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Factors Associated with Population Changes in Rural South Dakota Communities

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FACTORS ASSOCIATED WITH POPULATION CHANGES IN RURAL SOUTH DAKOTA COMMUNITIES

BY

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IN RURAL SOUTH DAKOTA COMMUNITIES

This thesis is approved as a creditable and independent investigation by a candidate for the Master's Degree, and is acceptable as meeting the thesis requirements for this degree. Acceptance of this thesis does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department.

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STATEMENT OF THE PROBLEM AND OBJECTIVES OF THE STUDY

Introduction

Recently, residents in the United States have become increasingly concerned with possible overpopulation. During the same time, regions in the country were losing population. For example, between 1960 and 1970 South Dakota, North Dakota, and West Virginia experienced population declines, a trend common in most rural areas. This trend, in fact, was evident from 1950 to 1960. In 1963 the United States Department of Agriculture indicated that in " . . . rural United States, there have never before been so many areas declining in population at a time when most urban areas are growing rapidly."[1]

Most recent attention has centered upon the population problems experienced by large urban centers. Thus, research has not focused as much upon factors associated with population changes in rural areas, including the small town. This is unfortunate for those responsible for the viability of rural communities in South Dakota, since over

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[1]Recent Population Trends in the United States with Emphasis on Rural Areas. Washington, D.C.: United States Department of Agriculture, AES Report No. 23, January, 1963, p. 2.

92 percent of the incorporated towns in the state are rural, and 71 percent of these communities declined in size over the past decade.[2]

The declines in South Dakota small town populations suggest that a study of small rural communities would be beneficial in order to determine those factors associated with population growth or decline in rural communities. For the purposes of this study, small town is defined as an incorporated place under 2,500 population.

Statement of the Problem and Objectives of the Study

Students of demography have long been aware that populations change over time; they are dynamic. The determination and explanation of population change forms the central focus of population analysis, and the question arises as to what factors best explain observed variations in population changes occurring in South Dakota rural towns.

Consequently, this study investigates the following problem:

What is the association between selected demographic, geographic, economic, and social factors and the population changes that transpired from 1960 to 1970 in South Dakota incorporated places classified as rural in both 1960 and 1970?

Specifically, the study attempts to determine:

1. What changes in population occurred from 1960 to 1970 in South Dakota small towns.

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[2]Marvin P. Riley and Robert T. Wagner, Reference Tables: Population Change of Counties and Incorporated Places in South Dakota, 1950-1960. Brookings, S. D.: AES, South Dakota State University, Bulletin 586, July, 1971.

2. How these population changes varied by small town when controlled for selected variables.

3. What factors help explain the observed variations in population change reported for the towns under study.

The possibility of a declining population concerns numerous groups. Local businessmen fear the loss of potential consumers, farmers fear the loss of marketing and trading facilities, and community leaders fear waning support or loyalty. Governmental agencies are faced with a declining tax base and continued expenditures for schools, roads, and other services; and the entire population of the community is threatened with the loss not only of individuals but also of facilities such as hospitals, churches, and schools.

Organization of the Thesis

This thesis is organized as follows:

1. Chapter I defines the research problem and the objectives of the study.

2. Chapter II reviews selected literature pertinent to the study.

3. Chapter III includes the theoretical framework, together with the research hypotheses.

4. Chapter IV presents the research design and methodology.

5. Chapter V reports the research findings.

6. Chapter VI includes conclusion, implications, and limitations of the study and suggestions for further research.

CHAPTER II

REVIEW OF LITERATURE

This chapter:

1. Reviews pertinent literature;

2. Summarizes findings reported in the selected literature; and

3. Indicates possible application of findings to the present study.

Hodge[1] stated in his 1966 study that current literature indicates that trade center population change is viewed from three general perspectives. The first of these perspectives stems from rural sociologists concerned with the analysis of population trends, the second from central place theory showing descriptive models of trade center systems, and the third from prescriptive writings about the problems of agriculture and rural life. This study will emphasize the first perspective, yet will employ the other two.

The small town has been somewhat neglected by social scientists until recent years. Duncan and Reiss[2] emphasized this point in their statement that the American village is without a doubt " . . . one of the most neglected areas in American demography."

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[1]Gerald Hodge, "Do Villages Grow?--Some Perspectives and Predictions," Rural Sociology, 31:184 (June, 1966).

[2]Otis Dudley Duncan and Albert J. Reiss, Jr., Social Characteristics of Urban and Rural Communities, 1950. New York: John Wiley and Sons, Inc., 1956, p. 109.

Even so, many sociologists, demographers, geographers, economists, and others have asked the question, "Do small towns grow?" As a result they have come to differing, even opposing, conclusions concerning the population changes in these communities. In a 1923 study, Gillette[3] predicted that rural villages and towns would decline and disappear. A decade later Brunner and Kolb[4] hypothesized that rural centers would tend toward population stability, and in 1936, Brunner[5] claimed that " . . . slow growth or relative stability . . . " would be the trend of small towns. In the sixties, two studies reported varying findings. Chittick[6] suggested that towns of 1,000 to 2,499 population would tend to grow in population, and those below this size would tend to decline. Shortly thereafter, Fuguitt[7] predicted a future growth for most of America's small towns. It is apparent that no definite trend for population changes was firmly established by these earlier studies.

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[3]J. M. Gillette, Rural Sociology. New York: MacMillan and Co., 1923, p. 463.

[4]Edmund deS. Brunner and J. H. Kolb, Rural Social Trends. York, Pa.: Maple Press, 1933, p. 84.

[5]Edmund deS. Brunner, "Do Villages Grow?" Rural Sociology. 1:506, December, 1936.

[6]W. D. Chittick, "The Future of the Small Town in South Dakota," South Dakota Farm and Home Research, Vol. XII, No. 3, Summer, 1961.

[7]Glenn V. Fuguitt, "The Growth and Decline of Small Towns as a Probability Process," American Sociological Review, 30:403-411, June, 1964.

One of the first studies to use a large number of factors in an attempt to explain small town population change was done by Vogt[8] in 1910. Vogt used as a universe all places in Ohio which in 1890 were incorporated and under 1,500 population. Although this study lacks present day methodological sophistication, it indicated that:

1. The prime cause of village growth or decline is economic.

2. Railway and electric line communication favors rather than hinders village growth.

3. Close proximity to a city aids village growth.

4. So far as Ohio is concerned, location on one railway does not necessarily interfere with village growth.

5. Location at junction points does not necessarily aid village growth.

6. Good roads, rather than rural free delivery, aid village growth.

7. Proximity to other villages has a marked effect on village growth.

8. Parcel post may ultimately favor rural route centers.

9. Industrial activities in the village, unless the village is a 'satellite' of some large city, will have the larger chance of success if they are closely related to the natural resources of rural

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[8]Paul Vogt, "Village Growth and Decline in Ohio," American City, 13, (December, 1915), pp. 481-485.

environment. Lumber yards, brick manufacturers, creameries, canning establishments, and similar activities closely related to the production in the community grow most naturally.

10. The village tends to maintain a close relationship to the economic development of its environment, prospering or declining as that environment prospers or declines.

Northam[9] concluded that when searching for the reasons for decline in urban centers, two significant items need further study. First, he suggested that attempts should be made to determine the variables which contribute to urban decline by studying variables such as distance to large metropolitan centers, distance to major arterial highways, changing economic bases of small communities, and the size of the places in question. Relative to these variables, he stated that if knowledge concerning them could be more precise, planners could use them to support their proposals for changes. Secondly, Northam held that an inspection should be made of the role of the declining urban center within the framework of present central place theory.

Many of the factors cited by both Vogt and Northam have been used by other researchers in their studies of small towns as well. A review of several of these studies follows, organized into three

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[9]Ray M. Northam, "Declining Urban Centers in the United States, 1940-60," Annals of the Association of American Geographers, 53:59, March, 1963.

broad categories: (1) location, (2) size, and (3) economic characteristics of the small town.

Location

Distance to Larger Centers. One of the most common factors found in relation to population change of small towns was that of the location of surrounding larger cities. With better vehicles and roads, the rural population is becoming increasingly mobile. It has become easier for farmers, as well as others, to bypass the small town and go to a larger center to do their trading. As a result, many rural centers have had to specialize in certain types of goods and/or services.[10] According to Quinn[11] and Hodge,[12] rural people tend to depend on the nearest center for convenience goods such as gas, magazines, cigarettes, and groceries. They will go to a larger town for goods such as shoes, clothes, and hardware and even further for luxury goods. Northam[13] also believed proximity to a larger center to be an important feature. He concluded that the distance to large metropolitan areas from smaller towns was a factor which should be studied further if one were to determine the basis for decline in smaller places in the United States. Research in this area, however, has been inconclusive.

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[10]Chittick, p. 17

[11]James A. Quinn, Urban Sociology, American Book Co., N. Y., 1955, pp. 66-70.

[12]Hodge, p. 187.

[13]Northam, p. 59.

Those who found closeness to a larger center to be positively associated with population growth include Fuguitt,[14,15] in his Wisconsin studies and research on the United States as a whole; Hart and Salisbury,[16] in their research on Midwestern villages; Northam,[17] in his investigations of the conterminous United States; Doerflinger,[18] and Anderson,[19] in Iowa; and Chittick,[20] in South Dakota.

However, several researchers have found that nearness to a larger center is negatively associated with population growth. Hodge,[21] in his study of Canadian provinces, found that " . . . small centers will

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[14]Glenn Fuguitt, Growing and Declining Villages in Wisconsin: 1950-60. Madison: University of Wisconsin, Department of Rural Sociology, March, 1964, p. 13. (Mimeographed.)

[15]Glenn Fuguitt, "The Places Left Behind: Population Trends and Policy for Rural America," Rural Sociology, Vol. 36, No. 4, December, 1971, p. 449.

[16]John F. Hart and Neil E. Salisbury, "Population Change in Middle Western Villages: A Statistical Approach," Annals of the Association of American Geographers, 55:140-160, March, 1965.

[17]Ray M. Northam, "Population Size, Relative Location, and Declining Urban Centers: Conterminous United States, 1940-60," Land Economics, 45:313-322, August, 1969.

[18]Jon Doerflinger, Geographic and Residential Distribution of Iowa's Population and Changes, 1950-60. Ames: Iowa State University, Dept. of Econ. and Soc., 1962.

[19]Albert Anderson, Population Changes in Incorporated Places, Unpublished Masters Thesis. Ames: Iowa State University, 1960, p. 72.

[20]W. D. Chittick, Growth and Decline of South Dakota Trade Centers, 1901-1951, Brookings, S. D., Ag. Exp. Sta. Bulletin, 448, 1955.

[21]Hodge, p. 187.

likely disappear within a radius of 10 miles of large trade centers and will show substantial decline in areas up to 15 miles away. Only beyond this distance is the trade area integrity of small centers likely to remain secure." Nelson and Jacobson[22] came to a similar conclusion in their studies of Minnesota.

In South Dakota, Brown[23] discovered that the closer a community is to an equal or higher ranking town, the less its growth potential. Stewart,[24] in examining this same feature, found that the closer a place of 2,499 population or less was either to a metropolitan area of 50,000 or more population or to a city of 10,000 or more population, the less it tended to grow.

Additional studies have been inconclusive; that is, the data have not been significant in either direction. Tarver and Beale,[25] in their 1968 studies of Southern towns, found that the distance to the nearest metropolitan center exerted little influence upon the

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[22]Lowry Nelson and Ernest T. Jacobson, "Recent Change in Farm Trade Centers in Minnesota," Rural Sociology, 6:104, 1941.

[23]Ralph James Brown, Patterns of Change in the Spatial and Functional Aspects of Trade Centers and Trade Areas in South Dakota. Master's Thesis, Brookings, S. D., South Dakota State University, 1968, p. 81.

[24]James R. Stewart, A Study of Selected Demographic Factors Associated With Population Changes in Incorporated Rural Communities of South Dakota. Unpublished Master's Thesis, Brookings, S. D., South Dakota State University, 1967.

[25]James D. Tarver and Calvin L. Beale, "Population trends of Southern Non-metropolitan Towns, 1950-1960," Rural Sociology, 33:27, March, 1968.

changes in population in the small towns. Hassinger[26] found a "complex but patterned" relationship among size, growth, and distance from larger cities; e.g., small places (in this case those below 2,000 population) were more likely to grow if they were within 10 miles of a town of 5,000 or more population than if they were within 10 miles of a town of 2,000 to 5,000 population. Fuguitt[27] found that in the northern part of the United States small towns in counties remote from metropolitan areas of 50,000 or more population had population growth if they contained county seats, but the proximity to the metropolitan area made little or no difference in the South. In South Dakota, Field and Dimit[28] found a negative association between distance to a metropolitan area of 50,000 or more population and population growth in small towns, but noted no significant association between distance from a city of 10,000 or more population and small town growth.

Distance to Major Transportation Routes. Location of the small town in relationship to transportation routes has also been found to exert an influence on population size. Tarver and Urbon,[29] in their

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[26]Edward W. Hassinger, Factors Associated with Changes in Agricultural Trade Centers of Southern Minnesota, 1940-1950. Ph.D. Thesis, University of Minnesota, 1956, p. 141.

[27]Glenn Fuguitt, "County Seat Status as a Factor in Small Town Growth and Decline," Social Forces, 44:245-51, December, 1965.

[28]Donald R. Field and Robert M. Dimit, Population Change in South Dakota Small Towns and Cities, 1949-1960, Rural Sociology Department, AES, S.D.S.U., Brookings, S. D. Bulletin 571, March, 1970.

[29]James D. Tarver and Joseph C. Urbon, Population Trends of Oklahoma Towns and Cities. Stillwater: Oklahoma State University, Technical Bulletin, 1963, p. 15.

study of Oklahoma towns and cities, found that, from 1950 to 1960, places located near the "most strategic [highway] junctions" gained more rapidly than did more remote places. Chittick[30] found this true in South Dakota from 1931 to 1951, in that one-half of all trade centers that disappeared in these two decades were not located on either state or federal highways. Regarding railroads, Landis[31] found that, from 1901 to 1933, South Dakota trade centers had a greater likelihood of disappearing if they were not located on railroads. Lively[32] came to a similar conclusion in his Minnesota studies for the period 1905 to 1930.

Distance to Resort Areas and Tourist Attractions. Another locality variable is the degree of proximity to a resort area or tourist attraction. In studying population changes from 1940 to 1950, Brunner[33] found that for towns under 1,000 population in the United States, location near a summer resort area tended to favor small town growth in Minnesota.

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[30]Chittick, Growth and Decline of South Dakota Trade Centers, 1901-51, p. 39.

[31]Paul H. Landis, The Growth and Decline of South Dakota Trade Centers, 1901-1933, Brookings, S. D., AES Bulletin No. 279, 1933, p. 24.

[32]C. E. Lively, Growth and Decline of Farm Trade Centers in Minnesota, 1905-1930. St. Paul: Minnesota AES Bulletin, 1932, p. 39.

[33]Edmund deS. Brunner, "The Small Village: 1940-1950," Rural Sociology, Vol. 17, June, 1952, p. 129.

Population Size

A second major variable in the literature is the relationship of the population size of the place to its growth or decline. Most research in this area has resulted in similar findings: namely, size of place is positively correlated with population growth. Investigations confirming this association include those by Fuguitt,[35,36] Brunner and Kolb,[37] Brunner and Smith,[38] Doerflinger,[39] Fanelli and

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[35]Fuguitt, Social Forces, p. 250.

[36]Fuguitt, "The Places Left Behind: Population Trends and Policy for Rural America," p. 449.

[37]Edmund deS. Brunner and John H. Kolb, Rural Social Trends. New York: McGraw-Hill Book Co., 1933, p. 77.

[38]Edmund deS. Brunner and T. Lynn Smith, "Village Growth and Decline, 1930-1940," Rural Sociology, 9:103-115, June, 1944.

[39]Jon Doerflinger, Geographic and Residential Distribution of Iowa's Population and Change, 1950-1960. Ames: Iowa State University Department of Economics and Sociology, 1962.

Pedersen,[40] Hassinger,[41] Ratcliffe,[42] Weber,[43] Fry,[44] Gillette,[45] and Tarver and Beale.[46]

Economic Factors

In addition to locality and size, the economic characteristics of small towns have been investigated. Such factors as income levels, employment and business opportunities, diversity of employment, presence or absence of a county seat, dependency ratios, and other economic characteristics have been studied by many researchers. A review of selected research with regard to economic factors in the three general areas of employment, dependency factors, and county seat status follows.

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[40]A. Alexander Fanelli and Harold A. Pedersen, Growth Trends of Mississippi Population Centers, 1900-1950. State College Social Science Studies No. 10, 1956, pp. 13-17.

[41]Hassinger, pp. 74-78.

[42]S. C. Ratcliff, "Size as a Factor in Population Changes in Incorporated Hamlets and Villages, 1930-1940," Rural Sociology, 7:318-327, September, 1942.

[43]Adna N. Weber, The Growth of Cities in the Nineteenth Century: A Study In Statistics, Revised Ed. New York: Cornell University Press, 1963, p. 230.

[44]Luther Fry, American Villagers, George H. Doran, 1926, (New York), p. 51.

[45]Gillette, Rural Sociology, p. 435.

[46]Tarver and Beale, p. 19.

Employment Characteristics. Focusing on factors associated with employment in the small town, Hawley[47] stated, "In effect, no satisfactory method of forecasting the population of the small area can be developed until a reliable technique of projecting the trend of job opportunities is made available." Although this may be an oversimplification, a strong relationship has been observed between employment and population changes. Tarver and Beale[48] found that increases in civilian employment, as well as increases in the number of military personnel, were positively related to population increases. Hassinger[49] found that for places under 1,500 population a significant positive relationship existed between the number employed in manufacturing and the increase in population. However, Hassinger noted that this relationship did not hold true for places between 1,500 and 2,500 population.

Diversity of employment in small towns has also been observed to exert an influence on population change. Field[50] observed that growing communities in Pennsylvania were those with the more diversified

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[47]Amos H. Hawley, Human Ecology. New York: The Ronald Press Co., 1950, p. 125.

[48]James D. Tarver and Calvin L. Beale, "Relationship of Changes in Employment and Age Composition to the Population Changes of Southern Non-Metropolitan Towns," Rural Sociology, 34:16-28, March, 1969.

[49]Hassinger, p. 253.

[50]Donald R. Field, The Impact of Employment Alternatives on a Growing Rural Community. Unpublished Ph.D. Dissertation, Pennsylvania State University, 1968, p. 168.

employment base for males. Duncan and Reiss[51] also found this trend to be true from 1940 to 1950 for cities of over 10,000 population. In a related study, Fuguitt and Field[52] found that reliance upon industries other than agriculture tended to aid community growth in Wisconsin.

Dependency Characteristics. Tarver and Beale[53] have demonstrated a relationship between age and degree of out-migration; increases in population age tend to be correlated with the migration rates of young people. Smith[54] found that villages tend to have a disproportionately large number of the dependent groups in the population, including a high percentage not only of the aged, but also of widowed and divorced females. A Michigan study by Beagle, Phodtare, Rice and Thaden[55] supported these findings.

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[51]Duncan and Reiss, pp. 195-205.

[52]Glenn V. Fuguitt and Donald R. Field, The Social Characteristics of Villages Differentiated by Size, Location, and Growth. Paper presented at a meeting of the Population Association of America, 1965. (Mimeographed.) Original not available, taken from Darryll Johnson, Unpublished Masters Thesis, p. 21.

[53]Tarver and Beale, "Relationship of Changes in Employment and Age Composition to the Population Changes of Southern Non-Metropolitan Towns," pp. 16-28.

[54]T. Lynn Smith, "The Role of the Village in American Rural Society," Rural Sociology, 7:10-21, March, 1942.

[55]Allan Beagle, Hambir Phodtare, Rodger Rice and John T. Thaden, Michigan Population, 1960. East Lansing: Michigan Agr. Exp. Station Bulletin 438, 1962.

County Seat Characteristics. Fuguitt,[56] in his study of the United States as a whole, stated that those towns containing the county seat were more likely to have population increases than those which did not. Hassinger[57] found that towns of 1,000 to 2,000 population were more likely to grow than their non-county seat counterparts, but places of 2,000 to 2,500 population were not. Fanelli and Pedersen,[58] Tarver and Urbon,[59] and Mayo[60] discovered that county seats grew more rapidly than did other towns in Mississippi, Oklahoma, and North Carolina, respectively. With regard to county seat status, Tarver and Beale[61] concluded that the presence of the county seat made little difference with respect to growth in the small towns studied by them.

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[56]Fuguitt, "County Seat Status as a Factor in Small Town Growth and Decline," p. 250.

[57]Hassinger, p. 211.

[58]A. Alexander Fanelli and Harold A. Pedersen, Growth Trends of Mississippi Population Centers, 1900-1950. State College, Mississippi State College Social Science Studies, Comm. Ser. No. 10, 1956, pp. 26-30.

[59]Tarver and Urbon, p. 15.

[60]Selz G. Mayo, "Two Population Characteristics of County Seat Towns in North Carolina," Rural Sociology, December, 1947, pp. 423-426.

[61]Tarver and Beale, "Relationship of Changes in Employment and Age Composition to the Population Changes of Southern Non-Metropolitan Towns," pp. 16-28.

SUMMARY OF REVIEW OF LITERATURE

Social, demographic, economic and geographic factors, whether acting independently or jointly, appeared associated with the population changes of small towns. Although this review of literature spanned many decades and variant social situations, the findings suggest that small town population change is associated with the:

1. Number and types of roads running through the small town;
2. Size and composition of the surrounding population;
3. Location of the small town in relationship to other trade centers;
4. Number of railroads running through the small town;
5. Population size of the small town itself; and
6. Economic base of the area surrounding the small town.

CHAPTER III

THEORETICAL FRAMEWORK

According to Kerlinger[1] a theory is " . . . a set of interrelated constructs (or concepts), definitions, and propositions that present a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena." Unfortunately, demographers generally have occupied themselves with lower levels of abstraction, analyzing and summarizing data, improving methods of collecting, and refining demographic information. This situation has been lamented by several writers, including Hauser,[2] Vance,[3] Moore,[4] and Hawthorne.[5]

However, one theory has been used in small town research; the Central Place Theory developed by Walter Christaller.[6] Christaller

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[1]Fred N. Kerlinger, Foundations of Behavioral Research, 2nd ed. New York: Holt, Rinehart and Winston, Inc., 1973, p. 9.

[2]Philip M. Hauser, "Present Status and Prospects of Research in Population," American Sociological Review, 13:371-82, August, 1948.

[3]Rupert B. Vance, "Is Theory for Demographers?" Social Forces, 31:9-13, 1952.

[4]Wilbert E. Moore, "Sociology and Demography," The Study of Population, Philip M. Hauser and Otis Dudley Duncan, Editors. Chicago: University of Chicago Press, 1959, pp. 832-51.

[5]George Hawthorne, "Explaining Human Fertility," Sociology, 2:65-78, January, 1968.

[6]Walter Christaller, Central Places in Southern Germany. Translation by Carlisle W. Baskin, 1933. Englewood Cliffs, N. J.: Prentice-Hall, 1966.

claimed Central Place Theory could explain not only the size of towns, but also their frequency and distribution. The key propositions of Central Place Theory are:

1. The function of a city is to be a central place providing goods and services for its surrounding rural area. Consequently, the larger the area served, the larger the city.

2. The centrality of a city is a summary measure of the degree to which it is such a service center; the greater the centrality of a place, the higher is its "order."

3. Higher-order places offer more goods; have more establishments and business types; have populations, tributary areas, and tributary populations; do greater volumes of business; and are more widely spaced than lower-order places. Conversely, low-order places provide only low-order goods to low-order tributary areas; these low-order goods are generally necessities requiring frequent purchasing with little consumer travel. Because higher-order places offer more shopping opportunities, their trade areas for low-order goods are likely to be larger than those of low-order places, and since consumers have the opportunity to combine purposes on a single trip, this acts as a price-reduction.

4. More specifically, central places fall into a hierarchy comprising discrete groups of centers. Centers of each higher order group perform all the functions of lower order centers plus a group of central functions that differentiates them from and sets them above

the lower order. A consequence is a "nesting" pattern of lower order trade areas within the trade area of higher order centers, plus a hierarchy of routes joining the centers.[7]

Christaller postulated these ideas in a theoretical form only, and never expected to see a perfect duplicate of his theory in reality. Christaller also pointed out a shortcoming of his theory. An essential feature of the geographic area to which this theory would apply is that it be on a flat geographic plane such as that found in Southern Germany, the Great Plains, and the Midwest States in America. South Dakota is classified geographically as a Midwestern State.

Applying this theory and employing the findings derived from the review of literature, the following propositional framework is specified:

Proposition 1. A function of a community is to provide goods and services for the surrounding rural area.

Proposition 2. The magnitude to which a community provides goods and services to the surrounding rural area is associated with the centrality of that community.

Proposition 3. Communities with high centrality are classified as high order places.

Proposition 4. High order places are characterized by diversified economic resources that provide cost reductions to consumers.

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[7]Brian, J. L. Berry and Allen Pred, Central Place Studies, Regional Science Research Institute, Philadelphia, Pennsylvania, 1965, pp. 3-4.

Preposition 5. Communities with highly diversified economic resources and associated consumer cost reductions require larger contingent service populations.

Proposition 6. Consequently, the higher the order of the community, the greater the requisite resident population: the lower the order, the lower the requisite resident population.

Proposition 7. Changes in the magnitude of diversified economic resources in a community are associated with corresponding changes in the size of the community.

Proposition 8. South Dakota towns under 2,500 population are central places of a lower order.

Therefore:

Hypothesis 1. The more adequate the small town highways, the greater the population growth.

Hypothesis 2. The greater the population of the small town in 1960, the greater the population growth.

Hypothesis 3. The greater the previous growth of the small town, the greater the population growth.

Hypothesis 4. The closer a small town is to a city of 10,000 or more population, the greater the small town population growth.

Hypothesis 5. The further a small town is from a similar community, the greater the small town population growth.

Hypothesis 6. The shorter the length of time since the discontinuance of railroad service to a small town, the greater the small town population growth.

Hypothesis 7. Small towns which are county seats tend to grow more rapidly than those which are not.

Hypothesis 8. The greater the growth in county population, the greater the small town population growth.

Hypothesis 9. The smaller the increase in the average farm size for the county, the greater the small town population growth.

Hypothesis 10. The larger the increase in the agricultural component of the economic base for the county, the greater the small town population growth.

Hypothesis 11. The smaller the increase in the livestock component of the county economic base, the greater the small town population growth.

Hypothesis 12. The greater the increase in the crop component of the county economic base, the greater the small town population growth.

Hypothesis 13. The greater the increase in the number of farm laborers for the county, the greater the small town population growth.

CHAPTER IV

METHODOLOGY

This chapter discusses the unit of analysis, method of collecting data, procedures for analysis, and operational definitions governing the conducting of this study.

Unit of Analysis

The basic unit of analysis for this study is the small incorporated town in South Dakota classified as rural in 1960. The county is also used for comparative purposes to obtain data concerning the area surrounding these towns.

Method of Collecting Data

Dependent Variable. The dependent variable used in this study is the absolute plus or minus population change that occurred to small towns in South Dakota for the decade 1960 to 1970. South Dakota Agricultural Experiment Station Bulletin Number 586, Reference Tables: Population Change of Counties and Incorporated Places in South Dakota, 1950-1970 served as the source for this information.

Independent Variables. The independent variables are:

X_1. Adequacy of small town highways. This variable refers to the number and type of highways which pass through, or within one mile of, the small town. Highways were weighted as follows: one point for a paved, two lane, and two points for an access controlled multilane

principal through highway as defined by the South Dakota Department of Highways, 1970.

X_2. Population size of the small town. This variable refers to the total population of the small town in 1960, taken from Bulletin 586.

X_3. Amount of previous small town population change. This variable refers to the amount of small town population change from 1950 to 1960, derived from Bulletin 586.

X_4. Proximity to a larger trade center. This variable refers to the distance from the small town, in actual whole miles, to the closest incorporated place of over 10,000 population. This information is obtained from the 1970 South Dakota Road Map.

X_5. Proximity to a similar community. This variable refers to the distance, in actual whole miles, from the small town to the nearest incorporated place of under 2,500 population. This information is obtained from the 1970 South Dakota Road Map.

X_6. Length of time since discontinuance of railroad service. This variable refers to the length of time since discontinuance of railroad service in actual whole years. A list of abandoned railroads obtained from the South Dakota Public Utilities Commission serves as a source for this information.

X_7. County seat status. This is a dichotomous variable referring to the presence or absence of the county seat in the small town. The source of this information is the 1970 South Dakota Road Map.

X_8. Amount of county population change. This variable refers to the amount of change in population size from 1960 to 1970 for the county within which the largest portion of the small town population lies. This information is obtained from Bulletin 586.

X_9. Change in average farm size for the county. This variable refers to the change from 1959 to 1969 in number of acres of the average size of all farms, by acres, in the county in which the largest portion of the small town is located. This data is obtained from County Table 1, page 112 of the 1959 Census of Agriculture, Volume 1, Part 19 for South Dakota, and Table 1, page 268 of the 1969 Census of Agriculture, Volume 1, Part 19, Section 1, for South Dakota.

X_{10}. Amount of the change in the agricultural component of the county economic base. This variable refers to the change in the market value, in total dollars, of all agricultural products sold in the county, divided by the total number of farms in that county. This data comes from County Table 5, page 140 of the 1959 Census of Agriculture, Volume 1, Part 19, and Table 4, page 270 of the 1969 Census of Agriculture, Volume 1, Part 19, Section 1.

X_{11}. Size of the change in the livestock component of the county economic base. This variable refers to the change from 1959 to 1969 in the total market value of all livestock and poultry sold in the county, divided by the total number of farms in that county. Table 5, page 140 of the 1959 Census of Agriculture, and Table 5, page 271 of the 1969 Census of Agriculture, Section 1 serve as sources.

X_{12}. Size of the change in the crop component of the county economic base. This variable refers to the change from 1959 to 1969 in the market value of all crops sold (including hay and nursery products) in the county, divided by the total number of farms in that county. The sources of data for this variable are the same as those for variable X_{11}.

X_{13}. Amount of the change in the number of farm laborers for the county. This variable refers to the change in the total number of farm laborers and farm foremen for the county in which the small town is located. The data is obtained from Table 84, page 180 of the 1960 Census of Population, PC(1)-43C, and Table 122, page 246 of the 1970 Census of Population, PC(1)-43C.

Definitions

Terms requiring definition are defined at the place of use in the text.

Procedures for Analysis

To fulfill Objective One (determining changes in small town populations) and Objective Two (determining how these changes vary when controlled for selected variables) sets of tabular and graphic portrayals are used, following standard demographic procedures.

To fulfill Objective Three, a set of selected independent variables are determined and incorporated as part of a stepwise least squares multivariate linear equation. This process aids in the

determination of factors that help to explain the observed variations in small town population changes.

This type of analysis enables the researcher to account for the variability of the dependent variable as it may be associated with the variability of the independent variables. The researcher is permitted to test for multiple effects by assessing the relative importance of each of the independent variables as they were added or deleted, providing some measure of the extent to which each of the independent variables contributed to the explained variation in the dependent variable when a given level of significance was specified. The selected level of significance is 0.05.

CHAPTER V

FINDINGS OF THE STUDY

Part I of this chapter deals with Objectives One and Two, namely, to determine the changes that transpired in the population of South Dakota small towns from 1960 to 1970, and to determine how these changes vary when controlling for selected variables. Graphs, tables, and descriptive techniques will be employed. Part II reports findings relative to Objective Three, determining which factors best explain the observed variations in small town population changes. Multiple regression will be the method for analysis.

Part I

Objective One

This section reports the changes in the size of the population of incorporated places in South Dakota from 1960 to 1970.

Gains and Losses. Census data show that from 1960 to 1970, 78 incorporated places (27.9 percent) under 2,500 population in South Dakota gained population, and 200 (71.4 percent) lost. (See Table 1). This represents the largest number of towns showing intercensal decline when the 1960-1970 decade is compared to the 1940-1950 and 1950-1960 decades. From 1940 to 1950, 104 incorporated places of this size gained and 174 lost. From 1950 to 1960, the figures were 99 and 179, respectively.

TABLE 1

POPULATION CHANGES IN INCORPORATED RURAL PLACES, 1940-1970

Change Factor	1940-1950		1950-1960		1960-1970	
	Number	Percent	Number	Percent	Number	Percent
Growth	104	37.0	99	35.5	78	27.9
No Change	3	1.1	1	0.4	2	0.7
Decline	174	62.0	179	64.2	200	71.4
Total	281	100.1	279	100.1	280	100.0

Comparison with the State as a Whole. From 1960 to 1970, South Dakota's population declined 14,257 (2.1 percent), to a 1970 population of 666,257. The loss of population in incorporated places under 2,500 population was 2,345 persons, 16.4 percent of the total state loss. (See Table 2).

TABLE 2

POPULATION CHANGES FOR SOUTH DAKOTA AND INCORPORATED RURAL PLACES, 1960-1970

	1960	1970	Change	
			Number	Percent
Rural Places	132,487	130,142	-2,345	-1.8
State Total	680,514	666,257	-14,257	-2.1

Although the number of small towns experiencing intercensal decline from 1960 to 1970 was the greatest in the past three decades, the loss in population occurring to these towns aggregately was less than that of the state as a whole.

The purpose of Objective Two is to determine how the population changes in small towns vary when categorized according to selected small town population size and county seat status. These variables were selected in order to compare the extent to which size and status appear to effect changes in small town growth or decline.

Population Size. South Dakota contained 307 incorporated places in 1960 and in 1970. In 1960, 25 were urban; 282, rural. In 1970, 23 were urban; 284, rural. As Table 3 shows, incorporated places which contained fewer than 500 persons composed the largest category for both years.

TABLE 3

NUMBER OF INCORPORATED PLACES BY SIZE, 1960 AND 1970

All Places	Under 500	500 999	1,000 1,499	1,500 1,999	2,000 2,499	2,500 4,999	5,000 9,999	10,000 24,999	25,000 49,000	50,000 & Over
					1960					
307	195	51	24	7	5	13	4	6	1	1
					1970					
307	195	56	19	10	4	11	4	5	2	1
					Net Change					
0	0	+5	-5	+3	-1	-2	0	-1	+1	0

For descriptive purposes, the discussion of population size was separated into two parts. The first dealt with a rural-urban comparison, the second with a breakdown of the rural communities.

A. Urban-Rural Comparison. Sixty-four percent of South Dakota's incorporated urban places gained population from 1960 to 1970, while 36 percent experienced a decline. For rural places, 27.9 percent gained, 71.4 percent lost.

In terms of total population change, incorporated places in South Dakota contained a population of 411,508 in 1970, an increase of 3.4 percent from the 1960 population of 397,815. For incorporated places under 2,500 population, a 1970 population of 130,142 compared to a 1960 population of 132,487, for a loss of 1.8 percent. Those incorporated places of 2,500 and over population increased by 6.0 percent from 1960 population of 265,328 to a 1970 population of 281,366. (See Table 4).

TABLE 4

POPULATION OF INCORPORATED PLACES IN SOUTH DAKOTA, 1960-1970

	1960	1970	Change -- 1960-70	
Incorporated Places Under 2,500 Population	132,487	130,142	-2,345	-1.8%
Incorporated Places of 2,500 Population and Over	265,328	281,366	+16,038	6.0%
All Incorporated Places	397,815	411,508	+13,693	3.4%

B. Incorporated Rural Places. The incorporated places have been separated into four categories: under 500 population, 500-599, 1,000-2,499, and 2,500 and over. Table 5 shows the number and percent of incorporated places which gained or declined in population from 1960 to 1970, according to these size categories. The highest percentage of losses from 1960 to 1970 in incorporated places in South Dakota occurred in the under 500 population category. Conversely, the greatest percentage of gains took place in the 2,500 and over category. Incorporated rural places thus exhibited a definite trend from 1960 to 1970: the larger the population of the town, the greater the growth. This trend was the same for the previous two decades.

TABLE 5

NUMBER OF INCORPORATED PLACES GAINING AND LOSING POPULATION BY SIZE, 1960-1970

	Under 500		500-999		1,000-2,499		2,500 & Over	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Growth	44	22.8	18	35.3	16	44.4	16	64.0
No Change	2	1.0	0	0	0	0	0	0
Decline	147	76.2	33	64.7	20	55.6	9	36.0
Total	193	100.0	51	100.0	36	100.0	25	100.0

County Seat Status. As mentioned earlier in the chapter, size of place was one of two variables singled out for comparison with population change. The other variable was county seat status.

Table 6 shows the number and percent of county seats in each of four size categories used previously. Over one-half of the county seats in South Dakota were places of under 2,500 population in both 1960 and 1970. It may also be noted that the 2,500 and over category lost over 4 percent of its county seats in the small categories.

TABLE 6

SIZE OF PLACE FOR COUNTY SEATS, 1960-1970

Size of County Seat	1960		1970	
	Number	Percent	Number	Percent
Under 500	5	7.9	7	11.1
500-999	14	22.2	17	27.0
1,000-2,499	22	34.9	20	31.7
2,500 & Over	22	34.9	19	30.2
All Places	63	99.9	63	100.0

A comparison of county seats to non-county seats may be seen in Table 7. A greater percentage of county seats than non-county seats gained from 1960 to 1970. Conversely, a greater percentage of non-county seats declined than did county seats.

TABLE 7

POPULATION CHANGE FOR INCORPORATED PLACES UNDER 2,500 POPULATION, BY COUNTY SEAT STATUS, 1960-1970

Change Factor	County Seats		Non-County Seats	
	Number	Percent	Number	Percent
Increase	15	36.6	63	26.4
No Change	1	2.4	1	0.4
Decrease	25	61.0	175	73.2
Total	41	100.0	239	100.0

Part II

This portion of Chapter V is intended to fulfill Objective Three: namely, to determine the extent to which observed variations in selected factors attributed to the explanation of the variations in small town population change.

Statistical Test

The step-wise least squares multiple regression analysis was used for the purpose of testing the association between a set of independent variables and the dependent variable. Utilization of this technique yielded in rank order fashion the independent variables and their association with the dependent variable. The association between the

variables was tested at the 0.05 level of significance. The final step-wise equation with the appropriate intercept and regression coefficients for the significant variables was:

$$Y = -0.50620 + (0.00528)_{X8} + (-3.64173)_{X5} + (0.66294)_{X6} + (0.14219)_{X3} + (-0.03428)_{X2}$$

A function diagram of the relationship between the independent and dependent variables is as follows:

$$Y = f\ (X_1, X_2, X_3, \ldots X_{13})$$

The independent variables were:

1. Adequacy of small town highways.
2. Population size of small town in 1960.
3. Previous small town population change (1950-1960).
4. Proximity to a city of 10,000 or over population.
5. Proximity to nearest incorporated place of under 2,500 population.
6. Length of time since discontinuance of railway service.
7. County seat status.
8. County population change.
9. Average farm size for the county.
10. Change in the agricultural component of the county economic base, 1960-1970.
11. Change in the livestock component of the county economic base, 1960-1970.

12. Change in the crop component of the county economic base, 1960-1970.

13. Change in the number of farm laborers for the county.

Null Nypothesis

For the purpose of testing the significance of the association hypothesized between the independent and dependent variables, a null hypothesis was developed. The assumption was made that the least squares equation represents the best estimate of the linear regression equation. The multiple independent variables (X_1, X_2, X_3, ... X_{13}) were defined as a set, and the following null hypothesis was formulated:

The set of independent variables will not contribute significantly to the explanation of the variation observed in the dependent variable.

The Statistical Findings

Table 8 reports the statistical findings. Variables X_8, X_5, X_6, X_3, and X_2 were found to contribute significantly to the explanation of the observed variation in small town population change in South Dakota. The null-statement of an independent-dependent variable relationship was rejected for these five independent variables. Stated descriptively, South Dakota incorporated places under 2,500 that experienced the greater growth from 1960 to 1970 were characterized by:

1. Greater increase in county population, (X_8).
2. Shorter distance from a similar community, (X_5).

3. Greater length of time since the discontinuance of railroad service to the small town, (X_6).

4. Greater previous growth, (X_3).

5. Smaller population in 1960, (X_2).

The independent variables X_9, X_{10}, X_{11}, X_{12}, and X_{13} were found not to contribute significantly to the explanation of small town population change at the 0.05 level of significance.

TABLE 8

SUMS OF SQUARES AND PROPORTION OF VARIANCE ACCOUNTED FOR BY THE INDEPENDENT VARIABLES IN ORDER OF IMPORTANCE AS ENTERED INTO THE EQUATION

Independent Variables	Sum of Squares Accounted For	Proportion of Variation Explained	Cumulative Proportion of Variation Explained	Regression Coefficient for Significant Variables	Y Intercept
X_8	73100.188	0.032	0.032	0.007	22.203
X_5	59385.188	0.026	0.059	-4.233	
X_6	40623.828	0.018	0.077	0.732	
X_3	30623.375	0.014	0.090	0.132	
X_2	31794.094	0.014	0.104	-0.024	
X_{10}	14639.066	0.006	0.111		
X_{13}	13659.145	0.006	0.117		
X_1	7488.363	0.003	0.120		
X_9	2145.80	0.001	0.121		
X_{12}	1666.15	0.001	0.122		
X_{11}	7174.80	0.003	0.125		
X_7	1371.211	0.001	0.125		
X_4	110.504	0.000	0.125		

CHAPTER VI

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this chapter is to:

1. Summarize the research problem, objectives, and design;

2. Summarize major findings and conclusions related to the three objectives of the study;

3. Discuss implications derived from the research findings and conclusions;

4. Discuss limitations of the study and recommendations for further research.

SUMMARY OF THE RESEARCH PROBLEM, OBJECTIVES, AND DESIGN

Residents of rural South Dakota have been aware of population declines in their areas for several years. Such declines cause considerable concern. Schools, churches, hospitals, roads, and other facilities need to be maintained, and with a declining population, the per capita cost increases. Hence, a study of the possible causes of these population changes appeared appropriate.

The objectives of this study were to determine:

1. What changes occurred from 1960 to 1970 in South Dakota small towns;

2. How these population changes varied by small town when categorized according to selected variables; and

3. What factors help explain the observed variations in population change for the towns under study.

Chapter II contained a review of literature related to the problem. Major generalizations from this review indicate that small town population change is associated with the:

1. Number and types of roads running through the small town;
2. Size and composition of the surrounding population;
3. Location of the small town in relation to other trade centers;
4. Number of railroads running through the small town;
5. Population size of the small town itself; and
6. Economic base of the area surrounding the small town.

Chapter III contained the theoretical orientation, suggesting that small town population changes are a function of multi-dimensional factors. The theoretical framework hypothesized 13 independent variables to be associated with small town population change in South Dakota.

Chapter IV described the methodology used in the study.

A descriptive analysis of small town population change, and the relationship between selected variables and small town population change fulfilled the requirements of Objectives One and Two.

A step-wise least squares multi-variate linear regression statistical analysis was used to fulfill Objective Three of the study. This attempted to account for variations in the factors that would help

explain the observed variation in the population changes of small towns in South Dakota.

MAJOR FINDINGS AND CONCLUSIONS

The major findings and conclusions as related to the three objectives of the study were:

Objective One: Major Findings and Conclusions

Objective One was to determine the changes that transpired in South Dakota small towns from 1960 to 1970. The general findings were:

1. Incorporated rural places in South Dakota experienced 71.4 percent decline from 1960 to 1970; 29.7 percent gained.

2. The 1960 to 1970 decade showed greater small town population decline than did the previous two decades.

3. The aggregate population loss for small towns in South Dakota from 1960 to 1970 accounted for 16.4 percent of the total state population decline.

South Dakota declined in population by 2.1 percent from 1960 to 1970. With a six percent gain in the urban sector of the population, the population decline occurred in the rural sector. It is concluded that a shift from the rural to the urban sector is occurring in South Dakota.

Objective Two: Major Findings and Conclusions

It was the purpose of Objective Two to determine how the small town population changes varied when categorized according to selected variables.

Two variables, small town population size and county seat status, were chosen for analysis. The findings were:

1. Incorporated rural places in South Dakota lost 1.8 percent of their aggregate population from 1960 to 1970, compared to a six percent gain for incorporated urban places.

2. From 1960 to 1970, small rural places in South Dakota were more likely to exhibit population declines than were large rural places.

3. A greater percentage of county seats than non-county seats gained population from 1960 to 1970.

Since small rural places exhibited a greater tendency to decline in population than large rural places, it is concluded that population change in South Dakota is selective by size of town.

With regard to county seat status, it is concluded that county seat towns may have a capacity to resist rural depopulation. This may be due to the fact that the county seat serves as a core for the surrounding community. That is, a certain number of persons are needed in order to operate and maintain the county government and services. Since these persons are assumed to live in the county seat town, they tend to aid in population stabilization.

Further, when individuals periodically visit the county seat, they stop to do shopping at the same time. This serves as a cost reduction for the consumer, and may add to the economic and population stability of the county seat town.

Objective Three: Major Findings and Conclusions

Objective Three was designed to determine the extent to which observed variations in selected factors attributed to the explanation of variations in small town population change.

At the 0.05 level of significance, five variables were shown to be associated with small town population change. A discussion of each follows:

1. County population change. The multiple regression analysis showed that at the 0.05 level of significance, county population change is positively associated with small town population change. It is concluded that the symbiotic relationship between the county and the state is reinforced.

2. Distance from a similar community. It was found that distance from the nearest incorporated rural place was negatively associated with population growth. Thus, being located near a similar sized town does not mean population decline is imminent for an incorporated rural place. It is concluded that each town has its own clientele and its own population base. Consequently, nearness does not necessarily lead to population decline.

3. Length of time since discontinuance of railroad service. The statistical analysis showed a positive correlation between length of time since railroad discontinuance and population gain.

This finding says that, in general, discontinuance of railroad service is not associated with population decline. However, it is generally assumed that discontinuance of railroad service is one of the precursors of population decline for the small town. Thus, ambiguities exist between the finding and previous assumptions.

This study used data concerning the discontinuance of any railroad in South Dakota and was not selective as to time period or any other circumstances which may apply to railroad discontinuance.

Further research with regard to railroad discontinuance as it relates to small town population change is needed. Perhaps population decline is associated selectively with railroad discontinuance. That is, the discontinuance of inconsequential railroads (as in the case of duplicate railroads), or discontinuance of railroads over a certain number of years may be differentially associated with population change.

4. Greater previous growth. Small town population change from 1950 to 1960 was found to be positively associated with population change from 1960 to 1970. Thus, towns which were attractive to population increase in the 1950 to 1960 decade were the same towns which were attractive to population increase in the 1960's. The converse would also appear to be true.

5. Previous small town population size. The multiple regression analysis showed a negative relationship between size of town and population growth. This finding is contrary to most previous research and may mean that a levelling effect is taking hold. The larger rural towns are declining in population because they no longer serve as a hub for such large trade areas. Instead, the hub has shifted to the urban centers and the large rural places are losing population. The smaller rural towns are not exhibiting the same amount of population loss because they are already down to a relatively stable base population.

IMPLICATIONS OF THE STUDY

This study showed that small rural towns are declining in smaller proportions than are large rural towns. This may mean that declining small rural towns in South Dakota have experienced the greater proportion of their population losses and may be reaching a stabilized minimum level.

Data also show that nearness to similar sized towns is not associated with population decline. This may imply that competing rural communities can exist side by side without fear of population decline.

Data show a close relationship between county and town population changes; by implication, changes in the values or characteristics of one will be closely associated with changes in the other.

The discontinuance of railroads in general was found not to be associated significantly with population decline in small towns.

Currently it is assumed that railroad discontinuance will generate further decline in affected communities. This study would suggest that the relationship cannot be interpeted that simply.

The emphasis, then, should be shifted to ascertaining under what circumstances small town population decline is associated with the discontinuance of railroad service.

LIMITATIONS OF THE STUDY

The county was used as a representative of the surrounding population of the small town. This is considered a limitation because the town is a subset of the county. Thus, the two units were not mutually exclusive, and may have resulted in confounding results.

Although this is a limitation, the independent and dependent variables were operationalized this way because this study was a replication of an earlier study,[1] and the variables were controlled for uniformity.

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[1]Donald R. Field and Robert M. Dimit, Population Change in South Dakota Small Towns and Cities, 1949-60. Brookings, S. D.: Rural Sociology Department, Agricultural Experiment Station, South Dakota State University, Bulletin No. 571, March, 1970.

BIBLIOGRAPHY

Anderson, Albert. Population Changes in Incorporated Places. Ames, Iowa. Unpublished Master's Thesis, Iowa State University, 1960.

Anonymous. Recent Population Trends in the United States with Emphasis on Rural Areas. Washington, D.C.: United States Department of Agriculture, Agricultural Economic Report No. 23, January, 1963.

Beagle, Allan and Others. Michigan Population: 1960. East Lansing: Michigan Agricultural Experiment Station Bulletin No. 438, 1962.

Berry, Brian J. L. and Allen Pred. Central Place Studies. Philadelphia: Regional Science Institute, 1965.

Brown, Ralph James. Patterns of Change in the Spatial and Functional Aspects of Trade Centers and Trade Areas in South Dakota. Brookings, South Dakota: Unpublished Master's Thesis, South Dakota State University, 1968.

Brunner, Edmund deS. "Do Villages Grow?" Rural Sociology, 1:506, December, 1936.

Brunner, Edmund deS. and J. H. Kolb. Rural Social Trends. York, Pennsylvania: Maple Press, 1933.

Brunner, Edmund deS. and T. Lynn Smith. "Village Growth and Decline, 1930-1940." Rural Sociology, 9:103-115, June, 1944.

Chittick, W. D. "The Future of the Small Town in South Dakota." South Dakota Farm and Home Research, 13, No. 3, Summer, 1961.

Christaller, Walter. Central Places in Southern Germany. Trans. by Carlisle W. Baskin. Englewood Cliffs, N. J.: Prentice Hall, 1966.

Duncan, Otis Dudley and Albert J. Reiss, Jr. Social Characteristics of Urban and Rural Communities, 1950. New York: John Wiley and Sons, Inc., 1956.

Field, Donald R. and Robert M. Dimit. Population Change in South Dakota Small Towns and Cities, 1949-1960. Brookings, S.D.: Rural Sociology Department, Agricultural Experiment Station, South Dakota State University Bulletin No. 571, March, 1970.

Fuguitt, Glenn. "County Seat Status as a Factor in Small Town Growth and Decline." Social Forces, 44:245-51, December, 1965.

Fuguitt, Glenn. "The Growth and Decline of Small Towns as a Probability Process." American Sociological Review, 30:403-411, June, 1965.

_____. "The Places Left Behind: Population Trends and Policy for Rural America." Rural Sociology, 36:449-470, December, 1971.

Gillette, J. M. Rural Sociology. New York: MacMillan and Co., 1923.

Hawley, Amos H. Human Ecology. New York: The Ronald Press Co., 1950.

Hart, John F. and Neil E. Salisbury. "Population Change in Middle Western Villages: A Statistical Approach." Annals of the Association of American Geographers, 55:140-160, March, 1965.

Hauser, Philip M. "Present Status and Prospects of Research in Population." American Sociological Review, 13:371-382, August, 1948.

Hawthorn, George. "Explaining Human Fertility." Sociology, 2:65-78, January, 1968.

Hodge, Gerald. "Do Villages Grow? Some Perspectives and Predictions." Rural Sociology, 31:184, June, 1966.

Kerlinger, Fred N. Foundations of Behavioral Research. New York: Holt, Rinehart and Winston, Inc., 1964.

Landis, Paul H. The Growth and Decline of South Dakota Trade Centers, 1901-1933. Brookings, S.D.: Agricultural Experiement Station Bulletin No. 279, 1933.

Lively, C. E. Growth and Decline of Farm Trade Centers in Minnesota, 1905-1930. St. Paul, Minnesota: Agricultural Experiment Station Bulletin, 1932.

Mayo, Selz G. "Two Population Characteristics of County Seat Towns in North Carolina." Rural Sociology, 12:423-426, December, 1947.

Nelson, Lowry and Ernest T. Jacobson. "Recent Change in Farm Trade Centers in Minnesota." Rural Sociology, 6:104-110, June, 1941.

Northam, Ray M. "Declining Urban Centers in the United States, 1940-1960." Annals of the Association of American Geographers, 53:59, March, 1963.

Quinn. Urban Sociology. New York: American Book Company, 1955.

Ratcliff, S. C. "Size as a Factor in Population Changes in Incorporate Hamlets and Villages, 1930-1940." Rural Sociology, 7:318-327, September, 1942.

Riley, Marvin P. and Robert T. Wagner. Reference Tables: Population Change of Counties and Incorporated Places in South Dakota, 1950-1970. Brookings, S.D.: Rural Sociology Department, Agricultural Experiment Station, South Dakota State University Bulletin 586, 1970 Population Series, Report No. 2, July, 1971.

Smith, T. Lynn. "The Role of the Village in American Rural Society." Rural Sociology, 7:10-21, March, 1942.

Stewart, James R. A Study of Selected Demographic Factors Associated with Population Change in Incorporated Rural Communities of South Dakota. Brookings, S.D.: Unpublished Master's Thesis, South Dakota State University, 1967.

Tarver, James D. and Calvin L. Beale. "Population Trends of Southern Non-metropolitan Towns, 1950-1960." Rural Sociology, 33:19-29, March, 1968.

_____. "Relationship of Changes in Employment and Age Composition to the Population Changes of Southern Non-metropolitan Towns." Rural Sociology, 34:16-28, March, 1969.

Tarver, James D. and Joseph C. Urbon. Population Trends of Oklahoma Towns and Cities. Stillwater, Oklahoma: Oklahoma State University, Technical Bulletin No. T-105, 1963.

Vance, Rupert B. "Is Theory for Demographers?" Social Forces, 31: 9-10, 1952.

Vogt, Paul. "Village Growth and Decline in Ohio." American City, 13:481-485, December, 1915.

APPENDIX

TABLE 1

POPULATION AND PERCENT CHANGE OF INCORPORATED RURAL PLACES IN SOUTH DAKOTA, 1960-1970

Name	Population 1970	Population 1960	Population Change 1960-1970
Agar	156	139	+39
Akaska	46	90	-44
Albee	26	42	-16
Alcester	627	479	+148
Alexandria	598	614	-16
Alpena	307	407	-100
Altamont	54	77	-23
Andover	138	224	-86
Ardmore	14	73	-59
Arlington	954	996	-42
Armour	925	875	+50
Artas	73	87	-14
Artesian	277	330	-53
Ashton	137	182	-45
Astoria	153	176	-23
Aurora	237	232	+5
Avon	610	637	-27
Badger	122	117	+5
Baltic	364	278	+86
Bancroft	48	86	-38
Belvidere	96	232	-136
Beresford	1,655	1,794	-139
Big Stone City	631	718	-87
Bison	406	457	-51
Blunt	445	532	-87
Bonesteel	354	452	-98
Bowdle	667	673	-6
Bradley	157	188	-31
Brandt	132	148	-16
Brentford	94	96	-2
Bridgewater	633	694	-61
Bristol	470	562	-92
Britton	1,465	1,442	+23
Broadland	45	33	+12
Bruce	217	272	-55
Bryant	502	522	-20

TABLE 1 (continued)

Name	Population 1970	Population 1960	Population Change 1960-1970
Buffalo	393	652	-259
Buffalo Gap	155	194	-39
Burke	892	811	+81
Bushnell	65	92	-27
Butler	38	62	-24
Camp Crook	150	90	+60
Canistota	636	627	+9
Canova	204	247	-43
Carter	17	18	-1
Carthage	362	368	-6
Castlewood	523	500	+23
Cavour	134	140	-6
Centerville	910	887	+23
Central City	188	247	-59
Chancellor	220	214	+6
Chelsea	45	53	-8
Claire City	100	86	+14
Claremont	214	247	-33
Clark	1,356	1,484	-120
Clear Lake	1,157	1,137	+20
Colman	456	505	-49
Colome	375	398	-23
Colton	601	593	+8
Columbia	240	272	-32
Conde	279	388	-141
Corona	133	150	-17
Corsica	615	479	+136
Cottonwood	16	38	-22
Cresbard	224	229	-5
Custer	1,597	2,105	-508
Dallas	233	212	+21
Dante	88	102	-14
Davis	101	124	-23
Dell Rapids	1,991	1,863	+128
Delmont	260	363	-103
De Smet	1,336	1,324	+12
Doland	430	481	-51
Dolton	60	71	-11
Draper	200	215	-15
Dupree	523	548	-25

TABLE 1 (continued)

Name	Population 1970	Population 1960	Population Change 1960-1970
Eagle Butte	530	495	-135
Eden	132	136	-4
Edgemont	1,174	1,772	-598
Egan	281	310	-29
Elk Point	1,372	1,378	-6
Elkton	541	621	-80
Emery	452	502	-50
Erwin	106	157	-51
Esmond	19	19	0
Estelline	624	722	-98
Ethan	309	297	+12
Eureka	1,547	1,555	-8
Fairburn	50	47	+3
Fairfax	199	253	-54
Fairview	72	101	-29
Faith	576	591	-15
Farmer	58	95	-37
Faulkton	955	1,051	-96
Flandreau	2,027	2,129	-102
Florence	175	216	-41
Frankfort	192	240	-48
Frederick	359	381	-22
Freeman	1,357	1,140	+217
Fruitdale	74	79	-5
Fulton	101	135	-34
Garden City	126	226	-100
Garretson	847	850	-3
Gary	366	471	-105
Gayville	269	261	+8
Geddes	308	380	-72
Gettysburg	1,915	1,950	-35
Glenham	178	171	+7
Goodwin	114	113	+1
Gregory	1,756	1,478	+278
Grenville	154	151	+3
Groton	1,021	1,063	-42
Harrisburg	338	313	+25
Harrold	184	255	-71
Hartford	800	688	+112
Hayti	393	425	-32

TABLE 1 (continued)

Name	Population 1970	Population 1960	Population Change 1960-1970
Hazel	101	128	-27
Hecla	407	444	-37
Henry	182	276	-94
Hermosa	150	126	+24
Herreid	672	767	-95
Herrick	126	160	-34
Hetland	81	107	-26
Highmore	1,173	1,078	+95
Hill City	389	419	-240
Hillsview	19	44	-63
Hitchcock	150	193	-43
Hosmer	437	433	+4
Hoven	671	568	+103
Howard	1,175	1,208	-33
Hudson	366	455	-89
Humboldt	411	446	-35
Hurley	399	450	-51
Interior	81	179	-98
Ipswich	1,187	1,131	+56
Irene	461	399	+62
Iroquois	375	385	-10
Isabel	394	488	-94
Java	305	406	-101
Jefferson	474	443	31
Kadoka	815	840	-25
Kennebec	372	372	0
Kimball	825	912	-87
Kranzburg	143	156	-13
Labolt	90	125	-35
Lake Andes	948	1,097	-149
Lake City	44	81	-37
Lake Norden	393	390	+3
Lake Preston	812	955	-143
Lane	94	99	-5
Langford	328	397	-69
Lebanon	182	198	-16
Lemmon	1,997	2,412	-415
Lennox	1,487	1,353	+134
Leola	787	833	-46
Lesterville	181	173	+8
Letcher	201	296	-95
Lily	62	119	-57

TABLE 1 (continued)

Name	Population 1970	Population 1960	Population Change 1960-1970
Long Lake	128	109	+19
Lowry	35	44	-9
Loyalton	10	34	-24
McIntosh	563	568	-5
McLaughlin	863	983	-120
Marion	844	843	+1
Martin	1,248	1,184	+64
Marvin	65	93	-28
Mellette	199	208	-9
Menno	796	837	-41
Midland	270	401	-131
Miller	2,148	2,081	+67
Mission	739	611	+128
Mission Hill	161	165	-4
Monroe	134	156	-22
Montrose	377	430	-53
Morristown	144	219	-75
Mound City	164	144	+20
Mount Vernon	398	379	+19
Murdo	865	783	+82
Naples	38	36	+2
New Effington	258	280	-22
Newell	664	797	-133
New Underwood	416	462	-46
New Witten	102	146	-44
Nisland	157	211	-54
North Sioux City	860	736	+124
Northville	119	153	-34
Nunda	85	106	-21
Oacoma	215	312	-97
Oelrichs	94	132	-38
Oldham	244	291	-47
Olivet	103	135	-32
Onaka	69	85	-16
Onida	785	843	-58
Orient	131	133	-2
Ortley	111	127	-16
Parker	1,005	1,142	-137
Parkston	1,611	1,514	+97
Peever	202	208	-6

TABLE 1 (continued)

Name	Population 1970	Population 1960	Population Change 1960-1970
Philip	983	1,114	-131
Pierpont	241	258	-17
Plankinton	613	644	-31
Platte	1,351	1,167	+184
Pollock	341	417	-76
Presho	922	881	+11
Pringle	86	145	-59
Pukwana	208	247	-39
Quinn	105	162	-57
Ramona	227	247	-20
Ravinia	109	164	-55
Raymond	114	168	-54
Ree Heights	183	188	-5
Reliance	204	201	+3
Revillo	142	202	-60
Rockham	60	197	-137
Roscoe	198	532	-134
Rosholt	456	423	+33
Roslyn	250	256	-6
Roswell	32	39	-7
St Francis	300	421	-121
St Lawrence	249	290	-41
Salem	1,391	1,188	+208
Scotland	984	1,077	-93
Selby	957	979	-22
Seneca	118	161	-43
Sherman	82	116	-34
Sinai	147	166	-19
South Shore	199	259	-60
Spencer	385	460	-75
Springfield	1,566	1,194	+372
Stickney	421	456	-35
Stockholm	116	155	-39
Strandburg	98	105	-7
Stratford	106	109	-3
Summit	332	283	+49
Tabor	388	378	+10
Tea	302	188	+145
Timber Lake	625	624	+1
Tolstoy	99	142	-43

TABLE 1 (continued)

Name	Population 1970	Population 1960	Population Change 1960-1970
Toronto	216	268	-52
Trent	177	232	-55
Tripp	851	837	+14
Tulare	211	225	-14
Turton	121	140	-19
Twin Brooks	122	86	+36
Tyndall	1,245	1,262	-17
Utica	89	70	+19
Valley Springs	566	472	+94
Veblen	377	437	-60
Verdon	18	28	-10
Viborg	662	699	-37
Vienna	119	191	-72
Vilas	33	49	-16
Virgil	43	81	-38
Volga	982	780	+202
Volin	157	171	-14
Wagner	1,655	1,586	+69
Wakonda	290	382	-92
Wall	786	629	+57
Wallace	95	132	-37
Ward	57	74	-17
Wasta	127	196	-69
Waubay	696	851	-155
Webster	2,252	2,409	-157
Wentworth	196	211	-15
Wessington	380	378	+2
Wessington Springs	1,300	1,488	-188
Wetonka	31	46	-15
White	418	417	+1
White Lake	395	397	-2
White River	617	583	+34
White Rock	35	76	-41
Whitewood	689	470	+219
Willow Lake	353	467	-114
Wilmot	518	545	-27
Winfred	110	137	-27
Wolsey	436	354	+82
Wood	132	267	-135
Woonsocket	852	1,035	-183
Worthing	294	304	-10
Yale	148	171	-23