmet | -.22 | -.56 | -.55 | 2.14 |
| Gogebic | .27 | -.64 | -.06 | .45 |
| Grand Traverse | -.86 | -.46 | -.32 | .55 |
| Houghton | -.29 | -.81 | -1.15 | .26 |
| Iosco | .18 | -.62 | -.93 | -.15 |
| Iron | .46 | -.75 | -1.16 | -.16 |
| Isabella | -1.86 | .42 | -.90 | -.18 |
| Kalkaska | .94 | -.05 | .27 | -.38 |
| Keweenaw | .05 | -.97 | .21 | -1.48 |
| Lake | 1.95 | 1.92 | -.24 | 1.21 |
| Leelanau | -.18 | 2.18 | -.88 | 1.42 |
| Luce | -.75 | -.92 | -1.17 | -.78 |
| Mackinac | -.50 | -.36 | -1.29 | 1.21 |
| Manistee | .10 | -.02 | 1.71 | -.63 |
| Marquette | -1.61 | -1.26 | -1.47 | -.05 |
| Mason | -.15 | .18 | 1.21 | -.66 |
| Mecosta | -1.07 | .47 | -.13 | -.94 |
| Menominee | -.21 | .65 | 1.93 | -1.15 |
| Missaukee | .18 | 3.32 | -.74 | -.28 |
| Montmorency | 1.14 | .17 | 1.28 | -1.42 |
| Ogemaw | 1.36 | 1.33 | -.13 | -.77 |
| Ontonagon | -1.24 | -.27 | -.80 | -1.93 |
| Osceola | -.36 | 1.02 | 2.26 | .97 |
| Oscoda | 2.49 | .40 | -.40 | 1.65 |
| Otsego | -.76 | -.60 | .35 | 1.58 |
| Presque-Isle | -.40 | 1.71 | -1.21 | -1.00 |
| Roscommon | 2.30 | -.97 | -.94 | -.37 |
| Schoolcraft | -.09 | -.64 | -.67 | -.38 |
| Wexford | -.35 | -.67 | .95 | .49 |

# APPENDIX IV

## LIST OF LOCALLY-RELEVANT INDUSTRIES FOR THE STUDY, NUMBER OF COUNTIES HAVING THE FUNCTION IN 1970 NUMBER OF COUNTIES ADDED AND DROPPED THE FUNCTIONS, BASED ON 1967 STANDARD INDUSTRIAL CLASSIFICATION

## APPENDIX IV

LIST OF LOCALLY-RELEVANT INDUSTRIES FOR THE STUDY,NUMBER OF COUNTIES HAVING THE FUNCTION IN 1970 NUMBER OF COUNTIES ADDED AND DROPPED THE FUNCTIONS,BASED ON 1967 STANDARD INDUSTRIAL CLASSIFICATION

| SIC | Function | # of county | drop-ped | add-ed | SIC | Function | # of county | drop-ped | add-ed |
|---|---|---|---|---|---|---|---|---|---|
| 5411 | Grocery stores | 42 | 0 | 0 | 5541 | Gas station | 42 | 1 | 0 |
| 5813 | Drinking place | 42 | 0 | 0 | 5812 | Eating place | 41 | 0 | 0 |
| 5912 | Drug stores | 41 | 1 | 0 | 6000 | Bank | 41 | 0 | 1 |
| 1711 | Plumbing contractor | 40 | 4 | 0 | 5211 | Lumber building material | 39 | 1 | 2 |
| 5251 | Hardware stores | 39 | 0 | 0 | 1511 | Building contractor | 37 | 7 | 0 |
| 5511 | Auto dealers | 37 | 0 | 0 | 1731 | Electric work | 37 | 7 | 0 |
| 5399 | General store | 36 | 2 | 4 | 5712 | Furniture stores | 35 | 0 | 1 |
| 5732 | Radio T.V. stores | 35 | 9 | 2 | 5941 | Sport bicycle goods | 32 | 1 | 7 |
| 5997 | Gift shops | 32 | 4 | 6 | 5013 | Auto equipment(wholesale) | 32 | 2 | 6 |
| 5621 | Women's wear | 31 | 0 | 3 | 5331 | Variety store | 30 | 1 | 3 |
| 5971 | Jewelry stores | 30 | 5 | 1 | 7933 | Bowling alleys | 30 | 8 | 3 |
| 5722 | Appliance stores | 29 | 4 | 3 | 5611 | Man's boy's wear | 28 | 1 | 1 |
| 5531 | Tire battery dealers | 27 | 5 | 1 | 5462 | Bakeries | 27 | 3 | 2 |
| 7216 | Dry clearing | 27 | 6 | 2 | 7261 | Funeral service | 27 | 6 | 4 |
| 5992 | Florists | 27 | 2 | 7 | 5661 | Shoes stores | 26 | 3 | 2 |
| 5983 | Fuel oil dealers | 25 | 15 | 2 | 5599 | Aircraft automatic dealers | 24 | 3 | 13 |
| 4213 | Trucking | 23 | 7 | 4 | 5095 | Alcoholic beverage (wholesale) | 22 | 14 | 0 |
| 5884 | Bottle gas dealers | 22 | 4 | 4 | 5713 | Floor covering | 22 | 2 | 6 |
| 5231 | Paint glass wall paper | 22 | 8 | 2 | 4832 | Radio station | 21 | 0 | 6 |
| 5943 | Stationery stores | 21 | 7 | 4 | 7538 | General auto repair shops | 20 | 4 | 6 |
| 5733 | Music stores | 20 | 2 | 1 | 5921 | Liquor stores | 19 | 4 | 6 |
| 1721 | Painting decoration contractor | 19 | 4 | 1 | 7221 | Photo studio | 19 | 6 | 2 |
| 5521 | Auto dealers(used) | 19 | 6 | 3 | 5591 | Boat dealers | 19 | 2 | 3 |
| 5999 | Miscellaneous retail stores | 19 | 2 | 5 | 5063 | Wiring supplies (wholesale) | 18 | 5 | 5 |
| 1761 | Roofing sheet metal work | 18 | 3 | 3 | 5043 | Dairy products (wholesale) | 18 | 8 | 1 |
| 7699 | Miscellaneous repair shops | 18 | 8 | 5 | 5996 | Camera supply shops | 18 | 5 | 0 |
| 4212 | local trucking | 17 | 1 | 2 | 5931 | Antique secondary stores | 17 | 5 | 7 |
| 5651 | Family clothing stores | 16 | 1 | 4 | 7211 | Power laundries | 16 | 7 | 4 |
| 5341 | Automatic mechanidising | 15 | 7 | 1 | 5084 | Industrial machinery equipment | 13 | 3 | 5 |
| 5065 | Electronic parts | 12 | 5 | 2 | 5048 | Fresh fruits vegetable (whole) | 11 | 0 | 1 |
| 5945 | Confestionery | 11 | 3 | 3 | 5641 | Children infant wear | 11 | 3 | 4 |

APPENDIX IV (continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5014 Tires wholesale | 10 | 5 | 3 | 4899 Communication services | 10 | 0 | 6 |
| 5994 News dealers stands | 10 | 4 | 1 | 5942 Book stores | 9 | 2 | 6 |
| 5421 Meat market | 9 | 2 | 5 | 5081 Commercial machine | 9 | 4 | 5 |
| 1741 Masonry stone work | 9 | 4 | 3 | 5087 Equipment for service stores | 9 | 4 | 5 |
| 5047 Meats meat products | 8 | 6 | 2 | 7539 Special auto repair | 8 | 3 | 8 |
| 5671 Custom tailers | 8 | 2 | 8 | 5441 candy nuts confectionery | 8 | 4 | 4 |
| 5351 Direct selling establishments | 7 | 6 | 3 | 5995 Hobby shops | 7 | 3 | 7 |
| 4121 Taxicabs | 7 | 3 | 1 | 5714 Drapery curtain | 6 | 3 | 4 |
| 5097 Furniture home furnishing | 6 | 4 | 5 | 5631 Women's accessory | 6 | 3 | 3 |
| 7213 Linen supply | 6 | 1 | 1 | 7629 Electrical repair | 6 | 4 | 2 |
| 5042 Drozen foods | 6 | 2 | 0 | 4833 T.V stations | 6 | 0 | 1 |
| 1771 Concret work | 5 | 3 | 3 | 5041 Groceries wholesale | 5 | 1 | 4 |
| 5431 Fruit vegetable markets | 5 | 1 | 5 | 1751 Carpentering | 5 | 5 | 4 |
| 5321 Mail order house | 5 | 2 | 7 | 5064 Radio T.V. wholesale | 5 | 2 | 0 |
| 5096 Paper and its products(wholesale) | 5 | 1 | 3 | 4111 Local transit | 5 | 3 | 4 |
| 4220 Warehouse | 5 | 1 | 3 | 5085 Industrial supplies | 4 | 0 | 8 |
| 5086 Professional equipment | 4 | 2 | 1 | 5012 Auto wholesale | 4 | 4 | 2 |
| 8911 engineering architecture service | 4 | 0 | 6 | 5044 Poultry wholesale | 3 | 2 | 1 |
| 7549 Automobile services | 3 | 2 | 1 | 4811 Telephone communication service | 3 | 0 | 3 |
| 7623 Refrigeration service repair | 3 | 1 | 4 | 5993 Cigar store | 3 | 3 | 1 |
| 5077 Airconditioning regrigeration su | 3 | 2 | 0 | 7349 Dwelling services | 3 | 2 | 3 |
| 5681 Furriers and fur shops | 3 | 2 | 0 | 7311 Advertising services | 2 | 0 | 1 |
| 4131 Intercity bus lines | 2 | 0 | 1 | 5719 Mis.home furnishing stores | 2 | 1 | 9 |
| 5046 Fish and sea foods wholesale | 2 | 0 | 1 | 5022 Drugs wholesale | 1 | 0 | 1 |
| 1791 Structural steel erection work | 1 | 0 | 1 | 5451 Dairy product stores | 13 | 7 | 1 |
| 7622 Radio T.V. repair | 14 | 4 | 7 | 5311 Department stores | 13 | 3 | 4 |
| 5074 Plumbing heating equipment | 13 | 0 | 1 | | | | |

Source: Compiled form Dun and Bradstreet Reference Book, July 1970 and July 1975.

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