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Rural Revitalization and Telecommunications: A Study of Four Communities

By

Sharon Strover and Frederick Williams

November 1991

College of Communication
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Table of Contents

List of Figures

Preface

This research was conducted under sponsorship of a grant from the Ford Foundation Program in Rural Poverty through The Aspen Institute for the Humanities. It is both a continuation of the policy research projects in telecommunications and economic development undertaken by a research group at The University of Texas at Austin as well as a new point of departure. In particular, this study succeeded a nationwide study of innovative applications of telecommunications at rural sites in the United States, reviewed in chapter 2.

This study is at root a field report of four rural communities grappling with the challenges presented by the coming century: educational costs and crises, quality of life issues, economic health and the forces of internationalization, the changing ethnic composition of all America, race relations, using and adapting to advanced technology, and finding a place within state and federal levels of opportunity and constraint. It attempts to capture the process of economic development in all its faces. Consequently, it profiles religious aspects of the chosen communities alongside business aspects, medical needs alongside distance education aspirations, power company and telephone providers alongside newspaper publishers. In attempting to obtain a sense of the relative role of telecommunications in the development process, we felt it incumbent to understand everything else that also might matter. In so doing, we came to know the four communities quite well. At the conclusion of the project, we also felt able to offer the generalizations in chapter 7 as a comprehensive reflection on the *comparative* meanings and processes of development that we had observed.

The Epilogue sections that complete each community chapter represent short, initial reports on what has occurred in the community since the time of our visits for this study (primarily 1989 and 1990). These follow-up visits will be the main subject of another report to be completed at the end of 1991. However, we felt it significant to include a preview in this final project report because the reports underscore which elements in the community in fact are most subject to change. They portray the essence of what people and institutions in each site are capable of and interested in.

While the principal authors designed, directed, and compiled this report, many contributed subreports and drafts to its development. This includes Harmeet Sawhney, who contributed the initial draft of the earlier policy research project for chapter 2; field researchers Richard Cutler, Joan Stuller, and Eduardo Barrera, who contributed to the Eagle Pass chapter (chapter 3), done under the direction of Frederick Williams; Liching Sung and Richard Cutler, who contributed to the Kearney chapter (chapter 4), done under the direction of Sharon Strover; field researchers Joan Stuller, Liching Sung, and Dale Phillips, who contributed to the Demopolis chapter (chapter 5, done under the direction of Frederick Williams); and field researchers Liching Sung and Richard Cutler, who contributed to the Glendive chapter (chapter 6), done under the direction of Sharon Strover. Special acknowledgment is due to James McCaine who compiled the econometric analyses of the four counties and to consultant Dr. Amy Glasmeier, who oversaw these analyses.

Of course, many acknowledgments are due to the individuals at the sites who took time and effort to participate in interviews and to provide local documentation, and to those in particular who reviewed our interim reports. While too numerous to mention by name, these people showed extreme patience and insight in explaining their communities and their unique endeavors. We also owe considerable debt to numerous other researchers and individuals who attended two meetings organized by the sponsors for the research; those people include Robert Pepper (FCC), Alfred Lee (NTIA), James Beatty (Rural Economic Development Institute), Marie Howland (University of Maryland), Carole Barger (attorney), DeWitt John (The Aspen Institute), Sally Johnstone (Western Cooperative for Educational Telecommunications), Charles Manto (Economic Development Corporation of the County of Marquette), Richard Silkman (Maine State Planning Office), and Nancy Williams (GTE Telephone Operations) among others.

Finally, we would like to acknowledge the assistance and support of our colleagues who were principal investigators in closely related components of this Ford Foundation and Aspen Institute initiative into telecommunications and rural development. These include Heather Hudson, University of San Francisco; Edwin Parker, Parker Telecommunications, Inc. (Gleneden, Oregon), and Donald Dillman, Washington State University. Finally, Maureen Kennedy's guidance and support were crucial and we appreciate all her efforts to probe this subject and to seek new answers and solutions to problems of rural America while maintaining the vision of its tremendous strength and vitality.

Sharon Strover
Frederick Williams
Austin, Texas
1991

Chapter 1

Background and Objectives of the Research

I. Overview

The changing global economy has altered the economic viability of many rural areas of the United States (U.S. Department of Agriculture, 1987). Renewed efforts to revitalize rural areas have led to careful assessments of critical infrastructural elements contributing to economic well-being. One of these is the growing availability of information services and technologies and the opportunities they introduce. These services and technologies have proved critical in urban areas, and their distance insensitivity (especially with reference to satellites) and connectivity qualities suggest their potential for remote, rural regions.

Various researchers (Hardy, 1980; Dillman, 1983; Hudson, 1984) believe that rural revitalization can occur with increased attention to and deployment of telecommunications-based businesses and services. Relief from rural poverty is often one of the cited advantages of such developments, as well as increased employment, greater efficiencies, and improved competitiveness. Some also claim that the disparity between rural and urban communities can be equalized by enhancing the telecommunications base already existing in rural areas. However, the current transition to a less regulated, market-driven telecommunications environment poses clear problems for rural areas where market demand is small, diverse, and disaggregated.

This research is premised on the notion that information technologies can affect some options for employment, health care, communication, and organization within a community. Yet deploying those technologies in certain ways affects members of the communities and stakeholders in the telecommunications realm in different ways. While one rural business may obtain needed phone services at affordable prices from a bypass service (e.g., a direct connection to AT&T for interexchange service with a saving on access charges normally going to the local exchange), the impact on the local exchange company can be negative: Limited in its service and geographical markets, a local exchange company (LEC) may suffer if several other providers begin to "compete" with it, chipping away at its revenue base and consequent ability to continue to offer service to other rural areas.

We undertook this research also knowing that the post-divestiture environment of telecommunications services has radically altered many of the dynamics at work in providing communications services to both urban and rural areas. The Bell operating companies (BOCs) are the dominant local exchange companies throughout the country, and US West is particularly important for the rural Midwest and West. While divestiture may have been prompted by the demands and potential competitiveness of what we now know as interexchange services (long-distance services), the net impacts on local monopolies providing the final connections to end users became obvious very quickly. With increased competition allowed in customer premises equipment and other telecommunications services, the BOCs found in their large urban markets new opportunities for investment and additional revenue, new constituencies for advanced offerings (e.g., data links), and a business community in danger of moving to bypass services if the local loop did not offer a state-of-the-art network.

In their quest to modernize urban facilities most BOCs ignored rural areas, or worse, consolidated their offices in these lower-revenue-producing areas and simply vanished.[1] Competition was unlikely to develop in these regions; in many cases they were subject to diminishing populations anyway and consequently required fewer access lines.

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[1] That is, they lack a community presence even though they still provide service.

Moreover, deploying certain reliable telecommunications technologies obviated the need for a phone company to have local offices in every single small town; the labor was unnecessary. Finally, corporate restructuring dictated a more regional approach to providing phone service. All these factors have conspired to "remove" the BOCs from rural America. Even so, service quality in some rural areas was often poor, with party lines, older switches(and therefore limited in flexibility), and uncertain line quality. Quality service to rural areas has not been near the top of the BOCs' agendas.[2]

We also began this research with the goal of ascertaining what mix of factors—economy, people, education, community spirit—was necessary in order for infrastructure investments such as phone systems to be useful. It has become clear to us in the course of this research and in the course of our work with other colleagues (Schmandt, Williams, Wilson, & Strover, 1991) that facilities alone are insufficient for economic or community development. A calculus of resources, people, and development perspectives can yield innovative, efficient, beneficial telecommunications applications; however, achieving the proper mix of all these elements is fraught with uncertainty, trial and error, and mistakes.

The present research builds on a three-year study of telecommunications and economic development in three environments: the States (Schmandt, Wilson, & Williams, 1989), cities (Schmandt, Williams, Wilson, & Strover, 1990), and rural areas (Schmandt et al., 1991). Those studies, however, focused upon technology and policy issues and did not delve systematically into patterns of likely impact on the rural economy and community. Thus the purpose of the proposed research was to carefully investigate the local, community outcomes and environments associated with innovative uses of information technology in rural areas.

Using four case studies selected on the basis of (1) rural location, (2) the presence of modern telecommunications infrastructure or applications, and (3) diverse economic bases, we gathered qualitative and archival statistical data that yield a better picture of the impact of the local telecommunications sector on the rural community. Such information should help the policy-making community understand which government and market interventions result in desirable and undesirable outcomes.

II. Research Objectives

Rural areas and towns, home to the poorest people in the United States, have pressing needs for new economic initiatives. With the downturn in agricultural and resource-based businesses in rural areas, local governments as well as state and federal policy makers are looking to new industries and services as possible solutions to rural poverty. A recent study of telecommunications planning and policy in seven states (Williams, Schmandt, & Wilson, 1989), found that in many cases state government has implicitly looked to new communications technologies as either key elements of the infrastructure or as businesses or services in their own right, and that they have positioned them as tools for rural revitalization. The federal government seems to be following suit with its distance learning programs and support of other rural telecommunications initiatives.

The present research sought to examine some of these economic revitalization assumptions against the actual experience of the people living in the communities where some new applications of telecommunications services are based. In particular we assessed the impacts of specific telecommunications developments on aspects of community life such as education, local economic development planning and action, health services, local business climate, and social services.

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[2] According to Parker, Hudson, Roscoe, and Dillman (1989), the BOCs serving rural areas have fewer digital switches and deploy less fiber than either large independents or small rural phone companies serving those regions

Our principal research goals were as follows:

1. To identify the revitalization outcomes, both positive and negative, associated with telecommunications-based businesses and services located in rural communities.

2. To assess the social changes in a rural economy, restructured by the erosion of the agricultural base and the rise of the service base (enhanced by telecommunications).

3. To examine the role of state, federal, or local policy initiatives affecting telecommunications or telecommunications-based businesses as they locate in or influence rural communities.

We selected four sites that vary in their local and state contexts in order to explore these issues. The sites include Kearney, Nebraska; Demopolis, Alabama; Glendive, Montana; and Eagle Pass, Texas (Figure 1.1, page 4). They represent cases of economic success (Kearney) and severe economic distress (Glendive); larger rural towns (Eagle Pass) and quite small towns (Glendive); geographic remoteness (Glendive), adjacency (Eagle Pass), and "hub" towns (Kearney and, to some extent, Demopolis); and they are located in states with varied telecommunications policies, ranging from Nebraska's very deregulated situation to states characterized by some regulatory flexibility (Montana, Texas).

III. Background to the Issue

In the United States, rural areas have often been the last to reap the benefits of technological innovations. With respect to the information and service businesses now altering the shape of our economy, rural areas are emerging as regions where new space- and time-insensitive technologies can bring great advantages; but at the same time deregulation in certain industries (e.g., finance) and other economic shifts have shaken local economic infrastructures. Consequently, it is in rural regions that the economic, political, and social infrastructure is least able to exploit many of the possibilities that telecommunications can offer. Moreover, although many information technologies are "scale neutral" or usable by small as well as large farms or businesses, their adoption occurs earliest among larger enterprises. This adoption pattern highlights the disparities between the small or less sophisticated rural farmer or business owner and the larger farmers (agribusiness) and rural service providers with increasingly concentrated agricultural resources (Lu, 1985).

According to the U.S. Department of Agriculture (1987), many rural counties provide highly specialized work opportunities rather than the diverse work types found in urban areas; by 1986, 1,000 of the nation's 2,400 rural counties had annual unemployment rates of 9% or higher. About 700 of all rural counties specialize in agriculture, another 700 in manufacturing, and about 200 in mining and energy extraction. Each of these sectors suffered tremendously during the 1980s. Since 1979 employment growth in rural areas has been one-third of that in urban areas (4% compared to 13%), with agriculture showing no growth at all. Additionally, the poverty rates of rural populations regularly exceed those of metro areas. The 1985 rural poverty rate was 18.3 % compared to 12.7 & in metropolitan areas.

Moreover, the rural population—more likely to be elderly, white, and Southern—is underemployed and undereducated compared to urban populations. High school completion in rural areas lags ten percentage points behind that in urban areas. The illiteracy and dropout rates in the South particularly stand out. This means that many rural

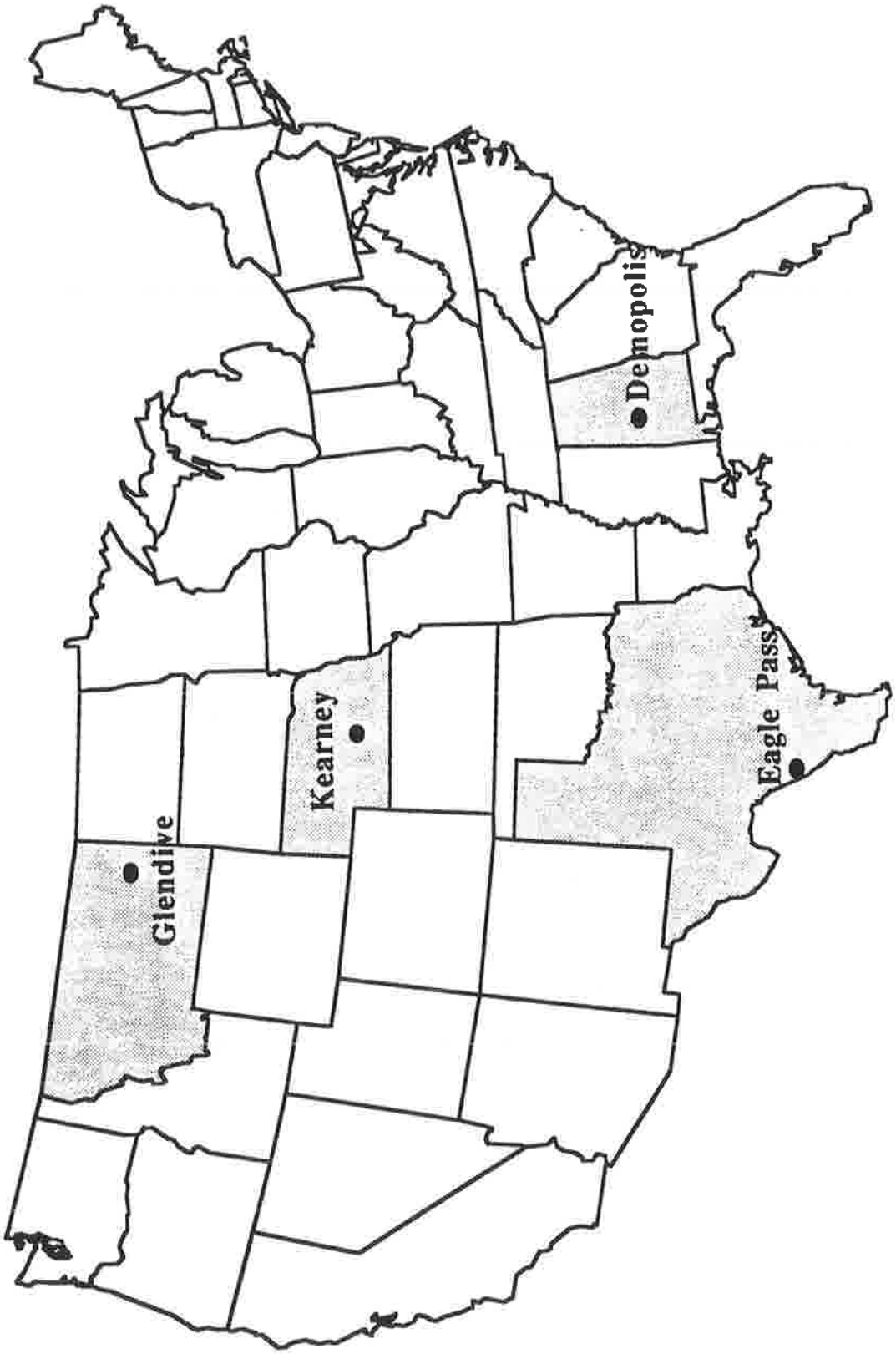

Figure 1.1. Location of the Four Study Sites.

people lack the education and employment experience that might help them break the cycle of economic stress in their region.

Various programs have attempted to address problems faced by the rural communities. Most can be distilled into a fundamental call for economic development or revitalization. This call in turn recognizes that rural economic development will not be based on agriculture or "farm policy," but rather will necessarily involve new industries (including recreation opportunities and retirement communities) and manufacturing endeavors that appear to survive well in rural areas.

In the 1970s and 1980s several researchers established a link between economic growth and telecommunications investment (Hardy, 1980; Parker, 1981; Hudson, 1984; Saunders, Warford, & Wellenius, 1983). However, this work examined either developing countries or a time period in the United States characterized by a vastly different telecommunications infrastructure (e.g., before the public switched network was well established and before the recent proliferation of technologies and industries based on telecommunications). The transferability of such findings to America's rural areas with their multiple economic bases and unique problems remains to be seen.

Nevertheless, prominent rural sociologist Don Dillman also sees a future for information technologies revitalizing the nation's rural areas, although he acknowledges that adoption of such technologies in business, educational, and cultural settings is difficult to predict (Dillman, 1983). He explicitly alludes to the economic and educational barriers that make revitalization in rural areas so difficult. Dillman's work considers rural deprivation and the implications of what some call the "growing information gap" between rural and urban areas.

These suggestions and findings have advanced a technology-based solution to economic revitalization problems: If telecommunications and advanced technology-based businesses move to rural areas, revitalization will occur. Bollier, for example, advocated renewed development of the rural telecommunications infrastructure (Bollier, 1988). California's Intelligent Network Task Force suggested that universal service be defined as something more than "plain old telephone service," that it instead be extended to include access to a more sophisticated "intelligent Network" (Pacific Bell, n.d.). The Washington State Economic Development Board's task force recommended that the state support job creation by establishing telecommunications links to rural regions (Washington State Economic Development Board, 1988). Some vendors and businesses have followed that call and established telecommunications services in rural areas that ordinarily would not obtain them, or moved telecommunications-intensive businesses to rural areas.

For example, telemarketing firms are now locating in rural midwestern states, replacing expensive urban labor with relatively cheaper rural labor (Richards, 1989). The Welnet program of the State of Texas has instituted a $12 million statewide collection of local area networks; serving about 100 offices, the program is designed to automate and streamline the welfare delivery system. The goal of Welnet is to move information and processing power closer to the end-user where it will be most valuable. Maquiladoras have proliferated among the Texas-to-Arizona border in part because they can take advantage of cheap labor while maintaining links via telecommunications with management in a distant, nonborder office.

The explicit link between such revitalization efforts or plans and the life experiences of the communities in which they take place, however, is unclear. Which people benefit from such developments? What effects are felt by local residents in terms of jobs, social services, education, and other quality-of-life factors?

IV. Work Plan and Methodology

As mentioned above, this investigation was carried out in four locations: Texas, Nebraska, Montana, and Alabama. We chose these states because they are characterized by large rural areas and because they harbor telecommunications infrastructures that appear to

have some role in local business, education, or other realms and seem to have affected the economic and social character of the communities in which they occur. They also represent a range of counties with various dominant industries, including mining and energy, manufacturing, and farming. Some of these sites have minority populations (Eagle Pass and Demopolis) facing unique language and occupational difficulties that affect their participation in mainstream economic endeavors. Some represent extreme poverty. They include people affected by the downturn in the agricultural sector that has gripped the United States in the past few years.

A qualitative community study was undertaken at each site, augmented with archival data concerning the location's past and present economic performance and any available statistics concerning the poor people in the area. The qualitative data-gathering relied on interviews with individual community leaders and others concerning the perceived impacts of telecommunications businesses as well as interviews and discussions with a range of economic stakeholders in the region (the telecommunications-oriented businesses, phone companies, etc.), who shared their perceptions of their contributions to revitalization and the problems of poverty. We also held several small group meetings (focus groups) in each location with different people, some recruited through churches, some through schools, others through informal networks, to discuss perceptions and indicators of local economic and social conditions and the priorities as well as the alterations, if any, prompted by a changed economic base. We routinely spoke with school superintendents, PTAs, small business owners, rural phone company managers, and economic development committees.

We also talked with numerous state government representatives in order to understand state policy that influenced the economy of our sites and the environment for telecommunications services. We investigated a few significant industries on a larger scale, notably telemarketing and the maquiladora, in order to understand the general principles that enter into establishing those businesses. Finally, we also sought to understand the role of interexchange carriers and conducted some interviews with service providers not based in our communities, (e.g., AT&T) but responsible for policies that influenced their service to such rural areas.

The combination of statistical data, respondent reports to semistructured questions, as well as observational data based on field work yields a rich picture of the interactions between the rural community, economic welfare and development processes, and the growth of the telecommunications infrastructure.

V. Organization of This Draft Report

This current study, in its draft form, includes our preliminary reports on the four communities studied. Each site chapter covers an entire community. Each includes an economic base analysis employing location quotient analyses, and each examines the community in terms of its economic development plans and options. Significant educational, health care, social service, and business or industrial aspects of telecommunications are highlighted, although the specific focus in each community varies according to the dominant themes evident there.

Our final report will have an additional concluding chapter that relates these findings to the policy issues and range of state and local initiatives that can have some effect on ameliorating rural towns' economic vulnerability.

Chapter 2

The Background Project: "Telecommunications and Rural Development: A Study of Business and Public Service Applications"[1]

I. The Policy Research Project

A. *Relation to the Present Study*

As introduced in the previous chapter, the present project grew in part out of a study of telecommunications innovations at some 37 rural sites. That study was the fourth in a series of telecommunications-oriented policy research projects carried out jointly by researchers in the Lyndon Baines Johnson School of Public Affairs and the Center for Research on Communication Technology and Society, both at The University of Texas at Austin.

Again, while the previous study focused on the innovations themselves, the newer project studied the entire community, then examined telecommunications uses in that context. In this chapter we provide a synopsis of the policy research project and then discuss its contributions to the Ford Foundation study.

B. *Focus of the Policy Research Project*

The policy research project was prompted by two factors: first, the recognition that rural areas of the country are suffering economic duress; and, second, the widely held expectation that the newest generation of telecommunications technology within the context of the Information Age may provide new opportunities for ameliorating some of the difficulties facing sparsely populated and remote parts of the country.

The potential of telecommunications has been realized in many communities, and this study has attempted to describe and analyze a number of these. Many discussions of telecommunications linger on speculation concerning larger issues such as the Information Age, structural change, or social equity implications; the approach here directed attention to the micro level, namely, the first fronts where the impact of rural telecommunications is being felt. Studying these innovations has provided insights into important areas of policy considerations, namely, the benefits of telecommunications investments, the mechanics of implementing an infrastructure strategy, and the relationship between economic and community development and telecommunications strategies.

The research sought answers to three primary research questions. First, what sorts of innovative telecommunications occur in rural areas? Are there key players such as grass-roots organizations, local businesses, telephone companies, and policymakers behind them? If so, how do such applications originate? This issue is addressed at several points throughout the study as we examined a range of innovative telecommunications uses.

Second, what role does telecommunications play in rural innovation and economic development? How do telecommunications infrastructures further economic advancements and what is their relationship to other causal factors? In short, we questioned whether telecommunications is a catalyst for rural economic development.

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[1]This study was a collaborative project of the Center for Research on Communication Technology and Society and the Lyndon Baines Johnson School of Public Affairs at The University of Texas at Austin. Until publication in Schmandt, Williams, Wilson, & Strover (1991), it is available as a research report from the authors of this monograph. Sponsors were Southwestern Bell Telephone Company, the Texas Telephone Association, and GTE Communications of the Southwest.

Finally, what are the policy and development implications of innovative telecommunications-based applications? Providing advanced telecommunications services to rural communities can be extremely expensive for telecommunications companies, so strong incentives to develop them are often lacking. Nevertheless, innovations of various sorts can obtain a great deal of public support and occasionally overcome some of the rural area's diseconomies.

C. *Research Plan*

To address our research questions, a comparative case study approach was adopted. This study is based on 37 case studies of public and private institutions that either deliver social services, run businesses, provide telecommunications services, or promote economic development in rural areas. The case studies do not represent a random sample. To select them, an initial database of more than 100 sites was established consisting of telephone companies, businesses, and public service and development agencies involved in serving rural areas and using telecommunications in innovative ways. These sites were divided into four functional categories representing key components of rural development: (1) telecommunications companies, (2) public services such as health care and education using telecommunications, (3) telecommunications-intensive rural businesses, and (4) rural communities using telecommunications as part of their development strategy. The sites for the four cases ultimately selected for this study illustrate the economic and geographical diversity characterizing rural America. Their economic profile includes communities whose economies are dependent on agriculture, manufacturing, retail, tourism, and public services, reflecting the diversity of rural America. In selecting the cases, we included sites in each of the major geographical regions of the United States: the Northeast, Southeast, Midwest, and Pacific Coast. Figure 1.1 illustrates the location of our four sites.

The actual fieldwork utilized three types of information sources: government documents, published literature, and more than 100 interviews—both telephone and personal—with representatives of the major players in each site. Prior to the fieldwork, research teams conducted in-depth studies of the issues involved in each of their fields. Students then traveled to various sites across the country to gather data. Communication between students and research sites was maintained throughout the writing process to ensure accurate data. Feedback was also offered from professionals in the telecommunications industry. In February 1990 a teleconference was held with a group of professionals in Washington, D.C. The participants included employees of various federal government agencies and industry associations. Later, in April 1990, a conference was organized by the research group. The participants for the conference included representatives from the telecommunications community and our research sites. Also on a regular basis we invited a number of experts to participate in our weekly seminars. The feedback from all these sources was incorporated into the final report.

II. Summary of Topical Research Areas

A. *Doing Business in Rural America*

In this category we studied the following organizations: Weyerhaeuser, John Deere, Wal-Mart, Cabela's, and EMRG. In these cases we examined how the extension of advanced telecommunications to remote areas enabled businesses to locate in rural areas or enabled other traditionally rural industries to be more efficient by competitively exploiting certain rural resources and markets. In studying these businesses, we examined the following issues: (1) What advantage does telecommunications provide for businesses operating in rural areas? (2) What are the effects of management philosophies on choosing telecommunications systems? (3) How have these industries affected local economies in rural areas?

Our research indicates that telecommunications, on one hand, allows the traditionally rural businesses (Weyerhaeuser and Deere) to operate more efficiently, and on the other, it allows other businesses (Wal-Mart) to expand into the rural areas. In all our cases there was a significant degree of bypass, with Wal-Mart moving toward an almost total bypass of public facilities. The communication systems we examined indicate that cost savings may be an initial impetus for deploying specialized networks, but it is not the only advantage and in the long run may not even be the primary advantage. Businesses appreciate the ability to tailor or customize their own networks, and internal control of telecommunications facilities allows them to do so quickly and expeditiously. We found such businesses give little thought to the long-term implications of moving their traffic off the local provider (LEC).

The impact of business telecommunications applications in rural areas is decidedly mixed. Large retail firms such as Wal-Mart, able to operate efficiently in rural areas in part because of their sophisticated VSAT network, draw more revenue and provide cheaper goods to an area, but at the expense of local businesses. Large manufacturing companies provide jobs and may influence telephone-rate bargaining power for the entire community. As in the case of EMRG and Cabela's, smaller businesses may take advantage of some of the advanced telecommunications infrastructure larger businesses attract to rural areas, thereby improving the prospects for sustained rural business growth. Sharing infrastructure investment in the public network or sharing private network capacity may provide solutions that benefit large businesses and the communities in which they locate.

B. *Public Service Delivery*

Low population density and distance work against the traditional channels of providing human services to the rural population. One of the more visible examples of this trend is the mounting toll of rural hospitals. Perhaps telecommunications holds the key to newer means of providing these services. For our study, we selected case studies which illustrate how telecommunications resources are being utilized to overcome distance barriers for medical, educational, and information service delivery. We studied the following organizations: Geisinger Medical Center, Minnesota Distance Learning Network, TI-IN, Inc., and the U.S. Department of Agriculture (USDA).

Our research into the use of telecommunications for public service delivery was aimed at answering the following questions: How have rural communities used telecommunications to gain access to public services? Which public and private institutional arrangements are most conducive to rural public service delivery?

In the area of distance education our cases provided a contrast between satellite-based systems (the TI-IN model), which necessitate centralization of resources, and telephone-network-based systems (the Minnesota model), which allow for sharing of local resources. The Minnesota model must rely on a concerted regional effort, while TI-IN enables single schools or school districts to take action. The drawbacks to the centralized concept are difficulties in scheduling classes to meet satellite feeds in different time zones and resistance to education provided by "outsiders." Nevertheless, the course offerings are substantial and the cost affordable for most school districts. In the alternative model, linked local sites provide a seemingly effective interactive teaching environment and enhance the sense of community power over educational offerings. Our general observation is that distance learning via telecommunications offers an expanded range of educational resources to dispersed communities.

The case of the Geisinger Clinic illustrated how rurally based health care and human services can benefit from the efficiencies realized by centralized functions such as accounting, billing, and technically intensive services. Telecommunications can also support decentralized diagnostic services. In a sense, our medical case illustrated again the benefits of centralizing and sharing certain facilities in response to demand that was "naturally" fragmented within the region.

Our cases examining agricultural extension service illustrated that some of the most highly developed information networks in rural America serve specific agricultural needs. In contrast, the more diffuse community development needs are often hard to identify and serve with information networks. Consequently, if information networks are to serve rural areas, potential users need (1) education on how to work with them, (2) easy access to them, and (3) assurance that they carry relevant information.

C. *Issues for Rural Telecommunications Providers*

In order to assess the problems faced by those who install and maintain the rural telecommunications infrastructure, we studied 16 telecommunications companies serving rural areas in an innovative fashion.

Our case studies included cooperatives (Eastern New Mexico in New Mexico; Eastex in Texas; Mid-Rivers in Montana; XIT in Texas); small telephone companies (Big Bendin Texas; Bretton Woods in New Hampshire; Clear Lake in Iowa; Kerrville in Texas; North Pittsburgh in Pennsylvania; Taconic in New York); regional networks (Iowa Network Services in Iowa; PalmettoNet in South Carolina), and an electric cooperative (Cotton Rural in Nebraska). We asked these research questions: How do rural telcos interact with their communities? What challenges are faced by rural telecommunications companies? And how do rural telcos approach innovative services?

In order to provide service to rural areas, telcos must surmount factors as diverse as high costs due to low-density service areas, regulatory changes which may not favor small telcos in a postdivestiture environment, and physical terrain which adds to the cost and difficulty of providing service. Four general coping strategies have developed: developing in-house expertise, forging regional alliances, preparing for future opportunities, and fighting for the elements of the status quo that protect rural companies. The strategies small rural telephone companies adopt result from a combination of many different factors: a particular individual's vision; local economic necessities and opportunities; physical terrain; regulatory changes; proximity to other telcos; and the ability to undertake cooperative activity.

Small phone companies attested to a wide range of policy-related concerns. Central to telco concerns is the erosion of support mechanisms such as REA funding and revenue pooling at the same time that they are under pressure to upgrade rural plants. They worry that REA funds, a source of capital for many of those companies studied, may be in danger of being cut. Given the uncertain future of traditional funding mechanisms, some telcos are looking to other lines of revenue and creative funding in the telecommunications market. Selling consolidated services (Iowa Network Services) and turning to the local community for bond funding (Clear Lake Telephone Company) are examples of such creative funding sources.

In general, the small rural telcos tend to have a very special relationship with the communities they serve. They tend to be locally owned and hence more in tune with the community's service needs.

D. *Telecommunications and Community Development*

Our case studies on rural communities provide an integrative perspective across the various sectors we separately studied in our other cases. We studied the following five communities: Dahlonega, Georgia; Demopolis, Alabama; Eagle Pass, Texas; Hutto, Texas; Hailey, Idaho; and Kearney, Nebraska. These rural communities were selected because telecommunications either contributed to or hindered community development efforts. The focus here is on the role telecommunications infrastructures play in community development efforts.

Our research indicates that telecommunications can affect community development in several ways. First, many communities look to business growth to fuel community

development, and telephone toll rates can have a direct effect on the cost of doing business. Local telcos may participate in community development by upgrading services in order to attract businesses the community has determined are desirable (Hailey, Idaho). Alternatively, the absence of extended area dialing (Hutto, Texas; Dahlonega, Georgia) could inhibit local business opportunities. Second, telecommunications can affect the process of community planning. For example, in the Thornton, Iowa region, the process of community "clustering" was somewhat inhibited by the toll charges exacted by the local phone companies. Extended area service for rural areas may have to be considered as community development efforts progress. Ottumwa, Iowa, illustrates a different role for telecommunications in community planning in that access to various "external" electronic information services furthered the process of community organizing.

However, the infrastructure or facilities alone are not enough for community development. Lack of local leadership or insufficient community support can stall development in spite of the presence of other ingredients, including a sophisticated telecommunications infrastructure.

III. Types of Telecommunications-Related Initiatives for Development

The cases examined in this study suggested at least three components to rural innovations. First, many of the innovations depended on discovering ways to aggregate demand through grouping and partnerships, thereby creating economies of scale typically absent in rural areas. Second, there were ways to integrate services, thereby creating economies of scale. Third, leadership, sometimes local and sometimes regional, was critical in several cases; certain individuals must be credited with having the vision and the talent to formulate and execute novel plans. We examine these next in a bit more detail.

A. *Aggregation and Partnerships*

One challenge in rural areas is to organize the limited resources in a manner which can support modern technological infrastructure and concomitant services. Several salient examples of aggregating demand and capacity are evident in the cases studied here. For example, both PalmettoNet and Iowa Network Services represent group enterprises. The first capitalized on the complementary nature of contiguous LEC territories to bring an advanced network into rural areas, and the other provided enhanced services, including equal access, by joining together 128 rural telephone companies so that they could afford a centralized technology providing that capability. So, too, Geisinger Medical Center represents an effort to centralize technology and expertise while the benefits of the economies thus obtained could be extended to a larger region.

Organizing to share existing resources is a related strategy. When the schools in Minnesota shared courses, they created scale economies and a set of conditions that benefited all concerned. So, too, as EMRG and other Kearney companies move closer to "piggybacking" on Cabela's AT&T POP, their sharing will introduce both new opportunities and reduced unit costs. These examples epitomize the way capacious telecommunications infrastructure can be used by enterprising and creative organizations. It is perhaps such organizational innovations that hold the greatest potential for rural America because they rely more on new thinking than on additional resources. These innovations basically are new ways of organizing the cooperative spirit often present in rural areas. The technologies simply provide new opportunities for cooperation.

The challenge is to foster new organizational forms which harness the technological potential of such telecommunications technologies. A bright spot in such efforts is the distance-reducing power of telecommunications technologies, which facilitates larger cooperative efforts across greater regions.

In that sense, communications technologies in themselves provide new opportunities for aggregation. The special capabilities of satellites, particularly their

distance insensitivity, are crucial for the sorts of capabilities utilized by Wal-Mart and TI-IN. For businesses with far-flung branches, satellites offer excellent ways to gather and distribute voice, data, and video communication. The net cost allocated to any single "branch"—whether a school or a retail facility—is relatively low.[2]

Another way telecommunications facilitates aggregation can be seen in the community cases examined here. If communities advocate clustering in order to create scale economies and nurture each other's strengths, telecommunications can help by enabling cheap, extensive "horizontal" communication. In other words, while telecommunications capabilities can bring new opportunities and information into communities—a type of "vertical" communication—it can also encourage deeper, more extensive use of information and resources within the region. Proliferating opportunities for towns to work with each other are directly dependent on a good, inexpensive communication system. The importance of extended area service is clear for such efforts.

Appropriate policies can go a long way to facilitate the process of aggregation and partnership formation in rural areas.

1. *Devising complementary community development activities*. Enabling adjacent areas to devise complementary community development activities is one important "facilitating" strategy. If the telecommunications infrastructure in adjacent areas is developed in a coordinated manner, the individual pieces complement each other to create a regional system.

One direct policy implication for facilitating such efforts is that the basic telecommunications network needs to be planned and regulated on a regional level. This is very different from the traditional approach of regulating on a company-by-company basis. Telecommunications providers' territories (LATAs, markets) are rather arbitrary, and the complementary approach requires a more integrated view of the entire telecommunications system. The regulators can facilitate such developments by eliciting cooperation from the disinterested but important entities (such as telecommunications-intensive users or businesses) whose participation may be essential for the regional network.

For those rural communities proximate to urban regions, conscious integration of the rural community's economy with the metropolitan area's agglomerative economy may be warranted. The rural infrastructure could be positioned as an extension of the urban system's. Policymakers on both local and regional levels should be conscious of the up and down sides of such integration. One would not wish to sacrifice the strengths of the rural area by siphoning off its local business potential; however, if the large and small communities can develop their single and unified strengths, integrated planning can be a win-win situation for both.

2. *Centralization*. Centralization is another strategy to be pursued in certain circumstances. Aggregation may be achieved by actually transferring the resources or the demand to a central point. TI-IN is an example of how satellite-based distribution systems can allow for centralization of resources to meet the educational needs of a dispersed population. INS is an example of how telecommunications technologies permit aggregation of demand at a central point. Technological developments like remote switching are going to increasingly allow for such centralization. Though there are definite

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[2] Other cases profiled businesses such as Weyerhaeuser and ENMR, which used terrestrial networks and advanced software protocols to enhance business operations or to exploit new service niches. It may not be too surprising that when simple technological use, as opposed to reorganizing resources or people, characterized a case's dominant innovation, that case was a private business. Private businesses are generally more organizationally primed to recognize and utilize inputs such as telecommunications to achieve improved competitive standing.

economic benefits that will accrue from such centralization, these developments are going to generate sociopolitical tensions which the regulators will have to resolve.[3]

3. *Sharing resources or "piggybacking."* It is possible for certain rural entities which alone do not generate sufficient demand or have enough resources to capitalize on a symbiotic relationship with a larger entity. EMRG's exploitation of the AT&T POP which was attracted to Kearney by Cabela's is an example of how such sharing might work. Bretton Woods' collocation of its facilities within Hotel Mt. Washington, its largest client, is another example of sharing of resources.

Regulatory efforts may be able to develop incentives for encouraging the resale of excess capacity of private networks in rural areas. Many large rurally based corporations have set up their own networks, which often extend to very remote areas. The telecommunications needs of these areas are likely to be slight compared to those of the large corporation operating in that area. Certain specialized needs (e.g., access to specialized information services or high-speed data links) can be perhaps met through using the excess capacity available on the private corporate networks. The profitability aspect of such arrangements may not be very attractive to the corporations owning such networks, but policymakers can devise incentives such as tax credits that make them more attractive.

4. *Access to advanced network capabilities.* The last few years have seen tremendous growth in the construction of high-capacity fiber optic networks, generally operated by interexchange carriers interconnecting the major metropolitan areas. While "eliminating" the continental distances, these lines by necessity crisscross the rural expanse. From a rural standpoint, it makes sense to connect to these networks. The factors impeding this interconnection are both cost as well as the relatively small demand on the part of rural communities. (Their use is likely to be miniscule compared to the billion-dollar metropolitan markets these networks interconnect).[4] A regulatory nudge can easily generate much activity in this direction.

5. *Local development and the magnet principle.* Obviously, telecommunications-intensive users attract infrastructure. Their demand is great enough to justify certain investments on the provider's part. Local development strategy, particularly as it interacts with whatever state-sponsored initiatives exist, might consider targeting a "magnet" user, one whose demand would justify service providers' attention. The community could then tailor subsequent development toward activities which would exploit the newly justifiable (and affordable) infrastructure. Kearney, Nebraska, offers an excellent example of such a strategy.

B. *Service Integration*

The process of demand aggregation can also be facilitated by removal of artificial barriers which fragment the existing demand by apportioning the market among different

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[3] There already are a number of such tensions revolving around centralization, and we do not mean to underestimate the sensitivity of such a strategy. One reason the Minnesotans decided to develop their own network rather than rely on TI-IN was that they did not want their children to be exposed to an education system whose locus of control was beyond the state's boundaries. Similarly, many independent telcos are apprehensive about entering into SS-7 arrangements because they fear loss of control over their subscriber data. On another dimension, regulators will have to be open to new organizational forms and an understanding of the regulatory complications arising from these rather unprecedented developments. One of the key factors behind INS's existence has been the supportive role played by the Iowa PUC board in the matter of newer tariffs and other operational issues.

[4] EMRG's experience with US Sprint provides an excellent example of this. US Sprint's high-capacity transcontinental line runs just two blocks from EMRG's front door. But US Sprint would not connect Kearney for a "small" $800,000 a year customer.

service providers, usually in a suboptimal manner. The key factor here is not the geographical dispersal of demand but the fragmentation resulting from service or client structures which are more often than not artificial. The following discussion identifies the key areas where policy initiatives can help the aggregation process.

1. *Service differentiation.* Insofar as it makes sense for rural areas to have a single integrated system or conduit which transports all the telecommunications needs of rural areas, the current situation of allowing certain service providers to engage in only a limited range of businesses may be dysfunctional. The digital technology which allows the mixing of voice, data, and video traffic is ideally suited for service integration. For example, the same single wire could provide not only telephone-like communication services but also access to databases and video entertainment programming.

The ever-increasing transmission capacity of fiber optic networks makes it attractive to aggregate all the rural demand on to the single channel. For example, on the basis of pure technological or economic criteria, having separate networks for cable and telephony does not make sense in rural areas. This is an issue difficult to resolve in the policy arena, although it has come up repeatedly in the 1989-1990 federal legislative session in the context of revising cable legislation. Rural utilities, telephone companies, cable companies, and satellite communication providers may be able to provide better services to rural areas if they can use their existing infrastructure as a platform from which to initiate new ventures. In the interest of getting the best possible mix of services to rural areas, some form of competition in heretofore protected service realms seems warranted.

Lest the most uneconomic of services (e.g., rural residential telephone service) be lost in the competitive fray, we suggest that policymakers devise incentives that will ensure continued attention to some basic level of telecommunications service to be available to all rural dwellers and businesses. A revised national definition of universal service may be the answer.

2. *Federal and state links to rural areas.* One entity that needs to reach out to every nook and corner of the country is the government, both federal and state. Yet the governments are often the biggest bypassers of the public network. This bypass activity may save one arm of the government a few million dollars, but it costs another arm a few billion dollars. From the perspective of developing the rural telecommunications infrastructure, it makes sense that the federal and state government traffic come into the single rural conduit, the public network, or alternately, that government telecommunications capacity be shared with various categories of rural users.

C. *Leadership*

Our results suggest that a main source of innovation in rural areas rests with visionary individuals who see a way to improve their businesses, communities, or services. For example, the innovative telcos examined here generally were characterized by having at least one creative individual in charge. The reason ENMR, which serves a rather isolated region of the continental United States, has been deploying state-of-the-art infrastructure is to a large extent due to its general manager, Robert Harris. Since he joined ENMR in 1974, the company has grown from 600 members in 1974 to over 10,000 members today and increased its net worth from approximately $1 million to over $80 million. It is perhaps the first cooperative to fully deploy SS-7. Similarly Mid-Rivers Telephone Cooperative in Montana serves a huge landmass (about the size of West Virginia) with one of the lowest customer densities in the nation. The company, however, is equipped with the most advanced switching and transmission technologies—almost fully digital switches and hundreds of miles of fiber optic cable. The impetus behind Mid-Rivers' activities is once again one individual, its general manager, Gerry Anderson. PalmettoNet's innovative organizational configuration which resulted in a fiber backbone for rural South Carolina is an idea sponsored by Frank Barnes, president of Rock Hill Telephone Company, and Jim Carlson, general manager of PalmettoNet, who implemented

it. So, too, the growth and success of Kearney's small business, EMRG, can be attributed largely to its founders.

In rural communities, leadership perhaps faces fewer bureaucratic obstacles, some compensation for having fewer resources to work with at the outset. Visionary leaders consequently sometimes are able to enlist other members of the community to back their ideas. For this reason leadership training and community organizing can be especially important to rural areas. Some of Kearney's economic health can be attributed to the combined efforts of Bruce Blankenship, president of the Chamber of Commerce; Steve Buttress, president of Buffalo County Economic Development Council; Dave Waldron, president of EMRG; and other members of the Economic Development Council. Their combined plan resulted in a two-stage economic development strategy of first attracting a high-tech enterprise and then capitalizing on the subsequent creation of infrastructure to develop other related businesses. Significantly, their economic development ideas are blended with parallel notions of community development, characterized by a more holistic concern for the community's quality of life and internal health and growth.

We see the power of individual efforts to mobilize larger communities or organizations in other areas as well. The transformation of Hailey, Idaho, may rest not so much on a local Hailey citizen as on Perry Swisher of Idaho's PUC; his efforts were crucial in US West's overearnings investment in digital switches for rural Idaho. It was this regulatory initiative that created the infrastructure allowing Power Engineers to relocate in Hailey. So, too, the Minnesota Distance Learning Network was heartily sponsored and supported by, who donated a great deal of time and facilities to the success of the endeavor.

The above are only some of the more salient cases of individually driven innovative activities. There were visible traces of individual initiative in almost all of the cases we studied. These cases lend themselves to the observation that, although individuals generally play an important role in the innovation process, in rural areas their role is particularly strong. While in urban areas individual creativity is often stifled by the inertia and constraints created by the larger social and organizational systems, in rural areas the existing organizational forms are more pliable.

Interestingly enough, more often than not the visionary is an "outsider" who relocates in a rural area. Robert Harris had worked for many years in the telephone business before joining ENMR; Gerry Anderson, Mid-Rivers' general manager, is an ex-REA employee; Jim Carlson, PalmettoNet's general manager, is an ex-GTE employee; Dave Waldron, president of EMRG, moved from a larger city to Kearney. These rural cosmopolises, to use a phrase well developed in the scholarly literature on innovation, possess a potent combination of a broad perspective and a commitment to their new habitat. Similarly, programmatic attempts to induce change in rural areas often rely on external agencies such as the Department of Agriculture's Cooperative Extension Service. Some of our cases illustrate their success. In Thornton, Iowa, the Iowa State Extension Service brought in the concept of clustering. In Ottumwa, Iowa, it was the efforts of Iowa State University's community development program which empowered citizens by developing their strategic planning skills through satellite-based teleconferences. In many of our cases the innovations were due to an individual or agency which was "external" in nature.

Often, due to the overemphasis on developing the hardware aspect of the technological infrastructure, the human element or the software aspect of the infrastructure is overlooked. The following discussion is targeted toward developing the human element of the telecommunications infrastructure in rural America.

1. *Inculcate community leadership.* Communities should be empowered to form united community leadership and achieve broad-based citizen commitment to development by providing training and necessary information resources. Programs such as Iowa State University's Tomorrow's Leaders Today may provide an example for future leadership training programs. The strategic use of telecommunications should be considered in order to facilitate community empowerment. Extended area service and easy access to

information through computer database may be helpful. One pertinent suggestion may be to shift the emphasis and funding away from agricultural information networks that are underused and feed the same district extension offices community development training information. In-place extension agents could be used to gain the competitive advantages that result from localizing information.

2. *Plan infrastructure*. Community development should be planned in tandem with developing telecommunications infrastructure. Infrastructure planning should parallel the strategic planning efforts of community leaders and citizens. Businesses and services need telecommunications to compete locally, regionally, and internationally. Achieving economic health may require modern technology, yet having modern technology does not guarantee its effective use within the community. Technology planning and community planning need to proceed in tandem. All planning for rural development should anticipate capacity for telecommunications businesses and the efficient operation of government, education, and public services. Integrated planning offers the best opportunity for providing telecommunications services at a cost which can be appropriate for all rate payers.

3. *Develop human skills*. Rural citizens and the labor force need up-to-date education in technical, manufacturing, computer, and basic communication skills. States should ensure that all their school districts have access to the same educational materials by integrating distance learning initiatives and providing curriculum guidance.

IV. Relation to New Project

In close examination of the foregoing types of innovations and related initiatives, their processes depend upon much more than the simple telecommunications components involved. Although we were aware of this in the present and earlier studies, the rural project seemed to reveal all the more the importance of the larger social context. After all, it is the community components that can undertake partnerships, promote aggregation, seek economies of scale, and most of all, provide leadership. Thus, again, we were reminded that the community or region may be an important level of analysis of relations between telecommunications and development. With this in mind, the new study was proposed, one which began with the community as the focus for analysis. The community level of analysis plus the types of processes underlying innovation found in the policy research project highly influenced the study described in the following chapters.

Chapter 3

Eagle Pass, Texas: From Transborder to International Trade

I. General Introduction

A. *Why Eagle Pass?*

Eagle Pass, the seat of Maverick County in Texas, is situated on the Mexican border between El Paso and Laredo, an area known as the middle Rio Grande Valley (Figure 3.1, page 18). It is about a two and a half-hour drive southwest from San Antonio. Unemployment among its largely Mexican American population of some 28,000 is estimated at a minimum of 35%.[1] For most of its history, the economy of Eagle Pass has depended upon agriculture (mainly cattle ranching) and those businesses associated with border crossings (customs brokerage, warehousing, transportation), though it has certainly not been among the most used commercial transit points.

Today, Eagle Pass is a trade and light manufacturing center strongly tied to Mexican and U.S. trade policies and, more importantly, to a city 10 times its size—Piedras Negras in the state of Coahuila, Mexico—across the Rio Grande. In spatial terms, this makes the economy of Eagle Pass an "adjacency" one, where much of what might develop depends upon patterns of commerce in Piedras Negras. This is, however, a special case because these patterns involve transit, including telecommunications, of an international border.[2]

If the two countries move toward a free-trade policy, the binational area may very well become a major manufacturing center, where "American management and development will meet a willing and inexpensive Mexican labor force," as many say in one form or another on both sides of the border. Traditionally, attitudes on both sides of the border have been that Eagle Pass and Piedras Negras are both so far from their nations' capitals that they are all but overlooked in national planning.

As will be seen in this chapter, transborder telecommunications has been a barrier for Mexico-U.S. joint business development. It has also been underused as a business and public service infrastructure component in Eagle Pass. As far as the future is concerned, however, telecommunications could mean new opportunities and efficiencies for Eagle Pass education, which is perhaps its best long-term investment not only for economic growth but also for the integration of Mexican Americans into the U.S. economy.
On the U.S. side, Eagle Pass is perceived as a small rural city in a county (Maverick) of some 40,000 people; its economy is in transition from that of agriculture and Mexican border trade to service and manufacturing. Beyond this, Eagle Pass has many distinctive characteristics and a future worthy of study. For example, even though the city is geographically removed from the main international trade crossings of El Paso-Ciudad Juárez, Laredo-Nuevo Laredo, and Brownsville-Matamoros, it has enjoyed a steadily growing role in Mexico-U.S. commerce—not only as a crossing point but also as a region

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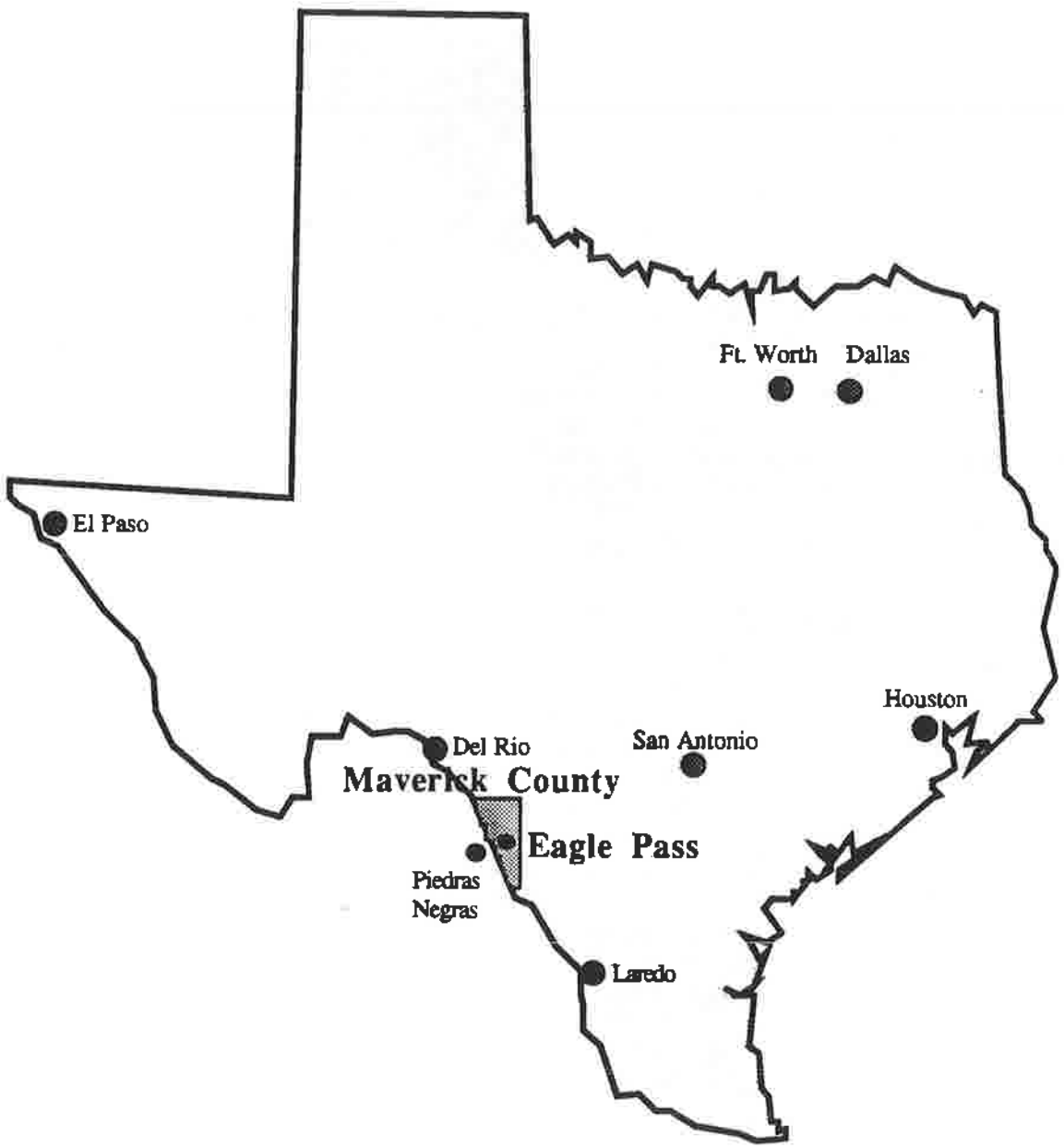
[1] Unemployment estimates vary not only because of the movement of seasonal laborers in and out of Eagle Pass but also due to the ebb and flow of individuals across the border.

[2] Telecommunications and adjacency developmental patterns were studied in an earlier U.S. national rural project described in Chapter 2—Dahlonega and Atlanta, Georgia (Schmandt, Williams, Wilson, & Strover, 1991) and in an Ohio project involving Sunbury and Columbus (Williams, Sawhney, & Brackenridge, 1990).

Figure 3.1. Location of Eagle Pass and Maverick County, Texas.



for the development of maquiladora ("twin-plant") businesses.[3] This describes a partnership whereby partly fabricated goods (e.g., clothing, electronics, machinery) are shipped tax-free into Mexico where low-wage workers complete the assembly; duty is then paid only on the added value when the completed goods are returned to the United States for shipment and sales.

From a Mexican border perspective, Eagle Pass is a small American town where economic activities draw less attention from administrators and leaders than the many industries of the growing city of Piedras Negras, now more than 220,000 in population. In comparison with other Mexican border cities, maquiladoras have received less attention from the Piedras Negras business community. This is because its current economy is large and diversified, including the operation of a nearby major coal mine (reflecting the city's name, literally "black rocks"). But with labor forces becoming limited in other Mexican "maquila" sites, there is now a growing interest in seeing this part of the economy develop further.

From a Mexican perspective, the maquila industry has replaced tourism as Mexico's second greatest source of income. Although the $1.7 billion it generates is still much lower than the $9 billion of the oil industry, the economic survival of an increasing number of families and cities is becoming dependent on maquila operations. The fiscal and legal framework for maquilas in Mexico dates back to 1965, when the government created the Northern Border Industrialization Program. A recent trend in the maquila industry is the increasing number of operations that originate from countries other than the United States. Manufacturing plants representing Japanese and Korean investments are mushrooming not only on border cities on the Pacific coast, but inland as well.

As documented in earlier research (Barrera, 1988; Barrera & Williams, 1990), the growth of maquilas is dependent in part upon transborder communications, a factor that could become even more critical if the border area were to develop and expand as a binational industrial center. Unfortunately, Eagle Pass has contributed little to developing this resource. Although the usual challenges of strategic telecommunications are found in Eagle Pass—and we document these—by far the most interesting situation is how communication in this binational center of commerce is inhibited by border regulations in both countries.

B. *About Eagle Pass*

Eagle Pass originated as a Rio Grande crossing point for early explorers and Santa Ana's army advancing toward the Alamo; after 1800 it was developed mainly by ex-soldiers. Irrigated agriculture became the dominant economy in Maverick County from the U.S. Civil War until World War II. Whereas many U.S. border cities have highly influenced their Mexican neighbor, Eagle Pass is instead dwarfed by its Mexican neighbor, Piedras Negras. Despite the long history of the Piedras Negras-Eagle Pass crossing, it is mainly perceived as an alternate gateway to Mexico because it is not situated on the main U.S. trade routes, as are Laredo and El Paso. Tourism has never materialized and the city's infrastructure has been largely neglected by federal governments on both sides. In contrast with other pairs of cities along the U.S.-Mexico border, Eagle Pass is situated to serve cities and transportation from Mexico more than from the United States. The Southern Pacific Railroad connects with the Mexican National Railroad at Eagle Pass

Today, the economy of Eagle Pass is growing toward increased international trade as the growing manufacturing and maquiladora industries spread their income effects across the border from Mexico to Maverick County. Well before federal law allowed for

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[3] Traditionally, the word "maquiladora" referred to doing custom work in return for a share of profits, as in harvesting. In the same "production sharing" sense, the term refers to a partnership or division of activity in manufacturing on the U.S. and Mexican sides of the border.

the transfer of U.S.-made parts for assembly in Mexico, apparel-fabrication firms such as Williamson-Dickie moved to Eagle Pass to take advantage of low-wage, nonunion labor and the willingness of both the city and county to provide low-cost space. To date, there are 36 maquiladoras operating and four more under construction in Piedras Negras that route their U.S. business through Eagle Pass.

Apparel is the main industry; other maquiladoras also engage in coupon counting, sausage casings production, electronics assembly, the fabrication of PVC pipe connectors, leather processing, and decorative ceramics. Estimated total employment in the area's maquiladoras as of December 1989 was 11,356; 23 affiliated U.S. offices or related industries employ a total of 822 in Eagle Pass (Maverick County Development Corporation).

Warehousing, transportation, and manufacturing in Eagle Pass benefit directly from the maquiladora industry. The major job benefits, however, have accrued to Piedras Negras, where the unemployment rate is reported to be low.[4] Women comprise the majority of the labor force in those maquiladoras where product assembly is the main function, whereas men are generally employed in the coal mining operations (not maquila operations).

In contrast, Eagle Pass has an unemployment rate approaching 35%, largely because it is a winter home for migrant workers and a gateway for immigrants. The average age of 24 and high unemployment rate suggest both a need and potential for economic development.

In spite of the apparent differences in size, economy, and employment, the two cities share a common heritage—Eagle Pass is more than 90% Hispanic—which creates a cross-border cultural bond that permeates all aspects of the economy. In addition to an English-language newspaper that covers the local Eagle Pass news, Mexican radio, television, and newspapers also report regional, national, and international news in Spanish. Educators and public service agencies place announcements on the Mexican television stations as well as on the two local-origination cable channels carried from Eagle Pass to Piedras Negras. A new television station on the U.S. side will soon broadcast Mexican programming to the entire region and garner advertising revenues from both sides of the border. The proliferation of broadband telecommunications across the border contrasts with both countries' regulatory restrictions on transborder voice and data communications. The former supports common cultural interests at the expense of market protection; the latter seeks to protect national interests regardless of cultural ties.

Eagle Pass can also be seen as a gateway of Mexican immigration into the United States, a trend dating back to the days of the Spanish explorers and likely to continue unless the border is closed altogether. As Eagle Pass School District Superintendent Frank Chisum describes it, Eagle Pass is typically the first area in the United States where Mexican immigrants taking this particular route seek employment, housing, and most importantly, education (Frank Chisum, interview, 6 August 1990). Although employment often entails following the northern crop-harvesting circuit, families are likely to return to Eagle Pass for the winter months. After a generation or two, they may settle permanently there. In Chisum's view, if job skills and education are not obtained early on, the new immigrants may join the welfare rolls locally or in a city further to the north. Thus, he argues that educational opportunity—especially the English language and vocationally oriented training—should be greatly expanded at the Eagle Pass "gateway."

Currently, neither Texas nor federal education policies are in tune with the needs of Eagle Pass and its migrant population. Nor is there much indication of any unified state-level guidance to the region in its efforts to join the economy across the river while trying to cope with steady in-migration. Federal trade tariffs strongly affect the relation between the

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[4] Mexican sources cite between 2 and 10%; several sources in Eagle Pass thought it greater (18-20%) and noted that younger working age people were included.

two border economies. Recent encouragement of foreign private investment in Mexico may soon lead to a free-trade border much like the United States enjoys with Canada. Yet the possibility of a free-trade border offers Eagle Pass great potential only if it can meet the biggest challenges. Businesses based on the border crossing, such as customs warehousing, parts fabrication for maquiladora assembly, and retail trade—in short, the bulk of the nonagriculture economy in Eagle Pass today—will have to undergo modification or may even cease to exist. In order to survive, Eagle Pass and the middle Rio Grande region must educate their young adults for higher-wage technical careers in the maquiladoras and related industries if they are to participate in the possible development of the region.

During the 1980s, Eagle Pass suffered from two major shifts that affected all of Texas: the devaluation of the Mexican peso and the collapse of the oil-based economy. According to the current city manager, Oscar Rodriguez, in 1982 the city laid off 40% of its employees due to the peso devaluation (Oscar Rodriguez, interview, 22 February 1990).

C. *The Association with Piedras Negras*

1. *Joint interests*. The community of Eagle Pass cannot be studied without giving special consideration to Piedras Negras, the city across the Rio Grande. Although characteristic of border twin cities, there are some striking differences between Eagle Pass-Piedras Negras and other sister cities along the border.

In most cases, the economic development of Mexican cities depends on the policies and efforts of their American counterparts. Eagle Pass is an exception to this by depending more on the development of Piedras Negras, a city with a population of approximately 220,000 and an annual growth of 1.2%. The main two reasons for the dominance of Piedras Negras are its size, which is 10 times larger than Eagle Pass, and the more diversified economy of Piedras Negras, which depends heavily on mining, the steel industry, and animal husbandry.

Another factor that has inhibited the development of joint projects between the two communities has been the political instability of Piedras Negras over the last 10 years, characterized by the ongoing struggle between Mexico's ruling party (PRI) and the more conservative PAN. According to Elias Sergio Trevino, municipal president, this tension has created an image of Piedras Negras unattractive to foreign investors (Elias Sergio Trevino, interview, 24 February 1990).

2. *On maquiladoras*. The Mexican government has favored maquila development as it creates jobs for its citizens and is a "mechanism for technology transfer" as explicitly stated in Article 16 of the 1983 Maquila Industry Decree. The article identifies the federal government's aim: to "promote investment in advanced technology sectors, and incorporate new technology which modernizes production processes" (Sklair, 1989). U.S. manufacturers cite the advantages of low cost and proximate Mexican labor over offshore (Asian) alternatives. U.S. border states have generally countered the "loss of U.S. jobs" argument with these points: First, they were already lost to Asia; and second, maquilas create product-distribution centers and household shoppers for the U.S. side of the border economy. *Expansion Management* ("Maquiladoras," 1988, p. 26) claims that 30% of the money generated from maquilas is spent on the U.S. side of the border. A third argument is that the maquiladora industry actually creates jobs for Americans in all continental states. For example, Mitchell and Vargas (1987) estimate that the industry is directly accountable for 175,440 jobs distributed among the continental United States.

Of the 1,500 maquiladora plants in Mexico, most are located on the 2,000-mile Mexican border, with large concentrations in Tijuana, Ciudad Juárez, and in the Matamoros-Reynosa area. Piedras Negras-Eagle Pass has the most room for further maquiladora development.

3. *Maquiladoras and Piedras Negras*. Out of all Mexican border cities, Piedras Negras has the most diversified economy, and in the last few years its fastest growing

sector has been the maquiladora industry. This industry dates back to 1965, when the Mexican federal government created the North Border Industrialization Program (PRONAF) after the United States ended its Bracero Program for temporary farm workers. The maquiladoras also take advantage of fiscal regulations of the U.S. Customs Code and Generalized System of Preference, which include the duty-free entrance of specific products and the deduction of the value of U.S. components from the duty of other products. It is estimated that—because of the cheaper labor, utilities, and construction costs—a typical maquiladora will save between $15,000 to $35,000 per employee per year when compared to the costs of production in the United States.

Maquiladoras in the Eagle Pass-Piedras Negras area have grown from 13 in 1987 to the present 36 (and 4 are currently under construction).[5] They employ approximately 10,000 people and are directly accountable for more than 850 jobs in 20 operations in Eagle Pass, mainly offices and warehouses (Maverick Country Development Corporation, 1989). That impact is expected to become stronger now that the Middle Rio Grande Development Council is encouraging companies that locate in Piedras Negras to create at least 1 new job in Eagle Pass for each 10 created on the Mexican side (Arthur Pine, interview, 24 February 1990).

Maquiladoras have grown not only in number but also in the complexity of their management and production practices. Whereas the first maquiladoras were extremely labor-intensive, new maquiladoras are starting to introduce quality circles (Ceramica Creativa), flexible machinery, and "clean rooms" (General de Telecomunicaciones).

The maquiladora industry is expected to grow even more in Piedras Negras in the near future because of the following factors: (1) current saturation of more established cities like Tijuana and Ciudad Juárez, which have virtually no unemployment and are characterized by a high turnover of the work force and a serious housing deficit; (2) a more active promotion of the area from the business community of Eagle Pass; (3) a need to diversify the Piedras Negras economy and create jobs for an economically active population; (4) the less conflictive labor force of Piedras Negras than that of cities like Reynosa and Nuevo Laredo; and (5) infrastructure improvements with plans for an airport and second international bridge.

Even when it is generally assumed that labor cost is the main factor, Gordon (1988) found that the best predictor for the new location of a multinational firm is a stable institutional climate. This climate is defined by Gordon as one in which the state is willing to attract foreign investment by creating an infrastructure with an amortization time much longer than that of the plant and equipment of the interested firm.

II. Maverick County Economic Analysis

A. *Background*

Historically, the economic base of Eagle Pass has been in cattle ranching. Since 1960, however, the county has become a regional retail trade center benefiting from its location near Mexico. The area also now has a manufacturing base in the apparel industry and periodically experiences economic growth from the mining industry. Economic statistics for the county reveal high levels of unemployment, low income levels, a general lack of education, and a work force that lacks the skills necessary for high-dollar employment. When these statistics are combined with an increasing population and decreasing employment levels, the economic future of an area that is already one of the most impoverished in the country looks bleak.

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[5] These numbers may vary, depending upon precisely what one considers as a "maquila."

B. *Nonagricultural Development*

1. *From 1950 to 1960.* In 1950, 72% of the nonagricultural employment in Maverick County was in the areas of retail trade, services, and transportation and public utilities. As shown in Figure 3.2 (page 24), the largest employer was the retail trade industry with 547 employees, or 29% of total employment. The second largest industry within Maverick County was transportation and public utilities, with almost half of the industry employment coming from the utilities and sanitary services sector.

By 1960, total nonagricultural and nongovernmental employment had increased from 1,911 in 1950 to more than 2,600. The largest employment gains in that period came from the retail trade, services, and manufacturing industries, while the transportation and public utilities industry slightly declined. Another industry that experienced growth during this period was the wholesale trade industry, which rose from 57 to 190 employees. Though there was some employment growth during this period, the relative mix of employment stayed the same, with only a moderate decline in transportation and construction and a slight gain in manufacturing and wholesale trade.

The location quotients shown in Figure 3.3 (page 25), for 1950 and 1960 illustrate that the three major employers in 1950—retail trade, transportation and public utilities, and service—were all basic industries for the county, although the service industry was only slightly basic. An additional base industry in 1950, though not a major employer in the county, was the construction industry. Other location quotients indicate that the employment percentages for the wholesale trade and F.I.R.E. (finance, insurance, and real estate) industries were below the national average, and the percentage of manufacturing employment was only 20% of the national average.

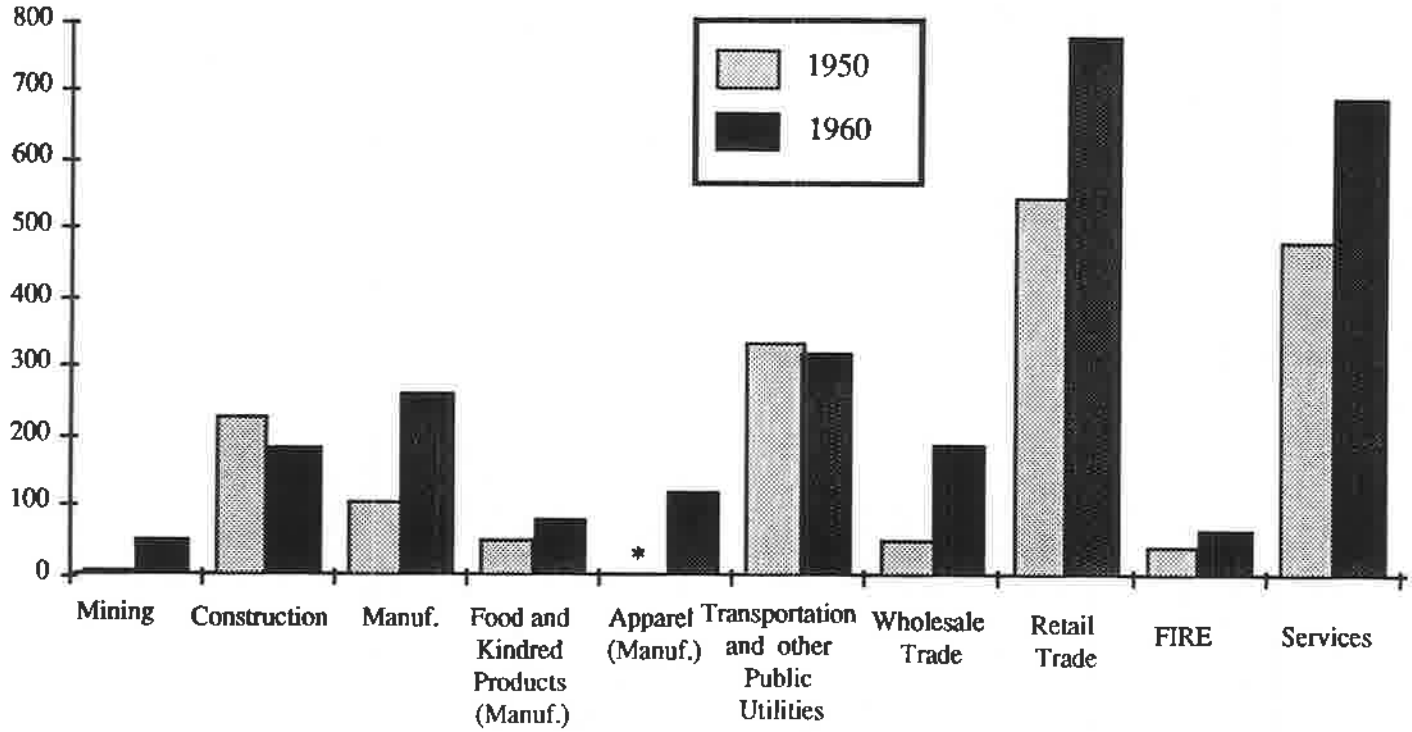
The concentration of retail trade activity in Maverick County was most likely due to trade with the Mexican population as well as retail trade within the county. The low location quotient for the F.I.R.E. industry indicates that the county either lacks income in general, or that financial activities are imported from other areas. With regard to manufacturing, the 0.2 location quotient illustrates that in 1950 the Maverick County manufacturing industry was almost nonexistent.

Though manufacturing as a whole remained a nonbasic industry for Maverick County, apparel manufacturing (1950 figures not available) was revealed in 1960 to be an additional export sector, with a location quotient of 2.3. In addition to apparel manufacturing, mining and wholesale trade also became export industries by 1960, although they accounted for only 10% of total employment. Other location quotients for 1960 indicate that the retail trade and transportation and public utilities industries remained export in nature, while the service industry remained only slightly basic.

The increase in mining activity during this period was probably related to coal, oil, or natural gas exploration, while the increase in wholesale trade employment may have been a result of increased trade between the United States and Mexico, or that large quantities of American consumer goods were just reaching this location on the edge of the market.

2. *From 1967 to 1987.* During the period 1967-1987, total nonagricultural and nongovernmental employment rose steadily from 1967 to 1982, but sharply dropped from 1982 to 1987 (Figure 3.4, page 26). During the previous period of employment growth, county population increased from 18,000 in 1970 to more than 31,000 in 1980. However, population continued to increase to almost 40,000 by 1988, even though employment declined (Figure 3.4).

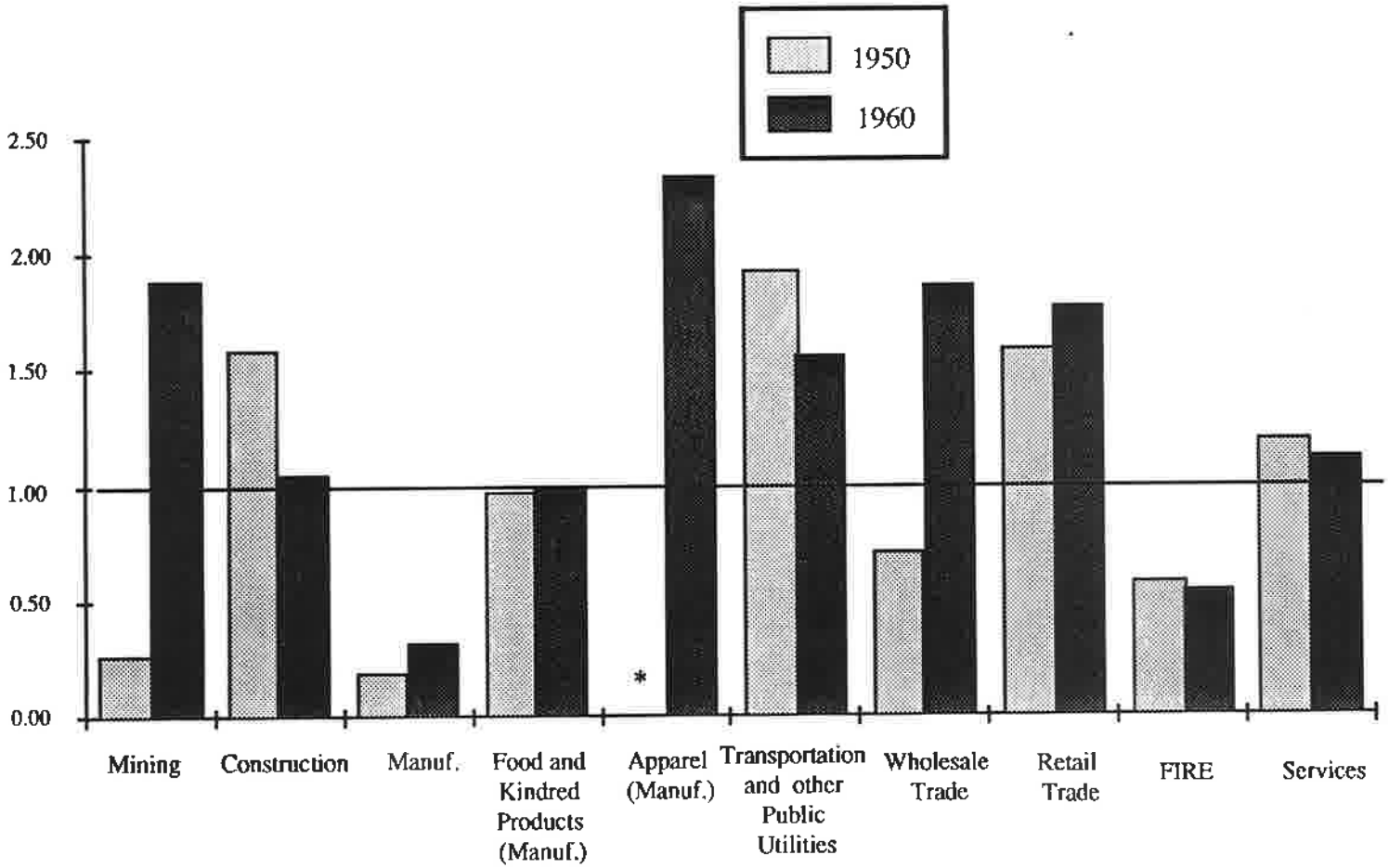
Figure 3.2. Industry Employment for Maverick County, Texas; 1950 and 1960



* not available in 1950

SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1950, Characteristics of the Population*, Part 1, U.S. Summary, Table 130, and Part 43, Texas Table 43; and *U.S. Census of Population: 1960, Characteristics of the Population*, General Social and Economic Characteristics, Part 1, U.S. Summary, Table 91, and Part 45, Texas, Table 85.

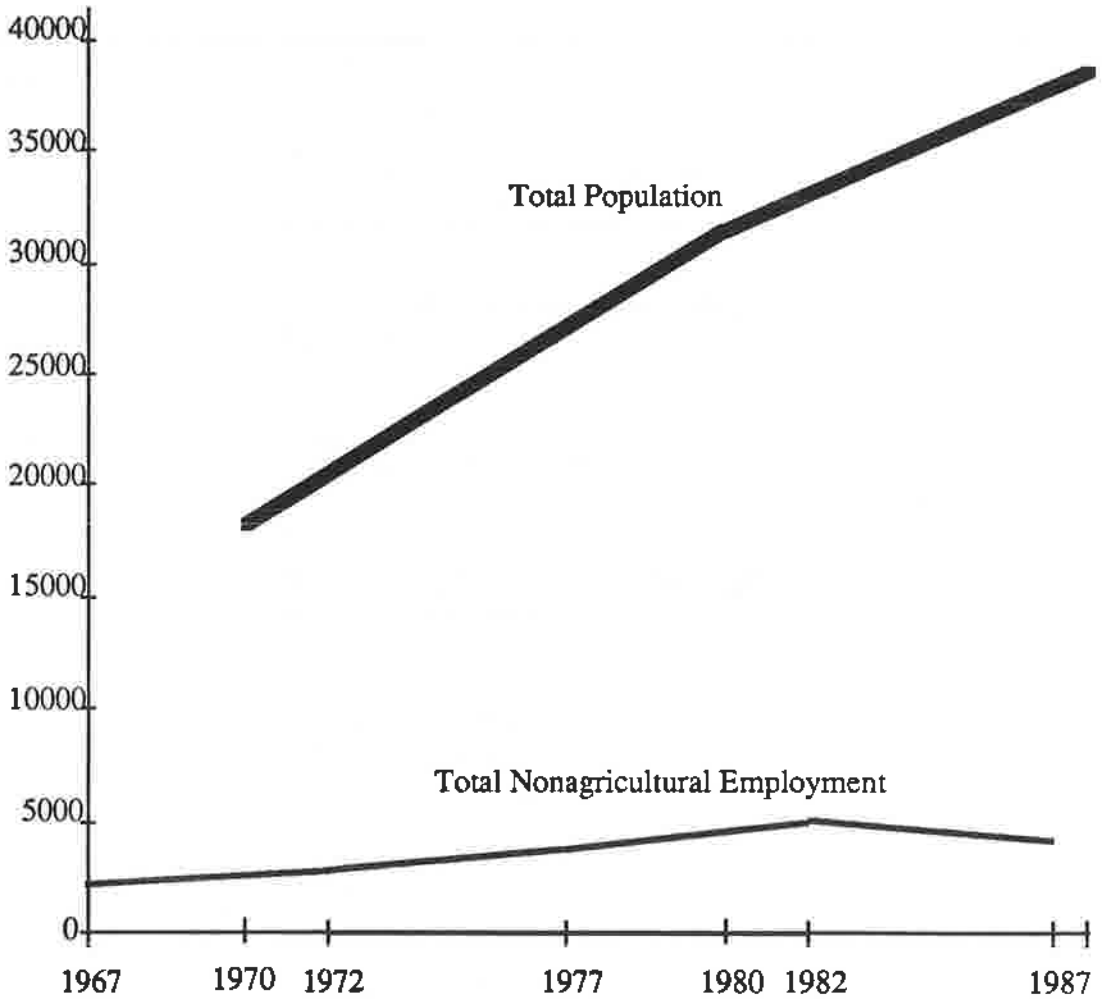
Figure 3.3. Industry Location Quotients for Maverick County, Texas; 1950 and 1960



* not available in 1950

SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1950, Characteristics of the Population*, Part 1, U.S. Summary, Table 130, and Part 43, Texas, Table 43; and *U.S. Census of Population: 1960, Characteristics of the Population*, General Social and Economic Characteristics, Part 1, U.S. Summary, Table 91, and Part 45, Texas, Table 85.

Figure 3.4. Population and Employment for Maverick County, 1967-1987



SOURCES: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns* CBP-67-43, CBP-72-43, CBP-77-43, CBP-82-43, and CBP-87-43; *U.S. Census of Population: 1970 Characteristics of the Population*, General Social and Economic Characteristics, Part 45, Texas, Table 119; and *Current Population Reports: Local Population Estimates*, Series P26, No. 88-S-SC.

During this 20-year period, the two prior leading employers from 1950-1960—retail trade and transportation and public utilities—showed opposite trends. The retail trade industry remained an important component of the economy, while the transportation and public utilities industry significantly declined. However, the most important trend of the economic growth from 1967 to 1987 was the development of the apparel manufacturing sector, which grew from 677 employees in 1967 to more than 1,000 by 1977, followed by a moderate decline to less than 1,000 by 1987. Although the apparel sector grew, it still remained the only manufacturing activity in the county, consistently accounting for at least 90% of all manufacturing employment. Other employment trends illustrated in Figure 3.5 (page 28), show that almost every industry grew steadily from 1967 to 1982 and then dropped from 1982 to 1987, with the exception of the services industry which grew steadily throughout the entire period.

Another important employment trend during this period was the predominance of retail trade. The level of employment in retail trade rose steadily from 1967 to 1982, then rapidly dropped during the mid-eighties. One possible explanation for the rise and fall in retail trade employment might have been increased trade within the county, and between the county and the neighboring Mexican region—probably a result of increased population on both sides of the border. The employment drop from 1982 to 1987 was not due to a loss of population, since population increased during that period, but possibly to the decreasing value of the Mexican currency, which probably reduced the amount of trade between the county and Mexico. As with manufacturing, the apparel sector was consistently the largest employer in the retail trade industry.

An interesting point shown in Figure 3.5 is the employment increase in the F.I.R.E. and service industry from 1982 to 1987, the only two industries with employment increases in a period of employment decline. It is possible that these trends are indicators of two vastly different scenarios: A positive scenario is that the increase in the F.I.R.E. industry may have indicated financial activity related to the maquiladora operations; the increase in services, however, was mainly in social and medical services, probably an indicator of increased poverty and unemployment in the area.

The location quotients shown in Figure 3.6 (page 29) point toward the same conclusions as the employment trends: that the economic base of Maverick County is highly dependent on apparel manufacturing and retail trade. Although apparel manufacturing employment was not disclosed in every year, the range of employment listed in *County Business Patterns* indicates that the sector was always a strong economic base for the area. As far as retail trade is concerned, apparel was the most important sector, though it slightly declined in importance throughout the period.

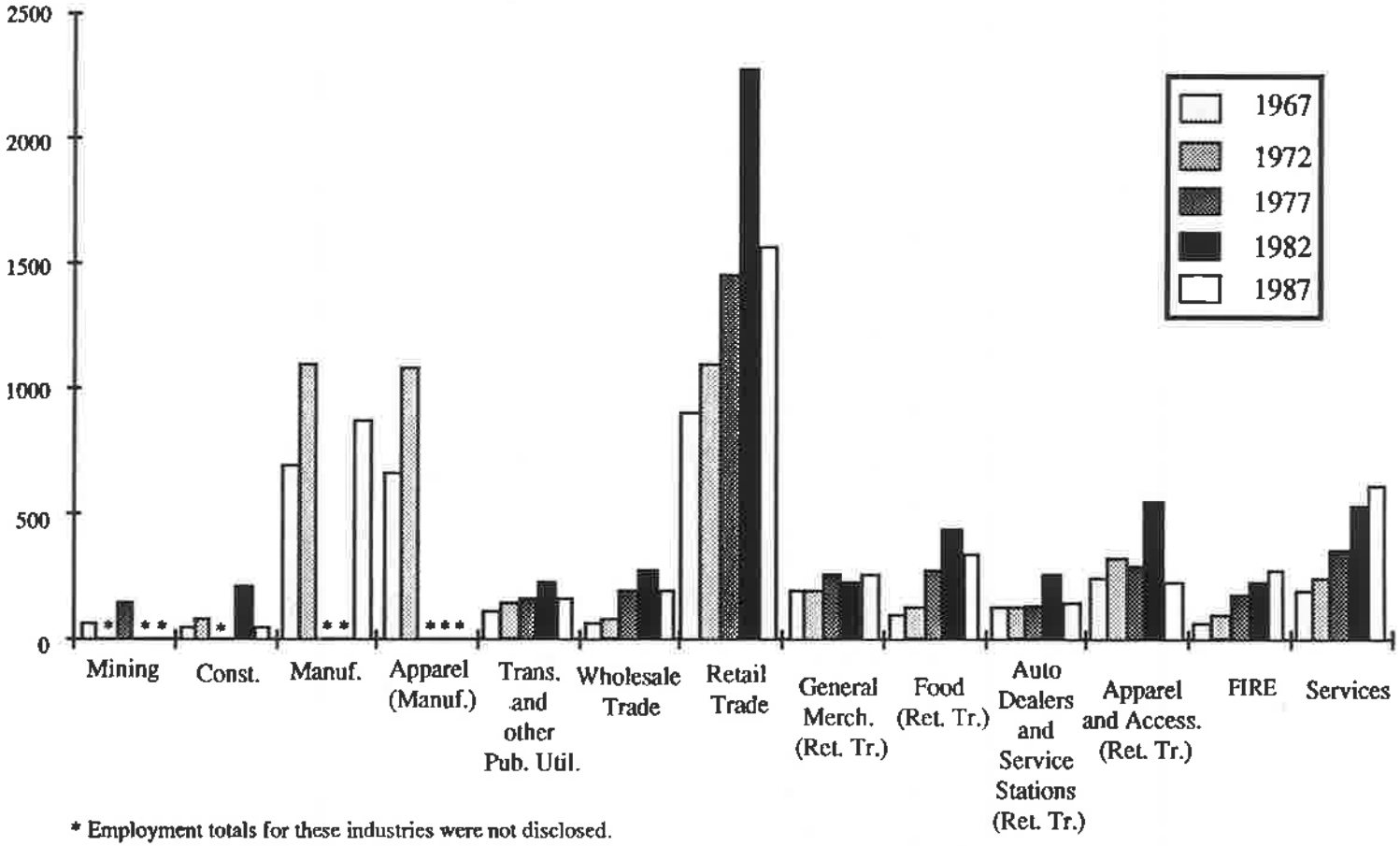
Other location quotients during this period show that the county was deficient in wholesale trade activities, financial activities, and services. All of these industries had location quotients below 1.0 for the period. However, the higher location quotient for the F.I.R.E. industry from 1982 to 1987 may be a positive sign of maquiladora activities.

Another indicator of the economy's health, though not substantial, is the effect of mining on the area. Although mining employment was not disclosed for three of the years, it appeared to be a base industry for the years when it was disclosed. Though mining activity is typically cyclical in nature, any activity that might diversify the area's economy is a positive one.

C. *Agricultural Sector*

The agricultural base of Maverick County is still primarily one of cattle ranching, followed by pecans, vegetable farming, and lawn grass. Large cattle ranches average more than 3,000 acres. In fact, from 1974 to 1987, cattle sales accounted for more than 90% of all county agricultural sales (Figure 3.7, page 30). Besides cattle ranching, however, there

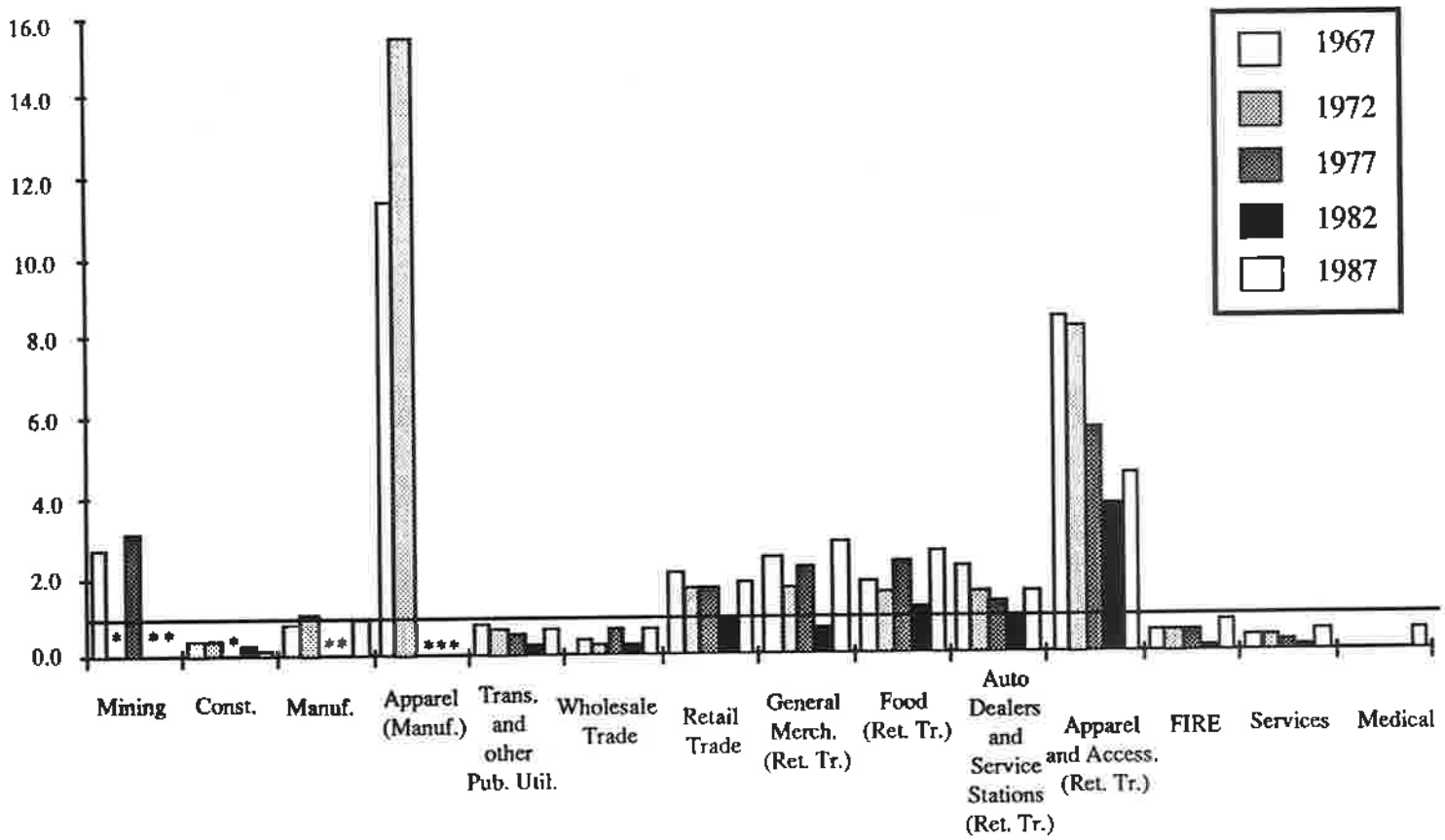
Figure 3.5. Industry Employment for Maverick County, Texas; 1967-1987



* Employment totals for these industries were not disclosed.

SOURCES: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*, CBP-67-45, CBP-72-45, CBP-82-45, and CBP-87-45; and CBP-67-1, CBP-72-1, CBP-77-1, CBP-82-1, and CBP-87-1.

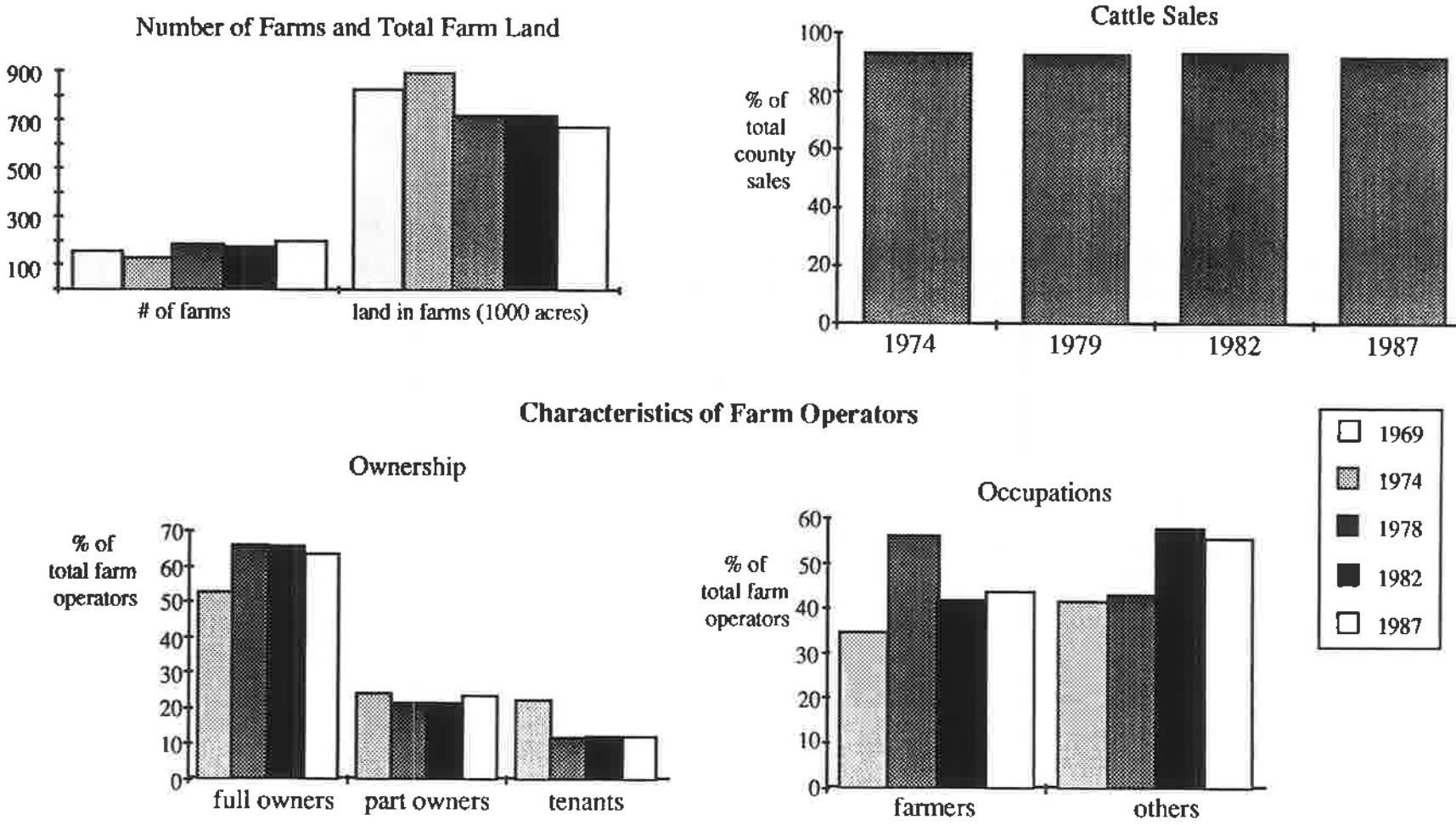
Figure 3.6. Industry Location Quotients for Maverick County, Texas; 1967-1987



* Employment totals for these industries were not disclosed.

SOURCES: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*, CBP-67-45, CBP-72-45, CBP-77-45, and CBP-82-45; and CBP-67-1, CBP-72-1, CBP-77-1, CBP-82-1, and CBP-87-1.

Figure 3.7. Selected Farm Characteristics, Maverick County, Texas; 1969-1987



SOURCES: U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture*, 1974, Volume 1, part 43; AC78-A-43; 1982-A-43; and AC87-A-43.

is little other agricultural activity within the county, probably because the land is unsuitable, with the exception of land near the Rio Grande.

Operator characteristics of the farm or ranch operators indicate that the ownership of the ranches has remained relatively stable since 1972. However, since 1977, it appears that some of the ranch or farm operators are supplementing their income with other occupations.

D. *Demographics*

1. *Education*. The educational characteristics of the primarily Hispanic population of Maverick County reveal one of the reasons for the county's high levels of unemployment and poverty. In 1980, only 35% of the males and 28% of the females in Maverick County had a high school education. Comparing these figures to the nation and other rural areas reveals that the county is markedly undereducated. On a national level, approximately 65% of both males and females had a high school education, while 60% of rural residents had received a high school diploma (Figure 3.8, page 32).

With regard to higher education, the county is still undereducated, but closer to other rural areas. In 1980, 12% of Maverick County males had at least four years of college, compared to 13% for other rural areas and 19% for the nation as a whole. For females in Maverick County, the figures reveal an even lower level of higher education, with only 5% with at least four years of college, compared with 8% for other rural areas, and 13% for the nation (Figure 3.8).

2. *Labor force*. Labor force characteristics of Maverick County shown in Figure 3.9 (page 33) reveal different trends for males and females. The percentage of males in the labor force declined from 75% in 1950 to only 53% by 1980, while female participation in the labor force steadily increased from 17% in 1950 to 37% in 1980.

Comparisons with national participation rates reveal that both males and females in Maverick County are less likely to be in the labor force than their national counterparts. With only 53% of the males in Maverick County in the labor force, the county is well below the 70% rate for other rural areas and the nation. Females, though closer to the national average at 37%, are still less likely to be in the labor force than other females around the nation.

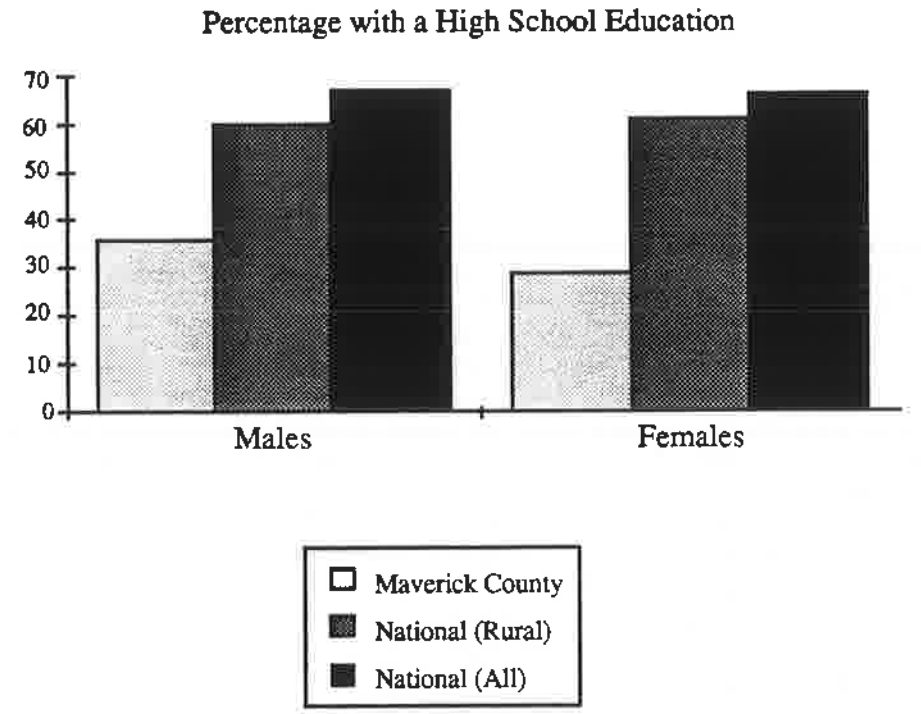
3. *Occupations*. The occupational profile shown in Figure 3.10 (page 34) of Maverick County shows that the most common occupational category is technical, sales, and administrative support, closely followed by the category of operators, fabricators and laborers. The large number of people in sales is not unusual given the strength of the retail sales industry in Maverick County, while the concentration of operators, fabricators and laborers is likely a result of the apparels manufacturing industry.

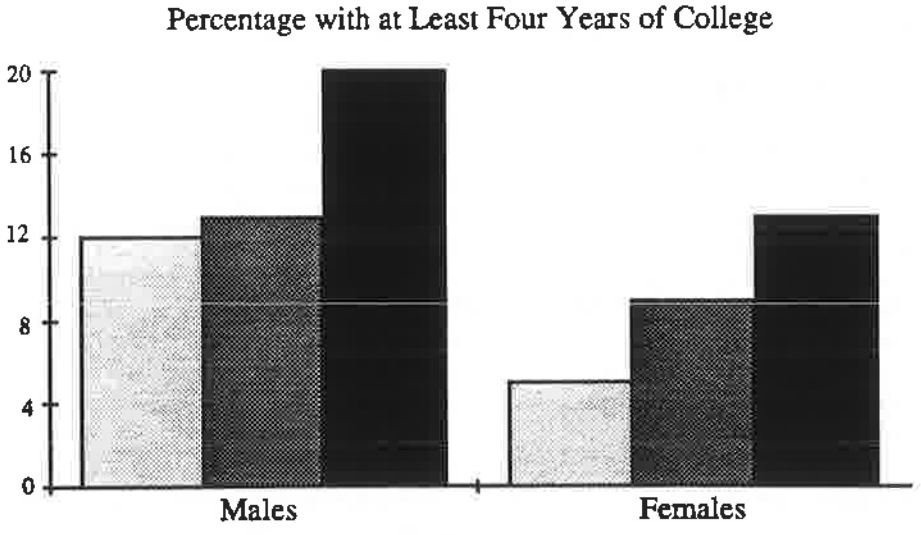
The Maverick County occupational profile is similar to that of other rural areas, with the exception that people in Maverick County are more likely to have the lower-skilled occupations of operators, fabricators, and laborers rather than the higher-skilled occupations of precision production, craft, and repair. Like most rural areas, higher-skilled occupations in Maverick County, such as managers and professionals, are not as common as they are on a national level.

With regard to occupational profiles by gender, Figure 3.10 shows that males in Maverick County are more likely than other rural males to have the high-skilled occupations of manager, professional, technical, sales, and administrative support. Maverick County females, however, are more likely to have the lower-skilled occupations of operators, fabricators, and laborers than their counterparts in other rural areas.

4. *Income and poverty levels*. Figures 3.11 (page 35) and 3.12 (page 36) reveal the impoverished nature of Maverick County. The per capita income levels from 1969 to 1985 were consistently less than half of national levels. The levels of income, low to begin with, declined further during the early 1980s. This was a result of a loss of jobs combined with the fact that the jobs were low-wage in the first place.

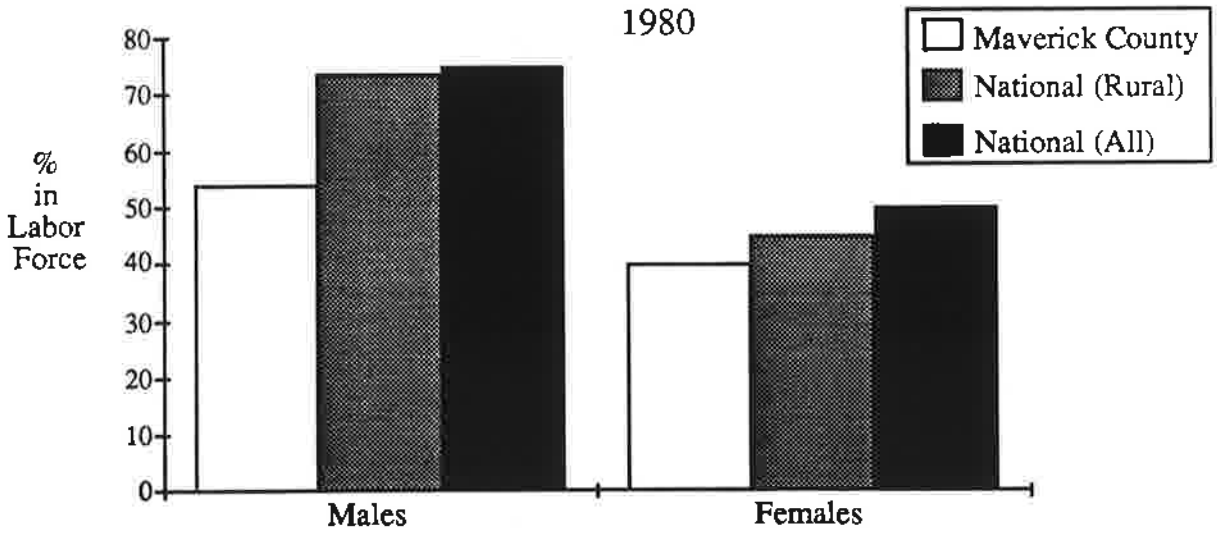
Figure 3.8. Educational Characteristics of Maverick County, 1980





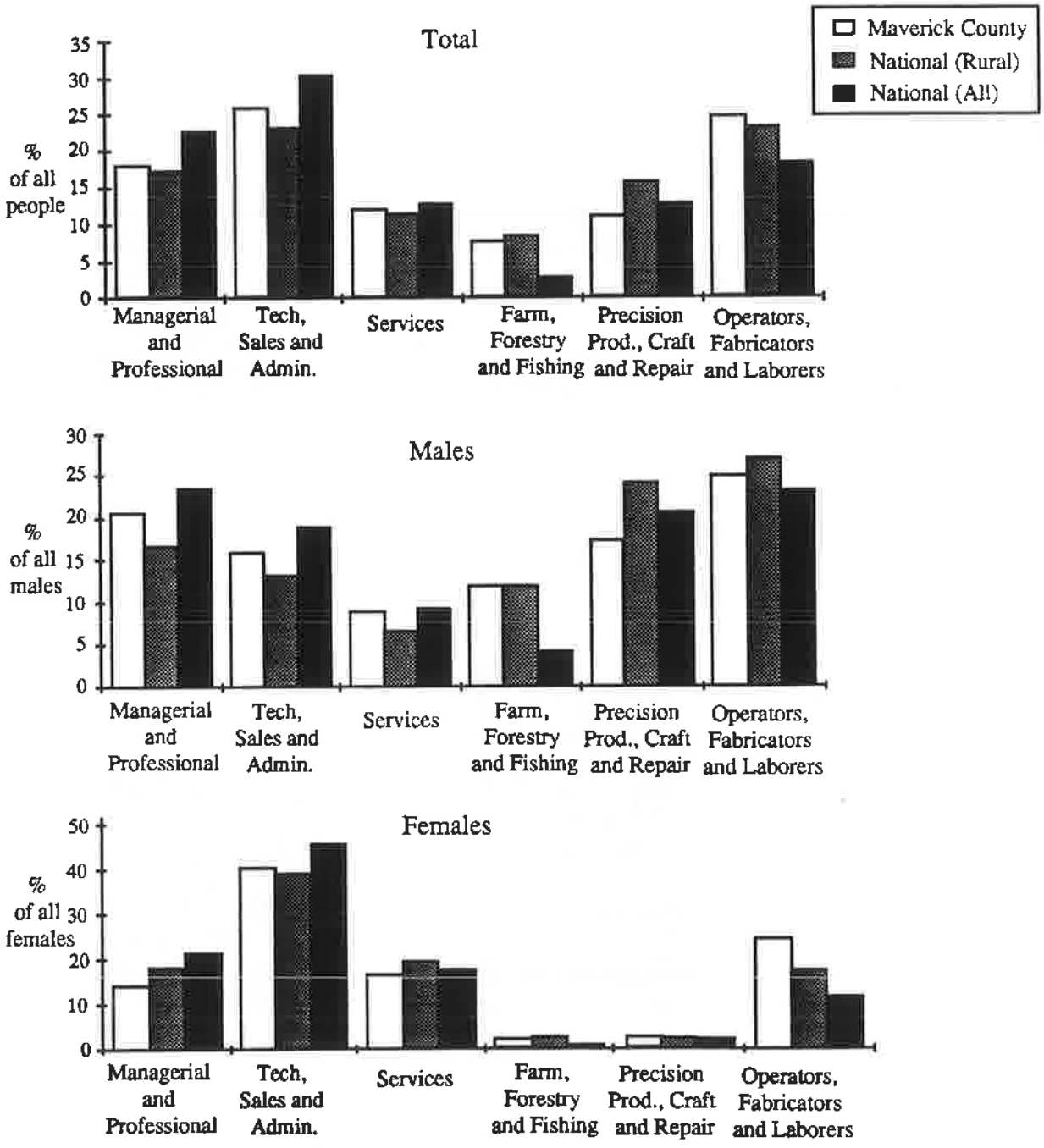
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1980 Characteristics of the Population*, General Social Economic Characteristics, Part 45, Texas Table 175; and Part 1, U.S. Summary, Table 102.

Figure 3.9. Labor Force Characteristics, Maverick County



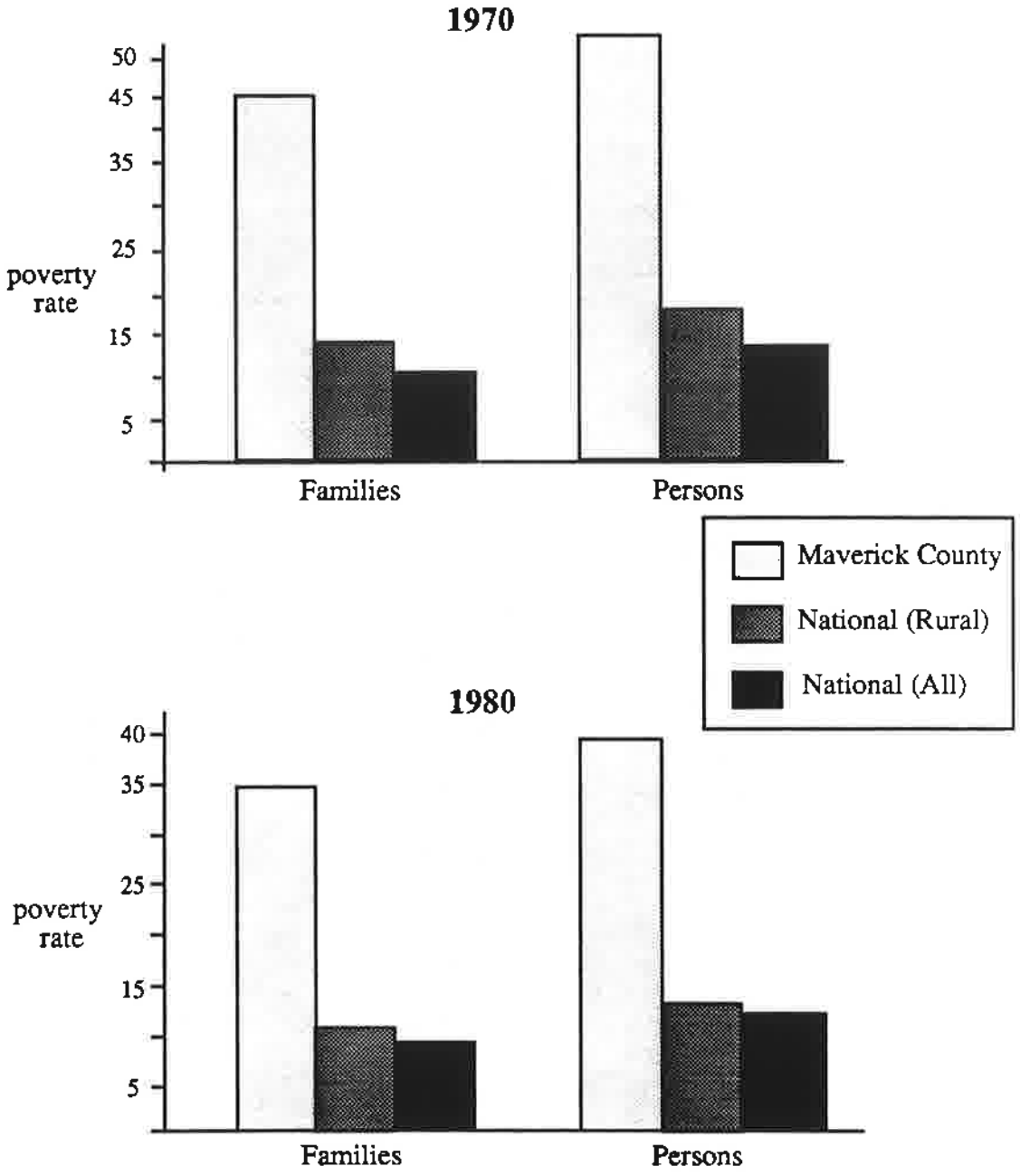
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1950, Characteristics of the Population*, Part 43, Texas Table 12; *U.S. Census of Population: 1960 Characteristics of the Population*, General Social and Economic Characteristics, Part 45, Texas, Table 81 *U.S. Census of Population: 1970, Characteristics of the Population*, General Social and Economic Characteristics, Part 45, Texas, Table 121; *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 45, Texas, Table 176; and *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 1, U.S. Summary, Table 102.

Figure 3.10. Occupation of Employed People in Maverick County, 1980



SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1980, Characteristics of the Population,* General Social and Economic Characteristics, Part 45, Texas, Table 177; and Part 1, U.S. Summary, Table 104.

Figure 3.11. Poverty in Maverick County, 1970 and 1980



SOURCES: U.S. Department of Commerce Bureau of the Census, *U.S. Census of Population: 1970, Characteristics of the Population*, General Social and Economic Characteristics, Part 2, Alabama, Table 126; *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 2, Alabama, Table 181; and *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 1, U.S. Summary, Table 97.

tied to Japanese and Korean capital are growing not only in border cities on the Pacific Coast but along the border.

B. *Maquila Job Skills*

The maquiladora industry of the last decade has been characterized by the coexistence of three types of operations: (1) those that involve easily acquired skills; (2) those that are labor-intensive and require a semiskilled labor force; and (3) those that can be described as flexible manufacturing or involve high technology and often need skilled workers. The last two have increased, particularly in the last 10 years in the Matamoros and Ciudad Juárez border sites. Advanced telecommunications services not only facilitate the linkages between the engineering and managerial sectors on both sides of the border, but can be used as a tool in the skilling of the work force. The Eagle Pass-Piedras Negras area may be able to look forward to the arrival of more major multinational companies as the work force thins out in other maquila areas.

Multinational firms have a need to customize the work force due to the weaknesses of the education system of Mexico and the lack of resources of both the federal government and the students' families to change this system. Mexican education has been plagued by the following problems: a constant decrease in basic and middle education, where 336,000 have no access to the former and the latter serves only 20% of the potential demand; a 25% decrease in subsidies for public universities in the last decade; a reduction of funds for the National Council of Science and Technology (CONACYT), which forced the cancellation of 70 research projects, 600 new scholarships, and 35 projects for research centers in 1988; and the small number of trade and technical schools compared to the number of liberal arts departments in the universities (Garcia, Canclini, & Safa, 1989). This final problem has inspired some organizations, like the Bermudez Group of Ciudad Juárez, to actively participate in the curriculum design of trade and technical public schools (CBETIS and CONALEPs) in order to satisfy the needs of firms that might establish operations in one of the 11 industrial parks of the organization.

Eagle Pass might well cooperate with Piedras Negras in the development of training programs for increasingly technologically based maquila jobs.

C. *Telecommunications Needs*

1. *Telecommunications infrastructure.* Telephone service in Piedras Negras is provided by Telefonos de Mexico (TELMEX), which is in the middle of reprivatization after being owned and operated by the government since 1972. An interesting difference between Piedras Negras and the rest of the country is the large number of available lines in the city, which by far exceeds the demand, even though its telephone density of 4% is lower than the national average (5.9%). There are currently 11,000 lines available, with only 8,500 being used and 7,000 still analog. TELMEX expects to introduce its first digital switch to Piedras Negras in 1991, and have a completely digital network by 1995.

The nature of the maquiladora industry makes it a lucrative source of large transborder telecommunications users, especially those operations with technologically sophisticated activities that are more information intensive. TELMEX had, until 1990, an exclusive agreement with AT&T for international traffic with the United States and has just opened this market to other common carriers, including MCI, US Sprint, and Westinghouse. Transborder traffic between Eagle Pass and Piedras Negras can be handled in two different ways: through the lines that connect these two cities directly or through the Monterrey-San Antonio lines of TELMEX-AT&T. The first route uses 34 trunk lines from Piedras Negras and 20 trunk lines from Eagle Pass.

An especially important factor in the direction of the traffic is the tariff differential, because while a three-minute call from Eagle Pass costs around $2.60, the same call from the opposite direction costs only 40 cents, due to a special toll called AB-08. TELMEX

complains that the maintenance and repair of these lines is extremely problematic because of an unclear delimitation of responsibilities between AT&T and Southwestern Bell. Regular long distance service is provided using 80 full duplex trunk lines.

TELMEX and AT&T can provide dedicated lines of up to 9.6 Kbps for voice and data communications. According to TELMEX, the installation and provision of advanced transborder telecommunications services would improve significantly if the management areas of the industrial parks planned these services as thoroughly as they do other utilities. This lack of long-term comprehensive planning by industrial parks requires each firm to form an arrangement with TELMEX on a one-to-one basis. The end result is a cobweb of lines that offers a poorer quality of service and is more expensive to maintain and upgrade for both provider and user (Daniel Sepulveda, interview, and Juan M. Tovar, interview, 24 February 1990).

A factor that may slow down the process of upgrading the telecommunications infrastructure is that Piedras Negras is not included in the program of advanced telecommunications services for maquiladoras in nine border cities and six interior cities (Telefonos de Mexico, 1988).

2. *The border as a telecom barrier*. Overwhelmingly important is that the maquila sites have excellent telecommunications with their parent companies, typically located in the United States. However, telecommunications services provided between the United States and Mexico not only fail to satisfy the needs of most industries already established on the border, but also represent a major obstacle to the development and operation of new projects in the manufacturing and trade sectors.

Telecommunications needs of the numerous maquiladora plants differ as much as the nature of the operations themselves. These needs can range from the small, family-run footwear plant, where voice telephony is considered a viable cost for avoiding some trips, to second-generation plants owned by Fortune 500 companies, where transborder data flow is an integral part of a worldwide data network. Without advanced transborder telecommunications, there can be little, if any, transfer of advanced production sharing.

Part of the problem is the mix of multiple vendors one has to deal with on the U.S. side. This may involve a local exchange company (Southwestern Bell), a U.S. long-distance carrier (eight are now available), a transborder carrier (traditionally only AT&T but now several competitors), a vendor for customer premises equipment, and perhaps another party for software needs. On the Mexican side, there has traditionally been only Telefonos de Mexico, which might take months to fill an order for lines and equipment. If a company requires more advanced technology than Telefonos can offer, there is a long process for seeking special equipment or services, often involving the expensive services of a Mexican consultant or "perrito."[6]

Alternatives are currently being developed for transborder telecommunications, a topic documented in related research undertaken by our group (Barrera, 1988).

3. *Transborder bypass*. Maquiladoras all along the border have looked for alternative forms of transborder communications to solve their different needs. In other cities, the need for more advanced services has been solved by using microwave links, as in El Paso-Juárez, where there are currently 27 systems. Cellular phones are a popular form of bypass all along the border except for Piedras Negras, where, as in Eagle Pass, there is no such service. Border vendors of this service have probably underestimated the Eagle Pass market since so many customers actually use their cellular phones across the border (and this is of questionable legality). Piedras Negras would, of course, be a very large market.

Bypass of the public network in Eagle Pass-Piedras Negras has taken other forms that may not be as sophisticated but are equally ingenious. These include mobile radio telephones, which are used in the cattle business; high-power wireless telephones, the use

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[6] Spanish for "little dog."

of which is restricted in the United States but still widely utilized by maquiladoras; high-power walkie-talkies, which are referred to by maquiladora managers as "intercoms"; FM or unique-frequency radios, used by maquiladoras and those in the cattle business; and bypass dialing, a practice common to frequent point-to-point callers from Eagle Pass, who will let the telephone ring once or twice before hanging up to wait for a return phone call from Piedras Negras in order to take advantage of the special AB-08 toll. It is also possible to "patch" various radio links into telephone dialers, thus gaining access to the U.S. network from a mobile station on the Mexican side.

The foregoing, though in many cases either illegal or in a gray area, illustrate the consequences of having a regulatory (on the part of both governments) dividing line through the center of an area of commerce. This situation is one of the most visible examples of how government policies are "distant" from the needs of border areas.

IV. Other Businesses

A. *Overview*

The viability of small and locally owned businesses generally signals the economic health of a community; Eagle Pass is no exception. Following are examples of typical businesses.

B. *Agriculture and Feed Lots*

Global competition has been introduced to Maverick County, once known for its year-round agricultural production. In 1989, the county produced $84 million in commodities, 90% of which was due to cattle sales. Large feedlot operators such as Alta Verde Industries, Inc., which employs about 300 people, bring in bonded cattle from Mexico, fatten them, and then send them back to Mexico where American-fed beef brings high prices (Wil Bocum, interview, 2 July 1990). However, the industry is mature and tapering off, largely due to the elimination of tax loopholes in 1986.

Telecommunications links the feedlot operations to their markets and customers. Staying in business means keeping current with prices and maintaining close and instant communication with clients. Alta Verde must use a satellite service, on-line computer service, and fax machine to stay competitive with other feedlot enterprises. The fax is used in batch sequencing for customer correspondence, banking relations, advertising, and contracting; the company has about 50 customers on its fax mailing list. Additionally, the company uses in-house desktop publishing to compose its newsletters. Of all these technologies, the satellite is probably the most valuable because of the specialized news service it provides through the Texas Cattle Feeders Association (TCFA). This news service, created by the Bonneville Network, carries U.S. Department of Agriculture (USDA) information as well as futures and livestock price quotations from the Chicago Board of Trade and Chicago Merchants Association, among others. The TCFA also uses the service to provide an electronic bulletin board of such things as notices of cattle sales and association meetings. Alta Verde sends daily sales information and receives hourly postings of market prices, which saves endless calling (Ben Doherty, interview, 22 June 1990).

C. *Oil and Gas*

Oil and gas have collectively been a cyclical industry for Maverick County. New communication technologies, such as horizontal drilling, have helped slash drilling costs. Recently, Winn Exploration brought in a well producing 20,000 barrels a day using the new horizontal-drilling technology "in an area regarded as well past its oil-producing prime . . . in a field where most wells produce less than 500 [barrels]" (Hayes, 1990).

Fax and radio phones are also used extensively to connect Winn headquarters in Maverick County with field units in nearby Zavalla County—to send detailed instructions, to receive daily production reports, and to draft participation agreements with other operators.

D. *Manufacturing*

1. *Williamson-Dickie.* Clothing apparel is by far the largest industry in Maverick County. Williamson-Dickie, a manufacturer of work clothes, has both on- and off-shore operations. It has been in Eagle Pass since 1960 for several reasons: the lease and labor are relatively inexpensive; Wal-Mart, an important client, insists that its products be made in the United States; operating in the United States is easier because communications systems are better and supplies are easier to procure; and quotas and other duty restrictions are less of a problem. Communications between corporate headquarters and Eagle Pass rely on the mail, fax, and phone.

Williamson-Dickie operates four plants. One of the factories in Eagle Pass concentrates on clothing, largely to meet Wal-Mart requirements; the other two only cut fabric, sending the pre-cut pieces to the Piedras Negras plant for completion at a much lower cost of production. Williamson-Dickie does not really compete with Eagle Pass Processing—the second largest clothing manufacturer—which makes Lee brand clothing.

Joe Herrera, a native of Eagle Pass, has worked for Williamson-Dickie for 25 years and is the area manager. Herrera says: "Times are tough in Eagle Pass now. When people try to save money they cut back on clothes. Williamson-Dickie makes working men's clothes and feels the changes in the economy first" (Joe Herrera, interview, 6 August 1990).

2. *Maverick Arms: A "reverse maquila."* One of the largest and more recent manufacturers to arrive in Eagle Pass is Maverick Arms, a subsidiary of O. F. Mossberg, a major gun-making firm headquartered in Connecticut. Attracting Mossberg to Eagle Pass was somewhat of a success story for Central Power and Light (CP&L), which maintains an economic development staff in Corpus Christi, Texas.

CP&L provides training to community leaders in methods of industry attraction. They invite community-paid staff to attend trade shows at which CP&L hosts a booth. They also maintain a database of 23,000 names and addresses of manufacturers. When a community provides a Standard Industrial Code (SIC)—a code designating a product for trade purposes—CP&L personnel send a mailing list sorted by that code. CP&L advertises its services in trade magazines, one of which caught the attention of Mossberg's president.

Because the Mexican government will not allow the assembly of guns in northern Mexico, Mossberg was seeking a "reverse maquila" type of arrangement. The company established ties with a shell group in Torrejon, Mexico which acted as a representative to the Mexican government. Raw materials arrive from Connecticut; shotgun barrels are manufactured in Torrejon; receivers are manufactured in Connecticut; assembly, finishing, and shipping are centered in Eagle Pass. Mossberg was attracted to Eagle Pass because of its reliable labor pool, its proximity to Mexican steel foundries in Torrejon, and the unique requirement of the Mexican government. To cement the arrangement, Eagle Pass offered creative financing through a local bank and employee training through the Joint Training Partnership Act (JTPA), administered by the Middle Rio Grande Development Council (Grace Rhodes, interview, 19 February 1990).

Plant manager Gabriel Bustamante is a resident of Piedras Negras who commutes across the border every day. Trained as a civil engineer at Texas A&M University, he has worked in maquiladoras for the past six years in Ciudad Acuna and Monterrey before returning to his home in Piedras Negras to participate in the border development there. Bustamante reports that Telefonos de Mexico (TELMEX) links are good, as are AT&T long-distance services on the U.S. side. Bustamante prefers working in Eagle Pass. Besides the obvious advantages associated with working for a large, established American

firm and the accompanying higher wages, Bustamante does not have to contend with Mexican unions, which he feels gives him more managerial control over the workers. In his opinion, Eagle Pass residents should become proficient in both English and Spanish, learn how to operate and maintain machinery, and gain a number of skills ranging from carpentry to computers if they want to work in the manufacturing industries developing along the border (Gabriel Bustamante, interview, 7 August 1990).

E. *"By the Bridge" Retail*

While VSAT dishes bring outside competition, small local businesses focus on personal service and product specializations to bring in pesos from across the border. Ben and Angie Rodriguez took over the Eagle Grocery from Angie's father in 1979. Angie works days as a school nurse and then joins Ben until store closing. Competition in the grocery business comes from an H.E.B.-chain grocery store right across the street and another store close to the newer part of town where the maquiladora managers shop. Eagle Grocery caters to the walk-in and pickup truck traffic that comes across the border bridge for a few special products. Ben says, "H.E.B.? They have a different clientele. They pick up the middle-upper kind of customer. H.E.B. has the advantage for wholesale. But each week we sell six thousand gallons of milk and four thousand cases of chicken—all walk-in trade. The quality in Piedras Negras is not as good and prices are not as good" (Benjamin and Angie Rodriguez, interview, 22 February 1990).

Across the street from Eagle Grocery, the Central Drugstore uses an on-line registration service to quickly locate prescriptions written by out-of-town doctors, thus extending the range of their service area. Thus, they can accommodate tourists who may suddenly need a prescription refilled. Also in the drugstore is a Kodak photo processing concession that uses a computer on-line hookup with Rochester, New York, to forward daily results of quality control tests. In return, Kodak gives a discount on processing supplies and allows the owner, Carlos Farias, to advertise as the official Kodak processing center (Carlos Farias, interview, 24 February 1990).

F. *The Customs Broker*

Reymundo Gonzalez operates a customs brokerage office just off the international bridge on the Eagle Pass side of the border. Gonzalez jokes that he is the man to see if you are bringing 5,000 plastic Santas out of Mexico in mid-July. He knows the laws, the paperwork, and the right people on both sides of the border in order to ease the details of importing from or exporting to Mexico. But business in changing, says Gonzalez, and he has had to become familiar with computers and telecommunications (Reymundo Gonzalez, interview, 25 February 1990)

Gonzalez's office is part of a three-office company, the other locations being in adjacent border cities. For some time now, it has been important to coordinate the activities of the three offices and for that purpose, the company installed a computer and dedicated phone lines connecting the offices. This was mostly a trial-and-error development because there wasn't a consultant in any of the border cities to help them plan their system. Southwestern Bell, the local exchange company, informed Gonzalez and his partners early on that all it could furnish was telecommunications within its service area (or LATA) and connections to AT&T for long-distance services. At the time, regulations prevented Southwestern Bell from directly selling any customer premises equipment. It was at this point that Gonzalez found that he and his partners had to deal with four different vendors in order to connect their offices: Southwestern Bell for the local connections, AT&T for long distance, a computer vendor for hardware, and a special consultant to do computer programming. None of these vendors would take responsibility for any more than their part of the system, and when problems arose in getting the system to operate properly, it

was left to Gonzalez and his colleagues to do the initial diagnosis, which eventually involved hiring a fifth party as a consultant.

Currently, Gonzalez and his partners are faced with two additional steps in development. First, the U.S. Customs Service is encouraging them to go on line with their business, which would necessitate new interfaces for linking their current computer network and software to the federal computers. Second, several large maquila operators have invited Gonzalez's business to merge telecommunications, but only if he can go on line with them via a transborder link. How he might establish this link, and whether the costs will be worth it, will require a whole new round of planning and, of course, expenses.

The question is: Where does he start? Eagle Pass is not Chicago, where there would probably be ample opportunity to choose a turnkey vendor to provide the entire package.

Southwestern Bell laments that it cannot do more for Gonzalez and his partners, but current regulations pretty much restrict Southwestern Bell to offering dial tone and, more recently, office equipment if it can compete with the smaller and more flexible vendors (Connie Salazar, interview, 24 May 1990). In fact, Gonzalez says that the brokerage is lucky if a telecommunications failure is fixed within 24 hours even though their business virtually stops with a communications outage.

G. *Maquila Consultant*

Saul Sepulveda left California to return to his home and culture on the Texas border when maquiladora activity picked up about nine years ago. He brought with him a knowledge of communications technology that has helped him as a maquiladora plant manager to span the barriers and achieve efficient cross-border communications. Sepulveda obtained a radio-phone transmitter with which he calls Piedras Negras and patches into a long-distance line for conference calls between the assembly plant and out-of-state design centers. As plant manager for Structural Graphics, a pop-out greeting card manufacturer, Sepulveda added a video phone to take still pictures which are then stored on video and can be sent later to the head office. A movable arrow enables Sepulveda to discuss design changes or blueprint interpretations in real time. Sepulveda's contacts in Mexico not only enabled him to obtain a permit from the Mexican Secretary of Communications in Mexico City for the video phone's use but continue to serve him well in his new position as plant manager at Cottontails, Inc., a U.S. maquiladora entrepreneur.

Sepulveda is very enthusiastic about the prospects of the combination of American know-how and Mexican labor for global competition, yet he feels community progress must be a consolidated effort not only to provide local training but also to attract jobs and industry from outside (Saul Sepulveda, interview, 6 August 1990).

H. *Local Communications Provider*

Frank's Custom Auto and Electronics sells radio phones, walkie-talkies, and other communications equipment in Eagle Pass. According to Frank De La Cerda, the owner, business is difficult for a number of reasons: The city places too many restriction on him even though he is a local; outsiders are discouraged from starting up businesses, "They have run big business out." Moreover, local discount competition undercuts his business; people will travel to San Antonio to buy at wholesale. Buyers will not pay local prices to purchase or pay for services. De La Cerda usually refuses to service equipment not bought from him. When asked if he would be interested in a service business, he responded in the negative, saying the parts vendors charge him too much for small orders. Finally, he pointed out, business is difficult because there are no more dealerships (Frank De La Cerda, interview, 25 June 1990).

I. *General Needs*

There are many distinct border businesses which could benefit from advanced telecommunications services. From the customs broker seeking to divert some of the border traffic currently jamming up at other crossings, to the auto wrecking yard with a large Mexican clientele, to the LP gas dealer—the need is for improved services to extend the source range of supply and customers.

Competition is based on more than simply price, though, and as niched services expand they will have to come to terms with competitive wages and health insurance. Real estate agents need a listing service to advise out-of-town firms on possible homes for their employees should the company want to relocate in Eagle Pass. Drug stores, hardware stores, and public service administrators can all use data management services not presently available. Some heavy telecommunications users, such as the school district, have purchased customer premises equipment but now are unable to obtain service or need more equipment. Small businesses typically need more information than people realize.

In Eagle Pass, small businesses are in a double bind. They suffer from the usual lack of assistance and consultation services available to rural telecommunications businesses. In this post-divestiture era there are few communications consultants and phone company representatives in a town like Eagle Pass. Meanwhile, large manufacturers, retailers, and chains are installing the latest management and communications technologies.

If a free-trade border is established, and this seems highly plausible given the present climate of the Salinas regime, local economies will soon span the border. Hardest hit will be the businesses where all or part can easily move to Mexico.[7] In such an event, advantages for Eagle Pass may be limited to its current practice of providing nonunion workers—seemingly preferable to management—and any upgrading of worker skills that may occur before a free-trade agreement is reached.

V. The Telco Dilemma: Lost Opportunities?

A. *Southwestern Bell in Eagle Pass*

Southwestern Bell installed a 2BESS electronic switch in 1981 that is the most up to date in the region. It provides 30,720 lines, of which roughly 10,000 are now in use. There is a choice of seven long-distance carriers. The largest telecommunications users in Eagle Pass are public-service entities, namely, the county and city governments, the hospital, and the school district. None that we could determine had bought their equipment from Southwestern Bell's unregulated equipment company; most appeared to have AT&T systems.

The newly appointed marketing representative to the area, Connie Salazar, handles only these large accounts. Some accounts consisting mostly of long-distance services are handled not by Salazar, but directly by a company like AT&T, which deals with Southwestern Bell on their customer's behalf. The city manager, Oscar Rodriguez, has inquired about Centrex (the central switching of office traffic instead of a private switchboard), and the school superintendent has expressed interest in talking to Southwestern Bell about new services (Connie Salazar, interview, 6 March 1990; 24 May 1990).

Salazar regrets that the company cannot have more of a presence in Eagle Pass, but divestiture has reduced the company's lines of business. Salazar covers most of the lower

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[7] "807" requires that pieces or components, not raw material, be shipped for fabrication in Mexico, thus a shop in Eagle Pass devoted, say, to cutting fabric, would no longer be necessary under a free trade agreement.

half of the San Antonio LATA, which involves much travel from town to town. She goes mostly where large customers have expressed needs, and works on a sales-quota basis. Smaller customers are handled by phone from the San Antonio office; middle-size customers are referred to a colleague also in that office.

Having worked with large accounts in urban areas, Salazar is aware of the many advanced applications of telecommunications. But it is difficult for her to promote these to the few large commercial customers in the middle Rio Grande Valley as they are already on overall contracts with long-distance providers or bypass the public network altogether (e.g., through the use of VSAT satellite technology). Salazar says there just isn't enough time to go knocking on their doors.

As she always has, Salazar will try to provide answers to questions that customers or potential customers might have, but smaller customers are generally referred to a different office that is mainly concerned with delivering dial tone. Often a small business will have already bought equipment from an independent dealer, and Southwestern Bell is responsible for hooking up the lines. Sometimes customers find that this equipment is not exactly tailored to their needs or, worse, it fails. But because independent dealers go in and out of business regularly or may attempt to sell replacement equipment rather than solve problems, this creates further problems for Salazar. Although she sympathizes with these customers' equipment problems—when they become known to her—the current way the telephone business is now organized largely places them out of her jurisdiction.

Another big problem is that telecommunications is becoming so sophisticated in its business applications that one must know a great deal about the nature of the customer's business in order to provide effective advice. While this is feasible when dealing with large customers, it is next to impossible for small ones. There is simply no time and little contact; furthermore, independent dealers or consultants will complain that the Bell company is infringing on their businesses. Salazar's policy is to be ready and willing to give advice, and to then let the customer make a decision about the equipment. Since 1 April 1989, the restriction that prevented sales personnel like Salazar from representing both the regulated (dial tone) and unregulated (e.g., equipment) business of Southwestern Bell has been lifted. Although this has somewhat alleviated an awkward situation with customers, it remains difficult to set up an equipment deal when AT&T, or a local dealer already has the customer's business.

Under regulation, Southwestern Bell, as a local exchange provider, cannot offer transborder telecommunications. It can link a customer to the network that, in turn, transmits traffic to Mexico, but it cannot offer the service itself. This is a great source of frustration when a border customer's main need might be transborder service. Although Salazar could recommend ways to obtain such a service, more often the customer has already contacted a transborder long-distance provider, and Southwestern Bell is brought into the planning only of the local loop connection.

Salazar would like to see her company pay more attention to the middle Rio Grande Valley—and she has written management to this effect—but she realizes that this is not just the company's choice. It would have to be able to sufficiently expand its lines of business to justify a greatly increased presence in Eagle Pass.

B. *Divestiture is the Real Culprit*

Long before visiting Eagle Pass, the research team heard from several quarters that attitudes about Southwestern Bell in Eagle Pass were a "touchy subject." Although this turned out to be true among persons who are understandably concerned about such attitudes—company officials involved in regional community relations and several city officials—we found no evidence that such attitudes were caused by basic shortcomings in the delivery of local telephone service. Although personality and political differences had entered into the picture, most of the problem—in our estimation—was due to the

consequences of divestiture, which has reduced the presence of Bell personnel in small communities.[8]

VI. The Community and Mass Media

A. *Media in General*

Reflecting a Hispanic culture on both sides of the border, the Spanish language permeates both the print and broadcast media in the area. The major Piedras Negras newspaper, *El Zocalo*, is readily found in Eagle Pass newsstands. Cable Television, which has a very high (60%) penetration in Eagle Pass, carries a full range of Mexican programs in addition to U.S. options, and the radio spectrum overflows with Spanish-language broadcasting and music.

B. *The Press*

Eagle Pass news is covered in detail in the *Eagle Pass News-Guide*, the only English-language newspaper in Maverick County and the most widely circulated. The *News-Guide* thrives on being controversial. Says editor Rex McBeath: "The *Eagle Pass News-Guide* publishes a lot of things that people would rather not talk about. We are the only ones around who will take the time to develop a story" (Rex McBeath, interview, 23 February 1990). This approach often includes opinionated coverage of city politics and school issues.

Both city manager Oscar Rodriguez and school superintendent Frank Chisum expressed frustration with the local press, saying that the *News-Guide* tends to emphasize controversy. In addition, they pointed out, Spanish-language publications on both sides of the border operate according to Mexican practices that do not fit American journalistic standards. For example, Mexican journalists expect to be paid for coverage of civic affairs and, in some cases, for favorable personal reporting.

There is some additional, although minor, local news coverage in two small, bilingual Eagle Pass publications (mostly advertising) and in other Piedras Negras publications.

C. *Broadband: Radio, Television, and Cable*

Three television stations and one radio station in Piedras Negras and two radio stations in Eagle Pass provide information to the Spanish-speaking community on both sides of the border through local news coverage and public service and paid announcements. Karnack Cable serves more than 7,600 customers in Eagle Pass and about 34,400 in Piedras Negras via microwave to a Mexican operator. Televised news and Spanish-language programming emanate from a local-origination cable programmer that follow, assert some, Mexican practices of sensationalism and unsubstantiated stories, as do the three Hispanic dailies published in Piedras Negras. Another local-origination programmer supplies religious programming, time for public service announcements, and human services programming.

The city's cable franchise does not provide for a public access channel for the government. Two local-origination channels, however, are available for paid time between

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[8] This perception problem was observed by our research team in nearby Uvalde, Texas. When asked directions to a building for a meeting with Southwestern Bell personnel, a local resident gave the location but exclaimed that he thought the "phone company had left town two or three years ago." On the contrary, the building housed the local switching office and several engineers; it was the public payment office that had been closed.

programs. Together with the cable system, broadband alternatives to print media are used by health and school agencies to reach community members who live and work on both sides of the border. But cable remains an underused resource for community participation in the development process.

D. *Use of Media for Community Development*

Eagle Pass city manager Rodriguez wishes that the city government—his office in particular—had access to a mass medium which neither promulgated sensationalism nor expected payment for coverage. Economic development, he feels, needs to occur in an atmosphere of understanding and cooperation rather than media-fueled adversarial factionalism fed by distortion. Like the city manager, the school superintendent would prefer to have more time on broadband media in order to build community consensus for drug prevention, parental involvement, and community development programs.

Unlike the city, though, the school district has an access channel on the cable system. Live town meetings, home study, and adult basic education are just some of the many opportunities available to the community through the school district. The school district, however, is beset by state-mandated, taxation-equalization problems that divert attention from community information programming.

VII. Education: Path out of Poverty

A. *Cycle of Poverty*

When first interviewed by our research team in February 1990, Superintendent Chisum had been on the job for only two months, although he had been promoted from within the Eagle Pass Independent School District system where he had served for 14 years (Frank Chisum, interview, and Enrique Montalvo, interview, 22 February 1990). At that time, Chisum saw his challenge as twofold. First, there was the usual problem of keeping a school district functioning in an area that suffers from a perennial lack of funds and, due to its flat economy, is hard pressed to raise taxes. What administrative shifts could be made to maintain or increase quality, yet hold costs down? What outside funds might be added to already meager resources? (Eagle Pass can attract federal funds because of its high poverty level.)

The second challenge on Chisum's agenda was to upgrade career training in the Eagle Pass area. Not only was the young population undertrained for modern factory or technical jobs, but there was also a steady migration of population from Mexico into the United States. Many live in the border area for a few years or even a generation, then move onto more northern cities. If work is not locally available, they leave sooner—likely having a negative impact on welfare roles elsewhere or adopting a lifestyle where they never make enough to survive. "So why not train them here at the gateway?" asks Chisum. "It will improve the chances of Eagle Pass attracting more employers and will lessen the chances of immigrants becoming part of a permanent underclass in the North." To Chisum, this means more science and technology in his schools, more concentration on job-oriented skills, and, above all, the establishment of a regionwide technical training center in the middle Rio Grande Valley. And Chisum has not overlooked how technology can be used to teach technology. One of his first moves as superintendent was to request a study by the Texas School Boards Association to assess how Eagle Pass ISD could best use instructional technologies.

An interview six months later illustrates the frustrations of working in a state that not only has a poor reputation in public education but also fiercely debates each and every attempt at school reform, especially recent legislation attempting to equalize school financing in Texas (Frank Chisum, interview; Enrique Montalvo, interview, 7 August 1990). Although Chisum had been able to make several desired changes, he was faced

with the nearly impossible task of budgeting the 1990-91 school year under provisions of a new financial reform bill that virtually doubled the school's tax rate from .51 to .94, the state average. Aimed at setting up a statewide plan for equalization of state-distributed monies, the bill required districts to bring their tax rates into line. This additional financial burden, especially as it affects larger taxpayers in the area (who would hopefully be school supporters anyway), makes it difficult for Eagle Pass ISD to also promote a regional training center or become involved in distance learning projects that would require raising extra local funds.

As Chisum and Montalvo both lament, a school-funding policy for Eagle Pass has to be different from other rural or small-city areas of Texas. Management in Austin and the Texas Legislature overlooks the specific needs of different Texas regions, their populations, and their economies. All of this may mean that the younger, educable residents of Eagle Pass are trapped in a circle of poverty. Possessing only skills for an agricultural economy, they may continue to follow the crops. If these individuals were to choose to work in the off season, their skills would qualify them only for minimum-wage jobs, probably in the apparel factories. Across the river, many people work at similar jobs for even less money. Yet even the maquiladoras need workers with a modicum of technical and carpentry skills and a familiarity with machinery—its operation and maintenance—and with computers (Gabriel Bustamante, interview, 7 August 1990; and Saul Sepulveda, interview, 6 August 1990).

Even more unlikely for Eagle Pass students is the possibility of rising to a professional or managerial position in local industry, including the U.S. side of maquiladora operations. Maquiladora managers frequently live in Eagle Pass rather than across the border because of the better housing, sanitation, and consumer goods. But these positions are out of reach for young adults in Eagle Pass because the education system there does not prepare them for work in the maquiladoras (Arthur Pine, interview, 22 February 1990).

B. *Consequences of a Free-Trade Agreement*

Probably one of the school district's best arguments for upgrading career eduction is the possibility of a free-trade agreement with Mexico. Although many of the customs-related functions that furnish Eagle Pass with business would disappear, maintaining managerial, distribution, and communication facilities on the U.S. side of the border would pose lucrative possibilities. Although many of the American low-wage jobs in maquiladora operations (such as cutting the fabric before transferring it to Mexican sewing operations) would move across the border, the U.S. side would likely grow in technical, managerial, and marketing aspects. In the eyes of some, the border region could become one of the world's fastest growth centers, given a free-trade agreement (a point discussed in many of our Eagle Pass interviews, especially that with the director of economic development for the Middle Rio Grande Development Council (Paul Edwards, interview, 6 August 1990; also Goldman [1990] for a description of the growth potential of maquiladora industries).

C. *Uses of Technology for Education*

As mentioned above, Superintendent Chisum took the initiative to sign up with a Texas Association of School Boards program for assisting the district in instructional technology. It will assess the district's needs and set up whatever is available to meet those needs. The cost of the program, estimated at $11,000, is paid for by the school district. Chisum thinks the program will involve televised course work as well as other programs (Frank Chisum, interview; and Enrique Montalvo, interview, 7 August 1990).

Chisum believes the new instructional program will meet the district's specific needs better than TI-IN, a learning network which the district dropped at the end of the 1989-90 school year. Problems with TI-IN included schedule conflicts; overlapping

courses that the district itself could have offered; and inaccessible audio feedback hookup when courses were recorded for later use. Chisum approves of television productions that not only allow him to convey his educational messages but that students also like. Chisum also sees the importance of these special training programs in worker "retraining."

Earlier this year, the district considered acceptance of the Whittle Company offer to supply a satellite dish, television sets, and inside wiring in return for airing a morning news program containing commercials. The board, however, vetoed the offer because they were against spending school time on a commercially oriented project. Chisum also felt that if he let one commercial program into the schools, he would have a more difficult time rejecting other ventures, including local advertisers.[9]

Chisum and his staff are apparently aware of the possibility of linking different regional school districts through a broadband-switched network so that classes can be "shared" through a classroom-type teleconferencing system. In an area characterized by low population density and one of the lowest tax bases in the state, sharing regional resources is a necessary solution. The best teachers and the best curriculum—through distance education—could serve the entire region, including Uvalde, Carrizo Springs, Crystal City, and Portula. Earlier in 1990, the high school principal and his TI-IN coordinator commented that one of their staff had unsuccessfully tried to contact someone at AT&T or Southwestern Bell about such a service (Pete Castillio, interview, 22 February 1990).[10]

VIII. Conclusions

Unlike other sites in this study, Eagle Pass appears to be more of a reactive than proactive community. Its adjacency to the border and the much larger Piedras Negras has meant that much of its recent economy has been influenced by the devaluation of the peso. This can be seen in the traffic of everyday workers across the international bridge to buy household items otherwise unavailable, of low quality, or of high price in Piedras Negras and the surrounding vicinity. The role of Eagle Pass in maquiladora development has largely been limited to whether or not companies located in Mexico wish to conduct business via Eagle Pass (e.g., the apparel firms).

Eagle Pass involvement in economic development programs has been more a case of outside assistance programs locating a site with high unemployment, low educational attainment, and a Hispanic majority than developmental strategies of the city itself.

Education has suffered from underinvestment, due to a low tax rate (not forced until recently to increase), and factionalism in community support. Conservative versus liberal political differences seem more visible (and sometimes debilitating) than in other sites of this project. And although the wealthy and entrenched (mostly Anglo) minority will speak of progress, there are few cooperative alliances like that seen, for example, in Demopolis, Alabama.

The above conditions are corroborated by the statistical picture of Eagle Pass, descriptions of conditions along the more depressed U.S. segments of the Mexican border, and the stereotype of largely Mexican-American populations living under legal and fiscal conditions chiefly imposed by distant state and federal capitols. As longtime dwellers describe it, the border area—on both sides—is a country unto itself. There is a bilingual, bicultural mix of economies, and handicaps and innovations related to disparities between

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[9] See Chapter 5 for an example of a school's perceived success in using the Whittle offerings.

[10] It is quite likely that neither company would have had information at that time about such projects in Texas as the only one currently being considered ("SchooLink") was just being designed by the Texas Association of School Boards. However, it would certainly be helpful if large telecommunications companies could have at least one contact point for questions about educational applications.

the two countries. It is a zone where an international boundary, not necessarily a cultural one, impedes transportation and communication. As one respondent, who would surely wish to remain anonymous, put it: Eagle Pass exists mainly because of the businesses associated with "getting across the border." The telecommunications situation is symptomatic of this no-man's land. All officials we talked to from either country recognized how critical efficient transborder communication is for the development of business, especially for firms employing modern, networked-management methods. We experienced more "bypass" stories in this study than in any other we have ever conducted, including a recent major study of large firms in U.S. cities (Schmandt et al., 1990). U.S. telecommunications policy changes have done nothing for, if not inhibited, the development of advanced transborder telecommunications.

Yet if we look at the people of Eagle Pass, and not just the statistics, a different and more positive picture begins to appear. On some issues there is a very visible "can do" attitude among Eagle Pass residents—both in civic and business leaders' ambitions for the area and in the easy and pleasant manner in which most residents offer travel directions, handle restaurant or motel transactions, or relate stories of difficult economic times. Perhaps this spirit is due to the constant coping that has marked the existence of Eagle Pass, or perhaps it has grown out of the best of two cultures. It does, however, lead one to believe that Eagle Pass may be on the verge of a crossroads, of taking a path toward proactive rather than reactive developmental strategies.

As discussed earlier in this chapter, a free-trade agreement with Mexico may greatly increase the viability of Eagle Pass as a "U.S. partner" with Piedras Negras in extensive development of the border area. Current specialities in customs brokerage and the establishment of partial fabrication plants (necessary under maquiladora laws) may lead to managerial and planning opportunities as well as warehousing and distribution centers on the U.S. side of the partnership. What would make Eagle Pass a superior "border point" in a free-trade scenario—an airport, teleport, trade center, or, literally, a transborder industrial park?

Attention should be given to improving the recreational and cultural infrastructure of Eagle Pass, a priority emphasized by City Manager Rodriguez. Although this may seem to be somewhat of a "frill" in a city of Eagle Pass's economic stature, knowledge of *why* some maquiladoras have not selected Eagle Pass in favor of other U.S. border cities may lead to future economic development. Plans for a water park on the Eagle Pass side of the Rio Grande reflect a growing awareness of potential in this area.

Possessing superior capabilities for transborder telecommunications and data processing, much like modern "ports" such as Amsterdam (and, increasingly, Seattle), could be another critical factor in attracting industry. If free trade or a free-trade zone is established, could a local "telecommunications zone" be established, so that local exchange providers could operate with a single powerful central office to serve both sides of the border? Perhaps the providers could share a percentage of proceeds with the host county. Would a high-performance, binational, and regional network stimulate industrial development and modern management methods?

It is also important to examine the role of the divested telecommunications company—in this case, Southwestern Bell—as a rural service provider. What may have been beneficial for America's cities has not been especially favorable for its rural areas. Before divestiture, the Bell system was a "full service" telecommunications provider. As a regulated monopoly it did not have to compete. Thus, it could provide an office in most communities, and its full range of equipment and services provided an "economy of scope" so that customers could have their needs met by "one stop" shopping. Many larger towns or small cities had a Bell Telephone office not unlike the electric utility; local employees participated in community affairs; and the company often contributed to local philanthropic funds. Bell companies had a definite presence in most of the communities they served. In many small communities, they provided one of the only "big company" influences in the town; often they were among the largest taxpayers (and still are in many areas).

But the breakup of the Bell system changed all of this. Among the more economically motivated reasons for the divestiture of the nation's telephone company (earning $50 billion in annual revenue) was the desire to accelerate the introduction of competition into the industry—competition that was already present and growing in long-distance services, customer premises equipment, and data services. The strategy was to separate the increasingly competitive long-distance, information, and equipment areas into an increasingly unregulated businesses, namely AT&T and its new competitors. The local exchange, or "natural monopoly" sector of the business, was to remain largely regulated and restricted to delivering dial tone. These were divided among regional Bell holding companies, of which Southwestern Bell is one, with a subsidiary, called Southwestern Bell Telephone, operating a division in Texas.

The desired outcome was to improve services and lower prices through competition in the bulk of the nation's telephone business, which, important for this analysis, is in the urban rather than the rural areas of America. It was reasonable to expect competition to develop in larger markets like Chicago, New York, or Los Angeles—or even Richmond, Fort Worth, or Fresno. In such locations, market concentrations offer enough revenue base for even a local exchange provider to gain a return on investment for offering dial tone while concurrently attempting to develop further lines of business (custom calling, business telecommunications, switching services).

But towns like Eagle Pass were another matter. As long-distance services remained with AT&T, the divested Bell companies were reduced to offering only connections on the local network (until recently, sales personnel could not simultaneously sell equipment along with dial tone). This changed what was a marginal business in many small towns to a cross-subsidized (from urban income) "holding" operation. Added to this was pressure from state utility commissions to hold down prices on local service, often offered at prices lower than cost in rural areas. Conservative price attitudes on the part of regulators as well as the attitudes of utility investors have made it difficult for local exchange companies to invest in small markets for "development" purposes. In fact, the whole scenario has led to cost containment and cutting for most Bell companies serving rural areas.

While attempting to maintain or improve basic service—often through new technology[11] —cost-cutting measures like closing local offices, cutting personnel, and halting philanthropic practices have been invoked in many rural areas and small towns.

This, we assert, has been the root of attitudinal problems of some individuals in Eagle Pass. Hard feelings have been caused by the closing of a local office and the accompanying loss of jobs, the cutback of Bell company advertising in the local newspaper, and a generally decreased presence in the town. As for service, the two major complaints we heard in both formal and numerous informal interviews were that, sometimes it takes up to a day to have a line repaired and it is difficult to acquire advice on how to handle certain business problems requiring telecommunications.

In our estimation—based upon this and other rural studies (Schmandt et al., 1990; Williams, Sawhney, & Brackenridge, 1990)—these are problems indicative of the declined presence of Bell companies (and other large telcos) and of conditions resulting from divestiture. They may have been exacerbated in Eagle Pass for reasons beyond our knowledge, but many decisions affecting Eagle Pass—taxation, education, border trade, and, in this case, changes in how telephone service is sold—are made by people who have little idea of their consequences on rural or border areas.

It may be that U.S. telecommunications policy for rural areas needs rethinking, which is a topic of Chapter 7 of this report.

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[11] Such technology includes digital switches, which require far less service than older electronic or step-by-step electromechanical ones. Customer service can be initiated or terminated from a central office rather than a technician's trip to the field. Much trouble-shooting can be done centrally. Improved "strung" or "buried" cable also alleviates costs of outside plant repair.

Finally, there is education. If positive economic development were to ever occur in Eagle Pass, it would first require improving the skills of the Eagle Pass work force. Superintendent Chisum already plans to develop a regional technical-training center to provide instruction in traditional machinist and carpentry skills in addition to electronics, applied chemistry, and computer-assisted manufacturing. Why not also train supervisors and managers locally? A switched-fiber network among the region's school districts would not only facilitate sharing instructional and administrative resources, but could also be linked to technical training facilities. And if binational trade centers and industrial parks are to be developed, why not training facilities as well? A high-performance transborder network would not only contribute to training but also to the manufacturing and management needs of cooperating border industries.

Superior training facilities would also meet the greater, and more nationally oriented, need to provide immigrants with work skills before they gravitate to welfare rolls in the cities. Perhaps investing in training facilities and taking advantage of the modern technologies of distance education would benefit not only the development of transborder industrial development but also those newly arrived members of the U.S. work force.

Epilogue

On July 11-12, 1991, project directors Sharon Strover and Frederick Williams paid a follow-up visit to Eagle Pass. This was a part of a final round of visits that would contribute to an "Epilog" for the project. Following is a list of summary generalizations from the visit.

- The greatest change in the Eagle Pass developmental scene is the prospect for a U.S.-Mexico free trade agreement and the ensuring implications for this border community. Although key figures and their organizations recognized this challenge, there had been no major coordinated efforts to learn more about the act itself or local implications. Chamber of Commerce director Arthur Pine, however, serves on several regional and national committees studying the matter. As summed up by planning and economic development director of the Middle Rio Grande Development Council, Paul A. Edwards, if Eagle Pass stakeholders (business leaders, the chamber, the school district, the city council) do not begin to plan for the impacts of free trade, many more opportunities may pass them by.
- Although all Eagle Pass stakeholders agree on the need for a countywide vocational-technical school, no concrete plans have yet come to pass. The problem seems one of the usual bureaucracy coupled with the inability of the community to lobby effectively. The latter is another reflection of the fractionated political situation in Eagle Pass.
- Despite the continued high unemployment rate (again, a reflection of seasonal employment and the "churn" of population back and forth across the border), business in Eagle Pass continues to appear lively. Vidal Gonzalez, president of Frontier Bank, reports a doubling of deposits over the past year.
- The Eagle Pass school district continues to face challenges, one being the turnover of three board seats is the last election. Presumably, this was a reaction to the near doubling of tax rate required by the new state finance plan. Superintendent Frank Chisum continues his lobbying against state-mandated requirements that fail to understand the special situation of a border area (e.g., a new method for calculating average daily attendance is biased downward because of temporary absences of the children of migrant workers).
- Political differences among stakeholder continue to prevent coordinated planning (e.g., free trade, the vocational-technical school, an airport), and these are further fueled by a highly critical and divisive local newspaper.

Interview Master List

Amezcua, Cesareo—Community Director, A Su Salud and Health Education Faculty Member, Health Science Center, The University of Texas, Houston, Texas. Interviewed via telephone by Richard H. Cutler and Eduardo Barrera, 12 February 1990.

Benavides, David Jr.—Manager-Network Maintenance, Southwestern Bell Telephone, Uvalde, Texas. Interviewed by Frederick Williams and Joan Stuller, 23 February 1990.

Baucom,Wil—Maverick County Agricultural Extension Agent, Eagle Pass, Texas. Interviewed via telephone by Richard H. Cutler, 21 February 1990 and again 2 July 1990.

Bustamante, Gabriel—Assistant Plant Manager, Maverick Arms. Interviewed by Richard H. Cutler and Frederick Williams, Eagle Pass, Texas, 7 August 1990.

Calley, Michael—Communications Director, Winn Exploration-Dulce Co., Eagle Pass, Texas. Interviewed via telephone by Richard H. Cutler, 23 June 1990.

Carlton, John—Group Director, Research and Development, Texas Association of School Boards, Austin, Texas. Interviewed by Richard H. Cutler, 18 April 1990.

Castillio, Pete—Principal, Eagle Pass High School, Eagle pass, Texas. Interviewed by Frederick Williams and Joan Stuller, 22 February 1990.

Chisum, Frank—Superintendent, Eagle Pass Independent School District. Interviewed by Frederick Williams, Joan Stuller, and Richard H. Cutler, Texas, 22 February 1990; by Williams, 6 August 1990; and by Williams and Cutler, 7 August 1990.

Coleman, Sandra—Director of Student Affairs, Uvalde Center, Sul Ross University, Uvalde, Texas. Interviewed via telephone by Richard H. Cutler, 14 February 1990.

De La Cerda, Frank—Owner, Frank's Custom Auto and Electronics, Eagle Pass, Texas. Interviewed via telephone by Richard H. Cutler, 25 June 1990.

De Luna, Jose—Broker, Main Realty, Eagle Pass, Texas. Interviewed by Joan Stuller and Richard H. Cutler, 24 February 1990.

Doherty, Ben—Sales Representative, Alta Verde Industries, Inc., Quemado, Texas. Interviewed via telephone by Richard H. Cutler, 22 June 1990.

Edwards, Paul—Director of Economy and Development, Middle Rio Grande Development Council, Uvalde, Texas. Interviewed via telephone by Richard H. Cutler, 7 June 1990 and 3 August 1990, and by Cutler and Williams, 6 August 1990.

Farias, Carlos—Kodak Photo Processor, Central Drug Store, Eagle Pass, Texas. Interviewed by Richard H. Cutler, 24 February 1990.

Gallion, Kipling—Communications Researcher, The University of Texas at Austin, Austin, Texas. Interviewed via telephone by Richard H. Cutler, 2 February 1990.

Gonzalez, Reymundo—Customs Broker, Eagle Pass, Texas. Interviewed by Eduardo Barrera and Frederick Williams, 25 February 1990.

Herrera, Joe—Area Manager, Williamson-Dickie Manufacturing Company, Eagle Pass, Texas. Interviewed by Richard H. Cutler and Frederick Williams, 6 August 1990.

Kinsall, Al—Sportswriter, *Eagle Pass News-Guide*, Eagle Pass, Texas. Interviewed by Richard H. Cutler, 22 February 1990.

Lloyd, Linda—Distance Learning Consultant, Texas Association of School Boards, Austin, Texas. Interviewed by Richard H. Cutler, 18 April 1990 and via telephone 30 May 1990 and 31 May 1990.

McAlister, Alfred—Professor, Health Sciences, Health Science Center, The University of Texas, Houston, Texas. Interviewed via telephone by Richard H. Cutler,

Montalvo, Enrique—Administrator, Chapter 1 Migrant Program, Eagle Pass Independent School District, Eagle Pass, Texas. Interviewed by Frederick Williams, Joan Stuller, and Richard H. Cutler, 22 February 1990, and by Williams and Cutler, 7 August 1990.

McBeath, Rex—Editor, *Eagle Pass News-Guide*, Eagle Pass, Texas. Interviewed by Richard H. Cutler, 22 February 1990.

O'Neill, Karen—Area Manager-External Affairs, Southwestern Bell Telephone, Hondo, Texas. Interviewed by Frederick Williams and Joan Stuller, 23 February 1990, and via telephone by Richard H. Cutler, 6 July 1990.

Perez-Trevino, Emma—News Editor, *Eagle Pass News Guide*, Eagle Pass, Texas. Interviewed by Richard H. Cutler and Joan Stuller, 23 February 1990.

Pine, Arthur—President, Eagle Pass Chamber of Commerce, Eagle Pass, Texas. Interviewed by Eduardo Barrera and Richard H. Cutler, 21 February 1990, and by Cutler, 30 July 1990.

Rhodes, Grace—Economic Development Staff, Central Power and Light, Corpus Christi, Texas. Interviewed via telephone by Richard H. Cutler, 19 February 1990.

Rodriguez, Benjamin and Angela—Owners, Eagle Grocery, Eagle Pass, Texas. Interviewed by Richard H. Cutler, 22 February 1990.

Rodriguez, Eddie—General Manager, Maverick County Water Control Improvement District, and former mayor and city manager of Eagle Pass. Interviewed via telephone by Richard H. Cutler, 14 February 1990.

Rodriguez, Oscar—City Manager, Eagle Pass, Texas. Interviewed by Richard Cutler, 23 February 1990, and by Cutler and Frederick Williams, 6 August 1990.

Rodriguez, Reymundo—Executive Associate, Hogg Foundation, Austin, Texas. Interviewed by Frederick Williams, Sharon Strover, and Richard H. Cutler, 8 January 1990.

Salazar, Connie R.—Marketing Representative, Southwestern Bell Telephone, San Antonio, Texas. Interviewed via telephone by Frederick Williams, 6 March 1990, and by Williams and Richard H. Cutler, 24 May 1990.

Sepulveda, Daniel—Commercial Director, Commuting Department,TELMEX, Piedras Negras, Mexico. Interviewed by Eduardo Barrera, 24 February 1990.

Sepulveda, Saul—General Manager, Structural Graphics, Eagle Pass, Texas. Interviewed by Richard H. Cutler and Frederick Williams, 6 August 1990, (now consultant to Cottontails).

Smith, Stephen S.—Senior Vice President, Karnack Cable, San Marcos, Texas. Interviewed by Joan Stuller, 2 March 1990.

Trevino, Elias Sergio—Municipal President, Piedras Negras, Mexico. Interviewed by Eduardo Barrera, 24 February 1990.

Tovar, Juan M.—Staff, Commuting Department,TELMEX, Piedras Negras, Mexico. Interviewed by Eduardo Barrera, 24 February 1990.

Wheeler, Manuel, Jr.—Director of Programming, WWTV, Eagle Pass, Texas. Interviewed by Richard H. Cutler, 23 February 1990.

Winn, C. C.—Owner, Winn Exploration Co., Inc., Eagle Pass, Texas. Interviewed by Richard H. Cutler, 23 February 1990.

Chapter 4

Kearney, Nebraska: Strategic Planning, Economic Development and Telecommunications Working Together

I. General Introduction

A. *About Kearney*

Kearney is a moderately sized city of 23,815 located within Buffalo County, Nebraska (Figure 4.1, page 58). Kearney first came to our attention when we learned that an interexchange carrier (AT&T) had installed a point of presence (POP) in a large, telemarketing-based firm in this town. As we investigated, it became apparent that Kearney had a progressive and visionary plan for its development, one that embraced a comprehensive strategy for improving the town and what it could offer its citizens. Having adequate telecommunications infrastructure was a part of this plan, although there are other, possibly more important, parts as well.

Modern telecommunications facilities have enabled a small but thriving telemarketing industry to exist in Kearney; this particular business has, in fact, taken root in several large and small communities in the Midwest, Omaha being the acknowledged nationwide leader in telemarketing firms. What is particularly interesting concerns the spin-off effects of the infrastructure required by Cabela's, the area's largest telemarketer; this infrastructure is on the verge of serving several other local clients, hinting at new capabilities and efficiencies local businesses will soon realize. Such efficiencies will, however, exact a cost: The local telephone provider, GTE, will certainly lose access charges. Consequently, GTE's interest in equipping other community-based businesses or services with costly telecommunications facilities may be dampened.

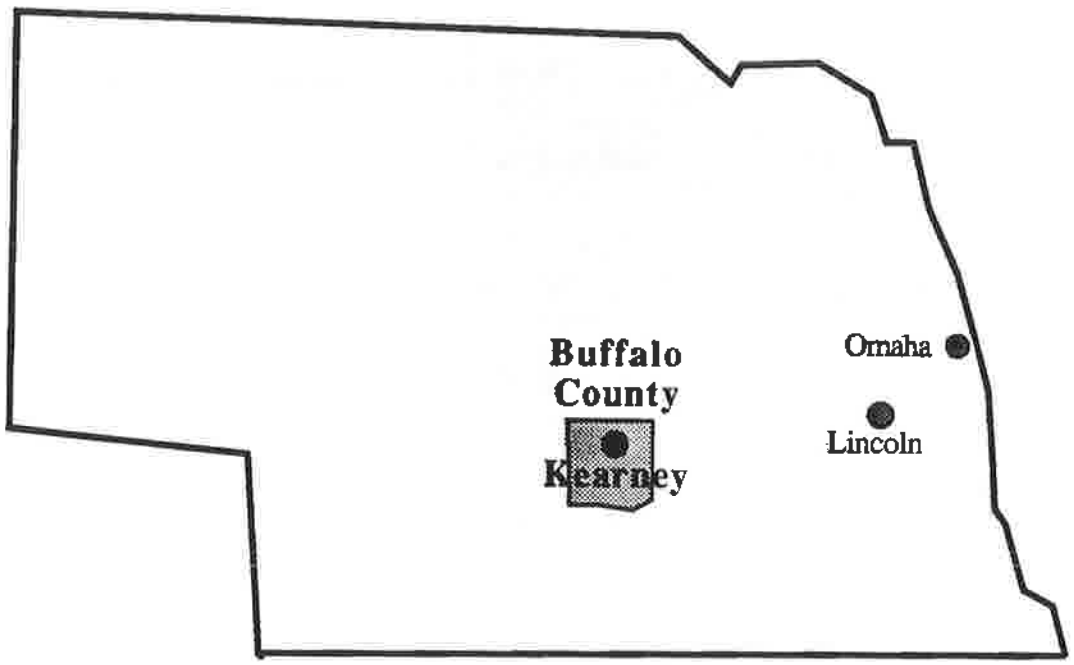
Kearney is also interesting for this study insofar as it is in Nebraska, a state which has gone further than any other in deregulating its telephone industry. Nebraska's adoption in 1986 of Legislative Bill (LB) 835—the Telecommunications Act of 1986—provided a freer rein for telephone companies in the state to alter services and rates. The implicit promise of deregulation was a more quickly modernized telecommunications infrastructure, widely believed to be in the best interests of the state's economy at the time. The impact of this initiative at the local level can be examined in Kearney.

Finally, Kearney represents a certain type of rural community. It is not directly adjacent to any major metropolitan area, yet neither is it entirely remote, given its proximity to Interstate Highway 80. It actually serves as something of a regional hub in that it is the first "major" town people in western Nebraska traveling east would encounter; it also has a reputable state college and excellent medical facilities, possibly the best west of Lincoln. Indeed, the local hospital reinforces another aspect of Kearney's hub function. The city has a diversified economic base, and it has been diversified for many years. Fortune 500 companies such as Baldwin Filters and Eaton's have provided continued employment and enhanced the community's stability. All these factors have made Kearney a type of rural area that has a favorable geographical position, sizeable population or critical mass, and long-standing mixed economy.

B. *The Area*

Buffalo County is comprised of rich, well-irrigated farmland. The area is well known for its wetlands; indeed, this aspect of the region has often saved the area's farming in times of drought. Water could always be pumped from underground when rainfall was insufficient. With historical roots as a fort, Kearney established itself as a crossroads for the expanding frontier in the 1800s. This role deepened with the location of a railroad running through the town. The railroad has been crucial to the town's activity as a grain-

Figure 4.1. Location of Kearney and Buffalo County, Nebraska.



shipping hub. Later, the major east-west Interstate 80 replicated a similar function for the town, allowing easy access for all sorts of shipping interests as well as individuals.

Situated about 200 miles from Omaha and 650 miles from Chicago, Kearney is poised on the eastern edge of a region settled by increasingly sparse numbers; to the west, towns are fewer and smaller. With its local college (recently designated part of the university system) and its hospital, Kearney is an outpost of sorts for people from those western regions—an "oasis" of services and certain products as people travel east. It is a convenient place for people from around Nebraska to congregate, and it boasts a lively hotel and small conference trade.

Kearney epitomizes many of Nebraska's self-proclaimed high work ethics. The state lauds its constitutional right-to-work provisions, and points out that its workers yield higher-than-average productivity rates; likewise, the state's value added per dollar of payroll is above the national average (Nebraska Public Power District, 1988, p. 2). Publicity brochures note that Nebraska's average hourly wages are the lowest among the industrial Midwestern states, and that Nebraska manufacturers spend only 60% of the national average cost of state-regulated workers' compensation insurance. Kearney, with its nearly full employment economy, reputed strong work ethic, and keen interest in community development is, in many ways, an exemplary Nebraska community.

II. Buffalo County Economic Analysis

The economy of Buffalo County is very diversified, with a high concentration of education, medical services, retail trade, agriculture, and manufacturing of food and kindred products. The population of the county is well educated and more likely to have higher-skilled occupations than people in other rural areas. The unemployment rate in the area is extremely low at 2.5%, a good indication of a healthy economy.

Buffalo County is also a localized hub for retail trade and medical services. The high location quotients for the retail-trade sector of building materials and farm equipment, as well as for medical services, imply that the county serves other areas in the region. Also, the large concentration of hotels in Buffalo County implies that the town either has an advantageous location for serving visitors traveling through the area or that the town attracts visitors and conventions.

A. *Buffalo County Nonagricultural Economic Base*

1. *From 1950 to 1960.* In 1950, the trucking and warehousing sector was the only nonagricultural industry in Buffalo County, with a location quotient large enough to be classified as a base industry. Other industries, shown in Figure 4.2 (page 61), with location quotients greater than 1.0 were construction, transportation and public utilities, railroad and railway express service, utilities and sanitary services, retail trade, and services.[1] For the 1950 analysis, only trucking and warehousing was a highly basic

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[1] Even though the location quotients are slightly greater than 1.0, they will not be considered as export industries in this analysis. Since location quotients are defined as the industry percentage of total employment on a local level divided by the industry's percentage on a national level, the elimination of agricultural employment from the employment total in areas that have a higher percentage of agricultural employment than the nation (as does Buffalo County) will produce higher location quotients. For example, assume that the construction industry in a farming area comprises 5% of all employment (including agricultural employment) while nationally the construction industry comprises 5% of all employment. In this case the location quotient for the construction industry will be 1.0. If agricultural employment is eliminated, the resulting percentage of construction employment may now be 8% on the local level, but only 6% on the national level, resulting in a location quotient of 1.33. Therefore, the construction industry appears to be an export industry in the nonagricultural analysis, but not in the analysis that includes agricultural employment. Due to this statistical modification, industries that have location quotients

industry, although the utilities and sanitary services, retail trade, and service sectors could also be viewed as mildly basic industries. (The other industries with quotients near 1.0 may not be considered basic, but they are relatively healthy local industries.) The remaining industries of manufacturing and financial, insurance, and real estate (F.I.R.E.) were the only two industries with quotients well below 1.0, indicating that the county imported products of these industries.

Employment totals shown in Figure 4.3 (page 62) indicate that retail trade and services were the largest county employers with nearly 3,500 employees. The third and fourth largest employers, far behind the first two, were the transportation and other public utilities and construction industries with more than 500 employees. All other industries in the county employed less than 400 people.

In the period from 1950 to 1960, there were only minor changes in Buffalo County's economy. The location quotient of the trucking and warehousing industry dropped significantly from 5.5 to only 1.5. This drop indicates that the industry's importance to the county economy diminished greatly. Other significant location quotient changes during the period were in the food and kindred products and communications sectors. These sectors, though not highly basic industries in 1960, demonstrated a growing importance to the local economy.

Employment trends from 1950 to 1960 reveal substantial growth in the manufacturing industry, bolstered by the food and kindred products, fabricated metals, and nonelectrical machinery sectors. The county also experienced employment increases in the construction, retail trade, and service sectors. Industries that suffered employment losses during this period were in the transportation and public utilities sector, due to losses in the railroad, utilities, and wholesale trade sectors.

In summary, during the period from 1950 to 1960, the economy of Buffalo County was somewhat diversified. While there was only one highly basic industry (trucking and warehousing)—related to transporting agricultural products—the other industries were in relatively good health, indicating a good economic balance. The only industry with a location quotient substantially less than 1.0 was manufacturing, and it improved during this period with a large employment gain in the food and kindred products sector.

2. *From 1967 to 1987.* Figure 4.4 (page 63) shows that nonagricultural and nongovernmental employment more than doubled from 5,369 in 1967 to 11,515 in 1982, and then leveled off from 1982 to 1987. The population of the county showed the same trend, rising from 31,222 in 1970 to 37,987 in 1984, then slightly declining to 37,000 by 1988.

During this 20-year period, Buffalo County emerged as a retail-trade center (Figure 4.5, page 64), supported by the building materials and farm equipment, auto dealers and service stations, apparel and accessories, and eating and drinking sectors. Other major contributors to the economy were the service, manufacturing, and, more recently, communications sectors. The service sectors which did well were hotels and lodgings, and medical and other health services. The manufacturing sectors which were major contributors included food and kindred products, rubber and miscellaneous products, machinery, and transportation equipment.

The industrial sectors which declined, or stayed in relatively poor shape during this 20-year period, included the trucking and warehousing sector, which declined steadily from 1967, and the F.I.R.E. sector. While the county was a regional retail-trade center and an improving manufacturing area, the financial aspects of these industries were imported from other areas.

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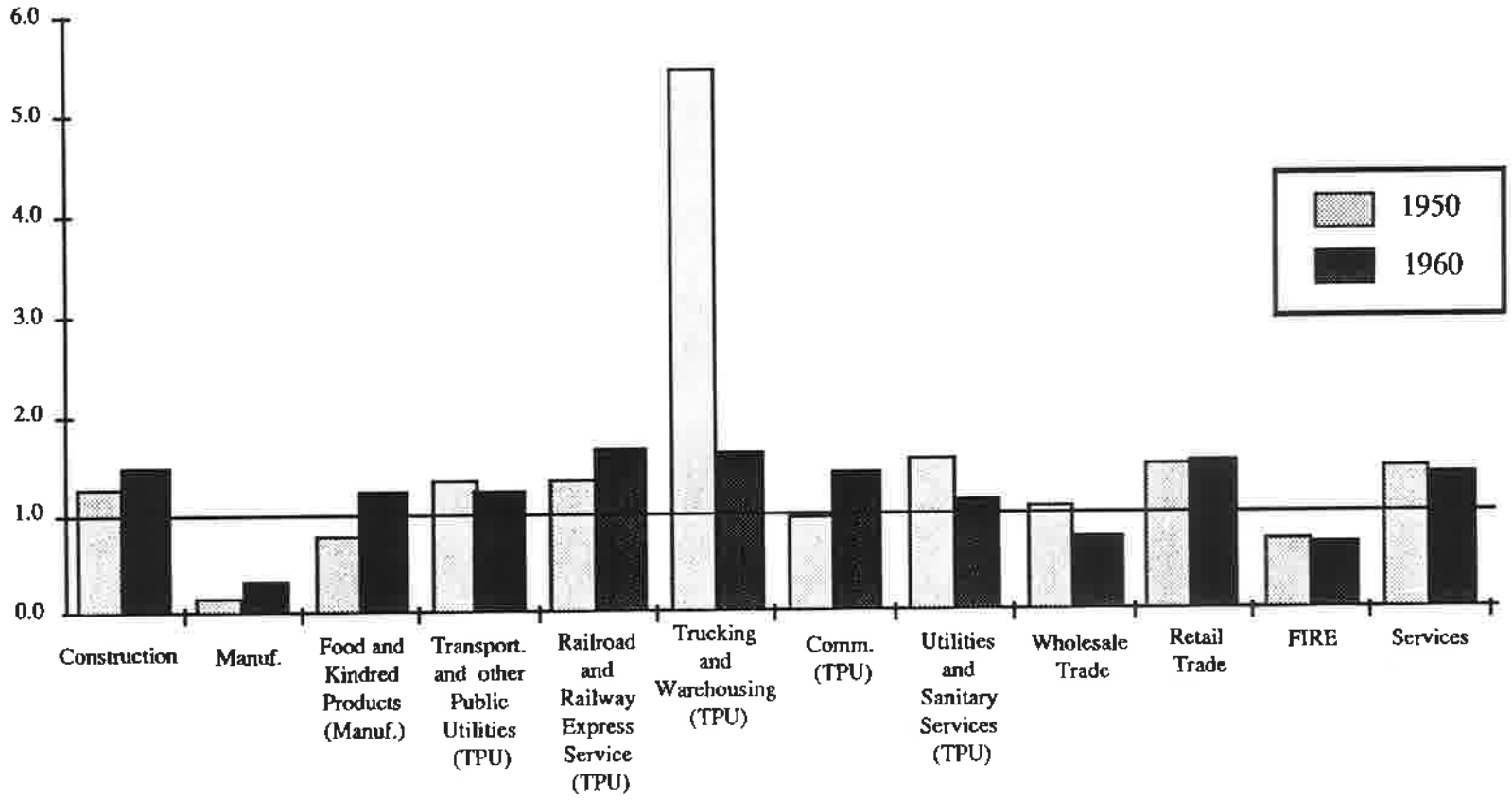
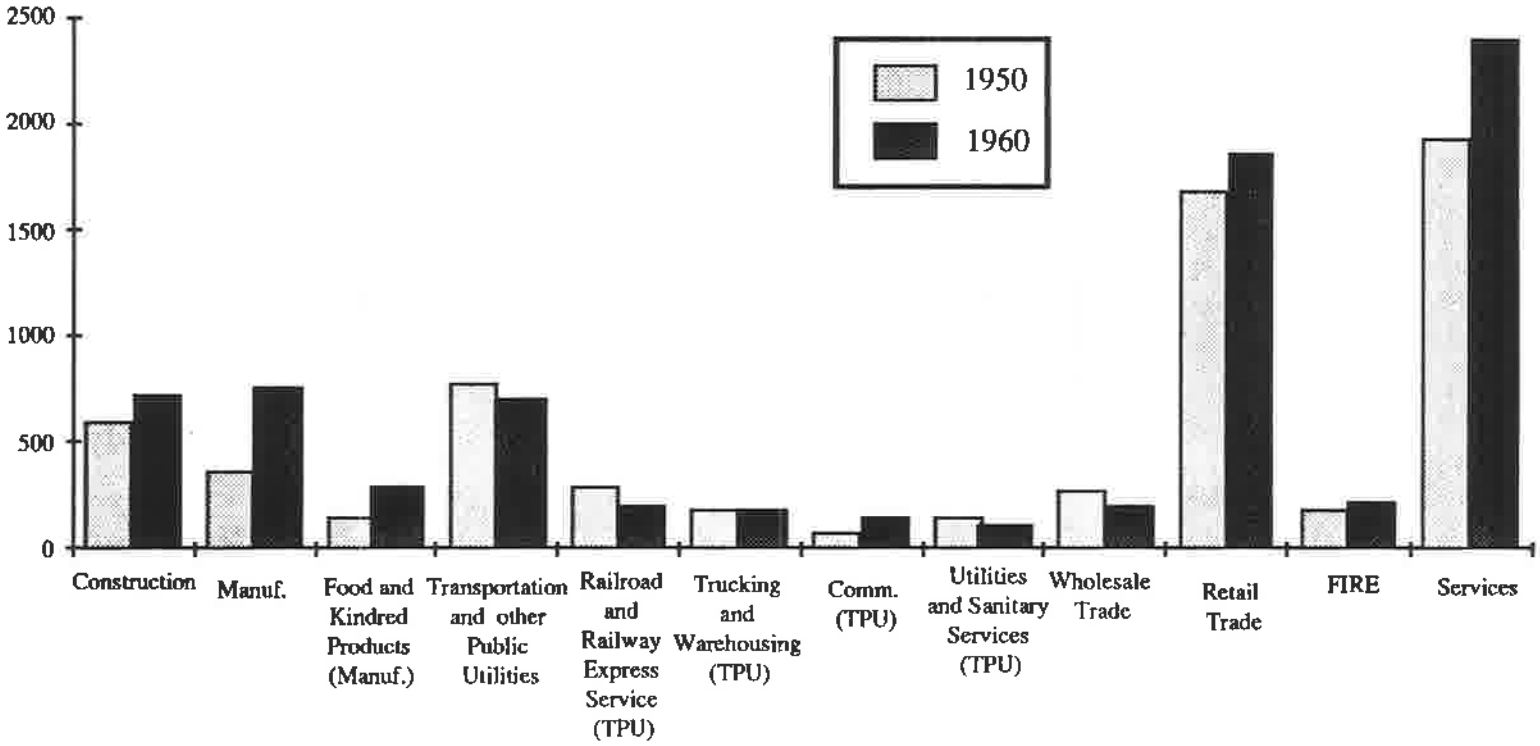
slightly greater than 1.0 will not be considered base industries. Also, extremely large quotients for certain industries in a nonagricultural analysis should be viewed as slightly larger than they would be if agricultural employment were included.

Figure 4.2. Industry Location Quotients for Buffalo County, Nebraska; 1950 and 1960



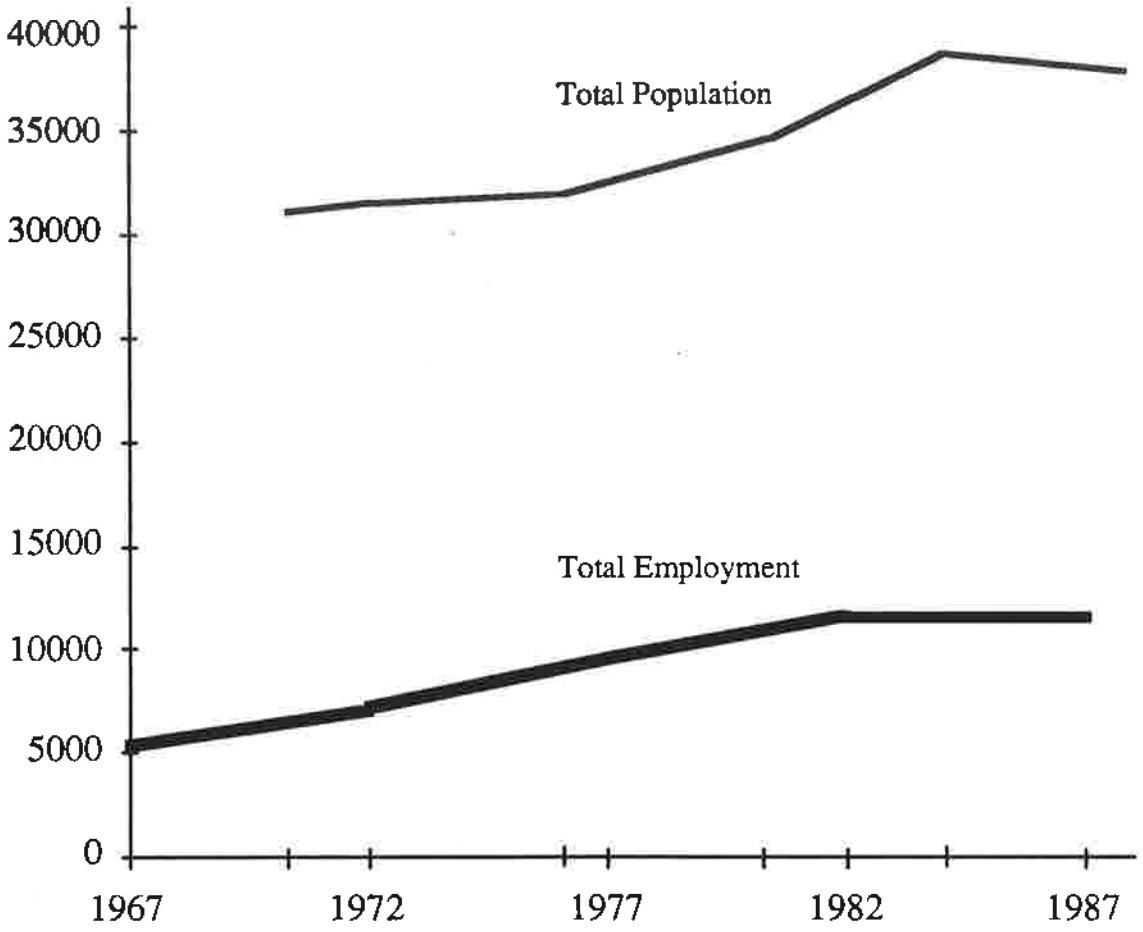
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1950, Characteristics of the Population*, Part 1, U.S. Summary, Table 130, and Part 27, Nebraska, Table 43; and *U.S. Census of Population: 1960, Characteristics of the Population*, General Social and Economic Characteristics, Part 1, U.S. Summary, Table 91, and Part 29, Nebraska, Table 85.

Figure 4.3. Industry Employment for Buffalo County, Nebraska; 1950 and 1960



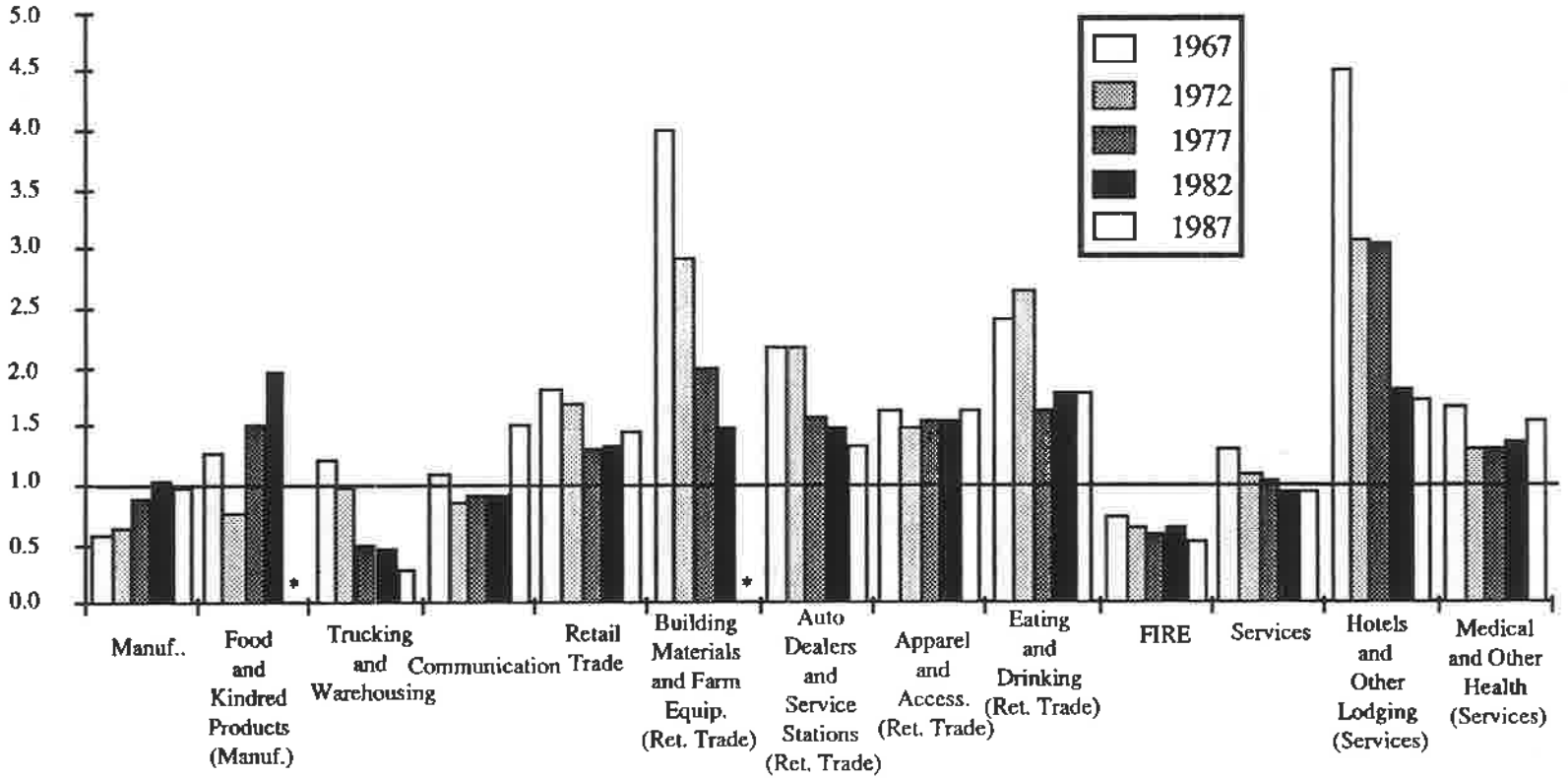
SOURCES: U.S. Department of Commerce, *U.S. Census of Population: 1950, Characteristics of the Population*, Part 1, U.S. Summary, Table 130, and Part 27, Nebraska, Table 43; and *U.S. Census of Population: 1960, Characteristics of the Population*, General Social and Economic Characteristics, Part 1, U.S. Summary, Table 91, and Part 29, Nebraska, Table 85.

Figure 4.4. Population and Employment for Buffalo County, 1967-1987



SOURCES: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*, CBP-67-29, CBP-72-29, CBP-77-29, CBP-82-29, and CBP-87-29; *Federal-State Program for Population Estimates*, Series P-26, No. 76-27; *Current Population Reports: Local Population Estimates*, Series P-26, No. 84-WNC-SC, and Series P-26, No. 88-WNC-SC; and *U.S. Census of Population: 1970, Characteristics of the Population*, General Social and Economic Characteristics, Part 29, Nebraska, Table 119.

Figure 4.5. Industry Location Quotients for Buffalo County, Nebraska; 1967-1987



* Employment for these industries were not disclosed.

SOURCES: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*, CBP-67-29, CBP-72-29, CBP-77-29, CBP-82-29, and CBP-87-29; and CBP-67-1, CBP-72-1, CBP-77-1, CBP-82-1, and CBP-87-1.

The high location quotients for hotels, auto dealers and service stations, and eating and drinking establishments indicate that the area was either a tourist attraction or, more likely, a favorable stopping point for travelers. Since Kearney is located on Interstate 80 between Omaha and Denver, it may accommodate travelers passing through the state to other destinations. There is also evidence that numerous smaller, regional conferences and meetings are hosted by Kearney, boosting hotel business.

Other strong sectors from 1967 to 1987 were building materials and farm equipment and medical and other health services. The high concentration of retail sales of building materials and farm equipment was an indication of both the agrarian nature of the surrounding areas during this period and the possibility that Buffalo County provided building and farm equipment to neighboring counties.

Since the location quotient for medical and other health services was greater than 1.0, it can be assumed that the Good Samaritan Hospital and the Richard Young Psychiatric Hospital, both located in Kearney, served more than the county population and therefore brought outside income into the county.

Trends over the 20-year period showed a growing manufacturing sector aided by the food and kindred products sector. However, while the importance of manufacturing was growing, the importance of retail trade (especially building materials and farm equipment) declined, although it still remained an export industry. Other important trends during the period were the decline of the motel sector and the rise of the communications sector. The location quotient for the motel sector declined from 4.5 in 1967 to 1.7 in 1987. This may have been partially due to the changing nature of travel in the United States. Since the area is located on the auto route going from the east and Midwest to the mountain regions and the West Coast, the advent of cheap air travel probably meant that fewer travelers were passing through Kearney.

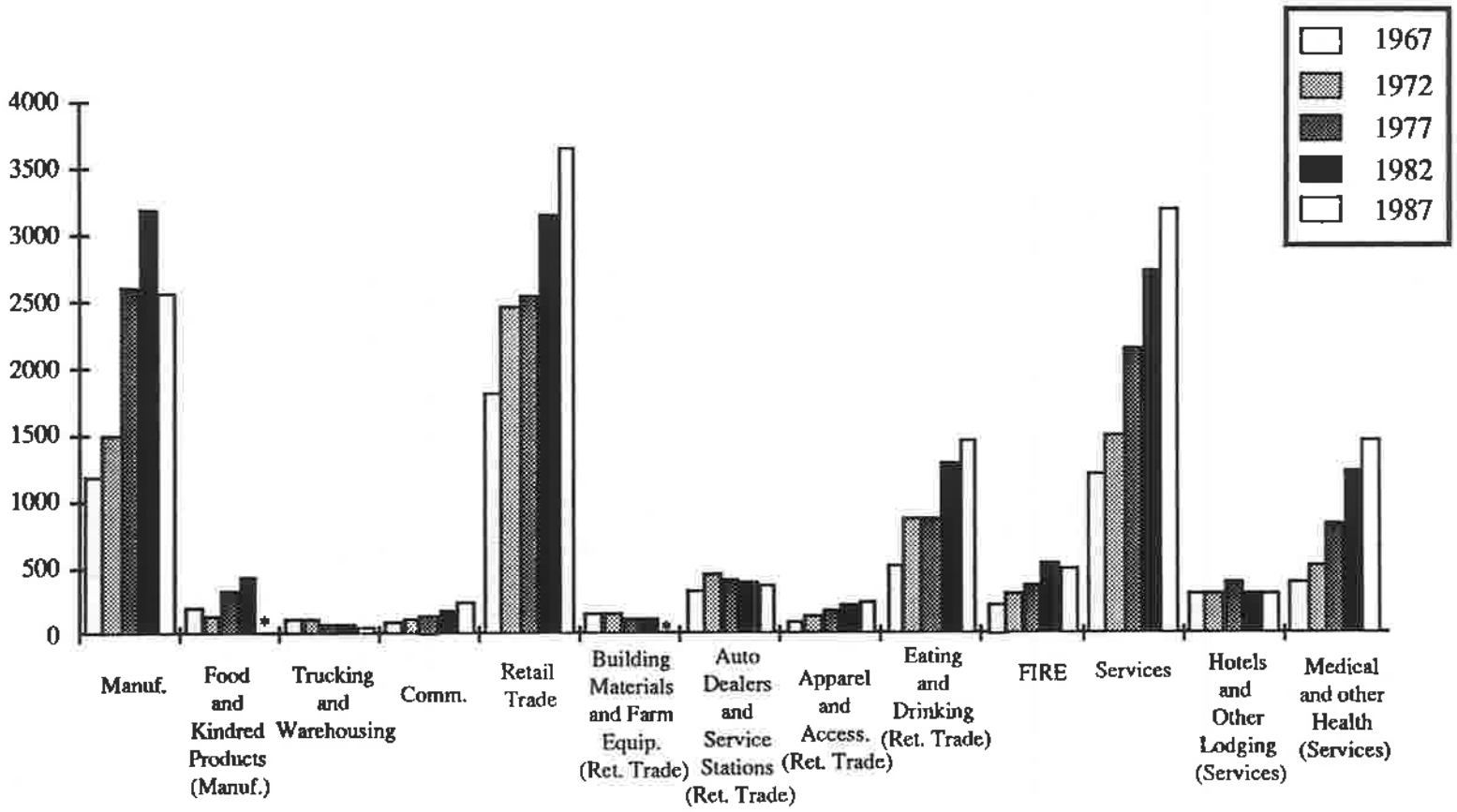
Employment trends in Figure 4.6 (page 66) show a steady rise in retail trade and service employment during this period, along with a rise in manufacturing employment from 1967 to 1982, followed by a drop from 1982 to 1987. The rise in retail trade and services employment, coupled with slightly decreasing location quotients, indicates that while the industry employment was growing, it was not growing as fast as the industry on a national level. The growth in retail-trade industry employment could be attributed to the eating and drinking establishment sector, with small contributions from the other sectors; the growth in the services industry came primarily from the medical and other health services sector.

Growth in the manufacturing industry came from many sectors. Although exact employment figures from most of the sectors were not disclosed in *County Business Patterns*, the publication did indicate ranges for the sector employments. These ranges imply that employment increased in the rubber and miscellaneous plastics, fabricated metals, nonelectrical machinery, and transportation equipment sectors.

An additional source of information available for the city of Kearney listed all employers with more than 100 employees in the city. The largest employer, though not covered in *County Business Patterns* and therefore not included in the figures, was Kearney State College. The college had 1,346 employees in 1989 and an enrollment of more than 9,000. Besides the employment that the college provides to local residents, the enrolled students also bring income (and a source of labor) into the area. Therefore, using the theory of export base industries, Kearney State College would be considered an export base because it brings outside income into the community.

The second-largest employer in the area was the Good Samaritan Hospital, with 750 employees. Of the remaining 16 employers listed, 7 were in manufacturing, 2 were hotels, 2 were the city and county governments, 2 were telemarketing operations, 1 was a retail establishment, 1 was a psychiatric hospital, and the other was the local school system. The diversity of these employers confirms that Buffalo County and the city of Kearney have a diverse economic base for a rural area.

Figure 4.6. Industry Employment for Buffalo County, Nebraska; 1967-1987



* Employment for these industries were not disclosed.

SOURCES: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*, CBP-67-29, CBP-72-29, CBP-77-29, CBP-82-29, and CBP-87-29; and CBP-67-1, CBP-72-1, CBP-77-1, CBP-82-1, and CBP-87-1.

In summary, Buffalo County's economy is based on education, medical treatment, and on retail trade, assisted by the purchases of travelers passing through the area. The manufacturing sector, almost nonexistent in 1967, now also contributes to the economy with a diverse range of products, including food, car parts, irrigation equipment, cookbooks, and lighting products. In more recent years, the economy has received an extra boost with the addition of telemarketing firms.

B. *Agricultural Base*

Agricultural statistics for Buffalo County indicate that farming and ranching is an important and stable part of the area's economy. The total amount of agricultural land has remained steady since 1969, as has the relative mix of products and ownership of farms. The steady nature of these statistics indicates that farming, although it has probably gone through poor economic times, is still an important activity in the area.

Figure 4.7 (page 68) shows a few economic indicators of agricultural activities in Buffalo County from 1969 to 1987. The number of farms decreased slightly from 1969 to 1974, but stabilized from 1978 to 1987. Also, the total amount of agricultural land remained the same throughout the entire period, indicating that although some farmers went out of business in the early 1970s, their farmland was taken over by other farms. In general, the stable amount of farmland throughout the period implies that farming and ranching have been, and still are, viable economic activities in Buffalo County.

The other graphs in Figure 4.7 illustrate the ownership characteristics of farms, principal occupations of farm owners, and relative mix of agricultural products. From 1969 to 1987, roughly 80% of all farms in the county were operated by full- or part-owners, while 20% were operated by tenant farmers. The relatively stable nature of these characteristics, coupled with a slight increase in full ownership in the last 10 years, indicates that many individual farmers have been doing well enough to maintain ownership of their farms.

A look at the principal occupations listed by farm operators shows that an increasing percentage of farm operators have turned to other occupations to supplement their farming activities. This trend does not necessarily mean that farmers cannot make it on farming alone, but may instead indicate additional part-time economic opportunities. Livestock and crops dominate the local agricultural products in a 60-40 ratio. According to the *Census of Agriculture*, the most common crop in the county is grain, primarily corn, while the most common livestock are cattle and hogs.

In addition to the statistics illustrated in Figure 4.7, economic trends from the previous nonagricultural analysis also imply that farming and ranching are important sectors of the local economy. The highest concentration of manufacturing in the county was in food and kindred products, principally due to the location of two meat and turkey processing plants in Kearney. Though the origin of the meat and turkeys for the food processing plants was impossible to determine, the provisions more than likely came from farms in the region. It might be mentioned that in 1990, the giant Iowa Beef Processing company announced it would open a processing plant in nearby Lexington, Nebraska; Kearney expects to feel substantial economic impacts from this new plant.[2]

A final indication of the soundness of the agricultural sector in Buffalo County is the high concentration of retail sales of building materials and farm equipment. The high location quotients for this industrial sector underscore farming's importance in the area.

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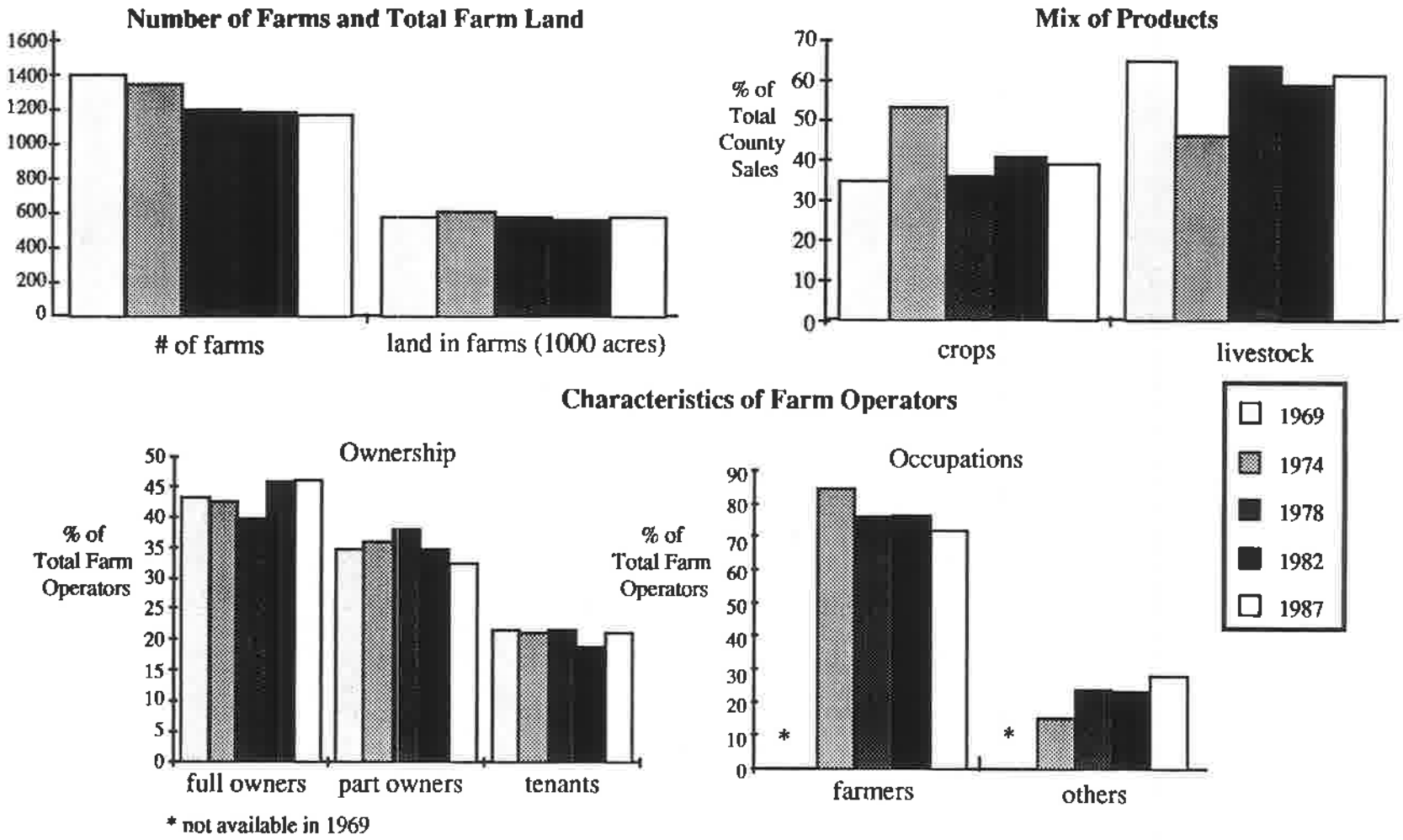
[2] Because Kearney is already short of labor, it is expected that many of the workers for this plant will be immigrants. Therefore, social services and educational agencies are gearing up and planning for additional services.

Figure 4.7. Selected Farm Characteristics, Buffalo County, Nebraska; 1969-1987



* not available in 1969

SOURCES: U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture*, 1974, Volume 1, Part 29, Nebraska, AC78-A-29, 1982-A-29, and 1987, AC87-A-29.

C. *Demographic Characteristics*

1. *Education.* Buffalo County has an extremely well-educated population . Figure 4.8 (page 70) shows that in 1980, almost 80% of both males and females had a high school education. Also, 22% of all males and 16% of all females in the county had completed at least four years of college. These figures show that, on average, Buffalo County residents are much more educated than residents in other rural areas and around the nation. The percentage of high school graduates, for both males and females, was roughly 20% higher than other rural areas, and 12% more than the national average.

With regard to college education, the same trend exists. A much higher percentage of Buffalo County males had a college education than other rural males, and a slightly higher percentage than males throughout the nation. A higher percentage of females also had a college education—approximately 7% more than other rural areas and approximately 5% more than the nation. Although the presence of Kearney State College may be responsible for the high level of education rather than the good work of the local school system, it does not change the fact that there is a large pool of well-educated workers available for companies that might move into the county.

2. *Labor force.* Similar to trends around the nation, the gender characteristics of Buffalo County indicate a stable percentage of males in the labor force and an increasing percentage of females (Figure 4.9, page 71). While the percentage of males in the labor force remained around 75% from 1950 on, the percentage of females in the labor force increased from 20% in 1950 to more than 50% in 1980.

When compared to other rural areas and the nation as a whole, Buffalo County male participation in the labor force mirrors both rural and national averages. For females, however, the participation rates are much greater than those of other rural areas and slightly greater than the national average.

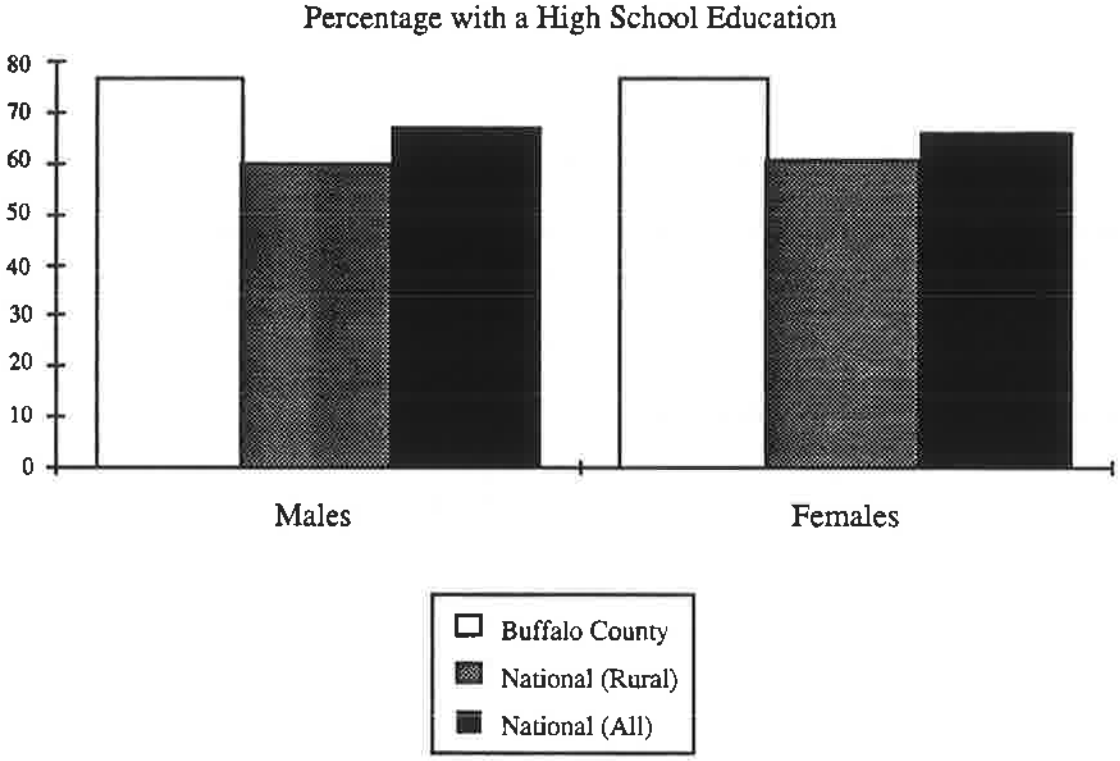
3. *Occupations and income.* Occupational profiles of Buffalo County reveal a population that has a higher percentage of farmers and skilled labor than other rural areas (Figure 4.10, page 72). In 1980, 10% of all the people in Buffalo County were in the farming, forestry, and fishing trades. Participation in this sector, especially by farmers, was slightly greater than other rural areas and is a good indication of the area's agrarian nature.

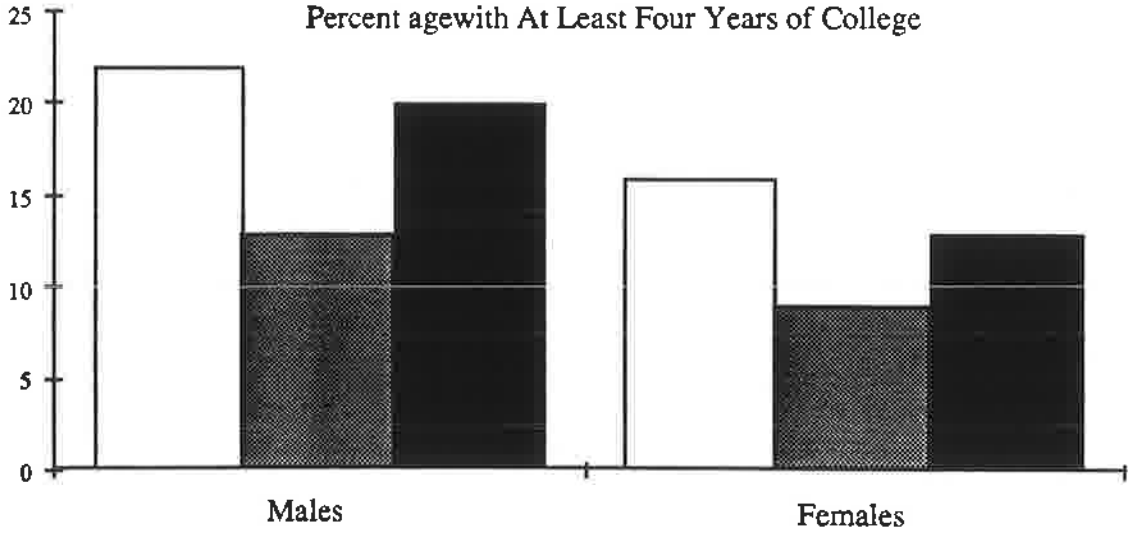
Another important conclusion from the occupational profiles is that Buffalo County has a higher percentage of people in higher-skilled occupations than other rural areas. There was a greater percentage of managerial and professional occupations in Buffalo County than in other rural areas, and also a greater percentage of technical, sales, and administrative occupations. These occupations are generally considered high skilled when compared to occupations such as precision production, craft, repair, operators, fabricators, and laborers—occupations found less frequently in Buffalo County.

The graphs of occupational profiles broken down by gender indicate that females in Buffalo County are on par with other rural areas and the nation: with high percentages in managerial, professional, technical, sales, administration, and services occupations; and low percentages in the labor-intensive occupations of farming, precision production, operators, and laborers. When comparing Buffalo County males to other rural males, the occupational profile showed a higher percentage of skilled occupations in conjunction with a lower percentage of labor-intensive occupations.

Figure 4.11 (page 73) illustrates that Buffalo County's poverty level was at or above the national average in 1970 (for families and persons respectively); that situation turned around by 1980, when the county's poverty rates were below national averages, particularly those for rural areas. Improving economic health is also indicated by the per capita income statistics in Figure 4.12 (page 74), which show that although the county's levels were below national averages, they began to climb toward them from 1979, lending some historical insight into Kearney's contemporary feeling of financial well-being.

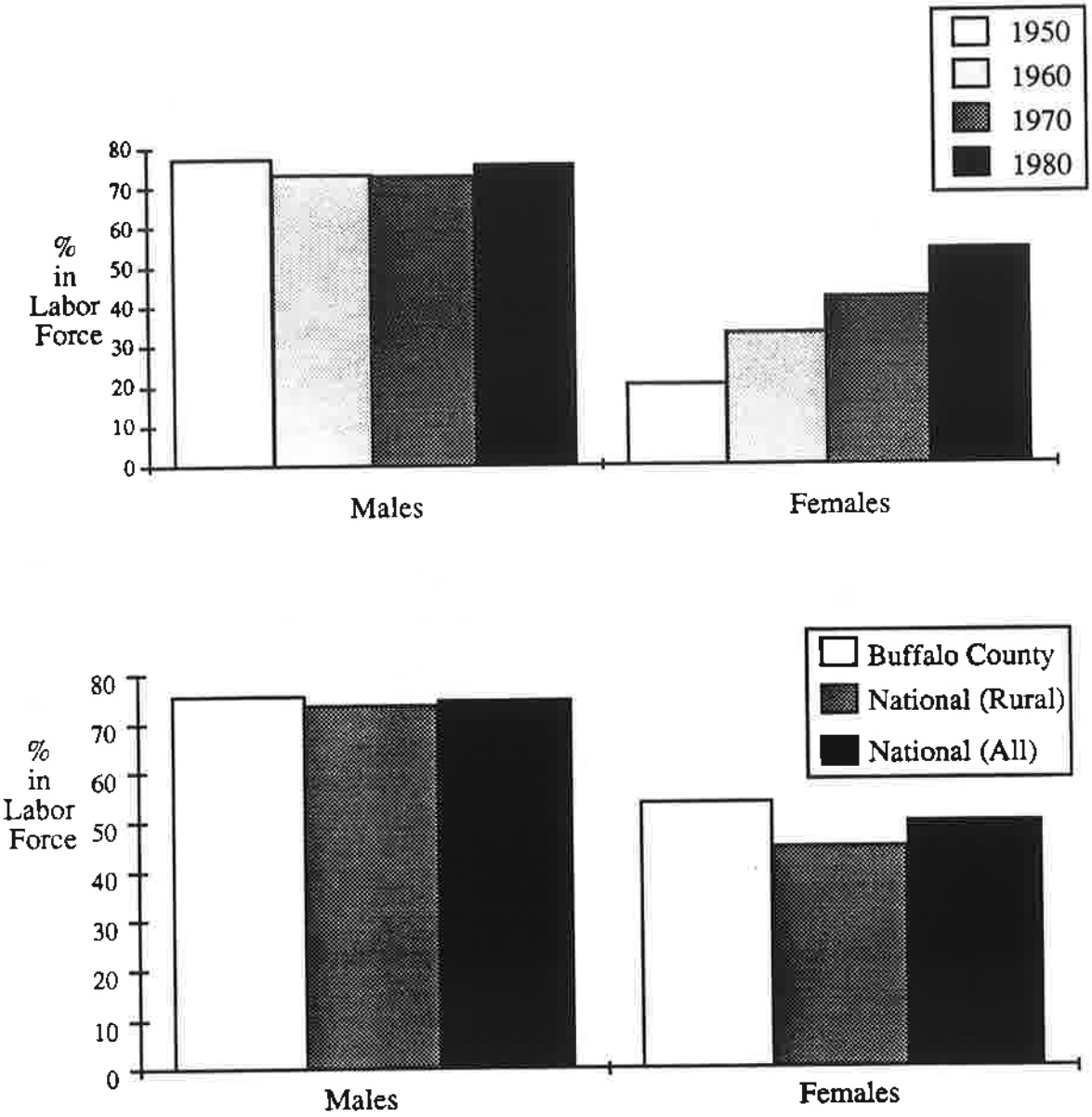
Figure 4.8. Educational Characteristics of Buffalo County, 1980





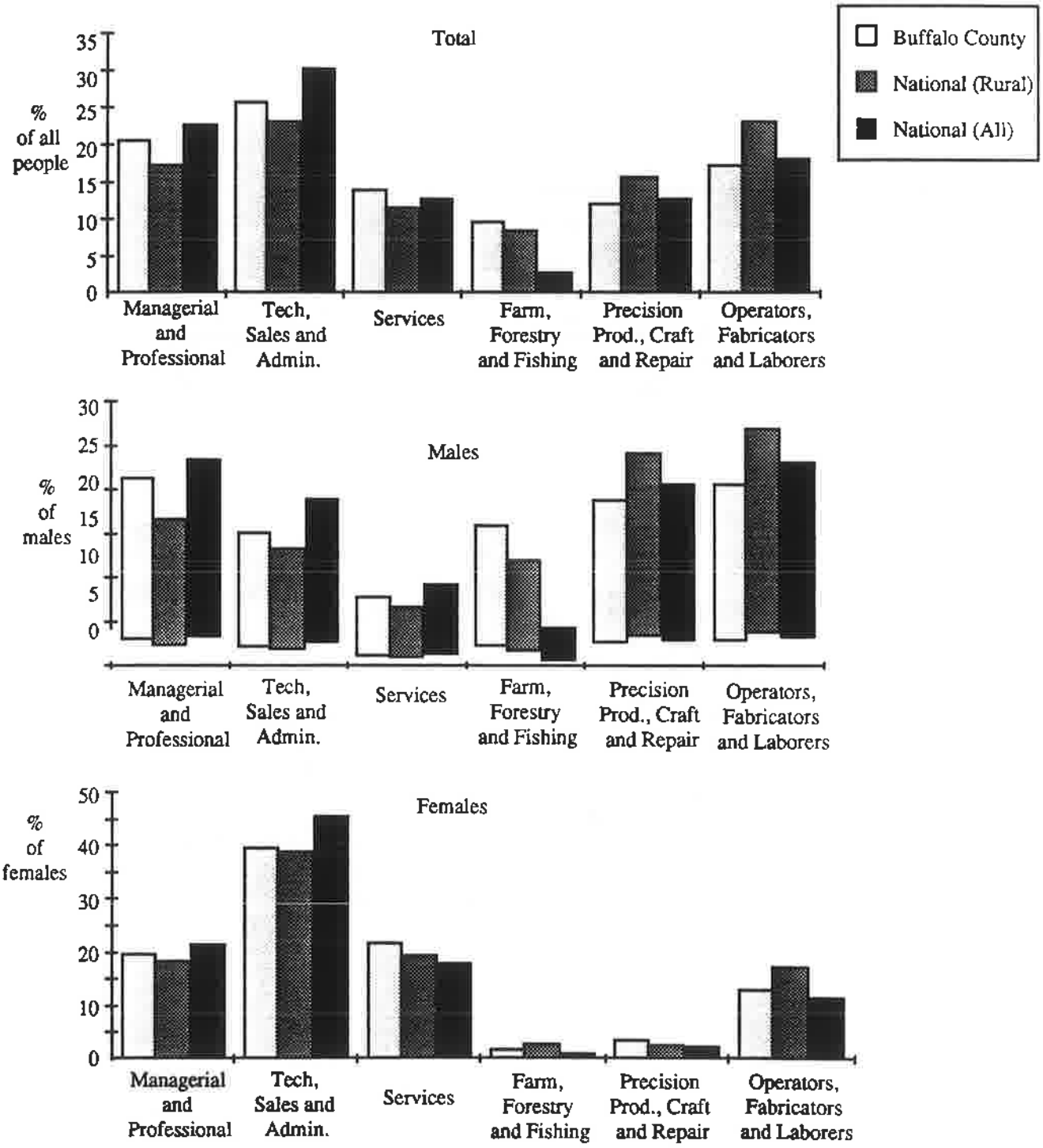
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 29, Nebraska, Table 175; and Part 1, U.S. Summary, Table 102.

Figure 4.9. Labor Force Characteristics, Buffalo County



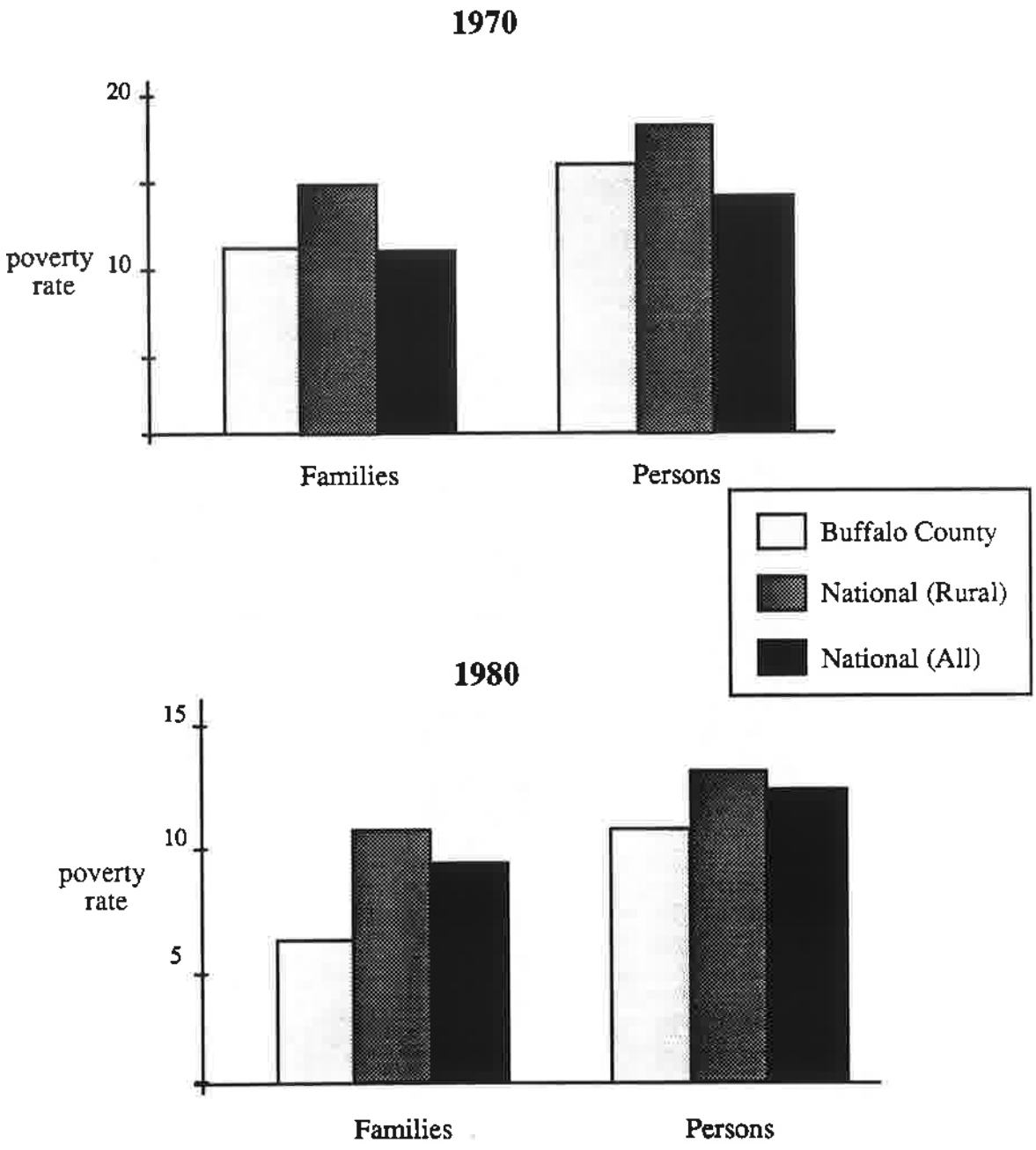
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1950, Characteristics of the Population*, Part 27, Nebraska, Table 12; *U.S. Census of Population: 1960, Characteristics of the Population*, General Social and Economic Characteristics, Part 29, Nebraska, Table 81; *U.S. Census of Population: 1970, Characteristics of the Population*, General Social and Economic Characteristics, Part 29, Nebraska, Table 121; *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 29, Nebraska, Table 176; and Part 1, U.S. Summary, Table 102.

Figure 4.10. Occupation of Employed People in Buffalo County, 1980



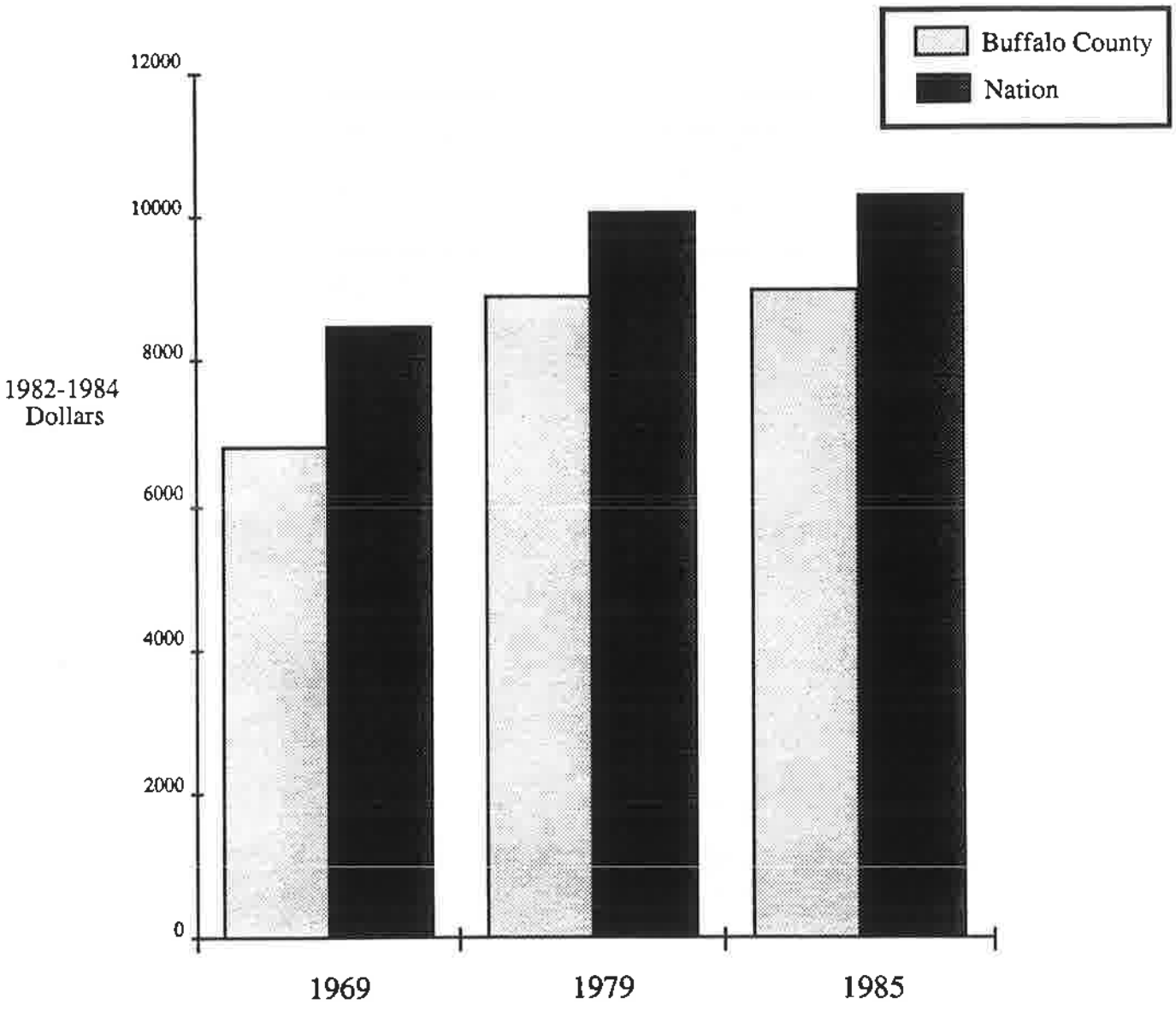
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 29, Nebraska, Tabale 177; and Part 1, U.S. Summary, Table 104.

Figure 4.11. Poverty in Buffalo County, 1970 and 1980



SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1970, Characteristics of the Population*, General Social and Economic Characteristics, Part 28, Nebraska, Table 126; *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 29, Nebraska, Table 181; Part 1, U.S. Summary, Table 97.

Figure 4.12. Per Capita Income of Buffalo County, 1969-1985



SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1970, Characteristics of the Population*, General Social and Economic Characteristics, Part 29, Nebraska, Table 124; *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 29, Nebraska, Table 180; Part 1, U.S. Summary, Table 107; and *County and City Data Book*, 1972 and 1988.

D. *Economic Summary*

The economy of Buffalo County is diverse, especially for a rural area. The county has large employment concentrations in education, medical services, food and kindred products, building materials and farm equipment, auto dealers and service stations, apparel and accessory stores, eating and drinking establishments, and hotels. Such a wide range of economic activities indicates that the area's economy is not dependent on one industry, as in many rural areas, but has a wide range of activities supporting it.

The location of Kearney State College in the county brings many students into the area. While students are usually beneficial to an economy because they do not require many social services or jobs but *do* bring income into an area, this is not the case in Kearney; most students are married, and they have little income and require many services (Pat Munro, Mary Kolstad, Bev Muller, Rosemary Northway, Interviews, 12 Jun 1990). The presence of the college also contributes to the high level of education found in the county—well above rural averages and slightly greater than national averages.

The high concentration of retail-trade activities within the county, as well as medical services, indicates that the county serves the regional population as well as people within the county. The centralized role of the county within the larger region will probably continue for a long time and ensure a future stable economy. The county's location, on Interstate 80 between Omaha and Denver and between the upper Midwest and upper West, is advantageous; it gives the county's hotel industry a livelihood not afforded many rural areas.

Agriculture also plays an important role in Buffalo County. The agricultural sector has remained stable for the last two decades and should remain stable into the future. Besides bringing outside income into the area through sales, county livestock ranching provides business for the food-processing plants, which is the primary export sector of the local manufacturing industry.

The last important trend in the area economy, and one that might warrant some concern, is the slowdown in the rate of job growth from 1982 to 1987. This trend might be the result of a diminishing labor pool rather than an indication of poor economic structure. With only 2.5% unemployment, there are very few available workers—unless new residents soon move into the county. The only major labor pool left is the student population, and they usually hold part-time jobs, not the full-time jobs associated with many manufacturing sectors.

In summary, the economic prospects for Buffalo County remain bright, although job growth may stagnate. Local agriculture, as well as the regional retail trade and medical industries, should remain healthy. However, the county will not attract full-time jobs due to a small available labor pool; instead, the county will attract part-time jobs which can be filled by students. This scenario is not really a major economic problem since almost everyone is employed, but it could tend to limit the opportunities available for personal advancement.

III. State Context for Telecommunications

A. *State Telecommunications Policy*

When Nebraska faced the farm crisis of the 1980s, telecommunications appeared to be the hope of the decade. Realizing that the state needed to broaden its economic base, then-Governor Robert Kerry led the charge to initiate this farming state into the Information Age. The governor established a Task Force on Communications and Information Systems Technology during his administration, which consequently recommended an important deregulatory initiative directed at telephone companies. This became LB 835, which has been called landmark deregulatory legislation. The task force also recommended and established a Telecommunications and Information Center, the goal of which was the

stimulation of telecommunications throughout the state. Established within the state Office of Economic Development, the center lost political backing when the governor left office, and today it no longer exists. The impact of LB 835, however, is still being felt.

Telecommunications-intensive industry was traditionally located in Omaha, but has since relocated to rural communities. On the promise that telecommunications could be a crucial tool in building a stronger economy, Kerry supported LB 835, which deregulated the rates and requirements faced by the state's local exchange companies. This legislation represented (and continues to represent) the most extreme form of deregulatory legislation any state has passed. Adopted in 1986 and implemented in 1987, LB 835 was later challenged but eventually declared constitutional by the Supreme Court in 1989.[3]

Fundamentally, LB 835 restricted the ability of the state public utility commission to regulate rates and services of telecommunications companies. It allowed companies to initiate rate increases of up to 10% with no more than a 60-day public notice; established a 1991 sunset on consumers' rights to petition for Public Service Commission review; and sunset the geographically based deaveraging of toll rates. The larger telecommunications companies backed the legislation; interexchange carriers and smaller telephone companies initially opposed it. (The state is served by 37 regulated companies, the 5 largest controlling about 92% of all access lines [Nebraska Public Service Commission, 1989].) Ultimately, the larger phone companies won the support of the smaller, predominantly rural companies by guaranteeing a "territorial franchise" for telephone companies—this meant that smaller companies did not then have to worry about new competition from "larger" entrants in their territory. With full industry support, LB 835 was passed amid expectations that, by 1991, competition would regulate pricing, the need for government intervention would be minimal, and any remaining "anticompetitive" provisions would be rendered unnecessary.

B. *Impact of LB 835*

The Nebraska Public Service Commission (PSC) fought LB 835 both before and after its passage. It has argued that the bill is vague and faulty, lacking properly specified terms. It continues to resent the impact of LB 835, in part because it believes consumers have lost some of their rights to the protection the PSC is supposed to provide.[4] In the aftermath of the bill, two telephone companies raised rates in 1987 (representing 44,400 access lines combined), two implemented increases in 1989 (213,000 combined access lines), and two more (24,000 lines) proposed raises at the end of 1989.

The PSC noted that at the end of 1989 the weighted (by line) average charge for all 38 state LECs for "business one-party" and "residential" was $15.06 and $9.23 respectively. The comparable national average for residential services was $12.33 in October 1988 (Nebraska Public Service Commission, 1989, p. 34). Although Nebraska's rates are not unacceptably high, the PSC pointed out that 34 states and the District of Columbia ordered rate reductions for LECs from 1987 to 1989, perhaps implying that Nebraska was not able to take advantage of rate reductions for which other states were eligible.

As discussed below, Nebraska's deregulation of telecommunications is sometimes associated with the robust telemarketing businesses in the state. In fact, state deregulation had little or nothing to do with the growth of telemarketing. Much of its development

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[3] *State vs. Northwestern Bell Telephone et al.* 233 Neb. 262 (1989).

[4] *The Nebraska Public Commission 1987 Annual Report on Telecommunications to the Nebraska Unicameral* noted that "public utility regulation with respect to entry, rates, services, and exit of local exchange carriers, is still very necessary in Nebraska and the Commission warns that the public has been and will be adversely affected by L.B. 835" (Nebraska Public Service Commission, 1988, p. 54).

preceded the passage of LB 835, and the industry in any event is more dependent on interexchange services (not regulated by the state) and was thus more directly affected by the AT&T divestiture. State telephone regulation has little direct impact on telemarketing.

The PSC does not believe that telecommunications deregulation has delivered many of its promises to date. Said Herb Sherdon, the PSC's director of telecommunications: "We haven't seen evidence of deregulation as a factor for economic growth. The main thing we found is that deregulation has allowed companies more leeway in introducing new services on a faster basis. Since they don't have to come to us for approval, they just file their rate schedule with us and service goes into effect 10 days after that" (Herb Sherdon, interview, 8 March 1990).[5]

A PSC staff attorney pointed out that as of early 1990, 36 new services have been offered by telephone companies—some of the new services are wildly creative, some of them are simply repackaged or renamed older services such as call forwarding and call waiting (Chris Dibbern, interview, 8 March 1990). For example, "one of the new services is called the 'express service,' which means if you order the installment of a new service, and if you are willing to pay a little extra, they can do it right away for you" (Herb Sherdon, interview, 8 March 1990). And for $20, one can have a phone hooked up in 24 hours instead of three days. Sherdon noted: "We have seen growth [of new services] in Nebraska and we have seen it across the nation; growth in resellers, in operator services, in 900 services, and in audiotex. Deregulation allows companies to file without a review by the Public Service Commission."

The PSC has made six recommendations to the state legislature to improve telecommunications regulation, one of which would ensure that consumers' voices continue to be heard through the petition process, and another would reject rate deaveraging. As Dibbern pointed out, state telephone companies have supported both of these recommendations. Conversely, LB 835 would remove consumer protection and allow deaveraging to take place in 1991. "The concept is that you no longer have to use the mileage base in our state. We told the legislature that if deaveraging takes place, rural areas and less populated areas will be hurt. Because of deregulation, the calls between Lincoln and Omaha will be terrific. The rates will go down. But the calls between Kearney and McCook and Kearney and Linden, where the volume is not there, that traffic very likely will be priced higher" (Chris Dibbern, interview, 8 March 1990).

Nebraska has three LATAs. Most of the territory south of the Platte River, served by Lincoln Telephone Company (LT&T), is one LATA. The north 402 area code LATA is served primarily by US West, another provider. IntraLATA rates are determined by US West since they provide most of the intraLATA long-distance services. LT&T has its own rates within its territory, which are almost the same as US West rates. InterLATA rates are determined by AT&T. For any particular distance, the rate is the same anywhere in the state. According to Sherdon, if geographic toll were deaveraged, AT&T, US West, and LT&T could determine the price of a call based on the actual access charge they pay. "Although I don't think any of these large companies will like to deaverage their long-distance charges, it does represent a threat to smaller companies because they charge higher access charges. AT&T or US West or LT&T could go to these small companies and tell them that we are going to raise your toll rates here because your access charges are so high" (Herb Sherdon, interview, 8 March 1990).

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[5] Sherdon commented, "New services include US West gateway services in Omaha, which is a videotex-type service using computer terminals. The system is modeled after French Minitel. A customer can buy one terminal for $200 or rent one for $6 or $7 a month to get onto this videotex system. They've got over 200 information providers on the system now. They anticipate that the system will grow a lot. [They operate on a trial basis now.] This is the first introduction of that service by US West in its 14-state territory. It is done in Omaha. The deregulation here allows them to put it in without having the Commission review the service."

The PUC staff observed that US West appeared to be slow in upgrading its switches. Other independent companies, such as Lincoln Telephone Company, were moving much faster. They attributed this to US West's focus on its profitability comparisons with other BOCs.

C. *LB 775 and State Economic Development*

After Governor Kerry left state government for the U.S. Senate, the emphasis on telecommunications as a panacea for the state abated. Internally, the state's aggressive planning for telecommunications atrophied, and the economic development office's efforts with the Telecommunications and Information Center dwindled to little more than bureaucratic reporting. Newly elected Governor Orr, with a strong business orientation, shifted her administration's efforts toward more conventional business-incentive methods. The keystone of her first years was LB 775, authorizing tax incentives for businesses creating certain numbers and types of jobs. While proponents hailed LB 775 as a tremendous economic boost, opponents condemned it as a give-away to big businesses friendly with Orr. Nonetheless, LB 775 did have some impact on the growth of telemarketing in Nebraska.

As the PSC's Dibbern put it:

> The bill says if you put in people and equipment, we are going to give you tax incentives. That bill was passed in the same year LB 835 was. A few days ago, the *Omaha World Herald* carried an article saying that 15% of the jobs under LB 775 are created in the telemarketing areas. That bill had real incentive for companies to locate here to do telemarketing. I think you can directly tie LB 775 with the growth of telemarketing in Nebraska. But the bill was very controversial at that time because people were saying that the state is giving away too much of our property tax base to companies. Example of companies which used LB 775 are US West and ConAgra. We had some large companies which threatened to leave the state if they didn't get the tax benefits. ConAgra was the largest one which said that it would leave. [ConAgra is a large food and manufacturing conglomerate. One of the places it wanted to go to was Texas.] Some senators called that "blackmail" but took those threats very seriously (Chris Dibbern, interview, 8 March 1990).

D. *State Distance Education Initiatives*

Nebraska has recently become interested in several types of distance education programs. It has had an active educational television service operating from Lincoln. This service, the Nebraska Educational Television Network (ETV), currently participates in three different types of programs:

1. SERC—A multiuniversity consortium delivering instruction for public education (primarily high school) via satellite;

2. Telecourses—College credit courses delivered via the statewide Nebraska ETV network; and

3. CorpNet—College credit courses and workshops delivered using ITFS and satellite.

The University of Nebraska is responsible for the production and programming of the 20-year-old ETV system. Its funding comes partially from the legislature's Telecommunications Commission and partially from the University of Nebraska. ETV has

operated a statewide network for several years, delivering its signals via terrestrial microwave lines. Distance education efforts have recently begun to seriously look at satellite distribution because the network's older microwave-based network is becoming too costly.[6] Additionally, the success of TI-IN, the Texas-based satellite educational service targeting public schools, suggests there is a real niche for satellite-based public education (Nebraska Educational Television Network, 1988).

NebSat will eventually fill that niche. Its basic equipment costs about $600,000 with an annual transponder lease fee of around $600,000. Said ETV's Assistant General Manager Lee Rockwell: "It is still cheaper than what we can do with microwave interconnection. This price provided us with a double-wide, C-band transponder on Spacenet II. It gives us one full video channel for our network distribution; a second full video channel can be used for distribution . . . plus either a 12 one-way compressed video or a 6 two-way compressed video. There is data transmission capability although we have not activated it yet. There is a radio transmission. We are building a state radio network" (Lee Rockwell, interview, 8 March 1990). The organization is enthusiastic about the additional capabilities made possible by using satellites for a variety of services.

1. *CorpNet.* An educational service with a business orientation, CorpNet specifically targets people in industries and organizations, servicing them at their work site. Said ETV's Gwen Nugent, educational telecommunications services coordinator: "We are very anxious to extend that beyond Omaha and Lincoln into the western part of the state because this is the area that needs revitalization. CorpNet started in 1986 in Omaha. In 1987 we picked up Lincoln. That was funded as a partnership between [the] University and business industry. Six companies in Omaha pay for it. They initiated to get education directly delivered to their workplace so their employees do not have to drive back and forth to Lincoln [where the University of Nebraska is located]" (Gwen Nugent, interview, 8 March 1990). The main emphasis of CorpNet is business and engineering, targets of opportunity with businesses such as AT&T and 3M. CorpNet offers two master's degree programs.

CorpNet is currently available only in Lincoln and Omaha because it is limited by ITFS (a special microwave transmission allocation category) technology. With imminent satellite links, however, CorpNet can reach other parts of the state.

2. *Satellite Educational Resources Consortium (SERC).* The consortium SERC is supported through various means. One is the annual membership fee that is paid out by each state; in 1990, it was approximately $30,000 per member. Most of SERC's income consists of student fees for each course; the 1990 fee was $300 per student. In 1991, this will go up to $400. Some of the language courses require additional fees because of the telephone bridge, and next year's offering of a physics course will entail an extra lab fee.

SERC offers instruction in Japanese, Russian, economics, probabilities and statistics, and discrete math to state high schools in 23 states. (Nebraska ETV produces a Japanese course for SERC.) In 1990, Nebraska had 23 schools participating in SERC. Next year it will have 50. These schools are geographically dispersed throughout the state and are comprised primarily of small rural schools that voluntarily join SERC. Half of the equipment costs are paid for by the federal Star Schools money; the schools themselves pay for the other half. Interestingly, probably 12 out of the 23 Nebraska SERC schools receive the Japanese course.

An interesting spin-off of participating in SERC has been additional interest in using the satellite network. Rockwell reported: "Many of the SERC-equipped schools are now calling ETV about CorpNet because they now have the satellite dish [which will

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[6] The University of Nebraska ETV system was leasing microwave from AT&T. When deregulation occurred, prices for leasing microwave suddenly started to go up. As Nugent of Nebraska's ETV put it: "We were dealing with an annual lease fee for the interconnection of about $180,000 a year for a very long period of time. Last year it went to up $332,000. This year it is going to go up to $720,000. This is the basis for us to switch to satellite" (Gwen Nugent, interview, 8 March 1990).

enable them to receive CorpNet courses]. They see this as an extension of education beyond high school level. This is kind of a spillover" (Lee Rockwell, interview, 8 March 1990).

3. *Telecourses.* In Kearney, approximately 250 students participate in ETV's telecourse program. These students register through Kearney State College (KSC); this does not mean, however, that they live in the immediate Kearney area, even though technically they are registered as KSC students. Nugent commented: "Kearney has done a good job in marketing those telecourses" (Gwen Nugent, interview, 8 March 1990).

The preceding efforts to harness the power of telecommunications in order to improve educational efficiency and expand course offerings illustrate the state's commitment to pursue and maintain its development of human capabilities. The variety of programs offered demonstrates ETV's belief that *all* education in the state—whether targeted at K-12 or workers continuing their advanced degree programs—needs whatever assistance it can provide. ETV's efforts reinforce state pride in its educational accomplishments.

E. *State Policy Toward Economic Development*

In general, the state has opted for a "self-selected" program of local economic development, meaning that it relies on communities to take the initiative to contact state offices for help or to solicit advice. As in many other states, the Nebraska Department of Economic Development (DED) has targeted certain industries for recruitment. These include food processing (i.e., beef is a top priority), plastics, printing and publishing (targeting towns with a population of at least 5,000), and telecommunications-intensive industries. DED works with some towns in focused recruitment, often alongside public power companies (also active in regional economic development and recruitment activities).

The state's geographical and accompanying cultural characteristics have some bearing on its economic development efforts. DED officials have pointed out that the eastern side of the state, where communities are closer together, is more industrialized than the western side. The state capital is also in the east. In the west, because of the physical distance from each other, communities tend to be more independent, they are faced with different economic issues, and they have more economic and social ties with western and midwestern states. This is partially compounded by the fact that the only television they receive originates in Denver, and carries nothing from eastern Nebraska.

The DED has a curiously mixed business constituency. For example, large firms in the state tend to be branch plants or subsidiaries of larger companies that already have access to the international market and are quite large and well funded. Consequently, the DED is of little help to them; these companies can purchase whatever help (consultants, information) they need, and their business networks are already well developed. As one DED official said: "There is not much we can tell ConAgra or US West or MCI about their export market" (Stephen Frayser, interview, 9 March 1990). Nevertheless, approximately 30% of Nebraskan manufacturers have expressed some interest in becoming involved in exporting their products, which is almost three times the national average.

Because the top 100 manufacturing plants in Nebraska employ about 50 or 60% of all manufacturing-based workers and are essentially independent, they do not need the services of DED. The businesses the DED office really considers its constituency are the other 1,700 or so smaller manufacturers in the state (Stephen Frayser, interview, 9 March 1990).[7]

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[7] As one DED official put it, "The real big guys don't need us."

The DED's deputy director described the agency's philosophy this way:

> We make overall policy decisions. We do not do any targeted development for communities. We are going to retain the self-selection process. We don't believe that we have the ability to choose winners or losers. We have placed a lot of emphasis on local leadership development and goal setting. We also do less formal development programs such as the Nebraska Community Improvement Program. We have about 40 to 50 towns that are actively involved in that. That is the oldest one in the country. It has run for 27 years. We push hard the idea of setting goals.
>
> We also encourage regionalized approaches to development—multicommunity approach development, share resources, and share approaches to development. Probably the best one that I have worked today is in Dawson County. We provide grant funds to assist those. The only differences that we have taken is in the 1990 block grant program. We are going to provide additional eligibility for financing towns of 2,500 or less. The only financing we have in Nebraska are federal programs. The key or the only commonality that we have found in these towns is the leadership structure. Where there is lack of leadership, the communities decline. Where there is a strong sense of community, they seem to be successful. That is why we don't think we should use objective criteria to target who the winner or loser is. There are towns out there for which there is no reason for them to exist, but they are doing well. In those towns under 2,500, we will assist them in financing retail and commercial operations (Stephen Frayser, interview, 9 March 1990).

Nebraska's spare budgets and inherent conservatism filter down to its economic development approach. For small rural towns, this means that local leadership is absolutely essential if any state-assisted revitalization is to occur. The irony of such situations—and Nebraska's approach is not singular—is that towns and cities that have had successes in the past and/or those that are familiar with working with the state tend to reap additional successes; the cycle continues, repeatedly rewarding the same places while those lacking the initiative to solicit state grants at least once never break into the state's cache of resources.

Two state initiatives were cited by Kearney leaders as somewhat influential in their own local development. One was the Nebraska Futures Inc. effort, a non profit corporation based on a model developed by SRI International's study, *New Seeds for Nebraska*. The study suggested holding numerous "town hall" meetings around the state—where citizens could discuss their visions for community development—in order to generate an economic-transition plan that was meaningful at local levels.

Predictably, DED was supportive of LB 775 efforts to create tax incentives for businesses to hire additional people. It claimed that LB 775 not only made the state more competitive but also marked an economic turnaround. DED officials note that two prominent telephone companies, AT&T and Lincoln Telephone (LT&T), have taken advantage of the bill. When the bill was passed, the Department of Revenue estimated that only 25 companies would qualify for its benefits. By 1990, however, 145 qualified. DED noted that there had been a "tremendous" growth in reinvestment during the first six months of the act. Second-round users of LB 775 appear to be branch plants.

IV. Economic Development and Telecommunications in Kearney

Nebraska, we were repeatedly told, is a conservative state. Its banks do not usually invest in new businesses—rural banks are particularly tight with their funds. The state is proud of its high educational achievements, having attained the fifth-highest composite

ACT scores in the nation in the 1980s. It accomplished this at the lowest cost possible: Nebraska ranks 29th among the 50 states in public school spending.

Kearney is very much a microcosm of the state as a whole. Its political system has been characterized by one local leader as largely inert and in need of organization and fresh visions of creativity. Another local leader said: "Our basic instinct is conservatism. The motto is: 'If there is a choice just don't do it.' I think we have to be active in creating our future. The opportunities are absolutely limitless" (Ron Bielenberg, interview, 12 March 1990).

Telecommunications has been very valuable in Kearney's creation of its own future. As Steve Buttress, former president of the Buffalo County Economic Development Council, put it: "All of a sudden we are not on the Platte River, we are not on the highway, we are not on the Oregon Trail. We are connected to any place in the whole world for good or ill. It used to limit us and it used to protect us. It does not do either one anymore. We are not limited or protected by that isolation" (Steve Buttress, interview, 10 March 1990).

A team of local leaders, catalyzed by an economic development leader hired from Montana, changed Kearney's vision of development to a more comprehensive one of community. Until this organizer arrived, the city was somewhat lax in taking advantage of opportunities.[8] Suddenly motivated by goals of holistic development—development that included not only jobs but also education, improved quality of life, control over local resources and problems, and self-directed, conscious improvement—this group initiated various programs. Its goals included revitalizing or maintaining downtown vitality, securing sufficient employment for all types of workers in the town, cutting down on the vacancy of large buildings, and nurturing a business climate that was in keeping with the community's goals.

A. *Kearney's Perspective on Economic Development*

Kearney and Buffalo County have a very active Economic Development Council. Formed in 1986 as a cooperative effort between the City of Kearney and the Kearney Area Chamber of Commerce, the council was faced with two immediate problems: A large employer, Rockwell, had recently closed its operations in Kearney, laying off 600 workers and vacating a large building at the edge of town; and the entire area was experiencing a downturn in farming, which was also having a negative effect on farming-related services. (The building was soon taken over by Cabela's, the world's second-largest sports-outfit mail order company, which also attracted shoppers from the nearby interstate.)

Under the leadership of Buttress, Kearney aggressively sought to develop an internal development program while simultaneously seeking businesses that might improve the town's employment situation and quality of life. Kearney's basic economic development goals were (1) to enhance the competitiveness of existing businesses; (2) to more effectively use existing resources and expertise; (3) to provide leadership and outreach to regional communities most affected by agricultural downturns; (4) to cultivate diverse local leaders; and (5) to recruit regional, national, and international businesses to the area, (Steve Buttress, interview, 10 March 1990).

As part of this plan, a local development officer would meet with local businesses to ascertain their needs and perhaps make suggestions on how the businesses might take advantage of community resources and opportunities. This process led to informal labor mediation at one large plant, the identification of telecommunications needs at several businesses, and the creation of business-education collaborative arrangements to redress training needs. The Development Council also sponsored the establishment of a chapter of the Direct Marketing Association in order to increase local telemarketing awareness;

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[8] The city was unaware that it had some power to regulate local utilities until someone pointed it out (Steve Buttress, interview, 10 March 1990).

telemarketing was explicitly identified by the council as a "significant opportunity for the region" (Steve Buttress, interview, 10 March 1990). Accordingly, Buttress talked at length with various telecommunications providers and users in order to pinpoint some of the region's problems and to generate ideas for further development using telecommunications. Buttress realized that telecommunications could further other industries such as data processing and entry, remote typesetting, and other information services.

Buttress is less sanguine than state development representatives about state-level actions such as LB 775. He explained:

> LB 775 came about because the powerful big-business interests in Omaha got one of their buddies elected as governor. She lowers tax rates on high-income people and gives tax breaks to only big businesses. If you invest $3 million or more and you create 30 jobs, you get tax benefits. They claim they did it for small businesses. But the rates for small businesses are one-tenth. If you don't qualify for the big [incentive], you might qualify for the small one but the incentive is only one-tenth of the other one. The governor at this point has announced that 384 companies applied for benefits, $2.7 billion and 17,000 jobs were created. . . .
>
> They say it is performance-based. You only get benefits if you create the jobs. That is true. But the reality is that those big companies have long-term capital allocation budgeting processes. They know right now what they are going to do seven years from now or the next four or five. They are going to do that anyway. It is part of the process. Every year roughly 7 to 8% businesses quit and 7 to 8% come on line. The difference in whether an area grows or not is whether the growing part is greater than 7 to 8% or less. This is almost constant. *What we have done is truncated all the potential for the tax base and given it away to big businesses for absolutely nothing in return* [emphasis added based on conversation]. It exempted them from taxes but it didn't change their investment decision. It didn't speed up investment. It didn't get them to invest money that they wouldn't have invested otherwise. It simply took money off the tax bases.
>
> From my perspective, this shows no understanding of what is going on in industry in this country. Nobody is expanding; nobody is looking for new plants. The issue that most people are dealing with is how to be competitive globally. How can we cut cost? How can we increase efficiency? In the 1950s, people were looking for new plants because the baby boomers were coming on. And they were trying to get production out. There was no global competition. It was how we serve the needs of the market. So it is something that makes sense at that period of time. It is absolutely backwards and counterproductive.
>
> The key to economic development is getting our schools in shape, getting our people's skills in shape and getting our colleges connected to the community's businesses. It is going to take some resources. What the governor is doing is saying that we will be better off leaving the money with the private sector. That is the choice they made. I don't mean to say that it is not important for businesses to be able to operate profitably. I don't mean to say that they are not useful, but they didn't encourage the investment, they didn't influence the investment, they didn't cause the jobs. They are in fact taking money out of the poor that we need to solve all those other issues and problems. The best economic development activities would be geared toward helping our primary, secondary, and higher education institutions. Plug into the 21st century. Those tax incentives are just a give-away (Steve Buttress, interview, 10 March 1990).

Buttress was instrumental in establishing links among business and local educational institutions, using a community-decision process that coordinated the talents and resources of these two key resources.

data entry companies, insurance claims processors, coupon fulfillment centers, and dozens of other businesses that depend heavily on telephone lines (Jordon, 1990). Beatty, the Omaha consultant who teaches rural communities how to become part of a telecommunications economy, has coined the term "teleconomic development"—the utilization of telecommunications services, equipment, networks, and information systems to stimulate community economic growth that results in the creation of new wealth and employment (Jim Beatty, interview, 2 April 1990).

Several rural Midwestern communities have been successful in developing telemarketing operations. One example is Aurora, Nebraska, a city of approximately 2,000 residents, about an hour's drive from Kearney. Its local telephone company, Hamilton Telephone, established a subsidiary, the Aurora Telemarketing Inc., in 1986 as a way to offer telemarketing services. Aurora subcontracts with large Omaha telemarketing centers, employs 60 local people on a part-time basis, and operates a thriving telemarketing business. The 60 employees comprise a large employed base for a town that size. Other examples of similar operations are in Hastings, South Sioux City, Broken Bow, Peru, and Ogallala in Nebraska; and Pacific Junction, Stanton, Breda, Sergeant Bluff, Sioux City, Corydon, and Ruthven in Iowa (Jordon, 1990).

Though touted as a "savior" by many economic developers, telemarketing is not always a desirable alternative for long-term economic development. First, the jobs it creates are primarily of low pay and low skill. While there are higher-paid and better-skilled telemarketing-related or telecommunications-intensive jobs such as data processing and other office operations available, these positions tend to remain in urban areas. Those telemarketing jobs that are attracted to rural areas, especially subcontracted outbound operations, are usually repetitive and labor-intensive in nature. Second, since telemarketing is so easy to establish, it is also easily removed. There is no guarantee that these jobs will stay in any rural community. Third, unlike manufacturing jobs that will generate growth in other economic sectors such as finance and services, telemarketing does not have a multiplier effect on local economies.

Nevertheless, when the immediate need is to stem a tide of further economic erosion, rural jobs created by telemarketing do provide some short-term succor. As Fulton said in a widely distributed article: "Telemarketing jobs may not be lucrative and they may disappear tomorrow, but they do provide a certain economic diversity. Telemarketing jobs helped get Nebraska through the farm crisis by employing farm wives." More important, he continues, "chasing telemarketing firms—if it's done as part of a balanced, diversified economic development effort—can help provide the market that will bring a telecommunications infrastructure that rural areas might otherwise miss out on" (Fulton, 1989).

B. *Cabela's Inc.—A Case Study*

Kearney's success in attracting Cabela's, the world's second-largest sports outfit mail-order company, provides valuable lessons for other rural communities that wish to partake of the benefits of telemarketing or telecommunications-intensive businesses. The case of Cabela's is especially significant because it is the first example of a long-distance carrier placing a point of presence (POP), a local hub from which carriers pick up long-distance calls, on the premises of a business. Through the POP, Kearney and its businesses can directly connect with the interexchange network, immediately bypassing the geographic and population limitations of its rural base. At the same time, the rest of the world is directly linked with Kearney.

Cabela's was founded in 1962 by two brothers, Dick and James Cabela, in Sidney, Nebraska. The brothers initially printed flyers and sold fishing flies through the mail. In 1983, the mail-order company began to experiment with an 800 number for orders (Tim Miller, interview, 11 March 1990). It became an immediate success. The business grew so rapidly that the telephone traffic it generated outgrew the capacity of the local telephone

company to handle the calls. After experiencing lost customer phone calls, especially during Christmas seasons, the company decided to move its telemarketing division somewhere else. Meanwhile, Cabela's had exhausted the labor pool in Sidney, a community of 6,000. Cabela's looked at several cities for relocation, including Omaha, Grand Island, and Columbus in Nebraska, and Hayes in Kansas, and Cheyenne in Wyoming. Relocation considerations included a ready and quality labor force, available facility, good telecommunications system, and good transportation system (Kay Bauman, interview, 9 March 1990).

Kearney stood out among the other sites for several reasons. First, Kearney already had a building available where Cabela's could begin immediate operations. The building had been vacated two years earlier by Rockwell, a valve manufacturer and former major employer in Kearney. Second, Kearney State College, with a student population of 10,000, could easily fulfill the telemarketing company's part-time labor requirements. Third, the local phone company, GTE, had just installed a digital switch which would meet Cabela's telecommunications needs. Fourth, Kearney is on Interstate 80, which would provide easy transportation for shipping. The city's aggressive recruiting also included an offer of one year's free rent for the building, which the city owned.

Cabela's specifically wanted to relocate to a rural area for two reasons. First, the firm had been founded in a rural area, and its owners were committed to the development of rural areas. Second, rural labor costs were cheaper than in Omaha, where there is still a bidding war for telemarketing labor. The average wage in Kearney is between five and six dollars per hour; the average wage in Omaha is eight dollars per hour.

In 1986, Cabela's moved to Kearney. Since then, the growth of the company and magnitude of its operations have extended far beyond what the city originally envisioned. By the late 1980s, Cabela's had grown into one of the country's largest mail- and phone-order companies, with an annual telephone bill of $2 million. Cabela's currently employs 530 people in Kearney, much more than the city originally thought it would. Additionally, by upgrading its telecommunications system, Cabela's has helped revamp Kearney's modest telecommunications infrastructure, elevating it to a status equal to that of a larger city.

1. *Cabela's and GTE.* The local telephone company, GTE, was also instrumental in initially recruiting Cabela's. It funded the Kearney Chamber of Commerce's participation in the recruiting convention in Atlanta where city representatives first encountered Cabela's. Furthermore, GTE offered Cabela's one year's free use of a PBX as an incentive to move to Kearney. And to accommodate Cabela's high-volume telephone traffic, GTE installed a high-speed T-1 line, later replaced with fiber optic cable, from its central office to Cabela's (Kay Bauman, interview, 9 March 1990).

The relationship between GTE and Cabela's, however, soured when the latter's new telecommunications manager, Tim Miller, spearheaded the company's purchase of its own switch, replacing the one leased from GTE, in order to directly hook up with AT&T's long-distance line, bypassing GTE's exchange. Miller felt the local exchange company was unresponsive to Cabela's' growing needs: "Their understanding of inbound telemarketing center was close to nothing. Plus, after divestiture, the problem with the Bell operating companies, GTE in particular, and United Telephone and the others was their attitude. They are still running a union shop, basically with people who feel that they are coming to work eight to five. Their sense of urgency just was not there. And I don't deal with it. If you guys can't respond, it is gone. And they are out" (Tim Miller, interview, 11 March 1990).

Miller's comments are reflective of other large companies' positions with respect to local phone service: In the newly competitive telecommunications realm, businesses expect more service and accommodation. As businesses themselves, they probably understand competition far better than the telephone provider. Consequently, their expectations are high. Miller's position is typical: "GTE did come back and counteroffer, but they are just not in a position. Ironically, they even buy the same equipment as we have. We have got

to make decisions in terms of what is best out there." Miller felt the maintenance and service attitude of the local exchange provider was simply out of step with the requirements of a growing, fast-moving company. He noted: "GTE did make attempts to accommodate us. But again that is marketing sales. You have to look at the companies, too. AT&T has made changes. Some are doing very well. GTE is still not able to make investment. It creates a lot of trauma for end users. We are kind of at the end of the tail. We have to take a position of being ahead of us and what actually fulfills our needs. We need to find out who is going to have better response to our needs and do they understand what we need them to understand" (Tim Miller, interview, 11 March 1990).

Miller wants a special type of switch, one equipped with automatic call distribution (ACD)—a switch/processor that systematically routes incoming calls to the next available agent. This is perceived as an indispensable device for a telemarketing operation. Call distribution is the primary feature of an ACD, but there are several other services such as call overflow, interactive call transactions, and caller identification that can also be provided. ACDs can also collect statistics and produce reports and displays (Sharma, 1988).

Miller dropped GTE's switch because it did not have a built-in ACD. When using GTE's switch, Cabela's had to lease other equipment to perform ACD functions. This led to maintenance problems (Kay Bauman, interview, 9 March 1990). In addition, according to Miller, the GTE switch did not have the reporting and traffic-handling capacity required for the size of Cabela's telephone volume: "The GTE switch is not designed for this kind of volume. They wish their product can do everything. But it really didn't do it." In December 1989, Cabela's installed its new ACD switch, a $400,000 PBX-integrated system, to handle its increasing number of orders. The new system not only processes calls more efficiently but provides management with vital data such as hour-by-hour listings of the number of lines in operation, the call volume handled, and the percentage of calls not able to reach the telemarketer due to busy lines. Said Miller: "With efficiency of the system, we put more people on and ultimately we got more orders in less time" (Jim Miller, interview, 14 June 1990). Cabela's ACD is on line 24 hours a day with the new switch manufacturer in Dallas ready to provide immediate assistance should the system break down.

2. *AT&T's Point of Presence (POP).* A point of presence or POP is the long-distance carriers' local hub; it picks up long-distance signals originating within the area. A POP in the public telephone network is analogous to an airport in the air transportation system. Conventionally, POPs are only built in urban centers just as airports are established only in big cities where the large concentration of population can justify the investment. For example, in Nebraska, POPs were built in only three major cities, Omaha, Lincoln, and Grand Island.

Miller, a former employee of Southern Bell, has the industry savvy to know what is needed to stay competitive in the telemarketing industry. "Being in Kearney, Nebraska, was a handicap. Facing the global competition, I felt we were not getting information fast enough to compete. Coming here I see the equipment which did not have the horsepower to compete. It wasn't digital. And they were paying too much for what they got." Miller said Cabela's needed a digital network and AT&T's premium services, especially MEGACOM 800,[10] a bulk 800 WATS service for large users (Tim Miller, interview, 14 June 1990). But as it was located in a small town, Cabela's could not obtain direct access

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[10] The POP is important for customers from a pricing point of view. Customers not only save access charges but also have access to a host of advanced services that AT&T offers, including MEGACOM, Readyline, and Multiquest. MEGACOM is a wide area telephone service (WATS), but is intended for bulk (T-1) access. There is a monthly base charge of $1,200, and pricing is sensitive to distance and time of day; the service is cost-justified only for large users. Readyline is a service for small businesses that can directly add 800 numbers to their existing lines. Multiquest is an interactive 900 number service.

to AT&T's services. The closest long-distance switch was 40 miles away in Grand Island. To reach there, Cabela's had to first go through GTE lines to get out of town and then use lines owned by US West from Kearney to Grand Island. This not only created bottlenecks but was costly since Cabela's had to pay an excessive long-distance access charge to GTE for the IXC connection.

To save costs, Cabela's tried several different approaches, including tying in to a short-haul microwave to Grand Island and leaving AT&T for a competitive long-distance carrier; the latter action finally got AT&T's attention. A discussion with the company's top management personnel in Omaha engendered the idea of locating a portable POP on Cabela's premises.

Building a POP used to require heavy investment, the construction had to meet extreme safety and security requirements, and the POP itself was very bulky and had to be housed in a large separate building. Divestiture has since forced AT&T to become more flexible, competition has forced the company to more effectively meet the customers' needs, technology has improved so much that now an entire POP can fit into a refrigerator-size box, and the cost has dropped to as little as $80,000. (AT&T has nicknamed the new POP "porta-pop" or "pop-in-a-box.") Cabela's POP is the first of its kind in the nation, and its successful installation has become a noted success for AT&T.

AT&T now plans to install similar POPs in six other small communities. Steve Hindman, AT&T's branch manager in Omaha, says that AT&T has become more flexible and mobile in its thinking since divestiture. He said: "This is what we've got to have. Flexibility means coming in with new blood. AT&T is trying to drive decision making lower and lower in the organization" (John Hetrick, Steven Hindman, and James Langridge, interviews, 11 June 1990).

Miller said that POP not only significantly reduces communication costs but also eliminates technical problems such as blocked calls. "Our phone cost goes down 24%, plus we have all the other advantages such as cleaner, faster, better and digital services." Miller said the per-minute cost for Cabela's' went down from 21 to 13 cents, and since the system is a dedicated, and not switched, facility, there is better and more sophisticated technical support. Furthermore, the POP has allowed Cabela's to introduce a 900-number service in July to handle catalog requests.

3. *Relationship Between the LEC and IXC.* That a telecommunications-based business such as Cabela's would lure a POP to its premises is an interesting development for rural infrastructure and possibly a very negative omen for local exchange companies. For example, GTE had helped recruit Cabela's to Kearney, and it had worked with the company to try to provide what was needed. Cabela's eventually decided its needs could be better met by a different telecommunications company (AT&T). Ultimately, the local telephone company, having gone to considerable expense in attempting to lure and maintain a large customer, was left at somewhat of a disadvantage. Kay Bauman, GTE's vice president for Nebraska operations, said: "When toll companies come to us for handling of their calls, they pay us an access charge. If they can get around the access charge, they can sell their services cheaper." However, he took some comfort in the knowledge that AT&T still had to use GTE's fiber optic cable to link GTE's central office to Cabela's (Kay Bauman, interview, 9 March 1990). The local exchange company apparently harbors few grudges over the situation with Cabela's, as it did not see how it could have satisfied the company's requirements.[11]

Bauman noted that GTE still benefits from Cabela's connection with AT&T's POP, even though it is less than before. Moreover, he pointed to some of the indirect benefits of

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[11] Bauman tried to dispel any notions of resentment: "I don't want you to feel that since Cabela's bought a new switch from somebody else and they put in AT&T's POP—which is halfway bypass—that we are aggravated. We are not. We are no different from anybody else who would like to have it all, but we also settle for less than that, too."

Cabela's new relationship with AT&T: "If you are looking at the revenue that we were getting before AT&T, that is less. But Cabela's employs a lot of people who need telephones which was not there before. We are still getting that revenue. It is not great, but it is a lot different from if they have taken the business somewhere else all together and we don't get any of it."

Ron Peterson, GTE's Kearney district manager, said the role of LECs is interfacing. According to law, they have to provide technical support in connecting any IXC with customers. "If MCI comes in, we will do the same thing." Peterson said the relationship between LECs and IXCs is a mix of competition and collaboration. "A lot of people don't realize that AT&T is our largest customer. As far as the toll service is concerned, we are definitely working with them. But if you are talking about terminal equipment, they are our competitor." Peterson said divestiture has provided large business users the freedom to choose carriers and that Cabela's is taking advantage of this freedom to the upmost. "From a business's standpoint, Cabela's is using deregulation to its best interests. It is going where it can get the biggest bang for its buck" (Ron Peterson, interview, 13 March 1990).

4. *Cabela's and the labor pool: Kearney State College.* Cabela's relies on a steady stream of labor largely composed of college students in Kearney. Lacking this labor supply, the company would have never moved to the town. In order to ensure the availability of this critical resource, Cabela's has instituted a series of "friendly arrangements" with the college. For example, the college maintains campus living units during the holidays so that students who wish to stay on and work for Cabela's (also the busiest season for the catalog operator) have a place to stay. Cabela's also sponsors scholarships at the college and participates in other campus programs.

5. *Summary of Cabela's case study.* The telemarketing industry, though it represents only a small employment percentage, is a technological stepping stone for rural communities to enter the 21st century. Kearney's experience—moving from initial collaboration between community leaders and GTE to entice Cabela's to the community, to Cabela's choosing of another telecommunications provider, to that provider (AT&T) installing state-of-the-art technology in Kearney for the benefit of its client—has ultimately resulted in faster and more reliable community telecommunications with the rest of the world.

C. *Other Telemarketing Activities in Kearney*

1. *WATS Marketing Group.* Following the success of Cabela's, in 1989 Kearney convinced the WATS Marketing Group[12] to also locate there. WATS, now called Integrated Marketing Services, is an Omaha-based, multimillion-dollar telemarketing service bureau owned by American Express; it maintains decentralized operations in various locations in the country to take advantage of lower labor, rent, and transportation costs. WATS moved to Kearney to take advantage of its low overhead and ready labor. Nebraska offered WATS $10,000 in training funds during the first year and $30,000 during the second. From the City of Kearney, the company received a one-year, rent-free lease in a downtown building previously vacated by J.C. Penney. Just as in the case of Cabela's, the availability of an inexpensive building provided a strong incentive for WATS to come to Kearney (Owen Thomas, Gary Fuller, and John A. Michl, interviews, 11 June 1990).

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[12] WATS is an outbound service bureau, which is basically a third-party vendor. The company sells different products over the phone for multiple clients which include, among others, credit card issuers, long-distance telephone companies, and travel clubs. For telemarketers to do business with telecommunications carriers, they may have to use the carriers' lines. For example, WATS's Omaha operation uses AT&T for long distance because AT&T is one of its customers.

Gary Fuller, director of operations at WATS's Omaha office, said that "the controlling factor in deciding where to locate is simply the cost of doing business in that area." (WATS has recently shifted its attention from small towns in the Midwest to overbuilt cities in the Southwest such as Tucson, Arizona, where populations average 400,000 residents. In addition to low overhead and plenty of available space and labor, Tucson has advantages that small towns cannot provide, such as a good transportation system.) For example, in Omaha the part-time wage rate is now seven to ten dollars per hour; in Kearney it is only four to five. Fuller said the three critical factors that attracted WATS to Kearney were its telecommunications system and high-caliber plant and workers.

WATS employs 137 people in Kearney; 30% of these are college students; the rest are working spouses and retirees. Not all of WATS's employees, however, are part-time. The company favors full-time workers because they are considered more productive and tend to stay longer.

The Buffalo County Economic Development Council and Steve Buttress are credited with luring WATS to Kearney. The council invested $36,000 and spent months campaigning. Their effort has paid good dividends: WATS not only provides wages to Kearney residents, but also occupies a downtown building that was previously vacant, and provides an internship program for the telecommunications program at Kearney State College. And just as Cabela's induced AT&T to improve long-distance services to Kearney, WATS has attracted MCI as a long-distance carrier (Fulton, 1989).

2. *Electronic Marketing Resource Group (EMRG).* EMRG, a small high-tech firm whose existence relies almost totally on telecommunications, is another telemarketer in Kearney. This company, led by an innovative entrepreneur named David Waldron, markets its computer-software packages by telephone; it also processes college financial-aid applications and designs book covers on personal computers.

Waldron discovered the telephone as an efficient sales tool in 1975 when he was still an office-machine dealer. Inspired by a *Time* magazine article on electronic sales, he tried calling prospective customers on telephone. To his surprise, he garnered more sales on the telephone than he did by sending salespersons on the road. In 1983, he left the office-machine business to start a computer-software company. The telephone remained his primary marketing tool.

He realized that locating in rural areas was not necessarily a handicap because the telephone could put him in touch with customers across the country. "People don't care where you are if you get your job done." Waldron's company has expanded from providing software programs to consulting, data-processing services for college financial aid, and desktop publishing. Waldron's company now controls 40% of the national market of financial-aid applications, a big success despite its location (Fulton, 1989). Waldron himself proudly said: "We are players in the middle of nowhere" (David Waldron, interview, 13 March 1990).

Waldron's company has experienced rapid growth, and at times the telephone volume it generates overwhelms the capacity of the local GTE phone system. Fortunately, the AT&T POP on the Cabela's premises will help solve this problem; EMRG plans to connect to the POP after it installs its own PBX in November. The POP will also facilitate EMRG's planned introduction of 900-number services, which Waldron sees as the future for rural telemarketing: "There are tremendous opportunities in 900 numbers. The public will pay for information. Here we are in the middle of nowhere, but we can do it. All we need to know is the psychology of the consumer and technology." Waldron intends to use 900 numbers for sweepstakes, fund raising, and college information; the latter two services have been based on 800 numbers in the past (David Waldron, interview, 13 March 1990).

Waldron is not only excited about the potential of AT&T's POP, but is also pleased that he will no longer have to work with GTE. "I don't want to have anything to do with GTE. GTE said we won't have the volume. But if we don't have the capacity, how can we have the volume?" By connecting directly to the long-distance carrier's high-capacity line, the POP opens up a plethora of opportunities for Waldron to explore, one of which is

the 900-number technology. "Without the AT&T POP, these could not be happening." Waldron is concerned that the increasing number of rural telemarketing operations has driven the wage rate up in small towns. "We don't want to escalate labor prices in rural communities to lose our labor advantage," he explained. He suggested two plans of action: to go to even more rural areas for labor and to develop 900-number technology, which does not require much labor (David Waldron, interview, 13 March 1990).

VI. Other Businesses and Telecommunications

As mentioned earlier, Kearney has several large manufacturing plants. Some of them, like Coleman and Baldwin, have local roots and were acquired only recently by Fortune 500 companies. They originated in rural Nebraska for specific reasons which may or may not continue to be relevant to their business. Branch plants are conventionally advantageous to rural communities because they provide a relatively secure source of work; they pay benefits, thereby assuring employees of quality health care; and, they have "multiplier" effects on the local economies.

Kearney's companies are searching for ways to overcome the distance and location barriers presented by their rural operations. The nearby interstate is advantageous for shipping, but local air service, limited to a commuter plane that seats eight people, is not particularly convenient. Service to the West Coast is especially difficult. Once again, telecommunications has proved very useful. Plants have tailored their communication systems to serve their needs: to easily communicate with headquarters (generally in distant cities) and regional sales and service staff; to manage the firm's internal communication needs, sometimes through PBXs; and to use increasingly sophisticated software-driven applications that may rely on the public network for interconnection. The three plants examined here—Eaton, Baldwin, and Coleman—provide good examples of the new telecommunications users.

Despite the importance of rural branch plants to general rural employment in the United States, they cannot be expected to have much impact on local telecommunications infrastructures. Their needs are more focused on interexchange service or purely intraplant systems. Nevertheless, to the extent that the LEC understands their needs and makes the strategic investments in the local network that can benefit businesses, it stands to see its largest clients either work with them or move toward more extensive bypass systems (International Communications Association, 1990). The situation in Kearney suggests that the local exchange company and these large organizations do not share an agenda for telecommunications improvements in the near future.

A. *Coleman Powermate*

Coleman Powermate, a generator-manufacturing company, was originally founded by two brothers in Hastings, Nebraska ,under the name of Ag-Tronic. The company moved to Kearney in 1970, and its name was changed to Coleman in 1986 when a Fortune 500 company acquired it. Coleman was purchased by another New York-based firm in 1988.

Coleman Powermate currently employs 330 people in Kearney, 15 of them part-time. The company has experienced tremendous growth since 1983, as the following growth figures illustrate:

1983	7,600	units shipped
1984	21,000	" "
1985	52,000	" "
1986	76,000	" "
1987	95,000	" "
1988	170,000	" "
1989	185,000	" "

Coleman has profited because of savvy engineering that has developed valued products and because of aggressive marketing efforts. Since 1985, Coleman has maintained price and quality advantage over Honda. Unlike some other manufacturers, it was able to avoid negative repercussions from the downturn in agricultural implements in the 1980s because it had left the agricultural market in the late 1970s. (Its founding product was originally directed at the agricultural market.)

Like some of the other large manufacturing firms, Coleman has developed a relationship with Kearney State College and reimburses 50% of tuition to those employees who take KSC classes. In conjunction with Eaton and Baldwin, Coleman sponsors on-site classes for its employees in engineering, computer awareness, statistics, and business. These courses are taught by Kearney State College faculty members three nights a week. Locations vary among the three companies.

These on-site classes are a result of a task force formed April 1990, by local schools and industry. Representatives from three educational entities—Kearney State College, the Kearney public school system, and Central Community College (in Grand Island)—and major manufacturers met to discuss how they could help each other. This is yet another example of Kearney's integrated community development approach that attempts to link businesses, educators, and modern training needs.

Typical of large, rural manufacturing plants, Coleman's communication needs focus on interexchange services and solid, internal-communications systems. The first need is served largely by AT&T and WATS lines; the second by a local PBX. Coleman's communication applications entail a direct on-line computer tie via telephone to the mainframe in Wichita; a LAN for PCs and a modem to Wichita; fax machines for customer orders, answering vendors' questions and anything else that needs immediate communications; two outgoing AT&T WATS lines used mainly by the purchasing, sales, and engineering departments; and five incoming WATS lines (also by AT&T) for customers and customer services. Internally, the company has a PBX system and dedicated computer line to Wichita as well as dedicated lines for sprinkler and security systems. Coleman briefly left AT&T because other IXCs offered cheaper plans, but AT&T reduced its service charges in order to win Coleman back.

Coleman's Len Palles, a vice president of manufacturing in 1990, thought AT&T's POP at Cabela's could provide a leading edge for Kearney. "It opens up lots of opportunities for the community. Without Cabela's, we wouldn't have AT&T's POP." Pallas noted that tying into the POP at Cabela's could save Coleman a great deal on its long-distance charges. He was interested in running a cable connecting Eaton, Baldwin, and Coleman—all in an industrial area directly to the east of Cabela's—to the Cabela's POP system (Len Palles, interview, June 12, 1990).

B. *Eaton Corporation*

Eaton Corporation, headquartered in Cleveland, ranks 110 in the Fortune 500 with 43,000 employees in 22 countries. Its principal products include truck transmissions, engine components, and electrical equipment. The Kearney plant, started in 1969, employs 738 people and occupies a large facility on the industrial east side of the town. Eaton uses a variety of telecommunications systems for its internal communication and for reaching affiliated plants as well as its headquarters. Its telecommunications needs are fairly typical of branch plant operations: dedicated interLATA needs, PBX-type internal needs, a few specialized, software-driven applications utilizing communications, and interaction with the local exchange only in order to reach its long-distance carrier. Eaton's headquarters pays a great deal of attention to its sites' communications needs. With facilities in Brazil, Britain, and Italy, Eaton's communication department is always searching for the best (more efficient) telecommunications.

The backbone of Eaton's internal telecommunications is AT&T's System 75, installed in the mid-1980s. One major advantage of this system has been the company's ability to restrict local toll calls formerly made by its employees. Because Eaton's employees come from the surrounding area and because there is no extended area service, many local calls employees made were subject to toll charges. As one representative of Eaton's pointed out, the current system's ability to program any phone has saved $3,500 per month in calls (Frank Richard, Jr., interview, 9 March 1990).

Eaton (located in Kearney and four other rural sites around the country) maintains links with the computer center of a regional headquarters in Marshall, Michigan; the Kearney plant has 50 terminals connected to it. The plant is also tied to its central engineering facility in Michigan. For within-company phone services, the corporation has an Adnet system. Similar to WATS in its function, Adnet facilitates dialing to any Eaton site in the country. Some of these lines are dedicated for data communications. In addition, Eaton has VSAT communications for its CAD/CAM operations. Additional uses for VSAT are currently being evaluated. Alongside this range of capability, the company has the usual fax machines (three for various communications such as orders, correspondence, and serving customers) and personal computers.

Comptroller Richard is not confident that the local telephone services are sufficient for Eaton's needs. He said: "I feel that GTE is not keeping up with the communications industry. We did talk to GTE, but GTE did not have the system that serves our needs. Kearney is a progressive community. With the college and some large businesses, they have to have telecommunications in order to keep some of the businesses here. GTE may not have been prepared for the area to grow as much as it did" (Frank Richard, Jr., interview, 9 March 1990). It should come as no surprise that Eaton is one of the companies considering sharing the AT&T POP in Cabela's facility.

The company generally hires skilled laborers; about 60% of its workers have college degrees. Even the unskilled workers are paid rather well—$10.50 per hour is the starting wage. The company experiences some competition for more specialized types of labor and is inundated with applicants for nonskilled positions (Frank Richard, Jr., interview, 9 March 1990). As many as 100 temporary employees work at Eaton.

Eaton is one of the corporations taking advantage of LB 775. The company scrutinized the state incentive law to see what advantages it might provide and how corporate functions could benefit from income-tax and sales-tax savings. It applied for several tax breaks that eventually allowed it to create 65 new jobs. It also took advantage of a state job-training program in which a certain number of people are hired in return for the state paying a certain percentage of those persons' wages to the company.

The company also participates with the Kearney State College in a tuition-reimbursement program in which employees attending college are partially reimbursed for their tuition. In addition to contributing to a Kearney State College foundation (as do other major employers in the area), the company has its own training department working with the college in order to train people to better suit the company's needs. Eaton has also used some ETV telecourses, distributed via local public broadcasting facilities, to instruct its employees. Finally, the company also does its own on-site training.

C. *Baldwin Filters*

Another large employer in Kearney is Baldwin Filters, employing approximately 700 local people. Baldwin is another example of a locally bred company that was bought by a larger conglomerate in 1981, in this case by Clarcor, which is headquartered in Rockford, Illinois. Baldwin Filters has been in Kearney since 1953. It manufactures filtration equipment, a legacy of the region's interest in pumping equipment for agricultural uses, and its customers span the agricultural, heavy-duty, and automotive industries.

Baldwin has experienced very rapid growth in recent years and has added capacity to its telecommunications plant in successive waves. The company currently needs a

system that incorporates some of the same switching capabilities Cabela's enjoys, particularly the automatic call-distribution facility. It would use this internal-switching ability to regionalize customer service procedures so that all of its customers (other retailers) could call just one telephone number and still reach their particular representative, no matter what their location. As company obligation to sales and marketing personnel has increased, its reliance on fast and efficient telecommunications services has also increased.[13] Baldwin acts as supplier to several retailers (e.g., local auto-parts stores, etc.) Its telecommunications priorities include understanding and exploiting toll services that can handle its high-volume communication needs and focusing on internal switching for improved service provision.

Baldwin's current communications system includes a GTD128 PBX digital system, purchased from GTE in 1982, that serves approximately 125 telephone stations. Another 22 lines which are made up of 10 central office trunks, 4 outbound AT&T WATS lines, and 8 direct dial lines accessed by 2 different number assignments (1 for customer service or order entry and the other for cataloging or number identification department use) are also used. Baldwin does not use 800-number lines at this time. Fax machines form the backbone of its ordering system: of their two fax machines, one is used exclusively for the sales and marketing area, because half the company's order entry is received from fax (the other half is received over the telephone); the second is dedicated to the rest of the company's research and development and engineering and purchasing needs. Customers pay the toll charge to call Baldwin when placing an order.

Additionally, Baldwin has a couple of in-house modems for its accounting area to communicate with the headquarters Clarcor facility. It is also affiliated with the EDS group which does its data processing, but it plans to acquire its own internal computer system for those purposes soon.

Baldwin anticipates more international orders as its market grows. With two warehouses in Europe (London and Belgium) and the Kearney plant servicing most of those warehouse needs, as well as new representatives in Australia and Mexico, the need for additional international telecommunications links are anticipated. (Baldwin already services Canadian accounts from the Kearney facility.)

Baldwin has relied on GTE and AT&T for most of its communication requirements. By and large, it has been quite satisfied with GTE's service. Nevertheless, it is currently exploring the possibility of tapping AT&T's point of presence (POP) in Cabela's for additional savings on its access charges. As a member of AT&T's ProAmerica program, Baldwin already enjoys some volume discounts on its phone services; it prefers AT&T over MCI and Sprint because it needs to be more universally accessible, and it has found that the latter two companies tend to provide their economic and service advantages to specific and limited regions.

As is the case with other large employers in Kearney, Baldwin collaborates with local educational programs, including the local high school where it sponsors training classes for older students. Baldwin also has a tuition-reimbursement program with Kearney State College; most of the applicable programs involve 15 to 30 hours of on-the-job training. And this is the first year that Baldwin is offering in-house classes with full college credit for interested employees. (Eaton, on the other hand, has offered this for

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[13] Anita Huddleston, the director of marketing services, noted: "We have need of a new switching system for Baldwin that would enable us to take advantage of such features as automatic call distribution and direct dial to customer service representation. Part of my function is to develop a telecommunications service for the Baldwin distributors. This is a new emphasis. We came to the conclusion that there is a need simply because of our rapid growth. Our previous methods of handling sales and marketing procedures and servicing the customers were just not meeting the standards we have for customer service" (Anita Huddleston, interview, 12 March 1990).

several years.) Again, this business/education collaboration is emblematic of the economic development approach in Kearney.

Finally, it should be noted that members of the community have helped the company solve one of its labor problems. Baldwin once had a policy of hiring people at a relatively low wage, in what was called a "temporary position," pending the worker's proving himself or herself. In this classification, people earned lower wages and were ineligible for benefits. Because of this, turnover was higher than the company would have preferred. As Huddleston said: "We developed a reputation for hiring people for less wages to do a job that really qualified them as full-time employees. Because our probation period went on and on, people began to wonder whether they wanted to work at Baldwin. It made us less attractive" (Anita Huddleston, interview, 12 March 1990). After some conversations with local community leaders about this situation, in which Baldwin complained that Kearney's labor market was unattractive because its unemployment level was so low, that system was revamped. (Basically, the probation period was shortened.) With more satisfied workers making the wages they believe they deserve, presumably the turnover problem will abate.

VII. Telecommunications and Education

A. *Kearney State College*

Kearney State College (KSC) plays a very important role in the community. It is a source of job training and continuing education for the area's largest employers, an enrichment center for all those who want higher education, a source of ready part-time labor for the telemarketing industry, and a crucible of talent.

With a student enrollment of 10,000 and an employment figure of 1,400, KSC is the largest employer in the city. With 1,800 telephone lines in place, it is also the biggest user of telecommunications. Just as the college has had an insurmountable influence on the local economy, so too has it played an equally important role on the telecommunications front. This importance will be further augmented by a current plan to build a campus-wide fiber optic network and automated library system and by the planned merger of the college with the University of Nebraska system in July 1991.

KSC's influence on telecommunications extends far beyond its being the largest consumer or the planned expansion of its system. It also provides a stable college-educated and computer-literate labor force for the telemarketing industry. As far as Cabela's alone is concerned, 60% of its 530 employees are KSC students. The college also offers a telecommunications management program to produce future leaders for the industry.

Another dimension of the college's importance in telecommunications is its involvement in distance learning. Every year, more than 500 of its students take courses via television. When the college merges with the university next year, it plans to receive graduate television courses delivered by satellite.

Kearney State College was authorized by the Nebraska Legislature in 1903 and classes began in 1905. It is Nebraska's third largest institution of higher learning and the fastest growing college in the Midwest, having doubled its student population in the last 10 years (Kearney Chamber of Commerce, 1990). Its rapid growth caught the attention of the state legislature and led to the approval of a bill to allow the college to merge with the university system. Following the state supreme court decision last June supporting the legality of the merger, the college will soon become the fourth unit of the University of Nebraska system.

Apart from the fact that KSC is the city's largest employer, it has a tremendous economic impact on the community in other ways. According to a study conducted by the School of Business and Technology, the college generated more than $127 million and 1,500 jobs for the fiscal year 1989-1990. Using an economic multiplier of 1.75 for both dollar and jobs impact, the study calculated the total real impact of Kearney State College at

$223 million and approximately 2,700 jobs for the area (Kearney State College, 1990). The college also serves as a symbol for the community. It is very supportive of regional development, demonstrated by several efforts.

First, it has created degree programs responsive to the needs of the region. For example, to meet the needs of employers in growing fields, it has created new programs in telecommunications, travel and tourism, airway science management, and nursing. Second, it created the Center of Economic Development as a research institute to stimulate development ideas and work with the community leadership. Third, the college has acted as an information hub for the region. Fourth, it collaborates with three major manufacturers to provide on-site degree courses and offers students with tuition reimbursement for taking these courses.

Originally a teacher's college, KSC has a strong history in training educational professionals. It offers master's programs in education, educational administration, and business administration and specialist degrees in various educational programs. More recently, as the local community began to realize the importance of technology and telecommunications, various local community leaders, business leaders, and college officials decided to create a telecommunications management program.

1. *CentraNet.* Because of its rapid expansion in recent years, the college's telecommunications demands have outgrown the capacity of its PBX. In August 1988, KSC decided to replace its PBX with a Centrex-type service, CentraNet, offered by GTE. CentraNet is a package GTE offers to large users; it provides switching facilities at the local phone company's central office and approximately 20 customer features that include call waiting, three-way calling, and call forwarding. KSC chose GTE's service because it is the local telephone company and was able to provide the needed features at a competitive price. The college seems satisfied with the service CentraNet provides and plans to use it to facilitate telephone registration in the fall semester of 1990. KSC is one of two CentraNet users in Kearney; the other is a group of state offices (Jane Sheldon, interview, 24 August 1990).

Since all calls are switched in the telephone company's central office, CentraNet relieves the customer of the burden of maintaining a PBX. Ron Peterson, GTE's district manager in Kearney, believes this is a key advantage that the company provides. In addition, he added, new features can be easily added to the service and it can be adapted to any existing telephone, saving the customer from purchasing new equipment. CentraNet is GTE's idea of providing advanced telecommunications systems to its users; here is the focus of its current major marketing and promotion efforts.

2. *The library automation project.* Kearney State College, along with three other state colleges, recently received funding from the state legislature to upgrade its campus telecommunications network. The Nebraska Legislature appropriated $3.5 million in the 1990 session to automate library systems at four state colleges: Kearney, Wayne, Chadron, and Peru. Because of its size, KSC will receive more than half of the funding ($1.6 million). The objectives of the project are to integrate the library system into each college's emerging computer and telecommunications network and to build a campus-wide computer network wired by fiber optics for faculty members, students, and intercampus library communication.[14] Initially designed to automate the library's manual system, the project will eventually establish a state-of-the-art campus computer network that will connect the college to other academic institutions in the state and country and provide students and faculty members with on-line information.

The new library system is designed to replace the libraries' manual systems and to provide computerized support to basic library operations and services to readers. Each college system will be networked with its local campus telecommunications and computer

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[14] The legislature approved a three-year budget. KSC wants to complete library automation by the end of the first year (December 1990) and campus wiring by the end of the third year.

systems, so that users both on and off campus will be able to access the library computer system and search its on-line catalog. Individuals and other libraries within each college's area of service will be able to dial into the college's library system through personal computers. The library system will also eventually be able to offer computer-driven faxes and videotex services (John Mayeski, interview, 14 June 1990).

In order to link the four college systems with each other, each college will upgrade its local campus telecommunications network with leased telephone line connections into HUSKERnet. The latter is the University of Nebraska-Lincoln network that interconnects with MIDnet (Midplains Regional Network). This connection will allow the college library systems to communicate with each other and with the libraries at UN-Lincoln and UN-Omaha. MIDnet, in turn, interconnects with BITnet, which in turn links to NSFnet. The interconnections will connect Kearney with a major academic hub network for exchanging information and data.

The library automation plan was first formulated in 1986. In an attempt to win support from the legislature, KSC collaborated with the three other state colleges to present a joint proposal. They asked the 1989 legislature for $1.9 million. The senate gave them $25,000 in seed money to refine the proposal, which they then expanded into a plan to build campus-wide computer networks at a cost of $3.5 million. Governor Orr recommended the full package in January 1990 and the legislature approved it soon after. John Mayeski, director of Kearney State College's library, attributed the bill's passage to cooperation among the four schools and well-prepared documentation (John Mayeski, interview, 14 June 1990).

3. *Project at KSC.* Only five buildings at KSC are currently wired with fiber optics in order to share the computer network for administrative purposes. (Academic departments do not have any computer network linking them together, except the business school, which has its own local area network.) These five buildings are the Computer Center, Founders Hall (administration building), the library, the student union, and the student service building. Once the library automation project has been completed, a fiber optics network will extend to all buildings on campus, including the distant west campus. Student dormitories will also be wired so that students can access the network at dormitory computer labs. The project also includes establishing an academic computer network to link all departments together, which will allow faculty members to conduct on-line research. The network, however, will be separated from the existing administrative network. Also in the plans are telephone-registration and financial-aid information services, which will allow students to call in for financial-aid information and grades.

Although it originated as an effort to automate the library system, the upgrade project goes far beyond replacing card catalogs with on-line computer searching capabilities. According to KSC's Computer Center director, Herbert Cunningham, the library will only use 10% of the system once it has been completed.

The library automation and campus wiring project will bring state-of-the-art telecommunications facilities to the college and link it with the rest of the world. However, this ambitious undertaking would not have been possible without the college's persistent pursuit of and cooperation with other colleges. "Because of where we are located, we have to take an aggressive stand," said KSC Library Director Mayeski.

4. *Current telecommunications application at the library: RICK.* RICK (Reference/Interloan Center at the Kearney State College Library) is a WATS-line link offered for interlibrary loans throughout central Nebraska. Local libraries call an 800 number at KSC for books and magazines not otherwise available. KSC helps locate and send the materials requested. All RICK services are free. Mayeski estimated that there are about 2,000 RICK transactions per month; 83 public libraries and 210 school libraries currently have access to RICK via a toll-free WATS line. Funding for RICK, approximately $91,000 a year, is provided by state libraries. It has become a model for other state libraries.

The college library has also operated a satellite downlink site for videoconferences since 1988; approximately six satellite conferences are delivered per year.

5. *Distance learning*. KSC currently offers telecourses, one example of distance learning. Telecourses are college-credit courses delivered on the public television channel via the statewide Nebraska ETV Network. Last year, 565 KSC students took classes via television. Most students who take advantage of this television-mediated college education are full-time workers who do not necessarily live in Kearney. On average, these students take seven to eight years to finish their degrees. According to a college-conducted survey, 73% of the students who take the telecourses are degree oriented; the rest are taking it for their careers and personal enhancement (Gene Koepke, interview, 12 June 1990).

KSC will soon participate in CorpNet, a corporate training network for the on-site delivery of University of Nebraska-Lincoln educational services. Established in cooperation with Omaha- and Lincoln-area businesses, the system offers undergraduate business courses and both undergraduate and graduate engineering courses to employees at their workplace. CorpNet was originally delivered through an ITFS system but since the establishment of the state NebSat program in 1989, CorpNet courses are now transmitted via both ITFS and satellite (Gwen Nugent and Lee Rockwell, interviews, 8 March 1990). KSC plans to install a satellite dish to receive CorpNet programs after it joins the University of Nebraska system in 1991.

B. *Public Schools*

Kearney public schools have faced several problems in recent years. First, the district has grown in the past four years from 3,700 students to the present 4,250. Even more pupils are expected in 1991 and 1992 as schools in the county begin to consolidate. Second, both the town and the state are fiscally conservative when it comes to education. According to school superintendent Gary Hammock, Kearney State College has been tremendously underfunded for a number of years; nor is the city funded as well as other city governments. "Studies have shown that we are on the low side as far as funding is concerned. But we do have a good city government, and a good park and recreation department in conjunction with that. The quality is there" (Gary Hammock, interview, 13 March 1990).

Even though Kearney is the 10th largest school district in the state, it has one of the lowest per-pupil costs, in the range of 5th to 10th lowest in the state. Nebraska has approximately 280 K-12 school districts. This conservatism hamstrings the delivery of quality education. Third, as the town has grown and become somewhat more sophisticated, demands on the school to offer special programs—whether for special students, gifted students, or athletically talented children—have also escalated, according to various PTA members. But due to financial constraints, the district has a difficult time funding anything beyond the basics.

Hammock commented on the influence that local planning efforts had on his strategic plan for school development: "When I got here, people told me special education is underfunded. Every aspect of our district is very lean because of this low per-pupil cost. As a superintendent, you are bombarded by a million different requests and you want to know which one seems to have the greatest support. The strategic plan has allowed us to identify areas that need to be addressed, and committees within that planning structure identify specific priorities of each of those areas. In the last two years, our tax request has gone up 24%. I am proud of that. In Nebraska, over 60% of our funding comes from local property tax. If you can get your property tax request up, that is an important part of your funding. We try to generate the dollars to drive our strategic plan and consequently we are seeing some items coming on board" (Gary Hammock, interview, 13 March 1990). The strategic plan was initiated in 1987. Community members had developed a list of the 10 most important interests; gifted and special education improvements were at the top of

the list. With this list in hand and the support of a representative committee, efforts to increase tax-based contributions were successful.

1. *Public school financing*. Nebraska's school funding formula is based in part on the local "valuation base." Because Kearney is a growing and dynamic community, its valuation base has increased. In 1987 it was less than $400 million; by 1990 it had risen to more than $500 million (a 25% increase in three years). Several factors affected that rate. For example, the Kearney system has added rural schools to its district. Two schools were added in 1988-1990 and one more may be added soon. A new K mart and new homes under construction in the north side of town have also helped drive up the valuation base. Such growth in a town of Kearney's size is atypical in Nebraska. (For example, comparably-sized Grand Island to the east has not had a new house built in five years, according to Hammock.)

From Hammock's perspective, the state structure in Nebraska does not adequately finance public schools. While its legislative mandate has not caused some of the problems other states' policies have,[15] Nebraska rewards the rich as well as the poor and does not help districts that really need assistance. For example, Stone School, on the east side of Kearney, has major manufacturing plants in its valuation base—Eaton, Cabela's, Coleman Powermate, and most of the big industries in town. This results in terrific bonuses for the school because the companies contribute huge sums to the base. Thus, Stone School (a Class One school[16]) with just 11 students, has a $45 million valuation. This works out to a $4 million valuation for every pupil, enabling the school to run a "Cadillac program" for every child. In contrast, Kearney has a valuation of only $117,000 per pupil. From the Kearney superintendent's perspective, this is totally unfair and inappropriate. Stone, while it has the right to integrate with Kearney schools if it wishes, will probably never choose to merge its resources with those of the Kearney schools. They already have better financial support than any merger could possible provide. Only when a school's per-pupil valuation is below that of Kearney's would it think about integrating with Kearney.

Some state educational bills now pending may change this situation. LB 259, for example, would create an affiliation agreement for K-12 schools. Over a period of time (four to five years), it would encourage some schools to close and merge with those in other districts, although this wouldn't be mandated. People perceive LB 259 as one way to consolidate schools—not just for Class Ones to merge with K-12 but also for some uneconomic K-12 schools to close. Basically, Class One school districts could choose to affiliate with a district providing K-12. In the past, students from a Class One had the choice of going to any K-12, paid for by their home school and county fund. Under LB 259's affiliation provisions, people in a Class One district would have to choose to affiliate with a particular K-12 district. This would create more revenue for districts offering K-12, though in the long run it implies fewer local schools or at least more identification with larger school districts as more and more rural schoolchildren "affiliate" with them.

LB 1059, a revenue bill, is the most dramatic school legislation of the century for Nebraska and has created much anxiety among administrators and teachers. LB 1059 includes a one-cent increase in sales taxes and a 17% increase in income taxes. This money would go toward school finance. But it also includes a decrease in property taxes. Ultimately, it would probably serve to accelerate school consolidation because it would reduce the tax-base contribution to school finance.

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[15] This is a reference to the problems in states such as Texas. There, a recently successful suit again state financing policy has caused great turmoil. The thrust of the previous state policy was to simply use the local tax base to provide basic funding to schools. This resulted in grossly inequitable school facilities; richer communities had vastly superior schools compared to poorer communities. The courts ruled this was unconstitutional and mandated that the state come up with a more just school financing program.

[16] In Nebraska, a Class One school does not offer grades 9-12.

Regional disparities in school finance work against Kearney's long-term economic health. The superintendent provided a hypothetical example of a family moving into the area, the husband securing a job with Eaton or Coleman, and the wife finding telemarketing employment: "If they lived on a certain side of town, they could find out that their kids are going to a Class One school with 72 kids, two trailer houses, and no gym. Their tax rates are already higher than Kearney's and they are not offering quality education. People would say 'I don't want my kids to go to school there.' From my perspective, this kind of thing hurts rather than helps in areas of industrial development" (Gary Hammock, interview, 13 march 1990). Ultimately, regional disparities in school finance impede equitable educational offerings.

2. *Distance education.* Kearney is currently looking at three alternatives in distance learning: SERC's courses, Turner Broadcasting's CNN News, and the Whittle system's Channel One. Channel One made a presentation to the district in 1990, and the board decided not to adopt it because of the included advertising spots. "We are more strict in keeping ads out of schools. I guess that is our conservative Central Nebraska flavor," said Hammock. Another strike against the Whittle system concerns its rules and regulations on the use of its wires to bring in any other programs that may have advertising. Moreover, the district was skeptical that Whittle would have sufficient long-term financing; it worried that the operation could move the $15,000 hardware in one day and go bankrupt six months later. Nevertheless, it is still considering Channel One because it is difficult to pass up $15,000 of hardware. The CNN service was attractive but provides no help with hardware or facilities, a service the district deems important.

The superintendent feels that SERC is promising but expensive. Although grants are available, they are only *partial* grants. Additionally, there are a number of costs that districts have to incur in order to use SERC's courses: "One of the big problems in schools today is asbestos. When you start wiring buildings for technology, you have to be aware that you may get into asbestos concerns and that may cost you thousands of dollars. We want to make sure that when we develop a plan, it is comprehensive and deals with all the problems and has adequate funding to make it work" (Gary Hammock, interview, 13 March 1990). Hence, SERC is considered highly desirable but not without its problems on the local level.

3. *Other educational opportunities.* The Kearney school system allows seniors to take classes at Kearney State College for courses not offered in public schools. One source of dissatisfaction with this relationship concerns the perceived underutilization of some of Kearney's public school teachers. The district has a disproportionately high number of people with specialist degrees (e.g., master's) because Kearney State College is present. These instructors could teach German, for example, in the high schools so that students would not have to travel to the college. In this somewhat unique situation, the district could replicate a lot of course offerings one might normally receive via SERC; however, an arrangement with Kearney State College to use the public school teachers would be necessary.

Finally, three educational institutions (Kearney State College, the Kearney public schools, and Central Community College) and three businesses (Eaton, Baldwin, and Coleman) are involved in an Employer Training Task Force. This is a cooperative effort between the schools and businesses to offer courses to workers so that they can upgrade their skills. The task force was initiated by Steve Buttress and others last fall. There are two components to this initiative: preparing students to enter industry and training people who are already employed at various industries. A grant application for this project has been submitted to the state.

VIII. Telecommunications and Health Services

A. *Good Samaritan Hospital*

The Good Samaritan Hospital's employment figures are second only to Kearney State College. Combined with its sister hospital, Richard Young Psychiatry, the hospital has a total employment of close to 1,000. In these terms, the hospital overshadows any of the four Fortune 500 companies that operate a branch plant in Kearney. Good Samaritan is the largest hospital outside of Omaha and Lincoln in the state and is a regional hub for rural hospitals. In order to provide emergency medical service and maintain instant communications with other hospitals, it has developed a sophisticated telecommunications system. The telecommunications technologies it employs cover a wide spectrum, ranging from walkie-talkies to computers and from fax machines to satellite links.

1. *Background.* The Good Samaritan Hospital serves 17 counties in a 100-mile radius in central Nebraska. Its service boundary extends to Kansas in the south, South Dakota in the north, Grand Island in the east , and the Nebraska panhandle in the west. The 197-bed acute-care facility serves a population base of 350,000 people. Between 60 and 65% of its patients come from areas outside of Kearney. Good Samaritan is a Regional Referral Center, a status designated by the U.S. Government which means that although it is located in a rural setting, it is a hospital of urban quality and services.[17] An average outpatient would drive from 100 to 120 miles one way to the hospital. As the hub hospital in the region, the Good Samaritan is affiliated with 19 small rural hospitals. It is also equipped with a helicopter to provide emergency medical service, transporting approximately 250 to 300 patients per year.

The Good Samaritan purchased nearby Richard Young Psychiatry Hospital (80 beds) in 1987. The two hospitals have a total number of 70 physicians on staff, representing 24 different medical specialities. With an annual payroll in excess of $18 million and $54 million in patient revenues, Good Samaritan contributes significantly to the economic health of Kearney.

2. *Telecommunications applications.* The Good Samaritan installed its own PBX seven years ago to reduce communications costs and to meet its increasing telecommunications demands. The hospital's phone system, made up of 900 lines, is bigger than that of some small cities. The capacity of the system allows 13 people to call the hospital's general number at the same time without receiving a busy signal. For regional communications, the hospital purchased its own paging system two years ago; this paging system covers a radius of 12 miles.

All 19 affiliate hospitals have direct phone links with the Kearney hospital. Dialing 0 will connect them to the hospital switchboard; dialing an extension number will reach a specific doctor. Good Samaritan provides laboratory, telecardiology, and other medical assistance to these rural hospitals. The rural hospitals' EKG (electrocardiogram) machines are linked through business phone lines to Good Samaritan so that doctors in Kearney can interpret EKG diagrams.

The hospital is very computerized. Its computer system keeps patients' records, schedules doctors' appointments, sends bills to customers, pays hospital employees, and makes sure the hospital does not overspend. Although federal laws require hospitals to keep copies of patients' medical records on paper, the ability of the computer to store financial data helps to significantly reduce the required amount of paper (David K. Glover, interview, 13 June 1990). Good Samaritan is on-line with its sister hospital, Richard Young. They maintain eight dedicated lines to transfer financial data and patient information between the two facilities. Their computer is tied with Lincoln through a

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[17] The federal plan is to develop hub hospitals and let rural hospitals act as emergency hospitals, served by a physician and supplemented by physician assistants but no nurse practitioners (David K. Glover, interview, 13 June 1990).

modem, and federal Medicare and Medicaid patients' insurance claims are sent through that link to Lincoln where the Blue Shield and Blue Cross' processing unit is located (George Bolz, interview, 12 March 1990).

Fax provides just what the hospital needs—immediate feedback and timely answers. In 1990, the hospital's fax machines will increase from 4 to 16. Faxes are used for various functions, including transferring patients' records and lab results, communicating with rural physicians' offices, purchasing medical supplies, sending information to the hospital's business partners in Omaha, and receiving first-hand information from Washington, DC. The Good Samaritan currently has a fax link with several of its affiliated rural hospitals. According to the hospital's vice president and chief operating officer, David Glover, the hospital plans to expand this fax link to cover all the rural hospitals it serves as a referral center. To establish a fax network, the hospital will place a fax in those small rural clinics which cannot afford to install it (David K. Glover, interview, 24 August 1990).

Glover believes that fax is more economical than traditional mail. He envisions a future time when patient medical records and other information can be processed even more rapidly once the fax machine has been linked with the hospital computer. Problems of confidentiality and appropriateness have accompanied the increasing use of fax in hospitals. Glover urges the exercise of caution when fax machines are used: "People who use fax need to have the responsibility of confidentiality to protect patients' privacy." He suggested that one way to avoid the misuse of fax is to develop certain policies and procedures for sending fax messages.

Good Samaritan subscribes to video services provided by the Hospital Satellite Network (HSN). Through its rooftop satellite dish, the hospital receives educational medical programming for both patients and physicians. HSN also conducts videoconferences once a month. In addition to satellite programming received from HSN, the hospital produces and purchases medical videotapes to broadcast on its channel. The hospital also operates its own satellite television system for patients' rooms, offering eight channels including CNN, Nickelodeon, and MTV.

The hospital's fire alarm system is connected to the city fire department, which receives the alarm signal as soon as the hospital does. The hospital also has an emergency backup system provided by the 911 emergency center. If all telephone lines were to go down, 911 could still pick up telephone calls and transmit them to the hospital by radio.

The hospital plans to build an education conference center during the next three years. This center will have a conference room for medical staff, an educational meeting place for employees, and possibly a satellite uplink site for videoconferences. Glover said there are four major medical conferences held in Kearney every year, usually in hotels. "It will be nice if these conferences can be held at the hospital." Glover said the conference center could also be used by the college and the community (David K. Glover interview, 13 June 1990).

IX. Other Aspects of the Telecommunications Infrastructure: Cable Television

Kearney's cable television system is typical of small towns across the United States. The services are provided by a small multiple system operator, Cable USA, which operates 31 cable TV systems, primarily in the state of Nebraska (as well as 2 systems in Iowa and 2 in Colorado). The company is 11 years old.

Prior to Cable USA's arrival in Kearney in the fall of 1987, there were two competing companies—TCI and Kearney Cablevision—that provided cable television to the town. Cable USA bought them both and has since grown rapidly. Local manager Keely Vasquez said: "We have grown faster than we can keep up with." Local penetration is at approximately 80%. "Most people who don't have and do not want to have cable are older people because they are afraid of it" (Keely Vasquez, interview, 14 June 1990).

Following success in Kearney, Cable USA expanded into the surrounding areas, building six systems north of Kearney.

Local service offers 41 channels (4 of which are premium) in Kearney. There is also a public access channel, a college channel, and a government channel for broadcasting live city council meetings. The city programs the latter channel (primarily teletext aside from live meetings), while Kearney State College has complete control over its channel. The cable company also uses the public access channel for occasional pay-per-view services. Cable USA started airing local commercials in about 1988, although local advertisers were at first resistant to advertising on cable. Indicative of its growing sophistication, Cable USA initiated telemarketing operations two months ago and has so far been successful. The telemarketing unit for the entire corporation is located in the Kearney office and is composed of four female staff members and one supervisor. Cable USA began offering tiered programming on 1 July 1990, its first venture into slightly more complex marketing and servicing domains.

Vasquez predicts that in three or four years the corporate headquarters will move to Kearney because of the rapid growth in the area. The company is currently headquartered in Scottsbluff, which has a population of 13,000. The Kearney office is implementing a new telephone system to expand its phone lines from 6 to 12, and the new system will have a dedicated line to Scottsbluff. Customers who live in two surrounding communities—Holdrege and Minden (20 and 10 miles away from Kearney respectively)—can dial a local number that is directly fed into Kearney. Cable USA has one incoming 800-number line.

The cable company does not aggressively seek an active role in community development. Public relations activities, such as sponsoring a hot-air balloon rally, represent its local contribution to date.

X. Conclusions

A. *Economic Development and Telecommunications*

Kearney provides our best example of a community sufficiently self-aware to plan for economic development alongside community development. Its explicit inculcation of local leadership, spanning the entire county in terms of geography as well as varied segments of the community, has enabled it to generate a plan linking its educational opportunities with its business opportunities; its community goals with actions moving it toward self-sufficiency. For Kearney, regionalism and leadership training are the keys to development.

Telecommunications plays only a modest role in the town's development plans. Nevertheless, it is notable that telecommunications was recognized as an important factor for some businesses, and that it is perceived as an ingredient which will be more and more critical. From the perspective of Steve Buttress, former president of the Buffalo County Economic Development Council, telecommunications is one of many tools that a community can use to enhance itself. Buttress writes: "The new look is inward. The new tools [for development] are knowledge and information, networking, visioning processes that tap and channel citizen energy" (Buttress, 1989, p. 24). In this view of development as an endeavor that works with already present local resources—both human and physical—the focus is on cooperation, regionalism, and creativity. Telecommunications is only as useful as the people in the community who discover novel ways to make it work for them.

The role of Kearney State College and its development of a telecommunications management degree program, a program designed in part to act as a technology transfer to local industry, is emblematic of this development approach. Indeed, the town's efforts to link the college to local industry in several training and education capacities attest to the perceived importance of developing human capital in order to better exploit opportunities.

B. *Rural Education in Transition*

The situation of Kearney's public school system is replicated in many rural school districts nationwide. Buffalo County's local disparities in financial support for schools has created certain imbalances. Pending the resolution of certain state initiatives, these imbalances could shift toward Kearney's favor. Some school consolidation appears to be inevitable, and while there is no easy solution to the psychological discomfort of consolidation, there may at least be somewhat of a solution to the fiscal problems that contribute to it. Telecommunications does not appear to offer a viable way around the school consolidation issue insofar as Kearney is anxious to address the support issue: With its lean per-pupil spending rate, the district is striving to increase its ability to deliver improved educational services. This means money, and the most viable source appears to be the tax base.

Kearney State College is a critical resource for this community. Its wholehearted embrace of telecommunications for its own modernization and its programmatic espousal of telecommunications suggest that the college will be an incubator of sorts: developing new ways to deliver and use information as well as creating the trained personnel who can manage such information systems. Its open-minded ties to local businesses and its enthusiastic training programs place the college in a central role for the community's development.

C. *Rural Telecommunications-Intensive Businesses and the Local Exchange*

Businesses in Kearney illustrate some of the possible applications of communications systems in rural settings. The telecommunications-intensive realm of telemarketing pressures the abilities of the local exchange, and its competitive needs simply cannot wait for conventional providers to "catch up." The case of Cabela's illustrated that if the LEC cannot solve users' problems, someone else will. The more traditional businesses, the branch plants in the area, do not entirely rely on telecommunications in the way telemarketing does, but they too have definite and growing communications needs.

The telemarketing businesses and branch plants in Kearney share a dissatisfaction with the local exchange company's services. The older companies have learned to work around GTE and do not rely on it very much for advice or new ideas. The interexchange carriers have become more important resources for them. What these businesses have in common is their obvious move away from voice-based telephony toward more specialized applications requiring digital equipment. In the case of Cabela's, this amounted to special call-distribution technology that could essentially *manage* telemarketing functions; in the case of the branch plants such applications range from VSATs facilitating long-distance CAD/CAM research to using land lines for time-sharing on a distant computer.

A 1990 ICA white paper, representing the business community's perspective on local exchange services, recommends that local telephone companies "evolve from suppliers of mainly generic, prepackaged services, to providers of the applications platform. They must market the capabilities of their networks at many *levels* of sophistication. These levels will include basic dial tone and dedicated point-to-point circuits; they will extend from dark fiber to ISDN-type building blocks on up to complete service arrangements. At the same time, business customers must assume even greater responsibility for assessing their telecommunications needs, and continue to become more sophisticated applications developers and users" (International Communications, 1990, p. 10). The cases in Kearney suggest that *inter*exchange carriers and specialized providers are taking on this challenge, while the LECs are more complacent.

The local exchange company was perceived by nearly all organizations, private and public, to be well intentioned but ill equipped to deal with the needs of more sophisticated users. Even though the company has a local presence, even though its representatives have

sat in on Kearney economic development meetings, even though they provide the moral (and often financial) support for certain development activities, their abilities to catalyze novel or innovative or simply state-of-the-art applications appeared to be limited. Whether this has to do with the fact that this particular branch of GTE is the smallest division of the large independent company, whether it has to do with a monopoly mentality locked into providing dial tone rather than applications capabilities, or whether it has to do with the absence of aggressive competition is unclear.

D. *Telemarketing: Decentralized Network or Rural Exploitation*

A great deal has been written about the tremendous opportunities that so-called footloose businesses offer to rural communities. Dependent primarily on modern telecommunications infrastructures, such businesses are believed by some to provide excellent economic prospects for rural revitalization. Our examination of Kearney's footloose businesses suggests it is not as easy as simply installing the appropriate network.

For example, telemarketers in Kearney require an adequate labor pool and adequate physical facilities as well. The work itself is predominantly part-time and subject to low wages. Whether such jobs actually enhance the fundamental job capabilities of telemarketing workers—whether they leave such jobs more qualified and capable than when they started them—remains to be seen. Finally, telemarketing does not appear to create the more long-range, multiplier effects certain other industries do; its "stand-alone" status then suggests more limited economic payoffs to local communities. Such positions do provide some employment, surely desirable to people in positions of economic marginality. And it should be noted that not all footloose industries operate as telemarketing does; back-office processing, for example, could be full-time work. Nevertheless, telecommunications-intensive businesses cannot surmount the importance of having an adequate mix of jobs and the presence of other amenities (a small college, a hospital, a good school system, buildings) that allow a community to build and plan for its holistic growth.

Epilogue

While we have not revisited Kearney since 1990, we have information about changes in the community. Local leader Steve Buttress, who was so instrumental in getting local institutions working together, first moved to Kearney State College from the city's Economic Development Council, and then moved to state government where he heads a program under the Department of Economic Development. To some extent this is no surprise. Everywhere we went during our field interviews, Buttress's name was known. His successes were well publicized. As of middle 1991, Steve Buttress is looking forward to focusing more state programs on the potential of rural areas.

Another change in Kearney concerns additional use of the AT&T POP. In our earlier visits, major businesses were just considering using the POP's capacity; now, several have jumped onto it as clients. They include Baldwin Filters, Eaton, and Coleman, the three Fortune 500 branch plants, as well as Dave Waldron's EMRG, the state college, and the hospital. The POP obviously offers cost savings as well as additional capabilities. The success of this rural telecommunications innovation may offer lessons for other communities with the diverse group of users that Kearney has.

Interview Master List

Bauman, Kay—Vice President, Nebraska Operations, GTE North, Inc., Columbus, Nebraska. Interviewed by Sharon Strover and Liching Sung, 9 March 1990.

Beatty, James—President, National Consulting Systems, Inc., Omaha, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 11 June 1990, and via telephone, 2 April 1990.

Bielenberg, Ron—Vice President and CEO, Firstier Bank, Kearney, Nebraska. Interviewed by Sharon Strover, 12 March 1990.

Blankenship, Bruce L.—President, Kearney Area Chamber of Commerce, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 14 June 1990.

Bolz, George—Director, Maintenance and Bio-Med, Good Samaritan Hospital, Kearney, Nebraska. Interviewed by Liching Sung, 12 March 1990.

Buttress, Steve—Vice President, College Relations, Kearney State College, Kearney, Nebraska, and former president of the Buffalo County Economic Development Council. Interviewed by Sharon Strover and Liching Sung, 10 March 1990 and by Liching Sung and Richard H. Cutler, 12 June 1990.

Cobb, James D.—Pastor, First Presbyterian Church, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 13 June 1990.

Cunningham, Herbert J.—Director, Computer Center, Kearney State College , Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 15 June 1990.

Dibbern, Chris M.—Attorney, Nebraska Public Service Commission, Lincoln, Nebraska. Interviewed via telephone by Liching Sung, 26 February 1990, and by Sharon Strover and Sung, 8 March 1990.

Frayser, Stephen—Deputy Director, Nebraska Department of Economic Development, Lincoln, Nebraska. Interviewed by Sharon Strover and Liching Sung, 9 March 1990.

Frederick, Roy—Professor and Extension Economist, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Lincoln, Nebraska, and former director of Nebraska Department of Agriculture. Interviewed by Sharon Strover and Liching Sung, 8 March 1990.

Fuller, Gary—Director of Operations, Integrated Marketing Services, Outbound Division, Omaha, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 11 June 1990.

Glover, David K.—Senior Vice President and Chief Operating Officer, Good Samaritan Hospital, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 13 June 1990, and via telephone by Sung, 24 August 1990.

Greene, Bill—Marketing Specialist, Nebraska Public Power District, Columbus, Nebraska. Interviewed by Sharon Strover and Liching Sung, 9 March 1990.

Greer, Gary D.—City Manager, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 13 June 1990.

Griswold, Ron—Supervisor and CEO, Maintenance, Kearney District, GTE North, Inc., Nebraska Operations, Kearney, Nebraska. Interviewed by Sharon Strover and Liching Sung, 13 March 1990.

Hall, Dennis G.—Area Development Manager, Nebraska Public Power District, Columbus, Nebraska. Interviewed by Sharon Strover and Liching Sung, 9 March 1990.

Hammock, Gary N.—Superintendent, Kearney Public Schools, Kearney, Nebraska. Interviewed by Sharon Strover and Liching Sung, 13 March 1990.

Herrman, Dan—Director, Patient Accounts, Good Samaritan Hospital, Kearney, Nebraska. Interviewed by Liching Sung, 12 March 1990.

Hetrick, John—National Account Manager, AT&T, Omaha, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 11 June 1990.

Hindman, Steven G.—Branch Manager, AT&T, Omaha, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 11 June 1990.

Huddleston, Anita—Marketing Services Coordinator, Baldwin Filters, Kearney, Nebraska. Interviewed by Sharon Strover and Liching Sung, 12 March 1990.

Jordon, Steve—Business Editor, *Omaha World-Herald*, Omaha, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 11 June 1990.

Kernick, Brad—President, Eakes Office Products Center, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 16 June 1990.

Koepke, Gene—Provost, Kearney State College, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 12 June 1990.

Kolstad, Mary, Staff Member, Head Start, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 12 June 1990.

Lueck, Karen K.—Executive Director, Mid-Nebraska Community Services, Inc., Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 15 June 1990.

Langridge, James—Sales Manager, AT&T, Omaha, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 11 June 1990.

Longfellow, Gay—Sales Associate, Midland Partners, Kearney, Nebraska. Interviewed by Sharon Strover and Liching Sung, 12 March 1990.

Lueck, Karen K.—Executive Director, Mid-Nebraska Community Services, Inc., Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 15 June 1990.

Lynch, Chandler—Owner-Manager, Midtown Communications, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 14 June 1990.

Mayeski, John K.—Director, Calvin T. Ryan Library, Kearney State College, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 14 June 1990.

Michl, John A.—Director of Quality Assurance, Integrated Marketing Services, Outbound Division, Omaha, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 11 June 1990.

Miller, Stu—Director, Division of Research, Nebraska Department of Economic Development, Lincoln, Nebraska. Interviewed by Sharon Strover and Liching Sung, 9 March 1990.

Miller, Timothy J.—Manager, Telecommunications /Telemarketing, Cabela's Inc., Kearney, Nebraska. Interviewed by Sharon Strover and Liching Sung, 12 March 1990 and by Sung and Richard H. Cutler, 14 June 1990.

Moseman, Rod—Vice President, Economic Development, Greater Omaha Chamber of Commerce, Omaha, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 11 June 1990.

Muller, Bev—Director, Nebraska Department of Social Services, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 12 June 1990.

Munro, Pat—Executive Director, Kearney Area United Way, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 12 June 1990.

Nazem, Sufi M.—Professor, International Center for Telecommunications Management, University of Nebraska at Omaha. Interviewed via telephone by Sharon Strover, 9 July 1990.

Northway, Rosemary—President, Kearney Public School Board, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 12 June 1990.

Nugent, Gwen—Coordinator, Educational Telecommunications Services, Nebraska ETV Network, Lincoln, Nebraska. Interviewed by Sharon Strover and Liching Sung, 8 March 1990.

Pallas, Len—Vice President, Manufacturing, Coleman Powermate, Coleman Company, Inc., Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 12 June 1990.

Petersan, Donis N.—Economic Research Specialist, Nebraska Public Power District, Columbus, Nebraska. Interviewed by Sharon Strover and Liching Sung, 9 March 1990.

Peterson, Ron—Kearney District Manager, GTE North, Inc., Nebraska Operations, Kearney, Nebraska. Interviewed by Sharon Strover and Liching Sung, 13 March 1990.

Quinn, George H.—Development Program Director, Mid-Nebraska Community Services, Inc., Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 15 June 1990.

Richard, Frank, Jr.—Controller, Engine Components Division, Eaton Corporation, Kearney, Nebraska. Interviewed by Sharon Strover and Liching Sung, 9 March 1990.

Rockwell, Lee—Assistant General Manager, Educational Telecommunications, Nebraska ETV Network, Lincoln, Nebraska. Interviewed by Sharon Strover and Liching Sung, 8 March 1990.

Scriven, Bob—Agent Chair, Buffalo County Cooperative Extension Service, Kearney, Nebraska. Interviewed by Sharon Strover and Liching Sung, 10 March 1990.

Sheldon, Jane—Director of Logistical Services, Kearney State College, Kearney, Nebraska. 24 August 1990.

Sherdon, Herbert J.—Director of Telecommunications, Nebraska Public Service Commission, Lincoln, Nebraska. Interviewed by Sharon Strover and Liching Sung, 8 March 1990.

Simmons, Mary—Deputy Director, Business Recruitment Division, Nebraska Department of Economic Development, Lincoln, Nebraska. Interviewed by Sharon Strover and Liching Sung, 9 March 1990.

Sinnard, Peg—President, Parent and Teacher Organization, North Eastern Elementary School, Kearney, Nebraska. Interviewed by Sharon Strover and Liching Sung, 12 March 1990.

Thomas, Owen L.—Director, Public Relations and Advertising, Omaha, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 11 June 1990.

Turner, Richard D.—Pastor, First United Methodist Church, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 13 June 1990.

Vasquez, Keely A.—Area Manager, Cable USA, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 14 June 1990.

Waldron, David—President, Electronic Marketing Resource Group, Kearney, Nebraska. Interviewed by Sharon Strover and Liching Sung, 13 March 1990.

Wiebusch, Janice M.—Owner-Broker, Midland Partners, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 14 June 1990.

Winseman, Albert—Pastor, First United Methodist Church, Kearney, Nebraska. Interviewed by Liching Sung and Richard H. Cutler, 13 June 1990.

Chapter 5

Demopolis, Alabama: Where Industry Brings Technology to Rural America

I. General Introduction

A. *Why Demopolis?*

Demopolis is a small Southern town in Marengo County, Alabama, whose population of 7,800 is about equally divided between black and white citizens. It is located in west central Alabama at the scenic confluence of the Tombigbee and Black Warrior rivers, about an hour's drive east from Meridian, Mississippi, or a little over an hour south from Tuscaloosa, Alabama (Figure 5.1, page 114). The favorable economic status of Demopolis (Greek for "city of the people") contrasts with other parts of the rural U.S. South and owes considerable debt to the existence of two large paper mills whose owners are committed to investing in new production technologies; to business influentials who have long sought a policy of economic diversification; and to civic leaders from both ethnic communities who have upheld racial harmony and cooperation as fundamental to progress. The selection of Demopolis for this study was influenced by the research of Amy Glasmeier (1989), who has identified pulp and paper mills as an important "technologically based" industry in rural America. We felt that Demopolis was a potential success story, one which might be transferable to other rural regions seeking a route out of poverty.

As described in several of our prior telecommunications studies (e.g., Schmandt, Williams, & Wilson, 1989), telecommunications has been a necessary but not entirely sufficient condition for the modern development of Demopolis. Both for internal networking and for geographically dispersed management, telecommunications is a major component of technological upgrading of paper mills and has potential impacts upon how work is "informated," a concept introduced in the writings of Shoshana Zuboff in her book *In the Age of the Smart Machine* (1988). Local as well as long-distance telecommunications services are increasingly necessary for the development of small businesses, a key to economic diversification of a rural area, and a possibly underused component in the Demopolis story. As in the other sites in this study, we inquired about the roles that local broadcasting and cable service play in community development. Finally, the Demopolis City School District serves as an example of how distance education—an important investment for training the rural work force—can develop relative to local, state, or federal educational policy.

In spatial terms, Demopolis and the contiguous areas also represent a "hub" type of economic situation, that is, where much of what develops in Demopolis will depend on patterns of commerce in the region. This region includes an adjacent three-county area, the Marengo County seat, Linden, and the Naheola Mill in Pennington.[1]

Until 1948, Demopolis was a typical small town whose main industry consisted of several small sawmills. Its economy began to diversify in 1950, when a women's lingerie plant called Vanity Fair was built, and even more so in 1957, when Gulf States Paper built one of the most modern paper plants of its kind in the world just four miles outside of Demopolis. Although the paper plant has not made many significant changes until now, it plans to spend an estimated $400 million over the next four to five years on improvements that include significant expansion and technological upgrading.

The second plant is the Naheola Mill of the James River Corporation. It is located approximately 40 miles outside of Demopolis in Choctaw County, but about 30% of its employees live and shop in the Demopolis area. The mill employs nearly 2,000 workers and uses many of the latest production technologies.

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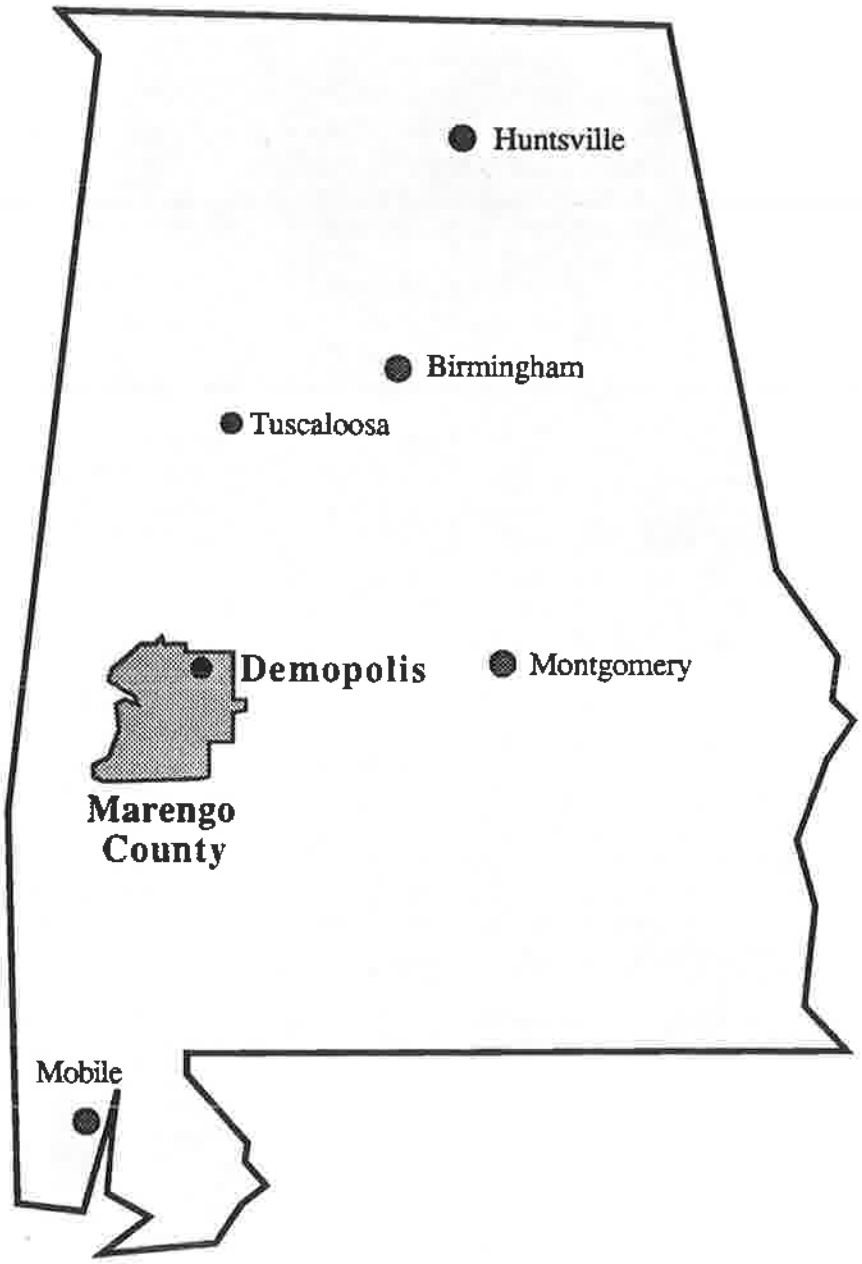
[1] For further discussion of "hubs" see Williams (1991).

Figure 5.1. Location of Demopolis and Marengo County, Alabama.



Although telecommunications surely is not the most dominant use of technology in these mills, it is a necessary component. Additionally, its uses not only affect the nature of mill work and management but also raise implications for other areas such as the regional educational system and its uses of telecommunications. In short, pulp mills are large employers and high value-added businesses. When successful, they can bring prosperity to an otherwise depressed rural area.

In general, Demopolis presents numerous examples of the importance of telecommunications for small businesses and the dilemma many face in acquiring the proper equipment and consulting services, as compared with their urban counterparts. Demopolis also provides many instances of telecommunications uses in local services, administrative areas, and information and culture.

Finally, Demopolis is important to us as a Southern site, and one with a population about equally divided between black and white residents. It is a relatively prosperous community in the midst of a larger, poorer region of Alabama. These contrasts should provide insights into Southern rural development.

B. *About the Area*

1. *Marengo and Choctaw Counties.* Demopolis is located in Marengo County in west central Alabama at the confluence of two major rivers—the Black Warrior and the Tombigbee. The fertile area near the rivers is referred to as the "Black Belt," due to the rich soil. The population is 7,800, and demographics show 49% to be black and 51% white.[2]

The nearest town to Demopolis is Linden. Linden is just south of Demopolis and is the Marengo County seat. Its population is 2,750. Linden is also centered around the wood and paper industries, and houses one of Alabama's many textile manufacturers. Farming is also part of this racially mixed town.

Butler is 30 miles southwest of Demopolis, and near the Mississippi border. Its population is 1,882. The area's largest industry is the Naheola Mill of the James River Corporation in nearby Pennington, which employs 2,000, and the Vanity Fair lingerie mill. The textile industry provides more than 800 jobs in Choctaw County.

In both counties, less than half of the population has a post-secondary education. Fewer than 10% exceed a bachelor's degree.

2. *The critical factor of race relations.* Although our research interests were on technology and economic growth, one cannot escape the role of race relations in the history of the area as well as its importance for modern development. This point was brought up by respondents in many of our interviews. Basically, the lesson provided by Demopolis is that harmonious relations (or at least the absence of strife) have been a basis for economic progress.

In most of our interviews, residents said that they felt there was less racial tension in Demopolis than most Alabama towns. The police chief, Charles Avery, is black, as is about 50% of the police force. Two of the five city council members are also "of color" (Charles Avery, interview, 8 March 1990).

Police Chief Avery spends a great deal of time in the community. His activities include public speaking to civic groups, antidrug presentations to school groups, and a concerted effort to upgrade the base station for his police force. Avery also hosts the Sunday morning gospel radio program at WXAL-AM in Demopolis; the six-hour show allows Avery to perform "community service for [his] people."

Thomas Moore, who is the local revenue examiner for the State of Alabama Department of Revenue, is another active black resident of Demopolis. Moore sits on the

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[2] These and the following figures were taken from a variety of standard statistical sources and from respective local governments and chambers of commerce.

Demopolis school board and has run for city council (Thomas Moore, interview, 8 March 1990).

Moore said most blacks who succeed in their education leave Demopolis; they emigrate to Atlanta, New York, Los Angeles, or Birmingham. The ones who stay in the town live a life both separate from and unified with the local white population.

In Demopolis, the churches and school dances are color separated, while the schools themselves are integrated, Moore said. Morningstar is the largest black church. One denomination, St. Leo's Catholic Church, has a strong black and white congregation. Black residents, Moore said, prefer a minister who is native to Demopolis. Ten years ago, Moore said, a city revival was held which was well attended by the entire population of Demopolis.

The James River mill, one of the area's largest employers, is actively investing in local training programs to obtain the qualified workers—black and white—it needs. Although blacks currently have a respectable share of paper-mill jobs, their numbers will probably increase due to these training efforts, eventually moving into supervisory positions. Companies such as LaFarge's Citadel Cement and James River seem to have fair hiring policies. Moore said the revenue department has a black supervisor and that many revenue examiners are black, but only whites hold positions in the income tax division. The personnel director is also black.

Within the operation of the city of Demopolis, some separation also exists. The school board pays $350 per month, which makes it prohibitive to the less wealthy blacks. The city council has had two black and three white members. This separation was eased somewhat by reapportionment mandated by the federal Justice Department. Instead of the entire city voting for each council member, now each of five districts elects one council seat. These districts break into two black, two white, and one mixed. Mayor Austin Caldwell said that, because the electorate has changed, members now have a tendency to favor district-positive measures rather than those which can help all of Demopolis. However, since the new districts have only been in effect for one local election, the mayor said he can already see new cooperation (Austin Caldwell, interview, 17 February 1990).

The new 1990 census should be important to racial representation in Demopolis. In the past, minorities have been undercounted during the 10-year tally, especially in black areas. This can lead to under-representation in legislative bodies and the loss of federal and state grants (Brown, 1990).

Whether or not those interviewed agreed on the exact status of race relations, most everyone interviewed—black and white—agreed that economic progress depends upon harmony. That the Demopolis school district has become successfully integrated and is often among the reasons residents move to town is perhaps the best example of this generalization.

II. Marengo County Economic Analysis

A. *From Agriculture to a Diversified Economy*

In the broadest sense, Demopolis is another example of how a rural area evolves away from an agrarian economy. Fortunately, in addition to the presence of the two large pulp mills, Demopolis has also attracted other businesses, which gives it the protection of economic diversification. The recent opening of the Tombigbee Waterway makes it possible for boats to navigate (through a system of locks) all the way to the Great Lakes. This and the local marina may contribute to tourism and recreational businesses in Demopolis (John Northcutt and Hugh A. Lloyd, interviews, 2 August 1990).

The town's agricultural roots date back to the early 19th century. Records indicate that Spanish explorer Hernando DeSoto passed through the area in 1540. The Indian name for the land originally was Pafalaya, not Alabama. Chief Tuscaloosa, the Black Warrior, ruled the land. Next, the area was settled by French expatriates of Napoleon's regiments.

Demopolis was established in 1817, with Linden following in 1823. Demopolis planners had hoped to create a local mecca for grapes and olives, owing to its location in the Black Belt and the presence of rich, black soil. The crops failed, however, and were replaced by cotton. From 1830 to 1860, plantations dominated Demopolis.

Whereas agriculture dominated the local economy at the turn of the century, Demopolis began to attract industry in the 1930s and 1940s, culminating in the building of the Gulf States Paper mill in 1957. According to Glenn Willoughby, managing editor of the *Demopolis Times*, Jewish families established mercantile businesses in Demopolis in the early to middle 20th century and showed local residents how to recruit large corporations to the town (Glenn Willoughby, interview, 9 March 1990). Although the two large pulp mills are by far the largest employer in the area, there are other businesses sufficient to support a diversified economy. Experience has shown this is preferable to trading agriculture for another single-source economy (like oil, a single manufacturer, or a single mill).

Current Demopolis industries include wood and forest products, textiles, cement, plastic containers, chemicals, catfish, and a trucking company. Marengo County Commissioner W. J. ("Billy") Miles said the town has about as much large industry as it can contain, due to landowners who would rather hold than develop their acres. There are, however, two industrial parks in the area that could accommodate limited new industry (William J. Miles, interview, 9 March 1990).

Marengo County currently has an unemployment rate of 7%, based on a labor force of 9,490. The Alabama state average is 6.7%, with much higher rates typically found in the Black Belt area. Nearby Greene, Perry, and Wilcox counties exceed 11.5% unemployment.

Adjacent Choctaw County is dependent upon the wood and textile industries. The county's unemployment rate rose over the past year from 11.6% to 14%, twice that of Marengo County. Miles said many of the workers at the James River plant reside in Demopolis. This may skew the employment figures for Choctaw and Marengo counties, if employment rates are based on county of residence, rather than employment. Marengo County has a $4.6 million budget. The largest portion supports the sheriff's department (William J. Miles, interview, 9 March 1990).

The area is an interesting economic study because it has managed to attract new jobs in the 1980s, despite the fact that the majority of people in Marengo County are not well educated and incomes are low.

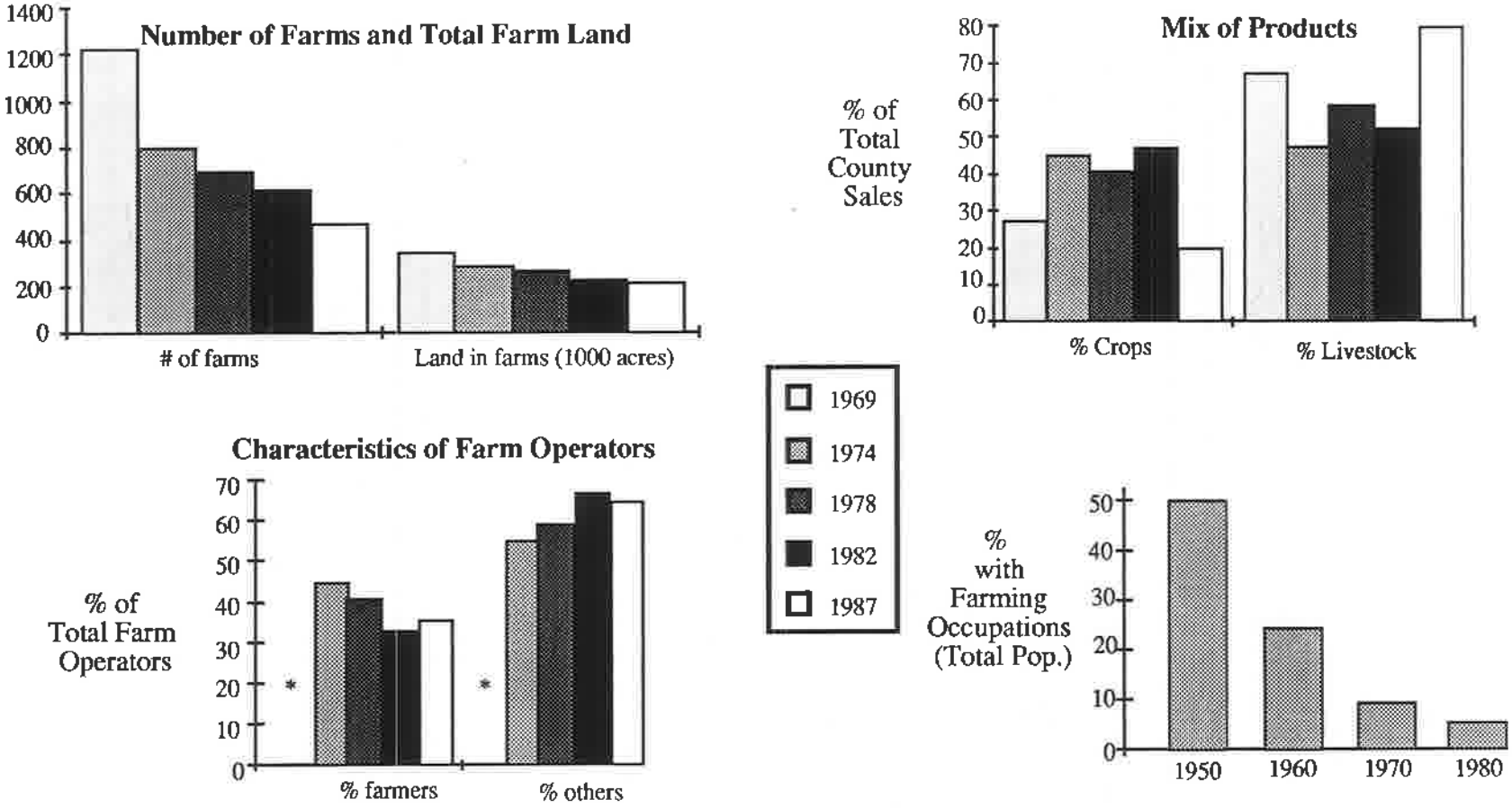
B. *Economic Trends*

1. *Agricultural sector*. The agricultural sector of Marengo County, though once prominent in 1950, has been declining ever since. In 1950, the U.S. Census indicated that nearly 50% of the employed people in Marengo County worked in agriculture. However, by 1960, only 25% of the labor force was in agriculture, and the percentage has since decreased from 8% in 1970 to 5% in 1980, as shown in Figure 5.2 (page 118).

In addition to the decreasing percentage of farmers, the fewer number of farms in the county is another indication of an agricultural decline in Marengo County. In 1969, there were more than 1,200 farms in the county, but by 1987, the number had dropped to only 500. As the number of farms lessened, so too did the number of acres of farmland. The declining amount of total farm acreage, coupled with a declining number of farms, indicates that some farms were not just taken over by others but were no longer used for agriculture.

The mix of farm products in Marengo County indicates that livestock is generally more important than crops, especially in the last reported year. Because data are only reported in specific years, it is difficult to determine whether the 1987 decrease on livestock is a long-term trend or just a yearly aberration. However, it does appear that the farmers who remain in Marengo County are generally having to turn to other occupations for their

Figure 5.2. Selected Farm Characteristics, Marengo County, Alabama; 1969-1987



* data not available for 1969

SOURCES: U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture*, 1974, Volume 1, Part 2, Alabama; 1978, Volume 1, AC78-A-2; and 1987, AC87-A-2; *U.S. Census of Population: 1950, Characteristics of the Population*, Part 2, Alabama, Table 43; *U.S. Census of Population: 1960, Characteristics of the Population*, General Social and Economic Characteristics, Part 2, Alabama, Table 84; *U.S. Census of Population: 1970, Characteristics of the Population*, General Social and Economic Characteristics, Part 2, Alabama, Table 122; and *U.S. Census of Population: 1980, Characteristics of the Population*, Part 2, Alabama, Table 177.

livelihood. Since 1974, a smaller percentage of farmers list farming as a full-time occupation, while a greater percentage are turning to other occupations to supplement their income.

2. *Nonagricultural economic base*. In 1950, the furniture, lumber, and wood industry was the only export industry within Marengo County with a location quotient of approximately 8.5.[3]

Figure 5.3 (page120) shows that although manufacturing as an aggregate industry was not wholly an export or base industry, the furniture, lumber, and wood component of manufacturing was a solid export business for the area. The only other industry in 1950 with a location quotient over 1.0 was services, which had a quotient slightly greater than 1.0.

Besides location quotients, the employment figures shown in Figure 5.4 (page 121) also illustrate the importance of furniture, lumber, and wood to the area's manufacturing sector as well as to the economy as a whole. In 1950, the furniture, lumber, and wood industry employed more than 1,000 people, which is greater than two-thirds of all manufacturing employment in the county and 22% of the nonagricultural employment. The services industry, though not a basic industry for the county, was significant as it employed more than 1,500 individuals.

By 1960, Marengo County still depended largely on the furniture, lumber, and wood industry, but apparel and other fabricated textiles soon emerged as an additional export industry, with a location quotient of approximately 4.0. Employment trends from 1950 to 1960 reflect the emergence of the apparel industry in Marengo County: In 1950, there were only 45 people employed in the apparel industry; by 1960, there were more than 400 employees. Another important employment trend during this period was the growing strength of Marengo County's manufacturing industry. Manufacturing employment rose from 1,467 of all nonagricultural employment to more than 2,100, despite a drop of approximately 200 employees in the furniture, lumber, and wood industry. The reason that manufacturing employment increased, even though timber employment decreased, was the larger number of apparel jobs and an increase in the category of "other nondurable goods and nonspecified manufacturing." However, since this category is an aggregate of "leftover industries," it is impossible to identify the specific industry which provided the jobs.

Figure 5.5 (page 122) shows that during the period from 1967 to 1982, Marengo County had a fairly stable level of employment. However, the nonagricultural employment rate of Marengo County increased nearly 25% from 4,644 in 1982 to 6,030 in 1987. The sudden and substantial increase in employment decreased the unemployment rate from 15% in 1982 to only 7.1% by 1987.

Figure 5.5 also shows that the population decreased slightly from 1982 to 1987, even though employment increased. Since the estimates are that part of the population decrease was due to an out-migration of 1,800 people, it appears that some residents either could not find work or felt there were better opportunities elsewhere.

The industrial breakdown of the economic trends of Marengo County during the 1967-1987 period are shown in Figure 5.6 (page 123), as are the location quotients for Marengo County. The lumber and wood industry was the primary basic industry throughout this period, although the electric, gas, and sanitary service industry (primarily electric supply) was also a base industry up until 1972, but declined in importance thereafter.

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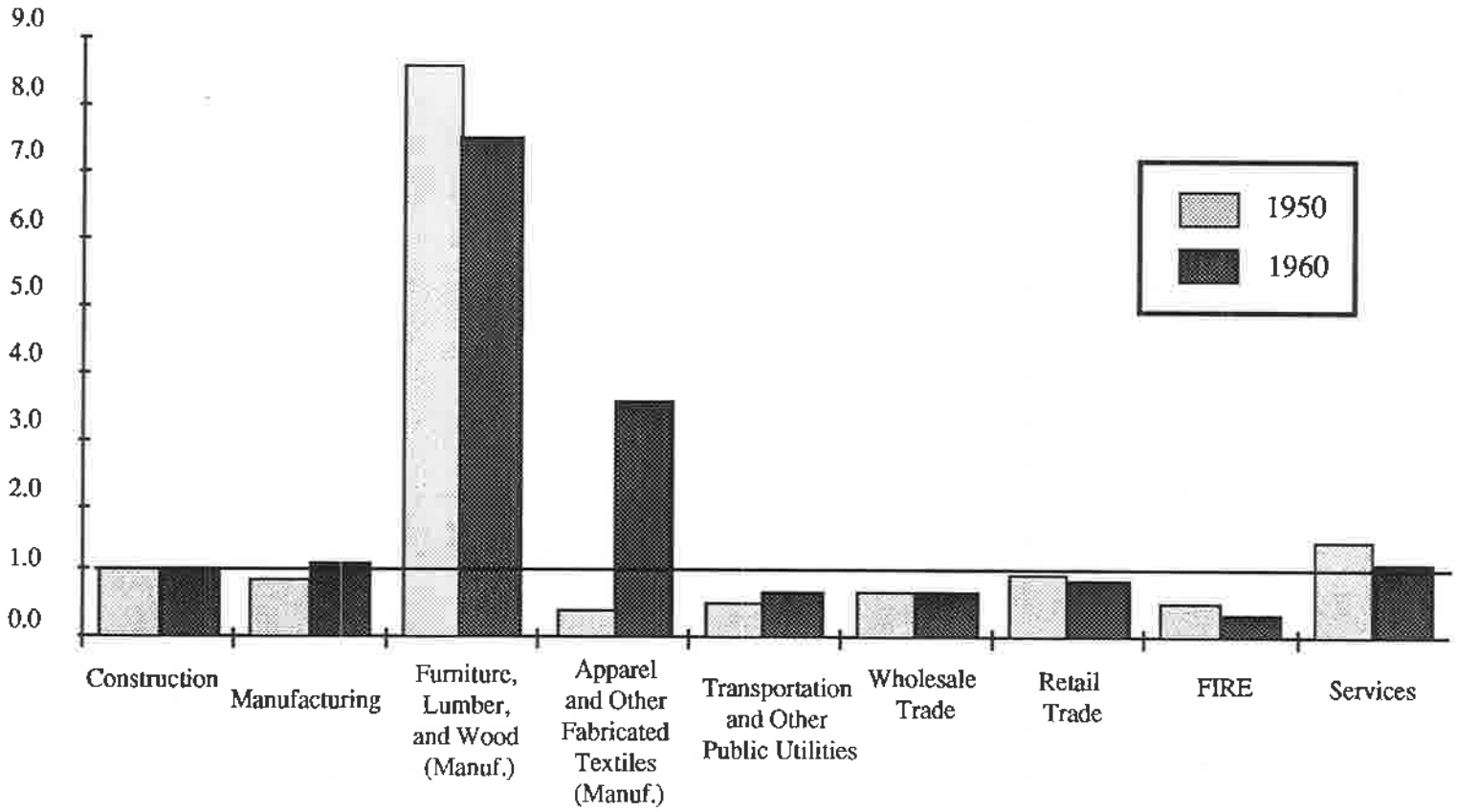
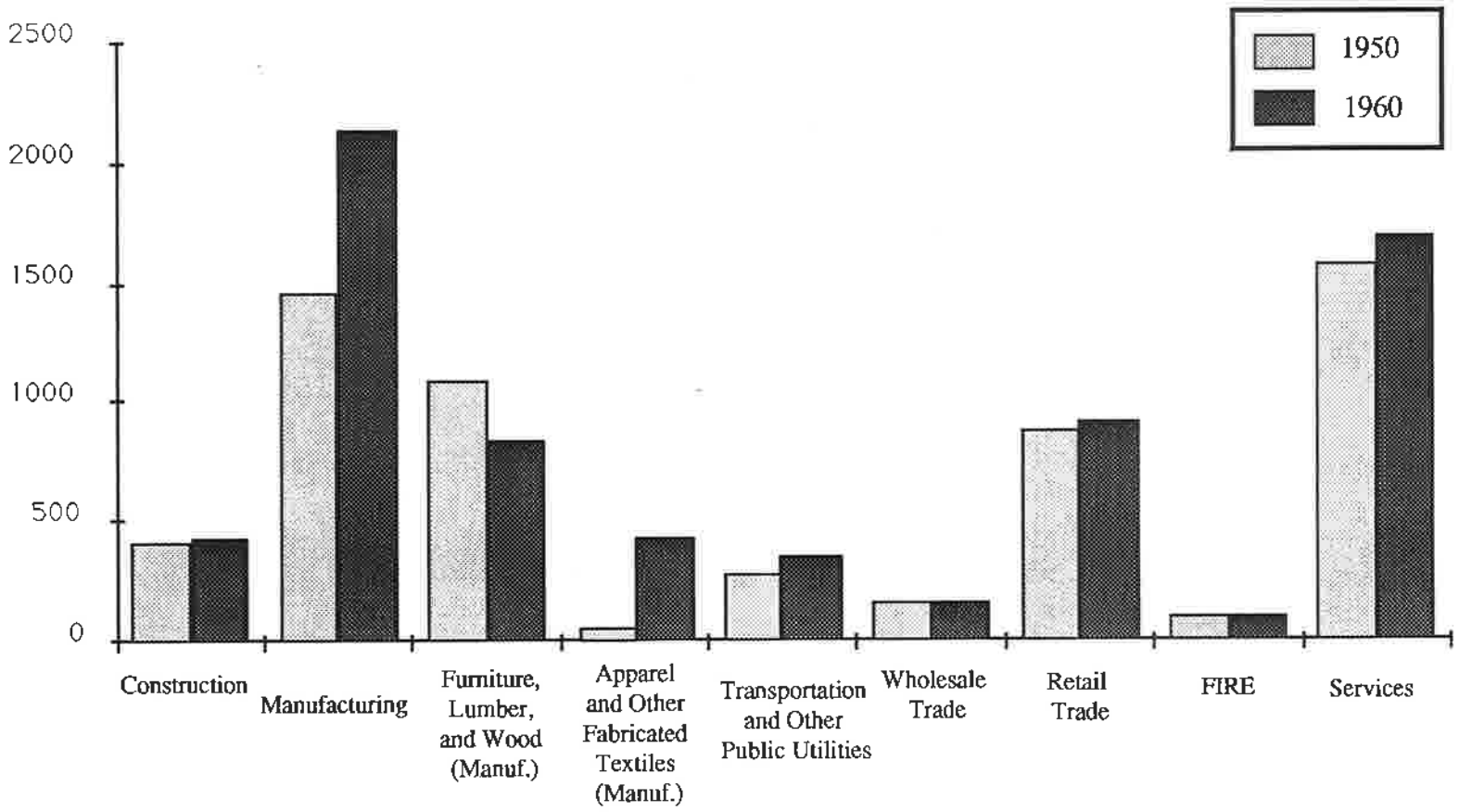
[3] A location quotient is the local employment in a sector relative to the average of all U.S. rural counties. A quotient of 1.0 indicates that the local average is the same as the national rural one.

Figure 5.3. Industry Location Quotients for Marengo County, Alabama; 1950 and 1960



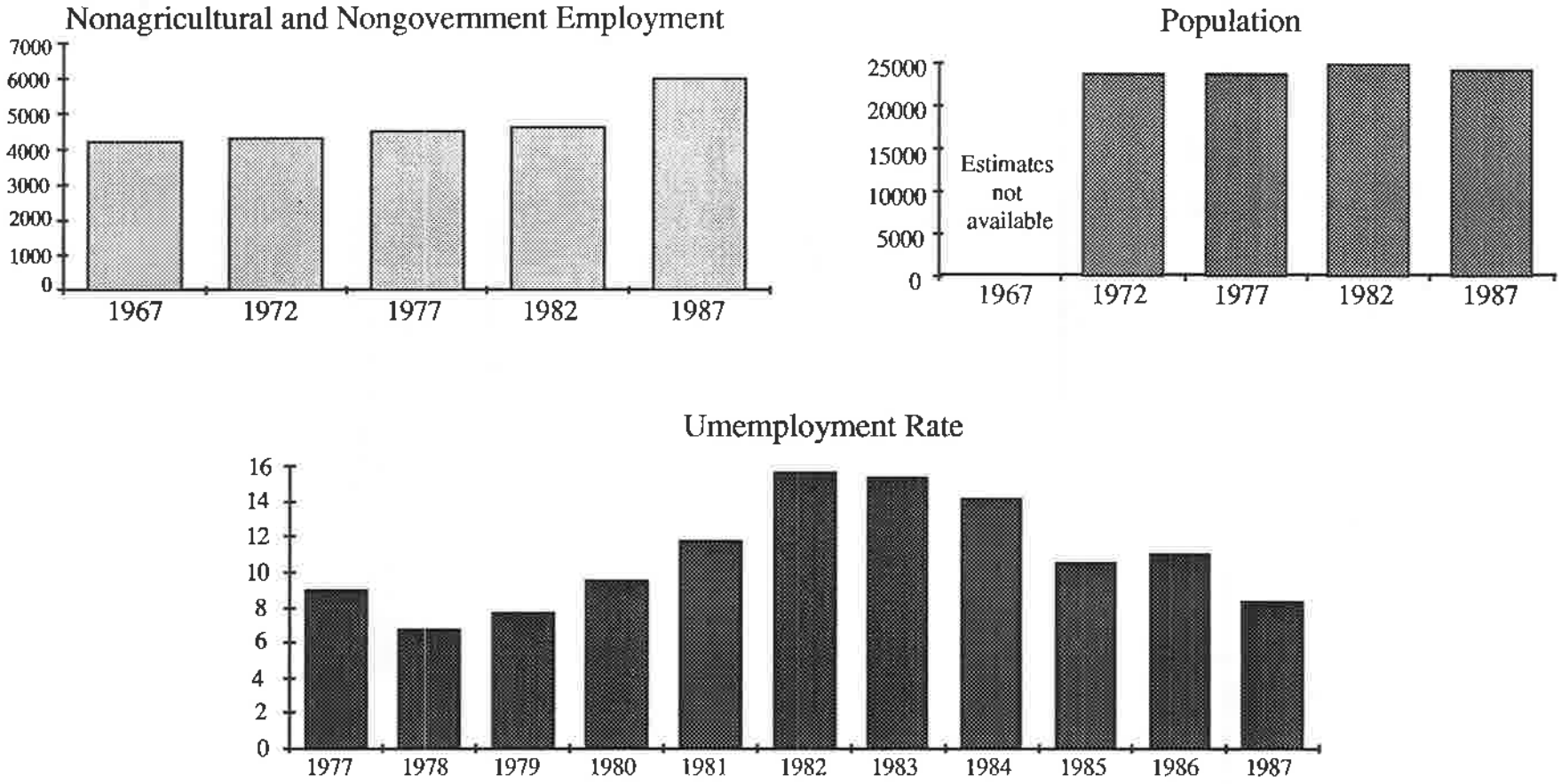
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1950, Characteristics of the Population*, Part 1, U.S. Summary, Table 130, and Part 2, Alabama, Table 43; and *U.S. Census of Population: 1960, Characteristics of the Population*, General Social and Economic Characteristics, Part 1, U.S. Summary, Table 91, and Part 2, Alabama, Table 85.

Figure 5.4. Industry Employment for Marengo County, Alabama;



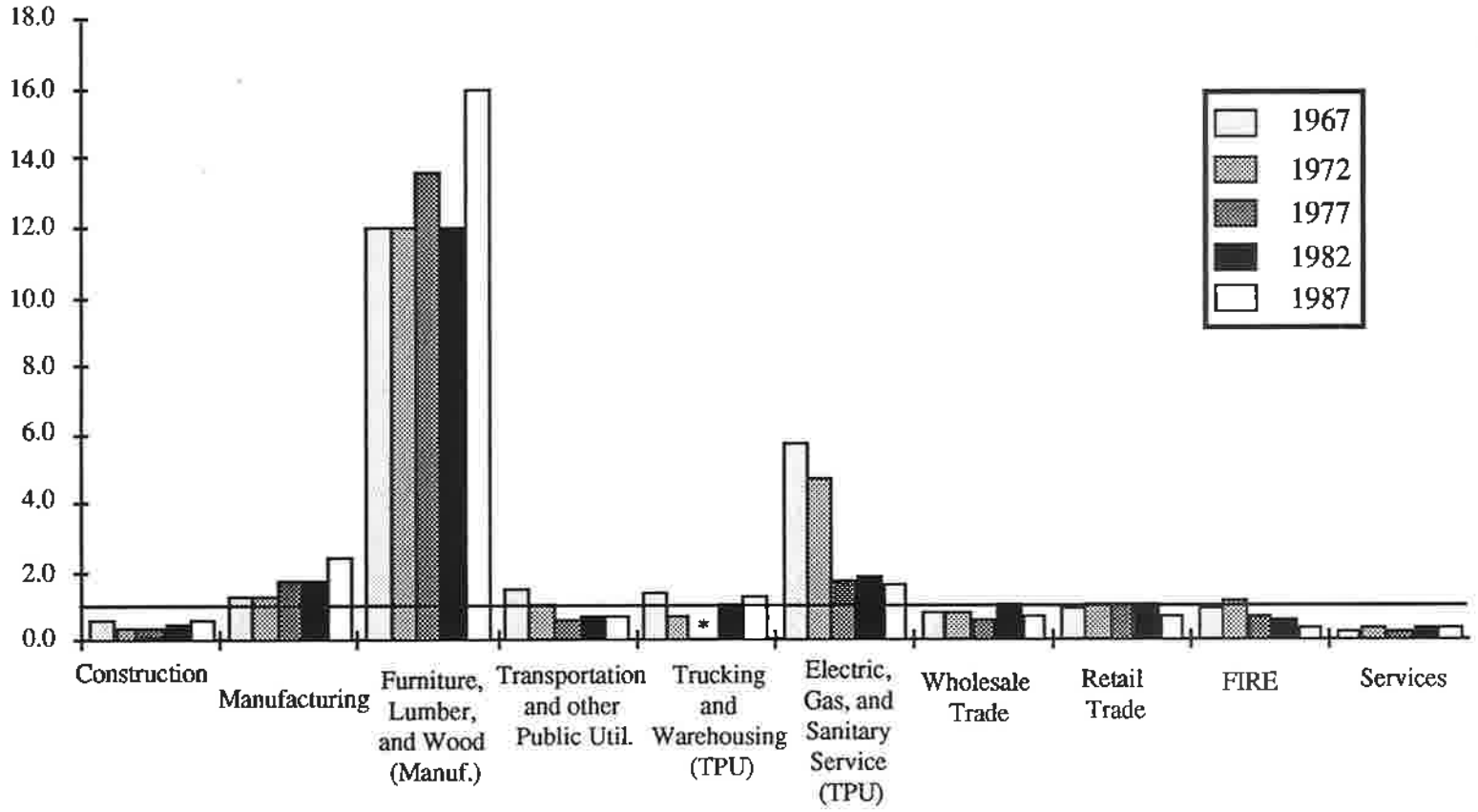
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1950, Characteristics of the Population,* Part 1, U.S. Summary, Table 130, and Part 2, Alabama, Table 43; and *U.S. Census of Population: 1960, Characteristics of the Population,* General Social and Economic Characteristics, Part 1, U.S. Summary, Table 91, and Part 2, Alabama, Table 85.

Figure 5.5. Employment, Population, and Unemployment Rate for Marengo County



SOURCES: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*, CBP-67-2, CBP-72-2, CBP-77-2, CBP-82-2, and CBP-87-2; *Federal-State Program for Population Estimates*, Series P26, No. 129, and Series P26, No. 78-2; *Current Population Reports: Local Population Estimates*, Series P26, No. 85-AL-C, and Series P26, No. 88-S-SC; and *Alabama Business*, Vol. 47: No. 6, Vol. 48: No. 3, Vol. 50: No. 3, Vol. 52: No. 2, Vol. 53: No. 1, Vol. 53: No. 11, Vol. 55: No. 11, Vol. 57: No. 11, and Vol. 59: No. 2.

Figure 5.6. Industry Location Quotients for Marengo County, Alabama; 1967-1987



* Trucking and warehousing employment was not disclosed for Marengo County in 1977.

SOURCES: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*, CBP-67-2, CBP-72-2, CBP-77-2, CBP-82-2, and CBP-87-2; and CBP-67-1, CBP-72-1, CBP-77-1, CBP-82-1, and CBP-87-1.

Although specific employment was not disclosed in *County Business Patterns*, the apparel industry remained an export industry in Marengo County. During the 20-year period, *County Business Patterns* indicates that at least two women's apparel establishments employed more than 500 people during this time; this employment level is high enough to classify apparel as an export industry for the county.

Another manufacturing industry that arose as an export industry during this period was paper and allied products, an industry related to the processing of lumber into usable products. Like the apparel industry, employment totals in the paper and allied products industry were not disclosed during the period, but approximations could be inferred from the classifications of the establishments. Using these, we can infer that employment in the paper and allied products industry was less than 500 in 1977, but rose to more than 1,000 by 1987.

One question raised by Figure 5.6 is why location quotients are so low for construction, services, and financial, insurance, and real estate (F.I.R.E.). The quotients indicate that these industries are a much smaller percentage of Marengo County's total employment than they are for the nation as a whole. They also indicate that the base manufacturing industries are not producing much local secondary development.

The answer to this lack of growth was found in subsequent interviews with Demopolis citizens serving in these industries. As pointed out by Robertson Banking Company's Hugh A. Lloyd, board chairman, and John Northcutt, president, many people listed in the Marengo County work force may not live in Demopolis or even the county (John Northcutt and Hugh A. Lloyd, interviews, 2 August 1990).

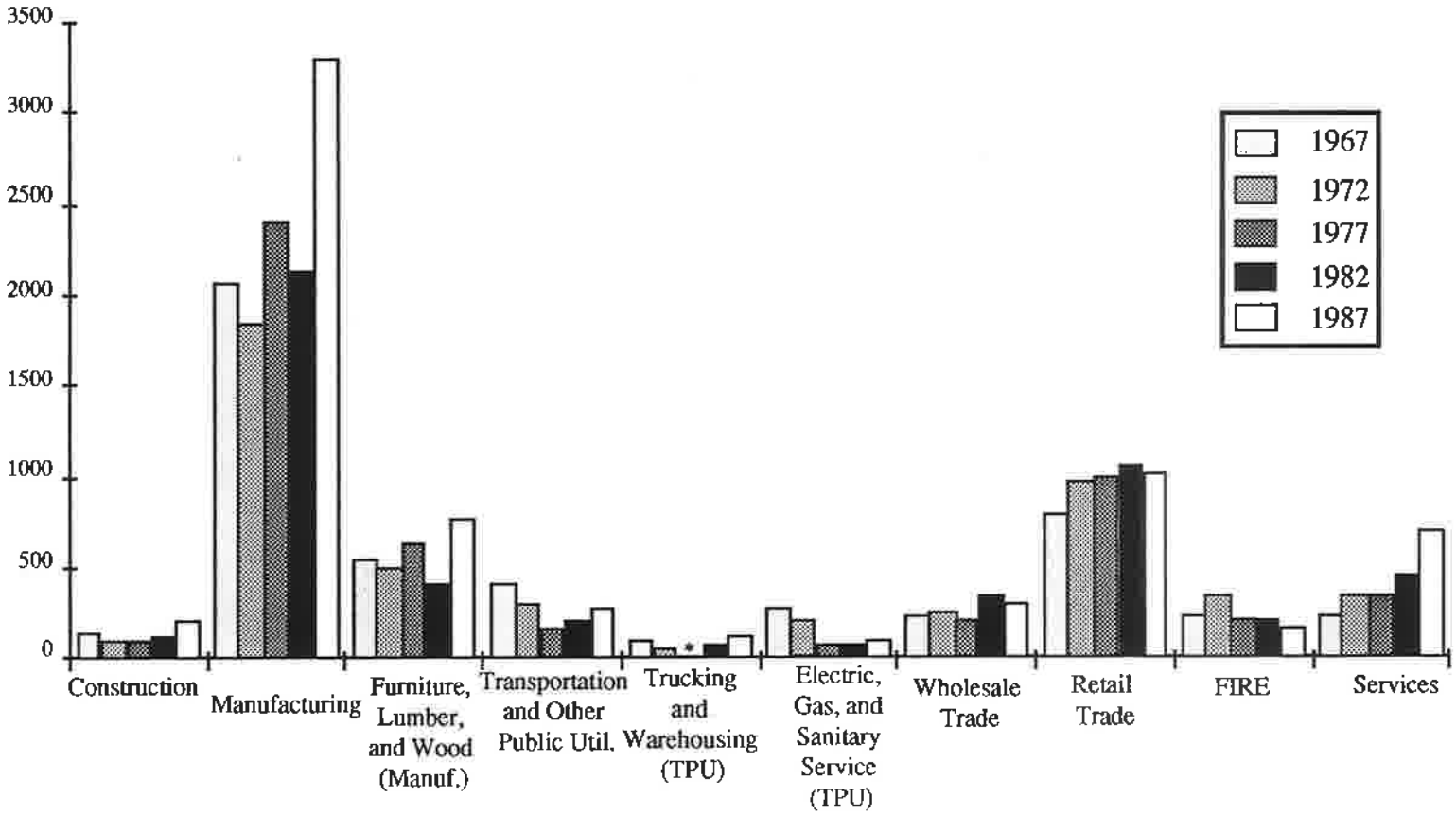
Demopolis is in the northernmost part of Marengo County, which is in west central Alabama. Because of a land shortage, it is more expensive to live in Demopolis than nearby towns or in the countryside. This is reflected in construction figures, finance and real estate businesses, and retail trade in Demopolis. Also, some of the higher-paid executives of the larger local industries may live in Meridian, Mississippi, preferring a more urban setting.

Real estate business owner Mem Webb echoes the above explanation, describing how large tracts held by often absentee landowners have placed a physical limit on the growth of Demopolis. Thus, the real estate business has not grown appreciably relative to employment statistics and probably will not unless conditions change (Mem Webb, interview, 2 August 1990).

Employment figures shown in Figure 5.7 (page 125) indicate that manufacturing employment fluctuated between 1967 and 1982, but demonstrated a dramatic increase of more than 1,000 jobs from 1982 to 1987. This was a result of employment increases in the lumber and wood industry and in the paper and allied products industry. A more disaggregated look at the paper and allied products industry shows that during the 1982 to 1987 period, a paper board establishment employed more than 250 people located within the county, adding to the one large establishment already present.

In summary, from 1967 to 1987, Marengo County depended primarily on manufacturing. The manufacturing industry—comprised of the lumber and wood, paper and allied products, and apparel sectors—was a very significant component of the area's economy. Although the manufacturing industry showed little growth from 1967 to 1982, it had a location quotient over 1.0 for each period after 1977 and showed substantial employment gains from 1982 to 1987. This increase in manufacturing employment helped reduce the county's ever-escalating unemployment rate from over 15% in 1982 to only 7.1% by 1987. The establishment of the paper and allied products industry, as well as the continued survival of the lumber and apparel industries, indicates that Marengo County has a substantial manufacturing base for a small rural county. There is, however, less growth in the secondary economy due to the dispersion of the population among the adjacent counties, the aforementioned higher costs of living, and limits to growth in Demopolis.

Figure 5.7. Industry Employment for Marengo County, Alabama; 1967-1987



* Trucking and Warehousing Emplyment was not disclosed for Marengo County in 1977.

SOURCES: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns,* CBP-67-2, CBP-72-2, CBP-77-2, CBP-82-2, and CBP-87-2; and CBP-67-1, CBP-72-1, CBP-77-1, CBP-82-1, and CBP-87-1.

C. *Demographics*

1. *Overview.* In 1980, the racial breakdown of Marengo County was 53% black and 45% white. The population is poorly educated, higher than average in the poverty sector, and primarily consists of people in low-skill occupations. When compared to other rural areas, the population also has a low percentage in the labor force

The educational characteristics of Marengo County indicate that the county residents are less educated than the national average and also less educated than the rural average. Figure 5.8 (page 127) shows that in 1980, less than 50% of both males and females in Marengo County had a high school education. Even though there is little educational difference between males and females in Marengo County, both genders are much less educated than other rural areas and the nation as a whole.

With regard to college education, Marengo County residents are relatively poorly educated. Only 9% of the males and 8% of the females in Marengo County in 1980 had four years of college. For males, the percentage with four years of college is less than half of the rate for the nation as a whole, and approximately 4% less than other rural areas. For females, although their rate of obtaining a college education is comparable to that of other rural areas at approximately 8%, they are still much less educated than other females in the nation.

As shown in Figure 5.9 (page 128), blacks had substantially lower levels of educational attainment than whites (1980 U.S. Census).

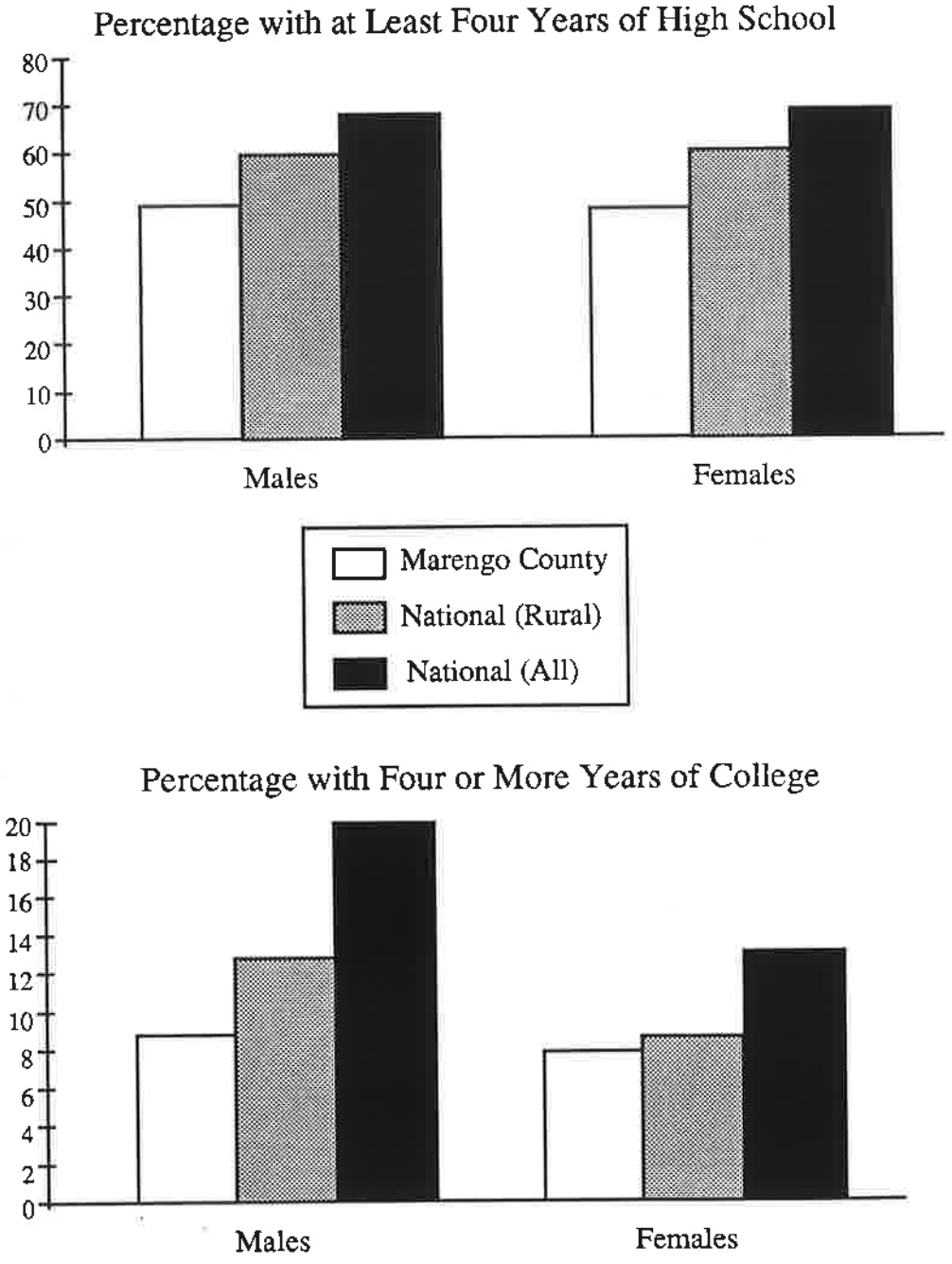
2. *Labor force participation.* Trends of labor participation in Marengo County reveal an increase of females in the labor force, but also show a decrease of male participation. Figure 5.10 (page 129) illustrates that for males, the percentage in the labor force steadily declined from nearly 80% in 1950 to 65% by 1980. For females, the labor force participation rate slowly climbed from 30% in 1950 to 40% in 1980. A comparison of Marengo County participation rates in 1980 to that of both the national population and the national rural population shows that both male and female participation rates in Marengo County are less than those for the national groups.

3. *Occupation profiles.* Occupation profiles for Marengo County show that workers there are less likely to have occupations which require education and skills than their counterparts around the nation. For the total population in Marengo County in 1980, 33% of the work force were operators, fabricators, or laborers. Figure 5.11 (page 130) shows that the operator, fabricator, and laborer occupations are more likely to exist in Marengo County than in either the nation or other rural areas. These occupations are generally low skilled when compared to management, administration, precision production, crafts, and repairs—vocations less common in Marengo County. Figures 5.12 (page 131) and 5.13 (page 132) show occupational contrasts of the black and white populations.

Two conclusions can be drawn from the high number of low-skill occupations in Marengo County. The first is that the industries in Marengo County must be more labor intensive and less in need of managers and administrators than other industries. However, it is possible that administrators have been brought into the area by the companies, and therefore would not be included in the occupation profile. The second conclusion is that the low degree of education in Marengo County is likely associated with the low-skill nature of the county's jobs.

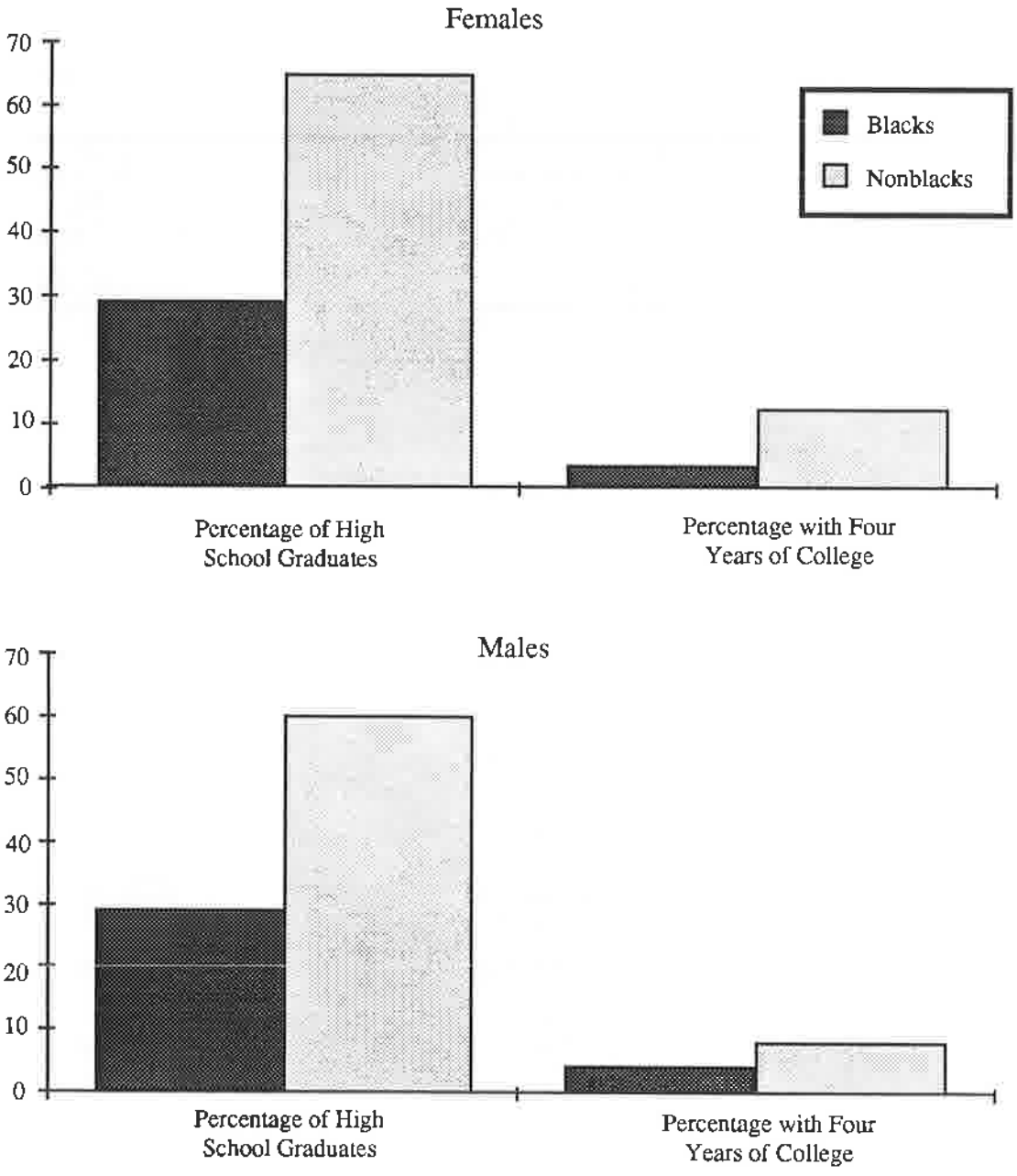
4. *Poverty statistics.* As might be expected from a county with a low degree of education, a low labor participation rate, and a high frequency of low-skilled occupations, Marengo County shows relatively high poverty statistics. In 1970, poverty rates for both families and persons were well above the average for the nation and other rural areas. Not only were rural residents slightly more likely to fall below the poverty line than residents in the nation as a whole, but residents in Marengo County were at least two times more likely to live in poverty than other rural residents. By 1980, poverty rates in Marengo County had dropped, but were still twice as high as those for the nation and other rural areas (Figure 5.14, page 133).

Figure 5.8. Educational Characteristics of Marengo County, 1980



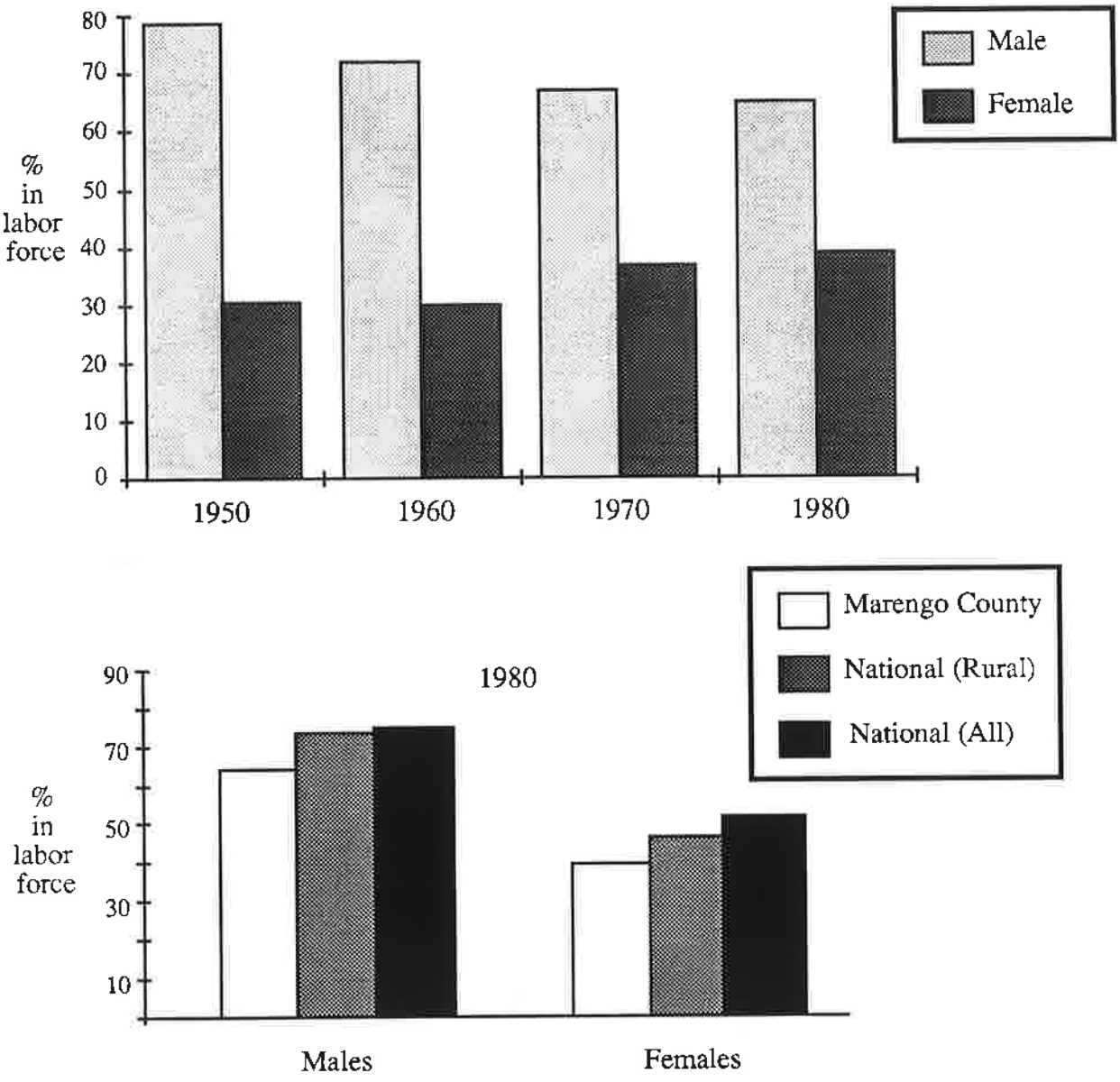
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1980, Characteristics of the Population,* General Social and Economic Characteristics, Part 2, Alabama, Table 175; and Part 1, U.S. Summary, Table 102.

Figure 5.9. Educational Characteristics for Blacks and Nonblacks in Marengo County, 1980, by Sex



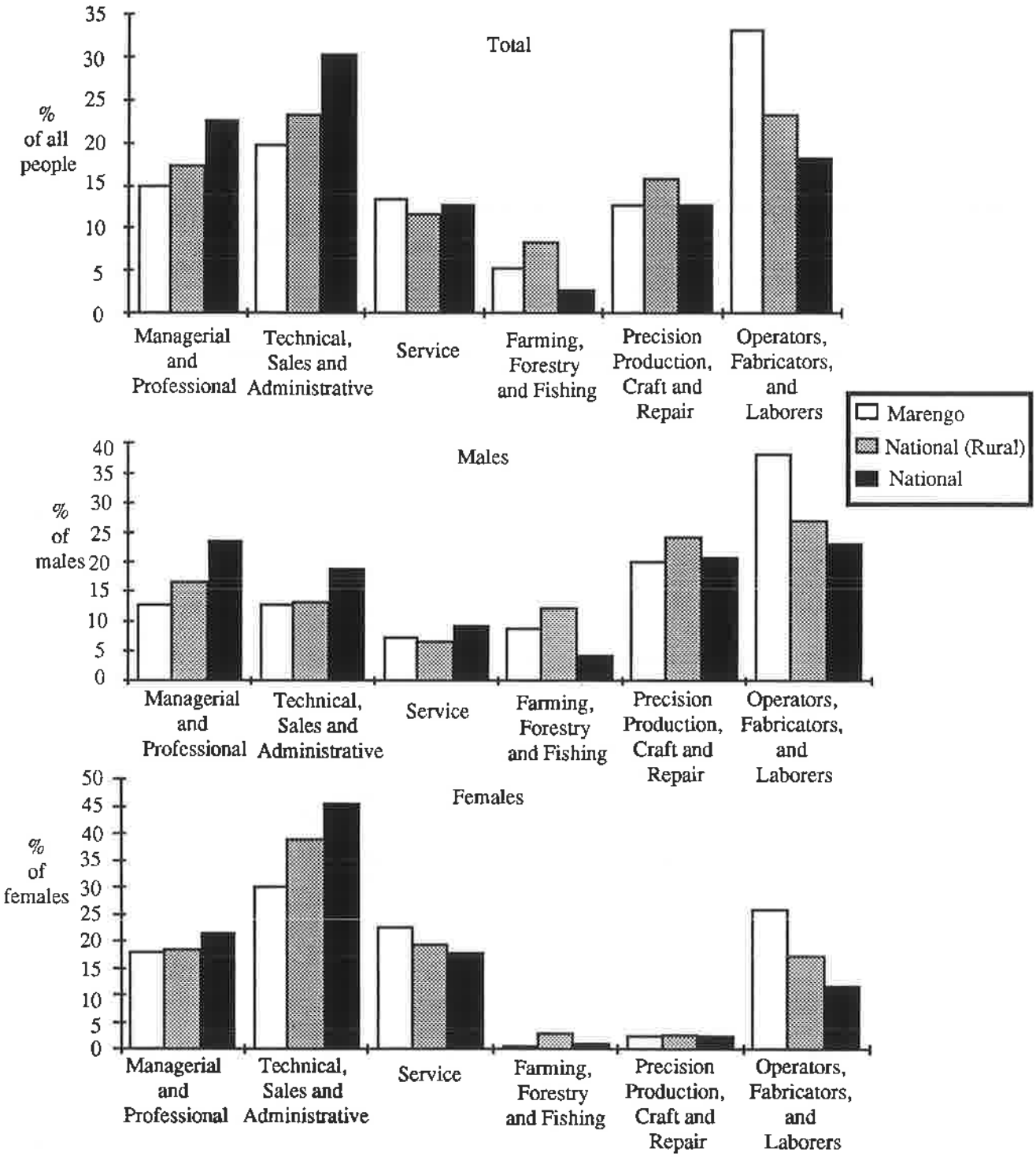
SOURCE: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 2, Alabama, Tables 175 and 182.

Figure 5.10. Labor Force Characteristics, Marengo County



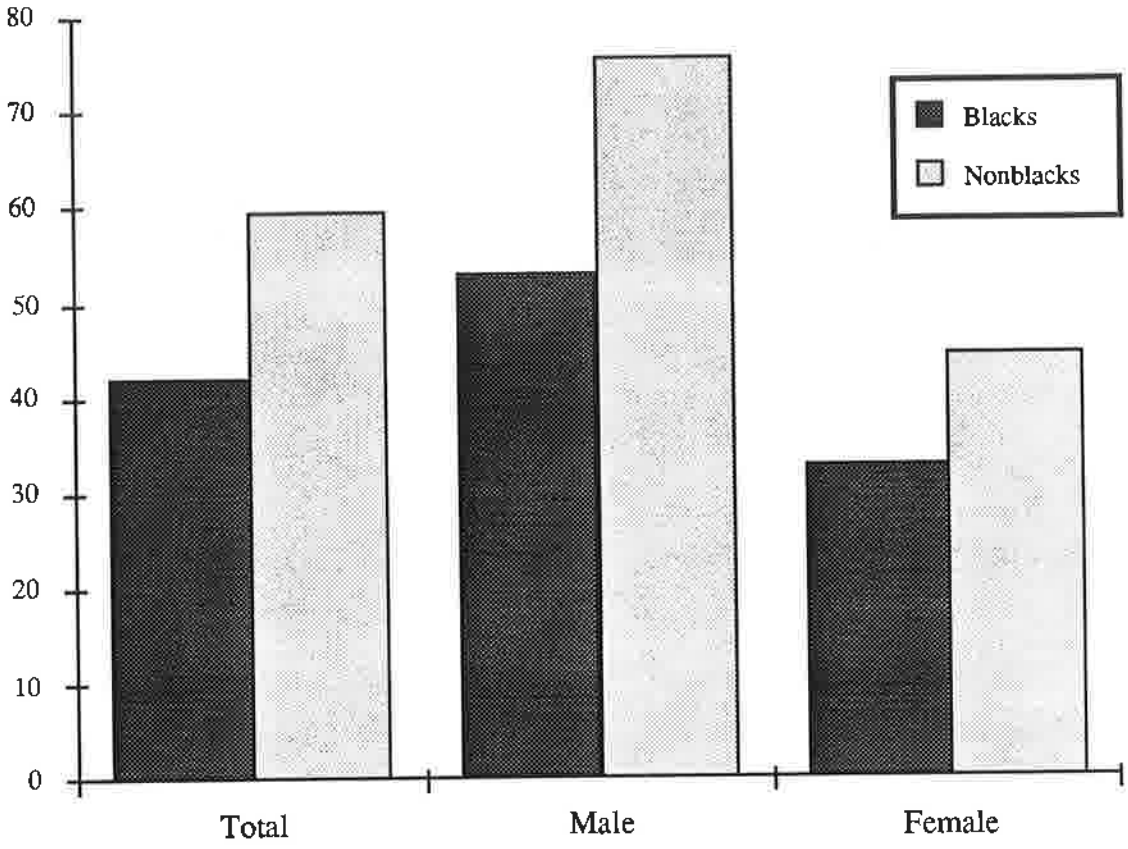
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1950, Characteristics of the Population*, Part 2, Alabama, Table 12; *U.S. Census of Population: 1960, Characteristics of the Population*, General Social and Economic Characteristics, Part 2, Alabama, Table 81; *U.S. Census of Population: 1970, Characteristics of the Population*, General Social and Economic Characteristics, Part 2, Alabama, Table 121; *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 2, Alabama, Table 176; and Part 1, U.S. Summary, Table 102.

Figure 5.11. Occupation of Employed People in Marengo County, 1980



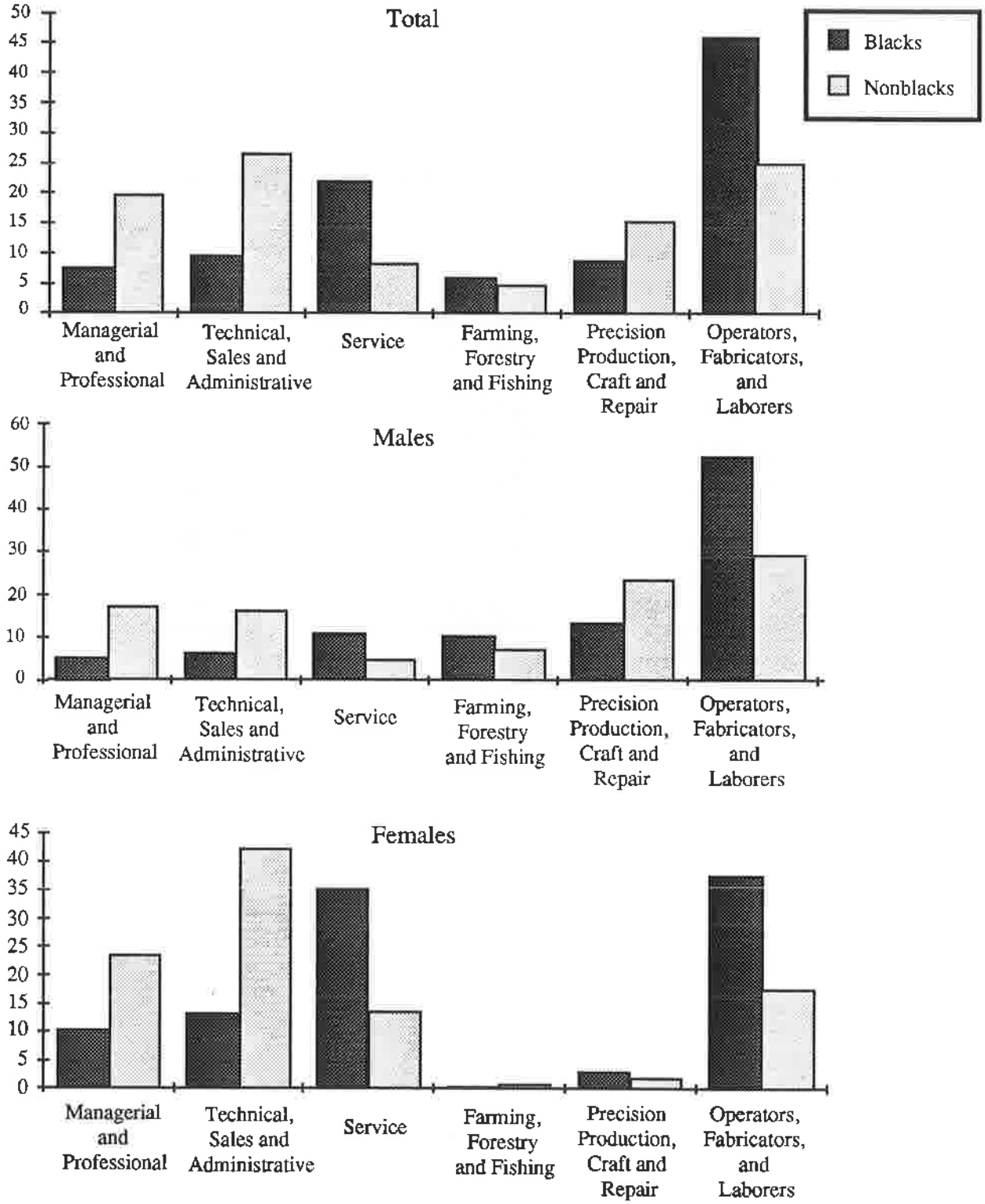
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1980, Characteristics of the Population,* General Social and Economic Characteristics, Part 2, Alabama, Table 177; and Part 1, U.S. Summary, Table 104.

Figure 5.12. Labor Force Participation Rates for Blacks and Nonblacks in Marengo County, 1980, by Sex



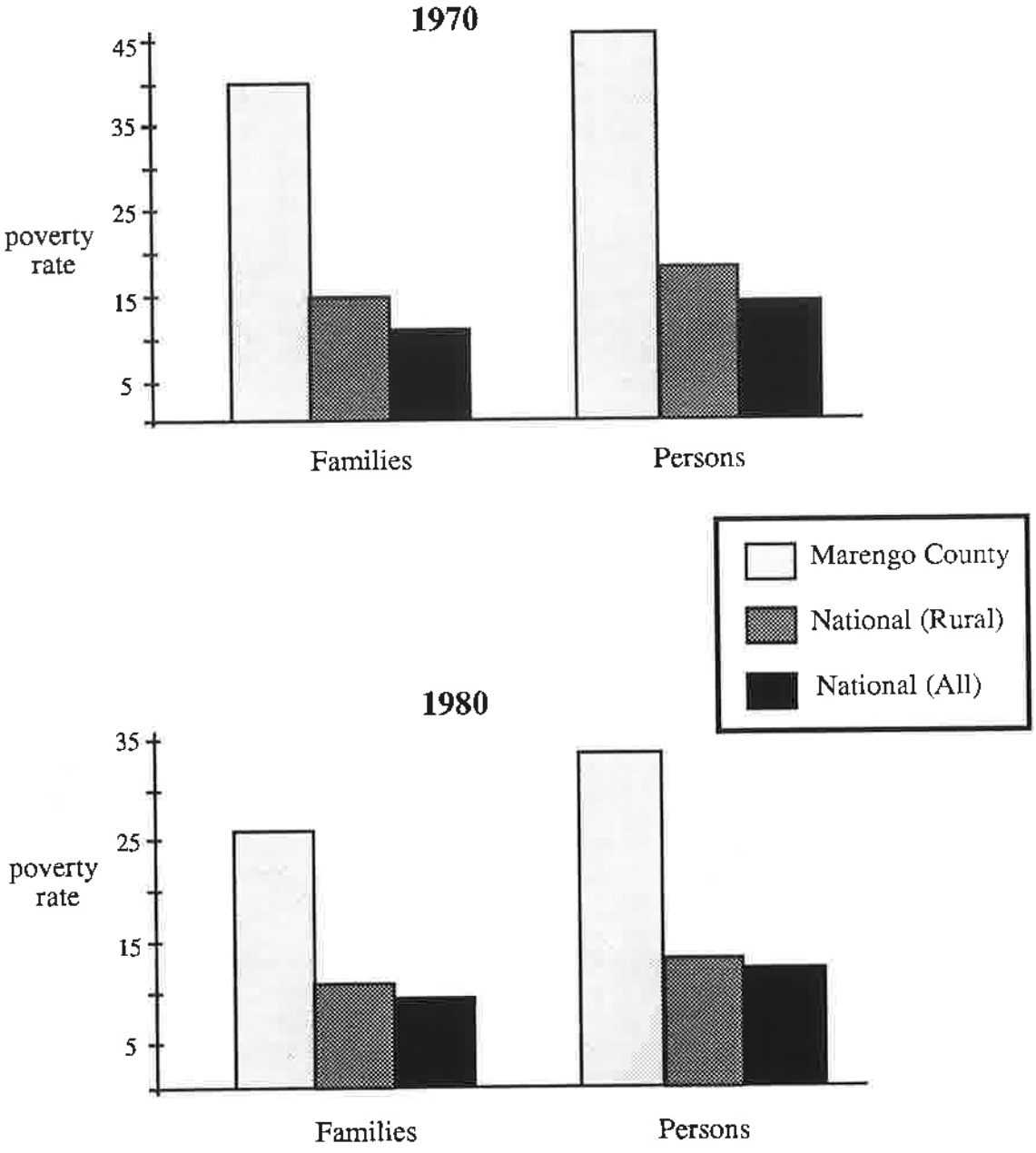
SOURCE: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1980, Characteristics of the Population,* General Social and Economic Characteristics, Part 2, Alabama, Tables 176 and 184.

Figure 5.13. Occupational Profiles for Blacks and Nonblacks in Marengo County, 1980, by Sex



SOURCE: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1980, Characteristics of the Population,* General Social and Economic Characteristics, Part 2, Alabama, Tables 177 and 185.

Figure 5.14. Poverty in Marengo County, 1970 and 1980



SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1970, Characteristics of the Population*, General Social and Economic Characteristics, Part 2, Alabama, Table 126; *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 2, Alabama, Table 181; and Part 1, U.S. Summary, Table 97.

Although it is difficult to pinpoint the exact causes of poverty in Marengo County, it may very well be related to a lack of education, a lack of skills, and the decline of the farming economy. It will be interesting to discover if the large infusion of manufacturing jobs from 1982 to 1987 put a large dent in the poverty rate. An early indication of the economic impact of the new jobs is provided by Figure 5.15 (page 135). The per capita income figures indicate that during the 1970s residents in Marengo County closed the income gap that existed between them and the rest of the nation. However, during the early 1980s, when employment dramatically increased, inflation-adjusted income levels indicate that the new employment did not substantially increase the income levels of the populace.

D. *Generalizations*

In summary, the economy of Marengo County, once dependent on agriculture, now has a very strong manufacturing sector, which created an additional 1,200 new jobs in the mid-1980s (a 50% increase) to further strengthen its leading economic role. However, a troubling point concerning the area economy is that the base manufacturing industries do not seem to be producing secondary industries which might later attract other industries.

The main strength of the manufacturing sector is the wood-related industry, which comprises two of the largest manufacturing employers in Marengo County, namely, both the lumber and wood industry and the paper and allied products industry. The third industry that completes the bulk of manufacturing employment is the production of women's apparel in two large plants in the county.

Relative to the strength of the manufacturing sector, the other sectors of the economy are weak. The county electric, gas, and sanitary service sector (primarily electric) has a slightly larger concentration of employees than the nation as a whole. The large percentage of employees in this industry may exist for three reasons: The industry is a truly basic industry and exports electricity to other counties; Marengo requires more electricity per capita than the nation as a whole; or the industry is less efficient than the average electric industry and requires more employees to produce the same amount of electricity.

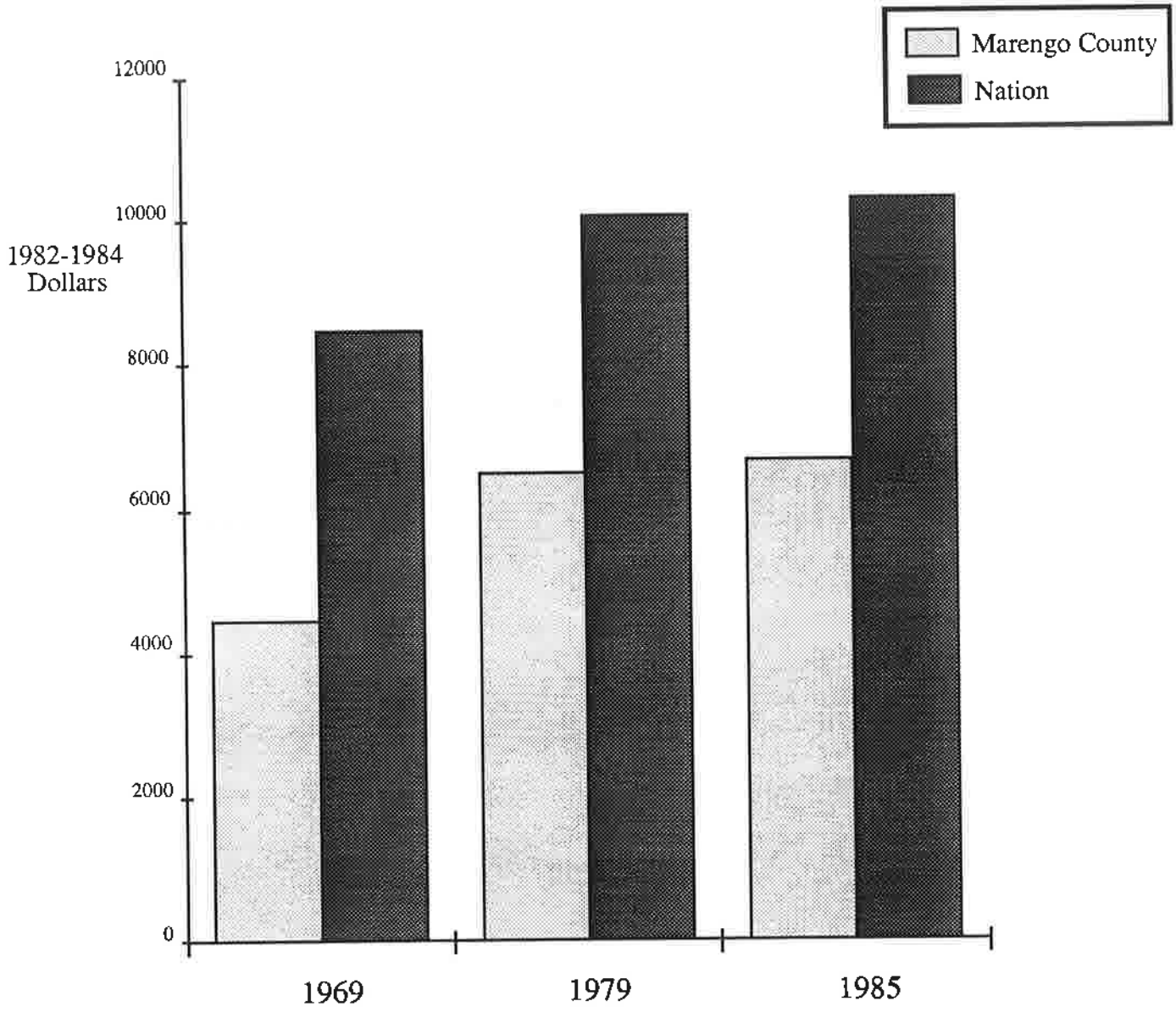
As mentioned earlier, there is also a low percentage of employees in the services and F.I.R.E. industries. The weakness of the services sector is an indication that either the manufacturing industries import their services, the industries do not require many services, or the people of Marengo County are very self-sufficient. The low percentage of F.I.R.E. employees indicates that the manufacturing industries either import their financial and insurance services or that there is a poor real estate market in Marengo County. (We were able to address this question in subsequent interviews.)

As an addition to the industrial analysis of Marengo County, it is interesting to note the changes that occurred during the economic boom of the early 1980s. Two points of note are that the large increase in jobs did not result in an increase in population, and the increase in the concentration of manufacturing jobs in the county did not result in an increase in the concentration of service and financial jobs.

In 1982, there were 4,644 nonagricultural and nongovernment jobs in Marengo County, accompanied by an unemployment rate of 15%. By 1987, there were more than 6,000 nonagricultural and nongovernment jobs in the county, and the unemployment rate dropped to 7%. The interesting point about these encouraging statistics is that although the economy drastically improved, the population decreased. In fact, the *County and City Data Book* estimates that 1,800 persons migrated out of the county from 1980 to 1986. Since the available statistics on jobs and population are in an aggregate form, it is difficult to pinpoint exactly what occurred. The discussion that follows gives possible explanations for the decrease in population accompanied by a substantial increase in jobs.

The industrial breakdown of the new jobs indicates that the job growth during 1982 to 1987 was primarily in paper and allied products, with the addition of one large establishment, and also in lumber and wood, with an addition of numerous small

Figure 5.15. Per Capita Income of Marengo County, 1969-1985



SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1970, Characteristics of the Population*, General Social and Economic Characteristics, Part 2, Alabama, Table 124; *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 2, Alabama, Table 180; Part 1, U.S. Summary, Table 107; and *County and City Data Book*, 1972 and 1988.

establishments. One explanation for the exodus of people coupled with the influx of jobs is that the young people of the county are leaving in search of better opportunities in other industries (possibly in nearby counties), while the new jobs are being filled by previously unemployed people inside the county. Additionally, some of the new jobs might have been filled by people who were previously employed by the two industries but who live in nearby areas that were in an economic slump.

Another explanation is that the new jobs created during this period were not very attractive to many people. These types of jobs, although they do provide employment for local people without much education or job skills, may not be attractive to the educated part of the county population, who may therefore leave the area in search of better opportunities. If it is true that educated and highly skilled people are leaving the county, it will likely become increasingly difficult to improve the long-term outlook of the economy.

Another interesting point of Marengo County's economy is the large concentration of manufacturing jobs in comparison to the very small concentration of service jobs. The disparity between manufacturing jobs and the secondary service and financial jobs is unusual because manufacturing jobs in highly basic industries usually attract a good deal of secondary employment.

To understand the apparent lack of secondary economic growth, a breakdown of the service sector is required: It primarily consists of services provided to industry establishments and to the general population. Industry-related services include business services, repair services, legal services, engineering services, or other professional services; population-related services include health, entertainment, and other personal services.

One explanation for the disparity between manufacturing and service employment is that the lumber-related industries in Marengo County do not spur those secondary service and financial activities normally associated with manufacturing; another explanation is that these industries import their service and financial activities from other areas. And if the industries do not require secondary services or import their services from elsewhere, they will not foster an industrial service and financial infrastructure that might, in turn, attract new industries; nor will they produce the secondary jobs that make base industries so attractive. Another reason for the lack of service jobs might be that the people of Marengo County are very self-sufficient and do not require the services that other people around the nation do.

The point of this observation is to question the "success" of the economic boom from 1982 to 1987. Since most of the boom was in the wood-related industries, it is possible that it was just a short-term relocation of a regional industry that periodically shifts locations to take advantage of natural timber resources. If this is the case, then the boom in Marengo County was only a short-term success, perhaps to be followed by a less fortunate industrial shift away from the area.

Another possibility—and one borne out in subsequent interviews—is that the economic boom might not have been a localized industrial shift of the lumber-related industries to Marengo County, but instead an indication of regional industrial growth. If this is the case, then one must wonder about the quality of the jobs created, and whether the new jobs indeed have represented better opportunities for the area's young people. Since the income levels presented later in Figure 5.15 do not show a substantial increase in income, it appears that these new jobs were not of the type that individuals can count on to lift them out of poverty and into a higher standard of living.

Although Demopolis has an active and healthy real estate market, this is not reflected in the industry location quotients for the county. Indeed, the low quotients suggest that the industry comprises a smaller percentage of Marengo County's total employment than it does for the nation as a whole. One explanation for this is that the figure accounts for the entire county instead of the city alone. Though the city may have a healthy real estate industry, the performance of the county as a whole may be only

moderate or even meager. A second explanation is that a significant portion of the population lives below the national poverty level.

Our figures show that in Marengo County more than 30% of the residents live below the poverty line, twice as high as the national rate. This would obviously restrict the number of households that might actively participate in property sales. Additional reasons—such as high turnover in the trade, out-of-county real estate agencies conducting business in the county, and unrecorded transactions such as properties sold by owners—may also contribute to the discrepancy between the statistics and the actual real estate market.

E. *Observations of Local Business Persons*

1. *John E. Northcutt and Hugh A. Lloyd, Robertson Bank.* Top officials at the local Robertson Bank have a simple explanation for the contrast between Demopolis's high growth and employment in local industries and its low rating in the retail trade and the financial, insurance, and real estate sectors (John E. Northcutt and Hugh A. Lloyd, interviews, 2 August 1990). As sketched by Lloyd, Demopolis is contiguous with a three-county area and many of the people who show up in employment figures for Marengo County live and shop elsewhere. They may very well buy daily necessities at a local store near their homes and make their major purchases (furniture, autos) in Meridian or another city within an hour's drive. Both Northcutt and Lloyd emphasized the importance of Demopolis promoting its own retail trade and services. They believe Demopolis needs to be promoted as a desirable hub for shopping and services, an approach very much akin to the "alliance" pattern of commerce referred to at the outset of this chapter.

Northcutt and Lloyd also stressed the importance of diversifying the Demopolis economy, which entails continuing to attract new businesses (but ones that pay a living wage and have benefits packages) and developing new opportunities such as recreation in association with the Tombigbee Waterway.

Lloyd, also an attorney, was prominent among the Demopolis interviewees in his belief in the importance of ethnic harmony for progress, most visible in the development of the Demopolis city schools.

2. *Mem Webb, Realtor.* An interview with Mem Webb, operator of Webb Realty, was an interesting "real life" reflection on some of the above statistical characteristics of the realty business in Demopolis (Mem Webb, interview, 2 August 1990). According to Webb, real estate is a conventional economic indicator. Accordingly, the active real estate market in Demopolis reflects the health of the city's economy. Webb said that local housing values have appreciated 3 to 5% each year since the mid-1980s and that the housing demand currently exceeds its market availability. "We are a seller's market now. Our inventory is low," said Webb.

Although part of the demand may be attributed to manufacturing growth in Demopolis, Webb also attributes it to geographical and social reasons. "We are strategically located on Highway 80. We have Tombigbee Waterway. Those two factors, plus a diversified industry and a strong school system, make Demopolis a desirable place to live."

Demopolis is within one hour's driving distance to a big city in three different directions. This central location has helped Demopolis grow into the largest community within a 50-mile radius and a small regional hub in western Alabama. Recreational activities, such as yachting on the Tombigbee River, is another reason some of James River's top management personnel choose to live in Demopolis.

"We are a small town which continues to grow while other small communities in surrounding areas are losing ground. We do not have fast growth but we have grown steadily over the years," Webb comments. Housing in Demopolis is relatively expensive compared to the surrounding communities. For example, houses here cost $5,000 to $10,000 more than those in Linden, the seat of Marengo County. Housing prices range

from $40,000 to $150,000 with an average of $70,000. As a result, many people move into the surrounding county area and commute to Demopolis for work.

With only limited housing available, Demopolis needs to develop new areas of accommodation. But developers cannot build more homes because several conservative landowners are not willing to sell their land, in some cases, at any price. According to Webb, there are three or four families who own thousands of acres of land in Demopolis but do not want to give up their land, which most have inherited, despite their having moved out of Demopolis years ago. Webb cited the example of a wealthy coal-mine owner who now lives in Kentucky but is unwilling to relinquish his grip on his land in western Alabama. "The land was given to him by his family. He does not sell the property because his father and his grandfather told him not to sell," Webb said. Other landowners are willing to sell but tend to ask exorbitantly high prices for their land, a large part of which is undeveloped. "They ask a high price for land which does not even have a sewer system," Webb said.

There are only two housing subdivisions available for building under the city zoning ordinances. One requires 2,200 square feet of living area; the other, 1,800. Both are large housing unit areas in which houses are often custom built. The average family usually cannot afford to buy houses allocated in either of these two areas. Thus, there is a large demand for smaller houses. But the smaller subdivisions are already filled and there aren't any new ones being developed. As a builder, Webb expressed his frustration with the local landowners. "They are hard people to deal with. They own a large part of the commercial property but the land is simply not available [for development]. It would help if they would loosen up."

III. Paper Mills: "Informating" Work

A. *Overview*

Pulp mills and wood products are vital to the economies of Choctaw and Marengo counties. The area contains thousands of acres of trees.

The Naheola Mill of the James River Corporation is the largest employer in Marengo and Choctaw counties. The company, headquartered in Virginia, was once the second largest paper company in the world. Its profitability suffered, however, when management chose to trade high return on investment for capital investments and growth (Novack, 1988). Some of these changes included a switch to household, rather than solely industrial, paper products. Acquisition of companies such as Dixie-Northern, Crown Zellerbach, and others that specialized in sanitary products led to a diversity which made it an industry leader (Meagher, 1988). Within its companies, James River's paper types have changed to fit customers' desires. One example of this is the glossier finish for catalogers (Podems, 1989).

Nearer to Demopolis, but outside city limits, Gulf States Paper employs 500 workers who average $15.50 per hour, totaling more than $6 million. More women than men work at the plant. Throughout the state, Gulf States Paper owns 450,000 acres of land (William J. Miles, interview, 9 March 1990).

B. *"Informating" Work*

As mentioned at the outset of this chapter, one of the reasons for choosing Demopolis was the impact on the local economy of two large pulp mills, one of which employed advanced technology (James River's Naheola Plant) and the other in the process of upgrading itself (Gulf States). Interesting to us was not only the presence of these high-tech rural employers but their transition to technological use, an excellent example of Zuboff's (1988) concept of "informating" as opposed to "automating" work. "Informating" focuses on the change in the nature of work as it is transformed from "hands

on" activities to the interposing of information technologies, so that the hands are on the technology which, in turn, controls the work. "Automating," in contrast, removes the worker from the picture. In our study of the paper mills, we were most interested in the consequences of informating as it changes the nature of the work and, hence, the type and training of the worker.

One of Zuboff's graphic examples is the transformation of the worker who can determine whether a pulp mill digester (which breaks down wood chips into pulp) is operating properly partly by its smell, a capability presumably gained over long experience on the plant floor. What would be the consequence upon the nature of this work—and, of course, the worker—as this talent becomes irrelevant, replaced by an ability to monitor and control the digester via an electronic interface?

Also of interest to us was that these technologies often incorporate telecommunications as the computerized interfaces become linked with one another, with higher-level management terminals and eventually with overall monitoring systems, some perhaps off site.

How does a company retrain traditional workers? Or can this be done? What about the younger worker already experienced with computers? How do more traditional uses of computers for office accounting and computer-aided design fit into the picture? And what are the implications for the local educational system in training the new breed of worker? We used interviews in the Gulf State and James River mills to pose these questions (and interviews at the school district to explore the educational connection).

Based on observations and interviews in the two mills, it appears that the informating of work at these sites has not been as abrupt as implied in Zuboff's writings. For example, the transition from a strictly hands-on approach to remote or assisted controls has taken several evolutionary steps. Beginning in the 1950s, pulp mill controls were utilizing electromechanical and hydraulic interfaces, which have since evolved into today's electronic control technologies that increasingly incorporate automated operations for subsystems and informating worker control over the production process. Some of the more routine sensing, feedback, and adjustments are performed by the computer, leaving more control and management functions for the worker. Such increased "intelligence" in the system relieves the worker from making all the adjustments.

The Gulf States and Naheola mills, about 4 and 40 miles from Demopolis respectively, provide excellent and somewhat period-oriented examples of changing technologies of automation and control. The James River Naheola Mill has been more upgraded than that of Gulf States Paper, but the latter is in the process of introducing new upgrades. In some respects, paper mills may be better illustrations of informating than typical manufacturing lines (like automobiles) because the paper mill operations of pulp production, paper making, and paper converting (cutting and sometimes shaping and gluing) differ in the type of "virtual interface" between operator and machine.

The pulping part of the production process involves cooking and blending. It is chemically intensive in technology. Production proceeds in "batches" as pulp is cooked or "digested." Feedback is used to control what is done with the batch. There is flow from one batch process to another, and some of these processes—like washing and bleaching—have a flow quality to them.

There is a distinct contrast between the aforementioned process and the requirements of paper making; this is when the mushy pulp is distributed as a thin film and eventually becomes paper through treating, pressing, and drying processes. Here, feedback and control are critical as the product may be moving at speeds up to 6,000 feet per minute. Although quality control is an important function throughout the entire line, this is the point of no return. (If the paper fails to meet certain specifications, it is repulped and returns to the beginning of the paper-making sequence.)

"Converting"—the transformation of raw paper stock into sheets, carton patterns, and other semifinished products—is again a mix of batch and flow processes, that part of the process most like a typical manufacturing line. Individual mechanical functions have to

be performed and controlled; the "units" have to be moved along the line, again with quality control; and inventorying and possibly packing must complete the process. Just as the functional aspects of different parts of the production line differ, so do the applications of control or computer interfaces. Depending upon whether you are looking for the right chemistry, the right surface, the right shape, how items will be batched, and which flow is most beneficial—workers can gain different skills in older plants by interfacing in different ways with computer applications. In a broad sense, the technology has to "learn," and, in turn, the modern worker must "learn" to take advantage of what the technology can do.

It is not just a matter of learning how to perform with a computer between the worker and the work; it is more like building skills with a particular style of interface with the work. In one sense, it is like being skilled at a computer game; but there are differences between whether it is a fast-moving Nintendo-type challenge or a slower-moving (maybe "batch-like") interactive "intellectual game." Workers must adapt to enter the world created by a computer interface; they are neither working exactly with the reality of what their hands are touching, nor is the computer simply an "electronic" hand on the machine. Their hands and minds and the machine are interfacing in a "world" created by the computer. Furthermore, there are differences in the parameters of what one might be controlling, testing, or shaping in that world, and here is where skill differentiation may again emerge. The finely honed skills of a pulping operator may be visibly different from the finely honed skills of an operator on the paper-making production line. Informating, though to various degrees, exists throughout.

The Naheola Mill is the larger and more advanced of the two, so it provided some contrasts in the earlier and later stages of computerization. Gulf States predominantly uses electronic control panels that allow production workers to monitor the line from within an air conditioned booth; James River utilizes computer monitors. (Gulf States expects to eventually install computer monitoring.)

C. *Telecommunications Notes*

Telecommunications is an important component in the operations of both of the foregoing plants. According to William Martin, telecommunications manager of Gulf States Paper, his company has two PBX sets, a Rolm switch, and dedicated lines for data transfer to its corporate headquarters connected through South Central Bell's Demopolis switch (William E. Martin, interview, 16 February 1990).

Similar equipment connects the Naheola Mill with TDS Butler Telephone's remote in Pennington, Alabama. Woody Collins, the seller of the switches, said James River had invested $250 million for expansion of its plant but forgot about upgrading its telecommunications. Collins said similar events are occurring at Gulf States, where telecommunications advances are not yet comparable with the factory's technological gains (Woody Collins, Owner, interview, 16 February 1990).

Collins said the relationship between western Alabama industry and South Central Bell is generally good, despite the fact that company marketing representatives visit towns only if requested via the Vendor Marketing Center. In addition, telephone vendors such as Collins are invited to South Central Bell seminars. "It's cost effective for South Central Bell to serve more heavily populated areas and let vendors serve the other areas," Collins said.

C. E. Fleming, a South Central Bell engineer in Demopolis, said his company upgraded to meet the needs of Gulf States before divestiture. Fleming said Gulf States has not stated a need for dedicated incoming lines as yet but both he and Martin said this is on Gulf States' telecommunications agenda (C. E. Fleming, interview, 16 February 1990).

Except for the internal switching and fiber lines inside owned plants, the large companies in western Alabama all appear to be using the public switched network. "Bypass"—and the potential loss of revenues to the public network—seems not to be an issue here.

IV. Other Businesses

A. *From Clothing and Catfish to Waste Disposal*

As already mentioned, Demopolis reflects the development of a wide range of businesses. Not only does this contribute to economic diversification, but these businesses increasingly require managerial skills, placing a demand upon Demopolis's educational system. They also require an increasingly modern telecommunications infrastructure—consultation on alternative services, including computer communications, and more importantly, rapid repair of telecommunications breakdowns. As documented in our other studies (e.g., Schmandt et al., 1990), more and more small-town entrepreneurs are recognizing that computers, fax machines, and WATS lines can help their businesses operate more efficiently and profitably. Gradually, and inevitably, telecommunications is changing the concept of traditional small business in rural America.

Among the businesses located in or near Demopolis are those involving wood products, textiles (specifically lingerie), minerals, chemicals, and hazardous waste vendors.

One example is clothing manufacturer Vanity Fair, which employs 8,000 people statewide and several hundred in Demopolis. The parent company, VF Corporation, also owns Lee and Wrangler Jeans and Jantzen swim wear, and Lee accounts for more than 25% of consolidated revenues (Morgenson, 1989). The Vanity Fair mills employ significant portions of Marengo and Choctaw counties, overshadowed only by the pulp mills.

LaFarge Coppee of France is the parent company of Demopolis's Citadel Cement plant (Maher, 1988). It has been listed by experts as one of the 20 most outstanding European companies and is considered to hold its place well in a difficult but mature industry (Issac, 1986). Under the leadership of Olivier Lecerf, the company diversified into such industries as biotechnology. Lecerf focused upon group harmony, strategy guidelines, and preparing the company properly for the future.

A smaller and more recent addition to Demopolis's employers is Blue Waters Catfish. The fish are largely exported to areas such as Louisiana. A Louisiana study showed that size of family and Catholic religious preference were positive indicators of catfish purchase (Dellenbarger et al., 1988).

The hazardous waste industry is also represented in Marengo County. In nearby Sumter County, ML is a 2,400-acre toxic waste dump and is one of two in the nation which takes PCBs. Some of the trucks which service the dump are owned by Suttles Trucking in Demopolis. The trucks, when empty, are washed in Demopolis, and the waste water flows into the Demopolis sewer system. The dump is open at all times, in contrast to other waste areas which curtail the number of evening hours and weekend days accessible to outside visitors. Although some environmental groups are concerned with possible effects on local residents, civic leaders are more concerned about jobs created by Suttles, Systech, and other waste-related companies centered in or around Demopolis.

When Hazardous Waste (Waste Management, Inc.) asked to place a plant in Demopolis, the company emphasized that it would be making only trash bins and would not change the product line to anything which includes the waste itself.

Demopolis Times Managing Editor Glenn Willoughby joked that when visits are made to friends who live in Sumter County near the ML plant, he always brings his own ice cubes and water. "We won't drink the water over there," he said. " It is potentially dangerous" (Glenn Willoughby, interview, 9 March 1990).

Because of the change from an agricultural, rural environment (although the forests are still a factor) to other industries, properties in rural areas have dropped in value over the past 10 years. For example, when sites in Marengo or Choctaw counties become potential plant locations, the real estate is reappraised and often found lacking next to its past

agricultural value (Everhart, 1989). In 1989, a nationally proposed Rural Capital Access Program was introduced as part of the Rural Partnerships Act of that same year. Finding funding for rural businesses, as well as providing better technical assistance for the businesses, was included in this proposed act (Morris & Drabenstott, 1989).

B. *Typical Small Business Telecommunications Users*

1. *Growth of applications*. Still largely unrecognized by many telecommunications regulators, consumer groups, and even some telephone companies, many small town businesses are increasing their uses of telecommunications as a strategic facet of doing business. This includes not only extra voice lines, WATS and 800 services, and fax, but data services as well. Major hardware and drug stores in Demopolis, for example, use different types of telecommunications for ordering and inventory services.

2. *Century 21 Realty*. Shirley Jay, who runs the local Century 21 office, has many uses for telecommunications. First, she is on-line with a national Century 21 computer, CenturyNet, which allows real estate agents to have instant amortization tables and property financial statements. Another medium used frequently is the facsimile machine, which Jay uses to receive housing requests from people moving to Demopolis, mainly engineers with the lumber mills and other high-technology businesses in Demopolis. Jay also receives benefits from television, through Century 21's national advertising, which enhances customer name identification with her service and company. Jay pays for these national services through a franchise fee and a monthly computer charge (Shirley Jay, interview, 8 March 1990).

3. *One-Stop Building Supply*. Kim Mayton is an innovative Demopolis businessman who, with the help of computers, runs a building supply chain in western Alabama. Mayton's store is located on Highway 80, right next to Wal-Mart, on the south edge of town.

In the modern showroom, clerks use computer terminals as they serve customers. With only a few key strokes, they can tell a customer all the information about a product. If the customer decides to buy that product, the clerk will press a few more keys and the transaction is complete. The customer either pays in cash or receives a computer-generated bill at the end of the month. The whole process takes only a few seconds. The computer not only allows on-line transaction but offers a range of other services. Through his computer and store network, Mayton monitors his inventory, issues monthly statements to charge accounts, balances his account,s and, once in a while, sends electronic messages to his employees in two other branches in nearby towns.

Mayton's building supply store is an outgrowth of the family's concrete business which was established by his father. The young Mayton opened his own building supply store in 1975. The business was so successful that by the mid-1980s it had grown beyond its current capacity. After experiencing frustration over the manual system, Mayton decided to make a change. "We felt we did not have enough control of our business. Our people couldn't get work done fast enough to meet demands and we constantly made clerical mistakes in inventory, accounting, and credits. At that time, we realized that we had outgrown our present system" (Kim Mayton, interview, 2 August 1990).

Building supplies is an inventory-intensive business. Mayton presumed that computers, with their ability to process data in no time and an enormous memory capacity, were a solution to his problem. With little knowledge about computers and telecommunications, Mayton began his investigation by reading trade journals and talking with people in his trade. After extensive traveling out of town and visiting other building-supply businesses, he discovered that in larger cities almost everybody with the same volume of business as One-Stop had installed computers. Even in smaller towns, his counterparts were acquiring computers.

Having gathered information from his out-of-town competitors and from computer magazines, Mayton installed a system in his office in 1985. He selected a package offered

by Triad, a Livermore, California-based firm specializing in providing business computer packages to building-supply companies. Mayton rewired his office when he moved the store from downtown two years ago.

While telecommunications enables his next-door neighbor Wal-Mart, the mega-million-dollar discount giant, to run an interstate conglomerate, it allows Mayton, a small-town businessman, to maintain a three-store chain in a much smaller radius. Shortly after his own office was wired, Mayton opened his first branch store in 1986 in Greensboro, a small community 25 miles north of Demopolis. The following year, he opened another shop in Thomasville, 50 miles south of the home-office site. To link his computer with these two stores, Mayton leases a dedicated phone line from AT&T for on-line data transmission between the Demopolis home office and each of the two branches. Computers make it possible for Mayton to expand his business to different locations. Mayton said he would not have opened the two branches if he had not had computers. "With the home office computer supporting the inventory and accounting functions, all it takes to open a branch store is to hire a few clerks to wait on customers." Harboring the computer technology, Mayton now plans to expand his mini network. He expects to open a fourth store next spring.

To maintain communication with his branch stores, Mayton relies heavily on telephone and fax machines. He calls each of his branches several times a day and uses the fax to send and receive documents. The fax machine is also used to place orders to vendors and receive orders from customers; Mayton said it is used on a daily basis and that traffic is getting busier everyday. Although the computer has the capability to send electronic messages, Mayton does not use this function often because "it is much easier just to pick up the phone." South Central Bell recently offered Mayton a package of cheaper long-distance rates within a 45-mile radius. Mayton said this package will cut his long-distance bill by 20%. (Mayton was looking at WATS before this package was offered.)

Mayton's store is the only building-supply firm in Demopolis with computerized operation and one of the few small businesses with computers. This has given him an edge over the local competition. Mayton said the computer benefits his business in three ways. First, it helps the store operate more efficiently with less inventory. "The computer keeps a selling history, from which we know what sells and what doesn't. Therefore we don't need to keep a large inventory.to meet customers' needs." Second, the computer helps the store maintain better control over accounts receivable. "It keeps track of our customers' paying records so we know who is paying and who is not—and we will contact those who don't pay." Mayton said after the computer was installed, the average age of accounts receivable dropped significantly. Third, the computer has increased profit. "It raises our profit margin. We are making a profit growth of 2% per year."

Mayton uses South Central Bell services to link his stores' computers. Although satisfied with South Central Bell in general, Mayton said some problems still exist. For example, when his network is down, he sometimes has to wait 24 hours before he can get it fixed, unless the problem can be solved at the local central office. Another problem, according to Mayton, is that often he does not know whom to contact when he has a problem or needs a new service.

Next door to Wal-Mart, Mayton's store benefits from the busy traffic that the discount giant draws. Although Mayton considers Wal-Mart a competitor, the two stores seem to coexist well. Despite the general animosity against Wal-Mart among small businesses in Demopolis, Mayton credits the giant store for stimulating competition. "Wal-Mart forces you to be a better retailer. It forces you to use ads more effectively and become more competitive." Mayton advertises his store in newspapers and on billboards. He said service is One-Stop's strong suit over Wal-Mart. "We deliver and service. We also give customers consultations." Mayton said downtown stores cannot compete with Wal-Mart "because they don't have technology." Mayton said his store's location is purely coincidental. "We moved there because the property came available and there is adequate traffic."

4. *Additional Examples*. There are numerous other examples of the application of telecommunications and information technology. One is Kate Allinder, a tax accountant who operates the local H & R Block, who said rapid tax refund ability through computer filings has increased her business 350% (Kate Allinder, interview, 8 March 1990).

Joan Daniels, an employee at Ye Ole Shack Florist Shop in Demopolis, said her job is dependent upon the telephone. Since flower suppliers are located only in Mobile or Tuscaloosa, daily phone orders are vital to business needs. Wire orders—people ordering flowers to and from distant locations—make up about 25% of the florist's business (Joan Daniels, interview, 8 March 1990).

Some Demopolis residents operate telecommunications-based businesses from their homes. According to Jane Gross of the Demopolis Chamber of Commerce, Ring Halpin performs desktop publishing with a home computer. Pete and Beth Neehoff have found a better way to run their soybean farm: Pete uses a computer and modem to access both his suppliers and the commodity markets and, with current information, Pete has more time to attend to other tasks (Jane Gross, interview, 16 February 1990).

Assistance to small businesses is also available by telephone from Marengo and Choctaw counties. Nearby Livingston University includes a small-business development center which is a member of a consortium offering other services to small companies. Members of this consortium include the Alabama International Trade Center in Tuscaloosa, the Alabama High Technology Assistance Center in Huntsville, and the Alabama Small Business Procurement System. It is funded by the national Small Business Administration and the state of Alabama.

Telecommunications is a vital component in rural businesses reaching both customers and suppliers. It transcends distance, transforming geographical factors into a transportation problem for goods, not information.

V. The School Connection

A. *General Issues*

Before researching Demopolis, we posed the general question of whether there was a relation—if even an awareness—of the link between the school district and economic trends in the community, especially the growing use of technologies in local businesses. Presumably some of the current economic trends, and certainly the long-range prospects, of the Demopolis economy would be tied to educational investments and programs.

Demopolis has a city-based district organization with three schools: elementary (grades K-4), middle (5-8), and high (9-12). There were 1,230 students who completed the 1989-1990 school year, operating with a budget of $4 million.

From a distance, the known statistics about education in Demopolis are not impressive. As shown in the earlier section of this chapter, the average educational attainment (as analyzed up to 1987) was lower for Marengo Country than the national average for rural counties in the United States which, in turn, lags behind the urban one. School test scores are not impressive either, although not disastrous.[4] If the educational level is so low, there would seemly be negative prospects for long-term technology upgrades of jobs in the area. What the *citizens* of Demopolis said, however, was markedly positive, even those persons (like local employers) from whom one might expect criticism.

The story told by almost any civic leader one might ask is that the Demopolis district, unlike many of the surrounding rural ones, has had a positive emergence from the long struggle of desegregation. Due to the realization by Demopolis leaders of the inevitability of racial integration of their schools, they made special efforts to not only

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[4] We have omitted scores from our report because of the importance of correctly interpreting them. Contact the District directly, if you wish detailed information and interpretation guidelines.

complete the process but also get on with improving education. Today, the racial integration of the Demopolis district (53% black, 47% white) reflects roughly the ethnic percentages of the community. Mayor Caldwell explains that this is partially because influential white citizens, such as state senator Richard Manley, have put their children into the local public, rather than private, schools. Two other factors—being a city rather than a county district and thus readily identifiable as a supplier of workers to local businesses—probably hastened the process of reorganizing the district.

Demopolis attracts professional-level families from outside of its boundaries (including, for example, the James River plant about 40 minutes away) because of the quality of the schools. Unfortunately, the cost and availability of housing (discussed elsewhere) discourage lower-wage families from moving in from outlying areas. In fact, as a result of this problem, plus the location of Demopolis in the northern tip of the county, many lower-wage Marengo workers live outside the county and, thus, the school district.

The foregoing is another example of how Marengo County economic statistics must be interpreted for differences in where workers are employed as opposed to where they obtain services. For example, if curriculum innovations were to be made for students who might track into technologically oriented work at Systic Disposal or the James River or Gulf States mills, these would have to be diffused among the school systems in nearby counties around Demopolis, in addition to the city district itself. This supports the case for resource sharing through telecommunications, since district consolidation would be politically infeasible or, if forced, would put the schools into another 20-year hiatus. Perhaps we have reached the point where transportation, governance, and taxing authority parameters are less relevant than patterns of commerce as a basis for defining the distribution of educational innovations.

B. *Education for Technology*

To first concentrate on the "informating" transition of work in this discussion, it is important to compare and contrast attitudes held by managers or business persons with those found in discussions with school personnel. (We hope the reader will bear in mind that the following is not meant to criticize either group, but to describe what is probably inherent to any situation of rapid change.) On a very general level—such as the importance of educating students for a changing job or career scene, the importance of literacy and basic math skills in today's work force, the importance of computers or even the ongoing "informating" of work—employers and Demopolis school officials seemed very much of a similar mind. (And, of course, many are much of a common mind when considering their own children.) But on more detailed levels, there are differences in expectations of the educational process. In many respects, these reflect differences in the two types of institutions these groups represent: The business informants often discussed outcome in terms of productivity, the quality and quantity of specific items or services, or the "what"; the educators seemed more concerned with skills, processes, methods, or the "how." Traditionally, managers want their workers to be able to read instructions so a machine will produce what is required; success would be gauged by that output. An educator might stop short of gauging reading solely by tests, reading habits, or reading levels; despite the existence of "what," reading would still be mostly a "how."

Although the foregoing contrast may not seem traditionally important, the juxtaposition seems to take on a slightly more important distinction when talking about training students for "informating" careers. When educators talk about students using computers, the emphasis seems, once again, to be more on the "how" than in the connection of "what" computers will accomplish beyond accounting or word processing. Modern business persons emphasize how production, analysis, or decision processes have been enhanced, the computer operating more as a means than an end. Granted, the means have to be learned if the computer is to be used at all, but it may be that educators need to experience more of the subtle, yet critical, results of production, analysis, or decision

applications, and distinctions among them. Educators may have to grasp more of what the business person has learned and inject this back into the curriculum. Conversely, the employer should be open to providing such experiences to educators, and also be tolerant of the investment that will have to be made in the "how" aspect of computer training.

C. *Education by Technology*

Our interviews with Demopolis school district personnel revealed that the district uses more instructional technology, including telecommunications, than most schools. This includes the TI-IN system, Whittle Communications Channel One, public broadcasting transmissions, Apple equipment, and other videotaped programming.

TI-IN is a satellite-based distance learning service that emanates from San Antonio, Texas. Most applications offer video and audio to the school, with a capability of students using an audio return loop. It is a commercial service highly used by public institutions for distributing specialized courses needed by rural schools that are not able to offer them (e.g., advanced math, Japanese) as well as teacher in-service training and downloading of enrichment material for classes. Schools must pay for the installation of receiving equipment (including a satellite dish), links to television monitors, and audio feedback equipment. The Demopolis district, however, did not have to pay these initial costs as they were part of a foundation-funded demonstration project, through the University of Alabama, designed to interest students in medical careers through offering anatomy and physiology courses.

Demopolis schools did go on to purchase some TI-IN instruction, but because of a small budget, costs had to be borne by parents of participating students (sometimes upwards of $500). This expense—or lack of budget—has discouraged use of TI-IN, which, in all other respects, has been found satisfactory—even by the students, who need extra self-motivation to be effective users of distance learning (Gina Johnston, interview, 3 August 1990). A solution to this problem seems to be on hand as The University of Alabama is organizing an uplink service for selected courses to be received via the local equipment originally installed for TI-IN. This service is thought to be much less expensive and more attuned to rural Alabama needs, and there is talk that it may be included in the state education budget, thus attaining recognition as a "basic" in educational operations.[5]

Whittle Communications' Channel One is part of Demopolis schools' elementary education. The service uses satellite to place news programming in the classroom for half an hour per day. Channel One is not only a new but also controversial service because it includes some commercial advertising in its broadcasts. If a school district meets certain size requirements, it may receive a satellite dish, wiring, and television sets free of charge in return for using Whittle broadcasts. Some districts, however, have taken a stand against the Whittle service because of its commercial involvement. According to the Demopolis district staff, the main resistance they encountered was from the state superintendent, who discouraged its use. Their reaction in a group interview was: "If the state superintendent cannot supply equipment we could use, then why not try Whittle?" The service was installed and used during the 1989-1990 school year on an experimental basis. The staff says they will continue with it. Whittle broadcast topics have included, "Drugs: Everybody's Problem," and "Rush to Freedom" (on Europe's changing face). Staff and teachers have not found the advertising (which is quite minimal) objectionable and do find the news program to be well done.

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[5] State budgeting theoretically provides only for the most minimum of educational services and is insufficient to operate the schools; any "extras" have to come from special taxes or donations. Including distance education in state budgeting would be a "breakthrough" (Robert Templin, interview, 3 August 1990).

Perhaps more significant is the use of Whittle equipment for other purposes, a practice encouraged by the donor. Teachers use it to play videotaped materials for classrooms, other satellite-received programs can be fed into it, and students have obtained a video camera to originate programs for distribution within their schools.

Public television supplies educationally related shows which are used both in the schools and for personal consumption. Demopolis has used its local public station as a method to increase knowledge of pupils within the schools.

As far as the absence of other opportunities in the Demopolis system is concerned, cable television plays no special role (except to deliver existing television programs). That is, there is no special access channel for the schools, donated linkage, or encouragement of any joint community projects involving the schools, teachers, or students.

Beyond these distance learning applications, the Demopolis district probably makes slightly above-average use of desktop computers in its schools. Apple II technology dominates in the lower grades and middle school, with additional IBM applications at the high school level. There is some use of a desktop interactive application for career information, as well as an on-line resource service in that area. The latter, however, involves long-distance charges for connecting to the host, a common problem challenging rural schools. Many of the major public on-line services (like CompuServe) have local access numbers in cities. Their use becomes expensive in rural areas where toll charges have to be paid for access to the nearest city number. Some of the computers and software have been obtained through school donation programs, including popular ones by the Apple company.

In all, a generalization drawn from the Demopolis instructional technology applications is that once there is some outside support for sponsoring an initial installation for distance learning, innovative school personnel will invent additional uses for it. Thus, the TI-IN experiences have led to a state satellite service to Demopolis. Intradistrict networking sponsored by Whittle has led to closed-circuit applications, including students' uses of a video camera to produce their own material. Such experiences have also likely put Demopolis staff members in an excellent position to explore the applications of switched-network distance learning, where schools could use video-conferences as a basis for sharing instructional resources. Although South Central Bell has not mentioned its Mississippi 2000 distance learning application to Demopolis schools, it is likely that the latter would be eager and effective adopters.[6] Short of national, state, or regional policies for implementing distance learning, it appears as if the "sometime" opportunities will underlie the diffusion of distance learning to rural schools like Demopolis, a technology so fitted to their needs.

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[6] At the time of this writing, Mississippi 2000 was a project being planned jointly by the state, South Central Bell, Northern Telecom, and Apple Computer. It is a fiber-based switched network of schools in the large Mississippi LATA involving mostly schools in poverty areas. The system will support full-motion interactive video. Northern Telecom is already testing this technology for use in public telephone networks for distance learning (as have Battle Creek, Michigan, and several Oklahoma panhandle sites). According to Brent McMahon of South Central Bell, they want to show how the telco network can bring the Information Age to rural and black areas, and break down the ivory towers in Mississippi. They will use the system as a "lighthouse" type of project for continuing education, health care, prenatal care, and job retaining, and will connect into the State Board of Education in Jackson (Brent McMahon, interview, 6 March 1990).

VI. Health Care and Emergency Services

A. *Bryan W. Whitfield Memorial Hospital*

Hospital and medical services are critical for the continued development of rural areas. Indeed, Demopolis is not only fortunate to have the Bryan W. Whitfield Memorial Hospital within its city limits, but also benefits because the hospital is an effective user of modern communications technologies.

Bryan W. Whitfield Memorial Hospital is a general, short-term acute-care hospital. It is the only hospital in Marengo County. Its service area comprises all of Marengo County and a 35-mile radius extending from Demopolis. The 99-bed facility has 12 physicians on staff, employs 275 people, and has a 24-hour emergency room. Besides medical and surgical beds, it has 12 obstetrical and 7 intensive-care beds (Arthur D. Evans, interview, 3 August 1990).

Although this is a city-county hospital, it does not receive funding from either the city or the county. The only tie-in with the city is that its council is the appointing authority of the hospital's board of directors. However, according to Arthur Evans, the hospital's fiscal services director, the city council well understands the importance of the hospital and supports it. At a time when many rural hospitals have been forced to close down, the Demopolis hospital continues to grow steadily. Evans attributes this growth to two factors. First, it has a good industry and population base; the healthy industrial base has been created largely by the lumber and paper industry, and Demopolis and the surrounding area ensure the hospital a stable population base. In the vicinity of Demopolis, the hospital serves 20,000 to 25,000 people. Second, the hospital has a solid financial base through federal Medicare and Medicaid programs.

Bryan W. Whitfield Memorial Hospital was recently approved by the U.S. Department of Health and Human Services as a "sole community hospital," which puts it on the same level as a 300- to 500-bed hospital in an urban area in terms of rates that the Medicare and Medicaid programs pay the hospital for treating patients.

The Demopolis hospital processes insurance claims electronically through computer links with Blue Cross and Blue Shield in Birmingham, where the central processing unit for insurance claims of the state is located. Two 24-hour telephone lines transmit patient data between Demopolis and Birmingham.

The hospital is also networked with two state universities' medical facilities. It sends both its EKG (electrocardiograph) and EEG (electroencephalograph) diagrams to the medical center of The University of Alabama at Birmingham to be interpreted by medical experts in that facility. The results are sent back to the local hospital through a fax machine. The Demopolis hospital is connected via a dedicated telephone line with the University of Southern Alabama in Mobile for patient care consultation, especially for labor, delivery, and infant care. The University of Southern Alabama medical center has a teaching center which is responsible for training and educating physicians in the state.

The hospital is also fully computerized. Patients' personal data and medical history are input into the hospital's computer system immediately after patients are admitted. The computer also keeps track of patient discharge and transfer information. Patient billing, hospital accounting, employee payroll, and medical supply inventory are other functions of the computer system.

Since the Demopolis hospital is the only general hospital in the surrounding area, it serves as a referral as well as a consultant center for rural clinics among the neighboring counties. Seven clinics have direct telephone lines hooked up with the hospital. They only need to dial an extension number to reach a specific doctor in the hospital.

The hospital purchased its own phone system two years ago to cut its telecommunications cost. It has 25 private lines and an outgoing WATS line in addition to the hospital's general number. After the first fax machine was installed more than a year ago, it has become an indispensable part of the hospital. Other than receiving EKG and

EEG interpretation, the fax machine is also used for sending medical supply orders, documents, and letters. Sixty-nine of the hospital's 99 beds are equipped with television sets that receive six different channels from the hospital's private satellite television system. The hospital also delivers educational medical programs through its in-house TV system.

B. *911 Comes to Demopolis*

A proposal to install enhanced 911 (e-911) service in Marengo County was initiated by both the county and South Central Bell in mid-1988. The mayor of Demopolis, Austin Caldwell, remains the main negotiator representing the city and the county (Austin Caldwell, interview, 6 August 1990).

Currently, the county is still waiting for South Central Bell to provide facilities so that a referendum can be drafted to have all voters in the county agree on the approximate 50¢ increase in their basic telephone charge. If this referendum is passed, Marengo will be the second county in western Alabama to have an e-911 service. The first county to enjoy e-911 service in that region is Sumter, which installed the advanced emergency calling system in 1985 shortly after the local telephone company upgraded the county's phone system.

The current 911 service involves a separate phone line and a 24-hour radio dispatcher in the police department who answers any 911 call and routes the information to the police department, fire department, and/or the hospital emergency room. There is a direct phone line from the dispatcher's desk to all three areas. The dispatcher simply picks up the phone to talk to the needed area without needing to dial.

The enhanced 911 service will include a video screen showing the calling party's address and name. This is specially helpful when a child makes a 911 call in an emergency situation and does not know how to give the proper address. The county is waiting for South Central Bell to install a computer and compile a list of street addresses. Once the hardware is ready, the county will submit a referendum to popular vote.

VII. Telecom Providers' Role in Development

A. *A Question of Potential*

As we have found in other rural studies (e.g., Schmandt et al., 1991), telecommunications providers can often be a visible factor in community development. For switched network providers this might take the form of advising a community on options for upgrading its telecommunications infrastructure, working with city or chamber officials in briefing business-site location teams on services available in the area, offering small business seminars on such topics as 800 marketing, lending executives aid in community projects, or donating funds for worthy causes.

In the broadcasting or cable areas, this assistance may take the form of encouraging community programming (news, interview shows, coverage of city or school board meetings), teaming up to promote community projects, lending executives, or donating funds.

Rural areas or small towns are often at a disadvantage in gaining developmental help from telecommunications providers because that provider, if locally owned, is typically small and does not have the resources or, if "outside" owned, may not have a sufficient presence in the community to participate in developmental activities. In the aforementioned study we found that locally owned telephone companies or cooperatives often had a more vested interest in their communities than an independent owned by a large company or a Bell system company owned by a regional holding company.

For Demopolis and the surrounding area, we clustered telecommunications providers into three groups: broadcasters and the local cable company; the local telecommunications equipment and service provider (Collins Communication); and the Bell

company (South Central Bell Telephone). For broadband services, we found that there is little local coverage or access for locals to provide programming. The cable company has no record of community contribution and in several interviews came under criticism. South Central Bell Telephone, although lauded for contributions in funds and other help for selected local events, plays little, if any, role in local economic development. And the local equipment provider (Collins) is too small to be of much consequence.

B. *Broadcasting and Cable*

According to Judy Faile, manager of radio stations WXAL-AM and WZNJ-FM in Demopolis, residents of Marengo County can receive two network-affiliated stations and the local PBS stations without cable. To receive all networks and additional stations, either cable or a satellite dish are needed (Judy Faile, interview, 8 March 1990).

Radio provides little in the way of community involvement. Judy Faile said her stations are mostly electronically controlled, meaning there is little in the way of local origination or local announcing. A morning disc jockey supervises the stations' simulcasts, and WXAL carries a long-running Sunday morning gospel show. WXAL, Faile said, is the strongest local presence during rated periods, just because of name identification. She said most people in the community actually listen to WZNJ. Stations WXAL and WZNJ receive news through satellite transmissions which includes Mutual's national news network. Regional news comes to the station through Alanet, a statewide service accessed through a modem.

In Demopolis, the supplier of cable is Asa Goldman through his majority-owned and -controlled Demopolis CATV. Faile and others said Goldman has a negative reputation in the community because of his administration of the cable wires. Goldman said he delivers 36 channels for $18, compared with the Linden system's charge of $18 for 18 channels. For another $11, Goldman will also supply HBO. Although residents have asked for Disney and other channels, Goldman does not supply these.

Goldman has been plagued with service theft because he does not send scrambled signals to customers. Goldman has prosecuted a local coach for stealing signals; in turn, Goldman is being sued because he refuses to give cable to an apartment building which is the site of frequent unlawful connections.

Satellite dish sales are a common sight among the towns of western Alabama. Linden and Butler have sales locations; Demopolis' vendor recently closed its office. Jane Gross at the Demopolis Chamber of Commerce said dish salesmen "come and go in these communities" (Jane Gross, interview, 16 February 1990).

What are the prospects for more community use of broadcast media? Probably not much unless some type of local initiative is taken. Low-power television licenses (LPTV) were created for just such a purpose, but an LPTV venture in Demopolis had problems maintaining its frequency without intruding upon other channels. It enjoyed some success until Goldman refused carriage over his cable system. Consequently, the LPTV carrier went bankrupt.

Competition in the cable area might attract more community services, such as a short-range "broadcast cable-TV" provider. But the market may not be able to withstand both competition and Goldman. Another scenario could involve whether or not telephone companies are allowed to enter into delivery of video services which, for the most part, they are now prohibited from doing. A rural exemption would allow phone companies to concurrently operate the cable and telephone service in one community, but certain conditions apply—for example, there can be no other franchise applicant in the area and the community itself cannot exceed 2,500 residents. Currently, if a company services fewer than 2,500 lines, it can legally enter into the cable business, though this is typically reflected in dual ownership rather than the use of a single network. (Modern advances in fiber optic transmission and switching will likely allow use of a common network for broadband, voice, and data services.) Currently, South Central Bell is barred from

becoming a cable provider, but would like to enter into the business. But whether South Central Bell would enter a cable market like Demopolis is another issue and it is difficult to obtain a confirmation from the company at this time. Perhaps if it were possible to enter several additional unregulated lines of business, the Bell company could find economies of scope that could lead to a suitable return on investment in a town the size of Demopolis.

Asa Goldman, the local cable owner, disagrees because he has found that large utility companies typically cannot serve the small community best (Asa Goldman, interview, 2 February 1990).

The Butler Telephone Company in Choctaw County, a private telephone company with an entrepreneurial spirit and a subsidiary of Telephone Data Services (TDS), would like to acquire the cable franchise for its area, according to Manager Robert Kidd (Robert Kidd, interview, 9 March 1990). The current supplier from Meridian, Mississippi, is unresponsive toward the community, Kidd said. If competition is granted, or if Butler can obtain the local franchise, Kidd felt his company could deliver better service to Choctaw County.

C. *Other Telecommunications Providers*

Other services, such as mobile radio, cable television, satellite television, and alternative long-distance providers, are available in each location. No wireless cable or cellular telephone competes with the more conventional media—the closest cell is in Tuscaloosa. In some cases, alternative providers, not the telephone company, supply these services. Collins Communication, an independent telephone equipment dealer and consultant, serves the industry sector in each of these towns (Woody Collins, interview, 16 February 1990). Collins Communication, then, provides local solutions. Since South Central Bell considers Demopolis to be a small and nongrowth market, it has a lower presence there than in larger towns (Mickey Harbin, interview, 6 March 1990).

Collins Communication has successfully supplied the needs of Gulf States, James River, International Paper, and other local plants. In addition, Collins serves smaller businesses through the provision of mobile radios.

Although South Central Bell seems comfortable with the local competition of telecommunications services, Butler Telephone Company has other goals. Unlike Bell, the TDS subsidiary is judged by its ability to satisfy its service area. Robert Kidd, manager of Butler, would like to regain the switching of James River, as well as obtain the local cable television franchise. Kidd would like to sell his services to everyone in his community who can use the lines. Kidd wants to find new telecommunications uses in his community. Butler, however, cannot provide a greater area of local (nontoll) service, due to LATA divisions. Many James River employees live in Demopolis, which is a toll call from the Pennington plant (Robert Kidd, interview, 9 March 1990).

The modified final judgment did reduce the local presence of the Bell companies in rural areas, but special services have been filled in by local companies. Where South Central Bell does not provide services, the enterprising Collins Communication, a family business, fills the gap. Butler Telephone also has the same motivation: to serve each member of the community well. Smaller companies may be best suited to serve America's smaller markets, especially as the know-how and large-scale resources of the Bell company are not as available to rural customers as their urban counterparts, clearly an inequity for a publicly regulated system.

Mobile radios, such as those provided by West Alabama Two-Way and Collins Communication, also help informal communications. New systems to provide rural radio are also being developed. These include frequency division multiple access (FDMA), shared lines, and direct lines (Skip Caldwell, interview, 8 March 1990). The need for alternatives to regular telephone service is obvious.

In Pennington and Butler, however, the situation is quite different. A smaller company serves that area and has made itself well known. Though it is owned by TDS, it

is treated like a local company and management is kept on the local level. Manager Robert Kidd has four switches within his control, comprising phone service for about one half of his LATA. With a service area limited in size, every client has greater importance and therefore service to customers is more personal. Thus, while South Central Bell has abandoned provision of some services to outside companies such as Collins Communication and West Alabama Two-Way, Butler Telephone Company seeks to provide as many services as it can.

On the other hand, Naheola Mill telecommunications personnel report that they have not always been satisfied with dealing with a small local telephone company, even though conditions improved when Butler was acquired by TDS. Currently, the parent James River Corporation has negotiated an overall telecommunications contract with AT&T for all of its plants, so Naheola personnel now follow the headquarters policy rather than formulate their own. This includes relations with Butler Telephone, where AT&T now directly negotiates Naheola Mill's business (Tony Storey, interview, 3 August 1990).

D. *South Central Bell*

Because of its small size, Demopolis does not have a South Central Bell business office nor full-time representatives. It does have a switch office, however, in Demopolis, though no local customer service personnel work from either Demopolis or Linden. According to Mickey Harbin, South Central Bell director of economic development, the company mission is to serve Demopolis and other towns its size, but there are no special activities or missions concerning their development other than to provide quality telephone service (Mickey Harbin and Calvin Nelson, interviews, 6 March 1990).

If a Demopolis customer desires service from South Central Bell, he or she calls a toll-free sales number in the Demopolis-Linden directory. Depending upon whether it is residential, small business, or large customer service, the call will be handed off to the respective South Central Bell representative. Unless a customer is a large one (like the paper mill, school district, etc.), the service will probably be provided without a visit by a company salesperson. Linda McGrue, a newly appointed marketing representative for the area, must cover a large part of rural Alabama, so her chances of visiting Demopolis are small unless there is a special customer to visit. (She says she often has to drive two hours for every one hour of business that she does) (Linda McGrue, interview, 9 July 1990).

As recently as 1967, Demopolis and other Alabama rural areas were served by crossbar switches. Demopolis now has a DMS 100 digital switch (which is also the host office for Linden), while Butler Telephone provides a DMS 1 switch to the James River mill. Fiber connections are available to those central offices. Except for current use by the progressive LaFarge Cement Company in Demopolis, fiber paths are still being developed.

Mickey Harbin, South Central Bell's economic development specialist in Alabama, said many services are available in Demopolis. T-1 carrier lines, business development meetings, and Centrex are available to local businesses. Fleming said that so far, the local power plant has been the only company to utilize the advanced capabilities of the local switch.

South Central Bell is generally concerned, however, with what new services it might provide to rural areas. In Mississippi, for example, it is planning a demonstration of a switched distance learning network called Mississippi 2000 (previously discussed in the section on education). When implemented, the project will include fully interactive audio and video. This pilot could then be put into other South Central Bell rural LATAs, such as those in Alabama (Brent McMahon, interview, 6 March 1990).

VIII. Conclusions

A. *Future of Demopolis*

Given its recent history, it appears that Demopolis can sustain its current prosperity as long as the region is a willing host to the two large paper mills, economic diversification is maintained, and ethnic relations remain cooperative (or improve). Continuing attention needs to be given to promoting local businesses for retail trade and financial services, as well as to improving the educational level of the local population. As the mills begin to require a higher level of education for its new workers and local businesses require a higher level of managerial skills, local schools need to meet the challenge of education "for and by technology," as some have said. In the long run, Demopolis can be the economic and social services hub of the three-county region. The possible growth of recreation associated with the Tombigbee Waterway may offer even more opportunity for growth, but only if the Demopolis land problem (i.e., owners holding undeveloped acreage) is solved.

High-technology companies bring state-of-the-art equipment to rural areas. As Willoughby said, the need for educated personnel to run that equipment increased the level of education within Demopolis. And once that human and technological infrastructure is in place, other companies can easily move in because hiring and implementation are easily accessible.

Choosing industries others reject is another key to the success of Demopolis. By allowing toxic waste to be trucked through the community and water from the trucks to be washed into the sewer system, the community created more jobs. Blue Waters Catfish, also a high-waste industry, was also allowed into the community. The trade of cleaner water and air for jobs may be a continuing issue.

Other rural areas of America can take note of the importance of economic diversification as promoted by business and civic leaders of Demopolis. These leaders could have been content to settle for one-industry employment, which would have been prone to disaster if this industrial sector had failed. Instead, additional employers have given the area an economy of scale sufficient to support a medical, educational, and social services infrastructure. Furthermore, there is now a sufficient community of economic interest in Demopolis to support additional activities (e.g., chamber operations, industrial park) to sustain or promote growth.

B. *School Innovations*

Education has been an important factor in the community development of Demopolis. When workers in Choctaw County also choose to reside in Demopolis, an hour away by country roads, it must be for some reason. Demopolis boasts the best school system in west central Alabama. And the influx of residents to Demopolis has allowed more small, service-oriented businesses to thrive.

School personnel have done well in taking advantage of opportunities for gaining distance learning equipment and services, almost all of which has been part of essentially "donated" programs (TI-IN through a University of Alabama project and equipment and a dish from the commercially oriented Whittle service). The school district has been innovative and constructive in trying to promote distance learning, probably more so than some districts elsewhere in rural America that have received specific funding in this area. It was intriguing for us to see at this research site the growing complementarity of school officials and local plant personnel regarding the challenges of educating the local work force, especially in the "informating" of work. But there is still a distance to go.

C. *The Role of Telecommunications*

In all, although telecommunications has played a supportive role in Demopolis—South Central Bell deployed a digital switch, there are inexpensive cable services, and local service and equipment providers have been able to meet basic needs—it has not had a particularly proactive role. Telecommunications as a strategic investment has not been a visible component of Demopolis activities, nor has South Central Bell, whose parent company Bell South claims a serious interest in Southern rural development. As far as we could determine, the Bell company aims to meet only obvious needs and is occasionally involved in civic events of Demopolis, but there is no evidence of direct involvement in economic development or social service activities that could benefit from modern telecommunications planning. Long distance (interexchange) providers have no visible presence in Demopolis apart from offering services.

The local broadcasters contribute little to community affairs save for the Sunday gospel program. And the cable provider seems to operate at a basic level of existence with little inclination—or perhaps resources—to do much more.

The main local telecommunications equipment and service company in telecommunications, Collins Communication—though enterprising—is small and parochial in outlook and difficult to contact unless a customer relationship has already been established.

Probably the greatest and most realistic priority for telecommunications to more proactively sustain the development of the Demopolis area (as well as offer an example for other rural areas) would be to gain more direct involvement from the local exchange company, South Central Bell, in community business and public service development. As already mentioned in this chapter, it does not appear that the choice by Bell companies to retreat from visibility in rural service areas was a totally voluntary one. Divestiture cut them off from being a total service and equipment provider, severely restricting the economies of scale needed to support investment and personnel in areas like Demopolis. This lack of visibility is also associated with increasing reliability and automation of the network. It simply isn't as necessary now to have as many local personnel as in the days of electromechanical switches and total "outside" wire. If the Bell companies were encouraged to do more in rural America, they might enter into more lines of local business, such as cable television, which, building upon urban services, they could probably provide more effectively than small local companies can. It is thus important to ask the Bell companies and other large-owner rural service providers about the scope and amount of businesses they would require in order to increase their local presence to, say, an office for sales, services, and consultation.

Along this same line, it seems important to examine how stronger telcos might benefit the infrastructure for public services, especially education. Bell South has already embarked on a major demonstration project, Mississippi 2000, which will allow rural schools to engage in resource sharing. What is the transferability of a project like that to a region like Demopolis and the adjacent counties? A Bell company/school district partnership could vastly benefit both. Schools could move more quickly into the information age, training students for the changing world of information work. Distance learning might even link directly into training facilities of the local paper mills so students and faculty could bridge the gap between educators' conceptualizations of the uses of computers in the workplace and the practical requirements of plant managers.

Alternatively, the Bell company could discover justification for rural network investment and entry into alternative lines of business. Other partnerships would be necessary, such as with other local exchange companies (TDS Butler, for one), and solutions to barriers raised by LATA boundaries, toll zones, and the like would have to be

found.[7] Similar partnerships might be developed in the delivery of other public services such as in employment, health care, security, and welfare.

Whether such partnerships ever develop will largely depend upon decisions made far from the rural areas of America, and places like Demopolis in particular. But as much as they can, leaders in these areas should lobby for change, because divestiture has put them at a disadvantage relative to their urban counterparts. In the meantime, state, regional, and local officials should implement what they can of ideas for strategic implementation of telecommunications.

Epilogue

On June 13-14, 1991 project directors Sharon Strover and Frederick Williams visited Demopolis as a part of a "follow-on" project to evaluate local leaders' reactions to the community reports, to discuss major themes in more detail, and, generally, to view what changes had taken place over the 10 months since the last visit. After all sites have been visited, this information will be compiled in an "epilogue" report on the project. At this time, these generalizations were drawn from the revisit to Demopolis:

• Economic diversification continues. The trash container factory is now operating (fabricating containers for Gulf War clean-up). A feedlot operation may be greatly expanded to serve Japanese customers. A houseboat construction company has gone into business. Several small and minority businesses have been established (hair salon, dress shop).

• Technology continues important in mill operations. The Gulf State's plant upgrade is now underway. James River executives now carry portable computers that can communicate to all parts of the company and headquarters via phone modem.

• The Demopolis School District continues to be a positive example of racial harmony; Thomas Moore, a black, is now president of the school board. The city has authorized an increase in local sales tax to support the building of a new high school. On the other hand, there is some talk at the state of forcing consolidation of the Demopolis city district with parts of surrounding county areas. In the opinion of Wesley Hill, Demopolis superintendent, this would destroy the racial cooperation built up over the years.

• In the minds of many of its leaders, the continued well-being of Demopolis will depend upon the continued diversification of business that can employ workers for a living wage (and benefits), cooperation with the two large paper mills, improved education of the population, and a special emphasis upon racial harmony that means, among other factors, that blacks have upward economic mobility and participate more in local decision making processes.

• One oversight in the study was our lack of more focus on the economic development efforts of Alabama Power which includes sponsoring trips to Demopolis of personnel scouting company sites. South Central Bell continues to be a "well thought of" telephone service provider, but is not seen as an active partner in local development efforts.

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[7] One must bear in mind, however, the current legal restrictions that discourage Bell company development of such projects. For example, without a special exemption, a local exchange company cannot deliver service across a LATA boundary (essentially marking their territory) lest they be in the interexchange business from which they are now barred. Many interdistrict school networks would cross LATA boundaries. Another restriction is that if any expenses are to be charged against the company's rate base, they must be approved by the state's Public Utility Commission. A current state and national regulatory issue is whether such services should be a part of customers' telephone bills.

Interview Master List

Allinder, Kate—Owner, H & R Block, Demopolis, Alabama. Interviewed by Joan Stuller, 8 March 1990.

Avery, Charles—Chief of Police, Demopolis, Alabama. Interviewed by Dale Phillips, 8 March 1990.

Caldwell, Austin—Mayor, Demopolis, Alabama. Interviewed by Joan Stuller, 17 February 1990, and via telephone by Liching Sung, 6 August 1990.

Caldwell, Skip—Owner, West Alabama Two-Way, Demopolis, Alabama. Interviewed by Joan Stuller, 8 March 1990.

Campbell, Grey—Electrical Engineering Section Head, Gulf States Paper Corporation. Interviewed by Frederick Williams and Liching Sung, 2 August 1990.

Carpenter, Jackie—Assistant Site Manager, Systech, Demopolis, Alabama. Interviewed by Joan Stuller, 9 March 1990.

Coley, Ron—Manager, Business Systems, James River Corporation, Pennington, Alabama. Interviewed by Frederick Williams and Liching Sung, 3 August 1990.

Collins, Woody—Owner, Collins Communication, Demopolis, Alabama. Interviewed by Joan Stuller, 16 February 1990.

Dailey, Gary—Plant Accountant, Gulf States Paper Corporation. Interviewed by Frederick Williams and Liching Sung,l 2 August 1990.

Daniels, Joan—Clerk, Ye Ole Shack Florist Shop, Demopolis, Alabama. Interviewed by Joan Stuller, 8 March 1990.

Evans, Arthur D.—Director, Fiscal Services, Bryan W. Whitfield Memorial Hospital, Demopolis, Alabama. Interviewed by Liching Sung, 3 August 1990.

Faile, Judy—Manager, WXAL and WZNJ Radio, Demopolis, Alabama. Interviewed by Joan Stuller, March 1990.

Fleming, C. E.—Electronic Technician, South Central Bell, Demopolis, Alabama. Interviewed by Joan Stuller, 16 February 1990.

Garner, David—Communications Manager, Vanity Fair Marengo Mills, Demopolis, Alabama. Interviewed by Joan Stuller, 7 February 1990.

Goldman, Asa—Owner, Demopolis CATV, Demopolis, Alabama. Interviewed via telephone by Joan Stuller, 2 February 1990.

Gross, Jane—Director, Demopolis Chamber of Commerce, Demopolis, Alabama. Interviewed by Joan Stuller, 16 February 1990, and by Frederick Williams and Liching Sung, 2 August 1990.

Harbin, Mickey—Economic Development, South Central Bell Alabama Operation. Interviewed via telephone by Frederick Williams, 6 March 1990.

Hill, Wesley—Superintendent, Demopolis City Board of Education, Demopolis, Alabama. Interviewed via telephone by Frederick Williams, 6 March 1990.

Ignac, John C.—Director, Mill Services, James River Corporation, Pennington, Alabama. Interviewed by Frederick Williams and Liching Sung, 3 August 1990.

Jay, Shirley—Owner, Century 21 Realty, Demopolis, Alabama. Interviewed by Joan Stuller, 8 March 1990.

Johnston, Gina—Counselor, Demopolis High School, Demopolis, Alabama. Interviewed by Frederick Williams, 3 August 1990.

Kidd, Robert—Manager, TDS Butler Telephone Company, Butler, Alabama. Interviewed by Joan Stuller and Dale Phillips, 9 March 1990.

Kirby, Olen, Jr.—Senior Vice President, Robertson Banking Company, Demopolis, Alabama. Interviewed by Joan Stuller, 8 March 1990.

Lee, Paul S.—Product Group Section Head, Gulf States Paper Corporation. Interviewed by Frederick Williams and Liching Sung, 2 August 1990.

Lloyd, Hugh A.—Chairman of the Board, Robertson Banking Company, Demopolis, Alabama. Interviewed by Frederick Williams and Liching Sung, 2 August 1990.

Manley, Richard—City Attorney and Alabama State Representative, Demopolis, Alabama. Interviewed by Joan Stuller, 9 March 1990.

Martin, William E.—Maintenance Engineer and Telecommunications Manager, Gulf States Paper Corporation, Demopolis, Alabama. Interviewed by Joan Stuller, 16 February 1990, and by Frederick Williams and Liching Sung, 2 August 1990.

Mayton, Kim—Owner, One-Stop Building Supply, Demopolis, Alabama. Interviewed by Frederick Williams and Liching Sung, 2 August 1990.

McDaniel, Joseph—Principal, U.S. Jones Middle School, Demopolis, Alabama. Interviewed by Frederick Williams, 3 August 1990.

McGrue, Linda—Account Executive for Demopolis Area, South Central Bell. Interviewed via telephone by Frederick Williams, 9 July 1990.

McMahon, Brent—Manager of Mississippi 2000 Project, South Central Bell. Interviewed via telephone by Frederick Williams, 6 March 1990.

Meigs, Robert M.—Assistant Police Chief, Demopolis Police Department, Demopolis, Alabama. Interviewed by Joan Stuller, 17 February 1990.

Miles, W. J.—Commissioner, Marengo County, Demopolis Alabama. Interviewed by Joan Stuller, 9 March 1990, and by Frederick Williams and Liching Sung, 2 August 1990.

Moore, Thomas—Revenue Examiner, Department of Revenue, State of Alabama. Interviewed by Dale Phillips, 8 March 1990.

Nelson, Calvin—Branch Manager, Marketing, South Central Bell. Interviewed via telephone by Frederick Williams, 6 March 1990.

Northcutt, John E.—President and Trust Officer, Robertson Banking Company, Demopolis, Alabama. Interviewed by Frederick Williams and Liching Sung, 2 August 1990.

Russel, H. D.—Principal, Demopolis High School, Demopolis, Alabama. Interview by Frederick Williams, 3 August 1990.

Sampson, Ellis—Director, Human Resources, James River Corporation, Pennington, Alabama. Interviewed by Frederick Williams and Liching Sung, 3 August 1990.

Skinner, Donald G.—Vice President, Manufacturing/Pulp and Paperboard, Gulf States Corporation. Interview by Frederick Williams and Liching Sung, 2 August 1990.

Smith, Debra—Radio Operator, Demopolis Police Department, Demopolis, Alabama. Interviewed by Joan Stuller, 17 February 1990.

Storey, Tony—Manager, Data/Tel Communications, James River Corporation, Pennington, Alabama. Interviewed by Frederick Williams and Liching Sung, 3 August 1990.

Templin, Robert—Assistant Superintendent, Demopolis City Board of Education, Demopolis Alabama. Interviewed by Frederick Williams and Liching Sung, 3 August 1990.

Webb, Mem—Owner, Webb Realty, Demopolis, Alabama. Interviewed by Frederick Williams and Liching Sung, 2 August 1990.

Willoughby, Glenn—Managing Editor, *Demopolis Times*, Demopolis, Alabama. Interviewed by Joan Stuller, 9 March 1990.

Chapter 6

Glendive, Montana: Trapped in the Wide Open Spaces

I. Introduction

Of all our research sites, Glendive, Montana, faces the most extreme privation. Although near Interstate Highway 94, it is quite remote, the nearest sizable population centers being Miles City, 80 miles to the west (population about 8,000), Billings, even further to the west (220 miles west, population about 80,000), and Bismarck, North Dakota (200 miles to the east, population about 50,000). Its Dawson County location in eastern Montana (Figure 6.1, page 160) renders it culturally and geographically closer to the wide, open spaces of North Dakota than to mountainous western Montana; indeed, Glendive is only about 40 miles from North Dakota. Glendive itself is the hub of Dawson County, with about half the county's population of 10,500 residing in the town (Montana Department of Commerce, 1989).

Glendive has lost nearly half its population over the last decade, down from 12,700 people in 1982 to 5,500 in 1990; additionally its dominant industries of mining, oil, and agriculture were hit hard during the 1980s. This predominantly white community is employed in either agriculture (27%) or professional and related services jobs (also 27%).

Agriculture traditionally has been the dominant portion of the local economy, cattle ranching and grain farming comprising the bulk of those activities.[1] Several recent years of drought and insect damage impaired agriculture's prospects in the Glendive area, and the local economy has felt the trickle-down effects of reduced income in the farm sector.[2] Oil and natural gas lent a cyclical factor to the economy, the shifts in those sectors varying widely during the past several years. The net effect has been tremendous economic difficulties and the feeling of being caught in a downward spiral.

Currently the largest local employers include Burlington Northern, which primarily operates a repair facility for its trains in Glendive;[3] Montana Dakota Utilities; the Glendive Medical Center, and the community college. The town lost 51 businesses, including a Safeway and J.C. Penney's, in the last five years (Dennis Winters, interview, 28 February 1990). Its current economic prospects focus on the imminent construction of a Veterans Administration hospital and the marketing of a local "caviar" from the large paddlefish common in Montana waters.

Against this backdrop, the prospect of local telecommunications services contributing to the locality appears only faintly to the community. Nevertheless, a unique and interesting aspect of the Glendive region is that the area is served by a telephone cooperative, Mid-Rivers Telephone Cooperative, that has state-of-the-art technology. Its system employs digital switches in all offices and several fiber links. Glendive itself is served by US West, which uses electromechanical switches for local service in town. The cooperative surrounds the US West territory, serving 5,500 subscribers in a landmass the size of the state of Virginia. Its service density is extremely low. Consequently, the efforts

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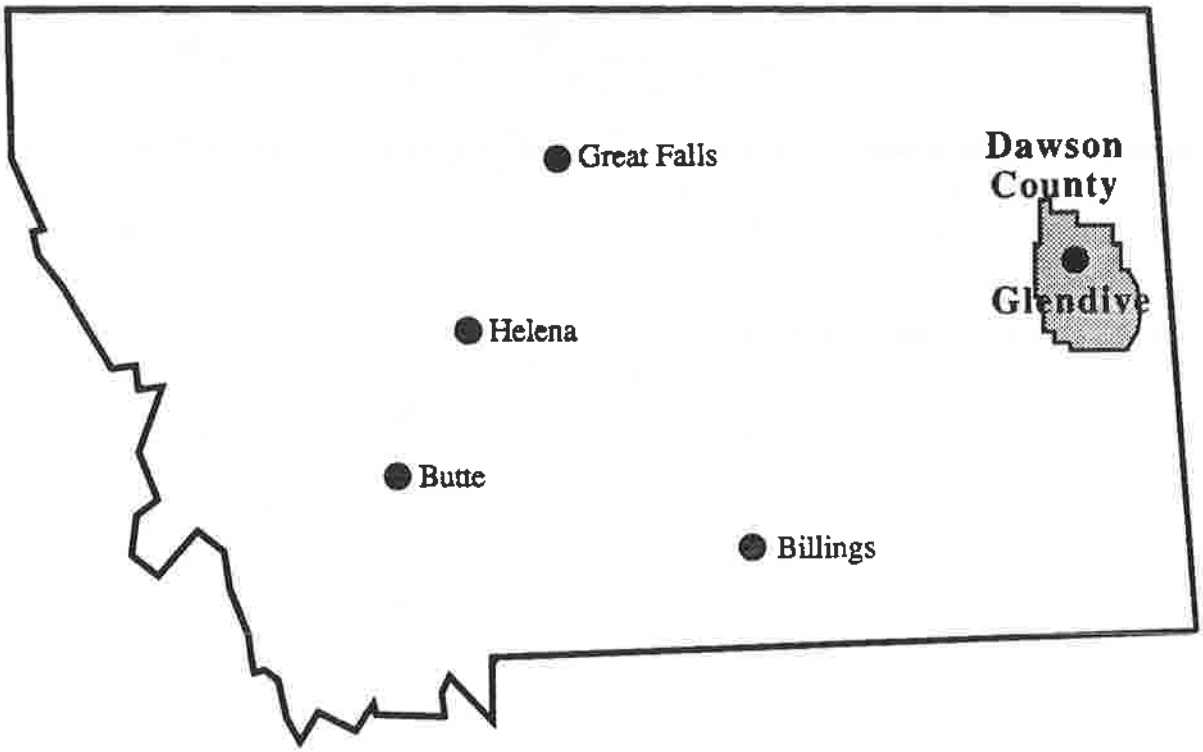
[1] It is worth noting that although employment in agriculture throughout the state of Montana decreased during the past 20 years, actual crop and livestock production grew, the differential attributable to improved technologies (Montana Department of Commerce, 1989).

[2] According to the managing editor of the local newspaper, Jinny Archdale, in the 1980s Glendive had five years of drought and two years of grasshoppers, with only three years of what were considered "normal" growing conditions (Jinny Archdale, interview, 5 January 1990).

[3] Although reduced to operate only as a freight and coal hauler, the railroad company continues to play a major role in Glendive's economy.

Figure 6.1. Location of Glendive and Dawson County, Montana.



of an aggressive, modernized, locally owned provider illustrate some of the dynamics of what telecommunications can (or cannot) do in a rural region beset by substantial economic difficulties.

Glendive has awakened to its economically precarious situation, and has engaged in several economic development efforts, albeit not without some internal dissension regarding what path is best for the community. Most recently, it has considered ways it might work with other local communities in order to stretch limited resources further. The term "local" may be somewhat misleading here, however, because such towns can be 40 miles away. Distance education efforts may be the first testing ground for local cooperation, and telecommunications is intimately involved in the plan.

II. Economic Analysis of Glendive and Dawson County

Glendive's economy is typical of rural towns lacking a diversified economic base. The region's health has revolved around only two industries: agriculture and more recently oil and gas (energy industries). A subsidiary sector, transportation, is highly dependent on the others for its activity. As the area now seeks additional sources of revenue, there is less likelihood that it will be seduced into false recoveries. Glendive has endured the uncertainties of oil and gas and the vagaries of agriculture. While it undoubtedly will continue to depend on both in the future, the search for additional sources of income and employment, and particularly, *varied* sources for employment, is paramount.

Before 1960, Glendive depended on both agriculture and the railroad industry for its economic base. However, during the 1950s, the discovery of oil and gas made mining the dominant industry in the area's economy. Under the influence of the erratic mining industry, the county since has experienced cyclical growth and decline. In 1950, Dawson County had 9,092 people. By 1960, with the addition of the mining industry, the county population soared to over 12,000. However, since 1960, the county's population has fluctuated from 10,900 in 1972, to over 12,700 in 1982, and back down to 10,100 by 1988. The region's cyclical economy is primarily due to the exploration and mining of oil and gas in the area. When the national mining industry is in an upswing, the economy of Dawson County thrives. However, when the national mining industry is depressed, so is the economy of Dawson County.

The other principal industries in the county are transportation, public utilities, and agriculture. Although these industries are more stable than mining, they also experience economic swings. Transportation and public utilities fluctuate because they have become increasingly dependent on mining and the population created by the mining industry. Agriculture also fluctuates, depending on the weather and commodity prices, but the down cycles usually rebound quicker. Glendive's region has recently experienced several years of drought, severely impairing agriculture's vitality.

A. *Dawson County Nonagricultural Economic Base*[4]

This economic analysis of Glendive and Dawson County, compares the industrial employment in Dawson County to the employment for the nation because the analysis was more illustrative than comparing Dawson County to the state of Montana. If the comparison was with Montana, then little would be revealed because the economies of the

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[4] For this report, the economic analysis of Dawson County goes back to 1950. The information for the analysis covers the period from 1950 to 1987, using decennial census data for the ten-year increments from 1950 to 1960, and *County Business Patterns* data for the five-year increments from 1967 to 1987. The analysis is performed on a county level because county employment figures are more accessible and because the economy of Glendive depends on the activity in the surrounding county.

county and state are very similar. However, by comparing Dawson County to the nation, unique features of the area economy are revealed.

Two other points about the following analysis are important. First, the analysis does not include agriculture or government employment since they are not included in *County Business Patterns*. However, since agriculture is an important part of the area economy, it will be covered in a later section. Second, this analysis will primarily cover industries in an aggregate form, because there are not enough disaggregated statistics available for a county as small as Dawson. For instance, the available statistics will only reveal employment data for manufacturing as a whole, rather than showing the disaggregated employment for textiles or lumber products. However, when the data are available, more disaggregated conclusions will be made.

1. *1950 to 1960.* Figures 6.2 (page 163) and 6.3 (page 164) show the location quotients and total employment for Dawson County industries in both 1950 and 1960.[5] In 1950, the only base industry in Dawson County was the transportation and public utilities industry. Underscoring Glendive's role as a rail transportation terminus, the location quotient for this industry in 1950 was 2.9, indicating that Dawson County's percentage of jobs in the transportation industry was roughly three times greater than the percentage of transportation jobs in the nation as a whole. Of the 2,260 jobs in the county, excluding farm and government jobs, the transportation and public utilities industry accounted for 755, or approximately one-third of the total.

By further disaggregating the 755 jobs in the transportation industry, 530 or 70% of them were in "railroads and railway express service." In other words, almost one-fourth of all the nonfarm and nongovernment jobs in Dawson County were related to the railroad

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[5] One method of analyzing a local economy is to determine which industries in the area are base industries. A "base," or "export," industry is one that is considered fundamental to an area's economy. Base, or basic, industries are fundamental because they bring outside income and capital into the area. The income and wages generated by the base industry are then spread throughout the local area, thereby supporting secondary industries, which either provide inputs to the base industries, or provide services to the local population. When jobs in basic industries are created, they lead to subsequent jobs in secondary industries. Conversely, however, when the base industry loses jobs, all other nonbase industries will also lose jobs because of declining area income.

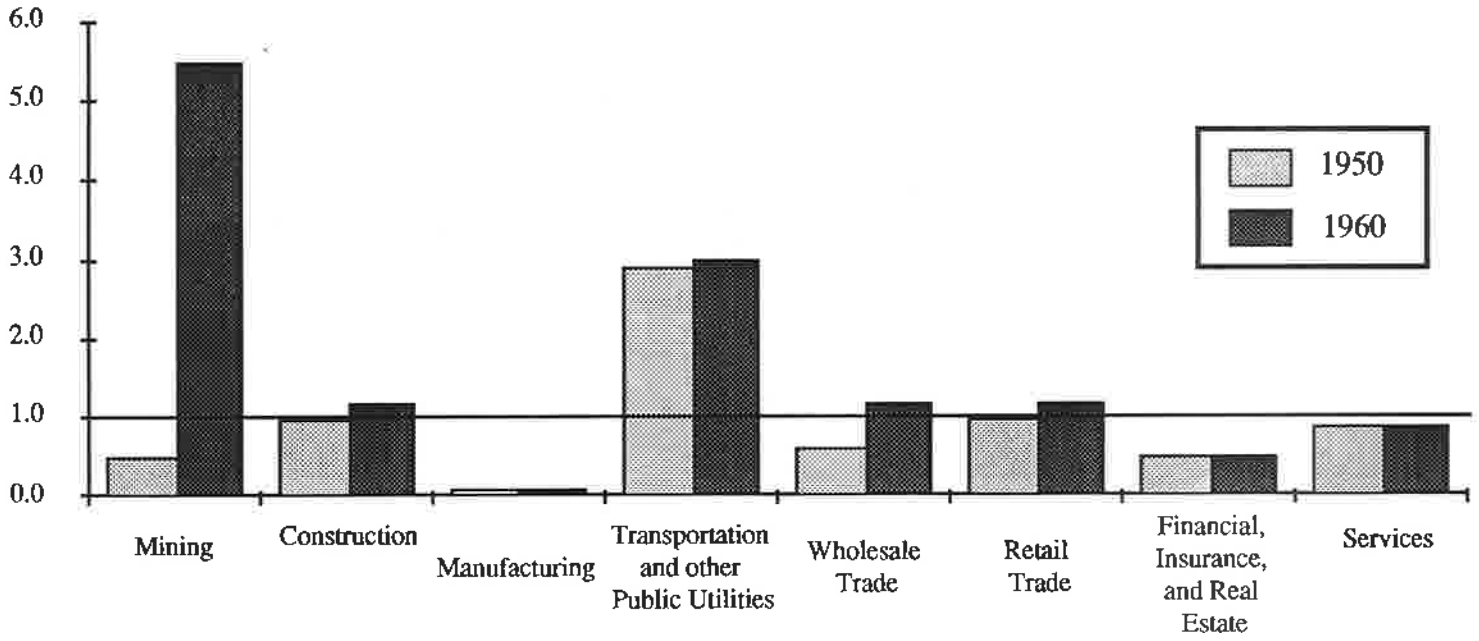
A somewhat simplified example of a base industry is provided by the automotive industry in Detroit, Michigan. The cars manufactured in Detroit are later sold throughout the nation and world. The income generated by the sales supports jobs within the auto company such as machinists, lawyers, and accountants. The auto company employees then use their income to support other occupations, such as storekeepers, carpenters, and doctors. In this manner, income generated from the auto or base industry supports more than just the industry employees. However, when the auto company lays off workers, the downward flow of money to other occupations decreases, and other workers outside the auto industry are also affected.

One method of determining which industries within an area are base industries is the use of location quotients. Location quotients identify base industries using the following argument: If the percentage of total local employment in an industry is greater than the industry's percentage of total national employment, then the industry is assumed to be more than is necessary for local self-sustenance, and will therefore export its excess products out to the nation.

Though the previous argument related a local industry to the nation, location quotients may also be performed using different geographical areas, as long as the two comparative areas are different in size, and as long as the smaller area is economically contained within the larger area. If these two criteria are met, then the assumption that the smaller area will export to the larger area may be regarded with validity.

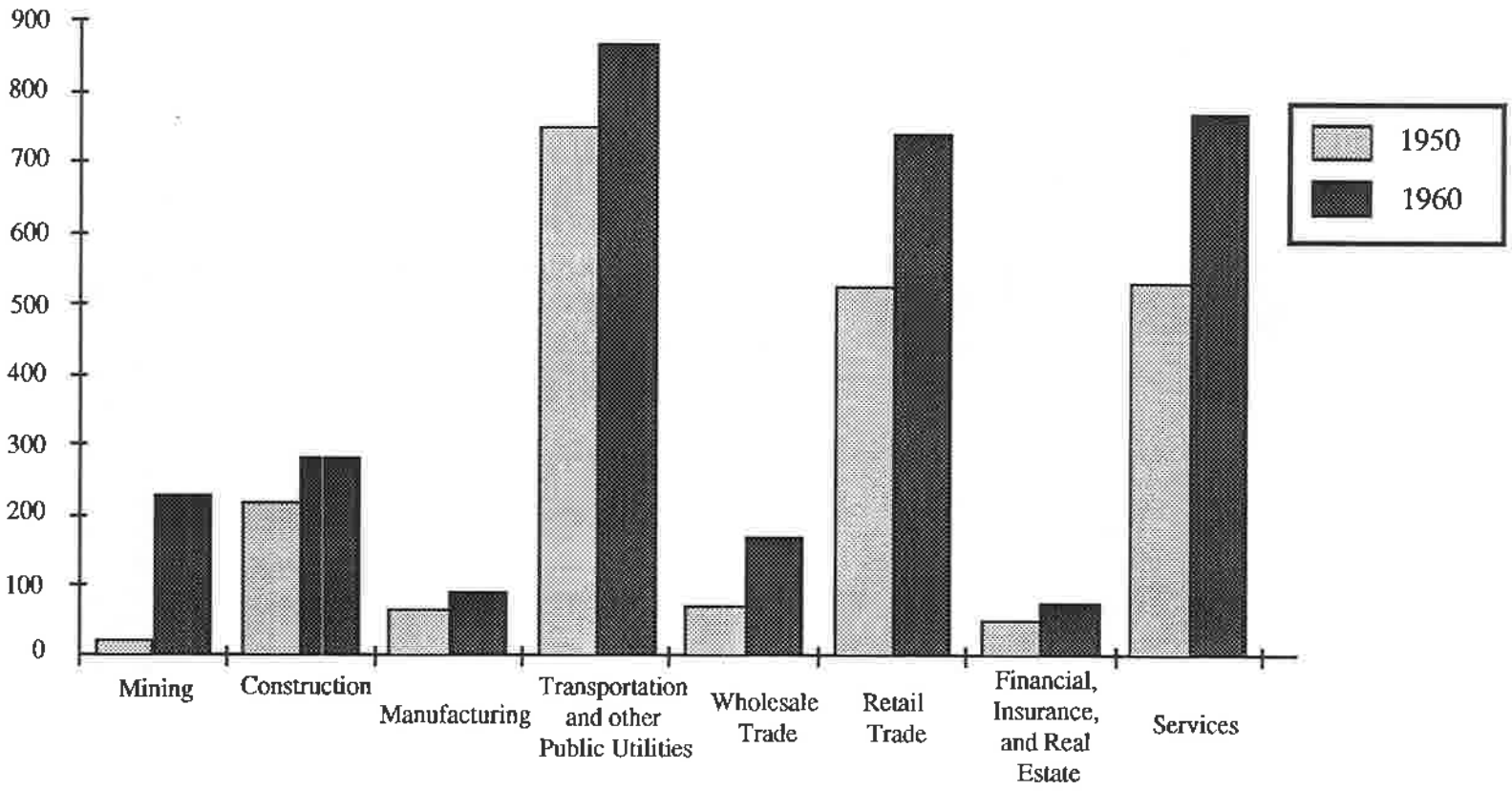
In mathematical terms, industries with location quotients greater than 1.0 are considered base industries, while industries with quotients less than 1.0 are classified as secondary or service industries. However, in using location quotients, the dividing line (1.0) is not so exact. Industries with quotients much greater than 1.0 are considered to be more important, while industries with quotients only slightly greater than 1.0 are not necessarily considered basic.

Figure 6.2. Industry Location Quotients for Dawson County, Montana; 1950 and 1960



SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1950, Characteristics of the Population*, Part 1, U.S. Summary, Table 130, and Part 28, Montana, Table 43; and *U.S. Census of Population: 1960, Characteristics of the Population*, General Social and Economic Characteristics, Part 1, U.S. Summary, Table 91, and Part 28, Montana, Table 85.

Figure 6.3. Industry Employment for Dawson County, Montana; 1950 and 1960



SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1950, Characteristics of the Population*, Part 1, U.S. Summary, Table 130, and Part 28, Montana, Table 43; and *U.S. Census of Population: 1960, Characteristics of the Population*, General Social and Economic Characteristics, Part 1, U.S. Summary, Table 91, and Part 28, Montana, Table 85.

industry. The reason for railroad influence in Dawson County is the location of the Burlington Northern Railroad.

Besides the transportation industry, no other nonagricultural industry in the county had a location quotient over 1.0. Therefore, in 1950, Dawson County was solely dependent on railroad and agriculture to bring outside income into the area. Manufacturing was insignificant to Dawson County's economy, accounting for only 70 jobs, or 3% of total employment in Dawson County, while it accounted for almost 30% of all nonagricultural and public administration employment at a national level. In summary, the nonagricultural economy of Dawson County in 1950 was a specialized one. The county depended solely on the railroad industry as an economic base, with little or no contribution from the manufacturing industry.

By 1960, the economy of Dawson County had drastically changed. Although transportation and public utilities still provided a strong base industry, the discovery of oil and natural gas in the area and its subsequent mining created a new economic base which resulted in a local economic boom. The number of nonagricultural and nongovernment jobs increased from 2,260 in 1950 to 3,242 in 1960, an increase of 44%. In parallel fashion, the county population grew by 35% during the decade, increasing from 9,092 in 1950 to 12,314 in 1960.

As can be seen from Figure 6.2, the location quotients for 1960 illustrate the importance of mining and transportation and public utilities. The location quotient for transportation and public utilities remained nearly constant around 3.0, while the location quotient for mining rose from 0.5 to 5.5, indicating that the industry changed from a relatively unimportant one in 1950 to the county's most dominant nonagricultural industry by 1960. The industry employment levels for the county also reflect the importance of mining and transportation. In 1950, the mining industry only had 26 employees in Dawson County. However, by 1960, the level of mining employment had skyrocketed by 900% to 231 employees. The economic upswing was also felt by transportation and public utilities as employment rose from 755 in 1950 to 871 by 1960

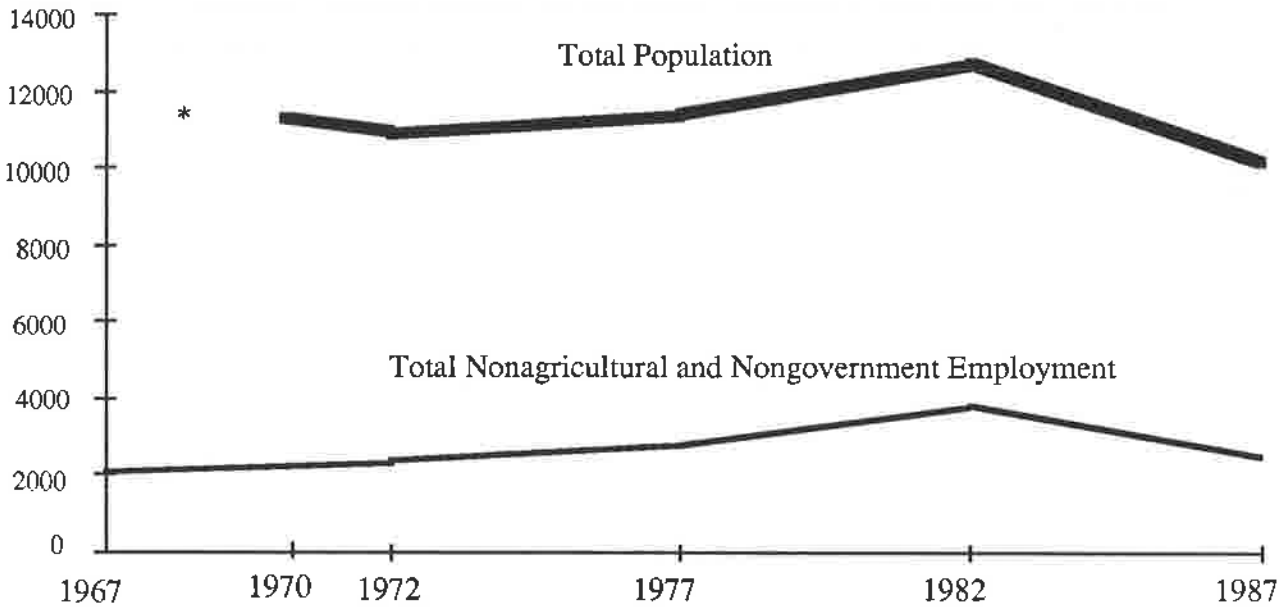
Other industries also benefited by the economic boom during the 1950s. Construction jobs rose from 219 in 1950 to 284 in 1960; wholesale trade jobs grew from 74 to 171; retail trade jobs increased from 527 to 743 and service employment increased from 533 to 772. Manufacturing, although it increased from 70 to 91, still remained a relatively insignificant industry in the county.

2. *1967 to 1987.* The rest of the economic analysis will be based on five-year intervals from 1967 to 1987. Figure 6.4 (page 166) shows the total nonagricultural and nongovernment employment levels for Dawson County from 1967 to 1987. The total county employment increased steadily from 1967 to 1977, then boomed again from 1977 to 1982 due to the oil crisis and rising prices, and then suffered a recession from 1982 to 1987 as oil prices dropped.

The reasons for the steady economic growth from 1967 to 1982 and the subsequent collapse by 1987 are illustrated in Figures 6.5 (page 167) and 6.6 (page 168). Figure 6.5 shows the industry location quotients, while Figure 6.6 shows the employment levels during the period. As was the case from 1950 to 1960, the basic industries for Dawson County from 1967 to 1987 were mining and transportation and public utilities. Even though the location quotients for mining dropped from 1967 to 1977 and rose again from 1977 to 1987, this industry remained the county's primary nonagricultural industry, with quotients always well above 1.0. Transportation and public utilities also remained a basic industry throughout the period, although their relative importance to the economy diminished during the 1980s.

As the mining and transportation and public utilities industries were the prime movers within the county, a look at their employment levels during the period explains the changes in population and total employment. Although employment levels in mining decreased from 1967 to 1977 and other industry jobs were lost as a result of the decrease,

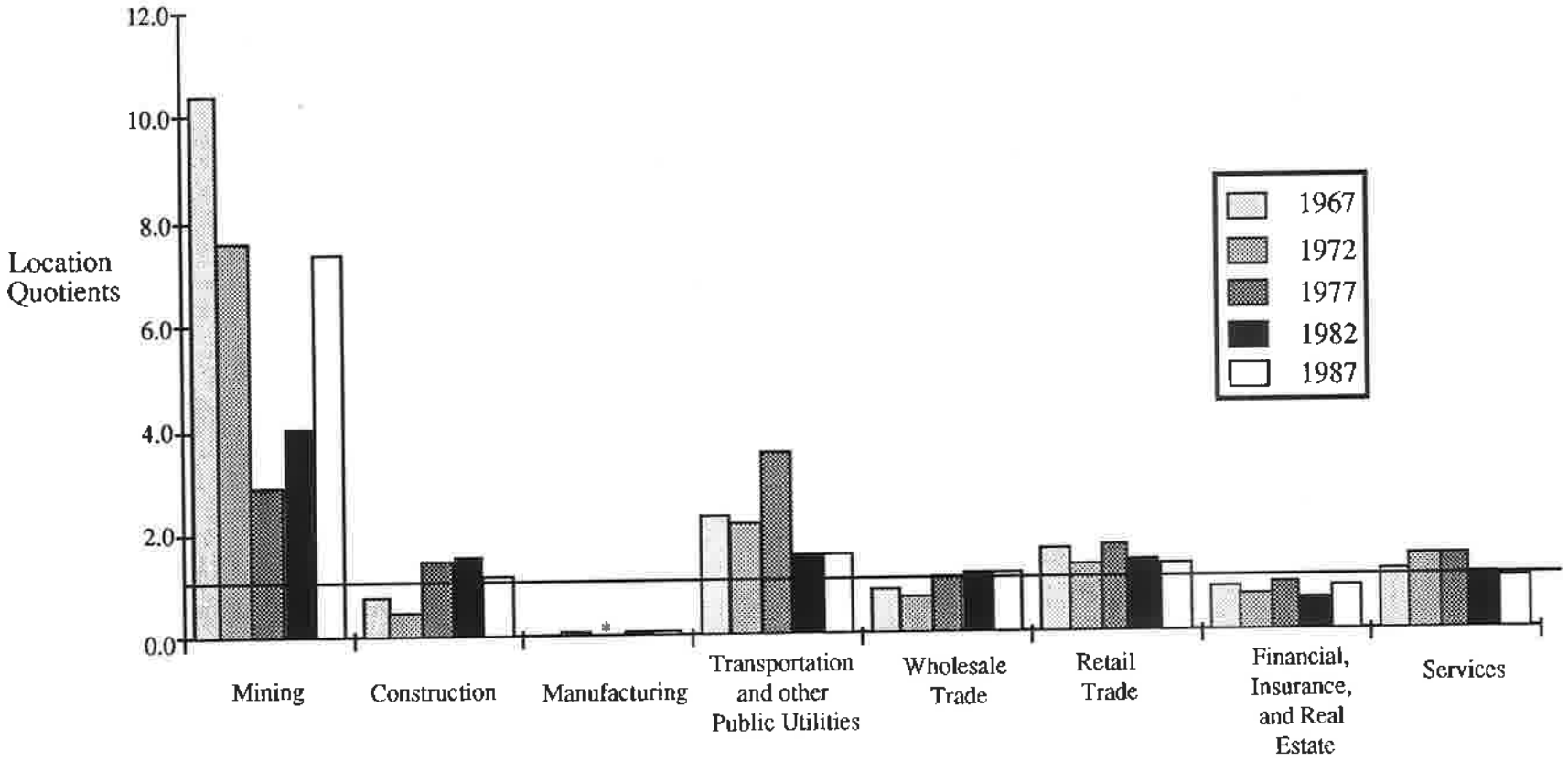
Figure 6.4. Total Nonagricultural And Nongovernment Employment, 1967-1987 and Total Population, 1972-1987



* estimates not available before 1970

SOURCES: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*, CBP-67-28 CBP-72-28, CBP-77-28, CBP-82-28, and CBP-87-28; *Federal-State Program for Population Estimates*, Series P26, No. 129, and Series P26, No. 78-26; and *Current Population Reports: Local Population Estimates*, Series P26, No. 84-W-SC, and Series P26, No. 88-W-SC.

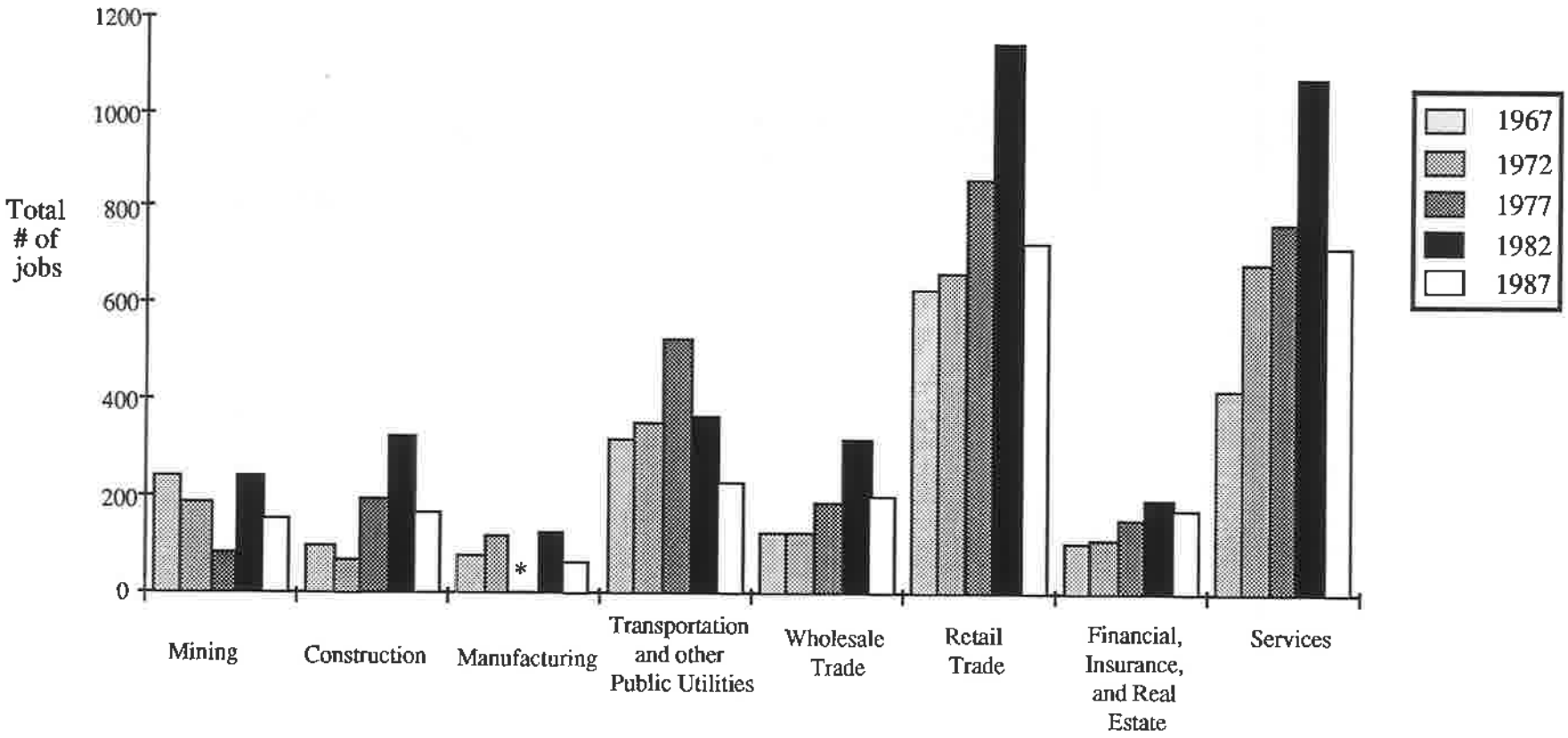
Figure 6.5. Industry Location Quotients for Dawson County, Montana; 1967-1987



* Manufacturing employment was not disclosed for Dawson County in 1977.

SOURCES: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns,* CBP-67-28, CBP-72-28, C P-77-28, CBP-82-28, and CBP-87-28; and CBP-67-1, CBP-72-1, CBP-77-1, CBP-82-1, and CBP-87-1.

Figure 6.6. Industry Employment Levels for Dawson County, Montana; 1967-1987



* Manufacturing employment was not disclosed for Dawson County in 1977.

SOURCES: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*, CBP-67-28, CBP-72-28, CBP-77-28, CBP-82-28, and CBP-87-28.

the ripple effects caused by the increase in transportation and public utilities more than offset the effect of the mining slump.

By looking at the industry breakdown, it appears that two phases occurred from 1967 to 1977. The first phase was the deployment phase of the mining industry, the phase in which the industry gets established in an area. During the deployment phase, there was a large increase in mining jobs such as exploration and drilling. After the exploration ended and the wells were drilled, the mining industry entered into the operational phase. During the operational phase, exploration and drilling jobs were no longer necessary, but there was an increasing need for people to *transport* the energy from Dawson County to other area in the nation. Therefore, the contribution of job growth in the transportation and public utilities industry, primarily aided by growth in the electric, gas, and sanitary service sector, resulted in a net job growth during the 10-year period, even though mining employment decreased.

The opposite trend occurs during the economic expansion from 1977 to 1982. Although transportation and public utilities jobs decreased approximately the same amount that mining employment increased, there was a net growth in total jobs. The reason for the job growth can be explained by the two industries' relative location quotients. Since the quotient for mining was much greater than the quotient for transportation, the equal increase in mining employment resulted in an increase in secondary jobs that was greater than the decrease in secondary jobs caused by the decrease in transportation employment.

For the most recent period from 1982 to 1987, Dawson County experienced an economic recession. During the period, employment levels in both mining and transportation and public utilities decreased. The cumulative effect of the loss of basic jobs caused a ripple effect throughout the local economy, with every industry showing a decrease in employment.

The importance of mining and transportation and public utilities on Dawson County's economy can also be illustrated by comparing the percentage of total employment in the industries to the percentage of the county's total payroll, excluding the income generated from government and agriculture. During the period from 1967 to 1987, only three industries in the county had a greater percentage of the total payroll than they had a percentage of total jobs. Two of the three industries were mining and transportation and public utilities. The third industry was the construction industry. The two basic industries, mining and transportation and public utilities, always maintained a higher percentage of the county's payroll than they did a percentage of the total jobs. In 1967, the two industries employed 27% of the total nonagricultural and nongovernment labor force, but accounted for 42% of the total payroll. From 1972 to 1977, the two industries accounted for less than 25% of the jobs, but over 32% of the payroll. By 1987, the two industries were both in a slump as they accounted for only 16% of the total employment, but they still accounted for 25% of the total payroll. (The construction industry also exhibited this trend, especially from 1982 to 1987. In 1982, the construction industry provided 9% of the total jobs, but 14% of the total payroll. In 1987, the same trend was evident, with the industry accounting for only 7% of the total jobs, but 13% of the total payroll.)

The fact that these three industries were bringing in a greater percentage of income than jobs is evidence that they were high-paying industries and that they were important to the local economy. However, since construction was not a basic industry in Dawson County, this trend was probably solely a reflection of a high-paying industry rather than an industry central to the area's economy.

In summary, the nonagricultural economy of Dawson County presently depends on the energy industry, both the mining of energy and the transport of energy away from the wells. The emergence of mining has changed the area from a farming and railroad town in the 1950s to a farming and energy town. Even the railroad industry, once the leading nonagricultural industry, now depends on the mining industry for cargo. Therefore, besides agriculture, Dawson County is very dependent on the fluctuating energy industry. Should the energy industry further decline or stay depressed, the area has little left besides

agriculture and a minor railroad. The county has no manufacturing base and no other industries which indicate a comparative advantage over other areas of the country.

B. *Agricultural Sector*

Dawson County also has an important agricultural sector. Its basic products are grains (wheat) and cattle, accounting for 85% of all products sold. The county depends on natural precipitation, with only 6% of the harvested cropland grown on irrigated land; 80% of the farm operators consider farming a full-time occupation; and 83% of the farms are operated by either full or part owners.

If we look back at the agricultural trends from 1969, it is evident that although the agricultural economy may have experienced temporary recessions during the period, it has remained a stable part of Dawson County's economy. Figure 6.7 (page 171) illustrates trends which are indicative of agricultural stability.

The number of farms decreased slightly from 552 in 1967 to 499 in 1982, but the number has since stabilized. The average size of the farms slightly increased from 2,548 acres in 1969 to 2,659 acres in 1987. The slight increase in average farm size was probably a result of land transfer from farms that failed during the period to other farms in the county.

The mix of agricultural products fluctuated during the 1970s, but it too has stabilized. In 1969, 48% of the total county agricultural sales was in crops, while 52% was in livestock. By 1974, the mix had changed to 73% crops,and 27% livestock. However, the increasing reliance on crops reversed from 1974 to 1978, as the mix changed to 59% crops and 41% livestock. Since 1978, the relative percentages of crops and livestock has been constant. However, these figures probably mask the impact of the federal Conservation Reserve Program, quite popular in the Glendive region. This program pays farmers to take highly erodible land out of production for 10 years. The program allows as much as one quarter of the croplands in a county to go into CRP; some counties in eastern Montana have almost reached this ceiling (Jinny Archdale, interview, 5 January 1990).

As another indication of Dawson County's agricultural economy, farm operators can be characterized both by ownership of farms and by their principal occupation. In 1968, roughly 30% of the farms in Dawson County were operated by full owners, 57% were run by part owners, and only 11% were operated by tenant farmers. During the 18-year period, some of the part owners in Dawson County either became full owners or tenant farmers in view of the fact that the percentage of part owners decreased during the period, while the percentage of full owners and tenant farmers increased. The increasing trend toward full-owner farm operators indicates a stable industry.

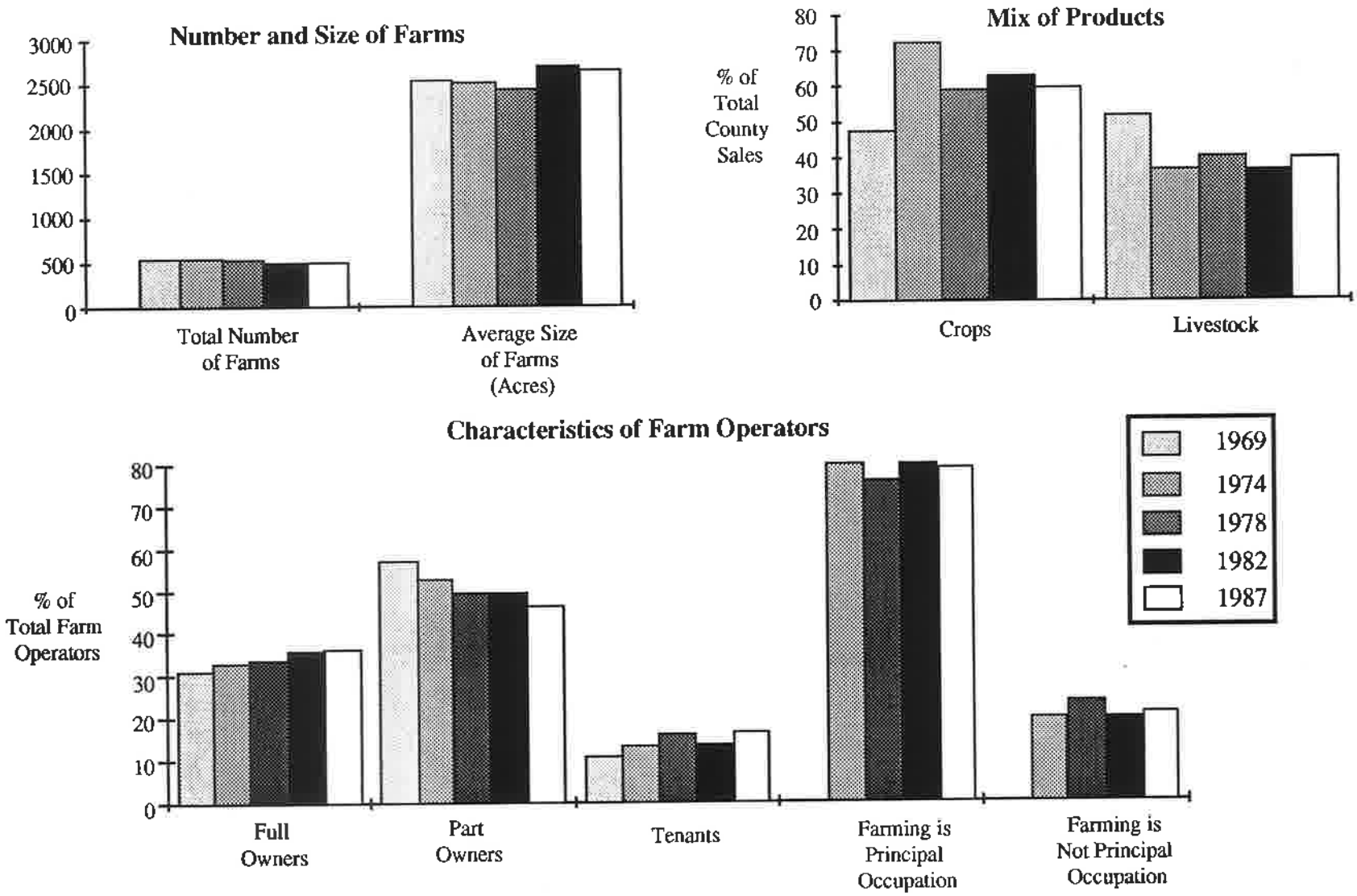
The occupation of the farm operators is another indication of the stability of agriculture in Dawson County. Since 1974, approximately 80% of the farm operators in Dawson County listed their principal occupation as farming, while only 20% of the operators classified themselves as nonfarmers. The percentage of operators who are principally farmers remained relatively constant throughout the period, indicating that farming is still a viable way of life in Dawson County.

In summary, agriculture is an important and stable part of Dawson County's economy. Although the agricultural industry may experience downturns due to droughts and fluctuating prices, the trend of the last 20 years suggest that it will remain an important part of Dawson County's economy.

C. *Demographic Characteristics*

The demographic characteristics discussed in this section include the occupational profile of the population, the participation of women in the labor force, and the educational and income characteristics of the population.

Figure 6.7. Selected Farm Characteristics, Dawson County, Montana; 1969-1987



SOURCES: U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture*, 1969, Volume 1, Section 2, Part 38, Montana; 1974, Volume 1, Part 26, Montana; 1978, Volume 1, AC78-A-26; 1982-A-26; and 1987-A-26.

1. *Occupational profile.* Figure 6.8 (page 173) shows the occupations, by sex, of Dawson County residents in 1980. The occupational profile for the county is compared to the profile for rural areas nationwide, and also to the nation as a whole. One point illustrated here is that Dawson County has a higher percentage of farmers than the nation, as would be expected, but also a higher percentage than rural areas nationwide. Another conclusion illustrated by the graph is that there is a smaller percentage of professional and managerial occupations in Dawson County compared to the nation. In other words, when compared to the nation, Dawson County is more oriented to farming and less toward professionals, and when the county is compared to other rural areas of the nation, it is similar but still slightly more farm-oriented.

2. *Labor force.* Figure 6.9 (page 174) shows the participation in the labor force for county residents broken down by sex. The first graph illustrates increasing female participation in the labor force. In 1950, only 20% of females in Dawson County were in the labor force, but by 1980, over 50% were part of the labor force. For males in Dawson County, participation in the labor force has changed little over the years, remaining at a nearly constant 82%. The other graph compares the county to the nation, and to rural areas. The female labor force participation rate in Dawson County is relatively equal to the national and rural rates while the male participation rate is slightly higher.

3. *Education and income.* The educational characteristics of Dawson County's population are shown in Figure 6.10 (page 175). Dawson County's high school educational level is slightly higher than the nation's, and substantially higher than that of other rural areas, with approximately 70% of both males and females having a high school degree. With regard to college education, two points are important. First, the county has a lower percentage of college-educated people than does the nation, but a greater percentage than other rural areas. Second, while males and females in Dawson County are just as likely to have a high school education, males are more likely to have a college education.

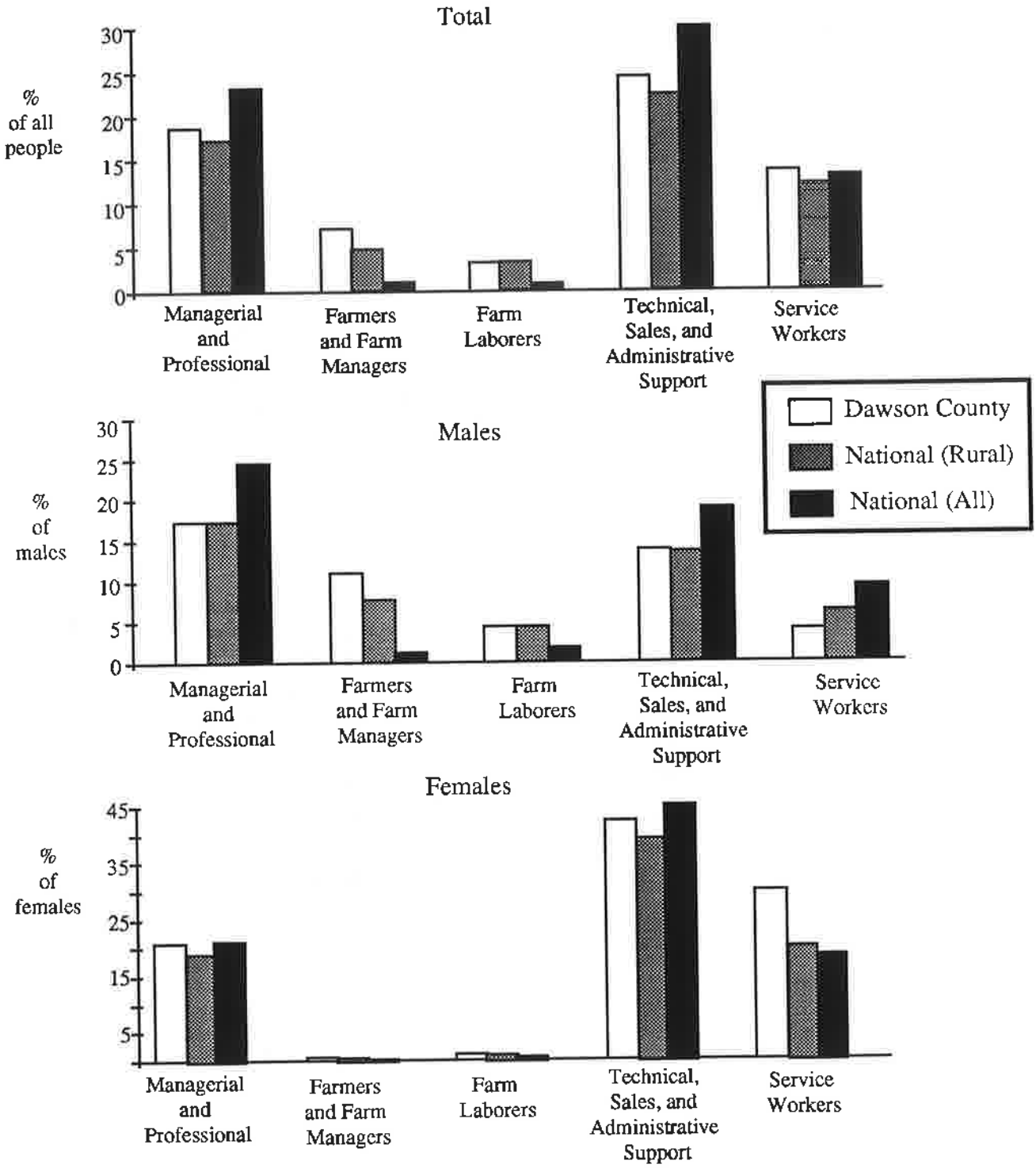
Figures 6.11 (page 176) and 6.12 (page 177) illustrate income trends in the region. Dawson county's poverty rates are below the national averages in 1970 and 1980, but per capita income level has dropped relative to the nation during 1969 to 1985.

D. *General Conclusions*

This economic analysis illustrates the enduring importance of agriculture in the region and the uneven effects of mining and oil. The latter industries are more subject to boom-and-bust cycles than is agriculture, and Glendive has felt both the booms and the busts. While weather and natural disasters (e.g., grasshoppers) have depressed the contribution of agriculture to Glendive's economy, it remains the dominant enterprise. Not surprisingly, productivity gains in agriculture do not translate into employment gains in that sector, as improved technology favorably affects the one and unfavorably affects the other. Moreover, 1990 was another bad year for Glendive: poor crops will mean that local farm loans go unpaid, banks will feel greater pressures, local businesses will close, and more people will leave (Richard Carney, interview, 28 August 1990).

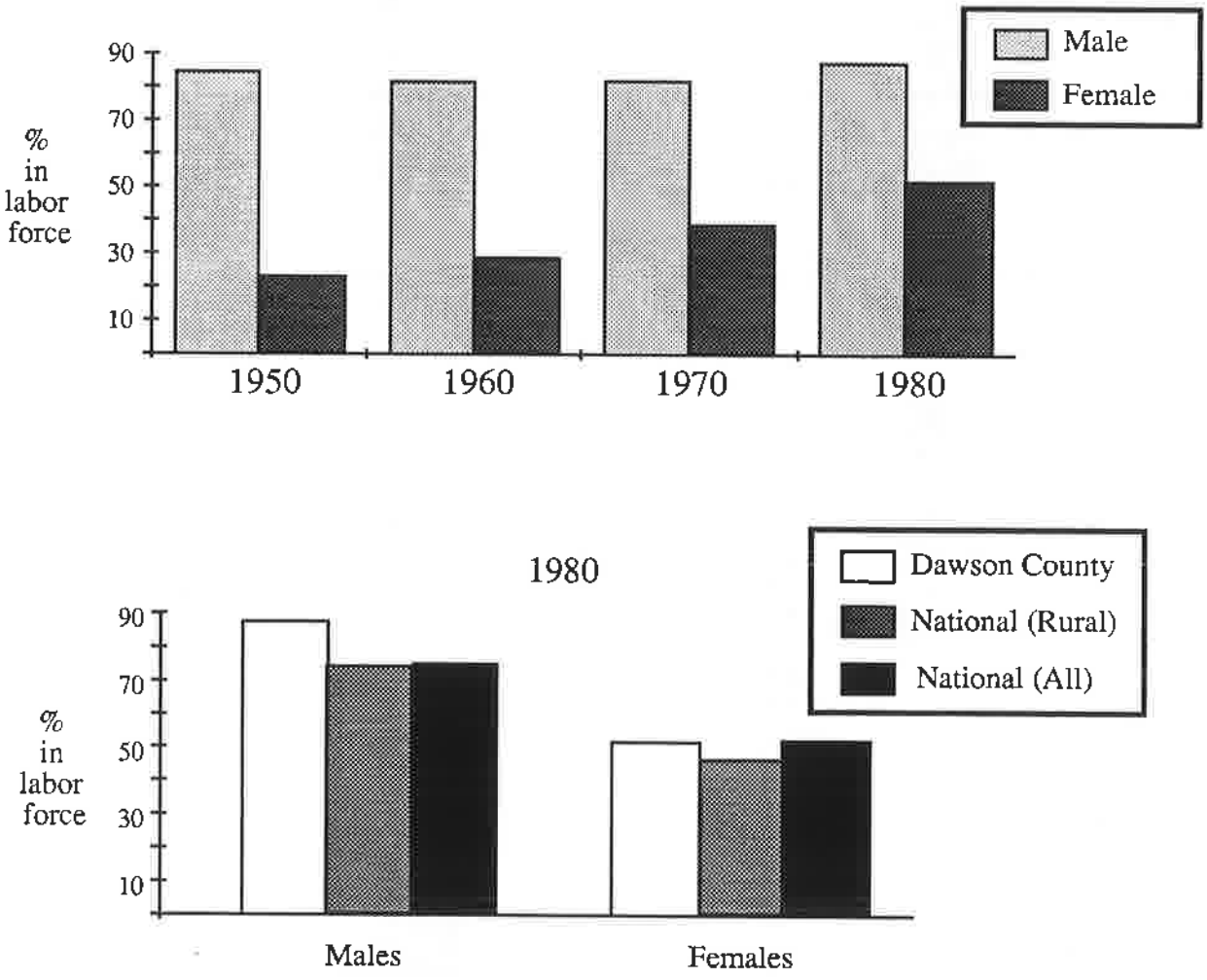
The community—indeed, all of eastern Montana—overbuilt during the oil boom. That period of time witnessed escalating employment levels in transportation (related to shipping energy products), utilities, and construction. The subsequent shrinkage of energy-related industries in the 1980s rendered small, remote communities like Glendive extremely vulnerable. Facing population declines and an agricultural base artificially buttressed by federal programs, Glendive's economy is at a crossroads. Without some solid turnaround in agriculture or energy, and lacking new enterprises to infuse capital and employment opportunities into the community, Glendive teeters on the brink of economic strangulation.

Figure 6.8. Occupation of Employed People in Dawson County, 1980



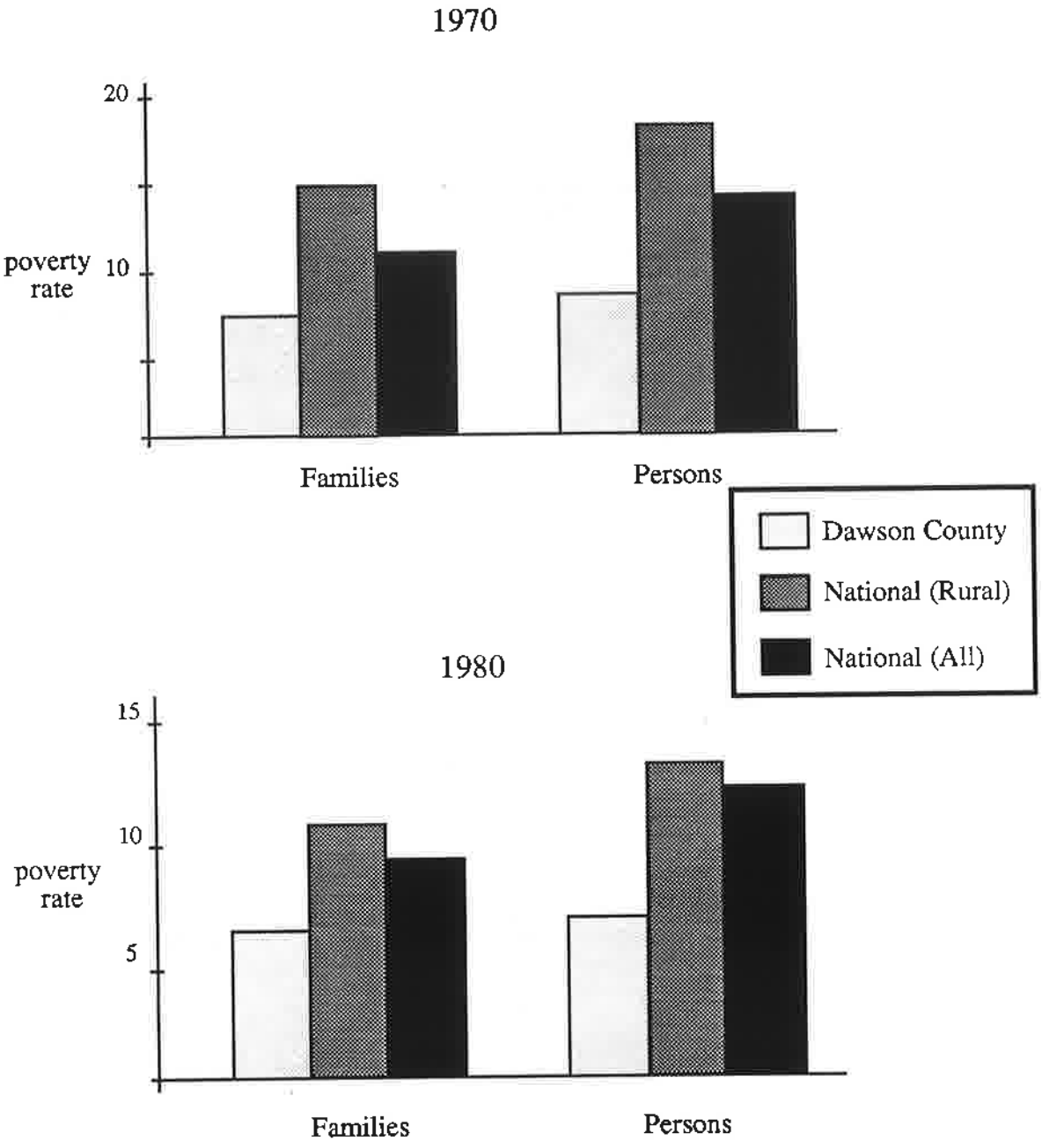
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characateristics, Part 28, Montana, Table 177; and Part 1, U.S. Summary, Table 104.

Figure 6.9. Labor Force Characteristics, Dawson County



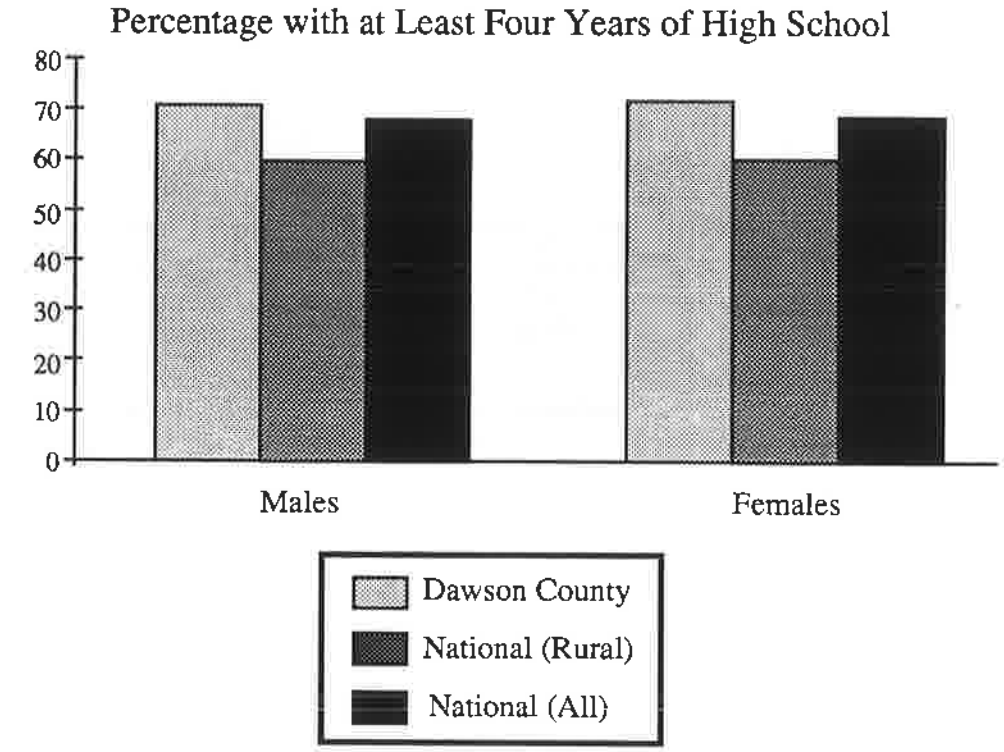
SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1950, Characteristics of the Population*, Part 26, Montana, Table 12; *U.S. Census of Population: 1960, Characteristics of the Population*, General Social and Economic Characteristics, Part 28, Montana, Table 81; *U.S. Census of Population: 1970, Characteristics of the Population*, General Social and Economic Characteristics, Part 28, Montana, Table 121; *U.S. Census of Population: 1980, Chracteristics of the Population*, General Social and Economic Characteristics, Part 28, Montana, Table 176; and Part 1, U.S. Summary, Table 102.

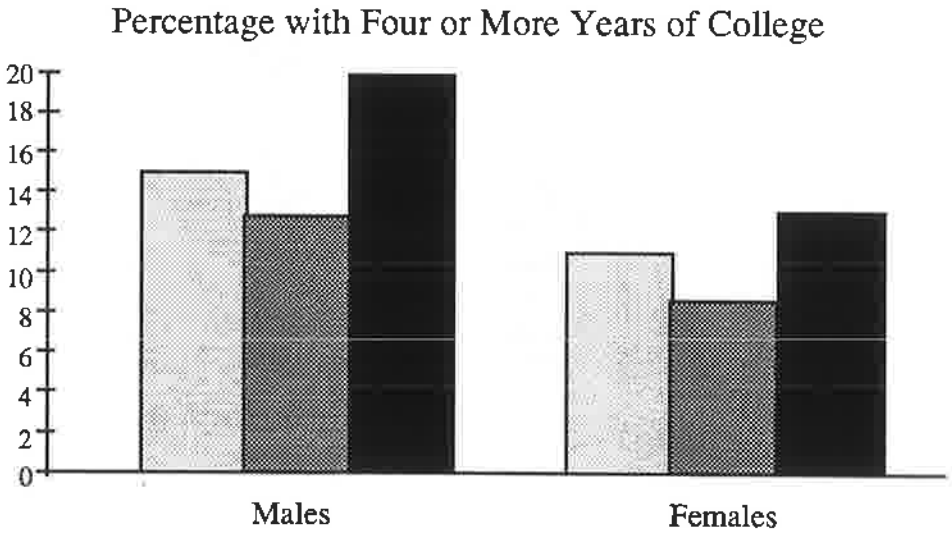
Figure 6.11. Poverty in Dawson County, 1970 and 1980



SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1970, Characteristics of the Population,* General Social and Economic Characteristics, Part 29, Montana, Table 136; *U.S. Census of Population: 1980, Characteristics of the Population,* General Social and Economic Characteristics, Part 29, Montana, Table 181; and Part 1, U.S. Summary, Table 97.

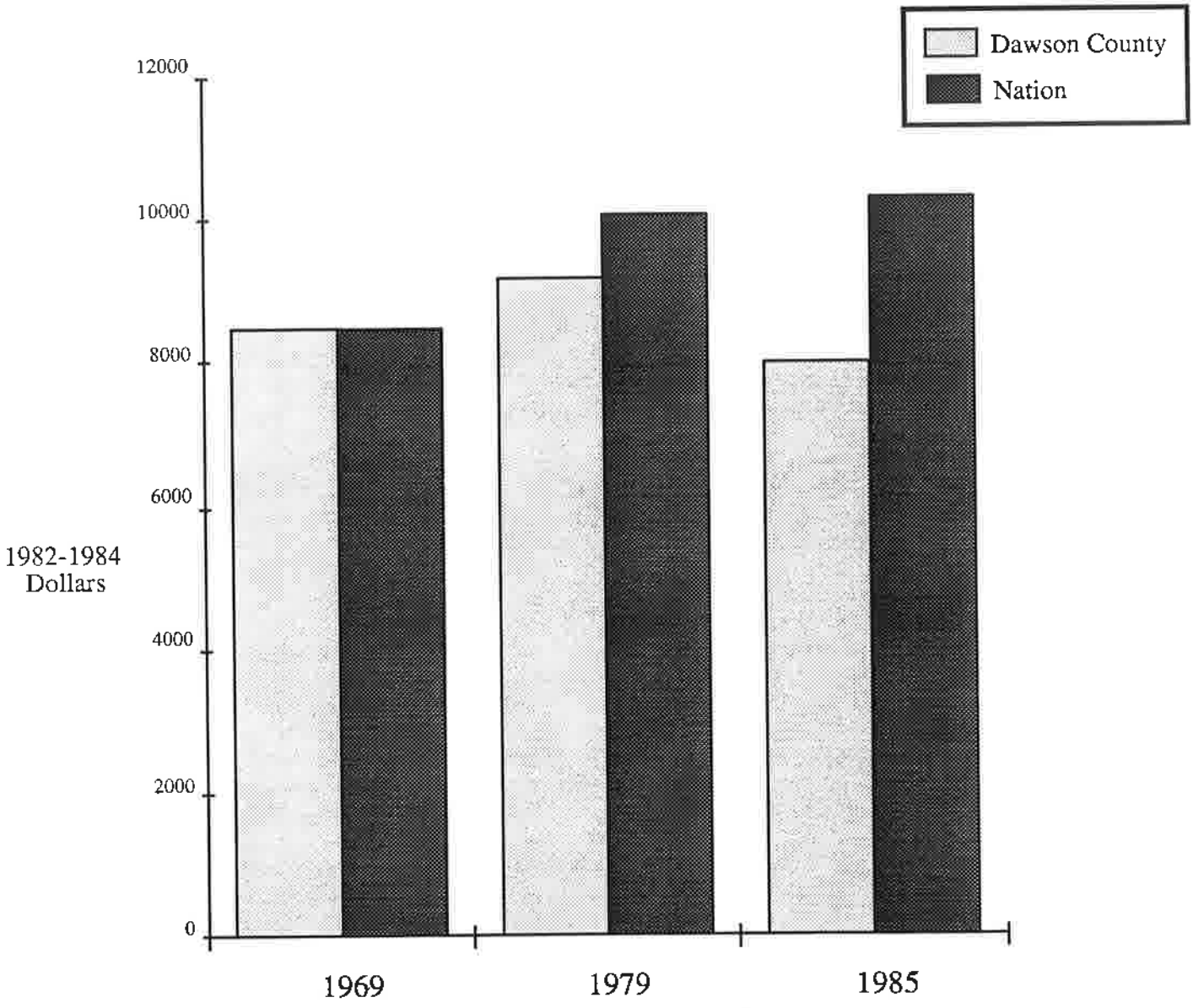
Figure 6.10. Educational Characteristics of Dawson County





SOURCES: U.S. Department of Commerce, Bureau of Census, *U.S. Census of Population: 1980, Characteristics of the Population,* General Social and Economic Characteristics, Part 28, Montana, Table 175; and Part 1, U.S. Summary, Table 102.

Figure 6.12. Per Capita Income of Dawson County, 1969-1985



SOURCES: U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1970, Characteristics of the Population*, General Social and Economic Characteristics, Part 28, Montana, Table 124; *U.S. Census of Population: 1980, Characteristics of the Population*, General Social and Economic Characteristics, Part 28, Montana, Table 180; Part 1, U.S. Summary, Table 107; and *County and City Data Book*, 1972 and 1988.

III. State and Federal Policies in Glendive

Glendive's economic analysis roughly parallels trends generally prevalent in the state of Montana. However, there are significant differences between the western and eastern portions of the state. The western half, with its mountains and more evenly distributed towns, has some larger population centers and a viable tourist industry, and has experienced more job growth during the past 10 years.[6] (As is the case nationally, Montana's most robust job growth occurred in the services sector during the 1980s.) Nevertheless, the entire state is rural. Its population of 800,000 is spread across a huge area, and the typical problems of low population density and distant settlements occur throughout the state. Accordingly, the state has tackled the problems of both economic development and education in various ways. Some of those efforts have direct effects on Glendive; others do not dent that site's problems.

In order to understand Glendive's state context, some background about Montana is necessary. First, Montana's basic method of financing state government and state programs depends heavily on property taxes as well as income taxes. There is no state sales tax; consequently, supporting the state is relegated to property owners, a generally conservative lot when it comes to the tax rate. Combined with slim tax revenues, the tremendous distances between places have dictated policy that avoids duplicating facilities or programs across the state. For example, there would be only one degree program in the state university system for pharmacy, only one for library science, and so forth. This means that programs may be less than easily accessible to all Montanans. Third, Montana is a relatively conservative state and has not invested heavily in social programs. Indeed, its rural development programs are only a few years old (Karen Barclay and Ray Beck, interviews, 14 March 1990).

This section will profile the relevant state and federal policies in the areas of agriculture, education, and economic development. The state's telecommunications activities are addressed in terms of the Public Service Commission's priorities and Montana's new educational initiative under House Bill 28.

A. *State and Federal Agricultural Policy*

Montana agriculture accounted for about $1.5 to $2 billion in sales and about 9% of employment as of 1986 (Lyle Pratt, interview, 15 March 1990). Farm earnings in Montana amount to something less than 2% of total personal income, and agricultural employment levels reflect the national trend away from agriculture and toward the service sectors (Montana Department of Commerce, 1989, p. 20). Montana has initiated several programs to improve the status of agriculture in the state, including some that one might classify as "stopgap," others with more long-range implications, and still others in conjunction with the federal government.

The variety of agricultural assistance programs in Montana indicates the seriousness accorded the impact of agriculture on the state's economy (Michael E. Murphy, interview, 15 March 1990). The most significant of these programs is a federal program managed by the state. The federal USDA Agriculture Stabilization and Conservation Service's Conservation Reserve Program (CRP) currently provides a method for farmers to settle debt—or for lenders to break even—depending upon one's point of view. The purpose of the program when implemented in 1985 was to prevent soil erosion, and the mechanics involved putting up to 25% of erodible cropland aside, seeded in grasses and kept weed-free, in return for annual payments. According to Murphy, under the CRP "enhancement program" the farmer who has a CRP contract can negotiate a one-time up-front collection

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[6] The Billings, Bozeman, Helena, Missoula, and Kalispell regions experienced above average job growth from 1979 to 1986 (Montana Department of Commerce, 1989, p. 28).

through a discount loan process in order to pay off other debts. While not an economic development program per se, the CRP seems to be the major source of new money in agriculture in Montana, and it has an economic impact on localities. As will be discussed below, the success of the CRP program on the local level is debatable.

The CRP is not the only form of assistance for farmers, merely one of the more recent and controversial because of its impact. Other programs to test new drought-tolerant crop varieties and product innovations with global market applications (such as canola) exist. A great deal of the agricultural development appears to focus on marketing. For example, through the Department of Agriculture, Montana State University received a grant from the Federal-State Marketing Improvement Program administered by the USDA's Foreign Agricultural Service to study the 10 most profitable crops. The Montana Growth Through Agriculture Act provides monies from a coal severance tax to agricultural development for (1) market enhancement, (2) export assistance, (3) business incubators, (4) foreign trade, particularly with Japan and Taiwan, and (5) seed capital loans. Two examples of trade export assistance can be seen in the promotion of Montana-processed foods and Christmas trees in Japan.

A few more decentralized services providing information directly to farmers are also available, some dependent on telecommunications. Anyone can use the Montana Agricultural Marketing (electronic) Bulletin Board, which has been in place since about 1988 and is a central clearinghouse for buyers and sellers, giving daily updates on grain and cattle prices and listing a guide to 800 buyers (Montana Department of Agriculture, n.d.). (During the drought the electronic bulletin board has been tied into the Hay Hot Line.) As is done through the Agricultural Extension Service in several states, Montana has a radio program providing agricultural information that is supplemented with USDA programs on agriculture and consumer education.[7]

Several Montana offices share information and coordinate agriculture programs. For example, the Food and Agriculture Council meets every two weeks to facilitate programs. It is composed of the Montana Department of Agriculture, the USDA, and Montana Fish and Wildlife.

B. *The Local Perspective on Agricultural Policy*

To a community like Glendive, the efforts of the state and federal governments to provide price supports to agricultural endeavors seem misguided. Additionally, some of the new state and federal emphases on *non*agricultural programs have no staff trained to implement them on the local level. The same agricultural specialists doing crop reports and providing veterinary tips are expected by their agencies to become experts on Main Street businesses as well.

One case illustrating frustration with "distant" agricultural policy concerns the local impact of the CRP program. We learned from a Glendive farmer/rancher, members of the community development organization Glendive Forward, and others that the CRP program was a mixed blessing and suffered some abuses. Although many farmers were saved from foreclosure and received comfortable annual incomes, they often took the land entirely out of production or sold it and retired. Moreover, the program that paid people to halt crop production obviously caused decreased sales among all the support industries—farm equipment, seed and fertilizer dealers—even car dealers, dependent on farming (Jinny Archdale, interview, 5 January 1990). Other farmers failed to keep the weeds down, and some put aside good land instead of the intended target erodible land (George Rice, interview, 17 March 1990). (The program was founded on the premise that farmers would plant native grasses to renew the land and minimize weed invasion.) Additionally, seed

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[7] The state statistician, Lyle Pratt, assembles this program.

dealers were unprepared for the requirements for grass seed and sold seed that was not as drought resistant as native grasses (Mike Carlson, interview, 16 March 1990).

Charlie Peterson, the Dawson County extension agent, identified some positive effects of the Conservation Reserve Program. "Overall," he said, "the CRP program in the long run has put a lot of this land back where it belongs . . . in grain" (Charles Peterson, interview, 16 March 1990). At the same time, though, he observed that another effect was to turn more land over to grazing for livestock production. Feeder cattle (spring calves) will be sold in the fall to eastern feedlots. Weather conditions and grain yields lessened by the CRP conspire to preclude year-around cattle raising; consequently, a slaughter industry cannot develop. Effects of the CRP extend to closing grain storage elevators and losing sufficient volume which would justify upgrading them to higher capacities; the latter, in turn, is needed to bring the trains to haul the grain away. Peterson is also not sure that the cash flow created by the annual payments to farmers ends up in Glendive banks, thus ultimately restricting the money available for farm loans. (He commented that in some ways, the CRP program is merely correcting the error of previous agriculture policy that encouraged farmers to break sod which should never have been turned, thus creating the erosion problems and grain surpluses.) He estimates that Main Street businesses have cut their base of operation by the number of acres taken out of production. "The good thing," says Peterson, "is that not all farms did get in it. Basically people farm the program."

The gap between agricultural economic development programs touted in the capital, and knowledge or use of them in Glendive was very apparent. Charlie Peterson expressed his situation as the lone agent well when he said, "You do whatever you can do. This is a big state and a long way between specialists." On top of his negative evaluation of the way state/federal agricultural policy works on the local level, Peterson feels overextended. While his training is in animal science, new mandates to deal with community problems, youth, and local business revitalization demand his attention. "I'm looking at sustainable agriculture, youth at risk, and a whole lot of things I never had any training in. You feel like Dr. Jekyll and Mr. Hyde in this business."

Peterson has taken training classes and receives books from state specialists in Bozeman, site of Montana State University, the land grant college hosting the Cooperative Extension Service faculty. Although Peterson is having his role expanded to include USDA initiatives focused on community revitalization, he must continue to serve several hundred farmers. Increased responsibilities have not been accompanied by greater funding. His $500 annual per diem account discourages him from more frequent travel for training. He is the only agent, and his secretary is the 4-H assistant. In fact, telephone allowance cuts have forced Peterson to discontinue using AGNET, the on-line electronic marketing service. Nevertheless, he uses his computer regularly for a variety of tasks. There is no satellite downlink, but Peterson maintains his own lending library of video programs made in Bozeman. These are training tapes; by replaying them Peterson saves a trainer from coming to Glendive from Bozeman. Peterson has a five-minute radio program—a typical county agriculture agent activity—four days a week composed of material he receives in a mailed packet, most of which relates to western Montana. He supplements that with a news packet from North Dakota State in Fargo. Mike Carlson, U.S. Soil Conservation Service District conservationist, echoed Peterson's frustration over not having an economic development specialist at the county level to provide the knowledge and guidance to apply for economic development monies. He too felt his responsibilities had stretched in the absence of additional support (Mike Carlson, interview, 16 March 1990).

C. *State Education Policy*

Some Montana leaders recognize that a strong educational system is required to support development (Burns, 1990), and telecommunications has been identified as one desirable way to overcome the distances that separate many rural communities from

educational resources. This state's School Equalization Bill (House Bill 28) passed in 1989, provides for a Telecommunications Development Bureau. The Montana legislature appropriated $200,000 for a network design study and $300,000 for improvements to existing networks. Today no comprehensive educational telecommunications system exists in Montana, but a plan for such a system was undertaken by the state's consultant in 1990.[8]

1. *Montana Telecommunications Project.* That plan is called the Montana Telecommunications Project. The first interim report published in April 1990 identified educational telecommunications needs, and resources, proposed a multitechnology solution, and posited a three-component network at a total cost of $2,150,000; the network's financial support is projected to come from the state, the private sector, "in kind" contributions, and other sources. The plan was supposed to survey the K-12 and university educational needs within the state as well as local exchange carriers providing service within the state. The telecommunications consultant was instructed explicitly to generate ideas for "shared use and enhancements of existing telecommunications systems, with emphasis on limiting financial commitments to the extent possible" (Montana Higher Education Commission, 1990). Its identified needs included (1) affordable or low-cost courses; (2) additional K-12 courseware (science, math, languages); (3) teacher in-service training; (4) graduate and undergraduate courses; (5) adult education; and (6) occupational training.

The telecommunications resources that the report recommends for meeting these needs include (1) "POTS" or plain old telephone service; (2) the Montana State Microwave System (portions of which are already leased or owned); (3) private microwave systems; (4) PBS broadcast television stations; (5) satellite-delivered programming; (6) cable television-delivered programming; (7) Montana-originated satellite programming; (8) existing educational computer systems; (9) existing Montana computer-based hardware and software; and (10) private-sector involvement (cable television system owners and Montana businesses) as needed. The report also established desirable goals for a new system, including equitable access throughout the state, financial self-support after initial capital investment, the ability to serve all levels of education and to exchange educational courseware both regionally and nationally, the potential to aid economic development with public-and-private-sector involvement, and use of a "multitechnology" solution.

The main components of the proposed network will be (1) local exchange companies, which will provide audio return path for two-way audio and one-way video as well as computer-to-computer communications; (2) satellites or satellite transponders, including C/Ku band receive-only installations at all schools, and (3) broadcast television, providing a 9 a.m. to 3 p.m. one-way video signal with two-way audio courseware, and (4) a network of microwave links, translator stations, and low power television stations. Preliminary cost estimates are $1,210,000 (Montana Higher Education Commission, 1990).

John Aubry is the telecommunications development manager of the state's Department of Administration and is charged with ensuring that the state has the best telecommunications infrastructure to deliver distance education (John Aubry, interview, 5 March 1990).

Aubry's task is to contract for state and local school districts' telecommunications services. The state has leased lines, mostly from US West, and has created a university microwave network with equipment it owns. Thus, the state is able to cross the two LATAs in Montana. Aubry is not trying to keep at the cutting edge of telecommunications technology, but to provide complete and viable voice, data, and video to as many

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[8] As Senator Burns observed, "The development of a plan has been under study since 1987, when a task force, comprised of K-12, higher education, and business representatives, was created to consider development of a statewide telecommunications network" (Burns, 1990, p. 1).

constituencies as possible on a developmental basis to avoid overlapping other infrastructure. Constituencies include educational entities, state and local government, and the health services community. An on-line bulletin board has been started but is used little; there is also a data network for criminal justice which connects the 56 county seats. Aubry stated that his office is very supportive of communities that want to take the initiative to use a particular technology but his office does not support one over the other because he wants each school district to make its own choices. The problem is that all the programs take money, and there simply is not enough of it in Montana.

Ron Lukenbill is a National Diffusion Network (NDN) and education technology specialist from the U.S. Department of Education who travels around the state sharing information among school districts trying technology (Ron Lukenbill, interview, 5 March 1990). He is the K-12 counterpart to the Office of Higher Education. He sponsors METNET—the Montana Educational Technology Network. Twice a month satellite broadcasts with project directors give school districts an idea of which programs are available and what they accomplish. If they see something they like, they contact Lukenbill, who then acts as a kind of broker to train local staff. He has some Department of Education monies with which he can help local school districts. The program directors have some training funds as well. Programs include EDUNET, which uses phone lines and microcomputers to link classrooms with over 35 courses, satellite courses from the University of Oklahoma, and electronic mail to link classrooms with others in the United States and around the world through CompuServe.

2. *Big Sky Telegraph.* Big Sky Telegraph, from Western Montana College, serves "as an on-line co-op [to] provide customized services to educators, individuals, and resource-providing organizations to better connect existing statewide needs and services" with rural communities (University of Montana, Western Montana College, n.d.). Big Sky Telegraph is basically a network offering electronic mail, computer conferencing, on-line databases, regional library services, global access, fax, voice mail, and optical scanner services. Its initial funding came from a small $35,000 grant from the Murdoch Charitable Trust of Vancouver, Washington; subsequent funding has come from US West, which granted Big Sky $238,000 in 1989. The service sent 75 modems and offered an on-line course to several communities in Montana when it first went on-line in 1988. The fundamental purpose of the network is to empower local people with electronic access to information and to each other. A secondary purpose is educational. The range of users is broad and typically includes staff in Resources Conservation and Development offices around the state; the Glendive Women's Center just went on-line with Big Sky. The service costs $50 a year for teachers or institutions plus on-line (phone) charges. Big Sky set up an 800 number to give new users 10 hours of free time on the system.

Frank Odasz, director of Big Sky, said the service's goal is to have 104 community representatives ("telegraphers") that are working on rural economic development using the system's resources. He assembles a packet called *Telecomm Guide to Community Action* with essays on economic development and the use of Big Sky. Odasz said, "We want to empower the ingenuity of rural Montana to have them tell us how to best help their community" (Frank Odasz, interview, 4 September 1990). The service will soon be connected internationally by linking to bulletin boards in Europe and Tokyo. It has established a low-cost method of batching messages in order to reduce the transmission charges associated with long-distance telephone connections.

Aubry and Lukenbill serve on a recently formed Montana Telecommunications Cooperative with Deputy Commissioner for Academic Affairs John Hutchinson to ascertain how to bring together all telecommunications entities for the sharing of information and resources. The cooperative is based on a successful Utah model, according to Hutchinson. Being late in the distance learning arena, Montana would like to profit by the experience of other states and is trying to proceed in a collaborative fashion.

3. *Other educational efforts.* The W. K. Kellogg Foundation, in partnership with IBM, had supported the initiation of a now defunct organization called Intermountain

Community Learning and Information Services. This was a technology-based information service operated through public libraries to provide educational and informational services to rural citizens desiring to learn Information Age skills. Other partners in implementing this system were the land grant university in Bozeman and local city and county governments. If completely implemented, the program would have offered training and support for community specialists, contractual arrangements with vendors for database and educational programming services, programming and services development, community assessment and analysis, and site planning within community locations. Each participating location would have had computer-assisted programs, a wide range of self-help and instructional programs, audiovisual technologies such as projection video, videodisc and tape, and two-way audio for interactive classes with colleges, and adult learning and referral services (Intermountain Community Learning and Information Services, n.d.). Internal shifts at the sponsoring organizations have curtailed this project.

Finally, the older organization WICHE (Western Interstate Commission for Higher Education) must be acknowledged. WICHE has sponsored several distance education efforts dating back to early experiments with communication satellites. It recently is developing the Western Telecommunications Cooperative (WTC). Involving 14 western states and some outside affiliates, WTC is a grand-scale version of the Montana Telecommunications Cooperative, bringing together institutions of higher education, state agencies, and information providers. WTC purchases satellite time, obtainable at low cost because of the large number of members. The satellite time may enable WTC to bring excellent courses to members of the cooperative. During the cooperative's first annual meeting in November 1989, project plans focused on six major areas: improved access to educational resources, data and library networks, development of user support services, policy development for interstate cooperation, systems planning, and access to essential information (Western Cooperative for Educational Telecommunications, 1990).

C. *Telecommunications Policy*

The state's actions with telecommunications have a strong bearing on rural areas. By exerting regulatory leverage, the state can encourage or discourage telephone companies to provide upgraded service in small towns such as Glendive. In Montana, telecommunications policy is directed by the Public Service Commission (PSC), which has five commissioners elected by districts to serve four-year terms. The PSC regulates all utilities including electricity, gas, and telephone. Since divestiture, the PSC has spent more time and effort on telecommunications issues than on its other industries.

The PSC is interested in having a solid telecommunications network that provides sound and affordable telephone services for rural areas. Since US West is the state's dominant provider, with a service area covering virtually the entire state of Montana, the PSC spends a great deal of its time with that carrier. In spite of the state's adoption of a regulatory flexibility provision and its attempt to encourage intraLATA toll competition, US West predictably feels Montana has not gone far enough. As in other states, US West has attempted to carve out a way to avoid rate-of-return regulation and to obtain state concessions for upgrading its network. Neither the PSC nor US West has invoked tangible economic development plans as part of their dialogue on upgrading rural telephone facilities. Nevertheless, a vague sense that a modern network is desirable drives the two parties toward some plan that will prompt the large provider to quickly deploy state-of-the-art facilities.

US West believes the problem in Montana is particularly difficult because in the predivestiture era about 44% of the state's plant costs were in effect subsidized by interstate revenues. As the long-distance portion of the local exchange company's revenues diminished (in Montana's case, down to 25% of the costs), Montana customers had to pick up the difference. As Russ Cravens of US West put it, "We had to increase our basic telephone to reflect the fact that the cost to provide service [here] is higher than the national

average" (Russ Cravens, interview, 14 March 1990). Moreover, the customer base for local exchange companies has eroded in Montana; the company's access lines in 1990 number the same as they did in 1984 (301,000).

1. *Legislative action and the PSC's regulatory policy.* The Montana PSC has adopted a "middle-of-the-road" approach in its regulatory policy. The commission uses traditional rate-of-return regulation, but the passage of a procompetition telecommunications bill in 1985 gives its policy some competitive facets. Additionally, the state has basically declined to regulate any telephone company with fewer than 5,000 lines, effectively "unregulating" the independent, rural providers (Eric Eck, Kate Whitney and Joe Holliman, interview, 15 March 1990).

In 1985, one year after divestiture took effect, the state legislature passed the Montana Telecommunications Act, allowing detariffing of certain competitive services. The act's purpose was "to provide a regulatory framework that will allow an orderly transition from a regulated telecommunications industry to a competitive market environment" (Montana Telecommunications Act, 1985). Joe Holliman, the PSC's staff economist, said this legislation allows an alternative form of regulation in that detariffing or price flexibility can be granted by the PSC for interLATA and intraLATA competition. (Joe Holliman, interview, 15 March 1990). Subsequent to that act, another bill was passed in the 1987 legislative session called the Small Telephone Company Bill. This bill basically relaxed regulation for telephone companies with fewer than 5,000 access lines. Additionally, telephone cooperatives are historically free from any form of regulation (Eric Eck, interview, 15 March 1990). Currently, there are 19 telephone companies serving the state of Montana, 10 of them cooperatives. Therefore, the PSC only regulates eight companies, including US West, the largest telephone company in Montana.

Montana's telecommunications regulation is unique in that it does not have franchised territories. Trade territories have evolved historically and are respected by companies. Some companies refer to this general accord as a "gentlemen's agreement." Although there are occasional disputes over territory, according to the PSC's Eck, "companies have been doing a pretty good job of balancing their competing interests" (Eric Eck, interview, 15 March 1990). This policy, however, will be tested in Glendive, where an outside telephone cooperative, Mid-Rivers, will provide video educational programming through its direct fiber optic line to the city's high school (described later); the latter is a customer of US West, the local exchange carrier. Since there is no certificated territory in Montana, theoretically it is legal for one telephone carrier to provide service in another's trade territory. But if Mid-Rivers goes beyond just delivering educational service and uses its fiber optic cable to provide dial tone, a dispute between the two telephone providers might be inevitable.

2. *The PSC and US West.* US West is the dominant telephone provider in the state of Montana, controlling 80% of the total access lines. It provides services in major cities such as Billings and Helena and population centers in rural areas such as county seats, leaving the mass of the sparsely populated countryside served by small independent companies. As portrayed by top management personnel of US West, the map that describes US West service is "a bunch of little islands all over the state with independent telephone companies and cooperatives serving the outside areas" (James Hayhurst, interview, 14 March 1990). Although its service tends to concentrate on urban areas, the dominant presence of US West in Montana makes it a crucial player in modernizing rural telephone services.

US West, the largest Bell operating company with a 14-state service territory, has been slow to invest in Montana due in part to the state's rural nature and limited potential for revenue. So far US West has installed digital switches only in larger cities in Montana. Rural areas almost always have step-by-step switches; that is the case in Glendive, a US West jurisdiction. The state PSC would like to speed up the process of modernizing telephone services in rural areas, but obviously the burden is on the service providers,

especially US West. (Interestingly, according to PSC's Eric Eck, all the switches of telephone cooperatives in Montana are digital.)

PSC's Eric Eck, Revenue Requirements Bureau chief, explains the situation: "Our reality with US West is that each manager in each state competes for funds, and Montana is no way unique. It is just one of the 14 states [from US West's perspective]. Those vice presidents all compete vigorously for investment dollars. Montana, due to a number of factors, does not attract a lot of investment inside US West. That goes to explaining why we have some digital switches and a lot of older, vintage switches" (Eric Eck, interview, 15 March 1990). Even US West's assistant vice president, James Hayhurst, admits this. "The capital dollars are limited in our corporation. The investment decision where there is some flexibility tends to go into jurisdictions where the return on the investment is most promising" (James Hayhurst, interview, 14 March 1990).

3. *IntraLATA competition.* The PSC's conflict with US West over the 1985 Montana Telecommunications Act illustrates a typical disagreement between the two. The act was aimed at encouraging competition in intraLATA toll telephone services. Despite the PSC's efforts, Montana has not been able to attract many competitive providers to the intraLATA market. Eck explains, "Montana is unique like every state is unique in certain ways. Part of the reality for intraLATA competition in Montana is that a lot of big telephone providers are not interested in this market. This is the reality" (Eric Eck, interview, 15 March 1990). As a result, US West, the defaulted carrier of intraLATA toll calls, has remained the dominant provider. US West said it identifies 14 intraLATA competitors in Montana (James Hayhurst, interview, 14 March 1990). In fact, most of these competitors are nonfacilities-based resellers which require access to the US West switch. The PSC does not consider nonfacilities-based companies as competition for US West. The only exceptions are interexchange long-distance carriers such as MCI and Sprint, which are allowed to provide intraLATA service under the Montana law, and a microwave-based service provider called TRI, which is a subsidiary of the Montana Power Company and is created to serve only the electric and gas company's internal communications.

Nevertheless, US West has perceived *any* competition resulting from the act as a threat to its toll revenue. "We are losing an increasing number of business customers to various competitive long-distance entities such as MCI, Touch America, American Sharecom, and Sprint. There is a fair amount of competition," said Dennis Lopach, US West's general attorney at the company's Helena office (Dennis Lopach, interview, 14 March 1990). In fact, according to PSC staff economist, Joe Holliman, US West is still a monopoly in intraLATA competition: "In terms of economic scaling, in this market you can have a dominant provider, a real price leader who has 80 to 90% of the market, but you still have competition. It all depends on how you define competition. You can have one million minutes of use and one minute of use goes to another company, is this competition or not?" (Joe Holliman, interview, 15 March 1990).

Although US West has a difficult time quantifying the impact of competitors, it feels threatened by the potential of this competition and feels its ability to compete is hindered to some degree by the PSC. "We feel that there is competition and in order to compete we need to serve customers in a way we want to and with a price we think we can provide. We think we can provide price and service alternatives and options but in some instances the commission won't allow for that kind of competitive pricing," said Russ Cravens, pubic affairs director of US West's Helena office (Russ Cravens, interview, 14 March 1990). Cravens noted that the PSC rejected US West's latest detariffing request in 1989.

4. *The Rural Telecommunications Improvement Project (RTIP).* In the early 1980s, the poor quality and inconvenience of rural, party-line service provided by US West resulted in a significant number of customer complaints to the PSC. According to Eck, US West historically had "an appallingly bad rural service in Montana to a point where when they have a snow storm it would take the whole town's service out because they have bare

wire hanging on poles" (Eric Eck, interview, 15 March 1990). This prompted the PSC to start negotiating with US West to upgrade telephone service in rural areas. After several failed initiatives, the PSC offered US West a revenue incentive to undertake a major upgrading program. The result is the Rural Telephone Improvement Program (RTIP), for which the PSC grants US West a 14.03% return on all investment. The five-year program was implemented in 1982. The project moved most rural lines underground, significantly improving the overall quality of the distribution network, and eradicated four- or eight-party lines, allowing only one- and two-party lines to exist. The construction period ran from 1982 to 1986. The total capital investment for US West was $82.4 million. Glendive was one of the beneficiaries of the RTIP project. Today of the 3,904 access lines US West provides in Glendive, only 32 of them are two-party lines. This program, however, is modest by current standards in that it only tightens up aspects of the network that should have been operating more efficiently and reliably to begin with.

5. *The rural modernization program.* The Rural Telecommunications Improvement Program addressed an imminent need to provide uninterrupted, weatherproof telephone service to rural areas, but did not bring any modern services to them. The choice of alternative long-distance carriers and advanced customer features such as call waiting, call forwarding, and three-way calling, commonplace in urban areas, are not available in the rural parts of the state. Even touch-tone phone service is not always available. A lot of these services have to be provided by an electronic digital switch, but most rural areas served by US West still use the older electromechanical switch; Glendive is one case.

In 1989 US West announced its intention to initiate a rural modernization program that would upgrade older-technology switches in Montana to digital over a period of seven years (Russ Cravens, personal communication, 28 March 1990). This program may require a $100 million investment, and US West has been negotiating with the PSC to gain its concurrence for this modernization program. Clearly the company will not commit itself to such a heavy investment unless it is allowed to recover it.

Shortly after the announcement of its rural modernization goals, US West presented the PSC and the Montana Consumer Council with an informal proceeding called the Revenue Sharing Plan, which the telephone company claimed would shorten the period for rural modernization from seven to four years in exchange for relaxed regulation. US West basically proposed an alternative regulatory system for its Montana operation. Under it, the company would no longer be rate-of-return regulated. Telecommunications services would be divided into two categories, basic and optional (or competitive). Changes in rates for basic services, such as basic home or business access, would be restricted, and prices for optional service would be changed to be more competitive. According to US West, the Revenue Sharing Proposal was designed to stabilize rates for basic telephone services, to provide incentives for the company to upgrade the telecommunications network and offer new services to customers, and to share part of the earnings with customers when these innovations generate higher revenues.

The PSC, however, had a very different opinion: "The Revenue Sharing Plan is definitely an expression of US West's corporate desire to have less regulation in every state it operates," said PSC's Eck (Eric Eck, interview, 15 March 1990). The Revenue Sharing Plan was rejected by the Montana PSC in 1990, but US West filed a new plan in June that is basically a revised version of the Revenue Sharing Plan. The new plan is called the Montana Network Improvement and Rate Stability Plan. The major difference between this plan and the previous proposal is that the new plan advocates some rate-of-return regulation but with certain modifications. A range of return rates (11 to 12.5% on the rate base) is proposed. If the company makes any profit (i.e., over 12.5%), 50% of that would be returned to the rate payers. If it makes less than 11%, the company would need to file a rate case, effectively cancelling the plan. Currently, US West is allowed to make up to 11.8% profit on the rate base (James Hayhurst, interview, 5 September 1990). Under this package, US West would replace 114 older, electromechanical switches with electronic digital switching systems and upgrade interoffice facilities in order to build a totally digital

long-distance network by 1995. Prices for most exchange access services would be "frozen" for the five years of the plan. If the commission approves the total package, the current schedule would include upgrading the Glendive switching office to a digital switching system in 1992. That office would tie into a fiber optic long-distance system that would link Glendive to US West's Billings long-distance connecting center during the same time frame (Russ Cravens,personal communication, 15 June 1990).

D. *State Initiatives for Economic Development: RC&Ds*

Only in the late 1980s did Montana's state government begin to act on the increasingly difficult situations experienced by its rural communities. As already mentioned, the entire state lost population during that decade; the resource and agriculture sectors both suffered, causing rural Montana towns to struggle for survival. Rural communities in economic distress were probably more common than those with healthy economies in Montana. Some members of the state legislature realized there was no structure in state government for addressing such problems. They looked to a federally funded program, the Resource Conservation and Development program (called "RC&Ds") as a model for what the state might establish to help rural Montana.

The RC&D programs were formed initially under the aegis of the USDA and are administered by the Soil Conservation Districts. There are 50 such programs around the country, 3 in Montana. Conservation Districts are a mandatory sponsor for the federal RC&Ds; with territories roughly paralleling county boundaries, they are responsible for maintaining the tax base within their particular areas and are responsible for natural resource management. The RC&D staff and operations are funded by the federal government (Karen Barclay and Ray Beck, interviews, 14 March 1990). The three federally funded RC&Ds in Montana, all in the western portion of the state (Headwaters, headquartered in Butte; Bitterroot, headquartered in Hamilton; and Beartooth, headquartered in Joliet), work within their regions on various projects and grants that may receive funding from other sources. The Headwaters RC&D, for example, organized committees in its region to examine local issues; there is a water committee, a weed committee, a wildlife committee, a forestry committee, and, most recently, an economic development committee. They were credited with success in coming up with a regional economic development program that replaced the mining economy with other activities such as promoting a new cash crop. The production of canola oil, for example, is one project they aided. The Headwaters RC&D helped to establish a processing plant in the area and launched efforts to plant the crop—the canola plant—as well. That RC&D was also active in fighting an outbreak of noxious weeds—spotted knapweed, in particular—which has overtaken the range and caused several problems. The weed committee worked with the legislature to erect a program to fight these weeds.

State legislators heard about the operations of the federal RC&Ds and requested the state offices to emulate that organizing mode in other regions of the state. The Department of Natural Resource and Conservation was the logical place for such programs to be implemented. The legislature allocated a special fund targeted to rural economic development in 1989; this fund was to help establish state RC&Ds in Montana. An initial two-year budget of about $40,000 per year (covering 1989 to 1991) has been extended with an additional $40,000 per year budget request for another two years (Steve Schmitz, interview, 5 September 1990). The state's Department of Natural Resources and Conservation formed a partnership with the federal Soil Conservation Service and sponsored a community-led program in central Montana in order to implement the first state-sponsored analog to the federal RC&Ds. The agencies provided the group, composed of city council members, Conservation District members, and county commissioners from a six-county region, with education on how to organize. This central Montana RC&D is headquartered in Roundup.

After the Central Montana group formed, the Conservation Districts in eastern Montana requested the same for eastern Montana. At this writing, a nine-county RC&D is being formed, with Dawson County and Glendive in the middle of the effort, with Mike Carlson playing an instrumental organizing role. Several meetings were held as preamble for forming the new RC&D, drawing large (45-100 people) and enthusiastic crowds. To date, three workshops, the first led by Dennis Winters, a private consultant headquartered in Butte, catalyzed the new organization's nascent efforts.

When we talked to Winters, he commented that his goals in the workshop were to help the community organize itself. He emphasizes education, helping towns and counties learn how to interact with each other, establishing a technical base (e.g., telecommunications), and obtaining capital (Dennis Winters, interview, 28 February 1990). Regarding the role of telecommunications in such efforts, Winters commented, "[To the people of eastern Montana] a phone is a phone. They don't understand that these technologies can be adapted to economic development." From his perspective, getting people organized and educated was the first step; only then would the potentials of technologies be assessed. The RC&D effort to regionalize is important as far as he is concerned, as is the need to be creative and look toward local resources. For example, he supports the paddlefish caviar notion: "[The community] can do two things: get a license from the government to gather the eggs. Second, build caviar canning plants. This is value-added agriculture. They need to find their niche. It has got to be niche oriented and niche marketing" (Dennis Winters, interview, 28 February 1990).

Near-term state efforts will continue to focus on creating or facilitating such local initiatives. In an era of scarce finances, the ability of the community to make its choices and actively work for change is the core of Montana's approach. State government will try in 1990 and 1991 to enlist the aid of local telephone cooperatives and local utility companies in their organizing efforts, but no specific telecommunications plans figure in their efforts (Steve Schmitz, interview, 5 September 1990).

IV. The Impetus to Organize: Economic Development in Glendive

Economic development efforts in Glendive have been modest. Only recently has the community created an organization in Glendive Forward that is aggressively seeking ways to turn Glendive's situation around. The Chamber of Commerce also has attempted to create local projects with economic potential; the chamber's backing of paddlefish caviar is its most significant recent endeavor. Two other initiatives promise to help Glendive. One is a new organizing mode that entails working with other towns or even other counties in order to facilitate coordinated, regional development; the other is the plan for the local telephone cooperative to deliver education among local high schools using its fiber optic network. This local distance education effort is intended to improve the educational offerings available in the region and to allow towns to avoid school consolidation. The explicit role accorded to telecommunications generally—that is, outside of distance education applications—is very limited.

A. *Glendive's Internal Conflicts: Glendive Forward and the Chamber of Commerce*

Economic development in Glendive and the surrounding territory is mainly the purview of Glendive Forward, a group of business and professional leaders committed to community development. The local Chamber of Commerce also has an economic development committee, but as members of Glendive Forward stated, "The chamber was trying to be all things to all people, a 'shotgun approach,' which was not able to do anything constructive about economic development" (Curtis Meeds, interview, 17 March 1990).

Attempts to unite the Chamber of Commerce and Glendive Forward to date have not been successful, and there is veiled competition between the two groups. The chamber

has a stronger agriculture orientation as many of its strongest members are farmers and ranchers. Glendive Forward is more town-oriented and concerned about industry and property taxes (Kathy Nedens and Mike Carlson, interviews, 16 March 1990). While the fact that the two groups do not work together very much probably impedes the full scope of what local economic development efforts might accomplish, nevertheless Glendive has had some recent economic successes.

Glendive Forward was formed in 1984 after the oil economy collapsed. According to members of Glendive Forward, Glendive's previous major sources of income had arrived in the town through no particular local effort: Burlington Northern, oil, agriculture, highways (I-94) all materialized with little local work. When these sources of income dried up or diminished, the town was shocked but also lethargic. According to some, at the time the Chamber of Commerce seemed immobilized. The concept for Glendive Forward came from a local banker who called two owners of local businesses and proposed the idea of a separate economic development group. Letters were sent to 20 business leaders and all showed up at the initial meeting. The weaknesses of the chamber seemed to create appeal for a new group. Says hotel owner Curtis Meeds, "The idea was well received because of the absence of the chamber's efforts in the fall of 1984. People in the community lost faith in the Chamber of Commerce's ability to raise support." The people who formed Glendive Forward could be called the "shakers and movers."

Among the members of Glendive Forward, we interviewed Richard P. "Dick" Carney, a businessman who once had seven businesses in Glendive and now has three; George and Ginny Rice, cattle ranchers and beet farmers active in the chamber and on the board of Mid-Rivers Telephone Cooperative; Curtis Meeds, member of the chamber, owner of the Best Western Holiday Lodge, and tour guide operator for agate hunting on the river; Al Sevier, securities broker and, with his wife, active in community affairs; and John Johnson, retired principal of Dawson High and representative to the Montana legislature. These people represent a cross section of community visions. For example, Curtis Meeds feels that "job opportunities would cure most of our ills"; Al Sevier says that the health of the community is in his interest as a businessman; John Johnson is simply interested in keeping the community viable; Ginny Rice wants to see groups work together.

At the time the organization was being formed, members of Glendive Forward entertained the idea of becoming a committee of the Chamber of Commerce, but they felt they would be limited by the chamber's budget constraints. Again, Curtis Meeds said: "People weren't willing to fund the chamber well enough. However, they were willing to fund a fresh organization. Also, there are a lot of people who don't identify with the Chamber of Commerce because of its business orientation but are interested in overall community."

After being formed, Glendive Forward shared the chamber's office, help, and a computer. Having formed an initial group of 21 (mostly merchants) dues-paying members—there are now 60—the group solicited advice from the Montana Department of Commerce. They were given three guidelines: (1) to form for only three years; (2) to select projects that could be accomplished in that time; and (3) to make initial selection of members very carefully. Meeds summarized their working credo: "We are a group of opportunists; we will embark on anything we think we have a chance of winning." Soon after forming, they took over the chamber's signs committee, whose task is to renew the "Welcome to Glendive" signs that greet visitors at the city limits. Then the group began a list of community accomplishments: taking over the Certified Cities Program; bringing the region's Small Business Administration office to Glendive; working with Burlington Northern Railroad (which had never been asked to be included in city projects before) to create Burlington Northern Park, a source of recreation and tribute to the one industry still providing many jobs in Glendive; staging a gubernatorial forum attended by 400 to 500 people; fathering Montana Forward, a tax restructuring referendum; acquiring a veterans' nursing home for eastern Montana to be built in Glendive; and, most recently, locating a Catholic "Home on the Range" in Glendive.

The major accomplishment of Glendive Forward has been the award of a state contract to build and operate a veteran's nursing home. In January of 1988, they had three project possibilities. The veterans' home seemed the economic development project most plausible to the group. After hiring a consultant, they conducted a survey to assess needs in the region, developed statistics, and got the backing of candidates for the legislature. The first step entailed passing a bill that would cover the state's costs of financing a construction project like this. (The total cost of a veterans' home would be $4 million, and the state has to pay for 35% of that while the federal government pays for the remaining 65%.) Once the bill was introduced (by John Johnson, a Democratic representative from Glendive), members of Glendive Forward rallied support from veterans and civic groups in the region of eastern Montana. People traveled across the state to the legislature to testify; a lobbyist was hired with local donations. There was some bickering, and at some points the effort was threatened with internal disintegration, but eventually all supporting cities in the Glendive region agreed to support the bill. (The bill was introduced in February 1989; it authorized a two-cent tax increase on cigarettes to help pay for the state share of funding.) After the bill passed, Governor Stan Stephens appointed a seven-member site selection committee consisting of veterans from eastern Montana. They cast their last vote on sites in February 1990; the vote was 4 to 3 in favor of locating the hospital in Glendive. (Miles City and Billings were also finalists.) Glendive got the site but had to offer the land and raise bond money out of city taxes. Looking back, Carney remarked that he had not seen that kind of cooperation in 20 to 25 years in eastern Montana. The last time Glendive pulled together was when Burlington Northern wanted to close down the hospital it had built. Glendive had to raise $135,000 to buy the old hospital and simultaneously start a drive to raise $500,000 to replace it.

The veterans' nursing home location was awarded to Glendive over the heavy lobbying efforts of Billings, the largest city in eastern Montana. The upshot of the battle to locate the veterans' nursing home was the insight voiced by Curtis Meeds: "Only by cooperation at the eastern end of the state could something get passed over the legislative representation dominance of a large city like Billings." Dick Carney understood that the region must develop together. "It has been beneficial that Billings opposes us so that it occurs to small towns to cling together." Members of Glendive Forward learned the importance of unified, regional action, but only slowly began to recognize that for Glendive to apply strategic planning to long-term community development, they will need the financial and human resources of the entire community. Expressing broad vision from his legislative experience, John Johnson said, "We need a project catalyst to get both together or we will hang separately."

During the hospital project, relations with the Chamber deteriorated. In November 1988 Glendive Forward members were informed that they would have to move out and find their own sources of office support. When asked about reuniting efforts with the chamber, initial responses were "There is way more [economic development] than two groups can do. There is no time for petty jealousies. Lead, follow, or get out of the way. The chamber may have an ax to grind. Glendive Forward has made every effort [to reconcile]. The chamber seems threatened."

There are now six economic development organizations in Glendive. Said Meeds, "We all identify with different things. There are different organizations for different personal orientations. For example, a business incubator is being started by one guy and could use support of the whole community." Dick Carney cited GATE (Glendive Agricultural Trade Exhibition) as another example. The Gateway Cowbelles, for example, promote beef through advertising and through supplying it to the home economics department in the high school. (None of these organizations has telecommunications as a focus or key tool.)

Meeds suggested that Glendive Forward was originally somewhat idealistic in thinking that sharing responsibilities with the Chamber of Commerce would work out. Carney believes, "The only way we'll turn animosity around frankly is to infiltrate. We

need to get more people who see the big picture. Someone will have to bite the bullet." Clearly, members of Glendive Forward see theirs as the only vision appropriate for Glendive.

Glendive Forward's vision for the region is broad. Carney recognizes that there are too many counties, schools, courthouses, and hospitals. Johnson cautioned that if county courthouses were joined, there would be loss of identity and jobs, but that could be overcome by having a representative for each community. Isolation and identity are important issues for rural communities. Unifying them into larger counties would do much to broaden their feelings of participation as well as save operating costs. Mid-Rivers' efforts to combine the educational system and the telecommunications infrastructure (discussed below) will be the community's second taste of working together with other constituencies. The notion of aggregating demand to create opportunities to build or utilize the infrastructure is an important conclusion to another rural development study conducted recently by the authors (Schmandt, et al., 1990).

B. *Regional Initiatives:*
Eastern Montana's Resource Conservation and Development (RC&D)

1. *From city to region.* The problems of community development faced by Glendive are symptomatic of those faced by the many small towns that dot the eastern Montana landscape. Glendive may be more fortunate than many because it has an excellent school system, the presence of Burlington Northern, the Yellowstone River, Interstate 94, the technologically advanced Mid-Rivers Telephone Cooperative nearby, and a body of citizens determined to work to preserve their town and way of life. An outgrowth of Glendive Forward's efforts to secure a veterans' nursing home for eastern Montana was the experience for those involved of regional action. Many small towns (e.g. Baker, Sydney, Miles City, Plentywood, Wibaux, and Williston, North Dakota) banded together to counter the strong lobbying efforts of Billings. We learned from discussions with members of Glendive Forward that they acquired an appreciation for the importance of regional action for development. As Curtis Meeds said, "It's not a matter of economic development; it's economic survival" (Curtis Meeds, interview, 17 March 1990). Glendive's role in helping to create the new RC&D-style organization in eastern Montana is a partial outgrowth of recent experiences with the veterans' nursing home project.[9]

2. *A grass roots concept.* The coordinating spark for eastern Montana is Mike Carlson, the U.S. Soil Conservation Service's (USSCS) district conservationist. The USSCS in Montana is very supportive of Carlson's efforts. He spends three days a week on the USSCS payroll traveling the eastern end of the state promoting the RC&D concept and organizing skills to community groups, boards of commissioners, and anyone else who will listen.

From July 1989 various counties have become interested in being part of an active RC&D in eastern Montana. Although most groups are still in the formative stage of holding irregular meetings to determine goals, all have created some sort of initial economic development plan. Carlson finds interest very high, probably because of the economic straits these towns are facing (Mike Carlson, interview, 28 August 1990; quotations which follow stem from this conversation and a previous personal interview in the office of the Glendive Chamber of Commerce on 16 March 1990).

Mike Carlson attempts to cover 16 counties in an area he describes as 300 miles long by 200 miles wide, and at this point he is swamped with coordinative tasks. When he put out a plea for advice over a national RC&D association electronic bulletin board, he got

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[9] We will call this effort an RC&D even though it is technically *not* one. The actual RC&Ds, as pointed out earlier, are federally funded. Eastern Montana's efforts discussed in this section are the beginnings of a second, *state*-supported organizing endeavor.

dozens of responses and calls, most of which told him to cut down on the area he was trying to cover, to form area councils, and to get a full-time coordinator.

At this point, growth and organization are episodic as groups meet to begin forming a list of development ideas. Although Glendive is progressing well—Carlson feels that it is about a year ahead of the other towns—Butte is "light-years ahead." Some positive signs of activity include the fact that two economic development groups in Glendive—Glendive Forward and the RC&D—have met informally to discuss mutual goals and possible joint projects. Another promising note for Glendive is a local initiative to place a small levy on property taxes for economic development, which would provide $16,000 a year toward RC&D activities. County commissioners have voted for it, but Carlson feels that a development plan issued by the Glendive core group is necessary for voters to approve the levy.

Carlson sees great interest at the county grass roots level. Even though they lack a full-time coordinator, the core groups or councils may survive. The severity of economic problems is breaking down rivalries and animosities between cities. For example, Glendive and Scobey will be sharing plans and funding sources for community centers that they both want to build. But actual strategic planning appears to be in the indeterminate future.

In an area so large, subject to poor roads and bad weather, communication is a high priority. Carlson is trying to start newsletters in all the counties and create a fax network in which every county would have at least one machine.

3. *State and federal support.* Impediments to further developments with the eastern Montana RC&D include shortages of funds, staff, and time. Carlson is dismayed at the lack of real support which could come from other federal and state agencies because of their unwillingness to propose or join with what many see as controversial or radical programs. Certainly the RC&D concept asks agencies which traditionally serve agricultural interests to shift attention and resources to community development. Typically, agricultural agents are a county focus for communications, meetings, information, and human resources, yet they remain very reluctant to shift attention and resources to development. Carlson notes, too, that the Montana Cooperative Extension Service has only one economic development specialist. Says Carlson, "I'm real disappointed in Extension right now; they could really help, but they aren't" (Mike Carlson, interview, 28 August 1990).

C. *The Role of Business in Glendive*

The largest businesses in Glendive do not appear to be taking a strong leadership role in the community's economic development efforts. The largest employers—Burlington Northern, Montana Dakota Utilities, the local hospital, the community college—are not as involved as are some of the small business people.

Burlington Northern, for example, has maintained a fairly low profile in the town, although it did work with Glendive Forward to establish a local park by donating $15,000 and labor for maintaining the baseball field. According to Round House Manager Leo Chase, Burlington Northern (employing 155 people) has not changed its operations in the Glendive area for many years (Leo Chase, interview, 8 January 1990). It is basically a maintenance shop for trains. In the early 1980s Burlington North was almost ready to close its Glendive offices and move to North Dakota; although the company stayed in Glendive, all hiring has stopped; only one person received a promotion last year.

Burlington Northern resembles other multilocation, large businesses in providing for its own needs and "bypassing" the community in certain ways. Most company training is done in central facilities. The business operates its own microwave system, which ties to other Burlington Northern offices around the country. IBM supplies a "Compass" system that tracks cars and locomotives and produces their maintenance history, while internal accounting and data transfers are performed using networked Xerox equipment. Burlington Northern does interact with the locality in that it support its employees'

attendance at community college; it reimburses those who take computer courses, and it also has a foundation awarding some funds to the community college. Nevertheless, the company does not have a large and important role, or one commensurate with its size.

The situation of Burlington Northern may hint at why some of the other larger employers are not as involved in Glendive. With shrinking customer bases and diminishing employee numbers, some businesses can do little more than stay afloat. US West, for example, employed 110 people during the oil boom but now employs only 18.

V. Telecommunications' Role in Glendive: US West and Mid-Rivers

Glendive's telecommunications situation is not entirely atypical in rural western states. Outlying, sparsely populated rural areas are served by quite modernized independent telephone companies; population centers are generally the domain of a Bell company (US West in 14 very rural states) with older technology. In Glendive, the aggressive, modern telephone cooperative serving the region is challenging the LEC serving Glendive with its plan to cross into its territory in order to provide some distance education opportunities to Dawson Community College. US West, with its older technology and "business as usual" approach, has not taken a lead role in innovating local services. Its imminent confrontation with Mid-Rivers may illustrate the shape of things to come between independents and Bell companies.

A. *Mid-Rivers Telephone Cooperative*

Mid-Rivers Telephone Cooperative, Inc., has been characterized as a progressive independent telephone company in the industry. The co-op, headed by an ex-REA employee, provides telephone services in a huge landmass (about the size of West Virginia) with one of the lowest customer densities in the nation. The company, however, is equipped with the most advanced switching and transmission technologies; almost all of its switches are digital and it has hundreds of miles of fiber optic cable.

Larger communities in eastern Montana (such as Glendive) often are served by US West. Independents such as Mid-Rivers only serve the extremely remote rural communities surrounding these regional centers. Traditionally, the co-op and US West have a so-called "gentlemen's agreement" not to get into each other's territory. However, this agreement will be put to a test in 1990 when Mid-Rivers' fiber optic cable crosses right through the city of Glendive. Since the state of Montana does not have a territorial franchise to protect telephone companies' service territories, Mid-Rivers' planned fiber optic line, which will connect two Glendive schools to its system, has the potential to draw customers away from US West.

Mid-Rivers has been in the limelight recently because of its proposed educational service (discussed below). It plans to expand this network to include the community college and the high school in Glendive into the system. If this interactive TV proposal succeeds, it will be the first distance learning system in eastern Montana and the first such system provided by a telephone co-op in the state.

Mid-Rivers has been actively involved in the rural communities it serves and participated in the recent regional economic development efforts which were triggered by an eight-year economic recession in the region.

1. *Background on Mid-Rivers.* Mid-Rivers Telephone Cooperative, Inc., was established in 1952. It provides telephone service to about 25,000 square miles in a 20-county area of eastern Montana and one county in North Dakota. It is the largest landmass telephone cooperative in the lower 48 states. Headquartered in Circle, Montana, a small rural town with a population of only 800, Mid-Rivers has 20 switches and serves approximately 5,500 customers. The company employees 63 people with an average salary of $30,000 per year, while the average annual wage in that area is $10,000 to

$13,000. The co-op is also the largest property tax payer in McCone County, where its headquarters are located.

Mid-Rivers is also an AT&T subcontractor to provide AUTOVON (Automatic Voice Network) service for the U.S. Department of Defense, a facility about 20 miles northeast of Glendive. It is the only co-op in the nation to support this military communication network service.

The company has a subsidiary, the Cable and Communications Corporation, which owns six cable TV systems in eastern Montana and it also markets TVRO (television receive only) satellite dishes, pagers, mobile telephone equipment, telephones and accessories, fax machines, and TDD (telecommunications device for the deaf). The subsidiary is not constrained by guidelines for not-for-profit organizations as is its parent company, the cooperative.

Mid-Rivers also is a limited partner in a cellular phone service in Billings, the largest city of Montana, and a general partner in six Rural Service Areas (RSA), including one in North Dakota. The company is interested in cellular phone business because the nonwire technology has the potential to compete with land line service and contribute to bypassing local loop demands—which are considerable in sparsely populated areas. Mid-Rivers has kept up with this technology in order to protect its service territory. Mid-Rivers' cellular phone services in the six RSAs are expected to be in place later this year. Mid-Rivers' investment in telephone plant is $39.8 million; $26 million of this is from REA (Rural Electrification Administration) loans. So far the company has paid back $10 million to the REA.

Mid-Rivers' monthly basic phone service charge for residents is $12; business users pay $19. However, an average customer monthly payment is $50 due to the fact that free calling areas are limited. The phone company's managers estimate that about 70% of Mid-Rivers' revenue is from toll calls.

2. *Physical facilities.* Mid-Rivers serves some of the most rural communities in this country with the most modern technologies. The co-op's telephone plant is equipped with state-of-the-art digital switches and fiber optic cable. Not only do all its customers have single-party service, they also enjoy advanced customer services such call waiting, call forwarding, and three-way calling, which are not available in the city of Glendive, a US West serving area.

Mid-Rivers is currently upgrading its switching and transmission systems. It began converting analog and electromechanical switches to digital in 1981. In the summer of 1990 the last four switches were replaced by digital, making the entire system digital. The co-op started to lay fiber optic cable in 1988. So far 200 miles of fiber lines have been installed and another 200 miles are projected in the next two years. The company plans to replace all trunking cable and microwave links, which were installed at various times up to 1984, with fiber optics.

Mid-Rivers maintains that to go into fiber optics and digital switching is the only way to provide services of the future. Its outspoken general manager, Gerry Anderson, who had worked with various independent telephone companies and had 10 years of REA experience before he became the head of the co-op, stated: "The [modern] telecommunications infrastructure has to be there in order for other things to happen" (Gerry Anderson, interview, 5 January 1990). Anderson argued that modern technologies have helped the co-op operate more cost-effectively.

Bill Wade, Anderson's assistant, cited several reasons why Mid-Rivers is going with fiber optics. First, fiber optic cable has become cheaper and cost-effective to install in recent years as more and more fiber optics cable is being laid. Second, the technology has improved significantly. For example, the way the fiber is spliced has become easier and better. As a result, fiber optics became easier to install and maintain. Third, the almost unlimited capacity of fiber optics makes it possible to carry video, voice signals, and data at the same time. Although video signals can be transmitted over microwave as well, they take up so much bandwidth that there is little space left for voice. According to Wade,

fiber optic cable's high capacity makes it an ideal medium for interactive TV transmission. The phone company started to market interactive TV to schools after it realized that it could obtain some additional revenue from providing this service.

3. *The interactive TV demonstration.* Mid-Rivers started installing fiber optic cable as a network transmission facility. During the period of time the company installed more fiber, its costs dropped, making fiber very cost-effective to install. Installation was also getting easier as splicing techniques improved. As Mid-Rivers was putting in the fiber cable, it passed either right by or very close to four local schools. At that time, the company noticed that it had a great opportunity to become involved with interactive TV or distance learning. So the cooperative approached those schools and offered the facilities and talked about some of the things that could be done with the network.

At that point, Mid-Rivers decided to get a temporarily interactive TV system set up so that it could show people what such a linkage could do. It also was an effort on the company's part to learn more about the linkage. It did a number of demonstrations to small and large groups. As described by one Mid-Rivers staff person during the demonstration: "A college professor taught back and forth between the two systems. He brought all types of training materials and slides. You can connect a PC to this. You can bring something up on a computer and transmit that screen to another site. They have an overhead camera that zooms in on paperwork on tables. So when you show something, you don't have to write it on the chart. You just zoom in on the work paper. You are only limited by your imagination of what you can do with it."

Mid-Rivers reasons for wanting to do this school project are mixed. On the one hand, the co-op sees in it some new sources of revenue. On another dimension, it also espouses the importance of maintaining good educational systems. Said Bill Wade, "School is the heart of community. In a small community, schools are very important. They have sports programs which are what bring people into town. If you lose a school, sooner or later the community will dry up and will be gone. We are trying to preserve some of the small communities because they are our subscriber base, that is where we serve, the rural America. We feel that interactive TV and distance learning will help a lot, not only to keep those schools alive but allow those schools to provide more subjects and better curriculum for their students. There are stronger and stronger requirement for academics and things that you have to provide. Anything we can help in that area is what we are driving at" (Bill Wade, interview, 6 January 1990).

The cooperative is relying on the schools to configure the educational component of the system so that its technical capabilities will mesh with what instructors want or need in order to do the sort of job they want to do. One problem is that the number of students in the classroom varies from school to school. Some schools may have 20 students in a class, while the next school, which is perhaps receiving the same class at the same time, has only one or two students in a class. All schools will require a studio classroom and all the equipment that implies. Mid-Rivers has offered to help maintain and even install some of the equipment. It has proposed purchasing all the transmission equipment itself.

Ultimately, Mid-Rivers would like to see all eastern Montana networked on fiber optic cable and interactive TV. It has a vision of a grand network linking high schools, community colleges, hospitals, and universities.

B. *Rivalry Between US West and Mid-Rivers?*

There are two questions regarding Mid-Rivers' interactive TV proposal. First, why is the co-op so actively pushing for providing educational service? Second, will Mid-Rivers violate the so called "gentlemen's agreement" when it puts fiber optic cable into the Dawson Community College and Dawson County High School, which are in US West's serving area?

In respect to Mid-Rivers' motivation in providing a transmission medium for distance learning, the phone company claims that using fiber optic cable for an educational

purpose benefits the entire community and is the most effective way to use its resources. It argues that the interactive TV service is an unexpected bonus growing out of the company's modernization plan. Bill Wade, Mid-Rivers' assistant general manager, states: "As we are upgrading our network, we happened to pass through these rural schools. At that time we noticed that we had a great opportunity to provide distance learning and our technology can make it cost effective for the schools to participate in such a system" (Bill Wade, interview, 6 January 1990.) However, US West said that interactive TV is only an excuse for the co-op to continue manipulating the revenue pooling system. It gives the co-op a justification for implementing expensive, yet not absolutely necessary, facilities. Mid-Rivers counters this by pointing out that interactive TV is not supported by the pool.

Despite these arguments, Mid-Rivers' interactive TV proposal was received positively in the recent economic development workshops which are part of a regional cooperative effort for economic revitalization. Various community leaders in that region embrace this educational service proposal because they recognize human resources as a critical factor for economic development. In addition, although the state of Montana recently passed an initiative to assess the educational application of telecommunications, the near-term possibility of establishing a distance learning system in eastern Montana is minimal. Mid-Rivers' interactive TV proposal, however, provides a viable alternative for local communities.

In regard to the possible territorial violation, the problem is more complex. First of all, it will result in duplicated infrastructure. Mid-Rivers' proposed fiber optic cable, in crossing the city of Glendive, will parallel a small part of the existing fiber optic line built by US West to connect the two phone companies' plants. Although the duplication at this moment is short-distanced, there will be a greater amount of infrastructure duplication when in the future the proposed US West fiber optic cable is extended from Billings to Glendive.

Second, Mid-Rivers will totally bypass the US West network to provide service to the high school and the college—both of which are in the Bell company's serving area. So far US West has not taken any action against Mid-Rivers primarily because there is no certified territory in Montana and it is absolutely legal for one telephone carrier to provide service in another's trade territory. An equally important reason is that US West does not provide the similar educational service. However, if Mid-Rivers is to use its fiber optic cable to provide phone service in Glendive, there will be considerable friction generated. After all, there is still the "gentlemen's agreement" between the two companies.

Mid-Rivers has expressed little interest in taking customers away from US West. According to its general manager, Gerry Anderson, the co-op's intent is to provide interactive TV to the entire area. He stated, "It is not our plan to get into a competitive war with US West. We have to cooperate with them in many ways and we intend to keep this cooperative relationship" (Gerry Anderson, interview, 5 January 1990).

The relationship of each company to the community may be an important factor in the potential relationship between the two companies as well. Mid-Rivers employs 63 local people; the Glendive US West office employs only 18. US West's facilities are limited. Although Gary Kirkpatrick, community affairs manager for Glendive's US West office, stated, "The existing telephone service and the types of services in Glendive are good services," he also had to confess that some customers (especially people who had lived elsewhere) had requested special services such as call waiting or specialized ring patterns or access to a long-distance carrier alternative to AT&T, only to be told it was impossible. A business executive who had moved to Glendive from another small town, a local oil company desiring call forwarding so that it could reach customers more easily, and a local entrepreneur who spends a lot of time on the phone, were among those requesting improved service. In fact, the only modernization that the local US West facility had done—on two offices—was in one case motivated by complaints to the PSC and in the other justified because the equipment was "exhausted," according to Kirkpatrick. The local office feels somewhat hamstrung by corporate policies that have dictated investment in urban areas. Retired US West manager Charles Woods said, "I sometimes feel that we are

a forgotten child. They [the corporation] put a lot of money in other big cities . . . We don't have a PSC to tell our company to do this" (Charles Woods, interview, 16 March 1990). Nevertheless, this picture suggests that a demand might exist for a provider offering more modern, community-oriented, well-marketed services.

VI. Education and Telecommunications

One of the most promising areas for local development concerns education. Educational opportunities represent a way to a better life to the people of Glendive, and they feel strongly about the value of their high school and their local community college. Efforts to improve both institutions using telecommunications linkages portend Glendive's initiation into some of the possibilities available to them via communication technology.

1. *The Mid-Rivers distance education project.* In the process of laying fiber cable lines, Mid-Rivers passed near four rural high schools which are 15 to 112 miles away from each other. The company approached area schools in the spring of 1989 with a proposal to provide interactive television courses through its fiber optic lines. The schools are interested in this proposal because some of them are relatively small and not able to meet a new state mandate to provide foreign language courses to junior high students. Furthermore, due to the economic recession which hit the region in the early 1980s, most communities in eastern Montana are losing population. As a result, student enrollments are declining. The interactive TV proposal provides these schools a way to share resources and, more important, to keep the schools open and maintain teaching and staff positions.

As the co-op's upgrading plans grow, so does its interactive TV proposal. Mid-Rivers is also modernizing the AUTOVON facility, which it operates as a subcontractor for AT&T to provide communication network service for the U.S. military. During the summer of 1990, the co-op built a 20-mile fiber optic line to connect its AUTOVON site in the northeast suburb of Glendive with the digital facilities it maintains in West Glendive. This fiber optic trunk runs right through the city of Glendive and parallels part of the existing fiber optic cable owned by US West. Mid-Rivers has already approached Dawson Community College and Dawson County High School in Glendive to include them in the distance learning network, which currently encompasses four rural schools outside the Glendive area. In doing so, Mid-Rivers will have to build some extra miles of fiber optic cable to connect these two schools.

The co-op has received favorable feedback from the high school and the college regarding expanding the fiber optic interactive TV network. Dawson County High School is interested in this project for at least one reason: The school was built to accommodate 1,000 students but now has only 500; providing education to smaller schools outside of the city through this distance learning system will be a way to keep its teachers and staff members in place.

2. *Dawson Independent School District.* Shrinking enrollments at schools in the area have provided a major incentive for adopting learning technologies. Dawson has lost 450 students since 1982-1983. Both the high school and the elementary schools are funded by property taxes, and under House Bill 28, the school equalization statute, the district will get more from the state than it contributes. Nevertheless, shrinking tax bases do not bode well for the schools.

A visit to principals of the Dawson Independent School District showed scattered use of telecommunications technologies, but more interestingly, revealed a consistent perception that the staff viewed themselves as exporters of programming, not mere receivers. Several teachers use electronic networks such as Big Sky Telegraph to exchange ideas. The high school has its own five-channel studio; it offers television production classes and actually televises morning announcements.

Dawson High School has a media director, Steve Hammer, who has been on the staff since 1973 learning and applying new technologies. His current goals include using the fiber optic hookup with Mid-Rivers Co-op to set up a consortium in which Dawson

High is a provider of courses. He is looking for programs to train teachers in interactive full-motion distance classrooms, and he is trying to figure out how to fund the equipment purchases necessary.

Elementary classes use CNN's "Xpress" news supplied by the local cable company, Telecommunications, Inc. Others use EDUNET, and one school was recently connected to cable and will be looking to Steve Hammer to train teachers to use that medium as a resource. There are no satellite dishes in the district; however, schools feel they can utilize one available at the community college if they are linked by fiber, or they can take their classes to the community college to view incoming programming.

The education community in Glendive is comfortable with communications technologies, had excellent relations with their media staff, and were quite proud of the quality of education they made available to their students in spite of declining enrollments and shrinking tax bases. They looked forward to improved linkages with networks out of Helena but were quite accustomed to being on the end of the pipeline and fending for themselves.

3. *Dawson Community College*. Dawson Community College, established in 1940 as a public junior college, began as a division of Dawson County High School. In 1966 it separated from the high school and later changed its name to Dawson Community College. Dawson Community College in Glendive is one of three community colleges in the state not under the university system's control. Roughly 600 students take courses with the 30 full-time faculty in order to get their A.A. degrees. One sequence at the college is largely vocational while others are more enrichment-oriented (Ron Swanson, interview, 8 January 1990).

The college is eligible to use the university system's microwave system, satellite downlinks, and an MBA program sent by microwave from Bozeman. Dawson Community College has one of two multidistrict, multicounty fiber optic networks linking several high schools with the community college. Representatives from both Mid-Rivers and US West have worked with the community college in order to provide adequate links to other educational facilities. Dawson Community College also works with Miles City Community College, which is about 75 miles southwest of Glendive. Miles City has a studio able to link with Dawson. The two are working together on training teachers. Part of a Title III grant awarded to them supports curriculum development for distance learning.

According to Swanson, the biggest problem with distance learning in telecommunications is the adequate training of instructors who are able to teach in that mode. Teachers who do extremely well in the classroom might not necessarily work well in distance learning. He believes the college must provide training for those people who are going to be teaching in that medium. Internally, the college is upgrading its computer labs with Mac II and Leading Edge (IBM compatible) computers. IBM is helping the college to build a Local Area Network that will link some of the labs.

VII. Other Aspects of Telecommunications

A. *Glendive Medical Center*

The Glendive hospital has not made extensive use of telecommunications to date. It routinely uses fax machines to connect to statewide hospitals and clinics for record and diagnostic purposes. Its newest innovation entails a teleradiology system which will allow radiologists in three hospitals to share their duties; if one radiologist is unavailable, materials can be sent to another site for diagnosis. This system will use phone lines for its connection. The hospital uses the city's cable system for patients' TV services (Penny Zimmerman, interview, 5 September 1990)

B. *Cable Television and TVROs*

The cable television system in Glendive is owned by the nation's largest multiple system operator, Telecommunications, Inc. (TCI). Well known for its numerous small systems in the west, TCI operates Glendive as it does most of its other systems—on a "no-frills" basis. The system has 2,400 subscribers (67% penetration) and provides 26 channels—22 for basic services and 4 for premium (primarily movie) services. The system is capable of delivering up to 36 channels. The basic subscription rate is $16.60, somewhat higher than the national average rate for basic cable service (particularly for so few channels). There are no local access channels, and the system does no local origination.

Interestingly, system manager Knute Gustafson commended the local broadcaster for its "real good job in public services announcements" (Knute Gustafson, interview, 17 March 1990). He implied that the broadcaster was taking care of community service, thereby obviating the cable system from such responsibilities. Gustafson said "It is redundant for us to do the same." The idea of doing community service in some *other* fashion had not occurred to him. This particular television station is the smallest television affiliate in the country. It is both a CBS and an NBC affiliate. The cable system picks up additional network signals from Billings and Denver stations. Another curious aspect of the local cable system is that it pays no franchise fees to the city. It has what was termed a "business license" with the city.

The cable company delivers a teletext service, X-PRESS, to the local high school and other users through a special feed. X-PRESS offers access to major newspapers and several other data services; they are translated at the receive end through a personal computer. The high school's audio-video resource center receives it and also does a lot of videotaping of regular programming. Gustafson noted that the company provides service to the area's schools for free.

Mid-Rivers Telephone Cooperative also offers some cable television service. The cable systems are owned by a Mid-Rivers subsidiary called Cable and Communications Corp. It houses no public access stations and cannot insert local commercials into programming. Twelve channels are available for cable service. The company charges $15 for a service order and has a $25 premises charge to install the system. Basic cable is $14.50 per month. This system does not serve Glendive.

There are three satellite dish dealers in the Glendive area (including Mid-Rivers). Television receive-only dishes (TVROs) are popular across rural America with people who cannot access cable systems because they live too far away from the towns wired by the cable systems. According to Mid-Rivers, the best satellite receiver from their perspective, costs from $1,300 to $1,500. The cable manager acknowledged that when programming via dish was free, the dishes posed more competition to cable television: "We can go more head to head with them now, but in the past you could buy a satellite dish and receive all satellite programming for free. They used to buy their equipment and receive all the services for free, but now they are actually packaged. People have to pay for them" (Knute Gustafson, interview, 17 March 1990). Whether the cable company decides to wire an area is in part influenced by how many households in that area already have satellite dishes.

VIII. Conclusions

Glendive's remoteness and vulnerability to shifts in its underlying economic base mean that it has been the first to feel shock waves when agriculture or oil suffered and the last to feel the benefits of social or other programs. Its boom and bust cycle, however, has so thoroughly settled into "bust" for the previous decade that the community has reacted. In Glendive we see the glimmers of things to come: a community that is beginning to learn how to work with its own members and with other towns and counties, a local telephone

cooperative willing to experiment with new services for education, in the context of a state newly aware of the advantages of distance education and regional organizing efforts.

As the eastern Montana RC&D takes hold, there is reason to believe it can be as successful as others around the state. For Glendive, this may mean some improved agriculture, possibly some more building or service contracts similar to the veterans' nursing home, or possibly paddlefish caviar or some other niche product. Yet Glendive's distance from other population centers, and its own low population, make organizing much more difficult than would be the case in a larger town or in a region with towns located more closely together. Even the distances one must travel for meetings can amount to hours in a vehicle. Moreover, the most common communication, the phone call, is invariably a toll call in eastern Montana.

Telecommunications providers could make a difference for Glendive's organizing tasks if they provided more inexpensive connections across Montana's distances. Extended area service might ease this situation for some members of the community, but the BOC does not favor it. From its perspective, EAS simply costs too much to provide. US West in Glendive already copes with decreases in access lines, decreases in service requests, and decreases in revenues. Relative to the boom times, when the phone company admits it overbuilt, the 1990s do not promise much increased business for them (Charles Woods, interview, 16 March 1990). However, as the BOCs bemoan the loss of their conventional residential and large business (many of them oil-related businesses) customers in places like Glendive, they appear to do little to generate additional business themselves. In Glendive, the local provider waits for businesses to come back just as it waits for its headquarters to decide it is time for improved facilities in this small town.

US West's apparent complacency makes Mid-Rivers Telephone Cooperative's activities all the more notable. Facing formidable service odds, Mid-Rivers has managed to install a technically superb system and to spearhead a regional educational consortium arrangement that will use its fiber connections. Its spin-offs into cable television, TVROs, fax machines, mobile telephone equipment, and other telephone accessories are some testimony to the cooperative's ingenuity and aggressiveness. Its management firmly believes telecommunications will be more important in the future, and people like Bill Wade of Mid-Rivers insist that fiber has got to be in place ("If we are going to provide the services of the future, we have to use fiber"). Mid-Rivers has the advantage of an REA loan, however, for some of its capital.

It also has the advantage of a strong commitment to the community. As Wade said, "Our prime interest is service. We are the strength of the communities we serve. If not, we're going to try harder to be that" (Bill Wade, interview, 6 January 1990). Indeed, the organizational premise of a cooperative is that precisely. Lacking the requirement to show profits for shareholders, the co-op can make investments that may take more time for payback. Insofar as the community *is* the co-op, it is able to communicate with its constituency more easily than can a company such as a BOC. For that reason, the state officials interested in enlisting business support for the state RC&D effort have targeted cooperative telephone and utility companies as likely supporters; such businesses are solid links to townspeople as well as representatives of key elements of the infrastructure.

How cooperatives might fare in a more deregulated rural telephone environment is difficult to predict. On one hand, there is some reason to think they may fare better than US West in rural areas like Glendive as long as they continue to have some access to capital. Mid-Rivers' example suggests they may be less risk averse, more interested in serving the community, and willing to make commitments to activities such as education. Even if the BOC in Glendive had the digital switches that may be in US West headquarters' plans, and even if it had some fiber optic lines, there was little evidence from our interviews that the company would know what to do with the facilities. On the other hand, if loan funds diminish, or if the toll rate structure were altered, both cooperatives *and* BOCs would suffer in places like Glendive.

Glendive's interest in local course sharing among high schools and in providing the wherewithal for Dawson Community College to flourish signals the high value the region places on education. Maintaining the public school's viability by sharing resources makes sense; although some might question how, in certain situations, very few students can justify large, tax-dollar-supported facilities, others would reply that a local school is the heart of a community. Local pride and vision are embodied in school offerings. In Glendive's case, however, too many people had to ask *what* they were educating their children for: job prospects in Glendive, or eastern Montana, are poor. As one interviewee said, after students are educated, they leave. A lot of people in the region agree with Bill Wade of Mid-Rivers, who said that school is the heart of community. Improved educational offerings may be one component which, combined with the efforts of community organizing, can help make a difference in Glendive's future.

Epilogue

Project directors Strover and Williams paid a follow-up visit to the Glendive site on 15 and 16 August 1991. Interviews were conducted with Dawson Country Community College, US West, Mid-Rivers Telephone Cooperative, The Soil Conservation Service (USDA), the Chamber of Commerce and Glendive Forward, as well as with one prominent local businessman. Results of these interviews confirmed that fiber installations for linking several of the regional school districts as well as the college were well underway. A first use will be in the area of nursing education, with Dawson Community College contributing academic subjects, and Miles Community College providing technical content. According to Dawson Community College president, Don Kettner, and the dean of instruction, Peter Degel, this service is directed to "place-bound" students—i.e., ones who would find it difficult to travel to a different town in order to take classes.

The only distance education project to be operational in fall 1991 is the Carter-Fallon-Prairie County High School ITV Distance Learning Network, linking schools in Terry, Plevna, Baker, and Ekalaka. According to Gerry Anderson (general manager of Mid-Rivers Telephone Cooperative, Inc.) and Bill Wade (plant manager), the project will use Mid-Rivers fiber optic lines so that the schools can share courses.

The network infrastructure in the region is changing, based on further interviews with Greg Goodnature, US West network switching manager for Eastern Montana, and Dan Green, government and educational services marketing unit for all of Montana. In all, US West seemed more involved in the deployment of fiber for Eastern Montana (a link has just been completed between Billings and Glendive) than found in earlier visits. This appears as a consequence of a commitment to upgrade facilities, including installing digital switches at Eastern Montana central offices, which are mostly served by step-by-step technologies. A digital switch will be coming on-line in Glendive in 1992. Although the US West Dawson-Miles City link would be necessary for the distance nursing education plan, the company had no immediate plan to support that project. This reflects the continuing lack of coordination between US West and the distance education community. The company has only two persons for the entire state. Although Mr. Green related that US West had a commitment to distance education in Montana, he was very cautious in referring to any details on projects. Stating that his business "is demand driven," Green conceded that it was difficult to serve the entire state.

Although we did not consult fresh figures, our local interviews showed that the Glendive economy seemed to be remaining steady, which many would consider below par relative to earlier years. By contrast, community college president Don Kettner felt that the current year was on an "upswing: Cattle prices have held for the past 18 months; oil is starting up again; and the hay crop is the best it has been in 10 years." "But, added Kettner, "we can't get greedy again" (referring to overbuilding during the oil boom). Kettner along with many of our contacts has a firm belief that Glendive and Eastern Montana must have careful and conservative long-range planning for slow growth. There

is hope that funding will be allocated to a Veterans' Administration nursing home which has already been approved as a project to be located in Glendive.

Interviews with the local RC&D representative, Mike Carlson (USDA) and the members of the Glendive Chamber of Commerce (Jim Culver, president of the Chamber, Kathy Nedens, executive director of the Chamber) and members of Glendive Forward (Curtis Meeds and Dick Carney, cofounders of Glendive Forward, and Kurt Baultrush and Murray Vester, members of Glendive Forward and the Chamber) confirmed that the Glendive economy, and in particular certain economic and community development efforts, had progressed. The most significant outcome of the past year is the merging of the Glendale Forward activities into the Chamber's programs. Members of the two groups are in accord with objectives such as the paddlefish caviar project and the VA nursing home, which now has a building site. The latter is slated to receive federal funding in the 1991-1992 legislative year. The paddlefish project reaped about $100,000 for the community's use. This money must be reinvested in community projects under state law, and the Chamber used money to date to improve various recreational opportunities, many of which in turn brought additional tourism revenues into the town. The Glendive region RC&D, renamed the "Eastern Plains RC&D," has applied for federal funding ($110,000, with great assurance of receiving it) and helped pass two state bills to benefit their projects. A new emphasis on marketing local products, achieved through a regional alliance as well as a three-state alliance—dubbed the Tri-State Marketing Cooperative—will help bring uniquely Montana products to a larger market.

Interview Master List

Anderson, Gerry—General Manager, Mid-Rivers Telephone Cooperative, Inc., Circle, Montana. Interviewed by Liching Sung and Joan Stuller, 5 January 1990, and via telephone by Liching Sung, 26 March 1990.

Archdale, Jinny—Managing Editor, *The Ranger Review*, Glendive, Montana. Interviewed by Liching Sung, 5 January 1990.

Aubry, John—Telecommunications Development Manager, Information Services Division, Department of Administration, Helena, Montana. Interviewed by Liching Sung and Richard H. Cutler, 14 March 1990.

Barclay, Karen L.—Director, Department of Natural Resources and Conservation, Helena, Montana. Interviewed by Liching Sung, 14 March 1990.

Beck, Ray—Administrator, Conservation and Resource Development Division, Department of Natural Resources and Conservation, Helena, Montana. Interviewed by Liching Sung, 14 March 1990.

Carlson, Mike—District Conservationist, U.S. Soil Conservation Service, Glendive,Montana. Interviewed by Liching Sung and Richard H. Cutler, 16 March 1990, and via telephone by Cutler, 28 August 1990.

Carney, Richard—Owner and agent, Carney Insurance Company, and former president of Glendive Forward, Glendive, Montana. Interviewed by Liching Sung and Richard H. Cutler, 17 March 1990, and via telephone by Cutler, 28 August 1990.

Chase, Leo E.—Shop Superintendent, Burlington Northern Railroad, Glendive, Montana. Interviewed by Joan Stuller, 8 January 1990.

Cravens, Russ—Director, Montana Public Relations, US West Communications, Helena, Montana. Interviewed by Liching Sung and Richard H. Cutler, 14 March 1990.

Eck, Eric—Chief, Revenue Requirements Bureau, Montana Public Service Commission, Helena, Montana. Interviewed by Liching Sung and Richard H. Cutler, 15 March 1990.

Eide, Candice—Director, Economic Development, Action for Eastern Montana, Glendive, Montana. Interviewed by Liching Sung, 5 January 1990, and via telephone by Richard H. Cutler, 28 August 1990.

Gustafson, Knute—System Manager, TCI Cablevision Montana Inc., Glendive, Montana. Interviewed by Liching Sung and Richard H. Cutler, 17 March 1990.

Hammer, Steve—Director, Media Center, Dawson County High School, Glendive, Montana. Interviewed by Liching Sung and Richard H. Cutler, 16 March 1990.

Hayhurst, James B.—Assistant Vice President, US West Communications, Helena, Montana. Interviewed by Liching Sung and Richard H. Cutler, 14 March 1990.

Helgeson, Henry—Financial and Accounting Manager, Mid-Rivers Telephone Cooperative, Inc., Circle, Montana. Interviewed by Liching Sung and Joan Stuller, 6 January 1990.

Holliman, Joe—Economist, Utility Division, Montana Public Service Commission, Helena, Montana. Interviewed by Liching Sung and Richard H. Cutler, 15 March 1990.

Hopfauf, Hilary M.—Principal, Dawson County High School, Glendive, Montana. Interviewed by Liching Sung and Richard H. Cutler, 16 March 1990.

Hutchinson, John M.—Deputy Commissioner for Academic Affairs, Montana University System, Helena, Montana. Interviewed by Liching Sung and Richard H. Cutler, 14 March 1990.

Johnson, John—State Senator, State of Montana, Glendive, Montana. Interviewed by Liching Sung and Richard H. Cutler, 17 March 1990.

Kirkpatrick, Gary—Manager, Community Affairs, US West Communications, Glendive, Montana. Interviewed by Liching Sung and Richard H. Cutler, 16 March 1990, and via telephone by Sung, 23 March 1990.

Kubesh, Kenneth—Director, Commercial Property Division, Realty One, Glendive, Montana. Interviewed by Liching Sung and Joan Stuller, 5 January 1990.

Lopach, Dennis—Attorney, US West Communications, Helena, Montana. Interviewed by Liching Sung and Richard H. Cutler, 14 March 1990.

Lukenbill, Ron—State Facilitator, Office of Public Instruction, State Capitol, Helena, Montana. Interviewed by Liching Sung and Richard H. Cutler, 14 March 1990.

McRae, Cal—Superintendent, Glendive Public Schools, Glendive, Montana. Interviewed by Liching Sung and Richard H. Cutler, 16 March 1990.

Meeds, Curtis—Owner, Best Western Holiday Lodge, Glendive, Montana. Interviewed by Liching Sung and Richard H. Cutler, 17 March 1990.

Murphy, Michael E.—Administrator, Montana Department of Agriculture, Agriculture Development Division, Capitol Station, Helena, Montana. Interviewed by Liching Sung and Richard H. Cutler, 15 March 1990.

Nagle, Gail—Director, Glendive Public Library, Glendive, Montana. Interviewed by Liching Sung, 8 January 1990.

Nedens, Kathy—Executive Director, Glendive Chamber of Commerce and Agriculture, Glendive, Montana. Interviewed by Liching Sung, 5 January 1990, and by Sung and Richard H. Cutler, 16 March 1990.

Odasz, Frank—Big Sky Telegraph, Helena, Montana. Interviewed via telephone by Richard Cutler, 4 September 1990.

Ollerman, Les—Mayor, City of Glendive, Montana. Interviewed by Liching Sung and Joan Stuller, 5 January 1990.

Peck, Ralph—Deputy Director, Montana Department of Agriculture, Capitol Station, Helena, Montana. Interviewed by Liching Sung and Richard H. Cutler, 15 March 1990.

Peterson, Charles—Dawson County Extension, Glendive, Montana. Interviewed by Liching Sung and Richard H. Cutler, 16 March 1990.

Pratt, Lyle—State Status Statistician, Montana Agriculture Statistics Service, Helena, Montana. Interviewed by Liching Sung and Richard H. Cutler, 15 March 1990.

Rice, George and Genevieve—Farmers/ranchers, Glendive, Montana. Interviewed by Liching Sung and Richard H. Cutler, 17 March 1990.

Sevier, Alan—Broker, Edward D. Jones and Company, Glendive, Montana. Interviewed by Liching Sung and Richard H. Cutler, 17 March 1990.

Schmitz, Steve—Chief, Conservation Districts Bureau, Conservation and Resource Development Division, Helena, Montana. Interviewed by Sharon Strover, 5 September 1990.

Swanson, Ronald A.—Dean of Instruction, Dawson Community College, Glendive, Montana. Interviewed by Liching Sung and Joan Stuller, 8 January 1990.

Wade, William J.—Assistant General Manager, Mid-Rivers Telephone Cooperative, Inc., Circle, Montana. Interviewed by Liching Sung and Joan Stuller, 6 January 1990, and via telephone by Sung, 22 March 1990 and 4 September 1990.

Whitney, Kate—Compliance Specialist, Montana Public Service Commission, Helena, Montana. Interviewed by Liching Sung and Richard H. Cutler, 15 March 1990.

Winters, Dennis—President, Montana Market Development Company, Butte, Montana. Interviewed via telephone by Liching Sung, 28 February 1990.

Woods, Charles—Retired employee, US West Communications, Glendive, Montana. Interviewed by Liching Sung and Richard H. Cutler, 16 March 1990.

Zimmerman, Penny—Glendive Medical Center, Glendive, Montana. Interviewed by Sharon Strover, 5 September 1990.

Chapter 7

Conclusions

I. Background

A great deal of this volume is concerned with how policy mechanisms can influence both infrastructure and economic development. The actual process by which those two are related, however, is not without complexity and paradox. For example, the subject of telecommunications in rural areas is dominated by a great deal of literature that makes tremendous assumptions about how economic development proceeds. Research based on both Third World situations (e.g., Saunders et al., 1983) and cases in the United States too often places the issue of infrastructure and its relationship to economic well being into direct causal models: If the infrastructure is there, economic development is sure to follow. Contradicting these technological deterministic approaches, however, is a growing consensus in the U.S. economic development community that something is missing from that model for development.

The research that is discussed in this chapter sought to find that missing element. It is premised on the notion that development must have community input and community leadership in order to work. Consequently, we sought out the community perspective on development efforts in the U.S., focusing on economic development efforts related to telecommunications infrastructure and investment. Ross (1990) characterizes U.S. rural economic development notions as being in three waves: The first entailed the wave of "factory-chasing" many states adopted in the 1950s and 1960s. This gave way to the equally unsuccessful second wave "industrial park" or "capacity-building" development approach, which involved state funded R&D centers, state venture pools, and state technology transfer programs in the 1970s and 1980s. These efforts also flagged when some inherent deficiencies of state sponsored efforts, including conventional nonresponsiveness to markets and inadequate scale of the projects, proved insurmountable. Hence, a third wave has now taken shape. This wave emphasizes rethinking how public money can be spent in ways that invoke or work from the competitive marketplace. Investment is thought of as contributing to building markets, and the entire community is expected to be involved in funded ventures. Basically, it acknowledges that development is a comprehensive process that cannot be fed by emphasizing any single element,be it infrastructure, or one type of business, or one location. This model of development acknowledges that communities are organic, dynamic, heterogeneous, and possess unique directions, capabilities, and needs, and that economic developers or development programs themselves do not create jobs and economic growth, but rather that businesses and entrepreneurs and communities do. Ascertaining how telecommunications systems might interact with such communities, and how development is related to the two necessarily becomes an exercise in understanding the *process* of change and in grasping the range of intricate relationships they create. This is the challenge our research took on when it examined the local level perspective on telecommunications and economic revitalization.

Consequently, the comments in this chapter focus primarily on what development looks like from the grass roots perspective, with special attention to the potential for telecommunications-related development opportunities. Our work is based on two major studies of rural telecommunications, and about three years worth of work investigating telecommunications systems in U.S rural and urban areas. Our last study, and the one extensively cited here, specifically examined four rural American communities, using longitudinal economic base analyses as well as several field trips. The longitudinal picture combined with rich interview data developed our understanding of each site as a unique "case" of intersecting rural characteristics, development trajectories, and telecommunications systems. Our decision to do in-depth case studies as opposed to a national survey reflected our growing realization that the aggregation-oriented models of

conventional studies cross-sectional studies are unable to capture the *process* by which towns or regions grow or decline, and how specific technology decisions, specific people, specific leadership strategies, and specific local, state, and federal policies affect that process.

II. A Preliminary Examination of Telecommunications in Rural Areas

The community study was in part an extension of a national study of rural applications of telecommunications, with an eye toward economic development (Schmandt, et al., 1991). In that study, we examined telecommunications innovations in rurally-based businesses, in rural towns or regions, in public services in rural areas, and in rural phone companies, making four "categories" of applications or services we explored at some 37 sites. A quick summary of that study concluded as follows.

Our first area of research focused on the use of telecommunications in rural businesses. Here we found a very visible distinction between large users' development of their own highly sophisticated networks (often bypassing the public network), as compared with small businesses which were left to develop their own applications (if, indeed, they even recognized their needs for telecommunications). The smaller businesses seemed handicapped because of the paucity of equipment and consulting services in rural areas, and they also appeared more captive to the expertise of the local phone company than are larger businesses.

A second research area sought out examples of rural cities or regions that capitalized on the development potential of certain spatial arrangements. At least four types of rural situations were observed. We found an "adjacency" phenomenon in which certain small towns develop in part due to their proximity to a large town or city. Small rural cities may also become "hubs" as they develop, serving as regional resource centers for other communities. Sometimes two or more communities become partners in developing businesses or sharing public services or other resources, forming an "alliance," another strategy. And other rural towns represent cases of the "isolate," when the town might have to reach out over long distances for markets or services. The heterogeneity of such rural areas meant that developing one generalizable recipe for local economic development was nearly impossible. Idiosyncratic local cultures, orientations, and resources (human and otherwise) make development a typically specialized and localized activity.

A third research area focused on the relationship between telecommunications infrastructure and the delivery of public services in rural areas, with an emphasis upon education health care management. One growing trend appears to be the entry of telcos into the development of interactive fiber networks that can connect local schools or adjacent school districts. Whether telcos should be encouraged to develop fiber networks and whether such "extra" services should be a part of the public rate base is a current policy issue.

A final research topic focused on small telephone companies, which we chose to study rather than the larger Bell or independent companies because they are so important to the most rural parts of the U.S. One can find many examples of small telephone companies that have very high visibility in the local community and that are seen as one of the key businesses. They often have a very direct role in local economic development, which may involve not only getting low-interest money to improve the local network, but also participating on economic development committees and in projects. We found that the BOCs tend to have a less personal presence in rural areas; apparently the drive toward competition has led the BOCs to emphasize their urban-based businesses where profit margins are greater. And, of course, supporting rural staffs is an expensive proposition due to the distances involved.

This multisite research project research centered on a particular telecommunications application or provider, with only a cursory examination of the context within which the innovation had to develop. If telecommunications appears as a "necessary" but not

"sufficient" condition for development, what can we examine as the "sufficient" aspect of the situation? Hence the present study suggested a different approach, one where the context—namely, a town—would be researched in detail, after which telecommunications could be seen *relative* to that context. Our site selection focused on rural towns in different parts of the country with at least state-of-the-art telecommunications infrastructure. Our basic plan was to compile an economic base that could provide a macrolevel look at economy changes, and to juxtapose these data against more contextual information provided through personal interviews with various individuals drawn from different segments of the communities.

III. The Four-Community Study

The four communities we chose for more extensive research were selected for regional differences, economic diversity, as well as variation in potential applications of telecommunications (depending on the local labor market and dominant industries). These communities were:

Eagle Pass, Texas. Eagle Pass is a small border city of 28,000, with a 90% Hispanic population. In 1990, unemployment in Eagle Pass hovered at 35%. Its economy is in transition from an agricultural economy to trade and transborder manufacturing, and it is in an "adjacency" relationship with much larger Piedras Negras on the Mexican side of the border. Mexican, Texan, and U.S. trade policies will be very important to economic development of Eagle Pass, particularly insofar as it is a maquiladora ("twin-plant") center, with over 36 maquiladoras currently operating and more in the planning stages. Transborder telecommunications has a definite role in the larger pattern of commerce in the region. Currently, border regulations inhibit telecommunications systems and this in turn hinders certain commercial activities. Improved telecommunications could also mean improved education in the Eagle Pass area, in part because enhanced educational offerings available through new communication systems promise to smooth the integration of Mexican Americans into the U.S. economy.

Demopolis, Alabama. Demopolis is a small city of 8,000 in an "alliance" situation with a few other small towns nearby for a regional population of about 25,000. Its population is about equally divided between blacks and whites. The economy in Demopolis stands in favorable contrast to that of many other southern small towns, largely because of the presence of two large paper mills as well as a local leadership that has emphasized racial harmony and cooperation and that has planned for economic diversification. Until 1948 Demopolis was a conventional small town relying primarily on local sawmills for its employment opportunities. In 1957 Gulf States Paper built a modern paper plant nearby, and shortly thereafter James River Corporation built another one farther from town. The two employ several thousand people, and have made a commitment to the local community that goes beyond simply employment numbers. Demopolis is now in transition from an agricultural to a light manufacturing and pulp mill economy, and telecommunications has played a significant role in the economy of the local paper mills because it has aided internal networking and facilitated geographically dispersed management. These improvements allow the mills to remain competitive and technologically advanced. Demopolis also presents several examples of the importance of telecommunications for *small* businesses, and the dilemma they face in acquiring proper equipment and consulting services for advanced applications. Demopolis has relatively low unemployment but also low wages and low educational attainment; the latter in particular has suggested to the community the need for careful consideration of new techniques for improving school opportunities.

Glendive, Montana. Glendive is an isolated small city of 8,000. Of all our communities, Glendive faces the most extreme privation. Although near an interstate highway, it is quite remote, the nearest sizable population center being Miles City, 80 miles to the west (population of about 8,000). Its Dawson County location in eastern Montana

renders it culturally and geographically closer to the wide, open spaces of North Dakota than to mountainous western Montana. Indeed, Glendive is only about 40 miles from North Dakota. This distance from the western population centers of the state (e.g., Helena, Butte) has not helped the town's political clout in terms of state economic development policy. There are ongoing struggles among the main Montana cities over nearly every significant state-supported development effort. Agriculture had been the traditional mainstay of the local economy, cattle ranching and grain farming comprising the major activities, and oil and mining were also lucrative activities at times. But in the wake of the drought of the 1980s, inopportune insect infestations, and the plummeting price of oil, the agricultural and resource base of Glendive's economy has severely eroded. The town lost half its population during the 1980s and is struggling to maintain itself. It now is striving to replace its aging agricultural and failed oil economies, and it is examining the potential of telecommunications-based activities for its development efforts. Glendive is distinguished by the presence of a very active local telephone cooperative that is keen to aid in development efforts.

Kearney, Nebraska. Kearney is a small "hub" city of 24,000 on the western rim of Nebraska's most populous region. Kearney first came to our attention when we learned that an interexchange carrier (AT&T) had installed a point of presence (POP) in a large, telemarketing-based firm in this town. As we investigated, it became apparent that Kearney had a progressive and visionary plan for its development, one that embraced a comprehensive strategy for improving the town and what it could offer its own citizens. Having adequate telecommunications infrastructure was a part of this plan, although there are other, possibly more important, parts as well. Kearney has developed telemarketing and some "back office" telecommunications-intensive businesses which operate alongside branch plant manufacturing operations also deploying innovative telecommunications applications. The branch plants give Kearney a diversified economic base, and they have been in this town for many more years than have the telemarket operations. (The spread of telemarketing sorts of businesses throughout the Midwest has become a phenomenon of the late 1980s.) What is particularly interesting about Kearney concerns the spin-off effects of the infrastructure required by Cabela's, the area's largest telemarketer. This infrastructure is on the verge of serving several other local clients, hinting at new capabilities and efficiencies local businesses will soon realize. Such new efficiencies, however, will exact a cost: The local telephone provider, GTE, will certainly lose access charges as AT&T's capabilities are more fully exploited. Finally, the town is looking for further economic diversification, and has had very methodical development planning. Insofar as Kearney functions as a regional economic, education, and service hub, the capabilities of telecommunications for public services (especially K-12 and college education and the local hospital) already have been acknowledged and await future exploration.

From our research in these communities, we were able to develop two broad areas of findings focusing on (1) the nature of local economic development and on (2) telecommunications service needs or demand in rural areas. The results in these areas (and our earlier study) suggested generalizations and recommendations regarding actual and potential roles for telecommunications in the local development of rural communities. These two points and their policy implications serve as the focus of the remainder of this chapter.

Economic development at the local level is the first of these topics. Each of the communities had an economic history, the near-term view of which was analyzed from county census data, community information, and local interviews. Against this view, we documented current developmental efforts and the relevance of telecommunications to these efforts.

The demand profile is the second main topic. We wanted to know what telecommunications services were required for the community's services and development. More specifically, what were "demands" relative to the needs of large and small businesses, as well as public services? What infrastructure characteristics were important

for development? Education was a major public service demand area, and one distinctly underrecognized and usually poorly served.

We conclude with an examination of the policy implications of these findings. We sought to generalize about how policy can stimulate a developmental view of telecommunications in these communities. From the local level upward, this involves initiatives on the part of various local stakeholders and citizens: community development persons, the local telephone and other telecommunications service providers, and regional development groups. It also entails better state-level coordination between development offices and utility commissions. Finally, there are federal policy implications, including consideration of how the increasingly competitive telecommunications market affects rural areas, and strategies or methods to promote telecommunications investment.

IV. Economic Development at the Local Level

In contrast to recently dominant models addressing local economic development, our study underscored development as a process requiring the initiatives and involvement of the local community and operating best when cognizant of uniquely local resources and interests. Earlier approaches sometimes described as "smokestack chasing"—defined as offering incentives to an industry in exchange for their locating to a town—or "industrial park" building—the assumption that if you build it, they will come—have not led to rural revitalization. In some cases, in fact, the expectation they engendered led to bitter disappointment when public monies supported building or recruitment efforts with little payback.

The cases examined here illustrate the difficulties of development in situations where single or limited resources dominate a region, the typical case in most U.S. rural areas. Our success story, Kearney, is so in part because its economy has been diversified for several years. But its circumstances are rather unusual. The strategy that appears to make most sense for rural local economic development is at least twofold. First, the community itself must face up to its problems and opportunities and embark upon a more conscious development plan or effort; using local resources—whether they are human, physical, geographical, or otherwise—and plotting desirable directions are necessary. Second, the typical smaller rural community must evaluate the nature and size of local demand factors (e.g., labor, facilities, materials or supplies, and the like) and figure out how to achieve the best economies of scale.

The foregoing necessarily implies that communities should consider their locational advantages or disadvantages and seek to ameliorate the latter while enhancing the former. Arrangements referred to earlier as hub and alliance strategies can improve opportunities for stretching scarce resources. By considering telecommunications as a key infrastructure element, some communities can find ways to aggregate supply and demand more advantageously.

Rural areas sometimes receive or collaborate in generating mixed messages concerning economic development. On its face, economic development most often means jobs, a laudable, desirable goal for most rural areas. But pragmatically, many rural areas may have what is to them high unemployment rates but what is in absolute terms a paucity of employable persons. In other words, the sparse populations of most rural areas discourage large employers from locating there. The new focus on community development as opposed to economic development reflects a concern with conceptualizing development in terms of where the community needs to go in order to create the type of environment it wants. This notion of development may include jobs, but it is also likely to include educational goals, health and service goals, and quality of life considerations. Community development is the explicit focus in Kearney, for example.

The cases we studied illustrate the positive benefits accruing to a development approach that emphasizes cooperation. Regional or locational cooperation can address some of the scale problems rural areas face, and cooperation within the community can

address that as well as other problems. In Kearney, Demopolis, and Glendive we saw examples of businesses collaborating with schools, telephone companies collaborating with local economic development commissions, and small retailers collaborating with large plants. In essence, these efforts were other methods of extending resources inside the community. Implementing development becomes a bit easier when various people are actively seeking ways to work together rather than awaiting a plan to arrive in the town hall from a state capital.

With respect to telecommunications specifically, we saw evidence that this key infrastructural element could be a catalyst for several users to begin to work together. In this sense we distinguish the additional advantages of community cooperation in its educational and creative facets, its unique ability to blend people with needs with those possessed of abilities or resources.

Any problem in implementing development initiatives, of course, concerns incentives: Who stands to benefit from initiating a risky venture? Can policy be structured to provide incentives for new efforts? As long as elements within a community fail to pool their risks and their successes, incentives to try something new will always be minimized. However, again, seeking more cooperation-based initiatives could spread risk and benefit, ultimately serving more of the community. Although telecommunications providers, especially local telephone companies, could play a key role in such effort by using their facilities for introducing new knowledge or services to the community, there is a curious lack of initiative and lack of know-how among most of the providers encountered.

There is something of a utility legacy among several telecommunications providers, whether they are telephone companies, cable TV companies, or even over-the-air broadcasters. The special sense of a "franchise," a figurative (sometimes literal) license to provide service to a geographical area has removed some sensitivity to the area's actual needs. Insofar as most of these providers do not really have much competition (particularly telephone and cable operators), there seems to be little incentive to improve service or to look for new ways of serving the locality. The exception to this appears to be the situation of the cooperative. Community-owned coops, existing by and for the community, do more actively consider services that would benefit their constituency; these endeavors are undoubtedly aided by some of the federal programs that rural coops are able to take advantage of, e.g., the Rural Electrification Administration's low-interest loans.

The inattentiveness to the developmental needs of rural communities on the part of many telecommunications providers is an indictment of current organizational and possibly regulatory schemes affecting such important constituents. Implementing development programs might be easier if clear and advantageous incentives could be generated for some of the critical stages. If telecommunications is an important infrastructure for economic development—and we believe it can be—the absence of incentives for local telco involvement hinders community development.

Where innovative local telecommunications applications do occur, what allows them to flourish? Several ingredients appear necessary. First, some entrepreneurial wisdom or expertise from outside the locality appears to be germane. Cabela's POP was devised by a newly hired telecommunications consultant along with AT&T representatives from outside the community. Glendive's regional conservation and development efforts were catalyzed by someone who had seen the same innovations work elsewhere. The plant management people at Demopolis had lived elsewhere and been exposed to alternative ways of thinking about the relationship between technology and industry.

Second, broad community support can enhance the innovation's acceptance and success. Systems, whether they are businesses, schools, or some other entity, interact with new technologies or new technology-based capabilities best when they have some decision making power regarding that technology. When their advantages are apparent and when they are designed to optimize peoples' activities, such systems have a greater likelihood of success. Community involvement in defining problems and finding solutions influences how well telecommunications-based applications find a place in local life.

Kearney's careful planning for telemarketing businesses illustrates the way in which site placement, employment opportunities for local students, and spin-off businesses can all be integrated into one larger telecommunications-based effort.

V. The Demand Profile for Rural Services

There are mounting rural business demands for telecommunications. Large businesses tend to be suitably provided with needed services, although this is mainly due to their ability to plan and purchase for themselves, and to do this often from the public switched network. Although most small businesses have few problems with routine telecommunications services, they tend to be handicapped in planning new services and in getting rapid installation and sometimes repair in rural areas. Most do not have the resources to take the initiative to investigate innovative uses of telecommunications themselves. There is definitely an unrealized potential for the use of telecommunications in small business development. We refers to installation of data lines, PBX alternatives, 800 numbers, alternative long-distance providers, and the absence of digital switching in some areas. In the near future this could include access to ISDN and fiber.

Some of the unrealized potential is due to the lack of know-how in rural America, some to the traditional barriers raised by distance and lack of population density, some to the continuing "utility" attitude of service providers, and some due to inept and sometimes conflicting telecommunications policy. Kearney offered an example of a small business entrepreneur who had the drive and know-how to gain the telecommunications service he needed, and given it, most business opportunities were developed. That most small business customers—as the customs broker in Eagle Pass or the building supply owner in Demopolis—have to coordinate their telecommunications planning and purchasing among multiple vendors is a visible handicap that divestiture put on these customers. Bell companies, being so restricted in their lines of business, are now less motivated to provide full services, and small independents or coops, despite good intentions, do not have the in-house talent to consult on small business applications.

There is a "catch-22" in the rural demand profile in that lack of quick return on investment discourages offering trials of new equipment or services. Large telcos or regulators may say, "Why offer or even try what people are not asking for?" But in telecommunications, how can rural customers ask for something they have never had the chance to experience? This situation is further exacerbated by the movement of large users away from the pubic network. Among rural telecom users, they could most pressure telcos and regulators to bring advanced services. But if they can take these from the public network (or never develop them in the first place), not only will this pressure be lost, but their revenues will be lost to the public rate base, thus discouraging even more the chance of trials or promotion of advanced services for small users. Despite potential demands, current telecommunications policy does not promote economic development, least of all in rural areas.

We continue to regulate rural local exchanges for "least cost," to control competition, and to maintain a hold on the BOCs. We definitely are not regulating with much of an eye toward strategic uses of telecommunications, least of all in rural areas. If we were to shift toward the latter objectives, it does not mean that we would necessarily abandon consumer goals in cost and service. It seems clear that when a small community is served by a large telecommunications provider, the era of divestiture has lessened the presence of those local exchange companies in the community. In Demopolis and Eagle Pass we found that although South Central Bell and Southwestern Bell, respectively, maintained an acceptable level of service in those communities, neither had much "presence" either as a company among local businesses or in community development activities. For example, although South Central Bell is appreciated in Demopolis for its financial or talent contributions to certain civic events, most major telecommunications users in that community would say "You have to find them" if you need something done.

On the other hand, perhaps someone should suggest to these communities that developmental assistance from a BOC is available if they would only ask for it.

The Eagle Pass area suffers from a variety of discrepancies in federal policy, which is geared to cities or rural mid-America, as compared with the special problems of the Southwest and particularly border cities. The pattern of commerce is clearly a transborder one, but the border provides a virtual Berlin Wall between the two local service providers, Southwestern Bell and TELMEX.

What if U.S.-Mexico free trade were to develop, as it appears it will in the very near future? Would it include a special free-trade telecommunications zone whereby an alliance of companies might join as one special service provider, perhaps a company jointly owned by Southwestern Bell, TELMEX, and AT&T or other long-distance providers? The entire area could have the character of a LATA and thus could support development of a unified high-performance local exchange network. This network not only could serve the business needs described in our study, but could be further used for binational training, including public services such as delivery of health care, and as the telecommunications component for automating the data aspects of customs clearance. As is, both sides of the border suffer from being too far out on the periphery of either government's main area of interest.

If one considers the motive for increasing competition as a key rationale for divestiture, it is not clear that competition has the economies of scale in small rural communities that it has enjoyed in urban areas of America. Thus as telecommunications service providers are fractionated—among the local exchange company, an outlying rural cooperative, a variety of long-distance companies, equipment sales businesses, consultants, and even independent switch or PBX providers—none seems to be able to do sufficient business to provide a major service to a community such as may be found in an urban area.

Demopolis represents another rural community where there is a decreased presence of a Bell operating company, in this case, South Central Bell. If the company were allowed to go into more lines of business such as information services, long distance, more directly providing equipment, or entry into the cable TV business, this might improve the economies of scale so as to justify more presence of this large company's resources in the community. On the other hand, critics ask, if BOCs are allowed or encouraged to get into new lines of rural businesses, would they actually do it? They could drive out competition, then return to a "utility" attitude. Despite the latent demand, there seems to be little policy initiative for using telecommunications to improve the delivery of public services.

Although there have been some innovative attempts to apply telecommunications in distance education systems, no example seemed to benefit from existing policy. No PUC, no state education commission, or any development entity seemed to actively promote uses for telecommunications for education. (And some are very unaware of the possibilities in this area of application.) Although Montana and Nebraska have new programs that may do this, the current level of commitment or interest might best be labeled experimental. Most examples of such efforts came from grass roots levels, often with a local champion. Organizations such as TI-IN or Whittle Communications could be credited with introducing the capability for distance education, often in the face of criticism or skepticism. In every community we studied, there were serious financial shortfalls in the operations of the schools. In each case there would be a great potential for expanding satellite users or to network adjacent school districts in order to share instructional resources. If telcos were encouraged to develop fiber-based switched networks (and a solution found as to how to pay for them), this could increase the economy of scope for educational activities.

Sites like Demopolis or Kearney could serve increasingly as educational hubs. This might be realized by networking school districts within the area, facilitating the better scale of economies but also adding the new materials for training workers in the increasingly technological local industries, including links with community colleges and other educational resources. Most of the above suggestions can also improve the delivery of

health care services, another demand area. In a more general sense, there are needs for local telecommunications providers to become more active in community development.

The Mid-Rivers cooperative in Glendive was a positive example of how a telecommunications provider can become involved in local development. The community is all the better for these efforts. There seems to be a major distinction between a locally owned telephone company or cooperative, and larger providers, mainly Bell system companies, in terms of their participation in local economic development activities.

Cable television providers could take a more developmental attitude as well. In all four sites, the cable companies were involved in only modest operations, without the resources and often the motivation to do much in the way of community development. This raises the issue as to whether telcos should be able to move into cable television (they can now in towns with fewer than 2,500 access lines). An argument in favor of this might be that such entry would create competition for cable television services, increase the local phone company's economies of scope, and thus perhaps increase the local presence of the telco. On the other hand, it is certainly not in the interest of small cable TV owners to unleash telephone companies into their markets. If some change is made, there will have to be a policy that will buffer current cable television owners.

VI. Cultivating the Development View

Our cases provide us with various points of departure for considering how telecommunications can be used to cultivate rural economic development. Our study showed that there are important roles for both state and local government, for state public utility commissions, for local phone companies and other local businesses or other users (e.g., public institutions such as schools, hospitals, or colleges) and for federal policy. We conclude that economic development cannot proceed without significant local involvement. State policies or programs are doomed without appropriate incentives for towns to get involved, and those incentives must be carefully structured if they are to truly benefit rural towns, the latter being less familiar with and adept at availing themselves of state programs compared to more urban towns or cities.

First, on the local level, economic development is an idea that must be nurtured across the community and that ideally should draw together educators, businesses, facilities providers, and others. If telecommunications applications are to be creative and are to serve various constituencies, those same constituencies must be involved in thinking about the opportunities and planning for them. Partnerships among several rural communities and within segments of rural communities—among different businesses within one community, for example—should be examined and probably encouraged. Kearney shows most clearly the advantages of coordinated efforts.

For example, its telemarketing industry worked with the development office and the local college in order to create several symbiotic arrangement in which the telemarketer received certain benefits for its college student workers (e.g., dormitories staying open during the Christmas season) while the college received benefits from the firm (such as scholarship support). A key local figure, Steve Buttress, was also instrumental in facilitating further exploration of ways the AT&T POP could be used by various local businesses, an effort which is only just beginning to pay off in terms of extending the utilization of the facility. So too, Glendive's nascent efforts to organize are paying off in the form of its success at recruiting the building of a state-financed veterans hospital in the area. Only by concerted, coordinated strategies could the community unite sufficiently and argue persuasively for the hospital's location to its town. The involvement of the local telephone cooperative in this endeavor may also feed forward into its newly defined interest in providing regional educational linkages so that area schools can shares courses and other sorts of resources; this is fundamentally an exercise in figuring out a way to keep schools with dwindling populations financially and educationally vital. At the heart of such efforts in both Glendive and Kearney is the notion of a partnership that can unite various

constituencies and create "win-win" situations for them. These arrangements are fundamentally economic, accountable to the locality, and based on extant incentives rather than artificial, nonmarket responsive subsidies.

The state governments in our four cases exhibited an orientation toward economic development that largely ignores telecommunications and that is predominantly industry-oriented rather than locally oriented. As we became familiar with many of the state economic development programs, it seemed apparent that the unit of analysis for development efforts was not the local market or the regional economy so much as it was whatever *industry* state government happened to be targeting. This orientation is relatively incognizant of local resources and orientations, and largely blind to any telecommunications opportunities that may exist. This industry orientation, while producing certain efficiencies for the state capital in terms of interacting with targeted industry personnel, actually is insensitive to the distinctive needs of specific sites. By ignoring the unique circumstances of rural towns or areas, state programs automatically discount or undercut their own probabilities for success. With more attention to the existing local economies, existing strengths, existing interests or pockets of expertise or ability in certain regions, state economic development efforts might have a better chance of enlisting the support and interest of localities.

State economic development efforts that do exist—and in the current financial era they are not generous portions of state budgets—rest on towns selecting themselves into such programs. The difficulty with this approach is that the same towns end up being targeted for state aid repeatedly. Other sites do not get the chance to break into the aid cycle, or they lack the know-how to do so. From a state perspective, too, bestowing aid to a locality that has a good record carries with it fewer risks than bestowing aid to an unknown location, another factor mitigating against a more rural, remote town's ability to work with state initiatives. This suggests that in order for the state to think clearly about extending the benefits of state programs to new or less developed regions, it must do the best job possible of informing the towns and of being cognizant of which state programs might have some intrinsic appeal to certain localities. An area that already has certain sorts of mills might respond more favorably to a state program proposing sponsorship for certain spin-off industries of the same mills than it would an entirely new industry. Another aspect related to cultivating the development view in the localities would include state sponsorship of local development assessment programs, whereby communities can take a good look at themselves and think and plan more deliberately for the sorts of economic and community development programs in which they actually may want to be involved.

We found no state economic development efforts geared toward exploiting realizable economies of scale in rural areas by fostering regional alliances or partnerships. That the market dynamics of such regions were opaque to state authorities may suggest that the localities must try to be even more responsible for developing their own programs and asserting their voices in all sorts of development programs. In an era of global competition scale economies are more important than ever. It is possible for such advantages to be achieved in rural areas, particularly for products or services dependent on *human* resources rather than material resources. Telecommunications networks are especially suited to created situations in which scale economies can be realized. If towns can be allied with each other through the creative use of telecommunications networks, they could be well positioned for functioning as a single economic unit akin to a city of much larger population. The potential for such alliances needs to be explored, recognized by local and state authorities, and tested in different marketplaces for its utility as a development strategy.

State public utility commissions by and large evidenced little interest in the development role of telecommunications in the four states we examined. Nebraska, with its deregulated telecommunications environment, eschews any social role for telecommunications (against the dissent of PUC staff) and espouses the most extreme marketplace approach, one actually legislated by its unicameral government. Texas, with

its recent "Texas First" settlement on overearnings, may embark to a limited extent on upgrading rural telephone facilities, but that state's PUC has sidestepped any direct responsibility for economic development (let alone any concern with the border economy). The same is generally true across the country. Moreover, most PUC staffs have little expertise on issues of local economic development, an argument for their keeping away from such issues. Nonetheless, the PUCs are in a crucial position to create incentives for telecommunications providers to do something constructive for communities which could exploit telecommunications facilities. As long as marketplace language dominates utility commissions' sense of mission, there may be little leeway for more developmentally-minded activities. Nonetheless, our research suggests that commissions could accomplish a great deal through careful attention to telecommunications regulations concerning such things as Extended Area Service, rewards (e.g., certain "breaks" or reduced financial obligations) for innovative service offerings to rural areas, or for exploring educationally-related applications in rural areas.

Another development player on the local level is the local rural phone company. Local telephone companies reflect a range of organizational types. The Bell Operating Companies have very different service orientations than do local cooperatives, for example. US West, the BOC serving the largest rural area in the U.S., appears to have focused its initial postdivestiture energies on upgrading services in its more lucrative, urban markets (e.g., Phoenix, Denver). Consequently, its facilities in rural areas are generally conceded to be inferior to those found in its urban markets. This was certainly true of Glendive. The same reasoning might apply to the large independent GTE, the carrier for Kearney, as well as to all the BOCs as regards their attitude toward rural areas. It comes as no surprise that at the national level the rural facilities of the BOCs are technically not the equal of those of most independents serving those same rural areas. The type of service provider appears to have some relationship to the modernity of the facilities it offers, and to the level of technical expertise it can offer a rural community.

Cooperatives, unlike the BOCs, logically privilege service to the locality if they are community-owned enterprises—albeit mindful of the costs to local customers and shareholders. Some rural independents, moreover, are eligible for Rural Electrification Administration loans that enable the capital investments necessary to offer state-of-the-art services (e.g., Glendive's Mid-Rivers Telephone Cooperative). In all of our four cases the local telco was a large BOC (in Glendive, Eagle Pass, and Demopolis) or GTE (Kearney), although Glendive's surrounding area was served by a progressive cooperative. In no case did we find the large telcos particularly receptive to new ideas about telecommunications or innovative in their approach to serving the rural customer. As long as the monopoly franchise for telephone providers exists, and as long as the financial incentives to provide service to rural areas are minimal, little can be expected of the rural service provider, particularly the provider that is a remote outpost of a large corporation.

It therefore may be incumbent for state and federal policymakers to construct incentives for rural telephone companies to both upgrade their facilities and to ensure that they are being used creatively and for community development. This could go so far as to have loan incentive programs to upgrade the electronic/communications infrastructure of a town or region—not just a local telco, since other sorts of providers (electric utility companies, for example) can also provide important related services. The lackadaisical attitude toward innovation and service characteristics of many rural telcos simply cannot continue if the areas they serve are to flourish. More aggressive and creative approaches may come from businesses and entrepreneurs willing to consider such services from entirely new angles. New, alternative *service-based* aggregations (electric utility, telephone, and cable television, for example, all from one provider) may produce some novel scale economies to which telcos are blind.

Finally, federal policy largely based on the circumstances and events of urban-based services may be inappropriate for rural areas. The assumptions concerning competitive markets and consumer demand fall apart in more rural, remote communities.

In essence, the marketplace reasoning and assumptions do not map well onto rural areas. Federal policy could encourage rural revitalization by bending some of its rules so that they reflect the needs of less competitive, consensual, precarious communities so characteristic of America's rural regions.

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