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Population dynamics of nonmetropolitan cities in five western states

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Contrary to popular belief, small cities, located outside Standard Metropolitan Statistical Areas (SMSA's) and generally referred to as nonmetropolitan cities, have not been declining in population and withering away; rather, they have been growing and prospering in all regions of the country, albeit their growth varies considerably.

It is this variation in growth rates of nonmetropolitan places in the northwest (and the factors associated with this variation) which is the focus of this thesis. Research literature in this area indicates a reciprocal relationship between the nature of economic activities in nonmetropolitan cities and their growth pat-

terns. In an attempt to more fully understand the nature of this reciprocal relationship, this research employs a longitudinal design. The effects of the previous growth (of the city's hinterland as well as the city itself), ecological position within a system of cities (location on or off an interstate highway, distance to nearest Standard Metropolitan Statistical Area, and proximity to places of varying sizes within the same county), and character of economic activity in the hinterland (State Economic Area extractive employment) impact upon both the economic functions of those nonmetropolitan places and their varying growth rates. This approach allows for a fuller explanation of how the economic organization of these communities operates as an intervening influence between these factors and subsequent population growth.

Analysis of the effect of the contextual and place factors on nonmetropolitan community economic function revealed that places specializing in manufacturing and public administration were generally located in State Economic Areas (SEA's) with low levels of extractive employment, whereas communities with a wholesale-retail function were found in high extractive settings. Cities in a multiple city context tended to specialize in manufacturing or to have a diversified economy, whereas communities in a single city context had a wholesale-retail or service specialization. Nonmetropolitan communities near a Standard Metropolitan Statistical Area (SMSA) generally specialized in manufacturing or public administration, and places some distance from a metropolitan city had a wholesale-retail, service, or diversified function.

The influence of size and proximity to other nonmetropolitan

places on growth variability was examined by delineating communities by size and adjacency to other nonmetropolitan cities. The delineation of communities yielded four types of nonmetropolitan cities in nonmetropolitan counties: (1) Large Adjacent City: a city of 10,000 or more with one or more smaller cities in the same county; (2) Small Adjacent City: a city under 10,000 with one or more larger places in the same county; (3) Large Independent City: a city of 10,000 or more with no smaller places in the same county; and (4) Small Independent City: a city under 10,000 with no larger places in the same county.

The examination of population changes showed that between 1960 and 1970 large independent cities had the highest growth rates (19.4 per cent), and small independent communities had the lowest (7.6 per cent). For all city types except small independent cities, single places had higher growth rates than communities in a multiple city context. Slightly less than half of the cities that lost population between 1950 and 1960 increased in size during the succeeding decade. Large independent cities displayed a trend contrary to other city types, in that this category contained the greatest proportion of cities growing in the farthest distance zone from an SMSA. All city types except large adjacent communities were more likely to increase in size if they had accessibility to an interstate freeway. Communities with a wholesale-retail, service, or public administration specialization were the most likely to increase in population, and places with a mining or transportation function manifested the lowest proportion of cities exhibiting growth.

Path analysis demonstrated that SEA extractive employment had an important negative impact on the independent cities' population change. The multiplicity of cities and accessibility to a freeway demonstrated a strong positive influence on large independent communities. Overall, service and diversified economic functions demonstrated the strongest positive effect on all city types. The only important indirect effects were the positive effect of distance through the economic function of large adjacent cities, and the negative impact of distance through economic specialization for small adjacent cities.

POPULATION DYNAMICS OF NONMETROPOLITAN CITIES IN FIVE WESTERN STATES

by

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CHAPTER I

INTRODUCTION

Three centuries ago, the urban component of American society was limited to a few small isolated settlements along the Atlantic coast and in Southern California. Today, nearly three-fourths of the population of the United States lives in urban communities covering approximately 1.8 percent of the total land area. The tremendous urban growth in this nation over the last three hundred years can readily be appreciated by utilizing Hope Tisdale's (1942) concept of urbanization--the multiplication of nodes of human concentration and the increase in the size of individual concentrations. For example, in 1790, the year of the first federal decennial census, there were only 24 cities over 2,500 population, the largest being the five boroughs of New York with a population of slightly less than 50,000. In contrast, by 1890 there were 1,348 places over 2,500, of which 58 cities had 50,000 or more residents. By 1970 the number of urban places had increased to 6,435 and the number of metropolitan cities to 396, including six cities with a population of more than one million (U.S. Bureau of the Census, 1972).

Beginning in the east and spreading westward, the American urban evolution, fostered by major changes in the technology of transportation and industrial processes and a series of great migrations, led to the emergence of a national system of cities and

a number of regional subsystems. Within this hierarchical urban system, cities range in size from a few large metropolises, functioning as national and regional centers of economic, political, and cultural activities, to a larger number of intermediate cities and a still larger number of small cities, primarily located in the intermetropolitan regions. Since the turn of the century there has been little rank shifting among either the largest cities of the system or the largest centers within the regional subsystems. The intermediate, and more importantly, the small cities, functioning as service centers for the rural population, have not exhibited the same rank consistency, however. These communities tend to experience a wide range of growth rates. Indeed, while the largest cities in the urban system have experienced steady, and in a few cases phenomenal, population increases during the last 70 years, the more numerous small cities often develop patterns of chronic decline or sustained growth within the same region or state. Often, the range of growth rates for these places extends well over 100 percent. For example, the population of Oak Harbor, Washington increased by 230 and 132 percent between 1950-1960 and 1960-1970, respectively. Conversely, the population of Astoria, Oregon declined by 8.9 percent in each of the same two decades (U.S. Bureau of the Census, 1972).

Contrary to popular belief, small cities located outside Standard Metropolitan Statistical Areas (SMSA) and ranging in size from 2,500 to 50,000, (generally referred to as nonmetropolitan cities) have not been declining in population and withering away. Rather, they have been growing and prospering in all regions of

the country, albeit their growth varies considerably by region. During the last two decades the number of people living in the nation's incorporated nonmetropolitan cities has increased by nearly 5.8 million, although during the same time the proportion of the population living in these communities declined from 1.2 to 1.1 percent of the total population, a change which can be attributed to the increasing number of people living within metropolitan areas (U.S. Bureau of the Census, 1972).

The exiguous decline in the share of the nation's population living in nonmetropolitan cities does not reflect the substantial interregional and intraregional variability in the nonmetropolitan population related to differences in geography and population. In the northern half of the Western Census Region, for example, the proportion of the population residing in incorporated nonmetropolitan cities has increased from 19.6 percent in 1900 to 22.8 percent in 1970. During these same 70 years, the metropolitan share of the population rose to 52.1 percent from 19.2 percent and the rural proportion decreased from 61.0 to 23.6 percent of the region's population. These figures clearly show that, as in other regions of the country, there has been a vast shift in the population of the northwest from rural areas to huge metropolitan components, increasing its share of the total population by only 3.2 percent. This apparent lack of significant nonmetropolitan growth does not imply that individual cities have not been increasing their size. In fact, many of these communities have grown to metropolitan status from their initial nonmetropolitan size class, and even more small towns and villages have increased their size to nonmetropoli-

tan status. The growth of individual places is evident by the increase from 29 non-metropolitan cities in 1900 to 184 by 1970.

RESIDENTIAL PREFERENCES

The growing number of people living in nonmetropolitan cities and the increasing proportion in the nonmetropolitan places of the northwest is not totally unanticipated, if one is cognizant of residential preferences. In spite of the fact that more Americans than ever before are living in metropolitan areas, recent surveys have shown that between 31 and 53 percent of the population (depending on the survey) would prefer to live in small cities and towns (Zuiches and Fuguitt, 1972; Fuguitt and Zuiches, 1975). Unlike previous researchers who failed to consider proximity to metropolitan areas as an element of residential preferences, Fuguitt and Zuiches (1975) asked respondents how close to a metropolitan city they would like to live. Fifty-five percent of those polled stated they would prefer to live within commuting distance (30 miles) of a large city, suggesting a trend toward further suburbanization. As might be expected, when the respondents were asked if they preferred their current residence, less than one-fourth of the suburban residents indicated they would like to live in another area. However, more than half of the large city and rural residents said they would rather live somewhere else; most said a small town within commuting distance of a large city. One indication of the continued popularity of small cities and towns was observed when the responses were arranged in rank order by first and second residential choice. Of those surveyed, 71 percent ranked an "away"

location, beyond 30 miles of a metropolitan area, as either their first or second choice. An "away" location was also ranked first or second by 50 percent of those living in cities over 50,000 in population and by 87 percent of the suburbanites. Although each individual will have a number of highly personal reasons for wanting to live in a particular location, the reasons given most often for preferring a rural setting included: less crime and violence, superior air and water quality, and a better milieu in which to raise children.

The surveys undertaken by Fuguitt and Zuiches have shown the appreciable degree to which anti-urbanism in America still exists and the extent to which small town and rural life continues to be valued as more desirable than life in a large metropolitan city. The mass appeal of the suburbs to their residents, and to the residents of central cities and rural areas, would lead one to conclude that the previous trend in suburbanization will continue for some time. Yet, the latent popularity of rural areas, as manifested by the first and second residential choices, suggested a potential for nonmetropolitan growth. If the past trends and residential preferences are any indication of future trends, the cities composing the nonmetropolitan segment of the system of cities can be expected to continue to exhibit a wide range of growth rates. It is this community population growth and the factors determining it that are the major focus of this thesis.

STUDY OVERVIEW

From an ecological perspective, this study examined the economic

specialization and population growth of nonmetropolitan cities at the subregional level. For the purposes of this study, the subregion consisted of the five states of Idaho, Montana, Oregon, Washington, and Wyoming, or the northern half of the Western Census Region. Specifically, this study examined the influence and impact of the context in which a city was located; also, both the impact of the characteristics, of a city and impact of economic function on a city's population growth and decline were analyzed. Finally, as part of the analysis, a causal model of city population growth was developed and evaluated using the multivariate statistical technique of path analysis.

Chapter Two conceptualizes the theoretical perspective of the study by reviewing the ecological and geographical literature relating to the economic specialization and population growth of cities. The hinterland and place factors influencing both the function and growth of cities were reviewed, along with studies describing the impact of a community's economic specialization on its growth.

Chapter Three follows with a discussion of the methodological procedures used in the study. The method of determining a city's economic specialization, the development of a city size-location typology, a measure of population change, and the units of analysis are covered. Path analysis, employed in analysis of the data, is also reviewed.

The analysis of the data is presented in Chapters Four, Five, and Six. Chapter Four presents the major findings of the effect of the contextual and place factors on community economic specialization. Chapter Five discusses the analysis of the impact

of the contextual and place factors on nonmetropolitan city population change. In Chapter Six the city population growth model is evaluated, using path analysis to determine the direct and indirect effects of the various factors on a city's function and population change.

The final chapter summarizes the major findings of the study and discusses the revival of nonmetropolitan growth in the United States and its causes.

CHAPTER II

THEORETICAL PERSPECTIVE

Studies by demographers, human ecologists, and geographers focusing on the population dynamics of communities in a system of cities have uncovered a number of factors influencing both the economic function and population growth of cities. This chapter reviews and discusses the two general types of factors influencing both communities themselves and the development of a causal model of nonmetropolitan city population growth. The first section of the chapter covers the variables associated with the larger geographical context in which a city is located. Those specific characteristics of the place itself which can have an impact on its economic specialization and growth are reviewed in the second section. The final section describes the exploratory model of community population growth.

CONTEXTUAL FACTORS

Contextual factors are the exogenous variables utilized to describe the ecological environment or system in which a nonmetropolitan city is located. In using exogenous variables it is assumed that the environment in which a community is found will have an impact on its economic function and population growth. Factors considered under this rubric include regional extractive employment, regional population growth, and the multiplicity of cities.

Regional Extractive Economic Activity

It is widely recognized that a concept basic to any ecological analysis of cities is the interrelationship, or symbiosis, that exists between communities and the surrounding hinterland (Mayer and Kohn, 1959; Duncan et al, 1960; Dickinson, 1964; Zuiches and Fuguitt, 1971). As postulated by Christaller (1966) in his central place theory, and specifically in his marketing principle, communities located in agricultural areas will primarily engage in tertiary activities with their hinterland population. These cities, functioning as market centers, are concerned with the collection of goods for shipment to larger centers and with the distribution of goods and services to the population of their complementary region. Berry (1967:3) has described marketing centers as

> ...neither more nor less than a cluster of retail and service establishments located in a place that provides a convenient point of location for consumers who visit to purchase goods and services they need.

For these places, especially smaller centers, their lower order central place functions (ubiquitous services found in all small communities) and their centrality attract consumers from the surrounding hinterland. As central places increase in size they take on new functions with larger threshold requirements and a greater range of goods. This enables them to supply specialized higher order functions, and, at the same time, to attract more shoppers from greater distances. Thus, small centers are dependent upon the hinterland for their commercial existence, while larger places are able to supply more central place functions, reducing their dependence on the hinterland and allowing them to engage in more specialized economic activities.

Since cities and their hinterlands are differentiated one from another in terms of their complementary and reciprocally related activities (Duncan et al, 1960), one would expect the economic activities of a city to be related to, and affected by, the characteristics of the hinterland (Dickinson, 1964). Smith (1965a: 546-547) has alluded to this point, arguing:

> ...if we agree that there is some spatial order to the distribution of economic activities in general, then surely we can expect to find distributional characterisitics of towns in similar functional classes that are peculiar to those classes...(and) given the notion that function implies at the simplest level a complementary relationship between a town and its hinterland, different functional classes ought to be associated with different types of hinterland areas.

Indeed, Smith (1965b) was able to lend confirmation to his hypothesis by demonstrating that various classes of service towns in Australia were concentrated in different types of hinterlands.

By relating the economic function of a community to the percent of extractive employment in the region, the interrelationship, or symbiosis, between the economic character of the hinterland and that of the cities serving the hinterland can be investigated. Although extractive employment is but one of many factors describing the character of a region, it is a convenient method for examining the level of economic development. Small cities are more likely to be found in areas of high extractive employment than in areas with little extractive activity.

For many larger cities at the highest levels of the central place heirarchy, their role as a marketing center is overshadowed by more specialized economic activities unrelated to either the hinterland or the functions performed by central places. One such

specialized activity is manufacturing. As an urban function, manufacturing is dependent upon internal economies of scale, accessibility to regional and national markets, and overall position in the spatial framework of the national economy; that is, manufacturing is dependent upon its position relative to metropolitan cities (Duncan, 1959). Because transportation costs of raw inputs, finished products, and large markets are so important to manufacturing, cities specializing in manufacturing are primarily located in urbanized areas where agglomerative economies associated with large population concentrations exist (Duncan, 1959; Yeates and Garner, 1971). It would be expected that manufacturing and other specialized activities unrelated to central place functions would be found in areas characterized by low extractive employment where there is a high degree of urbanization (Winsborough, 1959) as well as in larger nonmetropolitan cities.

A corollary of the interrelationship between the character of a region and a community's economic function is the association between the region's level of extractive employment and the growth of cities in the area. As the extractive sector of the economy (mining, logging, fishing, and most importantly, agriculture) continues to become increasingly capital-intensitive through mechanization and higher productivity, there is a corresponding decrease in the demand for labor, especially agricultural labor. This ongoing economic reorganization has led to fewer employment opportunites in areas with an extractive economic base and a decrease in the population growth through a net out-migration (Beale, 1962). For example, between 1960 and 1970 the farm population of

the United States declined by 37.8 percent, or 5.9 million people, and the net out-migration from farms was 694 persons for every 1,000 people living on a farm. In the five states examined in this study, the decline in the farm population was slightly less than for the nation as a whole (33.6%).

Although it has been argued in the literature that migration from farms should slow down and eventually stop as the farm population reaches the minimum level necessary to maintain current production levels, there is no sign of this; the number of people living on farms has decreased by 8.7 percent between 1970 and 1975 (Banks, 1976:4).

One interesting aspect of the out-migration of farm and nonfarm rural people is the age selectivity of migrants. Most people who leave rural areas are young adults in the prime of their reproductive years. In areas where rural out-migration has been particularly heavy, the number of births occurring to the depleted population of childbearing age are exceeded by the number of deaths in the larger older population. This natural decrease in the population at the county level has been documented by Beale (1969) as occurring in almost all regions of the country. In Oregon and Washington, Columbia, Jefferson, and Lewis counties underwent a natural decrease in their populations for one or more years between 1950 and 1960.

Numerous studies of rural farm and nonfarm migration have demonstrated that as people migrate from rural environments, they tend to move to nearby small towns, creating an inverse relationship between the proportion of movers from rural areas and the

size of their destination (Shryrock, 1964). One could hypothesize, based on migration studies of rural people and the step-like fashion in which migration often occurs, that the rural population would move from areas of high extractive employment to the nearest nonmetropolitan city in search of employment. Yet, many times whole counties or regions can decline in population, suggesting that either the rural population is moving to metropolitan areas or that both the rural and urban populations are leaving the area. It is clear, then, that in areas of high extractive employment there exists the possibility of either the rural population moving to nearby nonmetropolitan cities or the migration of both rural and urban residents to other areas.

Evidence supporting the latter possibility is provided by Frisbie and Poston (1975) in their study of nonmetropolitan county population change in the United States between 1960 and 1970. They found that general agricultural activity (employment in agriculture, rural farm population, and farm land) was negatively correlated with county population growth. In fact, agricultural activity was important enough to explain over half the total variation in county population change, suggesting that both the rural and urban residents of counties with an extractive economic base were migrating to other areas. Contradictory evidence by Zuiches and Fuguitt (1971) suggests that for the United States as a whole there is a slight positive relationship between levels of extractive employment in State Economic Areas and the growth of nonmetropolitan cities during the 1960's. However, in the Western Census Region Zuiches and Fuguitt found that the largest proportion of fast grow-

ing cities (intercensual growth rates over 15 percent) were in State Economic Areas with extactive employment under 10 and over 30 percent. State Economic Areas with extractive employment between 20 and 30 percent contained the smallest proportion of growing cities, with only 44 percent of the places gaining in population.

Regional Population Growth

The symbiosis between cities and the surrounding regions would be expected to encompass not only economic activities, but also the interrelationships between regional and city population dynamics. The concept of symbiosis between a region and its cities leads to the expectation of a complementarity of population growth between a region and communities in the region. Contemporary and historical studies have analyzed the association between the growth of cities and the surrounding regions (Zuiches and Fuguitt, 1971; Gibbs, 1961; Tarver and Urbon, 1963; Williamson and Swanson, 1966). Regardless of whether the region is delimitated as a county, State Economic Area, or state, a direct relationship has been observed between the growth of a region and the cities located in the region. It is not difficult to envision that as a region grows, a large share of its growth, most likely in the form of in-migration, would take place in already existing population concentrations: cities. The only exception noted in the literature is in the midwest, where Beale (1974) found that the increasing tendency among farmers to live in nearby towns and commute to their farmland has caused some communities in areas losing population to increase in size, in contradistinction to the regional trend.

Based on historical analysis of the association between city and county growth, Higgs (1969) has implied that a community's economic character can be influenced by the growth of the surrounding region. It is intuitively evident that cities located in areas experiencing rapid population increases will require an established trade and service economy or a concomitant growth in these non-basic support activities to supply the region's increasing demand for goods and services. As a region continues to grow, cities may begin to accomodate each other by specializing in reciprocally related economic activities. The question of whether the growth of a region had an appreciable impact on the economic character of a community was investigated in this study.

Community Competition and Accomodation

Within nonmetropolitan areas, the ecological processes of competition and accomodation can occur among nonmetropolitan cities, dramatically altering the economic and demographic relationships between communities. Both Hassinger (1957) and Butler and Fuguitt (1970) have observed that when nonmetropolitan communities, differentiated by size, are in close proximity to one another, there is a positive relationship between the growth of the smaller town, located near a slightly larger nonmetropolitan place, and the distance from the larger center. On the other hand, when a small city is located near a considerably larger nonmetropolitan place, a negative relationship exists between the distance from the larger place and the growth of the small town. In other words, when a small town is near a slightly larger community, its growth rate will in-

crease with increasing distance from the larger nonmetropolitan place; when the larger community is substantially bigger, the small town's growth will decrese with greater distance from the larger place.

Hassinger (1957) suggested that this reversal is the result of the small town (2,500-4,999 in size) being in direct competition with the slightly larger place (over 5,000 in population), since it offers essentially the same services and is competing for the trade of the same tributary area. Because of its size and the centralization of functions in the central place hierarchy, the larger place has an advantage in competition and is likely to grow at the expense of the smaller town. However, when a small center is situated near a considerably larger place, there is an accommodation or complementarity of functions between places, with the larger community functioning as a dominant, rather than as a rival, center. Such an adjustment is characterized by a decentralization of the population as the small town becomes a suburb of the larger place, providing housing for residents who commute to work in the nearby larger city.

When Butler and Fuguitt (1970) examined cities in urbanized areas they did not find a competition effect. Instead, they found that the shorter the distance to the nearest larger city, the greater the growth of the small place. This, as was suggested in the study, could be the result of either an accommodation between centers of different sizes, or increasing levels of commuting from smaller towns to nearby larger cities. They concluded that small communities near larger cities may lose services and trade through

the centralization of functions and, presumably, the attraction of shopping centers in larger nonmetropolitan cities. Simultaneously, small communities may gain in population as more people travel to larger cities to work. Butler and Fuguitt suggested that the function of a community should be taken into consideration in explaining nonmetropolitan city population growth and the possibility of a relationship between the population change of large nonmetropolitan cities and nearby smaller places.

By classifying nonmetropolitan cities according to their intra-county adjacency and size, Zuiches and Fuguitt (1973) found significant differences in their growth rates. For instance, cities under 10,000 in the same county as a city over 10,000 grew faster than the larger place, but independent cities (only one city per county) over 10,000 grew at a faster rate than small independent cities. These findings suggest that decentralization is ocurring in cities over 10,000 in the same nonmetropolitan county as a city under 10,000 between 1960 and 1970. Zuiches and Fuguitt also found, in comparing the growth of large (over 10,000) and small (under 10,000) nonmetropolitan cities in the same county, that slightly over half of the communities, differentiated by size, exhibited complementary growth rates.

Multiplicity of Cities

The frequency of occurence of cities at different levels of the central place heirarchy is thereotically reflected in their geometrical-spatial distribution. This salient feature of the central place theory stipulates that higher order centers should, on the average, be spaced more widely apart than the more numerous low-

er order centers. Each lower order place, as the market center for its respective trade area, is located at the mid-point between three higher level centers, thereby giving rise to a uniform pattern in which centers are distributed in the form of a triangular lattice. Extensive empirical research focusing on the spacing and distribution of cities, using the statistical technique of nearest neighbor analysis, has found few, if any, areas where cities exhibit a uniform spatial distribution, even on the featureless and isotropic plain of the midwest where it is believed most of the assumptions of the central place theory are satisfied (Dacey, 1960; King, 1962). Studies using nearest-neighbor analysis have found that cities are distributed in either a random pattern or linear one following major transportation routes. Part of the inability to substantiate this aspect of Christaller's theory is the assumption that trade areas are mononodal, when in fact, trade areas can contain more than one node at the same level of the hierarchy. To clarify this situation it would be instructive to make a distinction between a mononodal region and a multiplenodal region. A mononodal region is a trade area or region dominated by one center. A multiplenodal region, found less frequently, is a trade area dominated by two or more nodes at the same level or very nearly the same level of the hierarchry. Multiplenodal trade areas would most likely but not exclusively, occur at the lower levels of the central place hierarchy where there are more centers of the same size.

By conceptualizing the possibility of a multiplicity of nodes, Webb (1959) developed a hypothesis to describe the functions of a multiplicity of adjacent places within the same size class. He

suggested that, rather than compete with each other by offering the same central place functions, multiplenodes become increasingly specialized, dividing among themselves the services required of the rural population and culminating in an accomodation among centers. According to Webb, the division of economic activity and the accompanying specialization among places invalidates the concept of a tributary area associated with a particular city, and gives rise to the notion of a "tributary rural area" associated with all the cities within a multiplenodal region.

Under conditions of relative isolation from other communities, a single isolated city, functioning as the central place for the region, would be expected to exhibit many diverse functions characteristic of a single node servicing a trade area. Such a center would be required to function as a collection point for goods produced in the hinterland and as a distribution center for goods and services needed by the rural population.

In a multiplenodal situation, however, a group of cities exists in close proximity to one another. Competition and, more importantly, accomodation among centers, economic and social interaction, and multiplenodal trade areas would be expected to generate cities with complementary functions. Specialization within centers should occur, as opposed to the diversification of community economic activities that would be expected in a mononodal trading area.

PLACE CHARACTERISTICS

Contextual factors aside, characteristics of the community itself can influence its function and growth. Place characteristics

refer to specific endogenous ecological features of the city that can influence its economic function and population growth, such as its past growth or location on a freeway. (Place characteristics do not describe the broad context in which the city is found.) Factors to be analyzed within this category include: the city's previous growth, its size, its location with respect to the nearest metropolitan city, and its accessibility to an interstate highway.

Previous Community Growth

The historical pattern of community population growth in the northern half of the Western Census Region provides tangible evidence of the growth variability experenced by nonmetropolitan cities. Many cities, including Corvallis, Oregon; Yakima, Washington; and Coeur D' Alene, Idaho have been able to sustain their rapid growth for more than 30 years. Yet, other places in the same region have been unable to maintain their population and, as a result, have fallen into a pattern of chronic decline (declining population in two consecutive decades). Aberdeen, Washington; Astoria, Oregon; Gooding, Idaho; and Raymond, Washington are all too familiar examples of the latter. The capacity for particular cities to maintain their growth momentum over several decades could be the result of a "size ratchet" effect. Indeed, Thompson (1965) has suggested that if a community's momentum of growth continues for a long enough time, certain structural characteristics, such as industrial diversification, larger fixed investments, a self-suffient local market, and new industries will develop to such an extent that a growth mechanism metaphorically similar to

a ratchet or other locking device, will ensure a city's continued prosperity. Thompson also pointed out that the nature of a community's hinterland and its degree of isolation are important to its growth momentum. Hence, cities with a record of sustained growth will develop an economic structure able to retard the forces of stagnation and decline. Cities declining in population would be expected to have a considerably different economic structure.

The preceding intercensual growth would also be expected to have complementary positive impact upon a community's population growth. Cities able to sustain their growth from one decade to the next will logically have a greater probability of continuing their growth than places with a declining population (Fuguitt, 1965). Pred (1965) has suggested that as the size of a city increases, new local demands are created, attracting new business to the community to take advantage of greater economic opportunities. The new businesses, in turn, provide additional jobs, pulling more people to the community and giving rise to even more demand for goods and services, and still higher local thresholds. Pred has described this continuing growth as both a circular and a cumulative process.

King's (1964) investigation of this aspect of city population increase found that the previous decade's increase explained 36 percent of the variation in the growth rates of New Zealand cities between 1950 and 1960. Similarly, Forsht and Jansma (1975) found in Pennsylvania that the population change between 1940 and 1950, in cities under 25,000, had a strong positive association with community growth between 1950 and 1960. In agricultural areas, com-

munity growth between 1940 and 1960 had a positive association with 1960-1970 city growth. Zuiches and Fuguitt (1971; 1973) and Wilber (1964) have also shown the past decade's growth to be a significant factor in nonmetropolitan and metropolitan growth, respectively. A similar positive association was expected in this study.

Community Size

Urban research, to a large extent, has placed great importance on community size as a factor determining its economic and demographic structure. Part of this continuing interest in city size has culminated in studies revealing that city size has a moderate positive association with industrial diversification (Clemente and Sturgis, 1971). One possible reason for the direct relationship between diversification and community size was provided by Marshell (1975) in his study of Canadian cities over 10,000, in which he suggested that functional type and relative location are important factors in industrial diversification. Based on Thompson's (1965) discussion, it would be expected that as a city increases in size and its economic structure becomes more self sufficient, internal economies of scale and lower production costs will become large enough to offset the transportation costs from larger and more efficient operations elsewhere. Thus, new and more diversified industries will be attracted to a city, creating additional economies of scale and simultaneously further decreasing local production costs.

The importance of community size has been further demonstrated by studies showing that larger nonmetropolitan cities exper-

ience higher rates of growth than small places (Hart and Sailsbury, 1965; Tarver and Urbon, 1963; Northam, 1969). The propensity for larger places to grow rapidly has been interpreted as indirect evidence of the centralization of people and functions in rural areas as mediated by changes in transportation and communication technology, particularly as they affect the central place hierarchy. However, increasing levels of commuting, easier access among cities, and emerging nonmetropolitan decentralization are reducing, to a certain extent, the impact of a center's size on its growth rate (Fuguitt, 1971). The growth of job commuting in nonmetropolitan areas, according to Beale (1974), has acted to preserve the residential sections of many towns that have lost business and services to nearby larger places. Although commuting is becoming an important phenomenon in nonmetropolitan areas, it was expected that size would continue to exert a strong influence on community growth, especially for more isolated cities.

Distance from a Metropolis

Nonmetropolitan cities are not isolated entities. Rather, they are integrated, with the system of cities forming an integral link between metropolitan areas and rural towns and villages. A long tradition of research in the social sciences has focused on the association between various economic and demographic factors and distance from metropolitan areas.[1] In a pioneering study of community

[1]For example, Brian Berry (1973) plotted a number of "distances-gradients" between major metropolitan cities following highway routes, showing the decrease or increase of demographic and economic factors with increasing distance from large cities.

dominance and subdominance, Bogue (1950) examined the relationship between economic activities and demographic factors as they relate to distance from metropolitan cities. Bogue found that, with increasing distance from a large city, manufacturing activity decreased and wholesale and retail trade increased, especially for cities over 10,000 and at distances greater than 40 miles from a metropolitan center. He also noted, that what little manufacturing activity there was in the hinterland was confined to the largest hinterland cities, and that employment in the service industries decreased with greater distances from a metropolis. Similarly, functional diversity in Canada was greater among communities on the periphery of metropolitan areas "where serving a large hinterland is the raison d'etre of the city (Maxwell, 1965:92)." Moreover, there is less emphasis on manufacturing in Canadian hinterland cities and more on wholesale and transportation activities (Maxwell, 1965).

One of the most consistently used variables in the analysis of nonmetropolitan city growth is the distance from metropolitan areas. Previous studies relating the growth of communities to the distance from large cities have yielded conflicting results. Several scholars of small towns and cities have reported that with increasing distance from a large city, the growth of towns decreases (Tarver and Beale, 1968; Northam, 1969; Davidson, 1972; Zuiches and Fuguitt, 1973). In these studies it was assumed that places near a large center function as commuter or bedroom communities for the larger place, and, at the same time, provide certain locational advantage for the decentralization of industry. Other studies of

small and medium size cities have found a U-shaped, or curvilinear, relationship, with places near to and a considerable distance from larger places growing faster than those in between (Madden, 1956; Glynn et al, 1961). The greater growth of more remote places may be due to an economic advantage related to their central place function as purveyers of goods and services to their hinterland. Places in between may lack this locational advantage, and at the same time be too far from a metropolis to benefit from decentralization. A strong relationship between a city's function and growth and distance from the nearest metropolitan city was expected.

Interstate Highway Accessibility

The accessibility of a community to other places in the region and beyond requires an adequate transportation system. Since the initial construction of the interstate highway system, increasing interest has been directed to the impact of controlled-access highways on communities. One of the first studies to examine the effect of a modern freeway on a community's economy was undertaken in Marysville, Washington by a group of geographers (Garrison et al, 1959). With the completion of a freeway bypass Marysville was able to improve its competive position vis-a-vis other centers in the vicinity, a change attributed to improved transportation connections. The improved accessibility to other communities decreased through traffic in Marysville by two-thirds, lessening downtown traffic congestion and easing the problem of finding parking space. The resultant increased attraction of Marysville as a

marketplace of consumer goods increased the sales of lower order functions by 121 percent of prebypass levels. It became much easier to travel to larger centers, and, as a result, centralization of higher order functions was observed throughout the hierarchy. In Marysville, the centralization of functions was evident in that sales of higher order functions decreased by 83 percent of their prebypass volumes. Although the study of Marysville did not directly examine the economic specialization of the city, Bogue's (1950) study did show that wholesale and retail activities were most often located in sectors radiating from a metropolis which contained a intermetropolitan highway. Communities with functions that require high degrees of accessibility, such as manufacturing, wholesale, and retail functions, were expected to be located on controlled access highways.

The vast majority of those studies focusing on highways has not been concerned with the economic changes wrought by the construction of new highways, but rather, with the impact of highways on population growth.[2] Several studies have reported that cities located on freeways have higher growth rates than communities located away from the interstate system (Fuguitt and Zuiches, 1972; Zuiches and Fuguitt, 1973; Humpery and Sell, 1976). Although the differences in the growth rates of places on and off an interstate highway are not large, there is an unmistakeable trend toward the faster growth of cities on a freeway. Recently, an examin-

[2]For a discussion of the effects of railroads on the growth and decline of small towns during the late 1800's and early 1900's in Linn County, Oregon see Holtgrieve (1973).

ation of nonmetropolitan cities by Fuguitt and Beale (1976) revealed that the effect of a controlled access highway on community growth was not as straightforward as once believed. For example, it was found that at distances of less than 100 miles from a metropolitan city, places off the interstate system were growing faster than communities on the system. At distances beyond 100 miles, the reverse was true, the growth advantage adhered to cities on freeways. Fuguitt and Beale further found that the size of communities in a county can confound results, for, if the largest city in county was over 10,000, places located off a freeway had higher rates of growth than cities on a freeway; if the largest city was under 10,000, places on a controlled access highway grew the fastest.

Fuguitt and Beale's research seems to suggest that at distances of less than 100 miles from a central city, a freeway leads to nonmetropolitan decentralization. Moreover, if the largest city in a county is under 10,000, centralization is likely to occur in cities on the interstate system; yet, cities off the system will have the fastest growth rates in countries with a city over 10,000. Although the research by Fuguitt and Beale reveals the importance of a controlled access highway on nonmetropolitan city growth, more research is needed before definitive conclusions can be reached regarding the effects of interstate highways on communities. For example, the increasing cost of gasoline and diesel fuel may also have an impact on the accessibility of nonmetropolitan cities. However, it is clear that improved accessibility and lower transportation costs potentiated by the interstate system are conducive to the growth of nonmetropolitan cities in certain contexts.

COMMUNITY ECONOMIC FUNCTION

Research examining city population dynamics has demonstrated an important association between the economic functions of communities and their rates of growth. Generally, faster growing places tend to have either a retail or professional service function, although Johnston (1967) reported that in Australia, transportation and public administration centers grew the fastest. In the United States, Nelson (1957) observed that cities specializing in professional services, personal services, and public administration were growing at a rapid pace, while manufacturing and transportation centers exhibited slow growth rates. Using Nelson's classification system, Tarver (1972) conducted a study of Southern cities with a population range of 2,500 to 10,000, and pointed out that centers specializing in professional services, public administration, and wholesale and retail activities displayed consistently high rates of growth between 1950 and 1970. Zuiches and Fuguitt (1973) found that similar results were obtained for nonmetropolitan cities between 1960 and 1970. In examining variables that have been associated with the growth of cities, it was envisioned that the effects of a community's economic function on its growth could be clarified.

NONMETROPOLITAN CITY POPULATION GROWTH MODEL

Based on studies reviewed here, and using the ideas of human ecology, the model of nonmetropolitan city population growth shown in Figure 1 can be theoretically justified. The re-

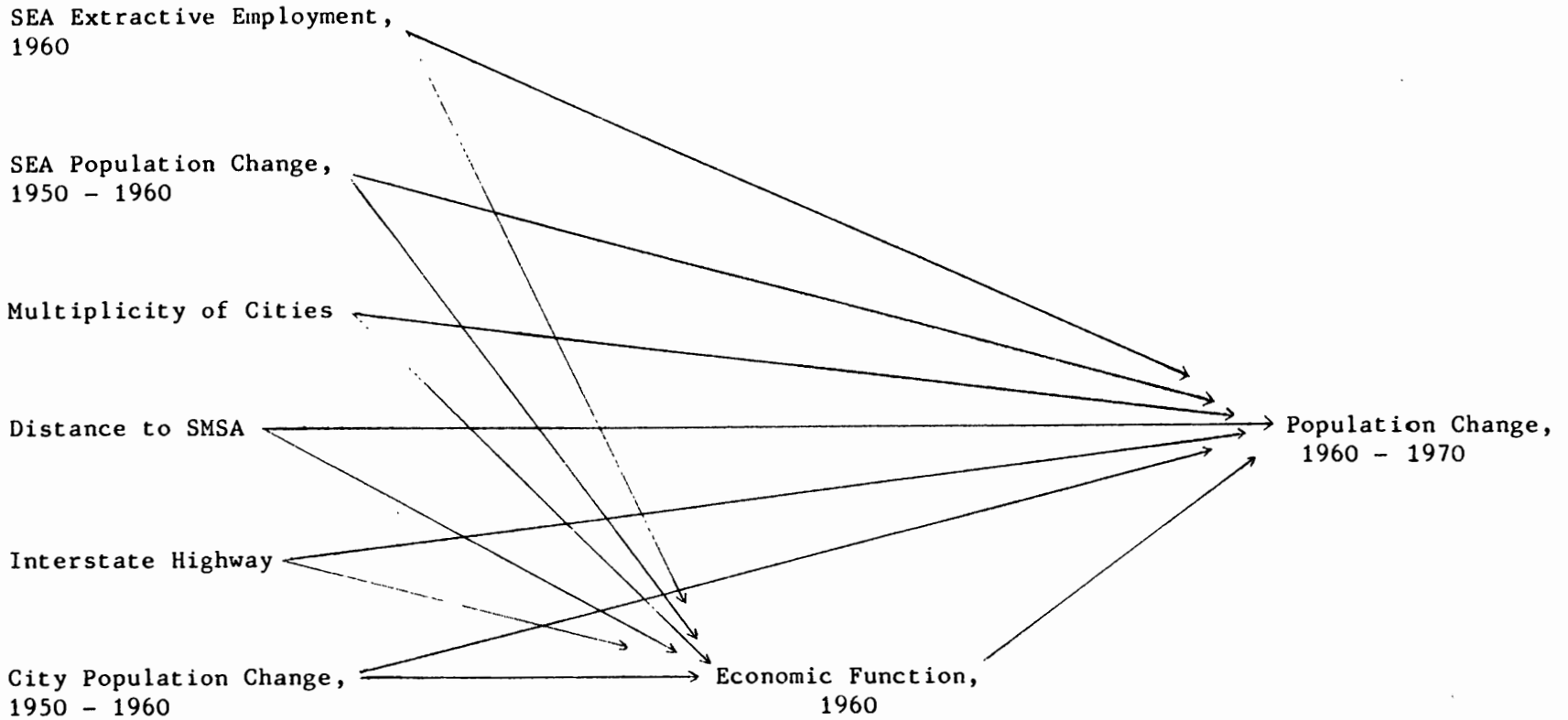

Figure 1.--Hypothesized Model of Nonmetropolitan City Population Growth

view of literature suggested two general types of factors operating to determine a city's economic function and growth as defined in the study: contextual factors (SEA extractive employment, SEA population change in the 1950's and the multiplicity of cities) and place factors (distance to the nearest SMSA, location on a freeway, and city population change during the 1950's). In addition, it had also been suggested that a community's growth; was influenced by its economic function. Following the organization suggested by the review of literature, the contextual and place factors were considered exogenous and prior to all other variables in the model. Because the place and contextual variables precede a community's function, which, in turn, leads to population growth, a city's economic specialization was considered an intermediate variable. The place and contextual factors were expected to have a direct effect on population growth and an indirect effect through a community's economic function. Community economic specialization will have, as shown in the model, a direct effect only on population growth.

CHAPTER III

METHODOLOGY

This chapter reviews the methodological decisions involved in (1) the measure of community population change, the city size-location typology, and the selection of the geographical context in which a city is located, and (2) the classification of communities by their economic function. The methods of analyzing the data and the city growth model are also discussed.

Community Population Change

This research focused on an examination of the growth variability experienced by nonmetropolitan cities at the subregional level. The primary concern was to analyze the intercensusal growth rate of incorporated nonmetropolitan cities, as of 1960 in Idaho, Montana, Oregon, Washington, and Wyoming between 1960 and 1970. These places were defined in this study as having a size range of 2,500 to 49,999 in 1960. By 1970 some had reached a population in excess of 50,000 or had declined to less than 2,500. The universe contained 156 cities in the northern half of the Western Census Region with a minimum population of 2,500 in 1950. While annexation, the attachment of land beyond the political boundaries of a city, is an important component of city growth, controlling for this process is not reported here since the aggregate population change rather than the change in a constant area was the primary focus.

When annexation was examined in a preliminary analysis, the zero-order correlation between the population change 1960-1970 and the change in a consistent area (excluding annexed areas) was .78. Moreover, controlling for annexation did not change any of the relationships.

Nonmetropolitan City Size-Location Typology

In chapter II it was pointed out that a study by Zuiches and Fuguitt (1973) of nonmetropolitan cities suggested an analytical distinction between communities based on their size and geographic context. This distinction was based on the previous work of Hassinger (1957) and Butler and Fuguitt (1970), which involved categorizing places by their distance from nearby larger centers and then examining their growth. Rather than constructing concentric zones around larger centers or measuring the distance between places, as had previously been done, Zuiches and Fuguitt (1973) simply designated cities by their intra-county proximity. This allows the competition and accomodation between adjacent cities, dichotomized by size, to be analyzed, while recognizing that independent cities (defined as the only nonmetropolitan city in a county) are too far from other nonmetropolitan places to develop interdependent relationships. The city typology developed by Zuiches and Fuguitt will be maintained in this study; each community is classified as to the presence or absence of larger or small nonmetropolitan places in the same county. This classification yields four types of urban environments in nonmetropolitan counties:

Large Adjacent City: A city over 10,000 population with one or more smaller cities in the same county;

Small Adjacent City: A city under 10,000 population with one or more larger cities in the county;
Large Independent City: A city over 10,000 population with no small cities in the county; and
Small Independent City: A city under 10,000 population with no larger cities in the county.

The classification procedures for "adjacent cities" can be demonstrated using the nonmetropolitan communities of Clatsop County, Oregon. Since Astoria's population exceeded 10,000 in 1960 (population: 11,239) and is located in the same county as a small nonmetropolitan city (Seaside, population 1960: 3,877), it was classified as a large adjacent city. By definition, Seaside was given a small adjacent city label, because it was under 10,000 and in the same county as a city over 10,000 (Astoria). The Dalles, Oregon, (1960 population: 10,493) was determined to be a large independent city since it was over 10,000 and there were no other nonmetropolitan cities of any size in Wasco County. An example of a small independent city is Tillamook, Oregon, with a population of 4,244 in 1960 and with no other nonmetropolitan communities in the county.

This size-location typology does not preclude the existence of two or more places of equal size in a single county. In fact, over one-fourth (28.2%) of the cities in the five states of this study had more than one place in the same size-location class. In order to provide for the possibility of more than one community per county in each size-location class, each city was further classified as to the multiplicity of cities within the same size-location class-per-county. This provided two types of nodal environments in nonmetropolitan counties:

Single City: One city per-county in the same size-location class; and
Multiple Cities: Two or more cities per-county in the same size-location class.

The size-location typology provided the opportunity to make comparisons between places of the same size, between cities of different sizes, and between places according to their adjacency or non-adjacency to larger and smaller communities. The two types of nodal environments allowed examination of the effects of function and growth on a multiplicity of cities within each of the four size-location classes.

Delineation of the Hinterland

For the purpose of providing an insight into the symbiotic relationship between cities and the surrounding hinterland, the delineation of the subregion in which a city is located requires an area smaller than a state, yet large enough to encompass a community's rural population and hinterland characteristics. It is apparent that there are two possible subregions large enough to provide the requisite information about a community's trade area: the county, and the State Economic Area (SEA). Of these two possible subregions, the SEA was selected as the most appropriate approximation of a nonmetropolitan city's hinterland. State Economic Areas, usually consisting of a group of counties, can contain counties with nonmetropolitan cities and entirely rural counties (counties in which the largest community does not exceed 2,500 residents) which rely on the nearest nonmetropolitan city for their goods and services. Although entirely rural counties may contain only a small proportion of a SEA's total population

and economic activities, they are, nevertheless, an important facet of a nonmetropolitan community's hinterland. Moreover, by combining several counties, the SEA can encompass the hinterland and trade area that extends beyond the county in which the city is located.[3]

State Economic Areas are relatively homogenous subdivisions of states. They are comprised of a group of counties, or, occasionally, a large single county, with similar economic and social characteristics. Climactic, demographic, agricultural, industrial, and physiographic factors were employed to delineate SEA's.[4]

Community Economic Function

The functional classification of cities based on identification of a community's dominant or specialized economic activities has a long-standing history. Attempts to delineate urban places have produced a myriad of schemes. The many classification approaches adopted by social scientists can be differentiated into those which are qualitative and those which are quantitative. The seldom-used qualitative approaches are based on general observations and logical deduction, and have been employed when precise numerical data are unavailable (Smith, 1965a). The more numerous quantitative methods identify cities through the use of elaborate methodologies, generally relying on census or other numerical data. Quanti-

[3]For a map showing the extent of multiple county trading areas in Idaho, Oregon, and Washington, see the Atlas of the Pacific Northwest (Highsmith, 1973).

[4]See Bouge and Beale (1961) for a detailed description of each SEA and the procedures for delimitation of the SEA's.

tative schemes include taxonomic systems, multivariate analysis (such as factor analysis or cluster analysis), and approaches based on the relative proportion of industrial activity in a community (Smith, 1965a).

While research focusing on the classification of cities has developed a varied array of methodologies, a common criticism is that the object of these systems is often difficult to establish, which compromises their utility as models for research into the character of urban settlements. (Duncan et al, 1960; Smith, 1965a; Wilson, 1962). The identification of a community's economic function was not the primary objective of this study. The classification was employed in the larger context of relating various factors, including economic function, to the population dynamics of cities.

The fundamental basis for determining the economic function of cities in this research was the classification system developed by Howard Nelson (1955). This system, used in numerous studies to identify the function of cities ranging in size from 2,500 to over one million, is based on the proportional concentrations of a city's employed population in various industries. Although there are several other classification schemes available, Nelson's system was selected for its simple use of descriptive statistics, its wide-spread acceptance, and its previous use with nonmetropolitan cities.[5]

Nelson's classification system required three procedural steps in order to establish a community's economic function. First, the proportion of each city's employed population working in seven industrial activities in 1960 was calculated. Table I presents the

[5]For a critique of Nelson, see Smith (1965a); and Yeates (1973).

TABLE I

INDUSTRIES COMPRISING THE MAJOR ECONOMIC ACTIVITIES OF NONMETROPOLITAN CITIES

Census Classification by Industrial Groups	Functional Classification
Mining	Mining
Manufacturing	Manufacturing
Railroad and railway express service Trucking service warehouses, Other transportation and telecommunication	Transportation
Wholesale food and dairy produce stores, Eating and drinking places, Other retail trade	Wholesale-Retail
Finance insurance and real estate Business services, repair services, Other services, Entertainment and recreation services	Personal Services[a]
Educational services, hospitals, Other professional services and related services	Professional Services[a]
Public Administration	Public administration

a Personal services and professional services were combined in analysis of the data under the title services.

industries comprising each of the seven activities. Although Nelson intitially separated wholesale and retail activities, as well as finance, insurance, and real estate from other personal services, the published census data for cities under 10,000 necessitated combining these industries. In addition, individuals not reporting the industry in which they were employed were excluded from the analysis.

The second step in determining each city's function was to compute the mean percentage of employed persons in each of the seven functional classes for all 156 cities of this study. Each class' standard deviation from the mean was then calculated. Finally, the economic function of each place was established according to the proportion of the employed population one standard deviation or more above the mean employment in the given functional class for all cities. Communities with an insufficient proportion of their population employed in any functional class equal to one standard deviation above the mean were classified as having a diversified function in accordance with Nelson's scheme. On the other hand, cities with more than one functional class satisfying the prescribed mean and standard deviation criteria were classified on the basis of that function demonstrating the largest employment percentage above the mean plus the standard deviation.

An example will help to clarify the classification procedures. The mean proportion of the population employed in manufacturing for all the cities studied was 20.04 percent with a standard deviation of 13.50 percent. Thus, for a community to be classified as specializing in manufacturing, its population employed in manu-

facturing had to be greater to or equal to 33.54 percent (the mean of manufacturing plus one standard deviation). Since the proportion of Kelso, Washington's population working in manufacturing was 37.5 percent, thereby exceeding the sum of the mean and one standard deviation of manufacturing, Kelso was classified as having a specialized manufacturing function. Because the proportion of Kelso's population employed in the other six industries did not exceed their mean plus one standard deviation, Kelso was considered to have only one dominant function.

Method of Analysis

The 1960 and 1970 census data collected for each city was examined, through two methods of analysis: tabular and multivariate. Tabular analysis was employed to examine the percentage distribution of economic functions of the four types of nonmetropolitan cities by the various contextual and place factors. Tabular presentation was also used to examine the proportion of the different types of communities that were growing by their contextual and place characteristics, and by economic function. Also discussed were the different types of communities' actual rates of growth during the 1960's.

The multivariate approach to the data employed path analysis, which provides "a general procedure for exploring the indirect effects of a determining variable on a dependent variable in a multivariate path model (Land, 1969:16)." Through path analysis, the direct effects of the independent variables on the intermediate and dependent variables, and the indirect effects through the inter-

mediate variable on the independent variable, were determined in the hypothesized model of city growth.

The fundamental theorum of path analysis is the equation

$$r_{ij=} \cong p_{iq} r_{iq}$$

where "i" and "j" refer to two variables in the system and the index "q" runs over all variables from which paths lead directly to a variable X_i. The basic inputs in any path analysis are the zero-order correlations and standardized regression coefficients of the given variables, which are generated by multiple regression techniques. As is the case for most models in the social sciences, the models used in path analysis are recursive or unidirectional. Stated differently, at a given time a variable cannot be both a cause of and an effect of another variable. Finally, it should be noted that although path analysis is used in conjunction with causal models, "the technique of path analysis is not a method for discovering causal laws, but a procedure for giving a quantative interpretation to the manifestations of a known or assumed causal system as it operates in a particular population (Blau and Duncan, 1967:177)."

CHAPTER IV

THE ECONOMIC FUNCTION OF NONMETROPOLITAN CITIES

This chapter analyzes the distribution of the economic functions of nonmetropolitan cities and provides a tabular analysis of their functions in terms of each community's contextual and place characteristics. Throughout the analysis the size-location typology is maintained, permitting the comparison of large and small adjacent and independent cities, and communities of the same size.

A number of hinterland and community attributes have been hypothesized to have an influence on the economic function of cities. This chapter begins by examining the distribution of communities according to their functional classification, and then turns to the analysis of the effects of the contextual factors (levels of extractive employment in the SEA, population change in the SEA, and the multiplicity of cities) upon their economic functions. The second part of the chapter examines the effects of the place factors (past city population change, distance to an SMSA, and location an interstate highway) upon the economic function.

DISTRIBUTION OF ECONOMIC SPECIALIZATION

The distribution of nonmetropolitan cities by their economic function is presented in Table II. The grand total of the distribution for all 156 cities indicates that functional diversity is more

TABLE II

PERCENTAGE DISTRIBUTION OF NONMETROPOLITAN CITY TYPES BY ECONOMIC FUNCTION

Economic Function, 1960	Adjacent Cities			Independent Cities			Large Cities	Small Cities	Grand Total
	Large	Small	Total	Large	Small	Total	Total	Total	
Mining	5.0	0.0	2.1	7.4	11.0	10.0	6.3	8.2	7.6
Manufacturing	15.0	22.2	19.1	14.8	14.6	14.6	14.8	16.5	16.0
Transportation	0.0	7.4	4.2	11.1	9.8	10.0	6.3	9.1	8.3
Wholesale-Retail	10.0	11.1	10.6	0.0	15.9	11.9	4.2	14.6	11.5
Services	10.0	14.8	12.7	29.6	12.2	16.5	21.2	12.8	15.3
Public Administration	15.0	11.1	12.7	7.4	4.9	5.5	10.6	6.4	7.6
Diversified	45.0	33.3	38.6	29.6	31.7	31.1	36.1	32.1	33.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
(N)	(20)	(27)	(47)	(27)	(82)	(109)	(47)	(109)	(156)

common than any single specific functional specialization. Manufacturing (16.0%) services (15.3%), and wholesale-retail functions (11.5%) are the most common specialties, followed by transportation (8.3%), mining (7.6%), and public administration (7.6%). The combined total for both large and small adjacent cities (places that have either a smaller or larger city in the same county) demonstrates that these communities are more likely to have a manufacturing, public administration, or diversified function than independent cities (places with no other nonmetropolitan city in the same county). The total distribution of independent places, both large and small, indicates that these places have a greater proportion of mining, transportation, wholesale-retail, and service specialties than adjacent cities. Large places (cities over 10,000), both adjacent and independent, exhibit a greater likelihood of having a service, public administration, or diversified function than the 109 small communities. Small communities (places under 10,000) have a greater proportion of specialized functions compared to large places, most notably mining, transportation, and wholesale-retail specializations. Ecological effects of adjacency and size on the distribution of economic functions are presented in Table II. The data show that the ecological position of a city (adjacent or independent) has a greater association with specialization in mining, transportation, public administration, and diversified functions, than does size of place. The proportion of large and small places with a mining function are nearly identical (6.3% compared to 8.2%), while only 2.1 percent of the adjacent communities have a mining specialization compared to 10 percent of the independent

cities. Thus, adjacency, or urban agglomeration at the county level, increased the probability of communities specializing in mining more than did size effect. This was also true for places with a transportation, public administration, or diversified economy.

The effect of adjacency is not as great as the effect of size in influencing wholesale-retail or service specializations. In this study, 14.6 percent of the small cities had a wholesale-retail function but only 4.2 percent of the large places had the same function. Moreover, the proportion of adjacent and independent communities with a wholesale-retail function were nearly the same (10.6% versus 11.9%). Apparently the adjacency vs. independence distribution is more important than size of place with regard to the emergence of mining, transportation, public administration, or a diversified economy in these communities. Size is more important in affecting the likelihood of specialization in wholesale-retail or service functions.

The percentages of both large and small adjacent cities (Table II) show that while a diversified function was the most common for both size classes of communities, there are considerable differences in the distribution of the remaining functions. Ranking the economic specialties of small adjacent cities, diversified economies are found most often, followed by manufacturing, services, wholesale-retail, and public administration functions. The economic functions of large adjacent cities were distributed differently: almost half of all these places had a diversified economy, followed by manufacturing and public administration functions (tied at 15% each), and then wholesale-retail and service cities (tied at 10%

each).

What may be inferred from these findings? First, it was expected that large cities would have a greater proportion of places with a manufacturing function than communities under 10,000, due to agglomerate economies, large local markets, and better accessibility to markets and raw materials. Adjacent cities showed the opposite tendency; a greater proportion of small adjacent cities than large adjacent places exhibited a manufacturing specialty. Apparently manufacturing activity is undergoing decentralization in an adjacent context. That is, manufacturing is more likely to be found in small adjacent cities than in large adjacent communities. The precise reasons for this process are not clear, but one can surmise that they are the same as for metropolitan decentralization; i.e., more land and building space is needed by metropolitan businesses, and these are readily available in nearby small nonmetropolitan cities.

Second, small cities have a much greater chance of specializing in wholesale-retail activities than places exceeding 10,000 people. This is particularly true for small independent cities since these communities are performing tasks associated with a central place. While one might expect more independent than adjacent cities to have a wholesale-retail specialization because they are farther from other nonmetropolitan places, there was a total of only 1.3 percent more independent places with this specialization when compared to adjacent communities with a wholesale-retail function. This is in part because there were no large independent cities with a wholesale-retail function (compared to 10 percent of the

large adjacent communities). In addition, since there was a greater proportion of small adjacent places than large adjacent cities with a service function, it appears that service activities may be decentralizing from large nonmetropolitan communities to small ones.

Third, while large adjacent cities may be losing specialized activities to small adjacent places, they are more likely to specialize in public administration activities or to have a more general or diversified economy than any other type of city. Adjacency is more conducive to the emergence of public administration and diversification than is independence, regardless of size. The greater proportion of large adjacent cities with a public administration function (15% which exceeds the percentage for all three other types of cities) may be due to size, which has resulted in these larger places being centers of Federal, state, or county governments which attract money to these communities. While independent cities may be too isolated and their hinterland population too small to attract a substantial amount of governmental activities, the size effect is evident here, too.

The foregoing discussion indicated that <u>both</u> size and ecological position (adjacency vs. independence) affect the nature of economic specialization which exists in nonmetropolitan cities. In order to farther analyze the effects of contextual and place characteristics upon the nature of economic specialization, the communities were elaborated by size and adjacency status, yielding four community types: large adjacent cities, small adjacent cities, large independent cities, and small independent cities. This elaboration allows an examination of how the contextual and place fac-

tors relate to economic function with the effects of size and adjacency status controlled.

Large Adjacent Cities

The first of the four nonmetropolitan city types to be examined are large adjacent cities. These communities have populations in excess of 10,000 residents and are located in counties containing a smaller nonmetropolitan city. The distribution of the economic functions by contextual factors for large adjacent cities is displayed in Table III. As had been expected, wholesale-retail and service functions were much more common in high extractive employment SEA's than in areas with little agricultural activity. Manufacturing and public administration functions show the opposite pattern, as these two activities were most often found in areas of low extractive employment. This is fully congruent with central place theory, which stresses the marketing center activities of cities in agricultural areas and suggests that manufacturing is generally found in or near highly urbanized areas where there are the advantages of economies of scale, transportation facilities, and a readily available market.

The relationship between community economic specialization and the SEA population growth for the 1950's was not as straightforward as for extractive employment. Manufacturing and wholesale-retail activities each accounted for approximately one-fourth of the functions in low-growth regions, while neither one of these specializations was found in rapid-growth areas. On the other hand, the proportions of service, public administration, and di-

TABLE III

PERCENTAGE DISTRIBUTION OF LARGE ADJACENT CITIES BY ECONOMIC FUNCTION, SEA EXTRACTIVE EMPLOYMENT, SEA POPULATION GROWTH, AND THE MULTIPLICITY OF CITIES

	SEA Extractive Employment			SEA Population Growth			Multiplicity of Cities	
	0-9.9%	10-19.9%	20+%	0-9.9%	10-19.9%	20+%	Single	Multiple
Mining	0	11	0	0	14	0	6	0
Manufacturing	33	0	20	25	14	0	11	50
Transportation	--	--	--	--	--	--	--	--
Wholesale-Retail	0	11	20	25	0	0	11	0
Services	0	11	20	0	14	20	11	0
Public Administration	33	11	0	13	14	20	17	0
Diversified	33	56	40	38	43	60	44	50
Total	100	100	100	100	100	100	100	100
(N)	(6)	(9)	(5)	(8)	(7)	(5)	(18)	(2)

versified functions were higher in rapid-growth regions than in the slowest growing areas.

The final contextual factor hypothesized to have an influence on the economic specialization of communities was the multiplicity of cities within each size-location class. As previously pointed out, in accordance with Webb's (1959) hypothesis, a single city functioning as a central place would provide a diversified array of economic activities for its hinterland population. In the context of a multiplicity of cities, Webb suggested that cities would accomodate and complement each other by specializing in different economic activities. As Table III demonstrates, there are not enough adjacent multiple cities (N=2) to adequately test Webb's hypothesis. It should be noted that almost half of the single cities have the diversified function which would be expected based on Webb's hypothesis. The effect of the multiplicity of cities will be further examined for the other three types of communities.

From his studies of community economic structure, Thompson (1965) argued that the preceding decade's growth would have an important influence on a community's economic structure. However, after examining the relationship between community function and its previous rate of growth (Table IV), the conclusion was drawn that there was no clear cut relationship between these two variables, except perhaps for cities with a diversified function. Communities with high rates of previous growth generally had a large proportion of diversified economic activities compared to places that lost population.

One of the most important factors influencing the location

of various economic activities is proximity to metropolitan areas. As previously discussed, manufacturing activities would be expected to be located near a metropolitan city, where there is ready access to regional and national markets, and where agglomerative economies can keep the costs of production down. Communities located further from metropolitan cities would most likely provide the local and hinterland population with central place activities, notably wholesale-retail and service functions.

Table IV shows, as was expected, that distance from a metropolitan city had a substantial impact on the economic character of large adjacent cities. Specifically, the proportion of communities with manufacturing specialization was lower (17%) in the farthest distance zone (150 or more miles from a metropolitan city) compared to cities within 75 miles of a metropolitan center (33%). The opposite pattern was manifested for wholesale-retail functions. Additionally, half of the communities in each of the two zones farthest from a metropolitan city had a diversified function, compared to only one-third in the close-in zone.

As Table IV indicates, distance from a metropolitan central city had an important impact on large adjacent cities specializing in manufacturing, wholesale-retail, and public administration activities. At greater distances from metropolitan areas there are few agglomerative economies, large local markets, or transportation facilities needed for manufacturing to operate profitably. Thus communities specializing in manufacturing are likely to be found near metropolitan cities. Cities with a wholesale-retail specialization will more likely be found farther from metropolitan areas, where

TABLE IV

PERCENTAGE DISTRIBUTION OF LARGE ADJACENT CITIES BY ECONOMIC FUNCTION, PAST CITY POPULATION CHANGE, DISTANCE TO NEAREST SMSA, AND ACCESSABILITY TO AN INTERSTATE HIGHWAY

	City Population Change, 1950-60			Highway Distance to SMSA			Interstate Highway	
	Loss	0-13.2%	13.3+%	0-74	75-149	150+	On	Off
Mining	50	0	0	0	12	0	10	0
Manufacturing	0	25	10	33	0	17	0	30
Transportation	--	--	--	--	--	--	--	--
Wholesale-Retail	0	25	0	0	13	17	0	20
Services	0	13	10	0	12	17	10	10
Public Administration	50	0	20	33	13	0	20	10
Diversified	0	38	60	33	50	50	60	30
Total	100	100	100	100	100	100	100	100
(N)	(2)	(8)	(10)	(6)	(8)	(6)	(10)	(10)

they perform central place functions of providing the hinterland population with goods and services.

The ease with which goods and people move between nodes on the interstate highway system could be expected to have an impact upon a city's economic structure.

In Garrison et al's (1959) study of Marysville, Washington, which dealt with the impact of accessibility, it was suggested that manufacturing and services would most likely be found in cities on an interstate freeway. Table IV shows that over half of the large adjacent cities on a controlled access highway are likely to have a diversified function (60%). Notice that none of the communities on a freeway has a manufacturing or wholesale-retail specialization, indicating that for large adjacent places accessibility may not be important for these two economic activities.

Small Adjacent Cities

Small adjacent cities are communities with a population under 10,000, located in the same county as a larger nonmetropolitan city. From Table V, it is evident that a greater proportion of small adjacent cities in areas of low extractive employment had a manufacturing or public administration specialization than in high extractive regions. There was a smaller proportion of communities in high extractive areas with a wholesale-retail or diversified function (compared to communities in low extractive areas). Small adjacent cities with a diversified economy accounted for 60 percent of the cities in regions with low growth rates (0-9.9%) during the 1950's and 23 percent of the places in moderately growing

TABLE V

PERCENTAGE DISTRIBUTION OF SMALL ADJACENT CITIES BY ECONOMIC FUNCTION, SEA EXTRACTIVE EMPLOYMENT, SEA POPULATION GROWTH, AND THE MULTIPLICITY OF CITIES

	SEA Extractive Employment			SEA Population Growth			Multiplicity of Cities	
	0-9.9%	10-19.9%	20+%	0-9.9%	10-19.9%	20+%	Single	Multiple
Mining	--	--	--	--	--	--	--	--
Manufacturing	50	21	0	10	39	0	21	23
Transportation	0	14	0	0	8	25	7	8
Wholesale-Retail	0	14	14	10	15	0	14	8
Services	17	14	14	10	8	50	28	0
Public Administration	17	14	0	10	8	25	7	15
Diversified	17	21	71	60	23	0	21	46
Total	100	100	100	100	100	100	100	100
(N)	(6)	(14)	(7)	(10)	(13)	(4)	(14)	(13)

areas. In the fastest growing areas, there were no diversified communities. One may surmise that cities in slow growing regions develop a more general type of economy, as opposed to attracting specialized economic activities associated with a rapidly growing population. Table V also suggests that multiple small adjacent communities were more likely to have a diversified (46%), manufacturing (33%) or public administration (15%) specialization. Single cities generally had a central place function (like wholesale-retail activities), lending confirmation to Webb's hypothesis that isolated places provide a broad range of activities for their residents. Multiple cities were likely to have a manufacturing function, since the combination of cities can provide economies of scale, a nearby market, and a pool of potential employees.

The relationship between the three place factors and the economic structure of small adjacent cities is delineated in Table VI. Looking at a community's rate of growth between 1950 and 1960, only two factors appear to have a meaningful relationship. The proportion of cities with a service function in each of the three population growth classes decreases as the class growth rate increases. The opposite is true with regard to diversification of function. That is, as the rate of population growth increases, the proportion of cities with a diversified function decreases. The proportion of places with a manufacturing or public administration specialization decreases with distance from a metropolitan city. Thus, while manufacturing and public administration activities account for 50 and 13 percent respectively of the functions within 75 highway miles of an SMSA, beyond 150 miles from a metropolitan city,

TABLE VI

PERCENTAGE DISTRIBUTION OF SMALL ADJACENT CITIES BY ECONOMIC FUNCTION, PAST CITY POPULATION CHANGE, DISTANCE TO NEAREST SMSA, AND ACCESSIBILITY TO AN INTERSTATE HIGHWAY

	City Population Change, 1950-60			Highway Distance to SMSA			Interstate Highway	
	Loss	0-13.2%	13.3+%	0-74	75-149	150+	On	Off
Mining	--	--	--	--	--	--	--	--
Manufacturing	29	17	21	50	13	9	25	22
Transportation	0	17	7	0	25	0	0	9
Wholesale-Retail	14	17	7	0	12	18	0	13
Services	28	17	7	13	25	9	0	18
Public Administration	0	0	21	13	12	9	25	9
Diversified	29	33	36	25	13	55	50	30
Total	100	100	100	100	100	100	100	100
(N)	(7)	(6)	(14)	(8)	(8)	(11)	(4)	(23)

each of these activities account for only nine percent of the cities' economic activities. Wholesale-retail and diversified activities display the opposite pattern. As distance increases, the proportion of these functions in each zone increases. Over half of the economic activities found beyond 150 miles of a metropolitan center are wholesale-retail and diversified activities. These findings are consistent with the ecological and geographical literature reviewed earlier (Bogue, 1950; Maxwell, 1965). As Table VI shows, only three functions were located on a freeway: diversified, manufacturing, and public administration. (Note that there were only four small adjacent communities on a freeway). For cities off a controlled access highway, diversified activities were the most common, followed by manufacturing, service, and wholesale-retail activities.

Large Independent Cities

Large independent cities are communities over 10,000 with no smaller nonmetropolitan places in the same county. These cities are generally more isolated than adjacent communities. The distribution of the economic functions of these cities by the contextual factors is presented in Table VII. As was found for adjacent places, the proportion of communities with a manufacturing or public administration specialization in areas of little agricultural activity exceeded the proportion found in the middle and high extractive employment SEA's. Diversification of economic function showed the opposite trend. Diversified places accounted for 17 percent of the cities in low extractive areas but increased to 60 percent of the

TABLE VII

PERCENTAGE DISTRIBUTION OF LARGE INDEPENDENT CITIES BY ECONOMIC FUNCTION, SEA EXTRACTIVE EMPLOYMENT, SEA POPULATION GROWTH, AND THE MULTIPLICITY OF CITIES

	SEA Extractive Employment			SEA Population Growth			Multiplicity of Cities	
	0-9.9%	10-19.9%	20+%	0-9.9%	10-19.9%	20+%	Single	Multiple
Mining	0	13	0	9	7	0	9	0
Manufacturing	50	6	0	36	0	0	9	50
Transportation	0	13	20	0	14	100	13	0
Wholesale-Retail	--	--	--	--	--	--	--	--
Services	17	38	20	9	50	0	35	0
Public Administration	17	6	0	18	0	0	9	0
Diversified	17	25	60	27	29	0	26	50
Total	100	100	100	100	100	100	100	100
(N)	(6)	(16)	(5)	(11)	(14)	(1)	(23)	(4)

communities in high extractive settings. Overall, manufacturing was the most common activity in low extractive areas, services in the moderately extractive regions, and diversified activities in highly agricultural settings. Turning to regional growth, in slow growing SEA's, the largest proportion of economic specialization was manufacturing, followed by diversified activities. In middle growth regions (10-19.9%) half of the cities had primarily service functions, with diversified places comprising slightly over one-fourth of the total. Functions of multiple places were evenly divided between manufacturing and diversified activities. (However, it should be noted that there were only four multiple communities). The largest specialized function of single cities was service activities (35%), followed by diversified functions (27%). Again, this was predicted, as manufacturing is predominantly a multiple city function while central place function (services in the case of large independent cities) is a single city activity.

The final three factors to be examined for large independent cities are the place factors (Table VIII). Turning first to the city's past rate of population change, it is evident that only one function displays a straight-forward relationship to growth. Manufacturing specialization existed in one-third of the communities' that lost population. This decreased to 30 percent for the cities with a low rate of previous growth, and there were no cities with a growth rate above 13.3 percent, the average for all cities in this study. Looking at distance, it can be seen that in the zone closest to an SMSA, services made up two-thirds of the functions, followed by manufacturing. At distances beyond 150 miles, half of

TABLE VIII

PERCENTAGE DISTRIBUTION OF LARGE INDEPENDENT CITIES BY ECONOMIC FUNCTION, PAST CITY POPULATION CHANGE, DISTANCE TO NEAREST SMSA, AND ACCESSABILITY TO AN INTERSTATE HIGHWAY

	City Population Change, 1950-60			Highway Distance to SMSA			Interstate Highway	
	Loss	0-13.2%	13.3+%	0-74	75-149	150+	On	Off
Mining	33	0	7	0	6	13	7	8
Manufacturing	33	30	0	33	19	0	0	33
Transportation	0	10	14	0	19	0	7	17
Wholesale-Retail	--	--	--	--	--	--	--	--
Services	0	40	29	67	19	38	40	17
Public Administration	0	0	14	0	13	0	13	0
Diversified	33	20	36	0	25	50	33	25
Total	100	100	100	100	100	100	100	100
(N)	(3)	(10)	(14)	(3)	(16)	(8)	(15)	(12)

the communities had a diversified function, followed by services. For large independent cities the effect of distance on manufacturing and diversified activities is clear: manufacturing was most often found near metropolitan areas, where there are economic advantages, rather than in isolated cities. The most common functions of large independent cities located on a controlled access freeway were services (42%), diversified activities (33%), and public administration (13%). Off a freeway, the most common functions were manufacturing (33%), diversified (25%), and services and transportation (17%). Contrary to expectations, the accessability of a freeway did not appear to have significant impact on manufacturing, but this condition did appear to influence services, public administration, and diversified functions.

Small Independent Cities

The most common type of community studied was the small independent city. These are places under 10,000 in size located in counties with no cities over 10,000 in population. Small independent communities are isolated places, typifying the common impression of nonmetropolitan cities. Table IX presents the distribution of economic function by the contextual factors for these places. Looking first at manufacturing it can be seen that it characterized 26 percent of the cities in low extractive settings, 15 percent of the middle extractive level cities and only six percent of the communities in highly agricultural SEA's. The two central place functions, wholesale-retail and services, comprised 13 percent and nine percent, respectively, of the cities in SEA's with little agricultural activity. In areas of extensive agricultural employment,

TABLE IX

PERCENTAGE DISTRIBUTION OF SMALL INDEPENDENT CITIES BY ECONOMIC FUNCTION, SEA EXTRACTIVE EMPLOYMENT, SEA POPULATION GROWTH, AND THE MULTIPLICITY OF CITIES

	SEA Extractive Employment			SEA Population Growth			Multiplicity of Cities	
	0-9.9%	10-19.9%	20+%	0-9.9%	10-19.9%	20+%	Single	Multiple
Mining	22	0	12	4	13	11	11	12
Manufacturing	26	15	6	14	17	0	12	20
Transportation	0	19	9	9	11	11	14	0
Wholesale-Retail	13	15	18	14	17	22	18	12
Services	9	8	18	23	8	11	7	24
Public Administration	4	8	3	14	2	0	7	0
Diversified	26	35	33	21	32	44	32	32
Total	100	100	100	100	100	100	100	100
(N)	(23)	(26)	(33)	(22)	(47)	(9)	(57)	(25)

these functions each accounted for 18 percent of the cities. Two functions, wholesale-retail and diversified, showed a relationship with regional growth. The proportion of cities with these two functions increased from 14 and 23 percent to 22 and 44 percent, respectively, in each successive regional growth category. Thus, while almost one-fourth of the cities in slow-growth regions had a diversified function, nearly half of the communities in fast growing SEA's had a diversified economy. This suggests that for small independent cities, fast hinterland growth leads to a diversified economy. A greater proportion of multiple places than single cities had a manufacturing or service function. Eighteen percent of the single communities had a wholesale-retail central place function, as compared to only seven percent of the multiple places.

Table X presents the three place factors by the economic function of small independent communities. In similarity to the other city types, a small independent place's past rate of population change does not seem to have a great impact on its economic structure. For those places losing population between 1950 and 1960, nearly half (44%) had a diversified function. Small independent communities growing more than 13.3 percent in 1960 most often had a diversified function (28%), with manufacturing accounting for another 15 percent. Generally, as a city's past growth rate increases, the percent of places with a diversified function decreases, and manufacturing and service specializations increase as a relative share of each growth class. The proportion of cities with a manufacturing speciality in each distance zone declines as the distance from an SMSA increases. Diversified activities were

TABLE X

PERCENTAGE DISTRIBUTION OF SMALL INDEPENDENT CITIES BY ECONOMIC FUNCTION, PAST CITY POPULATION CHANGE, DISTANCE TO NEAREST SMSA, AND ACCESSABILITY TO AN INTERSTATE HIGHWAY

	City Population Change, 1950-60			Highway Distance to SMSA			Interstate Highway	
	Loss	0-13.2%	13.3+%	0-74	75-149	150+%	On	Off
Mining	11	7	13	6	13	11	5	13
Manufacturing	11	15	15	18	20	9	0	19
Transportation	11	7	11	6	10	11	26	5
Wholesale-Retail	0	26	13	12	3	29	21	14
Services	11	11	13	13	10	11	26	8
Public Administration	11	0	7	6	7	3	0	6
Diversified	44	33	28	35	37	26	21	35
Total	100	100	100	100	100	100	100	100
(N)	(9)	(27)	(46)	(17)	(30)	(35)	(19)	(63)

the most common in the two distance zones under 150 miles, whereas wholesale-retail functions were the most common beyond 150 miles of a metropolis. For communities on a controlled access highway, transportation and service functions were the most common (26%), followed by wholesale-retail and diversified activities (21%). Of the 19 cities on a freeway, none had a manufacturing or public administration function. For communities with a manufacturing function, this was unexpected, as a highway was predicted to encourage manufacturing by lowering transportation costs. The largest percentage of cities off the interstate highway system had a diversified function, (35%) followed by manufacturing (19%), and wholesale-retail functions (14%).

Summary of Economic Functions

An analysis of the impact of contextual and place factors on a city's economic function revealed a number of important findings. SEA extractive employment had an important effect on the proportion of communities with a manufacturing, wholesale-retail, service, and public administration function: the highest proportion of manufacturing and public administration communities were found in areas of low levels of extractive employment. As was pointed out earlier, manufacturing would be expected to be found in more urbanized areas, where there exists the advantage of internal economies of scale and low-cost accessibility to regional and national markets.

Public administration specialization may be dependent upon the spending patterns of various governmental units. Federal,

state, and county governments concentrate their spending programs and thus jobs in communities that are not in highly rural areas. Regions with low extractive employment are generally closer to metropolitan areas and, thus, have a better chance of receiving public monies.

Specialization in wholesale-retail and services by cities in high extractive settings was expected, since these widely separated points of location engage in the central place activities of the collection of goods from, and the distribution of goods and services to, the population of the hinterland. The large proportion of diversified communities in the high extractive areas may be the result of these places performing many activities which are similar to those found in central places, even though they do not meet the requirements for classification as a city with a wholesale-retail or service function.

Second, the analysis showed important differences in the economic structure of places by the multiplicity of cities. Multiple communities tended to have a manufacturing or diversified function, whereas single cities specialized in the traditional central place functions of wholesale-retail or services. The data supported Webb's hypothesis that communities specializing in manufacturing would usually be found in a multiple place context, where there is the advantage of large population concentrations (more than one city in a given size-location class) which provide economies of scale, a nearby market, and a pool of potential employees. Furthermore, single communities were found to perform the broad, self-sufficient, central place functions (wholesale-retail and service

activities) associated with an isolated city. The large proportion of multiple cities with a diversified function could indicate that these communities perform the specialized activities generally found in the context of urban agglomeration (a multiplicity of cities). At the same, time, these communities did not fit any other functional specialization class.

Third, cities with a manufacturing, wholesale-retail, service, or public administration function were strongly influenced by their highway distance from the nearest metropolitan area. Communities close to a metropolitan city were most likely to have a manufacturing or public administration specialization. Cities more than 150 miles from a metropolis had primarily a wholesale-retail, service, or diversified function. At greater distances from metropolitan areas there are few agglomerative economies, large markets, or transportation facilities needed for manufacturing to operate profitably. As a result, communities specializing in manufacturing are likely to be found near metropolitan places, whereas cities with a wholesale-retail specialization were generally found farther from metropolitan areas, where they perform the central place function of providing the hinterland population with goods and services.

Fourth, the influence of an interstate highway on the economy of a community varied considerably by the type of city. Overall, communities on a freeway generally had a public administration or diversified economy. The most unexpected finding was that cities located on an interstate freeway did not have substantial manufacturing activity, with the exception of small adjacent cities.

The ecological and geographical literature had argued that places with accessability to a freeway would have the greatest probability of having a manufacturing economy. Perhaps nonmetropolitan communities with a manufacturing specialization may be engaged in local small scale manufacturing (e.g. saw mills). Because the products of such local activities are in all likelihood consumed in the local area, the location of such a city on a freeway is not as important as it is for cities producing nationally or regionally distributed products.

Finally, no clear relationships were found to exist between community economic structure and either its past rate of population change or the population growth of the hinterland. Levels of extractive employment, multiplicity of cities, distance to an SMSA, and accessibility to freeways all showed clearer patterns of association with the nature of economic activity than did population growth factors.

CHAPTER V

NONMETROPOLITAN CITY POPULATION CHANGE

This chapter is concerned with the population change of nonmetropolitan cities during the 1960's and the impact of both the contextual and place factors, and economic function, on their rates of population growth. As in the previous chapter, the contextual and place factors are examined first, followed by economic function.

In addressing the population change of nonmetropolitan cities, two modes of analysis can be employed: (1) the actual percentage change in places, or (2) the proportion of places growing during a defined period of time. Most research focusing on the population dynamics of cities, either metropolitan or nonmetropolitan, uses actual growth rates, defined as the percentage population increase of a city. The disadvantage of this method is that cities with extremely high or low growth rates can distort the overall rate. This is particularly true if the number of cities is quite small. By considering the proportion of places that increased or decreased in population, cities with extremely high or low rates will have little bearing on the proportion of cities exhibiting growth. In this chapter the second method of analyzing community population change will be utilized. However, the actual growth rates were also calculated to enhance the understanding of the growth of nonmetropolitan communities.

Well over half (62.9%) of all nonmetropolitan cities in the five states of this study increased their population during the decade of the 1960's (see table XI). Large cities were more likely to grow than small communities (70% vs. 59%). Growth in adjacent places occurred over 20 percent more often than in the more isolated independent cities (79% vs. 55%). Of the four city types, large adjacent cities had the greatest proportion increasing in population (80%) followed by small adjacent places (78%), and large independent communities (63%). Small independent places were the least likely to increase in size; only half (52%) of these cities grew.

The major impetus of this chapter is to examine the influence of the various contextual and place factors on the population growth of the four types of nonmetropolitan cities. The influences of the three place and three contextual factors on all the communities of this study are presented in Table XI. This table indicates that the low levels of extractive employment, a multiplicity of cities, and community accessibility to an interstate freeway were conducive to population growth. The impact of the remaining three factors is not as clear, although it appears that cities closer than 75 miles to or beyond 150 miles from an SMSA, communities in an SEA with moderate rates of growth (10-19.9%), and cities that increased in size at less than 13.3 percent in the 1950's, had the highest probability of exhibiting growth Only five percent of the cities that lost population during the period 1950 to 1960 increased in size between 1960 and 1970. The total percentage growing for large and small, and adjacent and independent communities is presented in Appendices A, B, C and D.

TABLE XI

Percentage of Nonmetropolitan Cities Growing 1960-1970 By Contextual and Place Factors

Contextual Factors

Percent SEA Extractive Employment	0-9.9%	10-19.9%	20+%	Total
Percent Growing	66	63	50	62
(N)	(41)	(65)	(50)	(156)

Percent SEA Population Growth, 1950-60	0-9.9%	10-19.9%	20+%	Total
Percent Growing	63	69	37	61
(N)	(51)	(81)	(19)	(151)

Multiplicity of Cities	Single	Multiple	Total
Percent Growing	59	63	62
(N)	(112)	(44)	(156)

Place Factors

Percent City Population Change, 1950-60	Loss	0-13.2%	13.3+%	Total
Percent Growing	52	65	63	62
(N)	(21)	(51)	(84)	(156)

Highway Distance to Nearest SMSA	0-74	75-149	150+	Total
Percent Growing	79	40	67	62
(N)	(34)	(62)	(60)	(156)

Interstate Highway	On	Off	Total
Percent Growing	75	56	62
(N)	(48)	(108)	(156)

*Note: The following communities were deleted from this table: three small independent cities declining in population in a SEA losing population, one small independent place growing in a SEA losing people, and one large independent city growing in a SEA declining in population.

Large Adjacent Cities

Large adjacent cities have a markedly different proportion of places growing by contextual and place factors compared to the other three types of communities in the study. Table XII indicates that large adjacent cities were most likely to grow if the SEA had a previous rate of population increase between 10 and 19.9 percent, if the city is a multiple place (note that there are only four multiple cities), and if the city grew between 0-13.2 percent during the 1950's. Contrary to the results for all communities, 83 percent of these cities in low extractive areas, and all of the places in high agricultural settings, grew, creating a curvilinear or U-shaped relationship. As the distance from a metropolitan city increased population; beyond 150 miles only 67 percent grew, compared to 100 percent of places less than 75 miles from an SMSA. Accessibility to an interstate highway displayed no relationship to population growth.

Small Adjacent Cities

Small adjacent cities (Table XIII) display a pattern of growth by contextual and place factors that is very different from large adjacent places. All of the adjacent places under 10,000 on the interstate system increased their size, compared to only 74 percent of those located off a freeway. The proportion of places with different levels of extractive employment displayed a U-shaped relationship: all of the cities in low extractive areas were growing, and 86 percent of the places in regions exceeding 20 percent agricultural employment were also growing.

TABLE XII

Percentage of Large Adjacent Cities Growing 1960-1970 By Contextual and Place Factors

Contextual Factors				
Percent SEA Extractive Employment	0-9.9%	10.19.9%	20+%	Total
Percent Growing	83	67	100	80
(N)	(6)	(9)	(5)	(20)
Percent SEA Population Growth, 1950-60	0-9.9%	10.19.9%	20+%	Total
Percent Growing	88	100	40	80
(N)	(8)	(7)	(5)	(20)
Multiplicity of Cities	Single	Multiple		Total
Percent Growing	78	100		80
(N)	(18)	(2)		(20)
Place Factors				
Percent City Population Change, 1950-60	Loss	0-13.2%	13.3+%	Total
Percent Growing	50	88	80	80
(N)	(2)	(8)	(10)	(20)
Highway Distance to Nearest SMSA	0-74	75-149	150+	Total
Percent Growing	100	75	67	80
(N)	(6)	(8)	(6)	(20)
Interstate Highway	On	Off		Total
Percent Growing	80	80		80
(N)	(10)	(10)		(20)

TABLE XIII

Percentage of Small Adjacent Cities Growing 1960-1970 By Contextual and Place Factors

Contextual Factors				
Percent SEA Extractive Employment	0-9.9%	10-19.9%	20+%	Total
Percent Growing	100	64	86	78
(N)	(6)	(14)	(7)	(27)
Percent SEA Population Growth, 1950-60	0-9.9%	10-19.9%	20+%	Total
Percent Growing	90	85	25	78
(N)	(10)	(13)	(4)	(27)
Multiplicity of Cities	Single	Multiple		Total
Percent Growing	86	69		78
(N)	(14)	(13)		(27)
Place Factors				
Percent City Population Change, 1950-60	Loss	0-13.2%	13.3+%	Total
Percent Growing	71	66	86	78
(N)	(7)	(6)	(14)	(27)
Highway Distance to Nearest SMSA	0-74	75-149	150+	Total
Percent Growing	88	75	73	78
(N)	(8)	(8)	(11)	(27)
Interstate Highway	On	Off		Total
Percent Growing	100	74		78
(N)	(4)	(23)		(27)

Unlike large adjacent cities, the proportion of single small adjacent places which grew between 1960 and 1970 was greater than multiple communities (86% compared to 69%), and cities with a previous growth rate exceeding 13.2 percent or a population loss were most likely to grow. Nearly three-fourths of these cities that lost people between 1950 and 1960 increased in size during the decade of the 1960's, the greatest proportion of any type of city. Similar to large adjacent places, small adjacent cities have a decreasing chance of growing as the distance from a metropolitan city increases.

Large Independent Cities

Large independent cities had two characteristics, SEA population growth and location on an interstate highway, which exhibited same direction of relationship as for the other three types of places, as shown in Table XIV. A greater proportion of large independent cities grew in the 10-19.9 percent SEA growth range than in any other growth class. In addition, a larger percentage of independent communities over 10,000 located on a freeway increased in size than those located off the interstate system. Unlike the proportions of the other three types of places, large independent places had the greatest proportion of cities growing the middle extractive setting. Single cities outgrew multiple places 65 percent to 50 percent. As each community's previous rate of growth increased, so did its chance of growing during the 1960's. Only one-third of the large independent places that lost population between 1950 and 1960 increased in population during the suc-

TABLE XIV

Percentage of Large Independent Cities Growing 1960-1970 By Contextual and Place Factors

Contextual Factors				
Percent SEA Extractive Employment	0-9.9%	10-19.9%	20+%	Total
Percent Growing	33	75	60	63
(N)	(6)	(16)	(5)	(27)
Percent SEA Population Growth, 1950-60	0-9.9%	10-19.9%	20+%	Total
Percent Growing	44	79	0	59
(N)	(11)	(14)	(1)	(26)
Multiplicity of Cities	Single	Multiple		Total
Percent Growing	65	50		63
(N)	(23)	(4)		(27)
Place Factors				
Percent City Population Change, 1950-60	Loss	0-13.2%	13.3+%	Total
Percent Growing	33	60	71	63
(N)	(3)	(10)	(14)	(27)
Highway Distance to Nearest SMSA	0-74	75-149	150+	Total
Percent Growing	67	50	88	63
(N)	(3)	(16)	(8)	(27)
Interstate Highway	On	Off		Total
Percent Growing	80	42		63
(N)	(15)	(12)		(27)

*Note: One large independent city growing in a SEA declining in population was deleted from this table.

ceeding decade, the lowest proportion of any type of city. The relationship between distance to a metropolitan city and growth was unique because large independent communities had the greatest proportion of places growing (88%) in the distance zone exceeding 150 miles from an SMSA, followed by places less than 75 miles from a metropolis. Large independent communities were the only city type to have the greatest share of their growth occurring in the farthest distance zone.

Small Independent Cities

The relationship between small independent cities and the contextual and place factors was generally the same as for the other types of places as shown in Table XV. Small independent places were most likely to increase in size if they were located in a region with levels of extractive employment between 10-19.9 percent. Similar to the other cities, small independent cities had the largest proportion of places growing if they were, (1) in a region that increased its population by 10-19.9 percent during the 1950's, (2) in a context of multiple cities, (3) had a previous rate of growth between 0-13.2 percent, and, (4) were with 75 miles of a metropolitan city. Finally, a greater percentage of independent communities under 10,000 on the interstate system increased in population compared to places not thusly located.

Economic Function

A major thrust of this research has been to examine the effect of a community's economic function upon its population growth. As previously discussed, research has suggested that

TABLE XV

Percentage of Small Independent Cities Growing 1960-1970
By Contextual and Place Factors

Contextual Factors				
Percent SEA Extractive Employment	0-9.9%	10-19.9%	20+%	Total
Percent Growing	61	69	33	52
(N)	(23)	(26)	(33)	(82)
Percent SEA Population Growth, 1950-60	0-9.9%	10-19.9%	20+%	Total
Percent Growing	50	58	44	51
(N)	(22)	(47)	(9)	(78)
Multiplicity of Cities	Single	Multiple		Total
Percent Growing	44	72		52
(N)	(57)	(25)		(82)
Place Factors				
Percent City Population Change, 1950-60	Loss	0-13.2%	13.3+%	Total
Percent Growing	44	59	50	52
(N)	(9)	(27)	(46)	(82)
Highway Distance to Nearest SMSA	0-74	75-149	150+	Total
Percent Growing	71	33	60	52
(N)	(17)	(30)	(35)	(82)
Interstate Highway	On	Off		Total
Percent Growing	63	49		52
(N)	(19)	(63)		(82)

*Note: This table does not include three small independent cities declining in population in an SEA losing population, and one small independent community growing in an SEA declining in population.

different growth rates of cities can be, in part, explained by their economic specialization. Table XVI presents the results of the tabular analysis for cities in the northern half of the Western Census Region.

For all nonmetropolitan communities, places with a service function had the greatest proportion increasing in population between 1960 and 1970 (75%), followed by wholesale-retail (67%), public administration (67%), and manufacturing cities (63%). The least likely to grow were communities specializing in mining or transportation.

Overall, only one type of adjacent community by economic structure (transportation) did not have at least 60 percent of its places growing. Manufacturing appears to be important to the growth of both large and small adjacent places (over 80 percent of both types of cities grew). At least two-thirds of adjacent cities with a public administration or diversified function increased in size. While all the large adjacent places with a wholesale-retail function grew, only one-third of the small adjacent cities with the same function increased in size.

Among independent places, those with a service function were the most likely to grow (72%) followed by wholesale-retail (67%), and communities specializing in public administration (67%). The least likely to grow were places specializing in either mining or transportation. Only 36 percent of these cities increased in population between 1960 and 1970.

An examination of large independent cities showed only service (88%) and diversified (75%) places had more than half in-

TABLE XVI

PERCENTAGE DISTRIBUTION
OF NONMETROPOLITAN CITIES GROWING 1960-1970 BY ECONOMIC
FUNCTION, ADJACENCY STATUS, AND SIZE

	Mining	Manufacturing	Transportation	Wholesale-Retail	Services	Public Administration	Diversified	Total
Percentage of Cities Growing	42	64	42	67	75	67	63	62
Adjacent Cities (total)	100	89	50	60	83	67	83	79
Large	100	100	--	100	100	67	67	80
Small	--	83	50	33	75	67	100	78
Independent Cities (total)	36	50	36	69	72	67	53	55
Large	50	25	33	--	88	50	75	63
Small	33	58	38	69	60	75	46	52
Large Cities (total)	67	50	33	100	90	60	71	70
Small Cities (total)	33	67	40	63	64	71	62	59
Number of Cities								
Adjacent Cities (total)	1	9	2	5	6	6	18	47
Large	1	3	0	2	2	3	9	20
Small	0	6	2	3	4	3	9	27
Independent Cities (total)	11	16	11	13	18	6	34	109
Large	2	4	3	0	8	2	8	27
Small	9	12	8	13	10	4	26	82

creasing in population. On the other hand, less than half of the manufacturing (25%) and transportation (33%) communities increased in size. The small independent cities most likely to grow were those specializing in public administration (73%) followed by wholesale-retail (69%), and service activities (60%). Only one-third of the communities specializing in mining increased in size and only 38 percent of the cities with a transportation function grew.

Discussion of Population Changes

Based on the preceding analysis, a number of inferences can be drawn about the influence of place and contextual factors on nonmetropolitan city population growth. Economic reorganization in agricultural regions and the resulting decrease in extractive employment opportunities (a decline of 33.9 percent between 1960 and 1970 in the five states of this study, Banks, 1976) has generally lead to an outmigration of individuals and families from rural areas. Does the level of extractive employment in a region have an impact on the growth of communities? The answer appears to be yes, depending on the type of city. It is evident that adjacent cities are more likely to grow in extremely high or extremely low extractive settings, and that both large adjacent and large independent places are more likely to increase in size in high extractive areas than are their smaller counter parts. In low extractive SEA's, a greater percentage of small communities increased in size than larger places.

This growth could be metropolitan spillover into nonmetropolitan counties. Apparently farm and non-farm migration to non-

metropolitan urban places in high extractive areas was directed to large cities (over 10,000) rather than to small communities, as a large proportion of large places grew compared to small cities in SEAs with high levels of farming.

An examination of the adjacent cities suggested that in low level extractive regions, decentralization at the county level was occurring, as a greater proportion of small adjacent places were increasing in size compared to large adjacent cities (100% compared to 83%). In areas with extractive employment exceeding ten percent, centralization was occurring as large adjacent communities outgrew small adjacent places.

The second contextual factor suggested to have an impact on community growth was the population growth of the surrounding region. If the region in which a city was located was growing, nonmetropolitan places in the same region were very likely to increase in population, particularly if the surrounding area grew at a rate between 10-19.9 percent between 1950 and 1960. All the large adjacent cities in regions with a growth rate between 10-19.9 percent increased in size.

It was shown in chapter IV that the multiplicity of cities had an important influence upon a community's economic specialization. Although it was not specifically suggested that the multiplicity of cities would affect population growth directly, the relationship between the multiplicity of places in each size-location class and their growth was examined.

Since the proportion of communities growing by the multiplicity of cities was discussed in the previous tables, Table XVII

TABLE XVII

NONMETROPOLITAN CITY GROWTH RATES 1960-1970 BY MULTIPLICITY OF CITIES, ADJACENCY STATUS, AND SIZE

	Multiplicity of Cities					
	Single		Multiple		Total	
	Growth Rate	Number Cities	Growth Rate	Number Cities	Growth Rate	Number Cities
Adjacent Cities						
Large	16.8%	(18)	9.8%	(2)	16.2%	(20)
Small	24.9%	(14)	12.3%	(13)	18.7%	(27)
Total	17.2%	(32)	8.7%	(15)		
Independent Cities						
Large	21.2%	(23)	5.5%	(4)	19.4%	(27)
Small	3.8%	(57)	14.8%	(25)	7.6%	(82)
Total	14.9%	(80)	12.0%	(29)	13.2%	(156)

presents the actual intercensual growth rates of the four types of communities dichotomized by the multiplicity of places. The growth rates for large and small cities, both single and multiple, indicate that small places had higher rates than large places with the exception of single independent communities. Adjacent single cities were growing twice as fast at multiple places (17.2 percent compared to 8.7 percent). It is noteworthy that small adjacent cities demonstrated the highest growth rate of any city type, 24.9 percent, and single small independent places had the lowest growth rate, 3.8 percent.

One of the most important factors explaining a community's population increase is the previous growth experienced by the city. Except for small adjacent cities, the majority of places losing population between 1950 and 1960 did not increase in size during the next decade. Only 33 percent of the large independent places that lost population during the decade of the 1950's increased in size during the 1960 to 1970 period, compared to 71 percent of the small adjacent places. If a community was growing in the 1950's, it had a probability of greater than 50% of continuing its growth between 1960 and 1970.

Previous studies have found either a negative or U-shaped relationship between community population growth and distance to the nearest metropolitan center. These data indicate that distance does have an important impact on the growth of cities, although it is not always the inverse relationship most often discussed in the literature. With increasing highway distance from the nearest metropolitan center the proportion of both large and small adjacent ci-

ties growing decreased. The largest proportion of small independent places growing were either near, or over, 150 miles from a metropolitan center. Large independent cities displayed a J-shaped relationship between distance to a metropolitan city and the proportion growing, with nearly 90 percent growing beyond 150 miles of a metropolitan area.

As an addition to the tabular analysis, scattergrams were plotted by population growth 1960-1970 and distance to the nearest metropolitan city center for each of the types of cities. The Pearson correlations and the least-square equations computed for each scattergram are presented in Table XVIII.

TABLE XVIII

SUMMARY OF SCATTERGRAM ANALYSIS OF NONMETROPOLITAN CITY POPULATION GROWTH 1960-1970 BY DISTANCE FROM THE NEAREST SMSA AND ADJACENCY STATUS

	Correlation Coefficient	Least Squares Equation
Large Adjacent Cities	-.61	Y =36.1 - .18X
Small Adjacent Cities	-.46	Y =42.4 - .21X
Large Independent Cities	.27	Y = 5.3 + .08X
Small Independent Cities	-.07	Y =11.2 - .02X

Table XVIII suggests that both large and small adjacent cities and small independent places exhibit a negative correlation between growth and distance from a metropolitan center, although the correlation for small independent cities is very weak. Large independent places, on the other hand, have a positive correlation, indicating that with increasing distance from a metropolitan city their growth rates increase.

Why large independent cities are growing faster at greater distances from a metropolitan area is not entirely clear, but one could surmise that, due to their lack of proximity to a metropolitan city and their isolation from other nonmetropolitan communities, there is a centralization of people and economic activities creating more self-sufficient cities. Their central place functions may become increasingly important at greater distances from an SMSA.

The importance of accessibility to an interstate highway for the growth of nonmetropolitan cities was clearly substantiated. For all types of cities except large adjacent places, location on a controlled access highway enhanced the proportion growing. (Location on or off a freeway had no impact on the proportion of large adjacent places increasing in size.) The availability and lower costs of transportation for communities on a freeway probably contributed to their growth. People may also perceive nonmetropolitan communities on an interstate highway as being "closer" to metropolitan cities due to their ease and speed of travel to such places; hence, they may prefer to live in cities on the interstate highway system.

The economic function of nonmetropolitan cities had an impor-

tant influence on population growth. Overall, those cities specializing in services or public administration had the greatest proportion growing, whereas only a small percentage of those places having a transportation function increased in size. (Generally, communities which had a transportation function contained a large number of people employed in the railroad industry.) Over three-fourths of the adjacent cities showing a manufacturing function increased in size, undoubtedly due to agglomerative economies and local demand. Independent cities, which do not have agglomerative economies or high levels of demand (because they are more isolated), did not have as large a proportion of communities with a manufacturing function increasing in population. Independent cities specializing in service and wholesale-retail activities exhibited the largest proportion growing of independent communities. Wholesale-retail and service activities are traditional central place functions that are found in isolated nodes which function as the center of a trading region.

Adjacent City Complementary Population Growth

This analysis of the economic function of communities suggests that, to a certain extent, a complementary relationship exists between large and small adjacent cities. In addition, various contextual and place factors affected growth of adjacent cities in that, in certain situations, small communities were growing faster than their larger neighbor. Specifically, small adjacent cities grew faster than larger places (1) in low extractive settings, (2) in SEA's with low rates of growth, and (3) in a single cities as opposed to places in a multiple city context. Further, it was sugges-

ted that decentralization at the county level was occurring in situations where a small adjacent city was growing faster than a large adjacent place in the same county. Centralization would be evidenced by the faster growth of a large adjacent city compared to a small adjacent community in the same county.

These findings lend credence to the possibility of complementary or parallel growth between large and small adjacent cities, as Butler and Fuguitt (1970) have suggested. To determine if there was parallel growh, the distribution of small adjacent city growth rates and the growth rates of large adjacent communities were analyzed. In the one county where there were two large adjacent cities, the mean growth rate of the two places was used as the measure of large city growth.

The data presented in Table XIX indicate that as the population growth of the large city increases, the growth of small adjacent places in the same county will also increase. From the table it can be determined that the greatest proportion of cities (66.6%) have the same growth rates or parallel growth (on the diagonal). However, it is also clear that both centralization and decentralization are occurring in nonmetropolitan counties. Decentralization is evidenced by the fact that 12 percent of the large cities which lost population had small communities in the same county showing above-average growth. Overall, 18.5 percent of the small adjacent communities had growth rates exceeding those of large cities (above the diagonal), indicating that the process of decentralization was occurring. Yet, when large cities had growth rates above 13.3 percent, the average for all places in the study, 17 percent of the

TABLE XIX

PERCENTAGE DISTRIBUTION OF
LARGE ADJACENT CITY POPULATION
CHANGE 1960-1970 BY SMALL ADJACENT CITY POPULATION
CHANGE 1960-1970

Large Cities Population Change	Small Cities Population Change in the Same County				
	Loss	0-13.2%	13.3%	Total	N
Loss	50%	33%	12%	100%	(6)
0-13.2%	20%	60%	20%	100%	(10)
13.3+%	9%	9%	82%	100%	(11)
Total	22%	33%	44%	100%	
(N)	(6)	(9)	(12)		(27)

Percent Small and Large Cities with Similar Rate	66.6%
Percent Small City Rate Exceeding Large City Rate	18.5%
Percent Large City Rate Exceeding Small City Rate	14.8%

small communities lost population. Centralization was also taking place; 14.8 percent of the large cities had growth rates surpassing those of small places (below the diagonal). The evidence presented here suggesting nonmetropolitan city decentralization augments Fuguitt's (1971) analysis showing that local decentralization is taking place in communities smaller than 2,500 located in nonmetropolitan counties with a city of at least 10,000 residents.

Summary of Population Change

The preceding analysis and discussion of nonmetropolitan city population change revealed several important findings. First, it was shown that large adjacent communities were most likely to increase in size in areas of high extractive employment. Small adjacent cities displayed the opposite tendency; all of the places in SEA's with extractive employment below ten percent were growing. Of all the city types, independent places had the greatest proportion growing in areas with middle levels of extractive activities. The growth of small adjacent places in areas of low extractive employment appears to be an example of decentralization at the county level, while the growth of large adjacent cities compared to small adjacent places in high extractive settings was an example of county level centralization. The population growth of independent communities in various extractive settings appears to be related to the same forces of centralization and decentralization that operate on adjacent cities.

Second, SEA population growth between 1950 and 1960 had a positive influence on community population growth, particularly

if the SEA's growth rate was between 10 and 19.9 percent. All the large adjacent cities in the middle growth level SEA's increased in size. However, if the SEA growth was rapid, above 20 percent, the growth of cities in the preceding decade was slow. For example, less than half of all nonmetropolitan communities increased in size if the area where they were located had increased in size at a rate faster than 20 percent during the 1950's. Overall, the evidence supported the hypothesis of regional population increase positively influencing community growth.

Third, the multiplicity of cities was suggested to have an influence of the growth of communities. The results clearly suggested that the multiplicity of cities made an important difference to the growth of communities. The categories of large independent single, and adjacent single, places had both a substantially larger proportion of places growing, and higher growth rates, than the same categories of multiple places. Only small independent multiple communities showed a greater rate and proportion of growth than multiple cities. Except for small independent cities, it appeared that, with multiple places, the population increase is diffused over several communities, which results in a lower growth rate for individual communities.

Fourth, city population change between 1950 and 1960 was shown to be an important factor in explaining community population increase for the period 1960 to 1970. Between 50 and 88 percent of the cities (depending on city type) that grew during the 1950's increased in size between 1960 and 1970. Less than half of either the large or small independent places that lost popula-

tion during the 1950-1960 period increased in size during the subsequent decade. Small adjacent cities showed the opposite pattern, with 71 percent of those places which lost population during the 1950's increasing in size the next decade.

Fifth, highway distance to the nearest SMSA revealed some expected and unexpected results. As expected, the proportion of both large and small adjacent cities growing declines with greater distance from an SMSA. The independent communities displayed an unexpected pattern. Large independent cities showed a J-shaped pattern, with 88 percent of the communities beyond 150 miles of a metropolitan city increasing in size. Apparently, the large proportion of large independent cities increasing in size beyond 150 miles of a metropolitan city was related to their function as a central place for the surrounding hinterland. Small independent places displayed an U-shaped pattern; 71% of these places located within 75 miles of an SMSA were growing, and 60% of the cities beyond 150 miles of an SMSA were also growing.

Sixth, accessibility to an interstate freeway had a positive influence on all city types except large adjacent cities. Between 63 and 100 percent of the independent and small adjacent cities increased in size if they had accessibility to a controlled access highway, compared to 42 to 74 percent of places without accessibility. Large adjacent cities displayed no difference relative to their location on or off a freeway. The findings indicate that the lower cost and ease of accessibility that is associated with a freeway are conducive to the growth of nonmetropolitan communities.

Seventh, the economic function of nonmetropolitan cities ex-

hibited a strong association with population change. Overall, cities with a service function were the most likely to increase in population, followed by wholesale-retail and public administration functions. Communities with a mining or transportation specialization were the least likely to grow. Adjacent places with either a mining or a manufacturing function were most likely to increase in size. Transportation places were the least likely to exhibit growth. The most likely of the independent places to grow were communities with a service function, followed by communities with a wholesale-retail function. The least likely to grow were places specializing in either mining or transportation.

Finally, the data clearly suggested that in nonmetropolitan counties there is a parallel growth between large and small adjacent cities. That is, large and small adjacent places in the same county were likely to have similar growth rates. A smaller proportion of small adjacent cities were either growing faster or slower than a large adjacent city in the same county. This suggested that in some nonmetropolitan counties either decentralization or centralization was occurring, as was posited by Fuguitt (1971).

CHAPTER VI

PATH ANALYSIS OF NONMETROPOLITAN CITY POPULATION CHANGE

This chapter considers the effects of a nonmetropolitan city's contextual and place factors and its economic function on its population growth between 1960 and 1970. Using multiple regression to decompose the total effects of each variable into its direct and indirect effects, the relative direct strength of each factor through economic function can be determined. As in the previous analysis, the size-location typology of cities was maintained to potentiate comparisons between places of different sizes and adjacency status.

Figure 1, Page 29, displays the postulated model of nonmetropolitan city population growth for large and small independent cities and large adjacent places. As the figure shows, context and place factors have a direct effect on population growth and an indirect effect on growth through each community's economic specialization. A city's economic function, in turn, has a direct effect on its population growth. The model for some adjacent cities is exactly the same with the exception of the stipulation that the population growth of a large city (large adjacent city) has a direct effect on the growth of small adjacent communities. In spite of the model's simplicity, it provides insights into the population growth of nonmetropolitan cities.

Large Adjacent Cities

The first type of city examined was the large adjacent community. Table XX shows, that the 12 variables explained slightly over 40 percent of the variation in the growth rates of this type of city. The $\bar{R}^2$ (.43) is respectable for research on nonmetropolitan cities (see Fuguitt and Zuiches, 1972; and Hart and Sailbury, 1963).[6]

As shown in the weights of the factors in the path equation, services, (.65), wholesale-retail (.40), diversified economic function (.31), city population change, 1950-60 (-.24), distance to an SMSA (-.24), and location on an interstate freeway (.23) had the largest aggregate effect on population change of large adjacent cities. The variable exhibiting the greatest direct effect on population change was distance to a metropolitan city (-.95). However, the large indirect effect of wholesale-retail, public administration,

[6]The early formula for decomposing causal effects was stated as simply the direct effects plus the indirect effects equals the total effects or zero-order correlation coefficient (Land, 1969). However, it has been pointed out that when there is more than one predetermined variable in a path model, the indirect effect of one variable on any endogenous variable is not simply the difference between the correlation coefficient and the path coefficient (Finney, 1972). When there is more than one predetermined variable, the difference between the correlation and the sum of the parts is due to the correlation between the predetermined variables in the model. Specifically, the correlation coefficient can be interpreted as a summary measure of all the factors leading to an association between two variables: the direct effect, the indirect, the spurious association due to a joint dependence on prior variables, and the association due to the correlation between predetermined variables. In the case of the nonmetropolitan city growth model, the correlation coefficient is equal to the direct effect, plus the indirect effect, and the association due to the correlation between the predetermined variables. Thus, the total effect (the sum of the direct and indirect effects) will not be equal to the correlation between two variables since there is an association due to the correlation between predetermined variables.

TABLE XX

SUMMARY OF PATH ANALYSIS OF LARGE ADJACENT CITIES

Dependent Variable	Predetermined Variables	Total Effect	Direct Effect	Indirect Effects via Economic Function					
				Ming.	Manf.	Whol.	Serv.	Pub Adm.	Div.
City Population Change, 1960-1970									
	Extractive Employment	.02	.02	.00	-.01	.00	.01	-.00	-.00
	SEA Population Change	-.09	-.05	-.01	.01	-.02	-.01	.00	-.01
	Multiplicity of Cities	.16	.20	.00	.07	-.10	-.04	-.00	.03
	City Population Change, 1950-1960	-.24	-.32	.09	-.04	-.02	.08	.05	-.08
	Distance to SMSA	-.23	-.95	.01	.03	.34	.17	.32	-.15
	Interstate Highway	.23	.24	.08	-.10	-.11	.02	.03	.07
	Mining	.12	.12						
	Manufacturing	.11	.11						
	Wholesale-Retail	.40	.40						
	Services	.65	.65						
	Public Administration	-.05	-.05						
	Diversified	.31	.31						

$\bar{R}^2$ = .43 N = 20 Mean Growth Rate of Large Adjacent Cities, 1960-1970 16.2%

and service functions lessened considerably the direct negative impact of distance.

The path analysis of large adjacent cities revealed more conclusively the total effect of the various factors on community population change. For example, the tabular analysis showed that 80 percent of the large adjacent cities with a growth rate above 13.3 percent in the 1950's also grew in the 1960's, and 88 percent of the same type of city with a growth rate between 0 and 13.2 percent between 1950 and 1960 increased their size during the 1960's. Path analysis showed that past city growth had a negative impact on growth during the 1960's (-.23). A path coefficient indicates how much change a standard unit of the dependent variable (city population change) is produced by a standardized (standard deviation unit) change in one of the independent variables (city population change, 1950-1960) when the other variables are controlled, i.e., are held constant. Thus, as the city's past growth increased one standardized unit, city growth in the 1960's decreased .23 of one standardized unit.

The results of the analysis of large adjacent cities differ somewhat from previous research. For instance, Frisbie and Poston (1975) found that distance to a metropolitan center, public administration, and manufacturing specialization had little or no effect on nonmetropolitan county population change. For large adjacent cities, manufacturing had a slight positive effect, whereas distance had a moderately strong negative impact. Contrary to Humphery and Sell's (1975) research on interstate highways, the location of large adjacent communities on a controlled access highway resulted

in a strong positive effect (.23) on population growth. Overall, the most important result of the path analysis of large adjacent cities was that the positive total effect of services, wholesale-retail, a diversified economic activities was greater than any of the place or contextual factors.

Small Adjacent Cities

The small adjacent cities displayed a slightly different pattern of path coefficients than their larger counterparts. Table XXI shows that the $\bar{R}^2$ was .29, indicating that the path model explained only about half as much of the growth variance for small adjacent cities as for large adjacent communities. Table XXI indicates that the place and contextual factors had a stronger impact than for large adjacent places. Of the four factors with the greatest total effects on population growth, three were place and contextual factors; distance to an SMSA (-.55), location on a freeway (.45), and multiplicity of cities (.24).

While tabular analysis had shown that distance and freeway location contributed importantly to city growth, path analysis indicated the relative strength of these two factors. In addition, SEA extractive employment had a strong negative impact (-.18), a relation not entirely clear from the tabular analysis.

Contrary to King's (1965) findings, the past city population change of both large and small adjacent communities had little or no impact on city population growth between 1960 and 1970 (-.24 and -.08 respectively). The path coefficients also indicated that, among the economic functions of small adjacent communities, diversi-

TABLE XXI

SUMMARY OF PATH ANALYSIS OF SMALL ADJACENT CITIES

Dependent Variable	Predetermined Variables	Total Effect	Direct Effect	Indirect Effects via Economic Function					
				Manf.	Tran.	Whol.	Serv.	Pub Adm.	Div.
City Population Change, 1960-1970									
	Extractive Employment	-.18	-.33	.24	.11	-.01	-.18	.01	-.02
	SEA Population Change	-.07	-.06	.01	-.00	-.00	-.02	-.01	.01
	Multiplicity of Cities	.24	.17	.04	.05	-.02	-.09	.04	.05
	City Population Change, 1950-1960	-.08	-.05	-.00	-.03	-.00	.01	-.00	-.01
	Distance to SMSA	-.55	-.24	.02	-.08	-.06	-.09	-.02	-.08
	Interstate Highway	.45	.39	-.13	.04	-.05	-.02	.10	.12
	Manufacturing	-.06	-.06						
	Transportation	.16	.16						
	Wholesale-Retail	.06	.06						
	Services	.16	.16						
	Public Administration	-.05	-.05						
	Diversified	.36	.36						
	Large Adjacent City Population Change	.05	.05						

$\bar{R}^2$ = .29 N - 27 Mean Growth Rate of Small Adjacent Cities, 1960-1970 18.7%

fied (.36), services (.16), and transportation (.16) economic activities had the largest total effect. Clearly, the diversified economy of small adjacent places contributes most stongly to their community population growth (.05). The growth of a large adjacent city had little impact on small adjacent place population growth.

Large Independent Cities

Independent cities showed a markedly divergent pattern of path coefficients when compared to adjacent places. Table XXII shows that the various factors examined explained only 15 percent of the variation in the growth rates of large independent cities. The most interesting finding was the strong positive effect (.52) that distance to a metropolitan center had on large independent communities. In other words, the further a city was from an SMSA, the greater its rate of growth. Table XXII also indicates that the existence of two or more cities in the same county decreases the growth of large independent cities, because the population increase is diffused over several nodes.

Based on the literature reviewed, location on a freeway would be expected to have a positive impact on growth. However, it was found that location on a controlled access highway had a strong negative effect (-.21) on large independent places. The large negative effect of SEA extractive employment (-.22) could lead to the speculation that agricultural reorganization does not lead to centralization, especially in counties with large independent cities.

Of the economic functions, services had the greatest impact

TABLE XXII

SUMMARY OF PATH ANALYSIS OF LARGE INDEPENDENT CITIES

Dependent Variable	Predetermined Variables	Total Effect	Direct Effect	Indirect Effects via Economic Function					
				Ming.	Manf.	Tran.	Serv.	Pub Adm.	Div.
City Population Change, 1960 1970									
	Extractive Employment	-.22	-.22	-.00	.05	-.08	.04	.02	-.03
	SEA Population Change	.10	.08	-.01	-.01	.05	.08	-.08	-.01
	Multiplicity of Cities	-.41	-.39	.08	-.15	-.06	.12	.01	-.02
	City Population Change, 1950-1960	-.22	-.21	-.00	.01	-.04	.01	-.00	.01
	Distance to SMSA	.52	.60	.11	-.09	-.17	.06	-.13	.14
	Interstate Highway	-.21	-.20	.02	.06	.05	-.04	-.07	-.01
	Mining	-.13	-.13						
	Manufacturing	.06	.06						
	Transportation	.07	.07						
	Services	.39	.39						
	Public Administration	.06	.06						
	Diversified	.18	.18						

$\bar{R}^2$ = .15 N = 27 Mean Growth Rate of Large Independent Cities, 1960-1970 19.4%

on growth. "Services" is one of the traditional central place functions that would be expected to enhance the growth of isolated communities. While economic function was generally more important to the growth of adjacent places than the contextual and place factors, the opposite appears to be true for large independent communities. Apparently, more isolated places are affected by their surroundings than by their own characteristics. Hence, it is unlikely that these places will greatly change their growth pattern in the future.

Small Independent Cities

Of the four types of nonmetropolitan cities examined, the growth model was least able to explain the population change of small independent cities. As Table XXIII indicates, the model was able to explain only 14 percent of the growth variation of these communities. Only two place and contextual factors contributed meaningfully to community growth: SEA extractive employment (-.35) and past city population change (.45). These findings are contrary to the research of Forsht and Jarsma (1975).

The negative effect of extractive employment indicates that decentralization associated with agricultural reorganization may be occurring, because high extractive settings have a negative effect on growth. The large positive effect of past city growth is nearly identical to that found by King (1965). Also of interest was the very weak effect of highway distance to a metropolitan city and location on a freeway. These findings were very similar to those of Frisbie and Poston (1975) and Humphery and Sell (1975).

TABLE XXIII

SUMMARY OF PATH ANALYSIS OF SMALL INDEPENDENT CITIES

Dependent Variable	Predetermined Variables	Total Effect	Direct Effect	Indirect Effects via Economic Function						
				Ming.	Manf.	Tran.	Whol.	Serv.	Pub Adm.	Div.
City Population Change, 1960-1970										
	Extractive Employment	-.35	-.39	-.01	.06	.04	.03	-.08	.04	-.04
	SEA Population Change	.09	.08	.02	-.00	.00	.00	-.00	-.00	-.01
	Multiplicity of Cities	-.07	-.09	-.00	-.00	.03	.01	-.03	.02	-.01
	City Population Change, 1950-1960	.45	.38	-.00	-.04	.09	-.02	-.02	.12	-.06
	Distance to SMSA	.02	.02	-.00	-.00	.00	.00	-.00	-.00	-.00
	Interstate Highway	.07	.06	-.01	-.02	.03	.01	-.01	-.00	-.01
	Mining	-.02	-.02							
	Manufacturing	-.01	-.01							
	Transportation	-.08	-.08							
	Wholesale-Retail	.04	.04							
	Services	.14	.14							
	Public Administration	.10	.10							
	Diversified	.16	.16							

$\bar{R}^2$ = .14 N = 82 Mean Growth Rate of Small Independent Cities, 1960-1970 7.6%

Turning to the economic functions, Table XXIII indicates that diversified economic activities (.16) somewhat weakly affects population change. Wholesale-retail (.04) and manufacturing (-.01) functions had almost no effect on community growth. The small negative effect of transportation (-.08) is congruent with Forsht and Jansma (1975). The findings for manufacturing and public administration are also similar to those found by Frisbie and Poston (1975). It is apparent that intervening factors not included in the model presented here impact on the growth of small independent communities.

Summary of Path Analysis

Table XXIV, which summarizes the total effects on the four types of communities, displays each factor that had a path coefficient between $\pm$.10 and $\pm$.24 and greater than $\pm$.25. Comparing first the adjacent cities, both large and small, only the multiplicity of cities, distance, and the location on a freeway had a total effect in the same direction. Among economic functions, only service and diversified activities had an effect (positive) in the same direction.

Independent communities displayed a different pattern of influence for the context and place factors, but a similar one for their functions. Only extractive employment has the same direction of influence for both large and small independent places. Like the adjacent communities, service and diversified economic activities had a positive influence on city population growth. Only one factor, city growth in the 1950's, was reversed between large and small independent cities.

Examination of the cities by size shows that for large communities, both adjacent and independent, only previous city

TABLE XXIV

SUMMARY OF THE TOTAL EFFECTS OF THE CONTEXT AND PLACE FACTORS, AND ECONOMIC FUNCTION ON THE POPULATION CHANGE OF NONMETROPOLITAN CITIES, 1960-1970

	Adjacent Cities		Independent Cities	
	Large	Small	Large	Small
SEA Extractive Employment		-	-	--
SEA Population Change			+	
Multiplicity of Cities	+	+	--	
City Population Change, 1950-60	--		-	++
Distance to Nearest SMSA	-	--	++	
Interstate Highway	+	++	-	
Mining	+	*	-	
Manufacturing	+			
Transportation	*	+		
Wholesale-Retail	++		*	
Services	++	+	++	+
Public Administration				+
Diversified	++	++	+	+

++ = .25+ + = .10 to .25 Less than .10 or -.10 are blank
-- = -.25+ - = -.10 to -.25 *City did not have the Economic Function

growth, services, and diversified functions exhibited total effects in the same direction. Factors that had a reverse effect on growth by adjacency status included the multiplicity of cities, distance from a metropolitan city, accessibility to a freeway, and the economic specialization of mining. While the multiplicity of cities, accessibility to a freeway, and mining had a positive effect on large adjacent communities, these same factors produced a negative impact on the growth of large independent places. The highway distance from an SMSA had the opposite pattern: a positive effect on large independent places and a negative impact on large adjacent communities.

For small communities, only SEA extractive activity, service specialization, and diversified functions exhibited total effects in the same direction. When compared with adjacent cities, none of the small independent places showed a reversal in the direction of their effects. Finally, across all four types of cities, only two factors, service and diversified economic functions, positively contributed to the population growth of all of the cities.

CHAPTER VII

CONCLUSIONS AND DISCUSSION

This chapter reviews the major substantive findings of the research on the growth of nonmetropolitan cities. First, a discussion is presented about the impact of contextual and place factors on a community and its symbiotic relationship with the surrounding hinterland. Following this, the influence of a city's economic function on its growth and the impact of size and adjacency on a community's economic structure and its growth are reviewed. The final section of the chapter focuses on the population growth of nonmetropolitan areas since 1970 and on the reasons for this growth.

CONTEXT AND PLACE FACTORS

It was first hypothesized that the ecological context in which a community was located importantly influenced its economic function and population growth. Across all four classes of cities, a community's hinterland demonstrated a substantial association, sometimes positive and sometimes negative, with its rate of growth and function. In particular, it was found that the greater the hinterland's level of extractive employment, the more likely cities are to engage in a wholesale-retail specialization or service activities, or to have a diversified economy. Conversely, communities in areas

with low levels of extractive employment were generally characterized by a manufacturing specialization. The final contextual factor examined was the multiplicity of cities. Consistent with the literature, manufacturing, and, to a lesser extent, diversified activities were found more frequently in cities located in a county with one or more places of the same size. It was also found, as had been expected, that places specializing in wholesale-retail or service activities generally were isolated, meaning that no other cities of the same size were located in the county. Overall, manufacturing and wholesale-retail functions demonstrated the strongest interdependency with the community's economic specialization and its ecological context.

Only two place factors were consistently useful in predicting a community's economic function. Manufacturing communities located away from a freeway may be specializing in local manufactured products that can be produced more cheaply locally than brought in from other areas. Conversely, cities on a freeway may have a diversified economy because of their easier access to goods and services. The other place factor systematically associated with a city's function was highway distance to a metropolitan city. Cities with a manufacturing specialization generally were located near metropolitan areas, while the opposite condition held for cities with a wholesale-retail specialization.

It was also suggested that the context and place factors, as well as economic function, would be associated with the growth of the cities. The effect of these factors varied considerably across

the four different classes of cities. The three factors which demonstrated the most consistent influence for all communities were: levels of SEA extractive employment, the multiplicity of cities, and accessibility to an interstate highway. Tabular analysis suggested that small cities were more likely to increase in size if they were located in areas of low extractive employment, whereas in large cities, the converse was true. An examination of the multiplicity of cities within each size-location class indicated that single large independent and small adjacent cities grew at a faster pace than large independent and small adjacent cities. Every city type, except large adjacent cities, derived a growth advantage from location on an interstate highway; large adjacent communities had an equal probability of growing, regardless of their freeway accessibility. Large independent cities were strongly influenced by more context and place factors than any other class of city (Table XXIV) and small independent places were influenced by the fewest number of factors. Across the seven economic functions examined, communities with a service or public administration function had the greates proportion of cities growing between 1960 and 1970, regardless of their size or adjacency status. Cities specializing in transportation, on the other hand, consistently had the least probability of increasing in size.

SIZE AND ADJACENCY

One basic hypothesis of this research was that nonmetropolitan cities in close proximity to one another would be characterized by economic and growth parameters that would differ significantly

from the parameters of nonmetropolitan places of the same size some distance from each other. To assist in determining the effects of city proximity, a size-location typology was developed which differentiated nonmetropolitan cities into two size classes, and which dichotomized communities according to proximity within the county to larger or smaller places. The analysis showed that community economic function and growth did differ by city size and adjacency status. The proportion of adjacent cities with a wholesale-retail specialization did increase with distance, but, for independent places, the same function had a curvilinear, or U-shaped, relationship with distance. Both small adjacent places and independent places, generally functioning as central places, had a greater proportion of wholesale-retail and service functions than larger communities. As one might expect, manufacturing activities were proportionally most often found in adjacent cities.

Some surprising differences were found in the growth rates of the four classes of cities. Independent cities exhibited the expected pattern, reported in the literature, of large places having higher rates of growth than smaller communities. The unexpected finding was the reversal for adjacent cities. That is, small adjacent cities had higher growth rates than large adjacent places (the difference in the growth rates was 2.1%). Apparently, in nonmetropolitan counties, a process of deconcentration is occurring in which cities under 10,000 in a county with a city over 10,000 are growing faster than the larger place. This pattern is similar to the well documented suburbanization in metropolitan areas. Indepen-

dent cities displayed the greatest range in growth rates: large independent places had the highest rate of growth across all classes of cities (19.4%) while small independent communities had the lowest growth rates (7.6%). The growth rates of large and small adjacent cities in the same county were also found to be similar. In other words, if a large adjacent city had a high rate of growth, a small adjacent city in the same county would be likely to demonstrate a high growth rate as well.

NONMETROPOLITAN POPULATION TRENDS SINCE 1970

Based on the results of this research and the trends of the past 70 or more years, it could be hypothesized that metropolitan areas will continue to grow rapidly and that only a few of the large nonmetropolitan cities will eventually reach metropolitan size. (The most recent of the cities to be designated an SMSA that was included in this study is Yakima, Washington, which was declared a SMSA in 1975). However, since 1970 there has been a major reversal in the previous trends of population distribution in the United States, a reversal which bears directly on nonmetropolitan cities. For the first time in this century more Americans are moving to nonmetropolitan areas than are migrating to metropolitan counties (SMSAs). One measure of this "counter-urbanization," to use Brian Berry's (1977:119) term, is that for every 100 persons who moved to metropolitan areas between 1970 and 1975, 131 moved out (Morrison and Wheeler, 1976:3). During the preceeding five year period, 1965-1970, only 94 people moved out for every 100 who moved into metropolitan areas. Between 1970 and 1974, nonme-

tropolitan areas grew 5.0 percent, compared to SMSAs, which grew by only 3.6 percent (U.S. Bureau of the Census, 1975). In small nonmetropolitan counties, those in which the largest city in the county is between 2,500 and 10,000, the growth rate between 1970-1974 was 6.0 percent, higher than the average rate for all nonmetropolitan counties. In entirely rural counties, counties in which there was not a place over 2,500 in size, the growth rate was 5.0 percent. In addition, three-fourths of all the nation's nonmetropolitan counties registered population gains from either natural increase or migration (or both) since 1970, compared with only one-half during the 1960's.

Not only are nonmetropolitan areas growing, but many of the country's metropolitan areas, especially central cities in the east, are declining in population. By 1975 almost one out of every six of the nation's metropolitan areas was losing population (Morrison and Wheeler, 1976). This metropolitan population loss is in part a result of the decline in the nation's birth rate since its post World War II peak in 1957. During the period 1960-1970 many SMSA's had an ongoing out-migration, but the high rate of natural increase partially obscured this trend. Since 1970 the birth rate has declined to the extent that it is no longer sufficient to offset the previously unnoticed metropolitan out-migration. Hence, many metropolises that grew during the 1960's are now losing population, and others that grew rapidly have experienced substantially reduced growth rates. Moreover, some cities that previously reported large in-migration rates are now undergoing a process of out-migration. For example, the migration rate from metropolitan to

nonmetropolitan areas between 1970 and 1975 was 3.5 per 1,000, while the rate for nonmetropolitan to metropolitan areas was 2.6 per 1,000 for the same period. (Morrison and Wheeler, 1976:8).

It could be argued that the recent growth of nonmetropolitan areas is not a reversal of previous trends, but is simply metropolitan overspill. In other words, nonmetropolitan counties adjacent to SMSA's receive the bulk of metropolitan out-migration and, thus, account for the greatest amount of nonmetropolitan growth. However, Morrison and Wheeler (1976) have shown that although the rate of growth declines as the rate of nonmetropolitan commuting to SMSA's (a measure of distance to or interaction with metropolitan cities) decreases, the decline is very small. For example, nonmetropolitan counties with no commuting to an SMSA have had an annual growth rate since 1970 (1.4%) equal to or greater than counties with commuting rates between 10 and 19 percent. Thus, although some of the new nonmetropolitan growth is the result of SMSA spillover or suburbanization, there appears to be significant growth in entirely rural areas where (1) commuting is non-existent and 2) there are no population nodes of urban size. Apparently people are leaving metropolitan areas, both for smaller urban places and for entirely rural areas. At this time, it is not clear whether this pattern of growth will significantly alter the population distribution between rural and urban areas or between metropolitan and nonmetropolitan areas.

The reversal of past migration trends and the growth of nonmetropolitan areas leads to questions about the causes of this growth reversal. A number of factors are involved in the prefer-

ence for nonmetropolitan areas, both urban and rural, and the pull of people to these areas (Berry and Gillard, 1977).

First, in recent years there have been two forms of industrial decentralization taking place. Within industrial regions (New England and the southern Great Lakes area, for example) there have been shifts back to, or the development of, plants in smaller cities and towns. This is especially true for communities with municipal services facilities and accessibility to other areas, but without the high economic and social costs of large eastern metropolises.

The other form of industrial decentralization is the diffusion of more labor-intensive industries to rural and small towns in southern and border states. This is the first time extensive industrialization has moved into less prosperous southern nonmetropolitan areas. Industries in which technology has matured and in which production processes are extensively routinized require less skilled labor than they once did. This, together with the high wages paid in large metropolitan cities, has made it attractive for industry to locate in low-wage areas. Southern and small cities are ideal for the relocation of old industry or the location of new industry, since such places lack strong unions, which tend to raise wages. Many nonmetropolitan cities also have available land for plant expansion and a pool of willing workers, both of which are important to industrial relocation (Erickson, 1976).

Since 1970, trade and other non-goods-producing sectors of the economy have challenged manufacturing as the principle source of employment growth in nonmetropolitan areas. In such areas,

manufacturing accounted for only one-fourth of the employment growth between 1969 and 1973, as compared with one-half during the 1962-1968 period. Still, in the late 1960's and early 1970's, the growth rate of manufacturing employment in nonmetropolitan areas was higher than in metropolitan counties (Beale, 1974). The northwestern region of the United States was consistent with this national trend. As of 1970, only 16 percent of the cities specialized in manufacturing, while slightly over one-fourth specialized in wholesale-retail and service functions. It was also shown that the fastest growing communities had a service economy.

The second reason for the current growth of nonmetropolitan counties is the extensive metropolitan economic depression. (The last previous period of rural resurgence was the Great Depression of 1929.) Thus, with many people unemployed or underemployed, those who migrated from rural areas may prefer to return to their home towns where they feel they can cope with the current economic situation more efficaciously than in an alien metropolis. Many of these people may also have temporarily withdrawn from the labor force.

Third, the dangers of personal and property crime, and noise, air, and water pollution are perceived to be so great by many Americans that they are again returning to the relatively safer and cleaner small town and rural environment. Zuiches and Fuguitt's (1972) survey of residential preferences found that those persons preferring nonmetropolitan locations valued the relative lack of crime and the clean environment. While these factors undoubtedly are taken into consideration by many individuals contem-

plating a change in their residence, they appear to be most salient for the elderly, who are concerned with crime, and for environmently concerned families with young children.

Fourth, for many people the amenities of climate and recreation are becoming more important to residential preferences, regardless of job opportunities or wage levels. Both Fuguitt (1971) and Ullman (1954) have suggested that such amenities play an important part in many decisions to move. The recent large scale migration to the "sunbelt states" reflects the growing prominance of climate in the location process selection.

Among these amenity-conscious migrants are the increasingly numerous retirees moving to nonmetropolitan areas. Since 1970, the fastest growing nonmetropolitan counties have been those with a heavy in-migration of white people who were 60 years of age or over (Beale, 1975). Most retirees are attracted to areas with a "good" climate, such as the "sunbelt states", while many younger people, to whom amenities and outdoor recreation are important, are attracted to areas perceived as unspoiled by pollution or a large population, such as the Rocky Mountain States and the Pacific Northwest. In many areas, service employment is expanding rapidly as senior citizens and young people demand additional goods and services not previously available.

Fifth, improvements in the level of welfare have possibly enabled some people to move to (or return to) preferred nonmetropolitan areas through early retirement, part-time work, or withdrawal from the labor force. Many individuals can manage to live at reduced levels of income through such transfer payments as so-

cial security, food stamps, aid-to-dependent children, Medicare and Medicaid, and better unemployment compensation. While some may be "welfare bums," most people, no doubt, are content to live in genteel poverty, perhaps to find part-time work that they consider preferable to the intensity of metropolitan life.

Sixth, nonmetropolitan counties with a college or university have traditionally had high rates of growth. Between 1970 and 1973 such counties have grown faster than nonmetropolitan counties as a whole (5.8% vs 4.2%). Eventually these counties are predicted to experience a drop in the number of students as the decline in the birth rate since 1957 continually affects enrollment. However, it is unlikely that college cities will shrink to their pre-baby-boom size. In fact, these communities many continue to grow, although at a slower pace, because of their generally larger size. As pointed out in the second chapter, larger nonmetropolitan cities have been found to have higher growth rates than small places. An additional factor in the continued growth of these communities is that some specialized, highly technical, businesses prefer to locate in college towns where college or university educated individuals provide a pool of reliable, high quality, easy-to-train employees.

Equally important to the growth of nonmetropolitan cities has been the growth of community colleges and technical education centers. These institutions typically, but not always, do not furnish dormitory facilities and, thus, do not swell the local population with students. Such institutions have made it much easier for nonmetropolitan residents to obtain a post-high school education through either university transfer courses or vocational training

classes. Community colleges often are able to cooperate with private industry by providing the specific skills and job training needed for both new or expanding businesses and for established local firms. This allows young adults to stay in the community. The rapid spread of community colleges suggests that nonmetropolitan cities no longer need be thought of as educationally and culturally removed from the rest of the country.

Seventh, the growing exploitation of newly valuable natural resources has resulted in the rapid growth of a small number of nonmetropolitan cities, primarly located in the western United States. Both the increased value of coal, oil, natural gas, and the construction of nuclear power plants have turned a few western cities into old fashion "boom towns," often bringing the problems associated with rapid growth. The actual exploration and the labor-intensive process of building factilities for processing raw materials may temporarily increase a community's population. However, over the long run, the future population growth of these places is uncertain at best, as many, but not all, workers usually move into temporary housing in the city nearest the construction site when the job is completed, rather than leave for permanent residences maintained in other communities.

Finally, improved transportation and communication technology, long distance commuting, and the universality of electricity and television have extended the influence of metropolitan cities far beyond the boundaries of SMSA's. As Berry and Gillard (1977) point out, the maximum commuting radius of SMSA central cities has increased from an average of 58 to 64 miles between 1960 and

1970. During the same decade, the maximum commuting radius for SMSA's increased from 66 to 76 miles. These figures reflect national averages and vary greatly by region; the northeast has the smallest radius and the far west the largest. A more revealing analysis of a metropolitan area's influence over nonmetropolitan areas is provided by Berry's Daily Urban Systems (Berry, 1973). Based on commuting data, Berry has concluded that in 1960 more than 90 percent of the nation's population lived within the daily commuting system of a metropolitan city. Not only has transportation and communication technology increased the spatial range of metroplitan cities; the range of nonmetropolitan communities has also increased as the interstate highway system and electronic communication link nonmetropolitan places together in a system of cities (Morrison and Wheeler, 1976).

The revival of growth in the nonmetropolitan component of the system of cities has taken most demographers and ecologists by surprise. There is little in the traditional ecological literature, except perhaps in the writing of Gibbs (1963), to suggest that eventually a nation or other large territory will begin a large scale process of population deconcentration. The void in ecological theory concerning population redistribution has prompted Beale (1975) to suggest that what is now occurring in the United States is a new, final phase of the demographic transition in which people move from large metropolitan concentrations to more numerous smaller communities. Beale wrote:

> Much is said in the literature of demography about the modern demographic transition. The process whereby nations go from high fertility and mortality through a per-

> iod of rapid total growth as mortality drops, to a subsequent condition of low growth as fertility falls, is seen to be accompanied by rapid urbanization. But in a nation where this process is essentially completed, another aspect of demographic transition may emerge, in which the distribution of population is no longer controlled by an unbridled impetus to urbanization. General affluence, low total population growth, easy transportation and communication, moderization of rural life, and urban population massings so large that they diminish the advantages of urban life--these factors may make a downward shift to smaller communities seem both feasible and desireable (Beale, 1975:14).

Beale's suggestion that there is an additional aspect of the demographic transition-population redistribution is both unique and testable. One could predict that countries (such as the United States) with low birth and death rates and a high degree of urbanization could undergo a redistribution of their population. In most cases, this would involve large scale migration from the largest cities to small communities, and perhaps to sparsely settled regions.

One recent attempt to examine the distribution of a nation's population relates directly to the growth of nonmetropolitan areas and to Beale's hypothesis. Vinning (1975), employing Markov chain analysis and using migration data, suggested that through modernization and industrialization, there is a convergence and then a dispersal of population in highly urbanized nations. Vinning's study of Japan showed that as the rural population becomes depleted, cities located in rural areas begin to increase their size faster than urban areas, since they are nearest to the remaining rural population. This will eventually lead to the decrease and then to the reversal of the convergence of the population urban regions. The rest of the population shift from older urban regions to rural

areas will not begin until the rural population begins to decrease significantly. According to Vinning, at the end of a nation's urbanization process, rural areas start to exert a pull on the population of urban regions through the higher growth rates of their cities. A secondary mechanism is also suggested to be operating, a mechanism by which older urban regions may repel their population to the relatively uncluttered and newer cities of the rural areas. (See Wardwell, 1977, for an equilibrium approach to post 1970 nonmetropolitan population growth). The result of Vinning's research is interesting in itself; however, it appears that he is subtly suggesting that highly developed countries may be reaching some equilibrium point in terms of population distribution between urban and rural areas. While Vinning's work is meritorious, the process of urban-rural population distribution needs to be more fully explored in order to explain the current population revival of nonmetropolitan America.

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APPENDIX A

Percentage of Adjacent Cities Growing By Contextual and Place Factors

Contextual Factors

SEA Extractive Employment	0-9.9%	10-19.9%	20+%	Total
Percent Growing	92	65	92	79
(N)	(12)	(23)	(12)	(47)

SEA Population Growth, 1950-60	0-9.9%	10-19.9%	20+%	Total
Percent Growing	89	90	33	79
(N)	(18)	(20)	(9)	(47)

Multiplicity of Cities	Single	Multiple	Total
Percent Growing	81	73	79
(N)	(32)	(15)	(47)

Place Factors

City Population Change, 1950-60	Loss	0-13.2%	13.3+%	Total
Percent Growing	67	79	83	79
(N)	(9)	(14)	(24)	(47)

Distance to Nearest SMSA	0-74%	75-149%	150+%	Total
Percent Growing	93	75	71	79
(N)	(14)	(16)	(17)	(47)

Interstate Highway	On	Off	Total
Percent Growing	86	76	79
(N)	(14)	(33)	(47)

APPENDIX B

Percentage of Independent Cities Growing By Contextual and Place Factors

Contextual Factors

SEA Extractive Employment	0-9.9%	10-19.9%	20+%	Total
Percent Growing	55	62	37	55
(N)	(29)	(42)	(38)	(109)

SEA Population Growth, 1950-60	0-9.9%	10-19.9%	20+%	Total
Percent Growing	48	72	40	53
(N)	(33)	(61)	(10)	(104)

Multiplicity of Cities	Single	Multiple	Total
Percent Growing	50	69	55
(N)	(80)	(29)	(109)

Place Factors

City Population Change, 1950-60	Loss	0-13.2%	13.3+%	Total
Percent Growing	42	59	55	55
(N)	(12)	(37)	(60)	(109)

Distance to Nearest SMSA	0-74%	75-149%	150+%	Total
Percent Growing	70	39	65	55
(N)	(20)	(46)	(43)	(109)

Interstate Highway	On	Off	Total
Percent Growing	71	48	55
(N)	(34)	(75)	(109)

Note: The following communities were deleted from this table; three small independent cities declining in population in a SEA losing population, one small independent city growing in a SEA losing people, and one large independent place growing in a SEA declining in population.

APPENDIX C

Percentage of Large Cities Growing By Contextual and Place Factors

Contextual Factors

SEA Extractive Employment	0-9.9%	10-19.9%	20+%	Total
Percent Growing	64	83	50	70
(N)	(12)	(25)	(10)	(47)

SEA Population Growth, 1950-60	0-9.9%	10-19.9%	20+%	Total
Percent Growing	63	86	33	60
(N)	(19)	(21)	(6)	(47)

Multiplicity of Cities	Single	Multiple	Total
Percent Growing	71	67	70
(N)	(41)	(6)	(47)

Place Factors

City Population Change, 1950-60	Loss	0-13.2%	13.3+%	Total
Percent Growing	78	67	70	70
(N)	(5)	(18)	(24)	(47)

Distance to Nearest SMSA	0-74%	75-149%	150+%	Total
Percent Growing	60	63	83	70
(N)	(9)	(24)	(14)	(47)

Interstate Highway	On	Off	Total
Percent Growing	80	64	70
(N)	(25)	(22)	(47)

Note: This table does not include one large independent city growing located in a SEA losing population.

APPENDIX D

Percentage of Small Cities Growing By Contextual and Place Factors

Contextual Factors

SEA Extractive Employment	0-9.9	10-19.9	20+	Total
Percent Growing	69	68	43	59
(N)	(29)	(40)	(40)	(109)

SEA Population Growth, 1950-60	0-9.9	10-19.9	20+	Total
Percent Growing	63	63	38	58
(N)	(32)	(60)	(15)	(109)

Multiplicity of Cities	Single	Multiple	Total
Percent Growing	52	71	59
(N)	(71)	(38)	(109)

Place Factors

City Population Change, 1950-60	Loss	0-13.2	13.3+	Total
Percent Growing	56	78	58	59
(N)	(16)	(33)	(60)	(109)

Distance to Nearest SMSA	0-74	75-149	150+	Total
Percent Growing	76	42	63	59
(N)	(25)	(38)	(46)	(109)

Interstate Highway	On	Off	Total
Percent Growing	70	54	59
(N)	(23)	(85)	(109)

Note: This table does not include three small independent cities declining in population in a SEA losing population and one small independent place growing located in a SEA declining in population.

APPENDIX E

Zero-order Correlation Matrix of Large Adjacent Cities

1. City Chg. 1960-70	1.000												
2. Distance to SMSA	-.619	1.000											
3. City Chg. 1950-60	-.272	.000	1.000										
4. SEA Pop. Change	.038	-.082	.162	1.000									
5. SEA Extractive	-.275	.668	.165	.005	1.000								
6. Multiple Cities	-.110	.198	-.022	-.301	.320	1.000							
7. Highway	.101	-.084	.292	.064	-.148	-.333	1.000						
8. Mining	-.033	.094	-.112	.119	.115	-.076	.229	1.000					
9. Manufacturing	.086	-.261	-.122	-.230	-.346	.326	-.420	-.096	1.000				
10. Whole-Retail	-.202	.381	-.100	-.296	.232	-.111	-.333	-.076	-.140	1.000			
11. Services	.364	-.146	-.087	.274	.352	-.111	-.000	-.076	-.140	-.111	1.000		
12. Pub. Admin.	.097	-.419	-.136	-.069	-.393	-.140	.140	-.096	-.176	-.140	-.140	1.000	
13. Diversified	-.215	.129	.348	.176	.128	.033	.301	-.207	-.379	-.301	-.301	-.379	1.000
	1	2	3	4	5	6	7	8	9	10	11	12	13

APPENDIX F

Zero-order Correlation Matrix of Small Adjacent Cities

1. City Chg. 1960-70	1.000												
2. Distance to SMSA	-.464	1.000											
3. City Chg. 1950-60	-.058	.042	1.000										
4. SEA Pop. Change	-.173	-.101	.355	1.000									
5. SEA Extractive	-.503	.664	.129	.038	1.000								
6. Multiple Cities	-.024	.061	.214	-.155	.363	1.000							
7. Highway	.617	-.301	.006	-.127	-.521	-.193	1.000						
8. Manufacturing	.068	-.440	-.135	-.115	-.525	.019	.027	1.000					
9. Transport	-.076	-.041	.655	.307	.172	.010	-.117	-.151	1.000				
10. Whole-Retail	-.219	.245	-.109	-.071	.135	-.104	-.147	-.188	-.100	1.000			
11. Services	-.141	-.064	-.123	.385	.132	-.401	-.173	-.222	-.117	-.147	1.000		
12. Pub. Admin.	-.089	-.028	.051	.080	-.036	.131	.184	-.188	-.100	-.125	-.147	1.000	
13. Diversified	.295	.315	-.113	-.365	.202	.262	.147	-.377	-.200	-.250	-.294	-.250	1.000
14. Pop. Chg. Lrg. Adj.	.430	-.679	-.299	-.044	-.391	-.119	.283	.299	-.191	-.091	.031	-.214	.022	1.000
	1	2	3	4	5	6	7	8	9	10	11	12	13	14

APPENDIX G

Zero-order Correlation Matrix of Large Independent Cities

1. City Chg. 1960-70	1.000												
2. Distance to SMSA	.278	1.000											
3. City Chg. 1950-6	-.204	.038	1.000										
4. SEA Pop. Change	.235	.143	-.031	1.000									
5. SEA Extractive	.059	.483	.228	.221	1.000								
6. Multiple Cities	-.146	.383	-.252	-.172	-.124	1.000							
7. Highway	.090	.404	.301	.200	.085	-.046	1.000						
8. Mining	-.224	.055	.081	-.103	.093	-.117	-.031	1.000					
9. Manufacturing	-.213	-.285	-.296	-.410	-.450	.413	-.466	-.117	1.000				
10. Transport	-.074	-.059	.171	.559	.378	-.147	-.158	-.100	-.147	1.000			
11. Services	.381	-.007	.029	.182	-.066	-.270	.253	-.183	-.270	-.229	1.000		
12. Pub. Admin.	-.131	-.162	.103	-.093	-.210	-.117	.252	-.080	-.117	-.100	-.183	1.000	
13. Diversified	.039	.332	-.023	-.136	.224	.186	.090	-.183	-.270	-.229	-.421	-.183	1.000
	1	2	3	4	5	6	7	8	9	10	11	12	13

APPENDIX H

Zero-order Correlation Matrix of Small Independent Cities

1. City Chg. 1960-70	1.000												
2. Distance to SMSA	-.073	1.000											
3. City Chg. 1950-60	.355	.026	1.000										
4. SEA Pop. Change	-.055	-.103	-.007	1.000									
5. SEA Extractive	-.308	.240	.008	.292	1.000								
6. Multiple Cities	.130	-.108	-.024	.027	-.448	1.000							
7. Highway	-.041	-.018	-.119	-.015	.094	.075	1.000						
8. Mining	-.098	-.019	-.002	.231	.065	.021	-.100	1.000					
9. Manufacturing	-.058	-.109	-.069	-.074	-.217	.100	-.227	-.145	1.000				
10. Transport	-.070	.056	.207	-.011	.100	-.217	.306	-.115	-.136	1.000			
11. Whole-Retail	-.045	.164	-.067	-.044	.017	-.069	.078	-.152	-.179	-.142	1.000		
12. Services	.052	-.024	-.070	.054	.057	.238	.236	-.130	-.154	-.122	-.161	1.000	
13. Pub. Admin.	.210	-.031	.338	-.080	-.030	-.149	-.124	-.079	-.093	-.074	-.098	-.084	1.000
14. Diversified	.057	-.036	-.131	-.057	.016	.004	-.125	-.239	-.282	-.224	-.295	-.253	-.154	1.000
	1	2	3	4	5	6	7	8	9	10	11	12	13	14

APPENDIX I

THE ECONOMIC FUNCTION, SIZE-LOCATION CLASSIFICATION, AND MULTIPLICITY OF EACH NONMETROPOLITAN CITY, 1960

City	Economic Function	Size-Location Classification	Multiplicity of City
IDAHO			
Blackfoot	Services (personal)	Small Independent City	Multiple
Boise	Services (personal)	Large Independent City	Single
Buhl	Wholesale-Retail	Small Adjacent City	Single
Burley	Wholesale-Retail	Small Adjacent City	Single
Caldwell	Diversified	Large Independent City	Multiple
Coeur d'Alene	Services (personal)	Large Independent City	Single
Emmett	Manufacturing	Small Independent City	Single
Gooding	Transportation	Small Independent City	Single
Grangeville	Services (personal)	Small Independent City	Single
Idaho Falls	Services (personal)	Large Independent City	Single
Jerome	Wholesale-Retail	Small Independent City	Single
Kellogg	Mining	Small Independent City	Single
Lewiston	Diversified	Large Independent City	Single

City	Economic Function	Size-Location Classification	Multiplicity of City
Montpelier	Transportation	Small Independent City	Single
Moscow	Services (personal)	Large Independent City	Single
Mountain Home	Public Administration	Small Independent City	Single
Nampa	Diversified	Large Independent City	Multiple
Payette	Diversified	Small Independent City	Single
Pocatello	Transportation	Large Independent City	Single
Conard	Wholesale-Retail	Small Independent City	Single
Cut Bank	Mining	Small Independent City	Single
Deer Lodge	Public Administration	Small Independent City	Single
Dillon	Wholesale-Retail	Small Independent City	Single
Glasgow	Diversified	Small Independent City	Single
Glendive	Transportation	Small Independent City	Single
Hardin	Diversified	Small Independent City	Single
Harve	Transportation	Large Independent City	Single
Helena	Public Administration	Large Independent City	Single
Kalispell	Wholesale-Retail	Large Adjacent City	Single
Lewiston	Transportation	Small Independent City	Single

City	Economic Function	Size-Location Classification	Multiplicity of City
Libby	Mining	Small Independent City	Single
Livingston	Transportation	Small Independent City	Single
Miles City	Diversified	Small Independent City	Single
Missoula	Diversified	Large Independent City	Single
Roundup	Mining	Small Independent City	Single
Shelby	Services (personal)	Small Independent City	Single
Sidney	Wholesale-Retail	Small Independent City	Single
Whitefish	Diversified	Small Adjacent City	Single
Wolf Point	Diversified	Small Independent City	Single
OREGON			
Albany	Diversified	Large Adjacent City	Single
Ashland	Diversified	Small Adjacent City	Single
Astoria	Public Administration	Large Adjacent City	Single
Baker	Services (personal)	Small Independent City	Multiple
Bend	Diversified	Large Adjacent City	Single
Burns	Diversified	Small Independent City	Single
Coos Bay	Diversified	Small Independent City	Multiple

City	Economic Function	Size-Location Classification	Multiplicity of City
Coquille	Manufacturing	Small Independent City	Multiple
Corvallis	Services (professional)	Large Independent City	Single
Dallas	Manufacturing	Small Independent City	Single
The Dalles	Diversified	Large Independent City	Single
Grants Pass	Diversified	Large Independent City	Single
Hermiston	Public Administration	Small Adjacent City	Multiple
Hood River	Diversified	Small Independent City	Single
Klamath Falls	Diversified	Large Independent City	Single
LaGrande	Transportation	Small Independent City	Single
Lakeview	Diversified	Small Independent City	Single
Lebanon	Manufacturing	Small Adjacent City	Multiple
McMinnville	Services (professional)	Small Independent City	Multiple
Medford	Diversified	Large Adjacent City	Multiple
Milton-Freewater	Manufacturing	Small Adjacent City	Multiple
Myrtle Point	Manufacturing	Small Adjacent City	Multiple
Newberg	Diversified	Small Independent City	Multiple
Newport	Diversified	Small Independent City	Multiple

City	Economic Function	Size-Location Classification	Multiplicity of City
North Bend	Diversified	Small Independent City	Multiple
Nyssa	Wholesale-Retail	Small Independent City	Multiple
Ontario	Services (personal)	Small Independent City	Multiple
Pendleton	Diversified	Small Adjacent City	Single
Prineville	Diversified	Small Independent City	Single
Redmond	Services (personal)	Small Adjacent	Single
Reedsport	Manufacturing	Small Adjacent City	Single
Roseburg	Diversified	Large Adjacent City	Single
St. Helens	Manufacturing	Small Independent City	Single
Salem	Public Administration	Large Adjacent City	Single
Seaside	Services (personal)	Small Adjacent City	Single
Silverton	Diversified	Small Adjacent City	Multiple
Sweet Home	Manufacturing	Small Adjacent City	Multiple
Tillamook	Diversified	Small Independent City	Single
Toledo	Manufacturing	Small Independent City	Multiple
Woodburn	Diversified	Small Adjacent City	Multiple

City	Economic Function	Size-Location Classification	Multiplicity of City
WASHINGTON			
Aberdeen	Manufacturing	Large Independent City	Multiple
Anacortes	Manufacturing	Small Independent City	Multiple
Bellingham	Diversified	Large Adjacent City	Single
Bremerton	Manufacturing	Large Adjacent City	Single
Burlington	Diversified	Small Independent City	Multiple
Centralia	Diversified	Small Independent City	Multiple
Chehalis	Services (personal)	Small Independent City	Multiple
Clarkston	Diversified	Small Independent City	Single
Colfax	Services (professional)	Small Adjacent City	Single
College Place	Services (professional)	Small Adjacent City	Single
Colville	Diversified	Small Independent City	Single
Dayton	Diversified	Small Independent City	Single
Prosser	Diversified	Small Adjacent City	Single
Pullman	Services (professional)	Large Adjacent City	Single
Quincy	Transportation	Small Adjacent City	Multiple
Raymond	Manufacturing	Small Independent City	Single

City	Economic Function	Size-Location Classification	Multiplicity of City
Richland	Manufacturing	Large Adjacent City	Multiple
Sedro-Woolley	Diversified	Small Independent City	Multiple
Selah	Diversified	Small Adjacent City	Multiple
Shelton	Manufacturing	Small Independent City	Single
Sunnyside	Diversified	Small Adjacent City	Multiple
Toppenish	Diversified	Small Adjacent City	Multiple
Tumwater	Public Administration	Small Adjacent City	Single
Walla Walla	Diversified	Large Adjacent City	Single
Wapato	Wholesale-Retail	Small Adjacent City	Multiple
Wenatchee	Diversified	Large Independent City	Single
Yakima	Wholesale-Retail	Large Adjacent City	Single
WYOMING			
Buffalo	Wholesale-Retail	Small Independent City	Single
Casper	Mining	Large Independent City	Single
Cheyenne	Public Administration	Large Independent City	Single
Cody	Services (personal)	Small Independent City	Multiple
Douglas	Wholesale-Retail	Small Independent City	Single

City	Economic Function	Size-Location Classification	Multiplicity of City
Evanston	Transportation	Small Independent City	Single
Gillette	Mining	Small Independent City	Single
Green River	Transportation	Small Adjacent City	Single
Lander	Diversified	Small Independent City	Multiple
Laramie	Services (professional)	Large Independent City	Single
Newcastle	Mining	Small Independent City	Single
Powell	Mining	Small Indepentent City	Multiple
Rawling	Transportation	Small Independent City	Single
Riverton	Mining	Small Independent City	Multiple
Rock Springs	Mining	Large Adjacent City	Single
Sheridan	Services (professional)	Large Independent City	Single
Thermopelis	Mining	Small Independent City	Multiple
Torrington	Wholesale-Retail	Small Independent City	Multiple
Worland	Mining	Small Independent City	Single
Moscow	Services (personal)	Large Independent City	Single
Mountain Home	Public Administration	Small Independent City	Single
Nampa	Diversified	Large Independent City	Multiple

City	Economic Function	Size-Location Classification	Multiplicity of City
Payette	Diversified	Small Independent City	Single
Pocatello	Transportation	Large Independent City	Single
Preston	Diversified	Small Independent City	Single
Rexburg	Diversified	Small Independent City	Single
Rupert	Wholesale-Retail	Small Independent City	Single
St. Anthony	Wholesale-Retail	Small Independent City	Single
Salmon	Wholesale-Retail	Small Independent City	Single
Sandpoint	Services (personal)	Small Independent City	Single
Shelley	Manufacturing	Small Independent City	Multiple
Twin Falls	Services (personal)	Large Adjacent City	Single
Weiser	Diversified	Small Independent City	Single
MONTANA			
Anaconda	Manufacturing	Large Independent City	Single
Bozeman	Services (professional)	Large Independent City	Single
Butte	Mining	Large Independent City	Single