SOCIOECONOMIC IMPACTS OF AGRICULTURAL AND NON-AGRICULTURAL ECONOMIC DEVELOPMENT IN NORTH DAKOTA

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Socioeconomic Impacts of Non-Agricultural and Agricultural Economic Development of North Dakota

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ABSTRACT

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This project built upon a previous study that analyzed the socioeconomic impacts of agricultural processing plants in North Dakota. There is uncertainty on the economic and fiscal impacts in communities that have experienced non-agricultural economic development in North Dakota. A comparison of these two types of communities to selected control communities that have not experienced any major economic development project provided a basis for evaluating the impact of plant construction and operation on economic, demographic, public service, and fiscal structures of rural areas.

Descriptive statistical analysis from the survey data and a factor analysis model were used to compare residents' feelings on economic development in each of the three types of communities. Results indicate that there is a significant difference in how residents in the agricultural processing communities feel towards economic development versus the other two types of communities studied.

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CHAPTER I

INTRODUCTION

Economic development issues have become increasingly important to rural communities that are trying to expand their economic base while reducing out-migration. The development projects may be agriculturally related, which tend to locate close to the raw materials necessary for production, or non-agricultural firms such as telemarketing, manufacturing, financial, or service firms (Coon and Leistritz, 1997).

In rural economic development, there is a need for communities to work together to attract industries to their area, which should provide jobs and add to the community's economic base. How do communities in rural America attract successful industries, and which industries will prove to be a success? How do we measure the impacts of the industries to the area? Residents and community leaders need to analyze whether the benefits of a large industry or plant locating in their community outweigh the associated costs, such as possible health problems, crime, and social issues. These questions are some of which rural communities are faced.

History of Rural Development

Economic development has become increasingly important to rural America in recent years. The trend in rural America in the 1970s was that commodity prices were up, farmers were acquiring more land to farm, and credit was readily available. In the 1980s, rural America experienced an economic crisis in which depressed prices and market concerns for agricultural products, environmental and market restrictions in the

forestry industry, cutbacks in the energy industry, and restructuring of the manufacturing sector caused much economic stress (Leistritz and Hamm, 1994).

Increased technology and mechanization have required farms to become very large to compete or get out of the farming industry. With larger equipment and technology advances in seed treatment, insecticides and pesticides, production has become much more efficient. Farming operations continue increasing in size to capitalize on scale efficiencies provided by new technology. Smaller farmers, choosing not to (or financially unable to) expand may leave the industry. In just four years from 1996 to 2000, the percentage of farms in North Dakota with acres greater than 1,600 increased by 14 percent and their median debt-to-asset ratio was 52.2 percent (Swenson, 2001).

The farm crisis and the trend toward large capital investments that many farmers cannot afford have resulted in a large number of farmers leaving their land and moving into urban areas to find work elsewhere. Farming, in general, continues to decline as a percentage of all adult employment (Falk and Lyson, 1991). From 1990 to 2000, employment in the agriculture sector in North Dakota decreased by 10 percent. In 1990, agriculture represented 37 percent of the state's economic base (sales for final demand), but by 2000, agriculture contributed only 25 percent to the economic base. This amount is a decrease of 6.3 percent, or $253.5 million, for 10 years in agricultural sales to final demand (Leistritz, 2000). The Bureau of Labor Statistics reports that, as a percentage of all farmers nationally, those 25-34 years old fell from 26 percent in 1982/84 to 15 percent in 1998 (Beale, 2000).

A decreasing number of farmers and reduced role of farming as a source of employment give rise to a major problem in rural areas—a continuous declining population. People have been moving from rural areas to more metro areas. In the United States over the past 200 years, society has gone from the majority of the population being rural and involved in farming to the majority of the population being urban. In this time period, the United States' urban population went from less than 10 percent to 75 percent in 1990, and the rural population declined from 75 percent to about 2 percent in that same time period (Gale, 2000a). In a period of 10 years between 1980 and 1990, North Dakota experienced the second largest out-migration in the nation, as 11 percent of the state's population moved from the state (Leistritz and Bangsund, 1998). In the1990s, rural North Dakota lost 6 percent of its population while the state's population overall stayed relatively unchanged (Sheaff, 2001).

Besides the increased technology and mechanization in farming, there have been improvements in transportation (improved roads and automobiles) which make it easier than ever before for rural people to travel to a larger city to purchase goods. Larger population centers have been able to attract discount stores such as Wal-Mart, which provide a wide array of products at discount prices. In 1986, consumers in North Dakota were traveling an average of 17 miles for banking, 18 miles for hardware and groceries, 21 miles for machinery, 33 miles for automobiles, and 37 miles for furniture to communities with a median size of 1,400 to 15,000 people (Goreham et al., 1986). Anecdotal evidence suggests that these distances are likely even greater today. Many smaller towns are no longer able to serve as retail and service centers (Flora et al., 1992). As stated by Gale and Kilkenny, "With larger farms, easier access to

automobiles, and pressure on retailers and service providers to exploit economies of scale, scattered cities and large towns in farming-dependent regions are becoming islands of commerce surrounded by a sea of sparsely populated farming areas" (2000, p.31). Smaller towns have not been able to maintain service-retail centers; therefore, more consumers' business is done in metro communities.

Should we really be concerned if rural America is losing its population to more urban areas? Some analysts go as far to say that areas plagued by out-migration should become "buffalo commons," in which animals are left to roam freely and the area becomes more of an unpopulated natural environment. Is it inevitable that these areas are going to continue to decline in population? Even so, does that mean that we forget about the people who live in rural areas and why businesses chose to locate there?

People who continue to live in rural areas are obviously there for a reason. The rural countryside and the natural resources it produces are the source of the nation's food supply. Also, the rural landscape provides much of the nation's scenic and cultural amenities that many grow fond of while making their living. Rural America is also very important to the nation's spirit in which much of the nation's solutions of combating drugs, race relations, and other "community" problems are found. The young people of rural America are a huge asset to the nation as we continue to see those children acquiring an excellent education and then becoming vital parts of our nation's future. Rural America is a large part of the macro economy and contributes greatly to the nation's overall health, and agriculture is a large part of the nation's overall economic base. While the economic base cannot tell the entire story about what

is happening in rural America, it does offer insight into a community's success and failure.

Need for Study

This project builds upon a previous study that analyzed the socioeconomic impacts of agricultural processing plants in North Dakota. There is uncertainty on the economic and fiscal impacts in North Dakota communities that have experienced non-agricultural economic development. A comparison of these two types of communities to selected control communities that have not experienced any major economic development project will provide a basis for evaluating the impact of plant construction and operation on economic, demographic, public service, and fiscal structures of North Dakota communities.

Evaluating these impacts will determine the importance of new business development projects and will serve as a source to other community leaders who are analyzing the possibility of a new economic development project in their area (Coon and Leistritz, 1997). These impacts become very important to leaders who are responsible to distribute a limited amount of resources to help fund projects, so funds must be used accordingly.

Objectives

This study compares communities within North Dakota that have experienced economic development from exported services or manufacturing to those communities that have been impacted by an agricultural processing plant. In order to compare the

two types of development, control communities are also utilized to determine specific impacts that result from development. Data are collected from several communities in North Dakota to

1. Determine the impacts of economic development in rural communities in North Dakota by using survey data to develop descriptive statistics.
2. Use a factor analysis model to determine whether residents' feelings towards community attributes are different in the three types of communities: agricultural processing development, non-agricultural development, or control.

Rural Economic Development and its Effects on the Community

In recent years, several new agricultural value-added processing plants have been developed in North Dakota. These plants generally have been seen as a positive development for not only those involved with the plant, but also everyone in the community. While helping farmers capture a greater share of channel profits is a primary goal of value-added processing firms, other economic impacts also occur. Increased employment opportunities and higher wages are positive results gained in some communities with new processing facilities (Leistritz and Sell, 2000). Although processing plant development is a positive community initiative, problems may arise, such as availability of "affordable" housing, day care, and tax abatements (Leistritz and Sell, 2000). Because agricultural plants are widely supported locally and statewide, there is some question on whether the agricultural processing plants receive a higher level of support from the government and the community than other non-agricultural manufacturing, exporting, or distributing economic initiatives.

A recent study on the socioeconomic impacts of agricultural processing plants took a closer look at four of the leading processing plants in North Dakota, including Dakota Growers Pasta in Carrington, ProGold in Wahpeton, Aviko (now Cavendish Farms) in Jamestown, and North American Bison in New Rockford (Leistritz and Sell, 2000). The purpose of the project was to assess the socioeconomic impacts of new agricultural processing plants located in rural areas of North Dakota. The objectives were to evaluate the impact of plant construction and operation on economic, demographic, public service, and fiscal structures of rural areas; and to develop a set of general principles and recommended actions for community leaders to follow when a new agricultural processing facility is being considered.

Several impacts were defined from their study. Improved job opportunities and enhanced incomes were seen as major benefits to local communities while the availability of affordable housing, availability of day care, and local tax abatements were issues that arose from these initiatives. Although the areas where the plants are located did not experience a population increase, these communities had previously experienced a declining population base; the development of the agricultural processing plant helped slow this declining trend.

Another study investigated the differences in economic and fiscal impacts between communities which experienced economic development from the siting and operating of waste processing and disposal facilities versus those that experienced economic development from other types of retail, wholesale distribution, or manufacturing businesses in the rural United States (Spies et al., 1998). These communities and their respective counties were compared and contrasted to selected

control communities. The following conclusions were made from this study: the non-waste development sites experienced the largest increase in population, employment, personal income, and retail sales; the waste-operating sites slowed the trend of unemployment and out-migration of community members; and government expenditures increased for the waste-siting and operating areas and decreased in the control areas. The waste processing study provides a framework for what will be done in the current study, but this study will analyze agricultural processing plants and non-agricultural manufacturing in North Dakota instead of waste and non-waste development in the United States.

The non-waste and waste operating site study utilized a control group. The basic idea in experimental research is that, without a control group, there is no way to tell how much of the overall effect in the experimental group was true cause and how much was extraneous effect (Isserman and Merrifield, 1982).

Scope of Study

The plan of research initially required identification of criteria for the communities that were used in this study. The criteria in selecting the communities were that communities were non metro and had experienced an economic development initiative within the last 6 to 10 years that added at least 40 new jobs to the area.

Next, a control group was identified on the basis of its industrial structure, location, and resources. The control group consisted of communities where there had not been any major economic initiative implemented in the community in the 10 years.

Control communities were similar to development communities in terms of unemployment rates, population, and per capita income.

Once the communities were identified, primary data were collected. The methods and procedures used in Leistritz and Sell's (2000) study, among others, were used for comparison of the data and results. Obtaining data required interviewing community leaders, economic development board members, CEOs of new firms, school officials, law enforcement personnel, and child care providers, among others. These people were asked to suggest others who should be interviewed (in some cases, persons who had been influential in creating the economic initiative). This snowball sampling method, which also was used by Murdock et al. (1998), indirectly signals that the interviewing process is complete when no new names are suggested for interviewing. Another rule of thumb is that, when there is no new information being presented in the interviews, that part of the study is complete.

Data were also collected from residents in the community by using a survey. A drop-off and pick-up survey approach was utilized, as it was not efficient to use personal interviews for each of these people. This data collection method was previously used by Leistritz and Sell (2000) and has been used by Krannich and Little (1989), among others. The questionnaire was delivered personally to each household and explained in detail. It was then picked up two days after the time of drop-off. At that time, the questionnaire was checked for completeness, and any questions were answered. Considering all other possibilities, this procedure generally yields a better response rate than phone or mail surveys (Steele et al., 2001).

The survey included questions that deal with the respondents' community ties and how they feel about their community, and a background on the respondent including things such as age, employment, origin, etc. The survey for the development communities also had a section of questions on what the respondents thought and felt about certain aspects of new business development in their area, whereas those in the control communities were asked questions on the effects of recent economic changes in general. See the Appendix.

Secondary data analysis includes information from the 2000 Census of Population as well as school enrollments, property values, and tax collections. These data are used to compare the communities that have experienced agricultural-related development, non-agricultural related development, and control communities.

Organization of Study

Chapter II reviews previous economic development studies and illustrates the need for more research on comparison studies of different types of development projects and how their impacts to residents differ. Chapter III begins with data development and explains data collection and analysis. Chapter IV explains results of descriptive and theoretical analysis of the survey data that were obtained from residents in each community, which includes a different conclusion than what most previous studies have found. Chapter V concludes the thesis with the addition of implications of the study and areas for further research.

CHAPTER II

REVIEW OF LITERATURE

The literature cited in this study discusses rural development, economic growth, and various theories and techniques for examining socioeconomic impacts related to economic development. Solutions that rural communities have implemented are analyzed. The literature shows there is a need for a comparison of agricultural and non-agricultural development and their impacts in North Dakota.

Economic Development Theories

One theory for assessing rural development in North Dakota is export base theory. After defining the theory, the economic base model is presented. The model is used to explain economic development, and the activity and impacts that a change in the economic base brings to a community.

Export Base Theory

In export base theory, the real criterion in determining the export function is whether the activity brings income into the community by 1) movement of goods or services, 2) movement of capital, and 3) movement of the consumer or purchaser (Shaffer, 1989). The export base theory states that a community can be divided into two sectors, one which buys and sells to those outside of the area (basic sector) and brings money into the community called basic income, and the second sector that buys and sells to those people within the boundaries of the community and supports the export sector (nonbasic sector). Export base theory is very useful in impact studies, which examine the effect on an area of a change in private demand for its goods and

services in other areas or a change in federal government spending in the area, and is more appropriately applied to smaller economic areas (Shaffer, 1989).

Communities, over time, often experience a decrease or increase in their existing export base, but businesses may also develop new export sectors that create new products and services to sell to markets outside the area. These new exports will, in turn, bring more basic income into the community and positively affect everyone involved.

Export Base Model

Export base theory, according to Tweeten and Brinkman (1976), is expressed as a set of equations:

(1)Yd= E + X-M,

(2) E = a + eYd,

(3) M = b + *m*Yd, and

(4) X = *x'*,

where

Yd = Net area product or income;

E = Expenditures on net investment, consumption, and government;

X = Exports;

M = Imports;

a = Value of E when Yd = 0;

b = Value of M when Yd = 0;

e = Proportion of incremental income allocated to E, or marginal propensity to spend;

m = Proportion of incremental income allocated to M, or marginal propensity to import; and

x' = Exports, determined by forces outside the area.

In equilibrium, aggregate supply (Ys) is equal to aggregate demand (Yd), and the result is an equilibrium income (Y).

$$Y = \frac{a-b+x'}{1-(e-m)}$$

Other things equal, the area income will be higher if the propensity to spend locally is higher and if the propensity to import is low. The level of exports determines area income, thus the impact of another dollar of exports on income is shown below.

$$\Delta Y = 1 / 1-(e-m)$$

Local spending on local goods is E-M, and the marginal propensity to spend locally is then $s = e-m$ and is expected to lie between 0 and 1. The multiplier is derived from local spending for locally produced goods and the propensity to spend locally.

$$\Delta Y = 1/1-s$$

Because employment is related to income in that employment provides income, the equation shows that average propensity to spend money on local products and services affects the ratio of non basic employment to total employment. Each job added in the export sector raises area employment by a multiple of the initial increase (Tweeten and Brinkman, 1976).

Some of the main reasons that support the use of export base theory are 1) the theory focuses on demand in the community for exports, 2) export demand is very important to smaller communities, which depend on outside business, 3) the theory is

simple and easy to understand, and 4) it explains changes in community income in the short run better than in the long run (Shaffer, 1989).

The export base theory is not a general theory and is best not used across all communities. It is better used to explain economic development in smaller, more dependent and less self-sufficient communities rather than larger, more independent communities that do not depend as much on what businesses export (Shaffer, 1989). Export base theory is very useful in impact assessment studies, which are used to determine how a particular development influenced a specific community and its residents (Tweeten and Brinkman, 1976).

The main idea of the export base theory is that the local economy is driven by what it exports, and exports determine the community's economic base. Value-added processing is an approach that North Dakota has taken to expand its exports by, for example, Dakota Growers Pasta processing locally produced durum instead of shipping it out. Value is added to the durum here, and it is shipped out as a finished pasta product. Profits stay in the state and are reused by consumers for other products (multiplier effect), and others benefit from this development. When inputs can be purchased locally, there will be greater secondary economic impacts. The expenditures from the firm will be put back into the local or regional economy and produce positive secondary effects.

Economic Development in Rural America

Historically, agriculture has been the main contributor to the economic base in North Dakota. However, because the trend in rural America in recent years is toward

fewer farmers, larger farms, and out-migration of rural people, alternatives to agriculture as the primary economic base need to be found. There need to be jobs available for people to stay and, in turn, contribute to the economic base.

With the large amount of acres and higher costs for the new equipment, land, and capital, off-farm employment has become very important in order for many farm families to continue living in rural North Dakota. In 2000, 76 percent of farms with sales less than $100,000 and 15 percent of farms with sales greater than $250,000 had net farm income below $25,000 (Swenson, 2001). Not many families can live off a net income of only $25,000. Off-farm employment for at least one of the members of the family farm has become more prevalent in this time period. Nationwide, 54 percent of farm operators and over 55 percent of spouses are employed off the farm (McElroy et al., 2002).

Attracting new business and industry has become crucial for rural community survival; it becomes very difficult for leaders to attract business and industry into their community. State and local governments become very important in attracting new businesses into their community. The federal government has largely gotten out of community development and left it for state and local governments to decide how to tax people and where to provide money and assistance to help the development of rural areas. In 1987 after North Dakota had been continuously experiencing a harsh economic downturn, the state legislature enacted a law which enables towns to levy a maximum 1 percent local sales tax to provide funds for local economic development, public infrastructure, and other various public costs (North Dakota Tax Department, 1996). In North Dakota, much of this extra revenue is being used on a regional level

and provides assistance to the surrounding communities for new, expanding, or relocating businesses (Leistritz and Bangsund, 1998). Other towns provide subsidized loans for new projects and for technical assistance to help developers work through the financial analysis, fund research projects, or write grants for additional money. In North Dakota, assistance provided by seven regional development funds in 1988-1995 was used as follows: 31 percent of the assistance was used for grants, 26 percent for loans, 23 percent for equity investments, 13 percent for interest buy-downs, 5 percent for rent/lease assistance, and 3 percent for loan guarantees (Leistritz and Bangsund, 1998).

North Dakota routinely analyzes ways to stimulate state and local economic development. Typically, start-up businesses first locate in urban areas, and as the industry matures, businesses are spun out to rural areas such as North Dakota because some of the inputs (i.e., space and labor) can be acquired more easily and less expensively. When looking at rural development and attracting manufacturers to non metro areas, the concept of the "product cycle" becomes very important. This phrase was created in 1966 to describe the theory that new innovative industries prefer to locate in urban areas where new ideas, technology, knowledge, and innovation are easily accessed (Schluter and Edmondson, 2000). These industries often require limited amounts of capital, but large quantities of skilled labor and access to services (Roth, 2000). Rural locations become more attractive as the industry matures and becomes more conscious of costs and less concerned about innovation and new ideas. Rural areas typically have lower land, facility, and input costs, and advances in telecommunications have allowed information to flow or be accessed from anywhere.

Rural locations also seem to be attractive to managers who may be more environmentally conscious (Schluter and Edmondson, 2000). In many cases, branch plants may be locationally filtered down to locations with less costly and less skilled labor while operations are still managed from the central location (Roth, 2000).

An industry that seems to be on the upswing in this product cycle is semiconductor manufacturing. Currently, semiconductor manufacturing is heavily urbanized, but of the few nonmetro locations where manufacturing occurs, the value added (measure of worker productivity) in dollars per employee is larger than that of metro areas. California and Texas are the leading employers in the industry with a 46 percent combined share of the semiconductor manufacturing jobs; Arizona, Oregon, and Washington had far fewer jobs, but recorded value added much greater than their share of employment (Gale, 2000b). Researchers suggest that the semiconductor industry is one industry which recruiters may want to focus on as rural locations may become more attractive.

Another aspect contributing to the accessibility of rural areas for development is information and communications technology. New telecommunications tools, such as the Internet and World Wide Web, have sped up communication and made conducting information-related business easier. Businesses are able to communicate with many more people over greater distances, and there is a large amount of information that is readily available at a lower cost (Winger, 2000). Firms can easily locate anywhere in the world and, within seconds, be connected with someone across the globe.

Once a community decides how it will try to attract a business into the area, leaders must look at what exactly each prospective firm will provide. Manufacturing

and export service firms may provide advantages and disadvantages that a community must weigh.

Economic development projects should positively impact the community through various means. Offering job opportunities, adding to the local tax base, and stabilizing or enhancing the local population are major issues that community developers analyze when a new employer moves into their area.

Local economic development in rural America has increased in the last few years. Development such as producer cooperatives, telecommunications-based firms, and other manufacturing plants have expanded into rural areas, provided employment, and added to the local economy. The following paragraphs include examples of communities that have taken the initiative to locate new employers and increased the economic benefits for their community and regional economic base.

In 2001, Gilson et al. assessed the economic impact of a rural computer service center (Sykes Enterprises, Inc.) in Hays, Kansas. Sykes is a leading third-party support provider for the computer and software industries. The industry has recently committed to locating call centers in many rural areas in the United States. A survey was completed to determine the actual impact that the firm had on this isolated community, which had given large incentives for Sykes to locate there. The results indicated that, for every dollar earned at Sykes, $.82 was respent in the community, and the employment multiplier indicated that 0.28 other jobs were created in the area for every job created at Sykes (Gilson et al., 2001). The investment for the community turned out to be a positive one.

Telecommunication-based businesses, such as telemarketing, data processing, and back office activities, have also added to North Dakota's rural economy. North Dakota has seen a rise in the past few years of these types of exported services (Leistritz, 1993). Examples of businesses of this type that have diversified state and local economies are Rosenbluth Travel in Linton and U.S. Health Care in Bismarck. These new data processing and telemarketing businesses have served as a source of new employment in the state, both employing over 100 people. Telecommunication firms routinely have a high turnover rate, so they must locate near a large pool of laborers, which can be found in North Dakota's larger towns. Also, the cost and availability of office space, reliable telecommunications service, and special taxes and regulations for the business have also been factors that make North Dakota a very attractive place to locate. U.S. Health Care received a $1.2 million loan from the Bank of North Dakota at a rate that was 6 percent lower than the average rate, which resulted in a cost savings to the firm of $337,000 over a 7-year period (Leistritz, 1993).

According to the study, the new telecommunication-based businesses have greatly contributed to the economy because 86 percent of their total expenditures were made within the state, including phone service, labor costs, and energy costs (Leistritz, 1993). The high percentages of total expenditures made within the state by telecommunication-based firms have resulted in high secondary (multiplier) effects for the state economy (Leistritz, 1993). When the firms spend a large portion of money within the state and purchase inputs locally, businesses in other sectors also profit from the telecommunication-based business through multiplier effects.

In recent years, several value-added agricultural processing plants have been developed in North Dakota. These plants have generally been seen as a positive development for not only those involved with the plant, but also everyone in the community. These new businesses are bringing more of the consumer's dollar back to the farm (Faber and Egerstrom, 2001). Producer cooperatives bring many benefits into the community, such as jobs, and generate local wealth; community leaders encourage their development. The local economic benefits may not always be as evident to the non-farm families of the community because they are seldom directly involved with the processing plant (Faber and Egerstrom, 2001). Producer cooperatives were established in order to add value to the producers' product in that farmer-members share in profits associated with processing. The new processing plants also result in increased employment opportunities and higher wages for the communities in which they are located (Leistritz and Sell, 2000).

Many times along with the benefits that accompany the growth of a community, there are also some disadvantages. Although mainly positive impacts have come from the addition of these processing plants, the communities have not been without problems, such as availability of "affordable" housing, day care, and the need for tax abatements (Leistritz and Sell, 2000). Taking into account the fact that these agricultural plants are widely supported locally and statewide, there is some question whether the agricultural processing plants receive a higher level of support from the government and the community than other non-agricultural manufacturing, exporting, or distributing economic initiatives.

When IBP, a pork processing plant, opened its doors in 1982 in Storm Lake, Iowa, impacts did not turn out to be as positive as originally expected. The location was chosen because of its proximity to hog producers and corn supplies that were less expensive than in other regions. Beyond the benefits of increased job opportunities and expanded economic base that this processing plant may have provided, the costs were substantial. The increased labor force consisted mostly of minority refugees and immigrants, and wages were about one-third of the income that was previously earned by workers employed by the previous plant operator. With the new workforce in town came new problems, such as increased crime rates, healthcare concerns, social problems, and a language barrier in the school and community because most of the new workers did not speak English (Grey, 1998).

In another case, the shift from an urban to rural-based meatpacking industry has resulted in both benefits and costs for rural areas where new plants have located (Broadway, 2000). The article analyzes the problems associated with a large packing industry in the area and identifies solutions to deal with them. The region of Brooks, Alberta, benefited from increased demand for locally produced animals, but it also faced challenges such as housing shortages, availability of affordable housing, increases in crime, and a larger demand for social services. Investors did not want to bother with building new real estate for the sake of a low rate of return, so on-site dormitories were built for workers to live in, and a 500-unit trailer court was developed.

Rural industrialization has been called a “process of societal realignment” when studying the impacts of large institutions on small communities. Summers (1976) uses the phrase “leakages” to describe small communities that lack the ability to absorb all

of the impacts of large manufacturers. Many times, these companies, which are located in small communities, have several economic links outside of the community, such as purchasing their inputs or selling the product outside of the area. These leakages tend to reduce the local multiplier effect and other local benefits, and as a result, effects on per capita income, real estate values, and immigration of people are not as large as expected (Summers, 1976).

These examples indicate why communities need to identify the social costs of economic development as well as the benefits. Planning for these changes is important, and community leaders need to take charge to make decisions and develop policies. Community leaders must identify what potential impacts the new business is likely to have on the community. One source of insight is by analyzing what has been done or has not been done previously in other communities, and what worked and what did not work. One way for leaders to see how a community may be affected by large economic development is by comparing it to a control group which has not had any recent large development. A control group offers insight into impacts that occur from economic policy.

Control Group

Isserman and Merrifield (1982) identified a control group based on its industrial structure, location, and resources. The study region used to demonstrate the control group approach was Summers County, West Virginia, because its labor force participation rate and unemployment rate were among the worst in the nation at one time (Isserman and Merrifield, 1982). The criteria used to determine a control group

included industrial structure; location; resources; and the area's similarity to the study area, including being exposed to similar national economic conditions. Similarity of counties was measured by absolute differences of the growth rates, relative size of the sectors, wage levels, and unemployment rates. Counties that had experienced any major changes were excluded from the potential control group, which was established by contacting several county and city leaders (Isserman and Merrifield, 1982).

Another study investigated the differences in the economic and fiscal impacts between communities which had experienced economic development from the siting and operating of waste processing and disposal facilities versus those that had experienced economic development from other types of retail, wholesale distribution, or manufacturing businesses in the rural United Sates (Murdock et al., 1998). These communities and their respective counties are compared and contrasted to selected control communities. The following conclusions were made from this study: the non-waste development sites experienced the largest increase in population, employment, personal income, and retail sales; the waste-operating sites slowed the trend of unemployment and out-migration of community members; and government expenditures increased for the waste-siting and operating areas and decreased in the control areas. The waste study provided a framework for what this thesis will examine, but the thesis will study agricultural processing plants and non-agricultural manufacturing in North Dakota instead of the waste and non-waste developments in the United States.

Manufacturing and exported service firms are increasingly locating in North Dakota. North Dakota has been mainly an agricultural-based state but has recently

been growing in the non-agricultural manufacturing and services sector of the economy. Previous studies have not examined differences between agricultural-related development and non-agricultural development. It is not evident whether the state and local government and residents provide greater support for an agricultural or non-agricultural development initiative in their community. Therefore, this study compares local socioeconomic impacts of agricultural and non-agricultural economic development in North Dakota.

Hypotheses

This study focuses on the similarities and differences of non-agricultural and agricultural development in North Dakota and the effects that each have on their host communities. Based on conclusions from the previous agricultural processing plant study, it is hypothesized that agricultural processing facilities have greater local support than other types of development, and contribute more to the community's export base than non-agricultural development such as manufacturers, and export or service firms.

CHAPTER III

METHODOLOGY

In this chapter, methods used in this study are described. The criteria used to select the study areas; and the data collection methods for the study areas, including leader interview procedures and survey procedures, a compilation of secondary data from the census, and the multivariate model used for statistical analysis, will each be discussed.

Selection of the Study Areas

The area of study is limited to communities in North Dakota because of time and resource constraints. North Dakota was chosen as the study region because 1) data from the agricultural processing plant study were already collected from four communities in North Dakota that had recently experienced an agricultural processing plant development or expansion and 2) it is relatively well known that rural areas such as North Dakota are looking for some type of large-scale economic development to keep people living and working here.

The first step in the data development was the selection of communities that have recently experienced some type of non-agricultural economic development. The initial selection process began with communities across North Dakota that were similar to those used in the agricultural processing plant study. It would have been ideal to find communities that exactly matched the agricultural processing study, but considering the size of the study area, finding them was not possible. The screening process involved locating communities based on their population size, economic base,

trade center classification, and whether the community had experienced any new or expanded economic development project initiative in the last 10 years.

These communities were researched using several different resources including the Growing ND web page (November, 2001) which provided a directory of North Dakota businesses and where they were located, how many people each business employed, and when each was incorporated; faculty colleagues who were knowledgeable concerning rural development in North Dakota; and community officials in each town. Requirements for the selection process were that 1) the community had to have experienced some type of non-agricultural economic development within the last 6 to 10 years and 2) the business needed to employ at least 40 people. Key people in each potential community were contacted to determine whether any recent economic development had occurred and, if so, what type of development. The contact people in each community were asked if there were anyone else in the community who was involved with economic development projects. From there, suggestions often led to further calling and information collection.

Control communities were selected based on 1) the nonexistence of any recent economic development, 2) population size comparable to development communities, and 3) geographical location. The control communities needed to be far enough away from the development communities so that businesses did not see any impacts from the industry. A map of study communities and counties can be found in Figure 3.1.

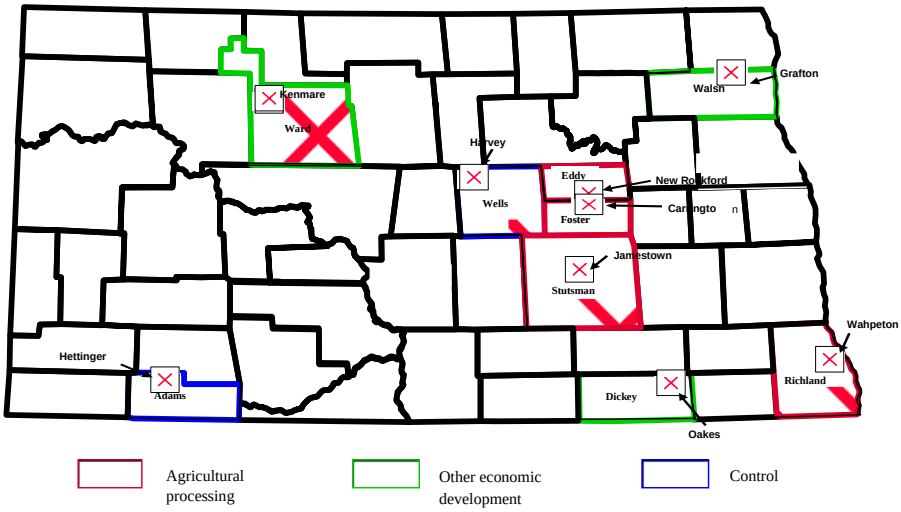

Figure 3.1. Study Counties and Communities.

Data Collection

The data collected for this study included both primary and secondary data, and were collected by a number of different methods. These methods included in-depth interviews with community officials and industry officials, community leader and resident surveys, and industry surveys as well as secondary data from the United States Census Bureau, and state and local sources. The agricultural processing study was completed in April 2000, and the surveys for the non-agricultural development and control communities were collected in the summer of 2002.

In each site community, in-depth interviews were conducted with a cross-section of community leaders to gain an understanding of the community (population trends, economic base, etc.). These informants were selected based on their elected or appointed governmental positions (i.e. mayor, county commissioner, or economic development leader) and roles in business, community, and educational organizations. Other community leaders were identified and interviewed by using the snowball

technique. (i.e., Leaders who were interviewed were asked if they knew of anybody else who would be knowledgeable about the issues discussed.) Interviewing went on until there were no new people suggested. Representatives of the plant were also interviewed. All of the people interviewed were chosen based on their knowledge of the community or the industry, not on their feelings about whether the economic development had a positive or negative impact on the community.

The interview included questions such as the effects of the project development and other socioeconomic changes that might have occurred or counteracted the project's effects. Leaders were each asked how they thought that the community, in general, viewed the recent changes. Short summaries of leaders' responses and community characteristics were written about each study community.

Leader and Community Resident Surveys

A short survey was administered to a random sample of residents in each of the study communities. The goal was to obtain 90 to 100 completed surveys from residents in each community. The survey questions focused on the respondents' satisfaction with their community; the services it offers and its characteristics; the impacts of the new business venture, if any, on social well-being; their involvement with community activities; their evaluation of the benefits and costs of economic development initiatives; their perception of community leader involvement with local initiatives; and demographic characteristics. Further information on survey questions can be found in the Appendix.

Designing the surveys consisted of the development of two similar surveys with differences only where necessary, one survey for the development communities and

another for the control communities. The design of the development surveys, for comparison reasons, was based on those surveys that were used for the agricultural processing plant study, only changing some of the wording. The control surveys were slightly different because questions about specific development projects were taken out of the survey for obvious reasons. Each of the leaders interviewed was also asked to complete a survey.

Survey data collection was completed in April 2000 for the agricultural processing plant study and in May through August 2002 for the non-agricultural development and control communities. A community organization was contacted in each of the communities to distribute the surveys for a fee. The goal was to get approximately 90 to 110 surveys distributed to community members. The survey was administered using a drop-off and pick-up procedure. The questionnaire was delivered door to door by the community organization so that it could be explained to the participant in person, and then, the survey was picked up two days later. At this time, the distributor could check for completeness of the survey and answer any questions that the participant may have had while completing the survey.

The drop-off and pick-up procedure was used because it has been previously found that it generally achieves higher response rates than a mail or phone survey. Problems associated with the telephone method may result from the public becoming too accustomed to public opinion polls, marketing surveys, or telemarketers (Dillman, 2000; Groves and Cooper, 1998; Hox and DeLeeuw, 1994). Problems with mail surveys include excluding households from the population of those being studied (Dillman, 1991; Melvin et al., 1999). Depending on where address lists are acquired, it

is almost impossible to include every address in the study area. Although direct contact with the respondents increases response rates, the drop-off/pick-up technique is best used in small and densely populated areas, and where residents are used to having visitors (Steele et al., 2001).

Questionnaires were completed by one member of each household in approximately 100 households in each of the survey communities. The person selected in each household to complete the survey was the one with the most recent birthday who was at least 18 years old. Response rates for residents were almost 100 percent for each community studied but differed among the communities for leaders, ranging from 53 to 60 percent (Table 3.1).

Table 3.1. Number of Community Resident and Leader Survey Respondents, by Community, and Response Rate for Leader Survey, by Community

Community	Completed Leader Surveys	Response Rate for Leader Surveys	Completed Resident Surveys
Kenmare	7	58.33%	75
Grafton	8	53.33%	95
Oakes	6	60.00%	100
Hettinger	4	50.00%	94
Harvey	6	54.55%	110
Total	31	55.36%	474

Industry surveys for the development communities consisted of questions which provided information on when the firm started, the number of employees, reasons that businesses decided to locate in that specific community, and expenditure records. Because the businesses were privately owned, many of them were reluctant to give us any financial information.

Secondary data collection came from demographic and economic characteristics of county and community information obtained from the 1990 and 2000 census, and information about services and specific community characteristics was obtained from each of the communities studied while conducting the interviews.

Comparison of Communities by Secondary Data

Now that the study communities and leader interviews from each community have been presented, a compilation of secondary data, such as population trends, retail sales, and pull factors, is presented. Each of the communities that have experienced agricultural development, non-agricultural development, and virtually no economic development and the corresponding data are found in Tables 3.2 and 3.3.

Like most communities in rural North Dakota, the study sites are experiencing the trend of declining economic and population bases. The communities studied had populations in 2000 that ranged from 15,527 in Jamestown to 1,081 in Kenmare. Although the numbers have a wide range, these communities all serve as trade centers for surrounding communities. Oakes is the only community that experienced growth (of about 11.5 percent) from 1990 to 2000, and Hettinger experienced the largest population decrease (almost 17 percent in just 10 years). Jamestown and Wahpeton are keeping a nearly stable population level, unlike Kenmare and Harvey, which each experienced over a 20 percent decline in population in the last 20 years. Carrington experienced a pretty large decline from 1980 to 1990, but then from 1990 to 2000, the population seems to be stablizing.

Table 3.2. Population, Adjusted Taxable Sales, School Enrollments, and Pull Factors for Non-Agricultural and Control Communities: 1980, 1990, and 2000

	Kenmare	Grafton	Oakes	Hettinger	Harvey
Population					
1980	1456	5293	2112	1739	2527
1990	1214	4840	1775	1574	2263
2000	1081	4515	1979	1307	1989
Percent Change					
1980-1990	-16.62%	-8.56%	-15.96%	-9.49%	-10.45%
1990-2000	-10.96%	-6.71%	11.49%	-16.96%	-12.11%
Adjustable Taxable Sales & Purchases (2000 dollars)					
1980	25,337	68,129	29,232	21,391	36,569
1990	10,538	54,673	16,289	14,289	21,426
2000	15,000	49,813	15,083	12,165	20,534
Percent Change					
1980-1990	-58.41%	-19.75%	-44.28%	-33.20%	-41.41%
1990-2000	42.34%	-8.89%	-7.40%	-14.86%	-4.16%
Pull Factors					
1980	0.74	0.9	1.18	0.84	0.79
1990	0.49	0.95	0.74	0.8	0.49
2000	0.7	0.81	0.63	0.71	0.54
School Enrollments					
1990	225	1,001	385	309	415
2000	206	929	423	282	382
Percent Change					
1990-2000	-9.22%	-7.75%	8.98%	-9.57%	-8.64%

The nine communities studied differ in their trade classification. Grafton, Jamestown, and Wahpeton are all classified as complete shopping centers while Carrington, Harvey, and Hettinger are classified as partial shopping centers. Kenmare and Oakes are classified as full convenience centers, and New Rockford is a minimum

Table 3.3. Population, Adjusted Taxable Sales, Pull Factors, and School Enrollments for Agricultural Processing Site Communities: 1980, 1990, and 2000

	Carrington	Jamestown	New Rockford	Wahpeton
Population				
1980	2641	16280	1791	9064
1990	2267	15571	1604	8751
2000	2263	15527	1463	8586
Percent Change				
1980-1990	-14.16%	-4.36%	-10.44%	-3.45%
1990-2000	-0.18%	-0.28%	-8.79%	-1.89%
Adjustable Taxable Sales & Purchases (2000 dollars)				
1980	43,454	190,997	18,821	79,570
1990	27,486	147,797	6,828	74,411
2000	31,495	163,706	6,746	76,715
Percent Change				
1980-1990	-36.75%	-22.62%	-63.72%	-6.48%
1990-2000	14.59%	10.76%	-1.20%	3.10%
Pull Factors				
1980	0.91	0.87	0.88	0.79
1990	0.74	0.77	0.33	0.82
2000	0.83	0.77	0.39	0.66
School Enrollments				
1990	482	4,008	356	3,433
2000	554	3,800	274	3,224
Percent Change				
1990-2000	13.00%	-5.47%	-29.93%	-6.48%

convenience center. It is interesting to note that, although Kenmare is experiencing a large decrease in population, taxable sales and purchases increased by 42 percent in 10 years, which is the largest of all 9 communities studied. Carrington and Jamestown also saw an increase in sales and purchases from 1990 to 2000. Oakes and New Rockford experienced large decreases in sales during the period of 1980 to 1990, with a loss of 44 percent and 64 percent, respectively. These numbers stabilized to only a loss of 7 percent and 1 percent, respectively, in the last 10 years.

Pull factors measure a city's actual sales versus potential sales and are calculated by dividing trade area capture by trade area population. A number less than 1 indicates that a city may be losing sales to other trade centers, and a value greater than 1 indicates that the city is attracting customers from outside of the area. Average pull factors by city size statewide have all decreased from 1990 to 2000 except for full convenience centers, which have risen from 0.67 to 0.73 (Leistritz, 2000). Looking at the cross section of pull factors, we can see that all of the communities are below 1, so a percentage of the people in a specific trade center area are going elsewhere to do their shopping. The range is from 0.39 in New Rockford to 0.83 in Carrington.

School enrollments have decreased from 1990 to 2000 for each community, except Carrington and Oakes. These communities have had increases of 13 percent and almost 9 percent, respectively. New Rockford had the largest decrease in school enrollments of almost 30 percent in just 10 years.

When comparing secondary data for the three types of communities in Table 3.4, there are some major differences. In the 1980s, there were decreases in population of 8 to almost 14 percent, with the largest decreases in the non-agricultural

development, the control, and the agricultural development, respectively. In the 1990s, population trends stabilized in both groups of development communities. The average percent change in the agricultural and non-agricultural development communities decreased only about 2 percent in the last 10 years, but decreased from about 10 percent in the 1980s to 14.5 percent in the 1990s.

When looking at changes in taxable sales in these communities in the last 20 years, the same type of trend exists. Each type of community experienced large decreases of taxable sales in the 1980s of 32 percent in the agricultural development communities to almost 41 percent in the non-agricultural development communities. In the 1990s, both of the groups of development communities actually experienced positive average percentage changes of almost 7 percent in the agricultural and 9 percent in the non-agricultural development communities. The control communities still experienced a negative change in the last 10 years, but only about 9.5 percent as compared to 37 percent the previous 10 years.

These trends present a difference in time periods. The 1980s seems to be a time of large declines in both population and taxable sales, but in the 1990s when the plants were getting started, the average changes were not as negative or were even positive for the development communities.

So far, the discussion has been on comparing the site communities, but when development occurs in rural areas, most likely it affects the entire county in which it is located. Table 3.5 compares the demographic and economic characteristics of site counties. When looking at changes in population from one decade to the next, there are large decreases in the 1980s as compared to the 1970s. In the 1990s, the change in

population was more stable for a majority of counties studied, but Adams (Hettinger) and Walsh (Grafton) Counties continued to decline in percentage population change. Wells County decreased in population by a smaller percentage than in the previous decade, but still dropped by almost 13 percent. Also, by looking at the employment data in Table 3.5, the majority of employment in 2000 occurred in the services sector.

Table 3.4. Comparison of Secondary Data for Three Types of Communities

	Ag Dev.	Non-Ag Dev.	Control
Population			
Percentage Change			
1980-1990	-8.10%	-13.71%	-9.97%
1990-2000	-2.79%	-2.06%	-14.54%
Adj. Taxable Sales & Purchases (2000 $s)			
Percentage Change			
1980-1990	-32.39%	-40.81%	-37.31%
1990-2000	6.81%	8.68%	-9.51%
School Enrollments			
Percentage Change			
1990-2000	-7.22%	-2.66%	-9.11%

Table 3.6 analyzes total employment numbers and the unemployment rate for each of the site counties. Adams County (Hettinger) experienced the largest drop in total employment from 1990 to 2001, followed by Eddy (New Rockford) and Dickey (Oakes) Counties. Ward County (Kenmare) saw the largest increase (of almost 11 percent) of the counties studied, followed by Foster (Carrington), Richland (Wahpeton), and Stutsman (Jamestown) Counties. Along with decreased employment opportunities, Adams County suffered the largest increase in unemployment rate of

Table 3.5. Selected Demographic and Economic Characteristics of Site Counties, 1970-2000

Item	County								
	Adams	Dickey	Eddy	Foster	Richland	Stutsman	Walsh	Ward	Wells
Population									
1970	3,832	6,976	4,103	4,832	18,089	23,550	16,251	58,560	7,847
1980	3,584	7,207	3,554	4,611	19,207	24,154	15,371	58,392	6,979
1990	3,174	6,107	2,951	3,983	18,148	22,241	13,840	57,921	5,864
2000	2,593	5,757	2,757	3,759	17,998	21,908	12,389	58,795	5,102
Percent Change									
1970-1980	-6.47%	3.31%	-13.38%	-4.57%	6.18%	2.56%	-5.42%	-0.29%	-11.06%
1980-1990	-11.44%	-15.26%	-16.97%	-13.62%	-5.51%	-7.92%	-9.96%	-0.81%	-15.98%
1990-2000	-18.30%	-5.73%	-6.57%	-5.62%	-0.83%	-1.50%	-10.48%	1.51%	-12.99%
Employment, 2000									
Agriculture	211	493	239	244	1015	870	882	1154	392
Manufacturing	28	245	116	237	1410	1259	550	723	63
Retail Trade	149	318	97	240	867	1225	588	3934	242
Services	679	1496	649	885	4254	6359	2987	16472	1173
Other	150	305	120	197	1195	1290	827	3819	289
Total	1217	2857	1221	1803	8741	11003	5834	26102	2159

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Table 3.6. County Total Employment and Unemployment Rate

Item	County								
	Adams	Dickey	Eddy	Foster	Richland	Stutsman	Walsh	Ward	Wells
Total Employment									
1990	1,765	3,005	1,354	1,872	8,229	10,879	6,106	25,264	2,389
1991	1,559	2,804	1,270	1,829	7,904	10,623	6,250	24,583	2,370
1992	1,482	2,662	1,094	1,802	7,961	10,383	6,010	24,988	2,255
1993	1,447	2,703	1,132	1,851	7,956	10,559	5,993	25,597	2,329
1994	1,613	2,928	1,245	1,978	9,010	10,948	5,843	27,509	2,350
1995	1,447	2,814	1,194	2,079	8,770	10,850	6,116	27,667	2,404
1996	1,478	2,786	1,240	2,100	9,361	11,315	6,248	28,570	2,411
1997	1,406	2,743	1,218	2,147	9,517	11,688	6,099	29,097	2,430
1998	1,393	2,794	1,308	2,158	9,271	11,574	6,009	28,460	2,416
1999	1,327	2,816	1,216	2,222	9,064	11,237	5,976	27,453	2,432
2000	1,307	2,874	1,145	2,084	8,891	11,181	6,008	27,888	2,376
2001	1,198	2,802	1,163	1,972	8,590	11,134	5,944	27,932	2,295
Percent Change, 1990-2001	-32.10%	-6.80%	-14.10%	5.30%	4.40%	2.30%	-2.70%	10.60%	-3.90%
Unemployment Rate (percent)									
1990	1.3	2.5	6.3	3.5	4.5	3.4	4.5	4.4	5.8
1991	2.4	3.1	7.9	4.1	4.6	3.7	4.3	4.3	6.5
1992	2.4	3.2	11.7	5.0	4.3	4.5	5.6	5.2	8.5
1993	2.3	2.6	8.6	4.0	4.1	4.0	6.3	4.8	6.8
1994	2.1	2.6	7.6	3.0	3.5	3.5	6.5	3.8	6.1
1995	1.7	2.2	5.9	2.8	3.2	3.1	5.1	3.2	4.1

Table 3.6 (continued)

	County								
Item	Adams	Dickey	Eddy	Foster	Richland	Stutsman	Walsh	Ward	Wells
1996	1.7	1.8	5.3	2.5	2.8	2.8	4.6	2.9	4.2
1997	2.0	1.4	3.9	1.8	2.1	2.0	3.8	2.3	3.3
1998	2.6	2.1	5.5	2.3	2.9	2.6	4.4	3.2	3.7
1999	2.9	1.7	5.7	2.5	2.9	2.7	4.2	3.4	4.2
2000	2.6	3.0	3.8	1.6	5.0	2.8	2.6	2.2	4.2
2001	2.0	2.2	4.8	2.8	2.9	2.1	3.6	2.9	3.4
Percent Change, 1990-2001	53.8%	-12.0%	-23.8%	-20.0%	-35.6%	-38.2%	-20.0%	-34.1%	-41.4%

almost 54 percent. Wells, Stutsman, and Richland Counties experienced the largest declines of 35 percent or more in the last 11 years.

Multivariate Analysis

To conclude the methodology chapter, a multivariate model is presented. Factor analysis is used to test the hypothesis of whether there is a difference in residents' feelings in each of the different types of study communities. It analyzes whether there is a significant difference in survey answers among residents in the non-agricultural development site communities, agricultural processing site communities, and control communities.

In factor analysis, the basic idea is to describe a set of variables in terms of a smaller number of factors and the relationship between these variables. There are *p* variables with values for *n* individuals. A constant ratio between rows of a correlation matrix follows as a set of assumptions that F is a "factor" value and *ei* is the part of X*i* (test score) that is specific to the *i*th test only. Scores are all in the form of

$$Xi = aiF + ei.$$

Thus, a general factor analysis model is

$$Xi = ai1F1 + ai2F2 + \ldots + aimFm + ei,$$

where X*i* is the *i*th test score with mean zero and unit variance; *ai*1, *ai*2,…, *ai*m are the factor loadings for the *i*th test; F1, F2, and F*m* are *m* uncorrelated common factors, each with mean zero and unit variance; and *ei* is a factor specific only to the *i*th test, which is uncorrelated with any of the common factors and has mean zero. The constant *ai* is called the factor loading; F and *ei* are independent; and the variance of F is assumed to

be unity. The square of the factor loading is the proportion of the variance of X*i* that is accounted for by the factor (Manly, 1986).

It must be mentioned that the specific technique used is called factor analysis for ordinal data. This technique is required in this case because the response variables in the survey are ordinal scaled and not continuous. The procedure starts by computing a correlations matrix. The interpretation is similar to the method used with continuous data but is computed differently than the regular method. Correlations measure respondent agreement and provide an estimation of what the correlation between these respondents would be if ratings were made on a continuous scale. Once these correlations are computed, they provide a framework that allows testing of marginal homogeneity among respondents. After these correlations have been found, the factor analysis is performed for each of the three groups of data (Drasgow, 1988).

The three stages in factor analysis are 1) determine provisional factor loadings *ai*j; 2) perform factor rotation; and 3) calculate factor scores F1, F2,…F*m* for each of the groups of survey questions. It is possible to show that provisional factor loadings are not unique. Linear combinations that are uncorrelated and still explain the data can be constructed.

In the second stage, factor rotation involves transforming the provisional factors into new factors that are easier to interpret. Factor rotation can be either orthogonal or oblique. In this case, *orthogonal rotation* was used, in which the new factors are uncorrelated just as the old factors were. The method of orthogonal factor rotation used is called *varimax rotation,* suggested by H.F. Kaiser in 1958, which is based on the assumption that factor *j* can be measured by the variance of the square of its factor

loadings, *aij* (Manly, 1986). If the variance is large, then the *aij* values are close to zero or unity. Varimax rotation maximizes the sum of these variances for all factors, which is called the communality of X. The communality is the part of its variance that is related to the common factors and cannot exceed 1. Specificity of X*i* is *ei*, the part of its variance that is unrelated to the common factors. High loadings on the same factors mean high correlations exist between scores.

The final stage of factor analysis is calculating the factor scores, which are the values of the factors F1, F2,…F*m* for each of the studied survey questions. The researcher ultimately determines the number of factors, but often chooses the number of factors that explain most of the data test scores. These factors explain the most variation in the overall data (Manly, 1986).

CHAPTER IV

RESULTS

In this chapter, results and important findings from the survey data are presented. In the first section of the chapter, each of the study areas is described. In the second section, tables explain the descriptive analysis for the three non-agricultural development communities and the two control communities. The descriptive analysis for the four agricultural processing communities can be found in Leistritz and Sell (2000). The survey results for the three groups of communities are compared, and statistical tests of differences are conducted. The final part of the chapter presents a multivariate analysis, using a factor analysis model, and offers further insight to whether residents' views in each of the three different types of communities studied are significantly different. This analysis includes the survey data from each of the three different types of communities (nine communities) that were studied.

Description of Communities Studied

The following pages consist of brief descriptions of each community studied. These summaries include the history, demographic, and economic bases of each study community. More information on the agricultural processing study communities can be found in Leistritz and Sell (2000).

Non-Agricultural Development Communities

Kenmare

Major Economic Changes or Developments. Most leaders expressed the need for the community to diversify development away from the agriculture and oil industries because of their instability. Recently, there have been expansions at two of the large employers, MTI (telemarketing) and Creative Industries (manufacture truck trunks), and the addition of Commercial Group West (hotel prefab manufacturer), North Dakota Envelope (bulk envelope printing), Quilt Inn (motel), and the renovation and reopening of the Kenmare Theatre. In recent years, the town has lost some of its retail stores downtown including a clothing store and a hardware store (although there are two others), and is experiencing a drop in population and school enrollment. However, recent development initiatives are bringing in a few families and providing job opportunities to those people who currently reside in Kenmare. The development projects are providing stability and allowing Kenmare to maintain most of the businesses there.

Efforts to Recruit Businesses or Industries. No specific industries are being targeted to locate in Kenmare, but local leaders are seeking to diversify into manufacturing and other services, not just concentrating on the value-added agriculture or oil industries. Overall, leaders seem to express their belief that any type of development is positive and that the development corporation will accept and listen to any ideas. One leader, in particular, said that the employers that are currently operating in Kenmare were not “bought” by the community. The businesses want to be there and

invest their own money in their firm. Leaders also mention that businesses that employ only 5 or 10 people are just as important as those that employ 100.

Creative Industries (CI), which manufactured and sold campers and motor homes, was the first project that the development corporation completed in 1969. The development corporation put together a finance package that allowed the owner to relocate his business to Kenmare. The son later purchased the business and has since changed to manufacturing truck trunks. The business is expanding into other sales lines (pick-up accessories) and is adding retail stores in Williston and Minot. CI employs 15-20 people (fluctuates because of demand factors and program with the school), and 85 percent of these employees are men. CI allows some students from the high school to work during the school year to get some hands-on experience in building projects. The average wage at CI is $10.25 per hour. The major benefit of operating in Kenmare is that labor is less expensive, but on the other hand, the major disadvantage is the high cost of distribution.

Midwest Telemarketing, Inc. (MTI) has been in Kenmare since 1998 and expanded its working space and employees a few years ago by leasing a section of the old theatre building from the development corporation. The development corporation renovated the building and is leasing the back part to MTI, and the front part has allowed the city to reopen the theatre after five years of being closed. This telemarketing firm does mainly outbound calling to everywhere in the United States, selling many different goods and services. The telemarketing firm signs a contract with a business, and then, the MTI employees do the selling by calling customers on the phone. Wages average $9.00 per hour plus benefits.

Commercial Group West manufactures mainly prefab motel rooms but has also made bunkhouses for firefighters, school rooms, and day care facilities. The firm also has plants in Arkansas and Pennsylvania. The development corporation did not provide much assistance for this expansion to take place, except securing the land and putting in the utilities.

The new motel opened its doors in 2000. The original thought was that, with all of the truck traffic on US Highway 52 in and out of Canada, Kenmare would be a convenient stop. Now after the terrorist attacks and an increase in border security, border patrol officers are staying at the motel.

North Dakota Envelope is a small business that has been operating for five years and has four employees who print bulk envelopes for many different companies. The firm has also done some work for the North Dakota government.

The development corporation is assisting the state in forming the Des Lacs National Wildlife Refuge Tour Route for travelers and visitors to look at the wildlife in the area. The refuge employs approximately 17 people.

Recently, a local oil business, Eagle Operating, that has seven oil rigs including two currently outside of North Dakota brought in another company from Colorado, Wolverine Drilling, to combine their forces. Together, the two businesses have approximately 200 employees, but not all of the employees are located in Kenmare.

Overall, community leaders believe that local residents view the recent economic changes as positive. The new and expanded businesses are providing employment, which has brought some people to town. The retention of population means that houses are being used, and schools and churches are still going. The

development corporation has not had to ask the community for any extra funds besides the sales tax, which was re-voted on in 1998 and passed with a 90 percent approval rating. The 1 percent sales tax goes to economic development and city funding. Most realize that, if businesses do not try different ventures, Kenmare will not be around much longer, but some say that there is some skepticism that goes along with all economic development.

As community leaders, their biggest challenge is to find people who are willing to invest and buy a business in town because the leaders and community members are unsure that the business will make it. Members of the development corporation are open to any new idea, business, or employer that wants to locate in Kenmare. The current development projects are providing better salaries, retaining the population, increasing the tax base by about 10 percent per year, and uniting the community. A few of the leaders mention that affordable housing is a slight problem in Kenmare.

Grafton

Major Economic Changes or Developments. The leaders almost always refer to the town's continuing loss of population. The current population is estimated to be 4,300 to 4,500 compared to 6,000 in the early 1970s. A number of factors contribute to the population decline, including changes in the area's agriculture (shift away from growing potatoes and fewer seasonal farm workers needed for sugarbeets) and the downsizing of the State Developmental Center. The center was downsized from 800 to 150 residents and from 1,000 to 400 staff during the 1989-1995 period. Declining population coupled with aging of the population has led to declining school enrollments. The Grafton K-12 enrollment is now about 1,000 but has dropped by 140

in the past 2 years. The local retail sector has been declining for the past 20 years. Grafton is only 40 minutes from Grand Forks, and the competition is felt in all areas. However, while traditional Main Street (Hill Ave.) stores are closed, some new businesses have opened in recent years (Alco, Pamida, Cenex C-store, etc.).

Efforts to Recruit Businesses or Industries. There have been efforts for 25 years, but they have become better organized and more successful recently. In the 1970s, local leadership saw little need for economic development efforts as area agriculture was doing well. During the 1980s, the situation changed. Late in the 1980s, Walsh County formed a Job Development Authority (JDA) funded by a county-wide mill levy, and the city started a local option sales tax (1 percent). These groups have been the major resources for economic development locally, but the Red River Regional Council has also been a valuable resource. The council provides technical assistance to local governments throughout its multi-county service area.

Development efforts in the late 1980s and early 1990s were aimed at 1) finding replacement jobs for the jobs being lost at the Developmental Center (DC) and 2) finding alternate uses for DC buildings that were becoming redundant as downsizing progressed. A telemarketing firm was attracted early in the 1990s and created about 40 jobs, but it has since closed. The major success for local developers was the announcement (in the fall of 1996) that Marvin Windows would be locating a factory in Grafton.

The Marvin Windows (MW) plant currently employs 509 workers (12 salaried). About 67 percent of the workers are women, and 52 percent live in the Grafton zip code area. The starting wage is $7.75 per hour, and the average is $10.63 per hour.

Most production workers are near $10/hr. The company is regarded as having a good benefit package (health insurance, 401k retirement, etc.), and its profit sharing plan with checks distributed at Christmas is well regarded.

The company has been building up to its present work force by adding roughly 100 new positions each year (since 1997). There is some concern by other local employers about competition for labor, and the entry-level wage rates are likely being increased by some of these entities (e.g., the school system, nursing home, and some retailers). MW has had little problem in hiring the needed workers. However, a few local workers with no previous industrial work experience are having some problems adjusting to the demands of factory work (e.g., punctuality).

The Grafton location is attractive to MW because of 1) its proximity to the firm's headquarters (in Warroad, MN), 2) its convenience to major suppliers, and 3) the incentive package offered by Grafton. Proximity to HQ means that the Grafton plant needs no R&D staff, no engineering, and very limited human resources or training personnel. HQ personnel can provide support in these areas. Major components/supplies for the plant are aluminum (from a supplier in Yankton, SD), glass (from a supplier in Fargo), and wood (from Warroad). The Grafton plant is only 10 miles off I-29 and, hence, is easily supplied. The incentive package (including per worker "subsidy payments," a 20-year phased tax abatement, an industrial park with a spec building already in place, and a PACE loan used for businesses to make payments at low interest over a period of several years) was a factor in the final decision between Grafton and other possible sites that would satisfy the first two criteria.

Effects of New Employer (and Other Recent Changes). The main effect of MW appears to be stabilizing the local economy, rather than leading to an influx of workers and their families. Some leaders point out that the past few years have been a difficult period for agriculture, which may serve to offset the positive effects of MW. The plant is providing job opportunities for people getting out of farming, for those farmers needing an off-farm income (or second income) to help support the farm operation, and for workers commuting from surrounding communities (about 48 percent of the MW workforce is from outside the Grafton zip code).

The local retail sector continues to struggle. Several new businesses were started about the time MW announced its intention to locate a plant in Grafton. Some of these businesses are surviving (AmericInn motel, Cenex gas station, 1st United Bank), but others did not (Ben Franklin and Donna's Treasures gift and variety shop). Cafes and motels seem to benefit from the presence of MW, and there is a new pawn shop offering "payday loans." Overall, retail sales went up a bit right after the announcement but have declined slightly since. It was indicated by one leader, in particular, that it is very difficult to sell a business in town, and most times, businesses just have to close the doors.

Housing demand is being affected by the growth of MW, but not dramatically. A new subdivision was developed (utilities, etc.) soon after the MW announcement, but to date, only three structures have been built there, of which two are duplexes. Three of these five living units are currently vacant. There were also 20 units of condominiums built. Housing values increased soon after the MW announcement and have been stable since. (As a result, the city is now adjusting assessed values upward.)

There were a number of apartment units built during the 1990s, including 49 units that were created by remodeling two of the redundant DC buildings, some of which were higher and some lower income housing. However, none of the apartment complexes were built primarily in anticipation of MW worker-related demand. While there are some vacancies and homes for sale today, the leaders' assumption is that vacancies would be greater without MW.

The failure of substantial numbers of MW workers to relocate to Grafton has been a disappointment to some local leaders. While housing appears to be available in Grafton, the commuting workers appear to have lower-cost housing (farmsteads and houses in smaller towns) where they currently are living and, hence, have little incentive to move. Because MW is providing employment largely for Grafton residents and area commuters, businesses and service providers are not experiencing the effects often associated with an influx of workers and families.

Job opportunities and enhancements to residents' incomes are generally seen as positive effects of MW. Many of the community leaders state that there seems to be a shifting of job opportunities or a shuffling of the labor force. MW jobs are enabling some displaced farm families to remain in the area, and some local people are finding MW jobs an attractive alternative to their previous employment (which was sometimes part time and at a lower wage with few benefits). The company hires additional workers for the summer, including some college and high school students. Also, some local residents work part time (evening shift) in addition to full-time jobs elsewhere. MW is also providing an opportunity for some younger people (high school and trade school graduates) to stay in the area.

Local services are being affected very little by the MW facility and its growth. Police services experience a seasonal pattern with complaints and citations higher during the summer months. (These problems are attributed to an influx of seasonal farm workers.) There seems to be a decrease in violent crime and an increase in vandalism. Social service caseloads seem to track very close to statewide trends with no discernable effect from MW.

Daycare "is always an issue," according to some local leaders. Two daycare facilities opened about the time MW opened, so it is not clear whether daycare is harder or easier to arrange now. The situation is fluid, with some providers leaving the business and others starting. While the MW plant works shifts (as does the Developmental Center), there is no licensed daycare provider in Grafton who accommodates shift hours. The Regional Development Council is working to get grants and other funding for daycare centers (some nonprofit), but it is extremely hard to cash flow these businesses, so the success rate is small.

Other community facilities are generally rated favorably, but the leaders also stated that these services and facilities are not really affected by the MW expansion. Local recreational facilities are being enhanced by the development of a fitness center at the Developmental Center (part of the downsizing/conversion process). Local health services (hospital and clinic) draw mixed reviews but, again, are only tangentially affected by MW.

Public revenues and expenditures are affected through increases in values and by the incentives provided to MW. Assessed values are being increased based on the increase in market values that occurred about the time MW started. In addition, there

has been greater interest in remodeling homes and refurbishing rental units in recent years.

The incentive package represented a major commitment of community resources over a 20-year period. Key components were 1) a PACE loan through the Bank of North Dakota (BND), with the community contributing funds to "buy-down" the interest rate (local community buys down 30 percent and BND 70 percent buy-down to reduce interest rate to 5 percent); 2) a property tax abatement with tax on the land only for the first five years and the plant being phased onto the tax rolls over the next 15 years; and 3) annual job subsidy payments of $1,000 per worker (with a maximum of $500,000/year) for 20 years. The Grafton Growth Fund (funded from local sales tax) and the Walsh County JDA (funded from local property taxes) are the main sources of funding, but the city of Park River and the Pembina Co. JDA are also contributing. The incentive package is the result of the stable company reputation that MW has; it is not likely to go away in five years but is likely to succeed.

Major Benefits/Costs of Economic Development. The leaders believe that residents generally perceive the growth of MW as a positive influence for the community. Major benefits are jobs and payroll (cited as $10 million/yr.). This growth represents an opportunity for local people and businesses. The wage scale for the community has been increased. The presence of MW should help Grafton retain its population and businesses and diversify the local economy. The overriding view is that MW is allowing Grafton to hold its population and retain most of its retail businesses, whereas the hope immediately after the announcement was for population growth and retail expansion.

The negative effects that some area residents perceive include the concern that MW has received inappropriate tax breaks and that the jobs provided are relatively low wage. (The workers would not be able to purchase a home with this salary, and it should be used as a second income in the family.) The fact that funds derived from local sales taxes are being used to "subsidize" an established and successful firm is also a concern to some people. It is also stated that some residents, just like in any other community, do not see why there needs to be any change; they are happy with the community as it is currently. People think businesses are over taxed, and it is harder now to raise development funds for new projects, especially with the large commitment of funds to MW.

The leaders feel that many residents' views about MW have changed over time in that initially the facility was seen as a "savior" that would reverse the patterns of decline previously described. Over time, these initial expectations have come to be recognized as unrealistic, and the role of MW in providing economic stability and a basis for retaining workers, families, and businesses has become better appreciated. The effects of MW are much less dramatic than what people expected, but residents are now realizing that MW is giving back to the community with donations and volunteer efforts.

The leaders are unanimous in believing that MW has had a positive effect on Grafton. Most leaders feel MW is a good community member and a strong, stable company with an excellent future. MW provides a rigid internal structure, business mentality, and social culture for its employees. Residents appreciate the company's role in stabilizing the local economy and helping retain workers. MW has also been

good for the psyche of the people in the area; people now feel that the community is going to survive. Some community members indicate that their own assessment of MW's contribution might be more positive than that of the general populace "because I've thought about where we'd be without the plant."

Oakes

Major Economic Changes or Developments. Three major employers are greatly affecting the fortune of Oakes and the surrounding area: Omniquip/Textron (formerly Lull Mfg.), Performance Centers (telemarketing), and Melroe/Bobcat (in Gwinner). The jobs being provided by these employers are stabilizing the local population (Oakes grew by 204 persons, or 11.5 percent, from 1990 to 2000 [2000 population = 1,979]). Many of the workers at the two Oakes facilities commute from outlying areas and smaller towns (Hecla, SD, was mentioned). On the other hand, many Oakes residents drive to Gwinner to work at Melroe, where many jobs are $15 per hour with a good benefit package. Omniquip/Textron (Materials Handling Technologies) is seen to offer desirable jobs from the standpoint of wages and benefits. Performance Centers was recruited partially because it is offering jobs attractive to women, whereas men are filling a higher percentage of the manufacturing jobs.

Some local firms are also strengthing the local economy. They include Economy Oil (service station, bulk oil business, and a trucking firm), Engine Rebuilders (rebuild Bobcat engines), and a small computer business that was recently started.

The agricultural sector is still the cornerstone of the area economy, and there are some positive developments in local agriculture. Potato production has increased (to

supply the Aviko plant in Jamestown). This production stimulates not only increases in irrigated acreage, but also construction of potato storage facilities (warehouses). The community is building a new 110-car capacity elevator just east of town by Valley Grain (a joint venture of Wheat Growers Co-op and the Norway Spur Co-op Elevator).

Local population growth is strengthening the real estate market and is helping the town maintain its retail sector. Local businesses still struggle to compete with the stores in Aberdeen, SD, and Fargo, but there are few vacant buildings on Main Street. The town has at least three restaurants, one of which is the recently refurbished Angry Beaver. One Main Street store is being reconstituted as a furniture and floor covering shop.

The local hospital and clinic has been a major strength for Oakes, offering complete healthcare services. The hospital is one of the oldest medical facilities in the area and serves people in North Dakota and South Dakota. The clinic is quite aggressive and now has six or seven satellite clinics in towns like Lamoure, Ellendale, and Forman and a staff of eight doctors and eight physicians' assistants.

Efforts to Recruit Businesses or Industries. Oakes, like most non metro communities in North Dakota, is making efforts to attract new primary sector businesses. The most notable efforts are Lull Mfg. (now Omniquip), a sewing factory (unsuccessful), and Performance Centers. The local development entity is Oakes Enhancement, Inc. (OEI). The major source of funds is the local sales tax. (OEI receives 1/2 of the 1 percent tax.) OEI has sought to join forces with some of its neighbors, including the towns of Britton and Hecla (in South Dakota), Forman and Gwinner (Sargent County), Lamoure (Lamoure County), and Ellendale (county seat of

Dickey County). First, the group sought designation as an Empowerment Zone. Now, it is called the Dakota Stateline Regional Alliance. Oakes recently joined with MacIntosh County to achieve national recognition as champion status, which gives them priority points in competitive federal funding. The federal agriculture department designated four areas in North Dakota as these "champion" communities.

The Lull Mfg. plant was a major accomplishment for the OEI. The manufacturing plant began operation is 1972 as an offshoot of the Melroe/Bobcat operation. The major turning point was in 1995, when Lull Industries purchased the facility. OEI helped by providing the building to Lull at virtually no cost. (Five year tax abatement was also provided.) When Lull acquired the plant, it had 18 workers. In 1999, a major expansion occurred. OEI arranged for Industrial Revenue Bonds (IRB) to finance the $4 million expansion of the building, and the company put in $1.5 million of new equipment. (OEI also improved the access road for the industrial park where Lull was located.) After the expansion, employment went to about 120 workers (one report says 175 at peak). The plant had to cut back in 2001 because of slow demand. (The plant closed down for a month in December of 2001.) Job opportunities are coming back now, and Omniquip has 90 workers, of which 30-40 percent come from the local area, and the rest commute. At least 90 percent of the work force is male.

The main reasons that the company chose the Oakes site were 1) opportunity to purchase an existing facility, 2) incentives offered by the OEI (i.e., building was virtually free, a 5-yr. tax abatement, and the IRB financing for expansion), and 3) labor force (Omniquip finds that turnover and absenteeism are less than at its other facilities,

plus it is easier to find the people the company needs for expansion.) The labor force and its productivity are the main advantage to operating at this location. The main disadvantages are freight costs and the lack of a local training facility.

Local residents seem to view Omniquip as a good place to work, and some feel the company has raised the standard for wages and benefits (in the sense that other employers must attempt to match or risk losing their workers). Omniquip workers start at around $9 per hour plus benefits.

Performance Centers (PC) also represents a success for the OEI. Initially, OEI built a building at the Industrial Park for a firm that wished to start a sewing factory. The sewing operation lasted about two weeks! Performance Centers was recruited both to fill the building and because it would provide jobs for female workers. The firm began operating in February 1999 and has had over 100 workers during peak periods, but the company had some layoffs during the summer of 2001. At the time interviews were conducted (May 2002), PC was reported to have 65 working, employing both part time and full time, and the firm represents a $1 million payroll. About 40 percent of these workers commute from distances within 50 miles of Oakes. Approximately 75 percent of the employees are female.

Overall, local residents' views of PC have changed over time. Originally, there were some negative stereotypes of telemarketing, but now after three years, the community is realizing the benefits of the $1 million payroll and the job opportunities made available.

Oakes Enhancement, Inc. currently has one paid employee who works on an as-needed basis. At the time interviews were conducted, he had been needed quite a bit as

the community prepared its proposal to be the site of a new ethanol plant. Local leaders feel that a paid employee is critical because the board members all have full-time jobs, businesses to manage, and other demands on their time. It is hard for volunteers to do all that needs to be done in their spare time.

Major Benefits/Costs of Economic Development. Local residents see the major benefits of the new employers to be living wage jobs that also pay benefits. The new job opportunities bring people to town to work and possibly to live. As a result, Oakes housing values are strong, and local residents feel that the town has a future. This positivism helps foster community pride and a willingness to invest in the community, both in public facilities and in improvements to individual homes and businesses. The development projects have allowed Oakes to retain the people that the community does have, and the community has not lost any services in town because of the people coming in and out of Oakes on a daily basis.

The costs or problems that some people might identify include 1) competition of labor, 2) tight housing market, and 3) concerns about taxes. Some local employers (especially Main Street retailers) feel challenged in trying to match the wage and benefit packages offered by the new employers. Likewise, housing prices and rents are noticeably higher than in nearby communities. (Ellendale was specifically mentioned.) Some community members complain that their real estate taxes are higher than what residents would pay on the same house in Ellendale (because values are higher). Others are concerned that sales tax dollars are being used to subsidize companies that will then compete for local labor, etc. or that will not be successful. (Hence, the

assistance is wasted.) Critics were plentiful after the sewing factory failed but are less vocal now.

Overall, the consensus is that the leaders do believe that residents' views have changed over time. Local businesses and residents are now realizing the benefits of what these employers are providing for the community. The people who are involved in the community definitely have become more positive about development projects because they can easily see the impacts of them.

All the leaders feel that recent economic development efforts have been good for Oakes because the new jobs and payroll have really bolstered the local economy, housing market, etc. This development is reflected in the health of many local businesses. (e.g., The Ampride gas station/convenience store recently expanded.) Some problems associated with the development changes are the inability to provide a living wage job; many of the employees are using their earnings as a secondary income. Some leaders feel that another problem is that the community has not been very successful in attracting people to move to town.

In terms of lessons for other communities, the leaders mentioned 1) the need for a paid economic development person (Board members all have full-time jobs) along with making sure that there is a member on the board from every faction of the community; 2) the need for younger leaders to get involved in activities and decisions; 3) the need to find ways to leverage local resources (through matching grants, etc.); 4) the need for a community to be willing to invest in itself (be open-minded and aggressive, the opportunities and funds are there, you just have to go and get them); 5) the need to make sure that there is a workforce available (Several communities have

contacted PC to help them implement a telemarketing firm, but the company is not able to because there is not a workforce to support a firm); 6) the need to spread tax base resources throughout several ventures; 7) the need to work together, and not competing with surrounding communities to get the same employer because in the end everyone benefits; and 8) the need to be prepared with a good strategic plan in place that works.

Control Communities

Hettinger

Major Economic Changes or Developments. The most common response to this question was the out-migration of young people because of fewer job opportunities. Along with fewer job opportunities, the agriculture economy is causing a decline in the number of family farms, a common trend in rural communities. Many leaders refer to the population in Hettinger as fewer younger people and more elderly. With the loss of population, school enrollments are down considerably each year.

In the last five years, Hettinger has acquired three major chain stores to replace previously existing businesses, including Duckwells variety store, Runnings Fleet and Farm, and White Drug. Killdeer Mountain Manufacturing, which makes airplane parts for the military, started operation in June 2001 with the hopes of employing close to 50 employees. The company now employs only eight people because of the September 11th attacks. The community provided a new building on Main Street and the five lots on which it is located. The company is hopeful that it will be able to obtain more contracts in the future.

Efforts to Attract Businesses or Industries. Hettinger uses its county four mill levy and some help from community funds to employ an economic development director. This group has worked hard to do a considerable amount for the community and the surrounding area. The development group is now more focused on keeping what the community has by providing assistance to businesses in the area with things such as interest buy-downs and rent subsidies. Retaining what Hettinger currently has is becoming more important than bringing new industries to town. The economic development corporation has tried to attract businesses into the area, but as many smaller communities experience, it is difficult to convince a company to locate in a smaller community. The Adams County Development Corporation is currently looking at locating a power plant and a company that makes molds for plastic pop bottles in the area.

Population has been decreasing slightly in past years and is at approximately 1300 people. Many people who leave are younger people who go to college and do not have any opportunities to come back. Many of those people who used to come back after college were farmers who were going to take over their parents' operation, and for many, that is not an option anymore. There are also a substantial number of farmers and ranchers who have had to leave for jobs elsewhere because of the slumping agriculture economy.

Major Benefits/Costs of Economic Development. The leader's responses are mixed on this question. Some leaders believe that most residents in the community have a positive outlook on change in Hettinger. Leaders are upbeat on having the community, school, and businesses survive. Other leaders say that, if residents were

really excited about these projects, people would get involved and do something for the community, and they would not shop outside of town unless they absolutely needed.

A small number of the leaders mention that there are quite a few negative attitudes towards change in the community and that some residents believe there is nothing that the residents can do or no hope for Hettinger. There is a very strong nucleus of people on the development corporation, chamber of commerce, and city council that works very hard for Hettinger, and people often do not realize this.

Most of the leaders say that, depending on how far you look back, people's attitudes towards the community have both changed and stayed the same. Looking back many years ago, one leader mentioned that people used to get involved and went to city meetings as a social event and really seemed to care about the people and businesses in Hettinger. Others say that there has always been some criticism because people keep seeing the population drop, school enrollments drop, and businesses leave. Residents are remaining relatively positive, are proud of their community and school system, and want to keep them there.

Harvey

Major Economic Changes or Developments. The major change or trend that is mentioned by all leaders is loss of population, primarily through out-migration of young people. (Harvey lost 12.1 percent of its population from 1990 to 2000, declining from 2,263 to 1,989 residents.) This trend is blamed for the erosion of the local retail sector and an aging of the local population. It is also stated that the smaller communities surrounding Harvey that businesses depend on for income are losing population. Changes in the farm economy are cited as a major cause of population loss,

as older farmers with 1,000 to 2,000 acres are retiring, and operators with 5,000 to 10,000 acres are absorbing the land. In addition, low commodity prices, adverse weather, and crop disease have made it difficult for young people to enter farming. The Conservation Reform Program (CRP) is taking farmland out of production, as did the acquisition of 30,000+ acres for the Lonetree Reservoir. Each acre represents a loss of $120 in farm input sales annually, according to one leader.

Positive trends include the influx of hunters, which has done wonders for the motels and cafes, among other businesses. The new Hallal slaughter plant is doing better after start-up problems, and employs 20 people.

Efforts to Attract Business or Industry. The community is making efforts to attract or develop businesses, but the successes of these efforts have not been as positive as residents were hoping. Leaders' focus was initially on attracting value-added agricultural processors, particularly those with limited labor requirements (20 to 30 jobs). More recently, the community has broadened its view to include technology companies and manufacturing industries. An industrial park with utilities is being developed. Residents have also been seeking an Alco or Pamida store, but the major drawback for these businesses is that Harvey is not the county seat.

The economic development efforts are met with mixed success. The Hallal meat processing plant appears to be doing well after a rough start. The city built a $1.3 million building which the company is renting (rent to buy program). Another project currently in the works with the help of the regional council, is a new motel, restaurant, and lounge. Although, the council has a limited amount of resources, as does every other source of funds. Local leaders are also looking at bringing in an

organic flour mill which would manufacture organic wheat into flour to be sold to food processors.

One leader mentions that the well-established companies that are looking to expand would rather do so in a larger community because, if the company does not make it, the firm or its creditors will be able to sell the building, whereas in Harvey, all of this money would be forfeited. For this reason, Harvey Area Economic Development has been focusing more on assisting some local initiatives. The development group is looking more towards small start-up businesses, but the problem with these smaller businesses seems to be that the entrepreneurs do not have enough money (resources are limited), and their training in management and marketing is not always adequate. Businesses which the development group has recently assisted are a gift and candle shop; the Ready Mix; feed supply store; hardware store; and a new business that provides a website for farmers called FarmNet, which was established by a local entrepreneur and seems to be doing quite well.

Projects that did not work out include T. J. Manufacturing (which built trailers and failed after four years) and NuGrain (a food processor since absorbed by Intel Foods, Bismarck). Lack of success by the economic development effort is leading to a certain amount of pessimism among local residents and leaders.

The local economic development efforts are led by the Harvey JDA (which controls revenues from a 1 percent local sales tax which all goes to economic development) and Harvey Area Economic Development. There is also a county JDA (funded with a county-wide mill levy). The local economic development entities have one paid employee.

The Chamber of Commerce is active in local retail promotions (Crazy Days, city-wide rummage sale, etc.). The chamber is also involved in efforts to attract/develop local retail businesses to round out Main Street.

Major Benefits/Costs of Economic Development. When asked about effects of recent economic and demographic trends, leaders feel that almost every aspect of the community is affected somewhat. Population is declining, and the effects of heavy out-migration are widely evident. The leaders who grew up in the area each mentioned that only a handful of their high school classmates remain in the area. However, a few previous residents are returning to enter local businesses. Local businesses are affected, and the schools have seen dramatic declines in enrollment. Some leaders feel that loss of farmland to CRP and Lonetree has exacerbated these effects while others mention the positive influence of the influx of hunters.

The phrase often used when describing residents' views of past changes is "concerned." Residents are aware of the changes and concerned about what kind of community they will have in another 20 years. Those people who live in Harvey are worried about the value of their property and where it will be in the future. Some community members are defeatist while others still feel that the community has a future. Residents are unsure about whether to support the economic development projects or not because the community residents have not seen a lot of change. One leader states that many residents are not aware of what goes on and have not seen that the Harvey Area Economic Development has made attempts, but many of them failed. It is also stated that many residents do not get involved, so they are not aware of how much work goes into bringing a new business to town. Many residents now have the

goal of "holding our own and maintaining what we have." Another common attitude is resignation; many residents just do not care any more. One leader is concerned about a lack of community spirit. He feels the local newspaper is not helping much because it is owned/published by a person now living in Arizona who does not have much understanding of the pulse of the community.

Changes in Local Residents' Views. The responses are mixed. One leader indicated that the issues and concerns are the same as 15 years ago when he came to town. Other leaders are more concerned about the future than they were 15 or 20 years ago, and others are resigned to the changes they have seen (loss of population and businesses) and now view them as inevitable. One leader states that the non business people used to think that it was the older business people who were holding the community back. Residents now are realizing that the business owners are trying to do something, but are unaware of what to do. There are limited resources, and people just do not want to give. Overall, leaders believe that residents know that conditions are better in Harvey than in some of the surrounding communities.

The leaders' advice for other communities is centered on the need for cooperation by smaller communities. Leaders are making comments such as "we can not compete with Minot, and we need to cooperate with the smaller communities in our trade area to achieve our objectives, etc." Leaders also hope smaller communities could lobby the legislature to obtain more resources for development efforts. The South Central Regional Council (based in Jamestown) is mentioned as a good source of technical assistance (for grant writing, etc.), but the council's resources are also limited (perhaps shrinking).

Several leaders mentioned that the community needs to take chances but should make sure to find out all of the information before doing anything. The 1 percent sales tax revenue is good, but it is a limited amount and must be used wisely. One leader, in particular, says that the community needs to keep people, such as the school and other community organizations, involved as to what activities are going. Leaders need to contact people who are originally from Harvey to bring their businesses back to North Dakota.

In general, these leaders seem to emphasize the difficulties of economic development for communities like theirs. Compared to other towns visited, leaders tend to express the goal of maintaining what Harvey has, rather than aspiring to major new projects. Also, a very high percentage described Harvey as a conservative community.

Descriptive Analysis

The descriptive analysis is done using SAS and developing frequency distributions for each variable for each town. The purpose of this part of the analysis is for the reader to examine the different responses of residents across each community type. Tables representing the communities studied include demographic characteristics, economic characteristics, satisfaction with community attributes, relationship with the specific business/plant (in the development communities only), involvement in activities related to development (in the development communities only), opinions about effects of a new business/plant, opinions about circumstances of the business/plant (in the development communities only), assessment of positive and

negative effects of recent economic changes, and an assessment of costs and benefits of business/plant (in the development communities only).

Demographic characteristics for the residents who completed the survey in each of the five communities studied can be found in Table 4.1. Almost 50 percent of the respondents were between the ages of 30 to 49, with a very small number under 21 (4.8 percent) and a very small number between 60 and 65 (4.5 percent). About 12 percent of the respondents were 21-29 years old; 17 percent were 50 to 59; and 13 percent were 65 or older. A very large majority (67 percent) of the respondents were female, and about 97 percent were white. Overall, 79 percent of the respondents were married; 11 percent were widowed, divorced, or separated; and 10 percent were never married. About 37 percent of the people surveyed had a college degree; 29 percent had obtained education of high school or less; 25 percent had attended some post-secondary school; and 9 percent had a graduate degree.

Age distributions among the communities were similar, except in Hettinger where 30 percent (vs. 4 percent to 13 percen t in the other communities) of the respondents are 65 or older. There are more female than male respondents' in each of the communities, which ranged between 56 percent in Kenmare to 75 percent in Grafton. Race is mainly white, ranging from 92 percent in Kenmare to 100 percent in Hettinger. About 78 percent of the respondents are married, ranging from 67 percent in Harvey to 90 percent in Grafton. The remaining people are widowed, divorced, or separated (4.3 percent in Grafton to 17 percent in Hettinger), or never married (3.2 percent in Hettinger to 19 percent in Kenmare). The percentage of residents who are college graduates ranged from 52 percent in Grafton to 23 percent in Kenmare;

those who have an education of high school or less ranged from 15 percent in Grafton to 41 percent in Kenmare; and those who have attended some post-secondary education ranged from 23 percent in Kenmare to 32 percent in Hettinger.

Table 4.1. Selected Demographic Characteristics of Community Resident Survey Respondents, by Community (percentage)

	Kenmare	Grafton	Oakes	Hettinger	Harvey
Age					
<21 years	13.40	1.30	0.00	1.20	9.10
21-29	13.40	19.70	8.10	6.10	13.60
30-39	17.90	23.70	27.90	14.60	17.10
40-49	26.90	29.00	34.90	18.30	31.80
50-59	13.40	17.10	16.30	23.20	14.80
60-65	6.00	5.30	0.00	6.10	5.70
>65	9.00	4.00	12.80	30.50	8.00
Sex					
Female	56.00	74.50	68.00	60.60	73.90
Race					
White	91.90	97.80	94.90	100.00	97.30
Marital Status					
Married (or living as married)	69.30	90.30	87.00	79.80	66.70
Widowed, divorced, or separated	12.00	4.30	8.00	17.00	15.30
Never married	18.70	5.40	5.00	3.20	18.00
Education					
High School or less	41.30	14.90	23.00	29.00	37.80
Some post-secondary	22.70	22.30	27.00	32.30	21.60
College graduate	22.70	52.10	39.00	26.90	36.00
Graduate degree	9.30	10.60	11.00	11.80	4.50

Table 4.2 shows a comparison of demographics for the three types of communities. Almost 45 percent of the residents in the control communities are 50 or older, whereas only 26 and 28 percent are this age in the agricultural and non-agricultural development communities, respectively. Another primary difference shown in this table is that the education level in the non-agricultural development communities is higher; 48 percent of the residents have a college or graduate degree, whereas only about 39 percent in the control and 42 percent in the agricultural development communities have this level of education.

Selected economic characteristics of respondents in each of the study communities can be found in Table 4.3. Among those residents surveyed, 45 percent say that they are the primary wage earner in the household. Each community studied is similar except Grafton, where only 28 percent of the respondents are the primary wage earner. This being said, 68 percent of the respondents are employed by someone else; 15 percent are self-employed; 12 percent are retired; and only 4 percent are unemployed. Employment by someone else ranges from 56 percent in Hettinger to almost 82 percent in Grafton. Hettinger also has the lowest percentage of respondents who are unemployed at 1 percent, and Harvey has the largest at 10 percent.

The services sector employs the largest percentage of respondents with 56 percent, followed by finance at 12 percent; retail trade at 10 percent; manufacturing and agriculture each at 5 percent; public administration and transportation each at 3.5 percent; and mining, construction, and wholesale trade at approximately 1 percent each. Overall, household income is evenly distributed across all income levels ranging

Table 4.2. Selected Demographic Characteristics of Community Resident Survey Respondents, by Community Type (percentage)

	Ag Dev.	Non-Ag Dev.	Control
	n= 469	n= 270	n= 204
Age			
<30	24.60	18.60	15.10
30-39	24.10	23.20	15.90
40-49	25.40	30.30	25.10
50-59	13.20	15.60	19.00
60 or over	12.70	12.40	25.20
Sex			
Female	63.90	66.20	67.30
Race			
White	97.40	94.90	98.70
Marital Status			
Married (or living as married)	75.10	82.20	73.30
Widowed, divorced, or separated	10.70	8.10	16.20
Never married	14.00	9.70	10.60
Education			
High School or less	26.20	26.40	33.40
Some post-secondary	30.90	24.00	27.00
College graduate	37.30	37.90	31.50
Graduate degree	5.40	10.30	8.20

between 14 to 19 percent in each level, except in the $25,000 income level where 21 percent of the total respondents are found.

Most respondents (85 percent) own or are buying their homes, followed by 13 percent who are renting and 3 percent who are living in their residence without any cost. Approximately 19 percent of the residents say that they either own and/or operate a farm/ranch, and 21 percent said that they own some other type of property other than

Table 4.3. Selected Economic Characteristics of Community Resident Survey Respondents, by Community (percentage)

	Kenmare	Grafton	Oakes	Hettinger	Harvey
Respondent is primary wage earner in household	56.80	28.30	44.90	55.40	43.00
Respondent is					
Not employed	1.40	3.30	4.10	1.10	10.10
Retired	13.70	9.80	8.30	21.50	9.20
Employed by someone else	64.40	81.50	76.30	55.90	63.30
Self-employed	20.60	5.40	11.30	21.50	17.40
Industry respondent works in					
Agriculture	8.60	3.90	4.80	7.10	3.70
Mining, oil, and gas extraction	10.30	0.00	0.00	1.40	0.00
Construction	1.70	1.30	0.00	1.40	3.70
Manufacturing	12.10	5.20	7.20	2.90	1.20
Transp., communication, or utilities	12.10	1.30	2.40	1.40	1.20
Wholesale trade	3.50	0.00	1.20	0.00	2.50
Retail trade	13.80	7.80	4.80	11.40	14.80
Finance, ins., or real estate	8.60	6.50	10.80	30.00	3.70
Services	29.30	67.50	66.30	37.10	67.90
Public adm. or government	0.00	6.50	2.40	7.10	1.20
Household Income, 1998					
<$25,000	28.60	3.60	12.60	27.60	32.40
25,000-34,999	20.00	8.40	15.80	13.80	16.20
35,000-49,999	18.60	13.30	16.80	21.80	24.80
50,000-59,999	12.90	21.70	17.90	10.30	9.50
60,000-79,999	9.90	20.50	25.30	13.90	10.40
80,000 or more	10.00	32.50	11.60	12.60	6.70
Residence is					
Owned	81.10	95.70	86.00	83.90	77.50
Rented	16.20	4.30	11.00	14.00	18.00
Occupied without cost	2.70	0.00	3.00	2.20	4.50
Respondent					
Owns/operates a farm/ranch	18.70	19.20	15.00	25.50	18.90
Owns other property	28.00	25.50	12.00	25.50	18.00

farmland. The lowest percentage of people who own some type of real estate was in Oakes where only 15 percent own/operate a farm/ranch and 12 percent own some other type of property.

Table 4.4 compares the economic characteristics of residents in the three different types of communities. Much of this information is fairly similar among the three types of communities. A majority of the residents in the non-agricultural development communities have an income of $50,000 or more, whereas only 25 percent in the agricultural development and 22 percent in the control communities have this level of income.

Respondents' satisfaction with specific community attributes is listed in Table 4.5. Overall, respondents are completely or somewhat satisfied with fire protection (87 percent), medical services (73 percent), public schools (72 percent), utilities (71 percent), quality of natural environment (68 percent), housing (67 percent), streets and roads (63 percent), law enforcement (61 percent), and childcare/daycare (51 percent). Employment opportunities to keep the youth in the area rank last with only 11 percent of all the respondents reporting satisfaction in their community. The range for this attribute is highest in Kenmare (19 percent) and lowest in Harvey (7 percent).

Results are similar in each community for all attributes, but there are some significant differences. The opportunity to earn an adequate living is quite low in Harvey (27 percent) and highest in Kenmare (47 percent). Recreation facilities/opportunities range from 33 percent in Oakes to 63 percent in Grafton.

Table 4.4. Selected Economic Characteristics of Community Resident Survey Respondents, by Community Type (percentage)

	Ag Dev.	Non-Ag Dev.	Control
	n= 469	n= 270	n= 204
Respondent is primary wage earner in household	45.40	43.30	49.20
Respondent is			
Not employed	5.10	2.90	5.60
Retired	9.30	10.60	15.40
Employed by someone else	67.90	74.10	59.60
Self-employed	17.40	12.40	19.50
Industry respondent works in			
Agriculture	10.90	5.80	5.40
Manufacturing	6.90	8.20	2.10
Transp., Comm., or Utilities	8.50	5.30	1.30
Retail Trade	10.10	8.80	13.10
Finance, Ins., or Real Estate	6.40	8.60	16.90
Services	45.00	54.40	52.50
Public Adm. Or Government	6.10	3.00	4.20
Other (mining, construction, & wholesale trade)	6.10	6.00	4.50
Household Income, 1998			
<$25,000	23.60	14.90	30.00
25,000-34,999	18.20	14.70	15.00
35,000-49,999	19.90	16.20	23.30
50,000-59,999	13.00	17.50	9.90
60,000-79,999	14.20	18.60	12.20
80,000 or more	11.10	18.00	9.70
Residence is			
Owned	76.30	87.60	80.70
Rented	19.40	10.50	16.00
Occupied without cost	2.40	1.90	3.40
Respondent			
Owns/operates a farm/ranch	21.00	17.60	22.20
Owns other property	14.80	21.80	21.80

Table 4.5. Community Residents' Satisfaction with Selected Community Attributes, by Community

	Kenmare	Grafton	Oakes	Hettinger	Harvey
	percent *somewhat satisfied* or *completely satisfied*				
Fire protection	71.60	90.40	94.00	94.60	81.80
Medical services	48.00	73.40	76.00	93.60	70.90
Public schools	62.70	81.90	78.80	73.40	60.90
Utilities	62.70	73.40	72.70	76.60	67.60
Quality of the natural environment	65.30	64.50	69.70	78.00	63.60
Housing	51.40	76.60	68.00	76.40	60.90
Streets and roads	44.00	59.60	63.60	75.50	68.20
Law enforcement	33.80	68.10	78.80	75.30	43.60
Childcare/daycare	34.70	56.00	46.90	65.20	50.50
Recreation facilities/ opportunities	41.30	62.80	32.70	59.30	50.00
Opportunity to earn an adequate income	46.70	45.80	45.00	38.50	27.30
Employment opportunities to keep youth in area	18.70	10.60	13.00	9.70	7.30
Community as a place to live	70.80	90.80	89.30	91.90	77.70

Hettinger respondents report that they are either somewhat or completely satisfied with their streets and roads (76 percent) compared with 44 percent in Kenmare. Overall, when rating their community as a place to live, 70 percent or more in each town are somewhat or completely satisfied.

By looking at Table 4.6, a comparison of residents' satisfaction with selected community attributes is compared among the three types of communities. When residents were asked about their community as a place to live, 70 percent or more in each of the three types of communities were satisfied. When asked about an opportunity to earn an adequate living, residents in the non-agricultural communities were most satisfied (46 percent), then the agricultural (39 percent), and control (33 percent). Residents' satisfaction with employment opportunities for youth was quite low with almost 17 percent in the agricultural communities, 14 percent in the non-agricultural communities, and 8.5 percent in the control communities.

Only the development communities are analyzed in Tables 4.7 to 4.14 because the questions deal with specific recent development projects. The non-agricultural development communities are presented separately, and the agricultural communities can be found in Lestritz and Sell (2000). Following these data, there are tables that compare the non-agricultural development communities as a group to the agricultural development communities combined.

Most of the respondents (93 percent) know where the business/plant sited in their community is located, and slightly over half (59 percent) have visited the site (Table 4.7). The average percentage of respondents who work for the business is 10 percent, but ranges from 24 percent in Kenmare down to only 3 percent in Oakes

Table 4.6. Community Residents' Satisfaction with Selected Community Attributes, by Community Type

	Ag Dev.	Non-Ag Dev.	Control
	n= 469	n= 270	n= 204
	percent *somewhat satisfied* or *completely satisfied*		
Fire protection	84.20	85.30	88.20
Medical services	63.80	65.80	82.30
Public schools	73.20	74.50	67.20
Utilities	67.40	69.60	72.10
Quality of the natural environment	66.20	66.50	70.80
Housing	61.80	65.30	68.70
Streets and roads	34.10	55.70	71.90
Law enforcement	68.10	60.20	59.50
Childcare/daycare	50.50	45.90	57.90
Recreation facilities/ opportunities	51.80	45.60	54.70
Opportunity to earn an adequate income	39.30	45.80	32.90
Employment opportunities to keep youth in area	16.70	14.10	8.50
Community as a place to live	79.60	83.60	84.80

and 5 percent in Grafton. Approximately the same type of range occurs with having a family member who works for the business, with Kenmare at 29 percent, and Grafton

Table 4.7. Community Residents' Relationships with a Specific Business, by Community (percentage)

	Kenmare (MTI)	Grafton (MW)	Oakes (Lull Mfg.)	Total
Respondent knows where business is located	88.00	100.00	90.00	92.90
Respondent has visited business	66.70	69.20	44.00	59.10
Respondent works for the business	24.00	5.30	3.00	9.70
Family member works the business	29.00	12.80	11.00	14.10
Respondent lived in community when business was proposed	70.70	87.20	65.30	74.50
Respondent owns or works for company that supplies the business	13.30	18.10	11.00	14.10
Distance from residence to business:				
<1 mile	52.00	13.80	26.00	29.00
1-5 miles	17.30	72.30	55.00	50.60
6-10 miles	8.00	8.50	5.00	7.10
>10 miles	22.70	5.30	14.00	13.40

and Oakes at 13 and 11 percent, respectively. Overall, three-fourths of the respondents lived in the community when the business site was proposed.

Table 4.8 presents a comparison of residents' relationships with a specific business in the non-agricultural and agricultural development communities. The two groups of communities are fairly similar except that the residents in the non-agricultural

Table 4.8. Community Residents' Relationships with a Specific Business, by Community Type (percentage)

	Ag Dev.	Non-Ag Dev.
Respondent knows where business is located	98.30	92.90
Respondent has visited business	44.00	59.10
Respondent works for the business	3.00	9.70
Family member works the business	7.70	14.10
Respondent lived in community when business was proposed	81.80	74.50
Respondent owns or works for company that supplies the business	17.50	14.10
Distance from residence to business		
<1 mile	7.70	29.00
1-5 miles	62.60	50.60
6-10 miles	13.50	7.10
>10 miles	14.50	13.40

communities seem to be a little more involved in the new business than do the residents in the agricultural development communities.

Table 4.9 shows how involved residents have been concerning the new or expanded business in their community. Overall, slightly over 15 percent of the respondents say that they have contacted a company official for some reason or another, ranging from 23 percent in Grafton to 10 percent in Oakes. Likewise, approximately 15 percent have attended a hearing or meeting regarding the business, ranging from 22 percent in Oakes to 11 percent in Grafton and Kenmare. Respondents

were rarely involved in other activities such as contacting a government official, signing a petition concerning the business, and writing a letter to the newspaper.

Table 4.9. Respondents' Involvement in Activities Related to Development/Expansion of New Business, by Community (percentage)

	Kenmare	Grafton	Oakes	Total
Attended meeting or hearing about business	10.70	11.00	22.30	14.90
Contacted a government official about business	2.70	5.30	3.00	3.70
Signed a petition concerning business	5.30	3.20	3.00	3.70
Contacted company officials	12.00	23.40	10.00	15.20
Written a letter to a newspaper about business	1.30	1.00	0.00	0.70
Other activities concerning business	4.10	13.20	7.10	8.30

Table 4.10 shows residents' involvement in the development/expansion of the new business. The level of activity in every aspect is quite low for both groups of communities, ranging from 0 to16 percent involvement, but once again, those residents in the agricultural communities were more involved in a majority of the activities.

Table 4.10. Respondents' Involvement in Activities Related to Development/Expansion of New Business, by Community Type (percentage)

	Ag Dev.	Non-Ag Dev.
Attended meeting or hearing about business	15.80	14.90
Contacted a government official about business	4.10	3.70
Signed a petition concerning business	1.70	3.70
Contacted company officials	10.90	15.20
Written a letter to a newspaper about business	0.00	0.70
Other activities concerning business	9.70	8.30

When looking at residents' opinions about circumstances of the development or expansion of a new business in their community, only a small number (24 percent) of them somewhat or strongly agree that state government officials provided complete and accurate information about potential local impacts (Table 4.11).

Likewise, only 36 percent of all residents in the development communities agree that company officials provided complete and accurate information about potential local impacts, ranging from 24 percent in Oakes to 47 percent in Grafton. Although many of the respondents think that residents could have been more informed about the business, 63 percent report that the social impacts of the business are positive, and 73 percent say that the economic impacts are positive. These numbers are relatively similar across each of the non-agricultural development sites.

Table 4.11. Community Residents' Opinions About Circumstances of New/Expanded Business Project, by Community

	Kenmare	Grafton	Oakes	Total
	percent who *somewhat* or *strongly agree*			
Construction workers were area residents	56.00	42.60	44.00	46.80
Operating workers were area residents	54.10	62.80	65.00	61.20
State government officials provided complete and accurate information about potential local impacts	22.70	32.30	18.00	24.30
Company officials provided complete and accurate information about potential local impacts	36.50	46.80	24.00	35.50
Social impacts of the plant are positive	58.70	63.80	64.00	62.50
Economic impacts of the plant are positive	64.00	74.50	79.00	73.20

A comparison of opinions about circumstances of new/expanded business between the two types of development communities can be found in Table 4.12. Residents were asked questions about a specific development in their area. When residents were asked whether the social impacts of the plant/business are positive, 64 percent agreed in the agricultural communities and 63 percent in the non-agricultural communities. Satisfaction with economic impacts is a little higher in both types of communities (75 percent in agricultural and 73 percent in non-agricultural), but still very comparable between the two types of development communities.

Table 4.12. Community Residents' Opinions About Circumstances of New/Expanded Business Project, by Community Type

	Ag Dev.	Non-Ag Dev.
	percent who somewhat or strongly agree	
Construction workers were area residents	22.50	46.80
Operating workers were area residents	38.00	61.20
State government officials provided complete and accurate information about potential local impacts	30.90	24.30
Company officials provided complete and accurate information about potential local impacts	33.80	35.50
Social impacts of the plant are positive	63.90	62.50
Economic impacts of the plant are positive	75.30	73.20

Most residents feel that the economic benefits from the new development exceed costs (50 percent) to the community (Table 4.13). Approximately 41 percent of respondents overall believe that the social benefits to the community exceed the costs. The percentage of residents for these two questions is highest in Oakes with 58 and 48 percent, respectively. Although statistics are true, there are almost as many respondents who report that they were unsure as to whether the benefits exceeded the costs.

Table 4.13. Community Residents' Assessment of Costs and Benefits of Business Development, by Community (in percent)

	Kenmare	Grafton	Oakes	Total
Economic benefits to community exceeded costs				
Yes	45.30	45.70	58.00	50.20
No	16.00	13.80	7.00	11.90
Don't know	38.70	40.40	35.00	37.90
Social benefits to community exceeded costs				
Yes	31.10	42.60	48.00	41.40
No	23.00	17.00	10.00	16.00
Don't know	46.00	40.40	42.00	42.50
If an election were held, most people would vote in favor of ag.processing plant				
Somewhat or strongly agree	61.30	75.30	74.70	71.20
If an election were held, I would vote in favor of a new business development				
Somewhat or strongly agree	71.60	88.30	84.90	82.40

If an election were held today, almost three-fourths of the residents agree that most people in their community would vote in favor of having a new business development with the highest percentages in Grafton and Oakes. Finally, 82 percent say that they personally would vote in favor of a new business development, with each community responding over 70 percent somewhat or strongly agreeing. Grafton reports the highest percentage of residents agreeing (88 percent), then Oakes (85 percent) and Kenmare (72 percent).

Table 4.14 assesses the costs and benefits of business development in the two types of development communities. Residents are a little more unsure as to whether social benefits of the development exceed the costs because they answered “don’t know” more times than “yes” or “no.” The table also shows that 72 percent of the residents in the agricultural communities and 82 percent in the non-agricultural communities would vote in favor of new development in their community.

Table 4.14. Community Residents' Assessment of Costs and Benefits of Business Development, by Community Type (percentage)

	Ag Dev.	Non-Ag Dev.
Economic benefits to community exceeded costs		
Yes	47.10	50.20
No	12.80	11.90
Don't know	40.10	37.90
Social benefits to community exceeded costs		
Yes	34.00	41.40
No	18.00	16.00
Don't know	49.80	42.50
If an election were held, most people would vote in favor of ag. processing plant		
Somewhat or strongly agree	65.40	71.20
If an election were held, I would vote in favor of a new business development		
Somewhat or strongly agree	71.80	82.40

Residents in each of the five study communities are asked to rate their opinion, from strongly disagree to strongly agree, about new business development in their area. An overwhelming 91 percent somewhat or strongly agree that new business development is economically beneficial to a community. The percentages are all fairly close to 90 percent, except Kenmare. Respondents agree 98 percent in Oakes, 95 percent in Hettinger, 94 percent in Grafton, 88 percent in Harvey, and 79 percent in Kenmare (Table 4.15). Overall, 87 percent agree that the presence of a new business encourages other industries to locate nearby (range 95 percent in Oakes to 79 percent in Kenmare).

When comparing responses by residents of the different communities, the pattern seems to be that residents in Oakes are more favorable; then Hettinger, Grafton, Harvey, and Kenmare. Only about 12 percent agree that new businesses result in decreases in property values, and 12 percent agree that new businesses cause environmental contamination. Almost 86 percent of all respondents agree that new businesses increase residents' sense of well-being and community pride, ranging from 93 percent in Harvey to 75 percent in Kenmare.

Table 4.16 shows a comparison of residents of the three types of communities and their opinions about the effects of new business development whether they experienced it or not. Most residents (80 percent or more) agreed that new business development is economically beneficial and encourages other industries to locate nearby. Agreement levels were very low when asked about causing a decrease in property values, ranging from 11 or 12 percent in the control and non-agricultural communities to 16 percent in the agricultural communities. The residents in the

Table 4.15. Community Residents' Opinions About the Effect of New Business Development, by Community

	Kenmare	Grafton	Oakes	Hettinger	Harvey
	percent who *somewhat* or *strongly agree*				
New Businesses					
Are economically beneficial to a community	78.70	93.60	98.00	94.60	87.40
Encourage other industries to locate nearby	78.70	87.20	95.00	89.30	82.90
Result in decreases in property values	10.70	10.60	15.00	7.50	14.40
Cause environmental contamination	14.70	10.60	13.00	6.50	14.40
Increase residents' sense of well-being and community pride	74.70	81.90	91.00	92.50	85.60

agricultural communities said that new business causes environmental contamination (31 percent), whereas residents in the non-agricultural and control communities did not really believe that contamination occurred to a large extent from new business development.

The community residents are asked to rate the effects that recent economic changes have had on various aspects of their community (Table 4.17). Almost 64 percent rated effects on job opportunities to be positive or very positive, ranging from 93 percent in Grafton to 29 percent in Hettinger. Quality of life is rated as being positive by 51 percent of the residents, with 4 of the communities at approximately 50 percent and Kenmare at 31 percent. Other aspects of the community that are rated

as being positively affected by 40 percent or more of the residents were social organizations (49 percent), residents' incomes (49 percent), family life (46 percent), and schools (43 percent).

Table 4.16. Community Residents' Opinions About the Effect of Agricultural Processing/New Business Development, by Community Type

	Ag Dev.	Non-Ag Dev.	Control
	percent who *somewhat* or *strongly agree*		
Ag Proc. Plant/New Businesses			
Are economically beneficial to a community	86.50	90.10	91.00
Encourage other industries to locate nearby	81.60	87.00	86.10
Result in decreases in property values	16.30	12.10	11.00
Cause environmental contamination	30.80	12.80	10.50
Increase residents' sense of well-being and community pride	58.50	82.50	89.10

Table 4.18 shows residents' assessment of the positive effects of recent changes in the area on specific community attributes. The most positive effect is more job opportunities in the development communities. The numbers for residents' incomes are not as high as those for job opportunities. The residents in the agricultural communities agreed 54 percent, the non-agricultural 65 percent, and the control 26.5 percent.

Table 4.17. Community Residents' Assessment of Positive Effects of Recent Economic Changes on Selected Community Attributes, by Community

	Kenmare	Grafton	Oakes	Hettinger	Harvey
	percent who rated effect as *positive* or *very positive*				
Job opportunities	80.00	92.60	89.90	28.60	34.20
Quality of life	30.70	50.00	54.00	62.60	53.20
Social organizations (churches, civic and business groups)	30.70	41.50	56.00	59.30	54.10
Residents' incomes	62.70	52.10	79.00	23.30	28.80
Family life	34.70	40.40	47.50	56.70	49.10
Schools	37.30	36.20	64.00	40.70	33.60
Fire protection	20.00	19.20	45.00	60.40	49.60
Childcare/daycare	37.30	28.70	43.00	47.30	32.70
Local public revenues	53.30	26.60	55.00	34.10	27.90
Streets, roads, and highways	9.30	23.40	46.00	50.60	48.20
Local public expenditures	24.00	25.80	48.00	41.10	23.40
Water quality	10.70	5.40	15.00	65.90	48.20
Housing costs	18.90	19.20	42.00	50.00	17.30
Air quality	10.70	6.40	18.00	49.50	43.60
Police protection	10.70	16.00	36.00	42.90	24.30
Crime/public safety	10.70	11.70	21.20	40.00	25.20

Table 4.19 rates the negative effects that recent economic changes have had on various aspects of each community. Overall, none of the aspects listed are rated as negative or very negative by more than 18 percent of the respondents. The aspect that respondents rate as most negative was job opportunities (18 percent), followed by housing costs (16 percent), residents' incomes (15 percent), local public revenues (14 percent), schools (11 percent), and local public expenditures (11 percent).

Table 4.20 shows a comparison of residents' assessment of negative effects of recent changes on community attributes among the three types of communities.

Table 4.18. Community Residents' Assessment of Positive Effects of Recent Economic Changes on Selected Community Attributes, by Community Type

	Ag Dev.	Non-Ag Dev.	Control
	percent who rated effect as *positive* or *very positive*		
Job opportunities	84.90	87.50	31.40
Residents' incomes	54.40	64.60	26.10
Local public revenues	22.50	45.00	31.00
Quality of life	32.50	57.90	58.30
Family life	23.80	52.90	52.10
Schools	35.30	37.20	52.40
Local public expenditures	22.50	32.30	44.60
Air quality	6.80	46.60	33.80
Water quality	6.60	57.10	40.50

Table 4.19. Community Residents' Assessment of Negative Effects of Recent Economic Changes on Selected Community Attributes, by Community

	Kenmare	Grafton	Oakes	Hettinger	Harvey
	percent who rated *effect* as negative or *very negative*				
Job opportunities	5.30	1.10	2.00	44.00	33.30
Housing costs	8.10	23.40	11.00	17.80	17.30
Residents' incomes	6.70	2.10	3.00	38.90	23.40
Local public revenues	6.70	16.00	3.00	26.40	18.90
Schools	8.00	1.10	2.00	28.60	17.30
Local public expenditures	6.70	7.50	5.10	17.80	15.30
Streets, roads, and hwys	14.70	5.30	3.00	18.70	6.40
Crime/public safety	14.70	4.30	0.00	8.90	16.20
Childcare/daycare	13.30	2.10	2.00	11.00	9.10
Police protection	9.30	0.00	0.00	8.80	16.20
Social org., such as churches and business groups	6.70	1.10	0.00	19.80	6.30
Quality of life	9.30	0.00	2.00	13.20	8.10
Family life	5.30	1.10	1.00	15.60	7.30
Water quality	6.70	1.10	1.00	4.40	3.60
Air quality	5.30	1.10	1.00	4.40	1.80
Fire protection	5.30	0.00	0.00	3.30	1.80

Table 4.20. Community Residents' Assessment of Negative Effects of Recent Economic Changes on Selected Community Attributes, by Community Type

	Ag Dev.	Non-Ag Dev.	Control
	percent who rated effect as *negative* or *very negative*		
Job opportunities	1.50	2.80	38.70
Residents' incomes	1.90	3.90	31.20
Local public revenues	14.50	8.60	22.70
Schools	3.40	3.70	23.00
Local public expenditures	9.60	6.40	16.60
Quality of life	3.80	3.80	10.70
Family life	3.00	2.50	11.50
Water quality	12.20	2.90	4.00
Air quality	24.00	2.50	3.10

Multivariate Analysis

This section of the chapter shows the results from the factor analysis on support for the siting of an economic development project. It includes survey data from nine communities in North Dakota. Data from each of the three different types of communities are used, including those where an agricultural processing plant is sited, those where some type of non-agricultural development has occurred, and those communities that have not recently experienced any type of large economic development project (control). To begin with, results from the varimax rotation method are explained, and then, the analysis of variance for the factors determined in the rotation is presented.

An orthogonal transformation matrix is performed on the survey data using the varimax rotation method. The rotated factor pattern is found in Tables 4.21 and 4.22. Based on the data, two factors are chosen, which means that most of the variability in the survey data is grouped into these two variables. Together, these two factors explain approximately 92 percent of the variability that occurs within the data. Factor 1 consists of questions regarding the respondents' satisfaction with specific factors in the community (Tables 4.5 and 4.6). Factor 2 consists of questions regarding residents' opinions about effects of new business (Tables 4.15 and 4.16). Table 4.21 and 4.22 show the two factors (Factors 1 and 2, respectively) and their corresponding factor scores for the questions that represent most of the variability in the data. Table 4.21 includes those questions that are included in Factor 1 because of their significance of residents' feelings and are bolded, and Table 4.22 includes those questions that are included in Factor 2 because of their significance of residents' feelings and are bolded. The factor scores that are greater than 0.3 (positive or negative) are those scores that are largely determined by that factor and can be identified by the bold text. Factor 1 is comprised of questions 1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 1K, 1L, 2, and 4 of the survey data (Table 4.21). Factor 2 explains less of the variability in the data and consists of question 6A, 6B, 6C, 6D, and 6E (Table 4.22). (See the Appendix for survey questions.)

Now that the data have been combined into two variables, an analysis of variance (ANOVA) is done to test the significance of these two factors. Due to missing values, only 894 (not 1011) observations were used in this analysis. The model for the data is

Table 4.21. Rotated Factor Pattern for Questions Included in Factor 1

	Public Schools Q1A	Housing Q1B	Medical Services Q1C	Childcare Q1D	Fire protection Q1E	Law enforcement Q1F	Streets & roads Q1G	Utilities Q1H	Recreation opport. Q1I
Factor 1	**0.49403**	**0.57773**	**0.55633**	**0.48499**	**0.56216**	**0.60729**	**0.5206**	**0.64423**	**0.59784**
Factor 2	0.09492	0.11212	0.10265	0.01531	0.22185	0.01	0.26958	0.11839	-0.03616

	Opp. for income Q1J	Employment opport. Q1K	Natural environment Q1L	Overall satisfaction Q2	Feelings towards neighbors Q4	Plan to move Q5
Factor 1	**0.58597**	**0.46942**	**0.50908**	**0.70873**	0.23734	**0.36495**
Factor 2	-0.055	-0.20199	0.29208	0.21095	0.13216	0.12956

*Boldface describes the questions that are significant and included in Factor 1 to explain residents' feelings towards their community.

Table 4.22. Rotated Factor Pattern for Questions Included in Factor 2

	Economically beneficial Q6A	Encourages new industries Q6B	Decrease in property values Q6C	Environmental contamination occurs Q6D	Increases sense of community spirit Q6E
Factor 1	0.18988	0.19029	0.03264	-0.01452	0.17489
Factor 2	**0.87093**	**0.82054**	**-0.45311**	**-0.49477**	**0.71491**

*Boldface describes the questions that are significant and included in Factor 2 to explain residents' feelings towards their community.

$$X = M + \text{treatment effect} + n,$$

where X is the factor, M is the overall mean, the treatment effect is the survey factor with three levels (agricultural processing, non-agricultural development, and control), and n is the error term.

The null hypothesis tests whether each of the three types of communities are equal to each other for both Factors 1 and 2. When testing the equality of Factor 1 for three groups of communities, the P value is 0.7219 which is greater than 0.05. Therefore, the test fails to reject the null hypothesis at $\alpha = 0.05$, and there is no significant difference between each of the three types of communities for Factor 1. When testing Factor 2 for the three types of communities, the P value is <0.0001 and is highly significant. Therefore, the test rejects the null hypothesis at $\alpha = 0.05$, so there is a significant difference between the three communities for Factor 2.

At a 5 percent significance level, the least significant difference (LSD) for Factor 2 shows that the data from the agricultural processing communities are significantly different from the other two groups of communities. There is not a significant difference between the control and non-agricultural development communities. The survey questions that are included in Factor 2 and that represent the differences presented here are found in Table 4.8. The survey questions can also be viewed in the Appendix. (Please note that, in the surveys for the control and non-agricultural development community residents, the term “new business” is used, and in the surveys for the agricultural processing residents the term “agricultural processing plant” is used.)

The LSD test indicates that the overall mean for the agricultural processing plant communities is much lower than that of the other two types of communities (control and non-agricultural development). The interpretation of the test is that residents in the control and non-agricultural development communities scored higher on the survey questions for Factor 2 than did the residents from the agricultural processing communities. Residents in the control and non-agricultural development communities agree more on these questions than do the residents in the agricultural processing plant communities.

Much of the literature regarding economic development projects in rural communities reports that, often when an agricultural processing plant is sited, the community experiences rapid growth. Along with rapid growth, the community has to deal with social, financial, infrastructure, and environmental problems. In this case, the growth did not happen. The agricultural processing plants acted as population and economic stabilizers. Some possible explanations for the outcome of the factor analysis model include the following reasons: 1) most of the respondents from the surveys are those who live in town, and many times do not benefit first-hand from the siting of an agricultural processing plant; 2) food processors often emit some type of smell, and even though the plant is located in the industrial park, the smell hovers over the entire community because of its size; and 3) publicity given to the amount of farm payments given to producers may be perceived negatively by urban and non-agricultural business owners because they are paying taxes to fund those payments, but their business is not receiving any government aid.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

The final chapter is divided into three sections. A Summary of the thesis is given in section one. Section two highlights the important Findings from the descriptive and analytical statistics. Implications and the need for further study are outlined in section three.

Summary

This study's purpose was to examine economic development in North Dakota and its socioeconomic impacts on residents. This project was an extension of an earlier study completed on four agricultural processing plants in North Dakota located near Carrington, Wahpeton, New Rockford, and Jamestown, respectively. In this report, findings of a study comparing the impacts of non-agricultural (telemarketing, manufacturing, or exported service firms) and agricultural development projects in North Dakota are presented. The non-agricultural development sites included the communities of Kenmare, Oakes, and Grafton. Control communities (communities that have not experienced any type of large economic development project) are used for comparison. Control communities included Hettinger and Harvey.

The decline in agricultural employment has forced many people to find other employment or to leave the state. Agriculture has long been the main economic base for North Dakota, but leaders are looking for other alternatives. Leaders in communities across North Dakota are looking for ways to stop the out-migration of people and stabilize the population.

The study involved several different sources of information, including secondary data and results from industry, community leader, and resident surveys. Secondary data included population trends, retail sales and purchases, and pull factors for each of the study communities.

The continuation of this chapter highlights major findings of both the descriptive statistics and analytical statistics. The Findings are followed by implications of the study and areas for further research.

Findings

The important findings in this study are grouped into two different types of results. The analysis of descriptive results included survey data from the three types of communities: non-agricultural development communities (Oakes, Grafton, and Kenmare), agricultural development communities (Carrington, Wahpeton, Jamestown, and New Rockford), and control communities (Harvey and Hettinger). The multivariate analysis used the survey data from the three types of communities to compare whether there was a significant difference in respondents' feelings.

The descriptive analysis indicated that, overall, most residents in both the control and development communities believed that some type of business or economic development site in the area of their community is beneficial. New businesses are believed to encourage other industries to locate nearby, and these new ventures increased residents' sense of well-being and community pride.

The descriptive analysis cannot conclude that residents in the control and non-agricultural development communities believe new businesses cause environmental

contamination or result in decreases in property values. Results in the agricultural development communities indicated that the majority believe environmental contamination is a result of a processing plant siting in their area. The difference in perception amongst communities most likely occurred because the new/expanded businesses in the non-agricultural development communities involved something other than a food processing plant. Most food processing plants emit an odor, therefore reducing the value of living near the plant. Businesses such as a telemarketing firm, or a window and door manufacturer do not emit these odors. Most residents in the control communities that have not experienced any type of development are not aware of this type of odor.

Economic and social strain, such as housing shortages and crime, are often issues brought up in literature concerning economic development and growth in rural communities (Dalla et al., 2002; Broadway, 2000; Grey, 1998). These issues were not seen as major problems with communities in this study. The development offered more of a stabilizer than boom-town growth.

Job opportunities, quality of life, social organizations, residents' incomes, and family life are reported as the most positive outcomes from recent changes in these communities, whether the area has experienced recent development or not. The control communities as a group rated these factors at a lower percentage, possibly because they have not recently experienced any new economic development. Hettinger residents viewed job opportunities as being positive at only 29 percent and negative at 44 percent. Residents in Harvey viewed job opportunities as being positive at 34 percent and negative at 33 percent. Development communities reported that the

effects of economic development were much more positive for their community. A reoccurring comment by those people in the development communities was that the new business provided jobs for people in the area. The development stabilized the local economy and population rather than providing growth (in population or number of businesses). By looking at these descriptive statistics, it is evident that those people in the development communities were satisfied with the job opportunities that the development project provided. Those in the control communities feel more negative towards job opportunities in their community.

In general, study participants were relatively satisfied with their community as a place to live. Those attributes with which people were most satisfied included schools, housing, and medical services. Several leaders who were interviewed mentioned that the hospital and medical services in their respective communities were a large asset to residents.

An aspect that many respondents report not being satisfied with was the opportunity to earn an adequate income. The percentages of residents being not satisfied with the opportunity to earn an adequate living were lowest in the control communities (Hettinger 39 percent and Harvey 27 percent). Perhaps rural communities in North Dakota are making efforts to attract businesses into their communities, but are these firms providing a living-wage income? A living-wage income is that which we as a society deem high enough to live comfortably, and this wage is most likely different in other areas of the country. Leaders in the development communities believed that residents were more satisfied (than those in the control) with the wages offered. Income offered by the new business was higher than several other places in town, but

maybe was not adequate living wages. Because the control communities have not experienced any type of large economic development, they are less satisfied with the opportunity to earn an adequate living wage.

Those residents who experienced new business development in their community reported that the social (63 percent) and economic impacts (73 percent) of the new business are beneficial to their community. These respondents, as a group, have levels of participation in the development process (such as contacting a business or government official, writing a letter to the editor of the newspaper, or attended development meetings) that are very low (1 to 15 percent). Kenmare respondents seemed to be less favorable toward new business development than Grafton or Oakes residents.

The multivariate analysis further explains the survey results. Results indicated that there is a significant difference in the support for economic development between the agricultural processing plant community residents, and the control or non-agricultural development community residents. There was no significant difference between the control and non-agricultural development communities. It is concluded, therefore, that residents in the agricultural processing plant communities were less positive about the effects of economic development for those questions included in Factor 2. Questions included in Factor 2 included agreement of whether a new business/agricultural processing plant is economically beneficial, encourages new industries, decreases property values, causes environmental contamination, and increases the sense of community spirit.

It is interesting to note, though, that leaders in Harvey said that they want to be careful not to target any business that has labor requirements with more than 30 jobs, either because they felt the local labor pool is too limited or because they fear competition with local employers. On the other hand, leaders in Carrington and Oakes seem willing to "take a chance" on employers who might require quite a few more workers. It might be a lesson learned for community leaders who need to determine if a project is economically feasible but can only be so selective when trying to attract a business to locate in their community.

Just as much of the economic development literature suggests, job opportunities were generally seen as the positive benefits of economic development initiatives in these communities in North Dakota. The report on whether residents' incomes were enhanced varies among those people surveyed. Residents in Grafton said the income that the new business is providing has caused competition for the other employers in town. Those people in Kenmare and Oakes often mentioned that the income provided is fine for second incomes, but not primary. The main factor is that the new/expanded businesses did indeed provide more job opportunities for residents in each of the development communities.

The negative effects, such as infrastructure, social, and environmental problems, did not occur to a large extent. The new/expanded businesses in the development communities did not include large feedlots, for example, that may have caused odor and social problems. The development communities did not experience any type of rapid growth; rather, the population and economy stabilized.

Implications and Areas for Further Study

Unfortunately, not all of the survey data used in the multivariate analysis were collected in the same time period. As was stated previously, the agricultural processing study was completed in April 2000. The surveys for the non-agricultural development and control communities were collected in the summer of 2002. Although the time lag is not great, it would have been ideal to collect all of the data from each of the nine communities in the same time period.

An aspect to consider when doing further research on this subject is to survey those residents living outside of the city limits. The survey respondents in this study primarily live in town. Surveying only those people who live within city limits excludes many of the farmers. However, this type of data collection may be more complex because it would involve determining boundaries as to how far to go outside of the community.

The findings of this study are different than those done by Grey (1998) of a pork processing plant in Iowa and Broadway (2000) of a beefpacking plant in Alberta, among others. These researchers examined value-added processing of agricultural products in rural communities only to find that, although the siting of the plant did provide job opportunities, residents felt that the costs outweighed the benefits. The jobs tended to be low-paying; social problems in the community increased; and the community failed to meet the housing needs of newcomers. It is not evident that these social and environmental impacts occurred, to a large extent, in the communities studied in this project. Further research on this topic could extend into studying a larger region of the Great Plains, which would offer several different types of

development. This area of the United States, in general, has experienced decades of slow economic decline and out-migration of people. A bigger sample including more states and more projects would benefit this type of study.

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APPENDIX

SURVEY QUESTIONS

This questionnaire asks about your community and activities that have affected or might affect it. The goal of the project is to provide information to help communities make decisions about alternative types of development projects.

Your community was selected to participate in the study because it has been the site of recent economic development. While your participation is voluntary, we do want to know how you feel about your community and how the presence of new business development may have affected your community or how such facilities may affect similar communities.

This survey is being conducted by the Department of Agribusiness and Applied Economics at North Dakota State University. If you have any questions about the questionnaire, please call or write.

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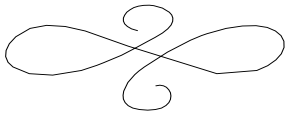

PLEASE READ THE FOLLOWING BEFORE STARTING THE QUESTIONNAIRE

To make sure we have an even mix of males and females answering this survey, we ask you to use the following method to select who in your household fills out the questionnaire:

The person who fills out the questionnaire should be the person 18 years of age or older who has had the <u>most recent</u> <u>birthday</u>. This person must be a permanent resident of the household. This means the person is not a guest or someone who rents a room from you.

It is essential that only one person in the household fills out the questionnaire. This means that the person who starts the questionnaire should be the one who finishes it. It also means that all the opinions should be those of the person who completes the questionnaire. We do not want a spouse's or some other person's opinions. We need only the respondent's opinions and their opinions alone. Remember, all of the answers are confidential. The information you provide will not be identified with any individual in any manner. Your participation in this survey effort is **voluntary**.

Please complete the questionnaire by marking the appropriate answer or by filling in the blanks provided. If you do not know the answer to a question, simply write in DK for don't know and go to the next question.

A member of our research team will pick up the questionnaire within 48 hours. If you do not plan to be home, a plastic bag is provided so that you can hang the completed questionnaire on the outside of your door.

COMMUNITY

This group of questions deal with your community ties and how you feel about your community.

1. Please indicate how satisfied you are with the following factors in this community.

	Completely dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Completely satisfied
a. Public schools	①	②	③	④	⑤
b. Housing	①	②	③	④	⑤
c. Medical services	①	②	③	④	⑤
d. Childcare/daycare	①	②	③	④	⑤
e. Fire protection	①	②	③	④	⑤
f. Law enforcement	①	②	③	④	⑤
g. Streets and roads	①	②	③	④	⑤
h. Utilities	①	②	③	④	⑤
i. Recreation facilities/opportunities	①	②	③	④	⑤
j. Opportunity to earn an adequate income	①	②	③	④	⑤
k. Employment opportunities to keep youth in the area	①	②	③	④	⑤
l. Quality of the natural environment	①	②	③	④	⑤

2. Using the scale below, please mark the response that best indicates how satisfied you are with this community as a place to live.

①	②	③	④	⑤
Completely satisfied	Somewhat dissatisfied	Neither dissatisfied nor satisfied	Somewhat satisfied	Completely satisfied

3. On average, about how many hours do you ordinarily spend in a normal month attending or taking part in any kind of organized or planned group activity or event (not associated with your work or job) that involves other members of this community?

① More than 10 hours per month
② 5-10 hours per month
③ 1-4 hours per month
④ Less than one hour per month

4. Using the scale below, how would you describe your feelings toward your neighbors? Would you say you are:

①	②	③	④	⑤
Very close	Somewhat close	Neutral	Somewhat distant	Very distant

5. Do you have any plans to move away from this community in the next five years?

① Definitely will not move
② Probably will not move
③ Probably will move
④ Definitely will move
Why? _____

NEW BUSINESS DEVELOPMENT

The next set of questions asks what you think and how you feel about certain aspects of new business development.

6. Please indicate whether you disagree or agree with the following statements.

	Disagree strongly	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Agree strongly
a. New business is economically beneficial to a community	①	②	③	④	⑤
b. The presence of a new business encourages other industries to locate in the surrounding area	①	②	③	④	⑤
c. A new business results in a decrease in property values in the surrounding area	①	②	③	④	⑤
d. Environmental contamination is likely to occur as a result of a new business in an area	①	②	③	④	⑤
e. A new business increases the area residents' sense of well-being and community pride	①	②	③	④	⑤

The following questions were asked only in the agricultural processing plant and non-agricultural development communities.

BUSINESS/PLANT

7. Please read the following statements about the Business/Plant, and mark "Yes" if the statement is true and "No" if the statement is false.

a. I know where the Business/Plant is located	① Yes	② No
b. I have visited the Business/Plant	① Yes	② No
c. I work for the Business/Plant	① Yes	② No
d. A member of my immediate family (i.e., husband/wife, son/daughter, father/mother, brother/sister) works for the Business/Plant	① Yes	② No
e. I lived in this community when the Business/Plant was first proposed to be located here	① Yes	② No
f. I own or work for a company that provides materials, goods, or services to the Business/Plant	① Yes	② No

8. How close do you live to the Business/Plant?

a. less than 1 mile
b. 1 to 5 miles
c. 6 to 10 miles
d. 11 to 20 miles
e. more than 20 miles
DK - don't know

9. Please indicate whether you disagree or agree with the following statements.

	Disagree strongly	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Agree strongly
a. The majority of the construction workers at the Business/Plant were residents of this area before the project was begun	①	②	③	④	⑤
b. The majority of the employees who operate the Business/Plant were residents of this area before the project was begun	①	②	③	④	⑤
c. State government officials have provided the public with complete and accurate information about the potential local impacts of the Business/Plant	①	②	③	④	⑤
d. Officials representing the Business/Plant have provided the public with complete and accurate information about the potential local impacts of the facility	①	②	③	④	⑤
e. The social impacts of the Business/Plant are positive	①	②	③	④	⑤
f. The economic impacts of the Business/Plant are positive	①	②	③	④	⑤

10. Please read the list below and indicate whether you have done any of the following activities.

a. Attended a public meeting or hearing about the Business/Plant	① Yes	② No
b. Contacted a government official about the Business/Plant	① Yes	② No
c. Signed a petition about the Business/Plant	① Yes	② No
d. Contacted Business/Plant officials	① Yes	② No
e. Written a letter to a newspaper about the Business/Plant	① Yes	② No
f. Other activities concerning the Business/Plant that are not listed above	① Yes	② No

If you answered "Yes" to question 10f. above, please list the activities below.

_____

_____

The following question was asked in all three types of communities (agricultural processing, non-agricultural development, and control). Note: The word "economic changes" was used in place of "Business/Plant" in the control communities.

11.The following is a list of community factors that can be affected by development and/or economic change. Please indicate what kind of effect you think that the Business/Plant has had on each aspect of your community.

	Very negative effect	Negative effect	Neither positive nor negative	Positive effect	Very positive effect	Don't know
a. Job opportunities	①	②	③	④	⑤	DK
b. Residents' incomes	①	②	③	④	⑤	DK
c. Schools	①	②	③	④	⑤	DK
d. Childcare/daycare	①	②	③	④	⑤	DK
e. Housing costs	①	②	③	④	⑤	DK
f. Police protection	①	②	③	④	⑤	DK
g. Fire protection	①	②	③	④	⑤	DK
h. Streets, roads, and highways	①	②	③	④	⑤	DK
i. Local public revenues (taxes, fees, etc.)	①	②	③	④	⑤	DK
j. Local public expenditures (funds,						

spent in service provision)	①	②	③	④	⑤	DK
k. Crime/public safety	①	②	③	④	⑤	DK
l. Family life	①	②	③	④	⑤	DK
m. Air quality	①	②	③	④	⑤	DK
n. Water quality	①	②	③	④	⑤	DK
o. Social organizations, such as churches, civic groups, and business groups	①	②	③	④	⑤	DK
p. Quality of life	①	②	③	④	⑤	DK

12. Of all the factors listed in question 12 above, which two or three do you think have been most significantly affected by the Business/Plant and why do you think this might be so? Please use the space below for your answer.

1_____

_____

2_____

_____

3_____

_____

13a. Do you think that the economic benefits to your community of the Business/Plant have been greater than the economic costs?

① - Yes ② - No DK - Don't know or have no opinion

13b. Do you think that the social benefits to your community have been greater than the social costs?

① - Yes ② - No DK - Don't know or have no opinion

14. Looking back on this area's experience with the Business/Plant, is there anything you think that should be done differently the next time such a company chooses to locate in your community or a similar community?

① - Yes ② - No DK - Don't know or have no opinion

If you answered Yes, please use the space below to explain why you think this is so.

_____

_____

15. If an election were held today, most people in my community would vote in favor of having an agricultural processing plant.

Strongly disagree ①	②	③	④	Strongly agree ⑤

16. If an election were held today, I would vote in favor of having new business development, such as a Business/Plant located in our area.

Strongly disagree				Strongly agree
①	②	③	④	⑤

The following questions were asked in all three types of communities (agricultural processing, non-agricultural development, and control).

BACKGROUND

We would like to ask some questions about you and other members of your household. Please remember, all your answers are confidential and the information you provide will not be identified with you in any manner. Information about your background will be used in a statistical analysis that compares the answers of many different kinds of people.

17. How old were you on your last birthday? _____ years

18. What is your sex? ① - Male ② - Female

19. Please indicate if you are

① - White
② - Black
③ - Native American, Alaskan Native, or Aleut
④ - Asian or Pacific Islander
⑤ - Other: _____
(please describe)

20. Are you of Spanish or Hispanic origin?
① - Yes ② - No

21. Including yourself, how many people live in this household? _____

22. How many in your household are less than 18 years of age? _____

23. How many in your household are 65 years of age or older? _____

24. What is your current marital status?

① - Married	④ - Divorced
② - Living as married	⑤ - Separated
③ - Widowed	⑥ - Never married

25. Please indicate the highest level of school that you have completed.

① - 8th grade or less	④ - Some college but no degree
② - 9th through 11th grade	⑤ - College degree
③ - High school graduate or GED	⑥ - Graduate degree

26. Are you the primary wage earner in your household?

① - Yes ② - No

27. Please mark your current employment status

① Unemployed _____(please go to **question 28**)
② Retired _____(please go to **question 28**)
③ Employed by someone else_____
④ Self-employed_____

27a.	What is your occupation? (Examples: Manager, Health Technician, Secretary, Waiter, Teacher, Laborer, Heavy Equipment Operator, Police Officer, Engineer, Carpenter, Farmer, Rancher, Salesperson) _____ (Please write your occupation in the space above.)

27b. Which of the following best describes the industry you work in; that is, the main kind of activity that is done by the place where you work?

1 - Agriculture, Forestry, or Fishing
2 - Mining, Oil and Gas Extraction
3 - Construction
4 - Manufacturing
5 - Transportation, Communication, or Public Utilities
6 - Wholesale Trade
7 - Retail Trade
8 - Finance, Banking, Insurance, or Real Estate
9 - Services (Business, Professional, Household, Personal, Social, Educational, or Health)
10 - Public Administration or Government (all governmental services including police and fire protection)

28. If you are married and living with your spouse (or living as married with someone), please mark your husband's or wife's (or partner's) current employment status.

① Unemployed

② Retired

③ Employed by someone else

④ Self-employed

29. How long have you lived in this community?
_____Years (If less than 1 year, then put "**<1**".)

30. How long have you lived in your current house?

_____Years (If less than 1 year, then put "**<1**".)

31. Which of the following describes the house in which you currently live?

① - Owned outright (that is, no mortgage payment)
② - Buying
③ - Renting
④ - Occupying at no cost but do not own

32. Do you own or operate a farm or ranch?

① - No

② - Yes

33. Excluding the house that you now live in and excluding farmland, do you own any other land or real estate in this area?

① - Yes ② - No

34. Please mark the number below that is closest to your household's 2001 personal income. (Include income from all sources before any deductions or taxes. This includes income from wages, salaries, self-employment, interest, rents, royalties, Social Security, other retirement income, child support, disability income, public assistance payments, and welfare income.)

① - Under $15,000
② - $15,000 to $24,999
③ - $25,000 to $34,999
④ - $35,000 to $49,999
⑤ - $50,000 to $59,000
⑥ - $60,000 to $69,999
⑦ - $70,000 to $79,999
⑧ - $80,000 or more