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**AVAILABILITY AND MARKET POTENTIAL
OF NON-AGRICULTURAL BUSINESSES
IN NORTH DAKOTA**

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ABSTRACT

Many North Dakota communities find it financially difficult to provide or maintain such necessary services as public safety, water and sewer services, garbage disposal, grocery and retail stores, local credit, medical care and similar other services due to gradual decline in both population and businesses. Declining population also stresses the existing businesses as they compete for a shrinking customer base while the cost of operating a business is likely to be increasing. Cooperatively-owned businesses are means by which needed products and services can be provided at a reasonable cost and at the same time provide meaningful employment opportunities. Thus, the cooperative approach may provide an option for rural communities in North Dakota for influencing economic development efforts in their localities. In an attempt to identify specific businesses for cooperative development efforts in North Dakota, this study explores the availability and market potential of various non-agricultural businesses in retail, service, wholesale, and finance, insurance, and real estate sectors in the state. In addition, the potential of cooperation among communities, public entities, and private businesses was examined.

The results of this study show that there are a considerable number of businesses in the state that have significant market potential for further growth, e.g., computer rent/lease and maintenance services in the service sector, and computer and software stores in the retail sector. Regarding the cooperative form of businesses in those business categories identified as having market potential, entrepreneurs who are individually unable to finance their business may solve their problem by forming a cooperative. In addition, there is scope for cooperation among existing businesses which want to reduce their operating cost and public entities and non-profit organizations that would like to provide their services at a reduced cost. There is ample evidence of on-going cooperation among various North Dakota communities and public entities to solve the problem of the high cost of providing public or government services. Such cooperation is encouraging because it may eventually lead to formation of cooperatives to provide goods and services in the state.

Key Words: trade analysis, market potential, cooperatives, non-agricultural

PREFACE

Preparation of this report was funded by cooperative research agreement FMHA-94-57 between the Rural Business and Cooperative Development Service, Rural Economic and Community Development, USDA, and the North Dakota State University Agricultural Experiment Station. Dr. Randall E. Torgerson of the RBCDS/RECD/USDA, served as liaison; and Dr. Dave Cobia was the principal investigator. This report also contributes to NDSU Agricultural Experiment Station project 1394, titled "Strategies for Rural Cooperative Development."

The study is based on secondary data which was collected by the first author. We are grateful to Ms. Clara Jenkins and Ms. Linda Gregory of the Corporate Division, Office of the Secretary of State, North Dakota, Bismarck, for providing important data on cooperatives and non-profit organizations in the state. We also thank public officials in various North Dakota communities mentioned in this report for providing information on on-going cooperation among public entities. We thank Larry Stearns, Jennifer Holstun, Bill Nelson, and Richard Rathge for their comments on an earlier draft of this manuscript. However, any remaining errors are the sole responsibility of the authors. We thank Eric Egge for his assistance in type-setting the tables. Word-processing and type-setting were done by the first author. We appreciate Ms. Donna Adam for her secretarial assistance.

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ABSTRACT

Many North Dakota communities find it financially difficult to provide or maintain such necessary services as public safety, water and sewer services, garbage disposal, grocery and retail stores, local credit, medical care and similar other services due to gradual decline in both population and businesses. Declining population also stresses the existing businesses as they compete for a shrinking customer base while the cost of operating a business is likely to be increasing. Cooperatively-owned businesses are means by which needed products and services can be provided at a reasonable cost and at the same time provide meaningful employment opportunities. Thus, the cooperative approach may provide an option for rural communities in North Dakota for influencing economic development efforts in their localities. In an attempt to identify specific businesses for cooperative development efforts in North Dakota, this study explores the availability and market potential of various non-agricultural businesses in retail, service, wholesale, and finance, insurance, and real estate sectors in the state. In addition, the potential of cooperation among communities, public entities, and private businesses was examined.

The results of this study show that there are a considerable number of businesses in the state that have significant market potential for further growth, e.g., computer rent/lease and maintenance services in the service sector, and computer and software stores in the retail sector. Regarding the cooperative form of businesses in those business categories identified as having market potential, entrepreneurs who are individually unable to finance their business may solve their problem by forming a cooperative. In addition, there is scope for cooperation among existing businesses which want to reduce their operating cost and public entities and non-profit organizations that would like to provide their services at a reduced cost. There is ample evidence of on-going cooperation among various North Dakota communities and public entities to solve the problem of the high cost of providing public or government services. Such cooperation is encouraging because it may eventually lead to formation of cooperatives to provide goods and services in the state.

Key Words: trade analysis, market potential, cooperatives, non-agricultural

HIGHLIGHTS

This study analyzes the availability and market potential of various non-agricultural businesses in retail, service, wholesale, and finance, insurance, and real estate sectors in North Dakota. It is grounded in central place theory-based regional economics models. Secondary data were used to estimate and analyze market potential and relative availability of non-agricultural businesses in North Dakota.

Out-migration of farm-families together with reduced spending by those who remained have adversely affected rural businesses and services, public services and community organizations in North Dakota. For example, during 1980-1988, retail sales fell by about 20% in North Dakota which had consequently affected employment and local tax bases. During 1980-92, only 5 out of 53 counties in the state registered employment growth and out-migration continued at the rate of -5.7 % per year during 1982-92. Such shrinkage was substantially more severe in outlying rural areas and towns than in areas with relatively high population, such as in Cass County or in Ward County. Declining population also stresses the existing businesses as they compete for a shrinking customer base while the cost of operating a business is likely to be increasing.

The recent and on-going phenomenon of forming various cooperatively-owned businesses in the agricultural sector has brought a new sense of community renewal into some rural communities in North Dakota. Cooperatively-owned businesses are means by which needed products and services can be provided at a reasonable cost and at the same time provide meaningful employment opportunities. Although there are over 440 cooperatives in North Dakota as of September 1995, over 95% of them are engaged in agriculture related activities, such as agricultural product marketing or farm supply. The cooperative approach may provide an option for rural communities in North Dakota to provide missing or inadequate products and services at a reasonable cost and at the same time provide meaningful employment opportunities.

In an attempt to identify specific businesses for cooperative development efforts in North Dakota, this study examined the availability and market potential of various non-agricultural businesses in the state. The results of this study show that there is a considerable number of non-agricultural businesses in service, retail, wholesale, and finance and real estate sectors in North Dakota that have significant business potential for further growth. Examples include the computer rent/lease and maintenance services category in the service sector and computer and software stores category in the retail sector. There is also ample evidence of on-going cooperation among various communities and public entities in the state to solve the problem of the high cost of providing public or government services. Given the high spirit of cooperation shown by North Dakota residents in the agricultural sector (e.g., establishing cooperatively owned food processing plants) and in the public sector, it is expected that the same spirit of cooperation will be extended to the non-agricultural sectors to provide products and services that are missing or inadequate in many communities in North Dakota.

Those who are interested in establishing cooperatives must identify the catalytic elements for forming such a cooperative, e.g., reducing operating costs of business or saving tax payers' money. Those who are interested in details on the structure and organization of cooperatives should contact U.S. Department of Agriculture's Rural Business and Cooperative Development Services (RBCDS) in Washington, D.C., at (202) 720-7558. Those looking for assistance on forming a cooperative in North Dakota should contact the Cooperative Development Specialist, North Dakota Coordinating Council of Cooperatives at 1-800-234-0518, or the Business and Cooperative Development Specialist, Farm Service Agency at (701) 250-4438.

AVAILABILITY AND MARKET POTENTIAL OF NON-AGRICULTURAL BUSINESSES IN NORTH DAKOTA

Sanjib Bhuyan, David W. Cobia and F. Larry Leistritz*

I. INTRODUCTION AND ECONOMIC BACKGROUND

Over the years, both population and businesses have been declining gradually in North Dakota. As a result many communities in the state, particularly rural communities, find it financially difficult to provide or maintain such everyday necessities as groceries and other retail stores, medical care, and local credit. Some of these communities also lack or are inadequate in providing such civic services as public safety, water and sewer services, and garbage disposal for the same reason. To overcome their financial woes, many North Dakotans in recent years have opted for the cooperative approach to raise or maintain their income by establishing value-added agricultural processing cooperatives, e.g, the pasta producing cooperative in Carrington established by a group of durum wheat producers. Similar actions have been taken by corn and wheat growers and milk producers in the state. North Dakota is known for its leadership role in agricultural cooperative development throughout the United States. Now, the question is whether the same cooperative approach can be utilized by rural communities and residents of North Dakota to provide or maintain the needed non-agricultural products and services at a reasonable cost and at the same time provide meaningful employment opportunities. In an attempt to identify specific businesses for cooperative development efforts in North Dakota, this study was undertaken to analyze the availability and market potential of various non-agricultural businesses in retail, service, wholesale, and finance, insurance, and real estate sectors in the state.

Historically, the economies of the Great Plains states, which include North Dakota, South Dakota, and Nebraska, have been dependent on the basic economic sectors, i.e., agriculture and mining. Such dependence is more pronounced in the rural areas of these states. Over the years, socio-economic and physical restructuring of rural economies have taken place due to continued industrialization and internationalization of the United States economy. Such restructuring had adverse effects on large segments of the rural community and their economy (Stone, 1987; Leistritz, 1991). For example, out-migration of farm families together with reduced spending by those who remained have adversely affected rural businesses and services, public services and community organizations. North Dakota is no exception to such effects. The economy of North Dakota has been facing a serious challenge since the early 1980s with the agriculture sector facing increasing competitiveness in the world markets, declining commodity prices and exports, reduction in federal assistance, and falling land values. The state's other major industry, the energy sector, has been trying to recover from the weakening world oil prices of the early 1980s. The economic problems of these two major sectors led rapidly to depressed economic conditions in other sectors of the North Dakota economy. For example, a recent report by the U.S. Small Business Administration (SBA, 1995) shows that retail sales (adjusted for inflation) fell about 20 percent from 1980 to 1988. Such shrinkage in economic sectors was substantially more severe in

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outlying rural areas and towns than in areas with relatively higher population such as in Cass County, which includes Fargo, or Ward County, which includes Minot. Although the agriculture sector in the state has recovered significantly, the economic situations have not changed much for most rural areas in North Dakota. Out of 53 counties, 4 counties (Cass, Grand Forks, Burleigh and Ward) account for nearly 40 percent of the population and had over 42 percent of retail industries as well as contributing over 61 percent of retail sales in 1992 (Bureau of Census, 1995).

The predicament of North Dakota's rural areas in terms of dwindling employment and income continues. For example, during 1980-92, only five of the state's 53 counties (including those four mentioned earlier) registered employment growth. Lack of growth in wage rates and other sources of income resulted in the state faring badly in per capita income relative to the nation and some neighboring states. During 1981-90, North Dakota was ranked 46th out of 50 states in per capita income growth. Because out-migration is a common response to lack of job opportunities, all but one county (Cass) in the state experienced net out-migration. Not surprisingly, North Dakota ranked second (to Wyoming) in rate of out-migration during 1980-90. While the United States population rose by 9.8% during 1980-92, population in North Dakota fell by 2.1%. Net out-migration of both population and businesses has put pressure on many communities' local infrastructures, such as grocery stores, eating and drinking establishments and other everyday necessities, local credit, medical care, affordable housing for the elderly and the poor, and basic community utilities and services.

Considering the state of the economy in North Dakota, it is apparent that there is need for economic revitalization in many communities in the state. It is a common goal of various local and state economic development agencies, such as the North Dakota Department of Economic Development and Finance and the North Dakota Association of Rural Electric Cooperatives, to search for opportunities for improving the economic and employment base of the state in general and in rural areas in particular. These and similar other agencies aim at providing local communities with greater capacity to contribute to their economies and find viable alternatives to develop their economic base. Although literature indicates that emphasizing basic industries, such as agriculture and mining, may not be a major source of future economic growth in terms of employment and income (e.g., Pulver, 1988), much of the past and recent economic development efforts have been focused on value-added processing activities in the agricultural sector, e.g., formation of various ag-processing cooperatives in North Dakota. Although much of the non-farm sector has been continually declining in many rural communities throughout the region, it has not received similar attention.

The recent and on-going phenomenon of forming various cooperatively-owned businesses in the agricultural sector has brought a new sense of community renewal into some of the rural communities in the state. Through these cooperatives, rural residents are able to exercise ownership and control for their goods and services they need. Currently, there are over 440 cooperatives in North Dakota (Office of the Secretary of State, North Dakota) and not surprisingly, over 95% of these cooperatives are engaged in agriculture related activities, e.g., Dakota Growers Pasta Company of Carrington and Dakota Dairy Specialties of Hebron.

Although many of these cooperatives have brought some vitality to the communities where they are located, the suffering of most rural communities in North Dakota in terms of lacking the necessary non-agricultural businesses and services has not stopped. People in many rural areas still have to drive 30-40 miles each way to find a medical facility (Hamm *et al.*, 1993). Likewise, they may not find any suitable child care facility in their locale. Thus, while much of the resurgence of interest in cooperatively-owned businesses has focused on value-added processing activity in the agricultural sector, there may be similar applications and opportunities in the non-farm sector. Through such jointly-owned businesses, residents can develop self-help activities that provide needed goods and services at reasonable costs and simultaneously provide meaningful employment opportunities for rural residents.

II. OBJECTIVE

This particular study was aimed at fulfilling the first stage of a research project that aims at exploring business opportunities for cooperatives in non-agricultural sectors in North Dakota. In an attempt to identify specific non-agricultural businesses for cooperative development efforts, the objective of this study is to examine the availability and market potential of various non-agricultural businesses in retail, service, wholesale, and finance, insurance and real estate sectors in North Dakota.

The purpose of this study is best understood when put in the context of the second stage of the principal project. For the second stage, following groups have been identified as potential cooperative entrepreneurs: (1) existing business owners who may form a cooperative to purchase their supplies and services together (i.e., purchasing cooperative to reduce operating costs) or to market their products and services at a reduced cost (i.e., marketing cooperative without violating the existing anti-trust laws), (2) potential entrepreneurs who individually may not have the financial strength necessary to open a new business venture, (3) those customers (both individuals and business consumers) who want certain goods and services locally instead of importing from outside of their community may form consumer cooperatives, and (4) public entities and non-profit organizations cooperating to provide their services at a lower cost. These groups may target one or more of the businesses identified in this study as having market potential. However, whether any of these groups actually have any intention of forming a cooperative form of business in any of the categories will be explored in the second stage of the principal study.

III. PROCEDURE

3.1 Analytical Framework

The analytical procedures are grounded in central place theory-based regional economics models. To analyze the growth potential of an individual business category (e.g., grocery stores), such measures as expected total sales (or market size), location quotient, and service density are used. All analyses are conducted at the 3- and 4-digit SIC (Standard Industrial Classification) levels for the following sectors: service; retail; wholesale; and finance, insurance and real estate

(FIRE). A total of 113 service business categories (e.g., beauty and barber shop), 48 retail trades (e.g., grocery stores), 53 wholesale trade (e.g., industrial supplies), and 23 FIRE trades (e.g., credit unions) in North Dakota are identified for the study. Two-digit SIC level data are used wherever data at the 3- or 4-digit levels are not available, e.g., in SIC 81 (legal services). Relevant data were obtained from various public domain sources (see Section 3.2 for data descriptions). In addition, personal contacts were made with public officials of several North Dakota communities/counties mentioned in this report to obtain information on on-going cooperation among public entities.

The 3- or 4-digit business categories are given ordinal rankings based on their respective estimated service density, location quotient, and market potential. For example, among retail industries in North Dakota, computer and software stores has the highest market potential with a location quotient of 0.34 (meaning the existing business establishments in this category were unable to fulfill the local demand), and was ranked as the 4th least available retail trade in the state. On the other hand, drinking places have the least market potential and are widely available in the state. Thus, it can be fairly concluded that the computer and software stores category has more business potential than drinking places in North Dakota.

Many of these business categories identified here are not available in most North Dakota counties. Therefore, when estimating market potential for specific business categories, this study assumes uniformity in terms of distribution of population and business establishments in the state, i.e., estimates are state averages. In reality, a majority of these businesses in North Dakota are located in the urban counties of Burleigh, Cass, Grand Forks, Stutsman, and Ward. In addition, the out-of-state demands for retail, service, wholesale or finance and real estate related goods and services from North Dakota establishments are assumed negligible relative to in-state demands. For such reason, overestimation of market potentials for some business categories, particularly those that are urban oriented, is possible. Although a detailed feasibility study of a specific business is an effective counter measure against such potential defects, it is beyond the scope of this study. Conducting such detailed feasibility study would be a next step for a potential entrepreneur who is considering opening a new business venture in a category that has business potential.

3.1.1 Market potential and related concepts

A crucial question faced by any entrepreneur is what is the market size, in terms of sales dollars, in his/her line of business? And given the existing demand and competition, whether his/her line of business has market or business potential? Although it is difficult to provide an accurate answer to these questions, systematic analysis of available facts and data generally lead to some answers. With such information, a prospective entrepreneur may be able to make initial judgement on the potential of his/her business and may conduct further study based on such judgement.

Market potential is the expected total sales of a commodity, a group of commodities, or a service in a market for all firms (U.S. Department of Commerce, 1979).¹ This definition is slightly modified to suit the needs of this study where the interest is to identify businesses that

have potential for further growth.

To identify businesses with market potential, the following steps are taken:

Step 1: Expected total sales (ETS_x) of a business category x (e.g., gasoline service stations) in state y (e.g., North Dakota) in 1992 is estimated as

$$ETS_x = \text{Per capita sales}_x * \text{Total population}_{ND} * \frac{\text{per capita income in North Dakota (ND)}}{\text{National per capita income}}. \quad (1)$$

Per capita sales² is the national average per capita sales in category x and is obtained by dividing the total national revenue in business x by total United States population. If this was a county level study, per capita sales value for the state would have been used. The ETS is a demand related concept. Although this measure ignores differences in state consumption patterns except adjusting the level by relative state income, it does provide a readily calculated estimate of market size (Shaffer, 1989).

Estimation of the ETS is demonstrated below using the 'gasoline service stations' category. Here are the necessary data to compute the ETS : total United States revenue (1992): \$134,705,359,000; total United States population (1990): 249,908,000; North Dakota population (1990): 638,800; per capita income in North Dakota and the United States, respectively (1992): \$15,688 and \$18,177. Then, the ETS for gasoline service stations in 1992 was (rounded),

$$\begin{aligned} ETS_{gas. serv. stm.} &= \frac{134,705,359}{249,908,000} * 638,800 * \frac{15,688}{18,177} \\ &= 0.53902 * 638,800 * 0.86307 \\ &= 297,177 \text{ (000\$)} \end{aligned} \quad (2)$$

Step 2: The share of actual revenue in 1992 to the expected total sales in 1992 is estimated for business x . This share is termed as 'sales goal achieved,' and defined as

$$\text{Sales goal achieved}_x = \frac{\text{Actual total sales in 1992}_x}{ETS_x \text{ in 1992}}, \quad (3)$$

and expressed in percentage terms. Continuing the demonstration, using (3), it can be shown that gasoline service station category exceeded expected sales in 1992, i.e.,

$$Sales\ goal\ achieved_{gas.\ serv.\ stn.} = \frac{297,177\ (000\$)}{439,968\ (000\$)} * 100 = 148.05\% \quad (4)$$

Step 3: All business categories are ranked in terms of their respective sales goal achieved in ascending order, i.e., 1 being the business with the least amount of sales goal achieved. Based on sales goal achieved in 1992, the gasoline service stations category is ranked 39th out of 46 ranked retail trade categories in North Dakota.

Those businesses that either did or did not achieve their total sales potential in 1992 are identified in Step 3. Now, to identify the businesses that may have potential for further growth it is assumed that those businesses that have achieved 70% or more of their expected total sales have reached market saturation and thus, have no further growth potential. On the other hand, those businesses that have yet to reach at least 70% of their expected sales have unfulfilled demand and thus, have potential for growth. A ranking of 1 in Step 3 thus implies a market potential ranking of 1, indicating the business category that has the highest market potential. An additional measure is used to supplement the above procedure for determining market potential: location quotient.

3.1.2 Location quotient

A common question faced by communities in both rural and urban areas is what is the level of goods and services currently provided locally and what goods and services are imported from elsewhere -- location quotient (LQ) provides an answer to such questions. Thus, LQ is a measure of self-sufficiency of goods or services in a community (Shaffer, 1989). Location quotient is a commonly used tool to identify non-manufacturing industries for industrial recruitment, which is a popular economic development strategy. For example, Doescher *et al.* (1986) used this tool to identify non-manufacturing industries for industrial recruitment in Oklahoma.

Location quotient is defined as the ratio of the share of state employment in a particular business category (x) to the share of national employment in that category:

$$LQ\ for\ x = \frac{Percent\ of\ North\ Dakota\ employment\ in\ x}{Percent\ of\ U.S.\ employment\ in\ x} \quad (5)$$

A location quotient of 1 ($LQ = 1$) means that local consumption demand is met through local production of specified good or service (Shaffer, 1989). Similarly, a location quotient of less than one ($LQ < 1$) means lack of self-sufficiency in good or service x , i.e., what is produced or available is not sufficient to meet the local demand. A location quotient greater than 1 ($LQ > 1$) means that the concerned state or community has a larger proportion of its employment in industry x than does the nation or whatever economic aggregate is used as the denominator in equation (5).

Continuing the demonstration, using (5), LQ s for the gasoline service stations category can be easily estimated. The required data are as follows: total persons employed in North Dakota and the United States in the gasoline service stations category, respectively were 2,590 and 675,080 (1992); total retail sector employment in North Dakota and the United States in 1990 were 53,309 and 19,485,666, respectively. Thus, using (5), the LQ for gasoline service stations category will be

$$LQ_{gas. serv. stn.} = \frac{2,590 / 53,309}{675,080 / 19,485,666} = 1.40. \quad (6)$$

Although location quotient has such shortcomings as assuming identical state and national demand and supply functions and similar tastes and preferences and income levels, it is a reliable measure of local self-sufficiency (Shaffer, 1989). To reduce the problem of misinterpretation of estimated LQ s, a much desegregated 4-digit SIC level data set is used in this study. Moreover, a lower threshold point is selected to determine self-sufficiency, i.e., it is assumed that an estimated LQ in the range 0.75 - 1.25 suggests self-sufficiency while those below 0.75 suggest lack of self-sufficiency, and $LQ > 1.25$ suggests abundance of that business or service. While lacking of self-sufficiency implies potential for new business or possible expansion of existing ones, abundance of business or services implies market saturation if export is not a principal activity in that particular business or service category.

3.1.3 Service density

This concept is used to show the availability of a particular business or service in an area, such as in a township (a township is defined as a 6 miles x 6 miles or 36 square miles area in most states in the United States), relative to other comparable businesses or services in the same area. Service density of business x can be defined in terms of the number of establishments engaged in business x per township, e.g., number of grocery stores per township. Service density can be used to compare the relative availability of a product or service between two cities or counties or even states. For example, the number of primary health care centers in a city (or in a county or in a state) or the number of hospital beds in a county indicates the availability of health care services in quantitative terms. Thus, this concept can be employed to analyze the variations in availability of goods and services as well as to make comparisons across counties or towns.

Service density of an industry x is defined as the average number of business establishments per unit area. Here, 'unit area' is defined as follows: total land area in North Dakota is 69,299 square miles which permits 1,925 possible townships (69,299 divided by 36 and rounded off) in the state. Thus, the unit area is defined as the number of possible townships in the state, i.e., unit area=1,925. Compared to the estimated number of townships in the state, i.e., 1,925, there were almost 1400 townships and over 350 cities in North Dakota as of 1992 (Omdhal, 1996).

Thus, service density is computed as

$$Service\ density_x = \frac{Total\ number\ of\ establishments_x}{unit\ area}. \quad (7)$$

Then the service density for gasoline service stations category will be

$$Service\ density_{gas.\ serv.\ stn.} = \frac{422}{1,925} = 0.22. \quad (8)$$

This implies that there is one gasoline service station in every 5 townships in North Dakota (compared to a national average of one service station per township in 1992). The unit area for the United States is $3732396 / 36 = 103,678$, where the numerator is the total land area (in square miles) in the United States.

3.1.4 Average population served

This is another measure of availability of goods or services in a given area, such as in a city, county, or state. It is defined as the average number of people served by a business or service establishment. For this aggregated state level study, average population served by business x in state y is defined as

$$Average\ population\ served_x = \frac{Total\ population_y}{Total\ number\ of\ establishments_x}. \quad (9)$$

The use of this concept can be elaborated as follows: the results of this study would show that on average, each of the 422 gasoline service stations in North Dakota served slightly over 1,500 persons in 1992, while the national average was slightly over 2,300. This implies higher availability of gasoline service stations in North Dakota as a whole.

3.2 Data

All data were obtained from secondary sources. The study period was 1992 because that is the year for which the most current data were available. The latest data on population and economic characteristics were available only for 1990 and were obtained from the *1990 Census of Population and Housing*. Data on sales, number of establishments and employment for each of the industry groups at the 3- and 4-digit SIC levels were obtained from the *1992 Economic Census*. Data on per capita income was obtained from the *Statistical Abstract of the United States, 1994*. The Corporate Division at the North Dakota Office of the Secretary of State, located in Bismarck, provided data on cooperatives and non-profit organizations.

IV. RESULTS AND DISCUSSIONS

4.1 Demographic and Economic Characteristics of North Dakota

This section draws heavily from Coon *et al.* (1995), where a detailed discussion of demographic and economic characteristics of North Dakota is available.

4.1.1 Population

The population of North Dakota fell from 652,717 in 1980 to 638,800 in 1990, a change of -2.1% in a decade. During the same time period, the United States population rose by 9.8%, from 226.54 million to 248.71 million. Among 53 counties in the state, only 6 counties, namely Cass, Grand Forks, Burleigh, Sioux, Mercer, and Rollette, experienced gains in population, most of which was concentrated in the first three counties. Not surprisingly, those three counties also contain the three major population centers of the state, i.e., Fargo in Cass, Grand Forks in Grand Forks, and Bismarck in Burleigh County. In terms of migration, all counties except Cass experienced net out-migration from 1980 to 1990. Rural North Dakota experienced the greatest loss of population. Migration generally takes young adults with better education out from a rural community, and the community loses not only its general population but also some of its community leaders--a trend which is quite concerning to all.

In terms of business population, there were 18,979 business establishments and 16,615 firms (a firm may have more than one establishment) in North Dakota in 1990 during which the national totals were 6.2 million and 5.1 million, respectively (SBA, 1995). In addition, there were 20,000 self-employed workers in the state compared to 8.6 million self-employed workers nationwide.

4.1.2 Education

North Dakota was ranked 26th in 1990 in the nation in educational attainment (76.7% with high school graduation or higher). The percentage of population that requires education, i.e., those under 18 years of age, was 27.5 in the same period. Nelson County had the lowest percentage of young people (23%) and Sioux County had the highest percentage of young people (44%). Coon *et al.* predicted that the continued loss of population from the rural areas, particularly those age groups with child-bearing capacities, would significantly raise the cost of providing high quality educational programs in rural areas.

4.1.3 Employment

According to the 1990 Census, the total employment in North Dakota was 287,558 or 45% of the total state population over the age 16. The following sectors provided over 65% of total employment in the state (Table 1): service industries (35.2% of total employment), retail trade industries (18.5%), and agriculture (11.6%). Although primarily an agricultural state,

North Dakota shows employment distribution similar to that of the national average with the

exception that at the national level, the agriculture sector was replaced by the manufacturing sector as the third largest employer (Table 1). The top five industries in North Dakota to provide employment in 1990 were health services with over 18% of total employment, followed by eating and drinking places (10.5%), wholesale trade of durable goods (5%), food stores (approximately 4.5%), and automotive dealers and service stations with slightly over 4% of the total employment (SBA, 1995).

Table 1. Distribution of Employment by Industry, North Dakota and United States, 1990

Sectors	Number of Workers		% of Total	
	North Dakota	U.S.	North Dakota	U.S.
Agriculture	33,385	2,944,042	11.61	2.54
Forestry and Fisheries	306	171,330	0.11	0.15
Mining	4,490	723,423	1.56	0.63
Construction	14,886	7,214,763	5.18	6.24
Manufacturing	18,053	20,462,078	6.28	17.69
Transp./communica./utilities	19,846	8,205,062	6.90	7.09
Wholesale trade	12,380	5,071,026	4.31	4.38
Retail trade	53,309	19,485,666	18.54	16.84
FIRE *	15,471	7,984,870	5.38	6.90
Services	101,114	37,880,865	35.16	32.75
Public/government	14,318	5,538,077	4.98	4.79
Total	287,558	115,681,202	100.00	100.00

* FIRE= finance, insurance, and real estate industries

Source: 1990 Census of Population, Bureau of Census, U.S. Department of Commerce.

The U.S. Small Business Administration (1995) estimated that the fastest growing industries for small business³ in North Dakota during 1988-1990 were electronic and other electrical equipment, general merchandise stores, fabricated metal products, health services, and business services. Regarding business health, business bankruptcies (those businesses that file Chapter 7, 11, or 12) fell from 191 in 1991 to 180 in 1992, a change of -5.8% compared to the national average of -1.1% during the same period. During the same period, business failures (refers to business closures involving a loss to a creditor) rose from 140 in 1991 to 163 in 1992 (or an increase of 16.4% compared to the national average of 9.9%) and business termination (refer to those firms which cease to employ people) rose from 1,944 to 2,010 (an increase of 3.4% compared to the national average 0.2%). Such change was similar to the national trend, except in the case of business termination, which fell 0.2% nationally during the same period.

Over the 1985-1993 period, service industries gained the most employment (almost 34%), followed by the manufacturing industries (26%), and the agriculture, forestry, and fisheries industries (19.6%). Two sectors lost employment, namely the mining industries (-44.5%) and the wholesale trade industries (-3.2%) during the same period. Mining suffered most because oil exploration and drilling dropped significantly in the mid-eighties. Significant

employment growth in the high paying manufacturing sector shows promise of continued economic growth for the state. However, such growth was not uniform across the state; those areas that lost manufacturing related jobs had many manufacturers of oil field supplies. Not surprisingly, job growth in the manufacturing sector was evident in non-energy related manufacturing such as ski equipment and furniture.

Dominance of the service industry in providing employment to North Dakotans reflects a national trend (USDA, 1995). The service sector includes such diverse industries as hotels and motels, shoe repair, tax preparation, medical facilities, nursing homes, and child care. Service was the only industry to experience job growth in all counties in the state during the 1985-93 period. Growth in the service industries was partly due to businesses seeking external help in accounting and security, and an increase in two-income households which demand more services, including child day care and housekeeping. Other sectors that experienced job growth in most parts of North Dakota were transportation, communication and public utilities. Those areas with heavy reliance on the oil mining industry suffered job losses.

Although there was variation among counties in terms of their respective unemployment levels, on average, the unemployment rate in North Dakota was 4.4% in 1993, which was lower than the national average (6.8%) during the same period. Some rural counties (e.g., Benson, Rolette, and Sioux) had higher unemployment rates than the state or the national average. It is a common phenomenon that when rural areas lose their jobs, out-migration of rural population, particularly the younger generation, to in-state and out-of-state metro areas takes place.

4.1.4 Income

In terms of per capita income (includes all sources of income), North Dakota achieved almost 86% of the national average with a state average per capita income of \$17,049 in 1992. Compared to the counties with metropolitan areas, e.g., Cass County, other counties derived a higher percentage of their income from farming. For example, farming contributed 34% of Slope County's income in 1991 while such contribution was only 2% in Cass County during the same time period.

4.2 Non-agricultural Cooperatives in Community Resources and Public Services: Potential Application of Shared-services Cooperatives

The idea of cooperation is not new in North Dakota, which is known throughout the United States for its leadership role in cooperative development. There are over 400 cooperatives in the state (appendix Table A.1) and in general, most of the cooperatives found in North Dakota deal with agricultural input or output marketing. There is also another type of cooperative called 'shared-services cooperative,' which is more common among private businesses and government entities. These cooperatives are not necessarily related to agricultural production or marketing. A shared-services cooperative is established by a group of public entities or private businesses to provide products/services to its members at lower cost. The goal is to capture savings through lower administrative costs, quantity purchasing discounts, sharing fixed costs, and assured levels of business with vendors and suppliers (Crooks *et al.*, 1995).

Many communities in North Dakota find it financially difficult to provide such necessary services as public safety, water and sewer services, or garbage disposal. Moreover, many rural communities also lack such non-civic services as grocery stores, retail stores, restaurants, and clothing stores, which are necessary for the well-being of such communities. Such problems are common in communities where both population and businesses are declining gradually over the years. Given that shared-services cooperatives can provide services at a reduced cost to members, the obvious question is whether this approach has potential in North Dakota to provide the services that are absent or inadequate in rural as well as in urban communities. For example, could a few adjacent rural communities form a shared-services cooperative to purchase expensive equipment or operate a recycling facility? These are some of the questions that will be explored in this section.

The shared-services cooperative concept is important to planners and policy makers, because this concept may be applied to maintain or improve the quality of life in rural communities by providing missing or inadequate goods and services. Strategic alliances among rural communities through establishment of shared-services cooperatives may be an effective way for these communities to empower themselves, i.e., through strategic alliance, these communities may be able to create jobs, attract new businesses and services, and strengthen their local economies.

4.2.1 Cooperation among public entities

Public entities, such as municipalities or county governments, in some states have started joint purchase of expensive but under-used equipment and various supplies and services through shared-services cooperatives to increase their negotiating and buying power. For example, the Western Area Cities/Counties Cooperative (WACCO), established by 19 cities and 7 counties in Minnesota, started with sharing costly, but under-used equipment and then extended its functions to provide employee training and purchasing supplies (e.g., road salt, road-grader blades, striping paint). In southeastern Wisconsin, 65 communities, counties and school districts formed a group called VALUE or Volume Acquisition of Local Uniform Expenditures as a purchasing partnership and reported substantial annual savings. Many states are also adopting the cooperative approach to recycling. For example, in Wisconsin, the Mount Horeb Farmers Cooperative has joined with private partners to form Agri-Paper Recycling; it recycles newsprint into animal bedding. In New Hampshire, a nationally known cooperative recycling agency -- the New Hampshire Resource Recovery Association (NHRRA) -- has been providing recycling education, technical assistance, and marketing services to the state's municipalities and other members since 1983. Some public services that may be considered under the shared-services cooperative approach are police and fire protection, garbage disposal, recycling, water and sewer services, schooling for special needs students, and health care or health insurance for public employees.

North Dakota's population is about 640,000, while there are 363 cities, 53 counties, 243 school districts, 225 fire districts, 224 park districts, 59 soil conservation districts, 23 irrigation districts, and 1,357 townships (Omdahl, 1996). Declining population, compounded by declining state and federal assistance, makes it difficult for these entities to provide or maintain necessary

civic and related services, such as public safety, garbage disposal, and water and sewer services. Forming shared-services cooperatives by these government entities may be a feasible alternative. There are already some forms of cooperation among many communities in the state. The City of Hettinger in Adams County has contractual agreements with the county government and some nearby cities (e.g., Reeder) to share and provide such civic services as police protection and water and sewer services. More recently, the cities of Drake and Anamoose in McHenry County and the county government have formed a common economic development agency as a cooperative which will share and utilize resources from all three sources. In another instance, the City of Williston in Williams County provides its landfill facility to several nearby smaller towns, some of which are from other counties, including Alexander in McKenzie County and Crosby in Divide County, based on contractual agreements. The City of Jamestown and Stutsman County share a joint correctional facility and winter equipment (e.g., heavy earth moving equipment used for snow removal), and Minot and Ward County share a computer service facility and joint police, fire and emergency dispatch service. Private citizens and public officials in Enderlin in Ransom County started a recycling program with a state grant. This recycling service is freely provided to some nearby municipalities such as Sheldon, Alice, and Fingal. There may be potential application for such cooperative recycling services/facilities in other communities in the state. Recently the *Farm and Ranch Guide* (January 19, 1996) reported that legislators from both North Dakota and South Dakota are discussing the possibility of providing some state services (not identified) jointly to save money and improve efficiency.

A few civic service-related cooperatives already exist in North Dakota. All of these cooperatives are resident-member-owned and are involved in water and/or sewer services in rural areas. For example, the Manning Water Works Mutual Aid Corporation is a cooperative that pools money from its members (fewer than 25) for the water they use and then pays a private water supplier. Similarly, the Slope Estate Cooperative of Dickinson is a water cooperative operating since 1980 with one well and fewer than 15 members. In operation since 1975, the West River Water & Sewer District Cooperative of Minot is a civic service-related cooperative which provides rural water and sewer services to about 100 members spread across four subdivisions west of Minot.

The fact that some North Dakota communities are cooperating to save and share their available economic resources demonstrates the potential for further cooperation in the public service sector in other communities in the state. By cooperating, communities are likely to reduce their operating costs, save taxpayers' money, and provide necessary civic services for quality living, particularly in rural areas. Local community leaders and public officials may take the initiative to explore cooperation with nearby communities to provide or maintain these services in their communities/cities. Of course, shared-services cooperatives are no panacea for all problems facing rural North Dakota.

4.2.2 *Cooperation among non-profits and other similar organizations*

Many non-profit organizations in North Dakota provide such services as fire fighting, emergency medical care, social work, or community development. There are over 8000 non-profit organizations in North Dakota as of September 1995 (Secretary of State, North Dakota). Most of these organizations are independent while the rest are local chapters of national organizations, e.g., American Red Cross. It is likely that many of these 8000-plus non-profit organizations in a sparsely populated state like North Dakota are providing duplicate services, so consolidation and merger may be in the future of many of these organizations, particularly those that are independent and small. Some of these organizations may continue to remain independent and operate at a lower cost by forming shared-services cooperatives to purchase equipment and supplies, to train volunteers and coordinators, or for any other common activities. These organizations would combine resources to capture benefits a single business enterprise may not realize if the tasks were undertaken individually.

4.2.3 *Alternatives to shared-services cooperatives*

Although it may seem that there is potential application for shared-services cooperatives in many community resource and service areas, a more informal cooperation may be more appealing or feasible for many businesses or communities. This is because as formal business entities, shared-services cooperatives require all the necessary steps and procedures needed to establish and run a business. Moreover, effective cooperation requires a strong core of leadership, commonly shared goals among potential members, members' willingness to work together for mutual benefit, and support and participation of members. It may be more appropriate to start with networking, which, if successful, may lead to a shared-services cooperative.

The two most common alternatives to shared-services cooperatives are contractual agreements and networking (Crooks *et al.*, 1995). Unlike shared-services cooperatives, these alternatives are not likely to be regulated and may not be subject to corporate income tax. In many cases, such agreements extend to providing such civic services such as police and fire protection, street repair and maintenance, garbage disposal, joint economic development efforts, and other similar civic services. Hettinger city's agreements with the county government and several nearby towns to provide such services as police protection and garbage disposal are examples of such contractual agreements. The problem with a contractual agreement is its transient nature, i.e., when such contracts expire, there is no guarantee that the joint action will continue. Because contractual agreements may not require significant commitment of resources, participants may not share similar goals, and their efforts may vary widely. However, establishing contractual agreements among public entities or private businesses may be a first step toward the formation of shared-services cooperatives.

Another alternative to a shared-services cooperative is 'networking,' which is even less formal than a contractual agreement and is an ad hoc assembly of people or businesses of similar type. Public entities or businesses of similar type can form networks to discuss their common

problems and explore possible solutions. Such joint discussions may result in joint activities such as contractual agreements or shared-services cooperatives.

4.3 Availability and Market Potential of Non-agricultural Businesses

Availability and market potential analysis helps identifying the non-agricultural businesses that have potential for further growth in the state in the service, retail trade, wholesale trade, and FIRE sectors.

4.3.1 Service sector industries

The service sector was the largest employer in North Dakota in 1990 (35% of total employment), reflecting a pattern similar to the national average. According to the 1992 Economic Census, there were 4,221 service establishments in North Dakota which earned approximately \$1.6 billion in revenue. A list of 88 service categories available in North Dakota is presented in appendix Table A.2 which contains information on number of establishments, sales revenue, and location quotient and service density values for each service category in 1992. For comparison purposes, similar information at the national level is also presented in Table A.2.

Table 2 shows availability, self-sufficiency, and market potential rankings of North Dakota service industries. These rankings are based on the relevant estimates of Table A.2. To analyze availability, both service density and location quotient rankings are used in each category of business. As explained in the empirical framework, an availability ranking of 1 indicates the business that is least available in North Dakota given the data. Similarly, a self-sufficiency ranking of 1 implies the least self-sufficient industry/business in the state. Likewise, a market potential ranking of 1 indicates the business category that has the highest market potential.

Service density rankings of Table 2 show that the general medical and surgical hospitals was the least available service category in North Dakota in 1992, while it was the 3rd least available service at the national level. Some other services categories that are also less available in North Dakota are: libraries, offices/clinics of doctors of osteopathic; dance studios, schools, and halls; commercial sports; nursing and personal care facilities; public golf courses; disinfecting and pest control services; and telephone answering service -- all of which had lower service density than the rest of the service industries in North Dakota.

Due to lack of appropriate data, location quotient or the self-sufficiency index could not be computed for several service industries; these industries are marked 'NA' in Table 2. Those ranked 38 and higher are considered self-sufficient because their location quotient was 0.75 or higher. Self-sufficiency rankings show that the computer rent/lease and maintenance services was the least self-sufficient service category in North Dakota in 1992. Those who demanded this kind of service had to import such service from out-of-state sources because local/in-state

Table 2. Availability and Market Potential of Service Industries in North Dakota, 1992

SIC	Industry	Availability (i) (service density)		Rankings Self-sufficiency (ii) (location quotient)	Market potential (iii)
		ND	US		
8062	General medical and surgical hospitals	1	3	NA	NA
823	Libraries	2	1	NA	NA
803	Offices/clinics of doctors of osteopathic	3	43	NA	NA
7948	Racing, including track operation	4	11	NA	NA
791	Dance studios, schools, and halls	5	24	NA	NA
7383	News syndicates	6	2	NA	NA
794	Commercial sports (incl. pro sport clubs)	7	16	NA	NA
8052b	Nursing and personal care facilities	8	5	NA	NA
7992	Public golf courses	9	17	NA	2
7342	Disinfecting and pest control services	10	48	NA	NA
7389c	Telephone answering services	11	13	NA	17
8732	Commercial econ, socio, educ research	12	26	NA	NA
763	Watch, clock, and jewelry repair	13	8	7	19
8244	Business and secretarial schools	14	4	NA	NA
7353	Heavy construction equip rental and leasing	15	20	5	3
702	Rooming and boarding houses	16	6	37	32
824	Vocational schools (incl. data proc. schls)	17	23	NA	NA
792a	Bands, orchestras, actors, and other. ent. gps.	18	29	NA	NA
7334	Photocopying and duplicating services	19	25	9	5
7331	Direct mail advertising services	20	21	NA	NA
7389b	Interior designing	21	31	6	14
8731	Commercial physical/biological research	22	19	NA	NA
8043	Offices and clinics of podiatrists	23	40	16	16
7389a	Sign painting shops	24	9	61	60
792	Theatrical prod(ex motion pic, incl. 792a)	25	45	4	NA
833	Job training, vocational rehabilitation	26	10	19	24
8051	Skilled nursing care facilities	27	47	NA	NA
7352	Medical equipment rental and leasing	28	14	57	54
839	Social services, n.e.c.	29	7	66	29
725	Shoe repair shops and shoeshine parlor	30	12	62	58
703	Camps and recreational vehicle park	31	27	2	15
8713	Surveying services	32	42	18	23
7377	Computer rent/lease, maintenance, n.e.c.	33	53	1	1
808	Home health care services	34	41	24	22
7299a	Diet and weight reducing services	35	18	52	45
7514,5	Passenger car rental and leasing	36	28	21	13
8052	Intermediate care facilities	37	15	NA	NA
752	Automobile parking	38	46	17	11
7335	Commercial photography, art, and graphics	39	57	8	7
809	Misc health and allied services, n.e.c.	40	51	NA	NA
7338	Secretarial and court reporting services	41	33	NA	NA
764	Reupholstery and furniture repair	42	32	25	25
832	Individual and family social services	43	36	44	34
8734	Testing laboratories	44	22	36	37
836	Residential care	45	52	31	30

contd./

Table 2. continued.

SIC	Industry	Availability (i) (service density)		Rankings Self-sufficiency (ii) (location quotient)	Market potential (iii)
		ND	US		
7384	Photofinishing laboratories	46	38	58	62
736	Personnel supply services	47	71	3	4
7991	Physical fitness facilities	48	44	35	18
7997	Membership sports and recreation clubs	49	35	15	21
731	Advertising	50	62	10	6
807	Medical and dental laboratories	51	55	32	46
751	Automotive rent and lease, without drivers	52	49	20	20
732	Adjustment, collection, credit agencies	53	37	51	41
8049	Office/clinic of health practitioner	54	66	27	28
8712	Architectural services	55	61	26	33
7299b	Miscellaneous personal services, n.e.c.	56	56	29	36
783	Motion picture theaters	57	34	54	47
7359	Equipment rental and leasing, n.e.c.	58	60	30	40
784	Video tape rental	59	64	33	42
733	Mailing, copying, photography, steno. serv.	60	72	12	9
7291	Tax return preparation services	61	39	43	53
762	Electrical repair shops	62	63	40	38
754	Automotive services, except repair	63	67	42	39
793	Bowling centers	64	30	64	63
722	Photographic studios, portrait	65	50	38	56
737	Computer program, data process, other	66	79	11	8
8042	Offices and clinics of optometrists	67	59	63	64
8711	Engineering services	68	75	13	12
726	Funeral service and crematories	69	54	55	61
7011a	Hotels	70	58	49	31
7389d	Other business services	71	74	23	NA
7533	Other automotive repair shops	72	70	45	52
8041	Offices and clinics of chiropractor	73	69	53	56
874	Management and public relations services	74	81	14	10
7999	Amuse and rec serv, incl museums,n.e.c.	75	65	NA	NA
721	Laundry, cleaning, and garment services	76	78	39	44
7349	Building cleaning and maintenance services	77	77	NA	NA
738	Miscellaneous business services	78	82	22	27
835	Child day care services	79	73	50	43
769	Miscellaneous repair and related services	80	76	48	48
7011b	Motels, motor hotels, and tourist courts	81	68	65	65
7538	General automotive repair shops	82	80	41	50
872	Accounting, auditing, and bookkeeping	83	83	34	35
801	Offices and clinics of doctors of medicine	84	88	60	57
802	Offices and clinics of dentists	85	85	47	49
81	Legal services	86	87	28	26
753	Automotive repair shops	87	86	46	52
723	Beauty and barber shops	88	84	59	59

Note: (i) Availability ranking = 1 being the least available industry/business; (ii) Self-sufficiency ranking = 1 being the least self-sufficient industry/business. Those ranked 38 or higher are self-sufficient (i.e., $LQ > 0.75$); (iii) Market potential ranking = 1 implies the highest given current number of establishments. Those industries ranked higher than 37 achieved 70 % or more of their market potential; (iv) NA = information necessary to compute location quotient or marketing potential is not available.

business establishments were unable to satisfy local/in-state demand. Other services that were identified as lacking self-sufficiency are: camps and recreational vehicle parks; personal supply services such as employment agencies; theatrical production; heavy construction equipment rental and leasing services; interior designing; watch, clock, and jewelry repair services; commercial photography, art, and graphics services; photocopying and duplicating services; and advertising services.

Although a particular category of business may be more commonly available compared to others in the same sector, such business still may have market potential. For example, personnel supply services category is ranked 47th among 84 service industries in North Dakota in terms service density; however, self-sufficiency rankings show that this category is ranked 3rd, implying that the state is not self-sufficient in this kind of business. This finding is further substantiated by the estimated market potential ranking of this business category -- 4th, i.e., there is substantial potential for further growth in this category of business in North Dakota.

As in the case of self-sufficiency rankings, due to lack of data, market potential rankings could not be obtained for several business categories, and these were marked NA. For those business categories for which market potential (or other indices of availability or growth potential) could not be estimated, a potential entrepreneur may conduct more desegregated market research (e.g., city level) to study their respective business potential. Among the service industries or business categories for which market potential rankings were obtained, computer lease/rent and maintenance services tops the ranking, indicating it has the highest potential for further growth. Other business categories with higher market potentials are public golf courses; heavy construction equipment rental and leasing; personnel supply services; photocopying and duplicating services; advertising; commercial photography, art, and graphic services; computer programming and data processing services; mailing, copying, photography, and steno services; and management and public relations services. Those industries ranked 37 or higher achieved 70% or more of their market potential and are considered lacking market potential.

If a certain industry has been ranked higher in terms of both market potential and self-sufficiency indices, that industry indicates significant business potential and as such, entry of new enterprises may be considered. Of course, before making any final decision regarding the establishment of new ventures, a prospective entrepreneur should conduct a well defined and thorough feasibility study as a critical component of his/her business plan.

4.3.2 Tax-exempted services

North Dakota also has many service industries which are exempted from federal taxes. Some of these tax-exempted establishments also operate as non-profit organizations (attempts to verify this connection were unsuccessful), e.g., some hospitals. Tax-exempted service categories include nursing and personal care facilities, medical, surgical, and specialty hospitals, residential care services, individual and family social services, gyms, athletics clubs, membership sports and rec clubs, and vocational schools. In this analysis of the availability and market potential of tax-exempted businesses in North Dakota, the legal requirements to become a tax-exempted business and such other matters are not considered.

According to the 1992 Economic Census, there were 1,110 federally tax-exempted service

establishments in North Dakota which earned approximately \$1.3 billion in revenue and employed over 36 thousand people. A list of 25 tax-exempted service categories are presented in appendix Table A.4. Availability, self-sufficiency, and market potential rankings of these tax-exempted service industries are presented in Table 3 based on the relevant information in Table A.4.

In terms of service density, vocational schools was the least available tax-exempted service category in North Dakota. Rounding the top five least available tax-exempted service categories in the state are: band, orchestra, actors and other entertainment groups; specialty hospitals such as psychiatric hospitals; miscellaneous health and allied services such as kidney dialysis centers; and research, development and testing services. Self-sufficiency rankings show that those ranked 6 or higher are able to fulfill the local/in-state demand for their services. Those ranked as being not self-sufficient include research, development and testing services; general medical clinics; museums, art galleries, botanical and zoological galleries; theater production, bands, orchestra, entertainment groups; and legal aid societies and similar legal services.

Those ranked 6 or higher in terms of their market potential in Table 3 have achieved 70% or more of their expected revenue and thus, considered lacking potential for growth. Those tax-exempted service categories that have potential for further growth include research, development and testing services; general medical clinics; theater production, bands, orchestra, and other entertainment services; legal aid societies and similar legal agencies; and child day care services. Those who are interested in establishing his/her business as non-profit or tax-exempted entities may consider these above five categories of services for new business ventures.

Table 3. Availability and Market Potential of Tax-exempted Service Industries in North Dakota, 1992

SIC	Industry	Availability (I) (service density)		Rankings Self-sufficiency (ii) (location quotient)		Market potential (iii)
		ND	US			
824	Vocational schools	1	3	NA		NA
7929	Band, orch, actors, other entertain groups	2	4	NA		NA
8063,9	Speciality hospitals	3	2	7		7
809	Misc Health and allied services, n.e.c.	4	17	NA		NA
873	Research, development and testing services	5	13	1		1
8111	Legal aid societies/similar legal services	6	6	5		4
7999	Fairs	7	1	20		20
808	Home health care services	8	7	NA		NA
8011	General medical clinics	9	10	2		2
792	Theater prod (ex mot pic),bands, orch, entert. gps.	10	9	4		3
874	Mgmt/public relations serv, not facil supply	11	5	9		14
829	Schools and educational services, n.e.c.	12	12	NA		NA
84	Museums, art galleries, botan and zool. gal.	13	8	3		6
833	Job training/vocational rehabil. services	14	16	16		15
7032,4	Camps and membership lodging	15	11	17		17
835	Child day care services	16	22	6		5
7991,7	Gyms,athl clubs, member sport and rec clubs	17	18	10		9
8062	General medical and surgical hospitals	18	14	14		16
836	Residential care	19	20	13		12
839	Social services, n.e.c.	20	21	12		10
861	Business associations	21	19	11		11
805	Nursing and personal care facilities	22	15	19		19
8629	Other membership organizations	23	23	8		8
832	Individual and family social services	24	24	15		13
864	Civic, social, and fraternal associations	25	25	18		18

Note: (i) Availability ranking = 1 being the least available industry/business; (ii) Self-sufficiency ranking = 1 being the least self-sufficient industry/business. Those ranked 6 or higher are self-sufficient (i.e., LQ > 0.75); (iii) Market potential ranking = 1 implies the highest potential given current number of establishments. Those ranked higher than 6 achieved 70% or more of their market potential; (iv) NA = information necessary to computer location quotient or market potential is not available.

4.3.3 Retail trade industries

The retail trade sector was the second largest provider of employment in North Dakota in 1990 (19% of total employment). According to the 1992 Economic Census, there were 4,790 retail trade establishments in North Dakota with a combined sales worth approximately \$4.7 billion. A list of 48 available retail trades categories in North Dakota is presented in appendix Table A.6, while Table 4 shows the availability, self-sufficiency, and market potential indices for these categories.

Estimated service density indices show that tobacco stores and stands were the least available retail business in North Dakota, followed by art dealers; news dealers and newsstands; computer and software stores; automatic merchandising machine operator; pet shops; musical instrument stores; mobile home dealers; record and pre-recorded tape stores; and finally book stores, rounding up the ten least available retail businesses in North Dakota in 1992.

Self-sufficiency rankings of North Dakota retail businesses (Table 4) show that the automatic merchandising machine operators category was the least self-sufficient retail business category in the state. Among the 48 retail trade categories, the state is self-sufficient in those ranked 15 or higher. The following businesses are ranked among the top ten least self-sufficient businesses in North Dakota: news dealers and newsstands; computer and software stores; apparel and accessory stores; catalog and mail-order houses; family clothing stores; book stores; radio, TV, and electronics stores; used merchandise stores; and pet shops. The existing business establishments in these retail business categories were unable to fulfill the local/state demand for their respective service or merchandise. This also implies that to fulfill the local/state demand these services or merchandise were imported from out-of-state sources.

Those retail businesses that are ranked 12 or higher in terms of market potential rankings have achieved 70% or more of their expected total sales and thus, are considered lacking potential for further growth. Market potential rankings of retail businesses (Table 4) show that the computer and software stores has the highest market potential in North Dakota, followed by catalog and mail-order houses. It is likely that the ranking of the catalog and mail-order businesses could be either over- or under-estimated because this business caters to both out-of-state and in-state customers.

Among other retail businesses that are among the top ten categories with high market potential are: apparel and accessory stores; used merchandise stores; news dealers and newsstands; automatic merchandising machine operators; food stores (other than grocery stores, meat and fish markets, and retail bakeries); radio, TV, and electronics stores, family clothing stores, and pet shops.

4.3.4 Wholesale trade industries

Wholesale trade (SICs 50 and 51) includes establishments primarily engaged in selling merchandise to retailers, to industrial, commercial, institutional, farm, or professional business users, or to other wholesalers, or acting as agents or brokers in buying merchandise for or selling merchandise to such persons or companies. Wholesale trade sector provided 4.31% of total employment in North Dakota in 1990. According to the 1992 Economic Census, there were 2,086 wholesale trade establishments in North Dakota with a combined sales worth approximately \$7.6 billion. A list of 53 wholesale trade industries in North Dakota is presented in appendix Table A.8, while Table 5 shows the availability, self-sufficiency, and market potential indices of these business categories in the state.

Table 4. Availability and Market Potential of Retail Industries in North Dakota, 1992

SIC	Industry	Availability (i) (service density)		Rankings Self-sufficiency (ii) (location quotient)	Market potential (iii)
		ND	US		
5993	Tobacco stores and stands	1	1	NA	NA
5999b	Art dealers	2	5	NA	NA
5994	News dealers and newsstands	3	2	2	5
5734	Computer and software stores	4	6	3	1
5962	Automatic merchandising machine operator	5	7	1	6
5999a	Pet shops	6	8	10	10
5736	Musical instrument stores	7	4	43	45
527	Manufactured (mobile) home dealers	8	3	39	36
5735	Record and prerecorded tape stores	9	10	15	16
5942	Book stores	10	20	7	11
5961	Catalog and mail-order houses	11	9	5	2
564,9	Other apparel and accessory stores	12	23	4	3
5995	Optical goods store	13	22	19	17
542	Meat and fish markets	14	11	23	19
572	Household appliance stores	15	12	20	13
526	Retail nurseries, lawn & garden supply	16	13	14	38
543	Other food stores	17	26	11	7
5731	Radio, TV, and electronics stores	18	25	8	8
5391	Miscellaneous general merchandise store	19	17	42	33
5963	Direct selling establishments	20	21	30	34
5311	Department stores (incl. leased depts.)	21	15	NA	41
5315	Department stores (excl. leased depts.)	22	16	37	40
598	Fuel dealers	23	14	18	29
552	Used car dealers	24	27	13	15
533	Variety stores	25	19	28	21
5461	Retail bakeries	26	31	17	12
593	Used merchandise stores	27	30	9	4
561	Men's and boys' clothing & accessory stores	28	24	34	31
555	Miscellaneous automotive dealers	29	18	35	42
565	Family clothing stores	30	29	6	9
5944	Jewelry stores	31	34	21	24
5713	Home furnishings stores	32	37	12	22
5661	Shoe stores	33	39	16	18
5992	Florists	34	33	38	32
5531	Auto and home supply stores	35	40	25	30
5712	Furniture stores	36	36	32	28
525	Hardware stores	37	28	41	43
551	New and used car dealers	38	32	36	35
592	Liquor stores	39	35	44	44
521,3	Building materials and supply stores	40	38	33	37
5911	Drug and proprietary stores	41	41	21	23
5943	Other misc shopping goods stores	42	44	26	14
5621	Women's clothing and specialty stores	43	43	29	25
594	Miscellaneous shopping goods stores	44	46	31	26
5411	Grocery stores	45	47	27	27
5541	Gasoline service stations	46	45	40	39
5813	Drinking places	47	42	45	46
5812	Eating places	48	48	24	20

Note: (i) Availability ranking = 1 being the least available industry/business; (ii) Self-sufficiency ranking = 1 being the least self-sufficient industry/business. Those ranked 15 or higher are self-sufficient (i.e., LQ > 0.75); (iii) Market potential ranking = 1 implies highest market potential given current structure. Those ranked higher than 12 achieved 70% or more of their market potential; (iv) NA = information necessary to compute location quotient or market potential is not available.

Based on service density estimates, the poultry and poultry products wholesalers were the least available wholesale business category in North Dakota. Other business categories that comprise the top ten least available wholesale businesses in North Dakota are: fish and seafood; photographic equipment and supplies; coal and other mineral ore supplies; meats and meat products; transportation equipment & supplies (excluding motor vehicles); metals service centers and offices; packaged frozen food wholesale; home furnishing; and finally, paint, varnishes, and supplies wholesale.

Due to lack of data, both self-sufficiency and market potential indices could not be computed for several wholesale business categories. Those business groups ranked 13 or higher have achieved self-sufficiency. Among those wholesale business categories for which these two indices were computed, the following categories have lacked self-sufficiency, i.e., the existing establishments in these categories were unable to satisfy the local/state demand for their respective merchandise: transportation equipment & supplies (excluding motor vehicle); jewelry, watches, precious stones & metals; industrial supplies; toys and hobby goods and supplies; books, periodicals, and newspapers round up the top five categories.

Market potential ranking, which is based on the estimation of the percentage of actual sales achieved compared to expected sales in an industry group, is also incomplete due to lack of data. Among those for which such ranking is available (Table 5), jewelry, watches, precious stones & metals show the highest market potential ranking, followed by transportation equipment & supplies (excluding motor vehicles) wholesalers; toys and hobby goods and supplies; chemical and allied products wholesalers; and wholesalers of automobile and other motor vehicles. This implies that wholesale businesses dealing with these five categories of goods and services have potential for future growth in North Dakota. The self-sufficiency rankings of some of these industry groups further substantiates this conclusion. For example, the transportation equipment and supplies wholesale category is ranked first as the least self-sufficient wholesale business in the state.

4.3.5 Finance, insurance, and real estate (FIRE) industries

In 1990, slightly over 5% of the North Dakota work force was engaged in the FIRE industries which included such businesses as investment offices, mortgage bankers and brokers, savings institutions, credit unions, commercial banks, real estate operators, and insurance agents, brokers and services. FIRE services are essential for growth of both local and the state economy. The strength of such businesses may be considered as a measure of the financial activities in the state. Appendix Table A.10 shows a list of available FIRE industries in North Dakota in 1992. According to the 1992 Economic Census, there were 423 FIRE establishments in North Dakota with a combined revenue worth approximately \$1.02 billion. The availability, self-sufficiency, and market potential indices of FIRE industries in North Dakota are presented in Table 6.

Service density indices of FIRE industries show that (Table 6) the management investment business was the least available financial business in North Dakota. It was followed by insurance carriers that carry surety, pension, health, and welfare funds insurance; other depository institutions, i.e., central/federal depository institutions and foreign banks and branches; business credit institutions; mortgage bankers and brokers; accident and health insurance and medical service plans; miscellaneous investing; security and commodity exchanges and services; personal credit institutions; and federal and federally sponsored credit agencies comprise the top ten FIRE categories least available in the state.

Table 5. Availability and Market Potential of Wholesale Industries in North Dakota, 1992

SIC	Industry	Availability (I) (service density)		Rankings Self-sufficiency (ii) (location quotient)	Market potential (iii)
		ND	US		
5144	Poultry and poultry products	1	2	NA	NA
5146	Fish and seafoods	2	10	NA	NA
5043	Photographic equipment and supplies	3	3	NA	NA
5052	Coal and other minerals and ores	4	1	NA	NA
5147	Meats and meat products	5	16	NA	NA
5088	Transp. equip & supplies (exc. motor vehicles)	6	14	1	2
5051	Metals service centers and offices	7	39	NA	NA
5142	Packaged frozen food	8	12	NA	NA
5023	Home furnishings	9	36	NA	NA
5198	Paint, varnishes, and supplies	10	13	NA	NA
5094	Jewelry, watches, precious stones & metals	11	30	2	1
513	Apparel, piece goods, and notions	12	48	NA	NA
5193	Flowers, nursery stock, and florists' supply	13	20	NA	NA
5049	Professional equipment and supplies, n.e.c.	14	8	NA	NA
5021	Furniture	15	29	NA	NA
5046	Commercial equipment, n.e.c.	16	22	10	13
5145	Confectionery	17	6	NA	NA
5092	Toys and hobby goods and supplies	18	7	4	3
5048	Ophthalmic goods	19	5	20	16
5033	Roofing, siding, and insulation materials	20	9	NA	NA
512	Drugs, drug proprietaries and sundries	21	27	NA	NA
5091	Sporting and recreational goods and supplies	22	25	6	9
5194	Tobacco and tobacco products	23	4	25	21
5099	Durable goods, n.e.c.	24	38	NA	NA
5047	Medical, dental, and hospital equip. & suppl.	25	37	NA	NA
5192	Books, periodicals, and newspapers	26	18	5	6
5032	Brick, stone, and related construction materials	27	19	13	28
5141	Groceries, general-line	28	21	28	30
5039	Construction materials, n.e.c.	29	15	NA	NA
5031	Lumber, plywood, millwork, and wood panels	30	33	22	25
5199	Nondurable goods, n.e.c.	31	43	NA	NA
5082	Construction & mining(exc. petroleum) machinery	32	23	27	29
5015	Motor vehicles parts, used	33	28	19	20
5085	Industrial supplies	34	45	3	8
5143	Dairy products, except dried or canned	35	11	8	11
5014	Tires and tubes	36	17	29	27
5093	Scrap and waste materials	37	35	17	15
5148	Fresh fruits and vegetables	38	27	23	24
5087	Service establishment equipment and supplies	39	31	18	23
5044	Office equipment	40	34	14	12
518	Beer, wine, and distilled alcoholic beverages	41	24	21	22
5045	Computers&computer peripheral equipment	42	47	11	7
5012	Automobiles and other motor vehicles	43	32	26	5
516	Chemicals and allied products	44	42	12	4
511	Paper and paper products	45	49	15	14
507	Hardware, & plumbing & heating equipment	46	50	9	17
506	Electrical goods	47	53	7	10
5084	Industrial machinery and equipment	48	52	16	18
5013	Motor vehicle supplies and new parts	49	51	24	19
5191	Farm Supplies	50	46	30	31
5083	Farm and garden machinery and equipment	51	40	32	32
517	Petroleum and petroleum products	52	44	31	26
515	Farm-product raw materials	53	41	33	33

Note: (i) Availability ranking = 1 being the least available industry/business; (ii) Self-sufficiency ranking = 1 being the least self-sufficient industry/business. Those ranked 13 or higher are self-sufficient (LQ> 0.75); (iii) Market potential ranking = 1 implies highest market potential given current structure. Those ranked higher than 19 achieved 70% or more of their market potential; (iv) NA = information necessary to compute location quotient or market potential is not available.

Table 6. Availability and Market Potential of FIRE Industries in North Dakota, 1992

SIC	Industry	Availability (I) (service density)		Rankings Self-sufficiency (ii) (location quotient)	Market potential (iii)
		ND	US		
672	Mgmt. Investment offices	1	1	NA	NA
635	Other insurance carriers ^a	2	3	NA	NA
601,8,9	Other depository institutions ^b	3	6	NA	NA
615	Business credit institutions	4	5	1	3
616	Mortgage bankers and brokers	5	12	3	2
632	A&H insurance and medical service plans	6	4	NA	NA
679	Miscellaneous investing	7	7	NA	NA
623,8	Security and commodity exchanges and services	8	9	2	1
614	Personal credit institutions	9	13	5	9
611	Federal & federally-sponsored credit agencies	10	2	15	12
671	Holding office (e.g., bank holding companies)	11	8	4	5
631	Life insurance	12	10	7	8
603	Savings institutions	13	17	NA	NA
633	Fire, marine, and casualty insurance	14	14	NA	NA
621,2	Security/commodity brokers, dealers, floatatn.	15	15	6	4
6514	Other real estate operators and lessors	16	18	14	13
6512	Operators of nonresidential buildings	17	19	13	11
606	Credit unions	18	11	NA	NA
654,5	Other real estate ^c	19	16	9	6
6513	Operators of apartment buildings	20	20	10	10
653	Real estate agents and managers	21	22	8	7
602	Commercial banks	22	21	12	15
64	Insurance agents, brokers and services	23	23	11	14

Note: (i) Availability ranking = 1 being the least available industry/business; (ii) Self-sufficiency ranking = 1 being the least self-sufficient industry/business. Those ranked 9 or higher are self-sufficient (LQ > 0.75); (iii) Market potential ranking = 1 implies highest market potential given current structure. Those ranked higher than 11 achieved 70% or more of their market potential; (iv) NA = information necessary to compute location quotient or market potential is not available. (v) a= surety insurance, pension, health, and welfare fund insurance; b= central reserve depository institutions, foreign bank and branches; c = title abstract offices, land subdividers and developers.

Among the 23 FIRE industries listed in Table 6, self-sufficiency rankings show business credit institutions; security and commodity exchanges and services; mortgage bankers and brokers; holding offices, such as bank holding offices; personal credit institutions -- all of which are financial services, are the top five least-self sufficient FIRE services in North Dakota. Note that those ranked 9 or higher are considered self-sufficient. In 1992, these five type of services were imported from out-of-state sources to satisfy local/state demand. If legally permitted under the current anti-trust laws, existing businesses and/or potential entrepreneurs may consider forming new ones, perhaps as cooperatives, to provide such missing or inadequate services. Because none of the real estate categories showed up as lacking self-sufficiency in the analysis, it can be concluded that North Dakota is self-sufficient in real estate services.

Rankings of the top-five FIRE industries in terms of their market potential show that security and commodity exchanges and services have the highest market potential in the state followed by mortgage bankers and brokers; business credit institutions; security/commodity brokers and dealers; and holding offices. Those FIRE industries that were ranked 12 and above

are considered lacking market potential for further growth in the state. Some of the industries in this group include insurance agents, brokers, and services and real estate operators that deal in non-apartmental dwellings and residential mobile homes.

4.4 Shared-services Cooperatives among Private Businesses?

The concept and potential applications of shared-services cooperatives among public entities and among non-profit organizations in North Dakota was discussed in Section 4.2. The same approach may have potential application among private businesses in the state. Private businesses may form service cooperatives to purchase supplies and equipment, train employees, or other activities to share and reduce costs. In this case, private businesses combine resources to capture benefits a single business enterprise may not realize if the tasks were undertaken individually. Individual franchisees of such well-known national chains as KFC, Taco Bell, Dunkin' Donuts, Dairy Queen, and Burger King are saving money on their food and supplies, equipment, advertising, insurance, service, and financing through forming service/purchasing cooperatives. For example, the Louisville, Kentucky, based Food service Purchasing Cooperative was formed in 1978 to serve the thousands of KFC franchises. This purchasing cooperative saves each of its member stores at least \$1,000 per month (NCB, 1994). Purchasing type shared-services cooperatives are also formed by independent hardware stores (e.g., Ace Hardware), restaurants, independent pharmacies, and retail food outlets (e.g., Independent Grocers' Association or IGA).

On a smaller scale, some rural electric and telephone cooperatives, independent beauty salons (e.g., Beauty Co-op of Omaha, Nebraska), independent direct mailing contractors (e.g., Merchants Direct Mailer of Omaha, Nebraska), hospitals in various cities (e.g., Hospital Co-op Laundry of Denver, Colorado), and various other businesses are forming cooperatives to provide services to their members at a reduced cost. Although not a shared-services cooperative, the North Central Data Cooperative (NCDC) of Mandan, which develops computer software and hardware for electric and telephone utilities all across the United States, is a service oriented consumer-type cooperative (its clients are its members). Another form of purchasing cooperative is buying clubs. All of these shared-services cooperatives operate as wholesale businesses for their members. In addition, private businesses are also forming shared-services cooperatives to provide health care or health insurance to their employees, thereby reducing their operating costs.

There are no private sector shared-services cooperatives in North Dakota as of now. However, considering the population and income base (i.e., demand factors for goods and services) and the number of businesses (i.e., supply factor of goods and services) in, for example, the service sector, it seems that there is potential application for shared-services cooperatives among businesses. For instance, according to the 1992 *Census of Industries*, there are nearly 1500 eating and drinking places, including restaurants, cafeterias, and bars, in North Dakota. However, such services no longer exist in many rural communities due to low demand (due to declining population) and relatively high operating costs. To remain competitive and continue to provide their services in rural areas, the existing restaurants and bars in North Dakota may consider forming shared-services (purchasing) cooperatives to buy such items as supplies and equipment, insurance, and other services. Retail and service merchants, such as independent grocery stores, restaurants, or bars in a few adjacent communities may start with a less formal type of cooperation to have their supplies delivered together to reduce cost and perhaps eventually form a purchasing cooperative.

Another example for potential shared-services cooperative is in the banking sector in North Dakota. There are over 200 banking establishments in the state, which is relatively high given the potential customer base. As the competition for the businesses of limited customers grows, some members of the banking industry in the state may find that forming a shared-services cooperative to train employees, to purchase equipment and machinery, and to negotiate business deals could provide a competitive edge. Health care is another sector where there is potential application for private sector shared-services cooperatives in North Dakota. According to a recent study (Hamm *et al.*, 1993), on average, residents in North Dakota travel 34 miles to a hospital and back. They also reported that out of the 60 or so major medical centers, most are located in the major population centers of the state; that is, Minot, Bismarck, Fargo, and Grand Forks.

Hospitals and health care centers in both non-metro and metro areas may consider forming cooperative alliances to share costs of expensive equipment, form rural emergency health care services, purchase supplies, train their physicians or nurses, and purchase health care insurance for members' employees. *The Forum* reported that (March 4, 1996) a few hospitals in North Dakota and Montana have agreed to purchase certain computer services jointly and exercised their joint purchasing power to reduce costs. Some health care facilities in North Dakota can also follow the example of the Hospital Coop Laundry of Denver, Colorado, which launders member hospitals' linen.

V. CONCLUSIONS

The principal goal of this study was to explore the availability and market potential of various non-agricultural businesses in service, retail, wholesale or finance, insurance, and real estate sectors in North Dakota. In addition, an attempt was made to explore the potential for cooperation among communities, public entities, and private businesses. Declining population in most communities in North Dakota makes it difficult for most of their public and private organizations and businesses to provide or maintain services. Many rural communities in the state lack or are inadequate in such everyday necessities as police and fire safety, water and sewer services, garbage disposal, grocery and other retail stores, restaurants, and health services. Cooperatives can provide feasible solutions to some financial problems faced by both public entities and private businesses, for example, through shared-services cooperatives, which is a purchasing-type cooperative and allows member communities, organizations, or private businesses to share the high cost of supplies and services. The benefits of cooperation have been realized by many public and private sector entities throughout the United States, e.g., the Western Area Cities/Counties Cooperative (WACCO) of Minnesota and the KFC National Purchasing Cooperative are noted for reducing their members' operating cost substantially.

Considering the relatively higher number of public entities, non-profit organizations, and some private businesses in North Dakota given the state's small customer base (or population) in general, and in its rural communities in particular, the need for cooperation in both public and private sectors in the state is apparent. There are already a few service-oriented non-agricultural cooperatives in North Dakota, most of which are associated with water or sewer services in rural areas. In addition, although limited to a few communities, there is informal cooperation among public entities in providing various civic services in the state. North Dakota residents have shown significant interest in capturing the benefits of value-added agricultural cooperatives as evident from the recent surge in the formation of agricultural processing cooperatives for durum wheat, milk, and corn (*The Forum*, June 25, 1995). Given the high spirit of cooperation in North Dakota

and the potential benefits of cooperation among public entities or among private businesses, formation of non-agricultural cooperatives in the state may not be far away.

Analysis of market potential of non-agricultural businesses in retail, service, wholesale, and finance, insurance and real estate sectors have shown that there are a considerable number of such businesses in North Dakota with substantial potential for further growth. For example, in the service sector -- computer rent/lease and maintenance services or heavy construction equipment rental and leasing; in the retail sector -- computer and software stores or catalog and mail-order houses; in the wholesale sector -- jewelry, watches, precious stones and metals wholesalers or transportation equipment & supplies wholesalers; in the finance, insurance and real estate sector -- mortgage bankers and brokers or business credit institutions. These are some of the businesses in the non-agricultural sectors that may be targeted by potential entrepreneurs in North Dakota for opening new business ventures in the state. It is needless to say that detailed feasibility study must be a part of any entrepreneur's business plan.

Regarding the potential of the cooperative approach to provide or maintain non-agricultural goods and services in North Dakota, the four groups of potential cooperative entrepreneurs that were identified, vs. existing businesses searching for cost reduction, financially inadequate potential entrepreneurs, consumers who want their goods and services locally, and public entities or non-profit organizations which want to provide their services at a reduced cost, may target one or more of the business categories identified here as having business potential. Cooperation may also take the form of contractual agreements and/or networking which are non-formal cooperation and may be more suitable to some of these groups.

Those who are interested in cooperation or establishing formal cooperatives must identify the catalytic elements for forming such a cooperative, e.g., saving taxpayers' money or reducing operating costs of business. Moreover, forming cooperatives is a much more involved process than other alternatives, such as contractual agreements or networking which may be more appropriate for many communities and businesses. Those who are interested in details on the structure and organization of cooperatives should contact U.S. Department of Agriculture's Rural Business and Cooperative Development Services (RBCDS) in Washington, DC, at (202) 720-7558. Those looking for assistance on forming cooperative in North Dakota should contact the Cooperative Development Specialist, North Dakota Coordinating Council of Cooperatives at 1-800-234-0518, or the Business and Cooperative Development Specialist, Farm Service Agency at (701) 250-4438.

END NOTES

1. For those with a bent toward central place theory, the term “market potential” as defined here is similar to the term “sales potential” as defined in Staffer (152:1989). Regional economists use the term “market analysis” which includes “market potential” as defined here in addition to such geography-based concepts as market place hierarchy, and trade area capture, which measure the level of goods and services in an area and their relative degree of availability compared to other places.

There are two related concepts, namely sales potential and sales quota, which are commonly encountered in the literature. Sales potential is the share of a market potential expected by an individual company or firm, while sales quota is a goal assigned to a marketing unit or a salesperson for use in the management of a sales effort; it applies to a specific period and may be expressed in dollars or in physical units (U.S. Department of Commerce, 1979). Both of these concepts are ignored here because this study is not focused on individual firm or company. Moreover, for a state level study as this, it is prohibitively expensive and perhaps impossible to obtain firm level data, which is necessary to estimate sales potential or sales goal, from thousands of business establishments.

2. In addition to per capita sales, sales index for goods and services can also expressed in terms of revenue per household and average revenue per establishment or average sales. Revenue per household is defined as $Revenue\ per\ household = Total\ revenue_x / total\ number\ of\ households$, i.e., it is the dollar amount spent by each household on the business category x in a market. This is another demand related index of sales. A high revenue per establishment (i.e., high average sales) indicates relatively higher demand for the relevant product or service given the number of establishments in that product or service category. A sustained high average sales is likely to attract potential entrepreneurs into that business.

The other sales index, average sales in business x , is defined as $Revenue\ per\ establishment_x = Total\ sales_x / Total\ number\ of\ establishments_x$. The drawback with this concept is that it assumes uniformity in terms of size, i.e., sales volume, number of employees, and floor space among existing establishments within the business category x . Although such assumption may not compromise an aggregate level study such as this one, a careful interpretation of results is nonetheless warranted.

3. A small business is defined as those firms with fewer than 500 employees. If such firms constitute at least 60% of employment in a sector, then such sector is considered small-business-dominated sector (SBA, 1995).

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APPENDIX TABLES

Table A.1. Distribution of Cooperatives by County, North Dakota, September 1995

County	Number of Cooperatives	County	Number of Cooperatives
Adams	4	Lean	12
Barnes	5	Mercer	9
Benson	5	Morton	21
Billings	1	Mountrail	9
Bottineau	10	Nelson	8
Bowman	4	Oliver	2
Burke	2	Pembina	9
Burleigh	17	Pierce	6
Cass	23	Ramsey	11
Cavalier	6	Ransom	6
Dickey	7	Renville	2
Divide	5	Richland	9
Dunn	4	Rolette	4
Eddy	5	Sargent	4
Emmons	7	Sheridan	3
Foster	6	Sioux	1
Golden Valley	3	Slope	1
Grand Forks	30	Stark	9
Grant	3	Steele	8
Griggs	7	Stutsman	14
Hettinger	5	Towner	7
Kidder	9	Traill	16
La Moure	13	Walsh	31
Logan	7	Ward	16
McHenry	6	Wells	8
McIntosh	0	Williams	16
McKenzie	6	State Total	442

Note: As of September 1995, there are 447 cooperatives incorporated under North Dakota laws of which five cooperatives have principal addresses outside North Dakota. Data source: Corporate Division, Office of the Secretary of State, Bismarck, ND.

Table A.2. Service Industries in North Dakota, 1992

SIC	Industry	Number of establishments *		Revenue *		Location Quotient	Average pop. served (persons)		Service density (est. per township)	
		ND	US	ND	US		ND	US	ND	US
7011a	Hotels	69	16,665	64,508	55,455,152	0.8570	9,258	14,996	0.04	0.16
7011b	Motels, motor hotels, and tourist courts	160	25,019	59,712	11,737,654	2.6191	3,993	9,989	0.08	0.24
702	Rooming and boarding houses	4	1,620	344	294,595	0.7441	159,700	154,264	N	0.02
703	Camps and recreational vehicle parks	12	5,315	1,071	1,716,526	0.1494	53,233	47,019	0.01	0.05
721	Laundry, cleaning, and garment services	119	55,760	29,635	17,140,354	0.7584	5,368	4,482	0.06	0.54
722	Photographic studios, portrait	52	11,381	8,153	3,191,132	0.7513	12,285	21,958	0.03	0.11
723,4	Beauty and barber shops	369	87,670	33,270	10,347,035	1.4025	1,731	2,851	0.19	0.85
725	Shoe repair shops and shoeshine parlor	10	2,702	857	275,777	1.6398	63,880	92,490	0.01	0.03
726	Funeral service and crematories	68	15,647	23,208	7,145,138	1.0688	9,394	15,972	0.04	0.15
7291	Tax return preparation services	44	7,924	3,059	1,295,405	0.7922	14,518	31,538	0.02	0.08
7299	Miscellaneous personal services, n.e.c. ^a	35	16,017	5,370	3,885,006	0.6105	18,251	15,603	0.02	0.15
7299a	Diet and weight reducing services	16	3,795	2,880	1,512,047	0.9100	39,925	65,852	0.01	0.04
731	Advertising agencies & services (all types)	28	19,023	8,096	19,455,616	0.3139	22,814	13,137	0.01	0.18
732	Adjustment, collection, credit agencies	31	7,472	9,944	6,151,119	0.8752	20,606	33,446	0.02	0.07
733	Mailing, copying, photography, steno. serv.	43	32,086	9,005	18,338,852	0.3226	14,856	7,789	0.02	0.31
7331	Direct mail advertising services	5	3,878	0	6,433,598	0.0000	127,760	64,442	N	0.04
7334	Photocopying and duplicating services	5	4,949	1,392	3,464,252	0.2448	127,760	50,497	N	0.05
7335	Commercial photography, art, and graphics	16	16,513	2,910	6,492,969	0.2344	39,925	15,134	0.01	0.16
7338	Secretarial and court reporting services	17	6,746	0	1,948,033	0.0000	37,576	37,045	0.01	0.07
7342	Disinfecting and pest control services	3	10,300	0	3,736,447	0.0000	212,933	24,263	N	0.10
7349	Building cleaning and maintenance services	129	47,349	0	15,266,279	0.0000	4,952	5,278	0.07	0.46
7352	Medical equipment rental and leasing	9	3,276	7,357	3,109,843	1.1940	70,978	76,284	N	0.03
7353	Heavy construction equip rental and leasing	4	3,853	1,298	3,879,374	0.2159	159,700	64,861	N	0.04
7359	Equipment rental and leasing, n.e.c	41	17,687	23,842	14,789,273	0.6312	15,580	14,129	0.02	0.17
736	Personnel supply services (emp. agen., etc.)	26	31,166	14,997	38,163,370	0.1523	24,569	8,019	0.01	0.30
737	Computer program, data process, other	57	59,052	48,370	101,073,456	0.3168	11,207	4,232	0.03	0.57
7377	Computer rent/lease, maintenance, n.e.c. ^b	14	14,617	3,496	15,241,713	0.1105	45,629	17,097	0.01	0.14
738	Miscellaneous business services ^f	134	75,287	48,359	50,928,555	0.4089	4,767	3,319	0.07	0.73
7383	News syndicate	2	598	0	1,020,825	0.0000	319,400	417,906	N	0.01
7384	Photofinishing laboratories	21	7,768	16,770	4,414,559	1.3143	30,419	32,171	0.01	0.07
7389a	Sign painting shops	7	2,562	1,693	523,726	1.5811	91,257	97,544	N	0.02

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Table A.2. continued.

SIC	Industry	Number of establishments		Revenue ('000 \$)		Location Quotient	Average pop. served (persons)		Service density (est. per township)	
		ND	US	ND	US		ND	US	ND	US
7389b	Interior designing	6	6,202	1,395	2,332,065	0.2177	106,467	40,295	N	0.06
7389c	Telephone answering services	3	3,191	0	1,043,064	0.0000	212,933	73,817	N	0.03
7389d	Other business services ^d	71	40,420	21,365	28,987,046	0.4356	8,997	6,183	0.04	0.39
751	Automotive rent and lease, without drivers	29	10,566	16,503	20,573,666	0.4020	22,028	23,652	0.02	0.10
7514.5	Passenger car rental and leasing	16	5,813	7,455	12,834,170	0.4039	39,925	42,991	0.01	0.06
752	Automobile parking	16	10,171	2,023	3,666,010	0.3705	39,925	24,571	0.01	0.10
753	Automotive repair shops	360	128,738	85,690	39,745,984	0.8243	1,774	1,941	0.19	1.24
7538	General automotive repair shops	161	64,822	35,921	17,772,602	0.7774	3,968	3,855	0.08	0.63
7533	Other automotive repair shops ^e	73	28,873	20,765	9,710,896	0.8204	8,751	8,655	0.04	0.28
754	Automotive services, except repair ^f	49	22,495	9,626	6,046,909	0.7844	13,037	11,109	0.03	0.22
762	Electrical repair shops ^g	47	21,199	16,850	10,667,383	0.7638	13,591	11,789	0.02	0.20
763	Watch, clock, and jewelry repair	3	1,662	215	274,650	0.2186	212,933	150,366	N	0.02
764	Reupholstery and furniture repair	18	6,731	887	980,357	0.5289	35,489	37,128	0.01	0.06
769	Miscellaneous repair and related services ^h	159	41,984	37,377	18,809,437	0.8403	4,018	5,952	0.08	0.40
783	Motion picture theaters (includes drive-ins)	36	6,892	11,366	5,816,526	1.0400	17,744	36,261	0.02	0.07
784	Video tape rental	43	21,998	8,578	5,075,315	0.6786	14,856	11,360	0.02	0.21
792	Theatrical prod(ex motion pic, incl. 792a)	7	10,086	572	8,625,489	0.1575	91,257	24,778	N	0.10
792a	Bands, orchestras, actors & other. ent. gps.	5	5,831	0	4,191,788	0.0000	127,760	42,859	P	P
793	Bowling centers	51	6,093	11,701	2,845,043	2.1296	12,525	41,016	0.03	0.06
794	Commercial sports (incl. pro sport clubs)	3	3,751	0	7,594,206	0.0000	212,933	66,624	N	0.04
7948	Racing, including track operation	2	2,666	0	4,097,999	0.0000	319,400	93,739	N	0.03
791	Dance studios, schools, and halls	2	4,839	0	594,778	0.0000	319,400	51,645	N	0.05
7991	Physical fitness facilities	26	9,216	2,842	3,823,566	0.6949	24,569	27,117	0.01	0.09
7992	Public golf courses	3	3,780	555	2,338,748	0.0000	212,933	66,113	N	0.04
7997	Membership sports and recreation clubs	27	7,275	4,113	5,018,717	0.3367	23,659	34,352	0.01	0.07
7999	Amuse and rec serv, incl ^{museums, n.e.c.i}	106	22,192	0	10,621,913	0.0000	6,026	11,261	0.06	0.21
801	Offices and clinics of doctors of medicine	243	197,701	422,058	141,429,109	1.4083	2,629	1,264	0.13	1.91
802	Offices and clinics of dentists	250	108,804	70,632	35,522,953	0.8363	2,555	2,297	0.13	1.05
803	Offices/clinics of docs of osteopathics	2	8,708	0	3,638,144	0.0000	319,400	28,699	N	0.08
8041	Offices and clinics of chiropractors	90	27,329	14,992	5,917,909	1.0169	7,098	9,144	0.05	0.26

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Table A.2. continued.

SIC	Industry	Number of establishments		Revenue ('000 \$)		Location Quotient	Average pop. served (persons)		Service density (est. per township)	
		ND	US	ND	US		ND	US	ND	US
8042	Offices and clinics of optometrists	64	17,135	21,635	4,939,521	1.8187	9,981	14,585	0.03	0.17
8043	Offices and clinics of podiatrists	7	7,948	1,382	1,920,076	0.3686	91,257	31,443	N	0.08
8049	Office/clinic of health practitioner	31	22,260	6,543	6,148,059	0.5753	20,606	11,227	0.02	0.21
8051	Skilled nursing care facilities	9	10,242	0	28,797,807	0.0000	70,978	24,400	N	0.10
8052a	Intermediate care facilities	16	3,375	0	4,207,093	0.0000	39,925	74,047	0.01	0.03
8052b	Nursing and personal care facilities	3	1,337	0	984,707	0.0000	212,933	186,917	N	0.01
8062	General medical and surgical hospitals	1	704	0	24,162,290	0.0000	638,800	354,983	N	0.01
807	Medical and dental laboratories	28	15,961	27,795	14,459,800	0.6508	22,814	15,657	0.01	0.15
808	Home health care services	15	8,045	8,612	10,413,844	0.4482	42,587	31,064	0.01	0.08
809	Misc health and allied services, n.e.c. ¹	16	11,457	0	9,604,620	0.0000	39,925	21,813	0.01	0.11
81	Legal services	335	151,737	91,586	101,114,199	0.5760	1,907	1,647	0.17	1.46
823	Libraries (part of educational services)	1	232	0	30,141	0.0000	638,800	1077,190	N	N
824	Vocational schools (incl. data proc. schls)	5	4,615	0	3,892,230	0.0000	127,760	54,151	N	0.04
8244	Business and secretarial schools	4	863	0	768,950	0.0000	159,700	289,581	N	0.01
835	Child day care services	146	35,327	9,012	5,269,980	0.8681	4,375	7,074	0.08	0.34
832	Individual and family social services	18	7,373	2,091	1,694,141	0.7924	35,489	33,895	0.01	0.07
833	Job training, vocational rehabilitation	8	2,643	1,228	1,464,645	0.3971	79,850	94,555	N	0.03
836	Residential care	21	12,121	4,900	4,358,095	0.6482	30,419	20,618	0.01	0.12
839	Social services, n.e.c.	10	1,659	602	562,304	3.7100	63,880	150,638	0.01	0.02
8711	Engineering services	65	41,834	36,708	65,245,236	0.3327	9,828	5,974	0.03	0.40
8712	Architectural services	34	17,875	13,179	11,244,379	0.5296	18,788	13,981	0.02	0.17
8713	Surveying services	12	8,418	1,908	2,280,177	0.3968	53,233	29,687	0.01	0.08
872	Accounting, auditing, and bookkeeping	191	79,097	46,579	34,037,898	0.6851	3,345	3,160	0.10	0.76
8731	Commercial physical/biological research	7	3,826	0	11,788,343	0.0000	91,257	65,318	N	0.04
8732	Commercial econ, socio, educ research	3	5,165	0	6,138,318	0.0000	212,933	48,385	N	0.05
8734	Testing laboratories	20	4,540	6,695	4,763,614	0.7337	31,940	55,046	0.01	0.04
874	Management and public relations services	92	72,130	30,880	57,320,624	0.3339	6,943	3,465	0.05	0.70

Note: (i) a=includes SIC 7299a; b= includes computer rental and leasing, maintenance and repair, and computer related services; c=includes detective agencies and protection services, armored car services, and security system services; d= includes following services: packaging and labeling, water softening and conditioning, trading stamp, convention and trade show, and private mail carrier; e= includes exhaust body repair, tire retreading and repair, automotive glass replacement, transmission repair, radiator repair, brake, front end repair and wheel alignment, carburetor repair, automotive electrical repair shops; f=includes carwashes, lubrication shops, towing, etc.; g= includes radio and TV repair, refrigeration and AC repair, and electrical/electronic repair shops; h= includes welding repair, armature rewinding, farm machinery & equipment repair, lawnmower/other small engine repair, sewer and septic tank cleaning service, and other related services; i= includes museums, art galleries, botan/zoological gardens, roller skating rinks, ice skating rinks; j= includes kidney dialysis centers and specialty outpatient facilities; (ii) N=negligible; P= part of another category; (iii) *=data from 1992 *Economic Census CD ROM*, Bureau of Census, U.S. Dept of Commerce.

Table A.3. Selected Ratio for Service Industries in North Dakota, 1992

SIC	Industry	Revenue Per capita ('000 \$)		Revenue per household ('000 \$)		Revenue per estab. ('000 \$)	
		ND	US	ND	US	ND	US
7011a	Hotels	0.101	0.222	0.268	0.594	935	3,328
7011b	Motels, motor hotels, and tourist courts	0.093	0.047	0.248	0.126	373	469
702	Rooming and boarding houses	0.001	0.001	0.001	0.003	86	182
703	Camps and recreational vehicle park	0.002	0.007	0.004	0.018	89	323
721	Laundry, cleaning, and garment services	0.046	0.069	0.123	0.184	249	307
722	Photographic studios, portrait	0.013	0.013	0.034	0.034	157	280
723,4	Beauty and barber shops	0.052	0.041	0.138	0.111	90	118
725	Shoe repair shops and shoeshine parlor	0.001	0.001	0.004	0.003	86	102
726	Funeral service and crematories	0.036	0.029	0.096	0.077	341	457
7291	Tax return preparation services	0.005	0.005	0.013	0.014	70	163
7299	Miscellaneous personal services, n.e.c.	0.008	0.016	0.022	0.042	153	243
7299a	Diet and weight reducing services	0.005	0.006	0.012	0.016	180	398
731	Advertising	0.013	0.078	0.034	0.208	289	1,023
732	Adjustment, collection, credit agencies	0.016	0.025	0.041	0.066	321	823
733	Mailing, copying, photography, steno. serv.	0.014	0.073	0.037	0.196	209	572
7331	Direct mail advertising services	0.000	0.026	0.000	0.069	0	1,659
7334	Photocopying and duplicating services	0.002	0.014	0.006	0.037	278	700
7335	Commercial photography, art, and graphics	0.005	0.026	0.012	0.070	182	393
7338	Secretarial and court reporting services	0.000	0.008	0.000	0.021	0	289
7342	Disinfecting and pest control services	0.000	0.015	0.000	0.040	0	363
7349	Building cleaning and maintenance services	0.000	0.061	0.000	0.164	0	322
7352	Medical equipment rental and leasing	0.012	0.012	0.031	0.033	817	949
7353	Heavy construction equip rental and leasing	0.002	0.016	0.005	0.042	325	1,007
7359	Equipment rental and leasing, n.e.c	0.037	0.059	0.099	0.158	582	836
736	Personnel supply services (emp. agen., etc.)	0.023	0.153	0.062	0.409	577	1,225
737	Computer program, data process, other	0.076	0.404	0.201	1.083	849	1,712
7377	Computer rent/lease, maintence, n.e.c.	0.005	0.061	0.015	0.163	250	1,043
738	Miscellaneous business services	0.076	0.204	0.201	0.546	361	676
7383	News syndicates	0.000	0.004	0.000	0.011	0	1,707
7384	Photofinishing laboratories	0.026	0.018	0.070	0.047	799	568
7389a	Sign painting shops	0.003	0.002	0.007	0.006	242	204
7389b	Interior designing	0.002	0.009	0.006	0.025	233	376
7389c	Telephone answering services	0.000	0.004	0.000	0.011	0	327
7389d	Other business services	0.033	0.116	0.089	0.311	301	717
751	Automotive rent and lease, without drivers	0.026	0.082	0.068	0.220	569	1,947
7514,5	Passenger car rental and leasing	0.012	0.051	0.031	0.137	466	2,208
752	Automobile parking	0.003	0.015	0.008	0.039	126	360
753	Automotive repair shops	0.134	0.159	0.356	0.426	238	309
7538	General automotive repair shops	0.056	0.071	0.149	0.190	223	274
7533	Other automotive repair shops	0.033	0.039	0.086	0.104	284	336
754	Automotive services, except repair	0.015	0.024	0.040	0.065	196	269
762	Electrical repair shops	0.026	0.043	0.070	0.114	359	503
763	Watch, clock, and jewelry repair	0.000	0.001	0.001	0.003	72	165
764	Reupholstery and furniture repair	0.001	0.004	0.004	0.011	49	146
769	Miscellaneous repair and related services	0.059	0.075	0.155	0.202	235	448
783	Motion picture theaters	0.018	0.023	0.047	0.062	316	844
784	Video tape rental	0.013	0.020	0.036	0.054	199	231
792	Theatrical prod(ex motion pic, incl. 792a)	0.001	0.035	0.002	0.092	82	855

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Table A.3. continued.

SIC	Industry	Revenue per capita ('000 \$)		Revenue per household ('000 \$)		Revenue per estab. ('000 \$)	
		ND	US	ND	US	ND	US
792a	Bands, orchestras, actors & other. ent. gps.	0.000	0.017	0.000	0.045	0	719
793	Bowling centers	0.018	0.011	0.049	0.030	229	467
794	Commercial sports (incl. pro sport clubs)	0.000	0.030	0.000	0.081	0	2,025
7948	Racing, including track operation	0.000	0.016	0.000	0.044	0	1,537
791	Dance studios, schools, and halls	0.000	0.002	0.000	0.006	0	123
7991	Physical fitness facilities	0.004	0.015	0.012	0.041	109	415
7992	Public golf courses	0.001	0.009	0.002	0.025	185	619
7997	Membership sports and recreation clubs	0.006	0.020	0.017	0.054	152	690
7999	Amuse and rec serv, incl museums,n.e.c.	0.000	0.043	0.000	0.114	0	479
801	Offices and clinics of doctors of medicine	0.661	0.566	1.751	1.515	1,737	715
802	Offices and clinics of dentists	0.111	0.142	0.293	0.381	283	326
803	Offices/clinics of doctors of osteopathic	0.000	0.015	0.000	0.039	0	418
8041	Offices and clinics of chiropractors	0.023	0.024	0.062	0.063	167	217
8042	Offices and clinics of optometrists	0.034	0.020	0.090	0.053	338	288
8043	Offices and clinics of podiatrists	0.002	0.008	0.006	0.021	197	242
8049	Office/clinic of health practitioner	0.010	0.025	0.027	0.066	211	276
8051	Skilled nursing care facilities	0.000	0.115	0.000	0.309	0	2,812
8052a	Intermediate care facilities	0.000	0.017	0.000	0.045	0	1,247
8052b	Nursing and personal care facilities	0.000	0.004	0.000	0.011	0	737
8062	General medical and surgical hospitals	0.000	0.097	0.000	0.259	0	34,321
807	Medical and dental laboratories	0.044	0.058	0.115	0.155	993	906
808	Home health care services	0.013	0.042	0.036	0.112	574	1,294
809	Misc health and allied services, n.e.c.	0.000	0.038	0.000	0.103	0	838
81	Legal services	0.143	0.405	0.380	1.083	273	666
823	Libraries (part if educational services)	0.000	0.000	0.000	0.000	0	130
824	Vocational schools (incl. data proc. schls)	0.000	0.016	0.000	0.042	0	843
8244	Business and secretarial schools	0.000	0.003	0.000	0.008	0	891
835	Child day care services	0.014	0.021	0.037	0.056	62	149
832	Individual and family social services	0.003	0.007	0.009	0.018	116	230
833	Job training, vocational rehabilitation	0.002	0.006	0.005	0.016	154	554
836	Residential care	0.008	0.017	0.020	0.047	233	360
839	Social services, n.e.c.	0.001	0.002	0.002	0.006	60	339
8711	Engineering services	0.057	0.261	0.152	0.699	565	1,560
8712	Architectural services	0.021	0.045	0.055	0.120	388	629
8713	Surveying services	0.003	0.009	0.008	0.024	159	271
872	Accounting, auditing, and bookkeeping	0.073	0.136	0.193	0.365	244	430
8731	Commercial physical/biological research	0.000	0.047	0.000	0.126	0	3,081
8732	Commercial econ, socio, educ research	0.000	0.025	0.000	0.066	0	1,188
8734	Testing laboratories	0.010	0.019	0.028	0.051	335	1,049
874	Management and public relations services	0.048	0.229	0.128	0.614	336	795

Table A.4. Tax-exempted Service Industries in North Dakota, 1992^a

SIC	Industry	Number of establishments *		Revenue *		Location Quotient	Average pop. served (persons)		Service density (est. per township)	
		ND	US	ND	US		ND	US	ND	US
7032,4	Camps and membership lodging	30	3,198	2,725	807,399	2.1882	21,293	78,145	0.02	0.03
792	Theater prod(ex mot pic),bands, orch, entert. gp.	10	3,089	1,905	2,819,694	0.5407	63,880	80,903	0.01	0.03
7929	Band, orch, actors, other entertain groups	2	1,420	0	1,522,885	0.0000	3,19,400	1,75,992	N	0.01
7991,7	Gyms,athl clubs, member sport and rec clubs	51	7,635	10,738	5,754,868	1.1077	12,525	32,732	0.03	0.07
7999	Fairs	8	633	5,165	417,508	8.6906	79,850	3,94,799	N	0.01
84	Museums, art galleries, botan. and zoological gal.	22	3,078	4,778	3,198,543	0.3447	29,036	81,192	0.01	0.03
8011	General medical clinics	9	3,187	5,045	16,548,253	0.2181	70,978	78,415	N	0.03
805	Nursing and personal care facilities	99	5,925	165,980	15,220,487	5.8111	6,453	42,179	0.05	0.06
8062	General medical and surgical hospitals	52	4,920	800,852	254,391,214	1.4846	12,285	50,794	0.03	0.05
8063,9	Specialty hospitals ^b	4	797	42,232	25,344,022	0.9475	1,59,700	3,13,561	N	0.01
808	Home health care services	8	2,215	0	5,713,903	0.0000	79,850	1,12,825	N	0.02
809	Misc Health and allied services, n.e.c. ^c	4	6,492	0	7,122,298	0.0000	1,59,700	38,495	N	0.06
8111	Legal aid societies/similar legal services	7	1,725	1,320	1,160,828	0.6144	91,257	1,44,874	N	0.02
824	Vocational schools ^d	2	1,052	0	548,601	0.0000	3,19,400	2,37,555	N	0.01
829	Schools and educational services, n.e.c.	12	3,659	0	1,897,224	0.0000	53,233	68,300	0.01	0.04
835	Child day care services	36	15,970	5,138	3,691,637	0.9161	17,744	15,649	0.02	0.15
832	Individual and family social services	137	28,859	47,500	16,045,852	2.0713	4,663	8,660	0.07	0.28
833	Job training/vocational rehabil. services	22	6,118	16,996	5,641,897	2.1263	29,036	40,848	0.01	0.06
836	Residential care	59	15,022	30,040	10,614,914	1.4453	10,827	16,636	0.03	0.14
839	Social services, n.e.c.	81	15,757	33,105	17,677,636	1.3824	7,886	15,860	0.04	0.15
861	Business associations	83	14,337	24,911	11,067,869	1.2695	7,696	17,431	0.04	0.14
864	Civic, social, and fraternal associations	257	41,789	61,578	13,176,090	3.2895	2,486	5,980	0.13	0.40
862,9	Other membership organizations	100	16,260	21,607	12,011,953	1.0604	6,388	15,369	0.05	0.16
873	Research, development and testing services ^e	6	3,813	1,872	12,535,075	0.1220	1,06,467	65,541	N	0.04
874	Mgmt/public relations serv, not facil. supply	11	1,694	6,729	2,246,890	1.0620	58,073	1,47,525	0.01	0.02

Note: (i) a= may include non-profit organizations; b= includes psychiatric hospitals; c= includes kidney dialysis centers and specialty outpatient facilities, n.e.c.; d= includes data processing schools and business and secretarial schools; e= not facilities; (ii) N=negligible; (iii) * = data from 1992 *Economic Census CD ROM*, Bureau of Census, U.S. Dept of Commerce.

Table A.5. Selected Ratio for Tax-exempted Service Industries in North Dakota, 1992

SIC	Industry	Revenue per capita ('000 \$)		Revenue per household ('000 \$)		Revenue per estab. ('000 \$)	
		ND	US	ND	US	ND	US
7032,4	Camps and membership lodging	0.004	0.003	0.011	0.009	91	252
792	Theater prod (ex mot pic),bands, orch, ent. gp.	0.003	0.011	0.008	0.030	191	913
7929	Band, orch, actors, other entertain groups	0.000	0.006	0.000	0.016	0	1,072
7991,7	Gyms,athl clubs, member sport and rec clubs	0.017	0.023	0.045	0.062	211	754
7999	Fairs	0.008	0.002	0.021	0.004	646	660
84	Museums, art galleries, botan and zoo. gal.	0.007	0.013	0.020	0.034	217	1,039
8011	General medical clinics	0.008	0.066	0.021	0.177	561	5,192
805	Nursing and personal care facilities	0.260	0.061	0.689	0.163	1,677	2,569
8062	General medical and surgical hospitals	1.254	1.018	3.323	2.725	15,401	51,706
8063,9	Speciality hospitals	0.066	0.101	0.175	0.272	10,558	31,799
808	Home health care services	0.000	0.023	0.000	0.061	0	2,580
809	Misc Health and allied services, n.e.c.	0.000	0.028	0.000	0.076	0	1,097
8111	Legal aid societies/similar legal services	0.002	0.005	0.005	0.012	189	673
824	Vocational schools	0.000	0.002	0.000	0.006	0	521
829	Schools and educational services, n.e.c.	0.000	0.008	0.000	0.020	0	519
835	Child day care services	0.008	0.015	0.021	0.040	143	231
832	Individual and family social services	0.074	0.064	0.197	0.172	347	556
833	Job training/vocational rehabil services	0.027	0.023	0.071	0.060	773	922
836	Residential care	0.047	0.042	0.125	0.114	509	707
839	Social services, n.e.c.	0.052	0.071	0.137	0.189	409	1,122
861	Business associations	0.039	0.044	0.103	0.119	300	772
864	Civic, social, and fraternal associations	0.096	0.053	0.256	0.141	240	315
8629	Other membership organizations	0.034	0.048	0.090	0.129	216	739
873	Research, development and testing services	0.003	0.050	0.008	0.134	312	3,287
874	Mgmt/public relations service, not facil supp.	0.011	0.009	0.028	0.024	612	1,326

Table A.6. Retail Industries in North Dakota, 1992

SIC	Industry	Number of establishments *		Revenue *		Location Quotient	Average pop. served (persons)		Service density (est. per township)	
		ND	US	ND	US		ND	US	ND	US
521,3	Building materials and supply stores	165	35,589	228,405	74,501,238	1.1280	3,872	7,022	0.09	0.34
525	Hardware stores	117	18,984	42,177	12,290,916	1.4060	5,460	13,164	0.06	0.18
526	Retail nurseries, lawn & garden supply	34	10,857	19,518	6,327,846	0.7413	18,788	23,018	0.02	0.10
527	Manufactured (mobile) home dealers	17	4,053	16,888	5,712,146	1.3619	37,576	61,660	0.01	0.04
5311	Department stores (incl. leased depts.)	41	11,001	626,536	190,784,927	0.0000	15,580	22,717	0.02	0.11
5315	Department stores (excl. leased depts.)	41	11,001	610,945	18,642,260	1.2484	15,580	22,717	0.02	0.11
533	Variety stores	44	12,561	17,597	9,056,820	0.9622	14,518	19,896	0.02	0.12
5391	Miscellaneous general merchandise store	41	11,044	131,007	49,850,205	1.5634	15,580	22,628	0.02	0.11
5411	Grocery stores	359	133,263	758,886	352,558,184	0.9544	1,779	1,875	0.19	1.29
542	Meat and fish markets	31	8,941	9,558	5,040,901	0.8907	20,606	27,951	0.02	0.09
5461	Retail bakeries	45	20,418	8,182	5,386,894	0.7955	14,196	12,240	0.02	0.20
543	Other food stores ^a	35	17,946	6,233	6,212,605	0.6287	18,251	13,926	0.02	0.17
551	New and used car dealers	122	24,380	967,217	333,801,369	1.2345	5,236	10,251	0.06	0.24
552	Used car dealers	44	18,672	29,712	16,031,345	0.7393	14,518	13,384	0.02	0.18
5531	Auto and home supply stores	94	41,308	69,797	28,565,320	0.9428	6,796	6,050	0.05	0.40
555	Miscellaneous automotive dealers ^b	52	12,013	57,083	16,749,848	1.2340	12,285	20,803	0.03	0.12
554	Gasoline service stations	422	105,334	439,968	134,705,359	1.4024	1,514	2,373	0.22	1.02
561	Men's and boys' clothing and accessory	48	15,566	24,812	10,013,646	1.1366	13,308	16,055	0.02	0.15
562,3	Women's clothing and specialty stores	181	58,970	73,846	34,912,011	0.9801	3,529	4,238	0.09	0.57
565	Family clothing stores	58	19,452	38,283	32,787,133	0.5255	11,014	12,847	0.03	0.19
566	Shoe stores	89	37,206	33,582	17,883,367	0.7849	7,178	6,717	0.05	0.36
564,9	Other apparel and accessory stores	28	14,296	4,540	6,118,317	0.3969	22,814	17,481	0.01	0.14
5712	Furniture stores	95	32,478	67,024	30,416,124	1.1060	6,724	7,695	0.05	0.31
5713	Home furnishings stores ^c	75	33,017	38,565	19,747,745	0.7262	8,517	7,569	0.04	0.32
572	Household appliance stores	32	9,743	12,625	8,155,425	0.8224	19,963	25,650	0.02	0.09
5731	Radio, TV, and electronics stores	39	17,324	20,212	19,791,236	0.5795	16,379	14,426	0.02	0.17
5734	Computer and software stores	9	5,438	3,785	6,550,436	0.3428	70,978	45,956	N	0.05
5735	Record and prerecorded tape stores	20	7,924	10,884	5,860,230	0.7560	31,940	31,538	0.01	0.08
5736	Musical instrument stores	15	4,149	12,234	2,684,847	2.0285	42,587	60,233	0.01	0.04
5812	Eating places ^d	993	377,760	352,867	184,203,215	0.9262	643	662	0.52	3.64
5813	Drinking places	423	55,848	73,921	11,113,777	2.6148	1,510	4,475	0.22	0.54

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Table A.6. continued.

SIC	Industry	Number of establishments		Revenue ('000 \$)		Location Quotient	Average pop. served (persons)		Service density (est. per township)	
		ND	US	ND	US		ND	US	ND	US
5911	Drug and proprietary stores	176	48,142	152,951	77,487,573	0.8865	3,630	5,191	0.09	0.46
592	Liquor stores	137	31,386	78,018	20,319,081	2.0999	4,663	7,962	0.07	0.30
593	Used merchandise stores	46	19,826	5,028	5,650,584	0.6192	13,887	12,605	0.02	0.19
594	Miscellaneous shopping goods stores ^e	335	127,312	140,761	66,175,409	1.0338	1,907	1,963	0.17	1.23
5942	Book stores	25	12,887	10,095	8,014,885	0.5533	25,552	19,392	0.01	0.12
5944	Jewelry stores	68	28,077	28,450	14,001,976	0.8873	9,394	8,901	0.04	0.27
5943	Other misc shopping goods stores ^f	179	63,034	47,710	29,697,554	0.9429	3,569	3,965	0.09	0.61
5961	Catalog and mail-order houses	25	7,773	25,036	34,579,632	0.4164	25,552	32,151	0.01	0.07
5962	Automatic merchandising machine operator	11	6,391	5,991	6,330,079	0.2362	58,073	39,103	0.01	0.06
5963	Direct selling establishments ^g	41	13,641	27,849	10,170,286	1.0132	15,580	18,320	0.02	0.13
598	Fuel dealers	42	10,973	30,995	13,875,226	0.7983	15,210	22,775	0.02	0.11
5992	Florists	89	27,341	14,349	5,719,237	1.2602	7,178	9,140	0.05	0.26
5993	Tobacco stores and stands	1	1,477	0	781,826	0.0000	638,800	169,200	N	0.01
5994	News dealers and newsstands	3	2,260	634	704,285	0.2942	212,938	110,579	N	0.02
5995	Optical goods store	30	14,160	8,970	4,806,183	0.7987	21,293	17,649	0.02	0.14
5999a	Pet shops	12	7,160	3,283	2,677,913	0.6281	53,233	34,903	0.01	0.07
5999b	Art dealers	2	5,010	0	2,080,789	0.0000	319,400	49,882	N	0.05

Note: (i) a= includes fruit and vegetable markets, candy and confectionary vendors, dairy product stores, and misc. food stores; b= includes boat dealers, RV dealers, and motorcycle dealers; c= includes SIC 5713 (floor covering stores), 5714 (drapery, curtain, and upholstery stores), and 5719 (misc. home furnishing stores); d= includes restaurants, cafeterias, refreshment places, and other eating places; e= includes sporting goods store and bicycle shops; f= includes stores dealing with stationery, hobby, toy and game, gift, novelty and souvenir, luggage and leather goods, and sewing and needlework; g= includes furniture, home furnishing, mobile food service, books and stationery and other; (ii) N=negligible; P= part of another category; (iii) * = data from 1992 *Economic Census CD ROM*, Bureau of Census, United States Dept. of Commerce.

Table A.7. Selected Ratio for Retail Industries in North Dakota, 1992

SIC	Industry	Revenue per capita ('000 \$)		Revenue per household ('000 \$)		Revenue per estab. ('000 \$)	
		ND	US	ND	US	ND	US
521,3	Building materials and supply stores	0.358	0.298	0.948	0.798	1,384	2,093
525	Hardware stores	0.066	0.049	0.175	0.132	360	647
526	Retail nurseries, lawn & garden supply	0.031	0.025	0.081	0.068	574	583
527	Manufactured (mobile) home dealers	0.026	0.023	0.070	0.061	993	1,409
5311	Department stores (incl. leased depts.)	0.981	0.763	2.600	2.044	15,281	17,343
5315	Department stores (excl. leased depts.)	0.956	0.746	2.535	1.997	14,901	16,946
533	Variety stores	0.028	0.036	0.073	0.097	400	721
5391	Miscellaneous general merchandise store	0.205	0.199	0.544	0.534	3,195	4,514
5411	Grocery stores	1.188	1.411	3.149	3.777	2,114	2,646
542	Meat and fish markets	0.015	0.020	0.040	0.054	308	564
5461	Retail bakeries	0.013	0.022	0.034	0.058	182	264
543	Other food stores	0.010	0.025	0.026	0.067	178	346
551	New and used car dealers	1.514	1.336	4.013	3.576	7,928	13,692
552	Used car dealers	0.047	0.064	0.123	0.172	75	859
5531	Auto and home supply stores	0.109	0.114	0.290	0.306	743	692
555	Miscellaneous automotive dealers	0.089	0.067	0.237	0.179	1,098	1,394
5541	Gasoline service stations	0.689	0.539	1.826	1.443	1,043	1,279
561	Men's and boys' clothing and accessory	0.039	0.040	0.103	0.107	517	643
5621	Women's clothing and specialty stores	0.116	0.140	0.306	0.374	408	592
565	Family clothing stores	0.060	0.131	0.159	0.351	660	1,686
5661	Shoe stores	0.053	0.072	0.139	0.192	377	481
5641	Other apparel and accessory stores	0.007	0.024	0.019	0.066	162	428
5712	Furniture stores	0.105	0.122	0.278	0.326	706	937
5713	Home furnishings stores	0.060	0.079	0.160	0.212	514	598
572	Household appliance stores	0.020	0.033	0.052	0.087	395	837
5731	Radio, TV, and electronics stores	0.032	0.079	0.084	0.212	518	1,142
5734	Computer and software stores	0.006	0.026	0.016	0.070	421	1,205
5735	Record and prerecorded tape stores	0.017	0.023	0.045	0.063	544	740
5736	Musical instrument stores	0.019	0.011	0.051	0.029	816	647
5812	Eating places	0.552	0.737	1.464	1.973	355	488
5813	Drinking places	0.116	0.044	0.307	0.119	175	199
5911	Drug and proprietary stores	0.239	0.310	0.635	0.830	869	1,610
592	Liquor stores	0.122	0.081	0.324	0.218	569	647
593	Used merchandise stores	0.008	0.023	0.021	0.061	109	285
594	Miscellaneous shopping goods stores	0.220	0.265	0.584	0.709	420	520
5942	Book stores	0.016	0.032	0.042	0.086	404	622
5944	Jewelry stores	0.045	0.056	0.118	0.150	418	499
5943	Other misc shopping goods stores	0.075	0.119	0.198	0.318	267	471
5961	Catalog and mail-order houses	0.039	0.138	0.104	0.370	1,001	4,449
5962	Automatic merchandising machine operator	0.009	0.025	0.025	0.068	545	990
5963	Direct selling establishments	0.044	0.041	0.116	0.109	679	746
598	Fuel dealers	0.049	0.056	0.129	0.149	738	1,264
5992	Florists	0.022	0.023	0.060	0.061	161	209
5993	Tobacco stores and stands	0.000	0.003	0.000	0.008	0	529
5994	News dealers and newsstands	0.001	0.003	0.003	0.008	211	312
5995	Optical goods store	0.014	0.019	0.037	0.051	299	339
5999a	Pet shops	0.005	0.011	0.014	0.029	274	374
5999b	Art dealers	0.000	0.008	0.000	0.022	0	415

Table A.8. Wholesale Industries in North Dakota, 1992

SIC	Industry	Number of establishments *		Revenue *		Location Quotient	Average pop. served (persons)		Service density (est. per township)	
		ND	US	ND	US		ND	US	ND	US
5012	Automobiles and other motor vehicles	40	7,899	165,141	278,912,873	1.87	15,970	31,638	0.02	0.08
5013	Motor vehicle supplies and new parts	127	28,002	126,678	91,378,524	1.60	5,030	8,925	0.07	0.27
5014	Tires and tubes	26	4,146	55,418	20,093,635	2.74	24,569	60,277	0.01	0.04
5015	Motor vehicles parts, used	22	7,227	6,500	3,719,318	0.95	29,036	34,580	0.01	0.07
5021	Furniture	8	7,342	0	2,302,515	0.00	79,850	34,038	N	0.07
5023	Home furnishings	6	9,115	0	35,901,553	0.00	106,467	27,417	N	0.09
5031	Lumber, plywood, millwork, and wood panels	19	8,364	129,020	56,004,376	1.28	33,621	29,879	0.01	0.08
5032	Brick, stone, and related construction materials	16	4,285	38,181	10,117,659	0.76	39,925	58,322	0.01	0.04
5033	Roofing, siding, and insulation materials	10	2,848	0	14,426,081	0.00	63,880	87,749	0.01	0.03
5039	Construction materials, n.e.c. ^a	17	4,049	0	9,216,008	0.00	37,576	61,721	0.01	0.04
5043	Photographic equipment and supplies	1	1,461	0	16,671,917	0.00	638,800	171,053	N	0.01
5044	Office equipment	28	8,631	26,336	28,903,843	0.77	22,814	28,955	0.01	0.08
5045	Computers & computer peripheral equip. & software	36	17,578	87,772	140,721,448	0.64	17,744	14,217	0.02	0.17
5046	Commercial equipment, n.e.c. ^b	8	4,998	10,294	11,203,113	0.62	79,850	50,002	N	0.05
5047	Medical, dental, and hospital equip. & suppl.	13	9,521	0	51,715,199	0.00	49,138	26,248	0.01	0.09
5048	Ophthalmic goods	9	1,783	4,905	4,909,583	1.02	70,978	140,162	N	0.02
5049	Professional equipment and supplies, n.e.c. ^c	8	2,820	0	8,849,352	0.00	79,850	88,620	N	0.03
5051	Metals service centers and offices ^d	4	10,426	0	105,833,987	0.00	159,700	23,970	N	0.10
5052	Coal and other minerals and ores	1	822	0	12,487,915	0.00	638,800	304,024	N	0.01
506	Electrical & electronic goods	69	39,303	175,871	227,784,486	0.52	9,258	6,358	0.04	0.38
507	Hardware, plumbing & heating equip. & suppl.	51	24,674	83,200	76,088,078	0.62	12,525	10,128	0.03	0.24
5082	Construction & mining(exc. petroleum) machinery	22	5,157	112,406	26,120,154	2.11	29,036	48,460	0.01	0.05
5083	Farm and garden machinery and equipment	230	10,742	544,146	29,498,767	8.09	2,777	23,265	0.12	0.10
5084	Industrial machinery and equipment ^f	82	30,322	106,520	86,649,236	0.81	7,790	8,242	0.04	0.29
5085	Industrial supplies ^f	24	16,199	39,969	56,684,330	0.38	26,617	15,427	0.01	0.16
5087	Service establishment equipment and supplies ^g	28	7,579	25,384	11,177,827	0.92	22,814	32,974	0.01	0.07
5088	Transp. equip & supplies (exc. motor vehicle)	4	3,866	1,659	19,873,661	0.13	159,700	64,643	N	0.04
5091	Sporting and recreational goods and supplies	10	5,530	16,016	21,084,805	0.50	63,880	45,191	0.01	0.05
5092	Toys and hobby goods and supplies	9	2,738	4,493	16,792,179	0.40	70,978	91,274	N	0.03
5093	Scrap and waste materials	27	8,928	23,345	24,461,997	0.86	23,659	27,991	0.01	0.09

contd./

Table A.8. continued.

SIC	Industry	Number of Establishments		Revenue ('000 \$)		Location Quotient	Average Pop. served (persons)		Service Density (est. per township)	
		ND	US	ND	US		ND	US	ND	US
5094	Jewelry, watches, precious stones & metals	7	7,421	2,419	41,305,983	0.16	91,257	33,676	0.N	0.07
5099	Durable goods, n.e.c. ^b	11	9,688	0	38,160,990	0.00	58,073	25,796	0.01	0.09
511	Paper and paper products	43	19,661	100,520	106,580,435	0.77	14856	12711	0.02	0.19
512	Drugs, drug proprietaries, & druggists's sundries	10	6,070	0	129,565,349	0.00	63880	41171	0.01	0.06
513	Apparel, piece goods, and notions	7	19,553	0	109,202,949	0.00	91257	12781	N	0.19
5141	Groceries, general-line ^c	16	4,528	925,504	132,602,589	2.53	39925	55192	0.01	0.04
5142	Packaged frozen food	4	3,468	0	53,256,028	0.00	159700	72061	N	0.03
5143	Dairy products, except dried or canned	25	3,378	29,270	35,324,092	0.58	25552	73981	0.01	0.03
5144	Poultry and poultry products (incl. live poultry)	1	1,224	0	10,118,173	0.00	638800	204173	N	0.01
5145	Confectionery	9	2,693	0	21,805,401	0.00	70978	92799	N	0.03
5146	Fish and seafoods	1	3,100	0	11,481,166	0.00	638800	80615	N	0.03
5147	Meats and meat products (exp. boxed beef)	2	4,123	0	54,871,104	0.00	319400	60613	N	0.04
5148	Fresh fruits and vegetables	27	6,003	88,672	38,512,291	1.55	23659	41631	0.01	0.06
515	Farm-product raw materials ^d	400	11,551	2,552,709	136,869,416	10.00	1597	21635	0.21	0.11
516	Chemicals and allied products ^k	40	14,193	58,798	132,471,184	0.74	15970	17608	0.02	0.14
517	Petroleum and petroleum products ^l	247	16,060	692,106	286,779,582	4.40	2586	15561	0.13	0.15
518	Beer, wine, and distilled alc. beverages	29	5,259	116,882	59,487,322	1.16	22028	47520	0.02	0.05
5191	Farm Supplies ^m	161	17,469	543,226	54,351,143	3.06	3968	14306	0.08	0.17
5192	Books, periodicals, and newspapers	13	4,205	15,765	26,568,841	0.49	49138	59431	0.01	0.04
5193	Flowers, nursery stock, and florists' suppl.	7	4,322	0	6,827,063	0.00	91257	57822	N	0.04
5194	Tobacco and tobacco products	11	1,702	69,082	39,239,377	1.73	58073	146832	0.01	0.02
5198	Paint, varnishes, and supplies	6	3,539	0	8,621,040	0.00	106467	70615	N	0.03
5199	Nondurable goods, n.e.c. ⁿ	20	15,535	0	48,969,569	0.00	31940	16087	0.01	0.15

Note: (i) a= includes flat glass and other construction glass; b= includes restaurant and hotel equipment and supplies, and store machines and supplies; c= includes religious and school supplies; d= except petroleum and includes both ferrous and non-ferrous metals sales and service offices/centers; e= includes food processing machinery and equipment, general-purpose industrial machinery and equipment, metalworking machinery and equipment, material handling equipment, oil well, and oil refinery & pipeline machinery and equipment and supplies; f= includes mechanical power transmission equipment, hydraulic & pneumatic parts etc., welding supplies, industrial containers and supplies, industrial valves and fittings, and other industrial supplies; g= includes such services as beauty and barber shops, janitorial services, and laundry and dry-cleaning services; h= includes musical instruments and supplies, forest products (except lumber), CDs and other prerecorded tapes, and fire extinguishers and fire safety equipments; i= include both voluntary and cooperative groups; j= includes grain and field beans, livestock, and such farm-product raw materials as hides, skins, etc.; k= includes industrial gases; l= includes bulk stations of petroleum and petro-gas, and petrol & petrol product wholesalers; m= includes wholesale distributors; n= includes art goods, textile bags and bagging and specialty advertising; (ii) N=negligible; P= part of another category; (iii) *= data from 1992 *Economic Census CD ROM*, Bureau of Census, U.S. Dept. of Commerce.

Table A.9. Selected Ratio for Wholesale Industries in North Dakota, 1992

SIC	Industry	Revenue per capita ('000 \$)		Revenue per household ('000 \$)		Revenue per estab. ('000 \$)	
		ND	US	ND	US	ND	US
5012	Automobiles and other motor vehicles	0.259	1.116	0.685	2.988	4,129	35,310
5013	Motor vehicle supplies and new parts	0.198	0.366	0.526	0.979	997	3,263
5014	Tires and tubes	0.087	0.080	0.230	0.215	2,131	4,847
5015	Motor vehicles parts, used	0.010	0.015	0.027	0.040	295	515
5021	Furniture	0.000	0.092	0.000	0.247	0	3,136
5023	Home furnishings	0.000	0.144	0.000	0.385	0	3,939
5031	Lumber, plywood, millwork, and wood panels	0.202	0.224	0.535	0.600	6,791	6,696
5032	Brick, stone, and related construction materials	0.060	0.040	0.158	0.108	2,386	2,361
5033	Roofing, siding, and insulation materials	0.000	0.058	0.000	0.155	0	5,065
5039	Construction materials, n.e.c.	0.000	0.037	0.000	0.099	0	2,276
5043	Photographic equipment and supplies	0.000	0.067	0.000	0.179	0	11,411
5044	Office equipment	0.041	0.116	0.109	0.310	941	3,349
5045	Computers & comp. peripheral equip. & software	0.137	0.563	0.364	1.508	2,438	8,006
5046	Commercial equipment, n.e.c.	0.016	0.045	0.043	0.120	1,287	2,242
5047	Medical, dental, and hospital equip. & supp.	0.000	0.207	0.000	0.554	0	5,432
5048	Ophthalmic goods	0.008	0.020	0.020	0.053	545	2,754
5049	Professional equipment and supplies, n.e.c.	0.000	0.035	0.000	0.095	0	3,138
5051	Metals service centers and offices	0.000	0.423	0.000	1.134	0	10,151
5052	Coal and other minerals and ores	0.000	0.050	0.000	0.134	0	15,192
506	Electrical goods	0.275	0.911	0.730	2.440	2,549	5,796
507	Hardware, & plumbing & heating equip & suppl.	0.130	0.304	0.345	0.815	1,631	3,084
5082	Construction & mining(exc. petroleum) machinery	0.176	0.105	0.466	0.280	5,109	5,065
5083	Farm and garden machinery and equipment	0.852	0.118	2.258	0.316	2,366	2,746
5084	Industrial machinery and equipment	0.167	0.347	0.442	0.928	1,299	2,858
5085	Industrial supplies	0.063	0.227	0.166	0.607	1,665	3,499
5087	Service establishment equipment and supplies	0.040	0.045	0.105	0.120	907	1,475
5088	Transport. equip & supplies (excl. motor vehicle)	0.003	0.080	0.007	0.213	415	5,141
5091	Sporting and recreational goods and supplies	0.025	0.084	0.066	0.226	1,602	3,813
5092	Toys and hobby goods and supplies	0.007	0.067	0.019	0.180	499	6,133
5093	Scrap and waste materials	0.037	0.098	0.097	0.262	865	2,740
5094	Jewelry, watches, precious stones & metals	0.004	0.165	0.010	0.442	346	5,566
5099	Durable goods, n.e.c.	0.000	0.153	0.000	0.400	0	3,939
511	Paper and paper products	0.157	0.426	0.417	1.142	2,338	5,421
512	Drugs, drug proprietaries, and sundries	0.000	0.518	0.000	1.388	0	21,345
513	Apparel, piece goods, and notions	0.000	0.437	0.000	1.170	0	5,585
5141	Groceries, general-line	1.449	0.531	3.840	1.421	57,844	29,285
5142	Packaged frozen food	0.000	0.213	0.000	0.571	0	15,356
5143	Dairy products, except dried or canned	0.046	0.141	0.121	0.378	1,171	10,457
5144	Poultry and poultry products	0.000	0.040	0.000	0.108	0	8,266
5145	Confectionery	0.000	0.087	0.000	0.234	0	8,097
5146	Fish and seafoods	0.000	0.046	0.000	0.123	0	3,704
5147	Meats and meat products	0.000	0.220	0.000	0.588	0	13,309
5148	Fresh fruits and vegetables	0.139	0.154	0.368	0.413	3,284	6,416
515	Farm-product raw materials	3.996	0.548	10.592	1.466	6,382	11,849
516	Chemicals and allied products	0.092	0.530	0.244	1.419	1,470	9,334
517	Petroleum and petroleum products	1.083	1.148	2.872	3.072	2,802	17,857
518	Beer, wine, and distilled alcoholic beverages	0.183	0.230	0.485	0.637	4,030	11,312
5191	Farm Supplies	0.850	0.217	2.254	0.582	3,374	3,111
5192	Books, periodicals, and newspapers	0.025	0.106	0.065	0.285	1,213	6,318
5193	Flowers, nursery stock, and florists' suppl.	0.000	0.027	0.000	0.073	0	1,580
5194	Tobacco and tobacco products	0.108	0.157	0.287	0.420	6,280	23,055
5198	Paint, varnishes, and supplies	0.000	0.034	0.000	0.092	0	2,436
5199	Nondurable goods, n.e.c.	0.000	0.196	0.000	0.525	0	3,152

Table A.10. Finance, Insurance, and Real Estate (FIRE) Industries in North Dakota, 1992

SIC	Industry	Number of establishments *		Revenue *		Location Quotient	Average pop. served (persons)		Service density (est. per township)	
		ND	US	ND	US		ND	US	ND	US
602	Commercial banks ^a	267	62,761	742,377	318,076,750	1.4294	2,393	3,982	0.14	0.61
603	Savings institutions ^b	56	20,544	0	92,322,214	0.0000	11,407	12,165	0.03	0.20
606	Credit unions	93	15,665	0	21,390,416	0.0000	6,869	15,953	0.05	0.15
601	Other depository institutions ^c	7	5,535	0	100,267,578	0.0000	91,257	45,150	N	0.05
614	Personal credit institutions	16	16,900	53,261	47,668,442	0.4225	39,925	14,787	0.01	0.16
611	Federal & federally-sponsored credit agencies	28	1,349	47,714	28,091,998	8.2635	22,814	185,254	0.01	0.01
615	Business credit institutions	8	5,038	7,401	36,552,770	0.0954	79,850	49,605	N	0.05
616	Mortgage bankers and brokers	10	16,152	3,778	23,073,736	0.2076	63,880	15,472	0.01	0.16
621,2	Security/commodity brokers, dealers, flotation	62	19,237	40,730	90,729,663	0.5164	10,303	12,991	0.03	0.19
623,8	Security and commodity exchanges and services	16	11,940	2,387	18,132,250	0.1158	39,925	20,930	0.01	0.12
631	Life insurance (sales, home and other offices)	37	13,424	373,576	378,401,736	0.5185	17,265	18,617	0.02	0.13
632	A&H insurance and medical service plans	14	2,846	0	148,259,458	0.0000	45,629	87,810	0.01	0.03
633	Fire, marine, and casualty insurance	59	19,002	0	258,394,706	0.0000	10,827	13,152	0.03	0.18
635	Other insurance carriers ^d	2	2,173	0	6,085,487	0.0000	319,400	115,006	N	0.02
64	Insurance agents, brokers and services	563	121,662	100,676	51,705,051	1.2100	1,135	2,054	0.29	1.17
6512	Operators of nonresidential buildings	88	32,905	49,615	36,868,690	1.4427	7,259	7,595	0.05	0.32
6513	Operators of apartment buildings	135	48,330	38,665	29,373,795	0.8049	4,732	5,171	0.07	0.47
6514	Other real estate operators and lessors ^e	75	21,652	14,519	7,827,063	1.7085	8,517	11,542	0.04	0.21
653	Offices of Real estate agents and managers	165	106,552	47,322	53,747,026	0.5428	3,872	2,345	0.09	1.03
654,5	Other real estate ^f	93	20,054	10,216	13,856,678	0.7931	6,869	12,462	0.05	0.19
671	Holding offices ^g	31	10,381	31,668	43,634,118	0.3958	20,606	24,074	0.02	0.10
672	Management Investment offices	2	829	0	3,826,568	0.0000	319,400	301,457	N	0.01
679	Miscellaneous investing ^h	16	9,117	0	18,356,766	0.0000	39,925	27,411	0.01	0.09

Note: (i) a= includes both national and state commercial banks; b= includes both federally chartered and unchartered institutions; c= includes central reserve depository institutions, foreign banks and branches, and functions related to depository institutions; d= includes surety insurance, pension funds and insurance carriers; e= includes operators of non-apartment dwellings, residential mobile homes, and lessor of other real estate property; f= includes title abstract offices, and land subdividers and developers; g= includes offices of bank holding and other holding (n.e.c.) companies; h= includes oil royalty traders, patent owners and lessors, real estate investment trusts, and other investors (n.e.c.); (ii) N=negligible; P= part of another category; (iii) *= data from 1992 *Economic Census CD ROM*, Bureau of Census, United States Dept. of Commerce.

Table A.11. Selected Ratio for FIRE Industries in North Dakota, 1992

SIC	Industry	Revenue per capita ('000 \$)		Revenue per household ('000 \$)		Revenue per estab. ('000 \$)	
		ND	US	ND	US	ND	US
602	Commercial banks	1.162	1.273	3.080	3.407	2,780	5,068
603	Savings institutions	0.000	0.369	0.000	0.989	0	4,494
606	Credit unions	0.000	0.086	0.000	0.229	0	1,365
601	Other depository institutions	0.000	0.401	0.000	1.074	0	18,115
614	Personal credit institutions	0.083	0.191	0.221	0.511	3,329	2,821
611	Federal & federally-sponsored credit agencies	0.075	0.112	0.198	0.301	1,704	20,824
615	Business credit institutions	0.012	0.146	0.031	0.392	925	7,255
616	Mortgage bankers and brokers	0.006	0.092	0.016	0.247	378	1,429
6212	Security/commodity brokers, dealers, flotation	0.064	0.363	0.169	0.972	657	4,716
623,8	Security and commodity exchanges and services	0.004	0.073	0.010	0.194	149	1,519
631	Life insurance (sales, home and other offices)	0.585	1.514	1.550	4.054	10,097	28,188
632	A&H insurance and medical service plans	0.000	0.593	0.000	1.588	0	52,094
633	Fire, marine, and casualty insurance	0.000	1.034	0.000	2.768	0	13,598
635	Other insurance carriers	0.000	0.024	0.000	0.065	0	2,801
64	Insurance agents, brokers and services	0.158	0.207	0.418	0.554	179	425
6512	Operators of nonresidential buildings	0.078	0.148	0.206	0.395	564	1,120
6513	Operators of apartment buildings	0.061	0.118	0.160	0.315	286	608
6514	Other real estate operators and lessors	0.023	0.031	0.060	0.084	194	361
653	Offices of Real estate agents and managers	0.074	0.215	0.196	0.576	287	504
654,5	Other real estate	0.016	0.055	0.042	0.148	110	691
671	Holding offices	0.050	0.175	0.131	0.467	1,022	4,203
672	Investment offices	0.000	0.015	0.000	0.041	0	4,616
679	Miscellaneous investing	0.000	0.073	0.000	0.197	0	2,013