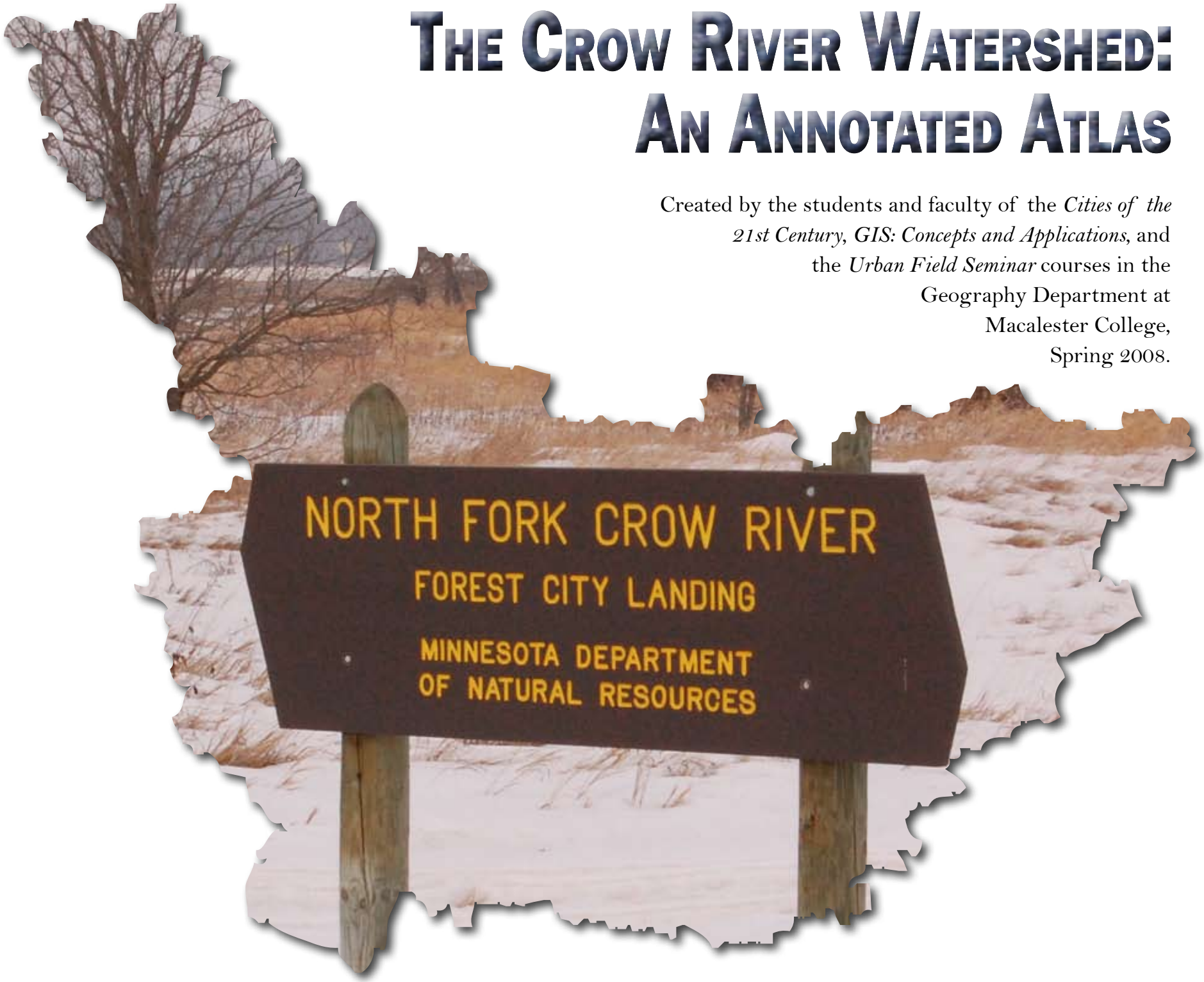
The Crow River Watershed: An Annotated Atlas

Created by the students and faculty of the *Cities of the 21st Century*, *GIS: Concepts and Applications*, and the *Urban Field Seminar* courses in the Geography Department at Macalester College, Spring 2008.



Cover photo courtesy of Victoria Harris.

ACKNOWLEDGEMENTS

As with many large and multi-faceted projects, it would have been impossible for us to complete *The Crow River Watershed Atlas* without the support of many people. This Atlas is the culmination of work and research undertaken by students enrolled in three different undergraduate geography courses at Macalester College. These courses include the *Urban Field Seminar*, *Cities of the 21st Century* and *GIS: Concepts and Applications*. The Geography Department at Macalester College is grounded in a tradition of community engagement, fieldwork and collaborative research; situations in which students engage directly with real-world issues through applied research. This type of approach to teaching and learning is only possible with the support, patience, enthusiasm, and resources of the many individuals and organizations that so graciously and generously lend their time and expertise to our endeavor.

Although many people contributed to the project, the blending of these multiple voices into a coherent atlas fell on the shoulders of one person, Birgit Muehlenhaus, the Geographic Information Systems Laboratory Instructor of Macalester College. We would especially like to exclaim our appreciation to Birgit, whose eye for design and expertise with both cartographic and layout design was critical to transforming dozens of maps and text documents into a beautifully designed atlas. Birgit's enthusiasm and good humor expand her scientific abilities and make her an ideal colleague and teacher. She provided timely assistance in the classroom and brought her tireless enthusiasm to the project, which inspired and encouraged everyone involved at the appropriate moments. The atlas could not have been produced without her. For this project, we chose to focus the efforts of these three groups of students on the Crow River Watershed, an extensive region which comprises a rapidly urbanizing corridor connecting the Twin Cities Metropolitan Areas with the mid-sized urban places and very rural communities which lie to the west of the Twin Cities. The watershed faces issues typical of rural to urban transition process; how to preserve some of the environmental quality that draws new residents; how to achieve a multicultural society, how to provide low income housing in a landscape dominated by private developers; how to match new employment opportunities with underemployed workers. Because the watershed is divided among several political jurisdictions, there is a great need to develop coordinated planning, zoning, and transportation, housing, and water policies.

We would like to extend our sincere thanks to the following groups and individuals who have made this project possible. First and foremost, we express our gratitude to Paul Schadewald, Associate Director of the Civic Engagement Center at Macalester College. Paul embraced our still rough ideas about multi-course collaboration and encouraged us to refine and expand our ideas in the context of a grant from Project Pericles to support public engagement. And as always, Paul has distinguished himself as a geographer-at-heart in his unending enthusiasm for our sometimes wild ideas. To Dan Hornbach, Professor of Biology and Director of the Mellon Three Rivers Center of Macalester College who provided guidance and inspiration in choosing our final geographic area of study, an area contained within the watershed regions of Minnesota's three most prominent rivers, the Mississippi, the Minnesota and the St. Croix. We would also like to sincerely thank Dolf Moon, Director of Parks Recreation and Community Education of Hutchinson, Minnesota who led 35 students and faculty on a tour of the environmental resources of Hutchinson and graciously continued to respond to inquiries for contacts and data throughout the semester. From Dolf's tour, the City of Hutchinson was enlivened and we gained a new appreciation for the local community efforts, projects and people that comprise this very large and diverse watershed. To Sue El-Eid, Department Coordinator, who consistently and with great patience organized the logistics of transporting, registering, and feeding 35 students and faculty as we embarked on our field excursions throughout the watershed. Sue's flexibility and willingness to put up with last-minute requests for everything from copies to snack selections, kept us all on track and in good humor. To Laura Kigin, with her keen eye for detail, who assisted in editing the document before printing. Finally, we thank Brad Belbas, Academic Information Associate for Social Sciences at Macalester College, for answering a myriad of technical questions and requests for both technical and logistical support throughout the semester.

We would also like to thank organizations that created opportunities for our students to present the findings of their work in a public forum, including the *Minnesota Undergraduate Geography Symposium*, hosted by the Geography Department at Gustavus Adolphus College and the *Environmental Thursday Speaker Series* sponsored by The Environmental Studies Department at Macalester College. In each of these forums students received both encouragement and

constructive feedback for their ongoing work.

Finally, we would like to sincerely thank Project Pericles and Macalester College President Brian Rosenberg, who provided generous support for our ideas both conceptually and financially, allowing us to take students into the field via day long field excursions, to conferences, and ultimately to print this Atlas. This support was critical in allowing this project to take form and in creating a memorable and rich experience for our students.

To all of these individuals and organizations we offer our sincere thanks and gratitude for allowing us to impose our ideas, our questions, and our needs on them and for their enthusiastic and generous response. Thank you.

	Urban Field Seminar	Cities of the 21st Century	GIS: Concepts and Applications
Instructors	David Lanegran & Birgit Muehlenhaus	Daniel Trudeau & Birgit Muehlenhaus	Holly Barcus & Birgit Muehlenhaus
Teaching Assistant			Petra Norlund
Students	Elana Dahlberg	Patricia Bass	Namara Brede
	Emily Goodman	Andrea Blake	Christine Chung
	Victoria Harris	Katherine Bristol	Hannah Gelder
	Matt Malmberg	Emily Gerteis	Robert Heyman
	Claire Reuning	Jessica Mowles	Stephanie Kleinschmidt
	Matt Wicklund	Ashley Nepp	Carolyn Loeb
		Joseph Parilla	Gautam Mani
		Leah Roth-Howe	Wade Miller
		Robyn Schindeldecker	Lauren Morse
			Elise Pagel
			Claire Reuning
			Anna Waugh

Thank you!

CONTENTS

MAP INDEX

Introduction

INTRODUCTION

Introduction to the Watershed, *by Prof. David A. Lanegran, Maps by Birgit Mühlenhaus and Elise Pagel*

Although it is one of the longest in the State of Minnesota, the Crow River and its watershed are not well known to most Minnesota residents. Draining 2,761 square miles or 1,767,525 acres of glacial till plains and moraines in west-central Minnesota, the river has several different personalities. The North Fork flows through lightly settled areas and has long stretches of wooded banks and is identified as a recreational canoe route. The South Fork flows through some of Minnesota's most productive farmland and many of its tributaries are drainage ditches. Downstream from their confluence, the river flows through a small gorge before reaching the broad levels that make up the area around the confluence of the Crow and Mississippi.

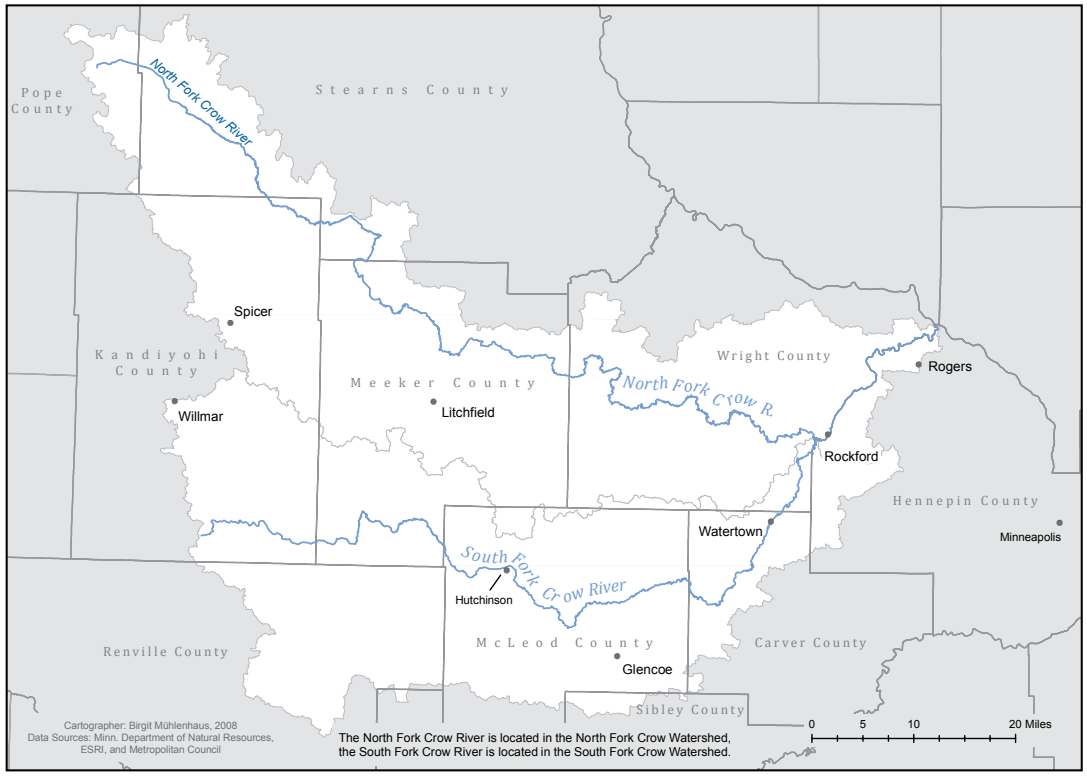
A watershed, or river basin, is a geographical region united by the flowing of water but divided by political boundaries such of counties, municipalities, and special jurisdictions. For the Crow River Watershed, these special jurisdictions are many and range from Metropolitan Council boundaries to Soil Conservation Districts. The two forks of the river form the dominate water feature in three counties and flow through parts of six others. The resulting mismatch of natural and political boundaries is common in the United States and makes the management of water and other resources challenging.

The Crow River Watershed is occupied by well established families as well as newly arrived residents, many of whom are not aware of the forces of nature that bind them together. Instead, they focus their planning and development efforts at a local scale, with few plans focusing on the entire watershed. Fortunately, watershed-focused organizations exist within the Crow River Valley and significant improvements in the management of the river and its environs are occurring. The most visible changes are the removal of the dam in Hutchinson and the fish ladder that has replaced it. However, as will be documented later in the Atlas, water quality is an issue in the watershed and at present, the monitoring of the river is very limited.

Land Use and Transportation in the Crow River Watershed

From the rapidly growing suburbs in western Hennepin County, through the smaller communities and farmlands, to Willmar in Kandiyohi County, the watershed contains a range of fascinating landscapes. Except for the portion of the watershed downstream from the confluence of the two forks, the watershed is dominated by agricultural land. The general pattern is a gradient from heavily urbanized land in the east to predominately agricultural land in the west. This general pattern is interrupted by the recreational developments and exurban settlements that surround the watershed's many lakes, especially in the northwest, and the

The Crow River Watershed, Minnesota

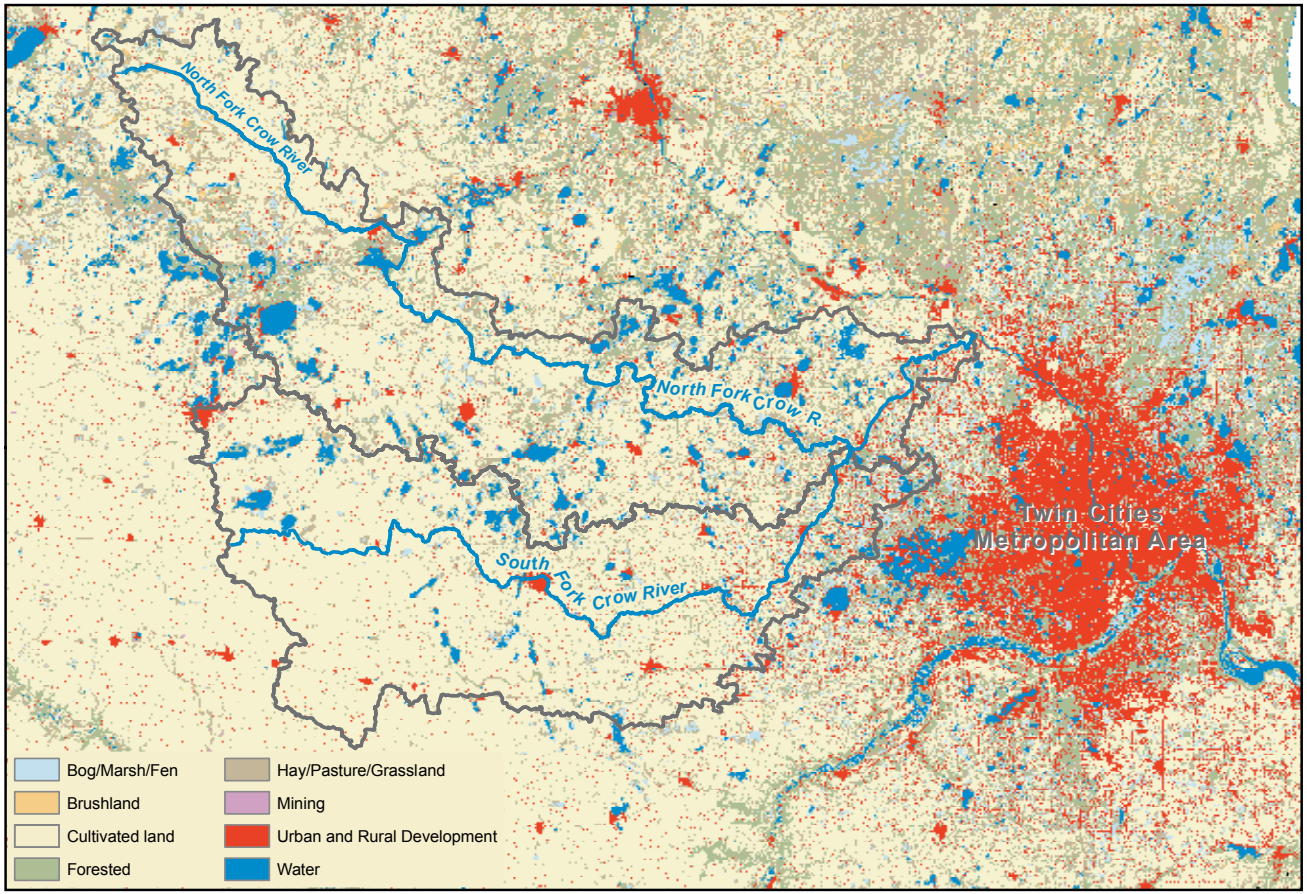


string of urban places that initially emerged with the establishment of railroads in the nineteenth century; a set of trade centers that grew to serve the agricultural economy. Some of these towns have attracted industries, while others do not have a direct connection to the local resource base and are in the valley to take advantage of the skilled labor force. The interplay between urban and rural land uses is primarily a function of the nature of the landscape and the transportation system developed in the late nineteenth and early twentieth century.

This transportation system reflects a combination of railroads and state and national highways that crisscross the area. The dominate flow of traffic is east-to-west and is centered on the Twin Cities. The larger towns are dependent on their location along these transportation arteries. Some towns, however, such as Forest City in Meeker County, lost all their urban functions when the railroad bypassed them earlier in the century.

Today, although many miles of track have been removed from the watershed, the railroad continues to serve a vital function for the agribusiness and manufacturing communities, while the new urbanites are entirely focused on the highway system. Unfortunately, the main roads in the watershed need a great deal of investment, and complaints about traffic congestion are quite common and growing. Transportation within the watershed is evolving as some rail corridors decline and people are transported increasingly along the highways. Some of the rail corridors, for example, have been converted to bicycle trails as shown in the photo on page 12, taken west of Hutchinson.

Land Use in the Crow River Watershed (1990)

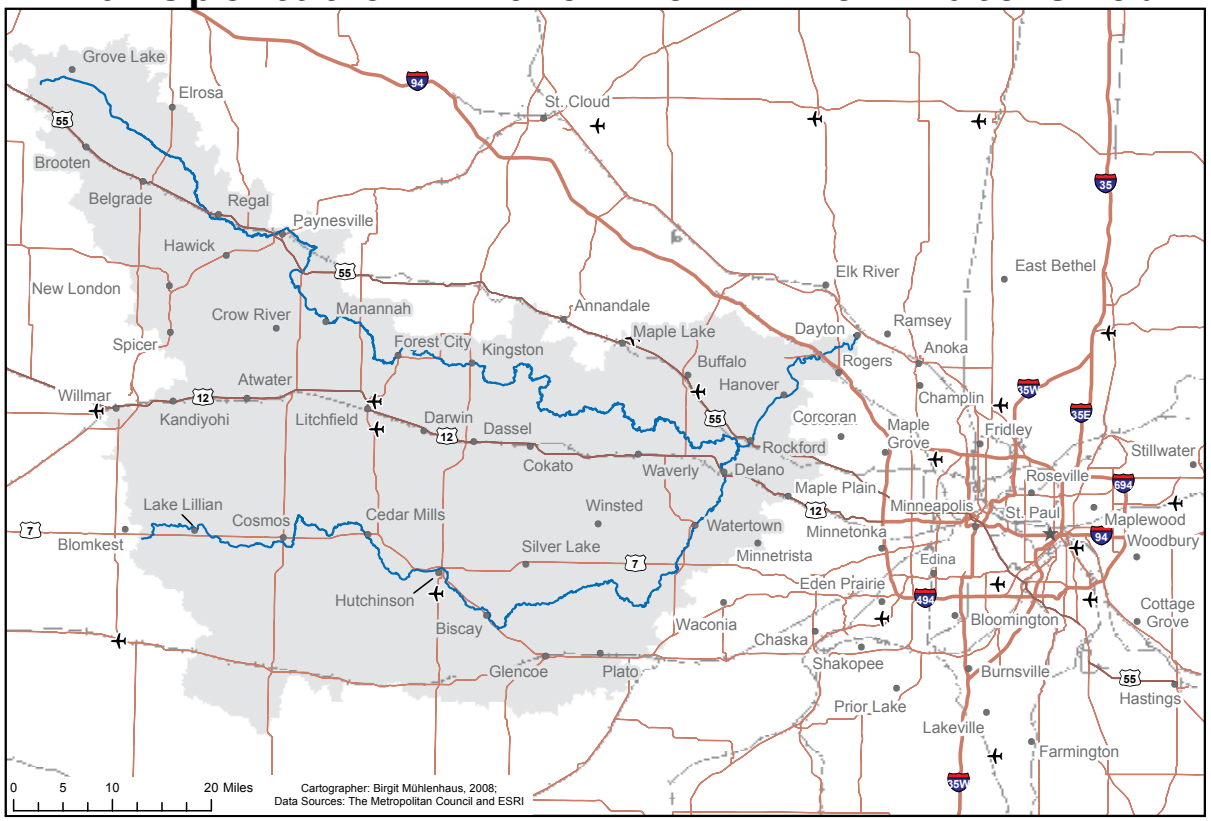


Cartographer: Birgit Mühlenhaus, 2008; Data Sources: ESRI, Minnesota Department of Natural Resources

Changing Settlement and Population Trends

The watershed's history is dominated by the process of agricultural settlement and the embellishment of the towns established to serve the rural economy. With the coming of railroads, a group of towns were quickly built and a transportation system established to facilitate the flow of commodities to markets and the return flow of manufactured products and migrants. In

Transportation in the Crow River Watershed



many ways, the watershed reflects a national trend of rural areas shifting from landscapes of production to landscapes of consumption. However, this transformation has not resulted in the elimination of agriculture, agribusiness or small manufacturing operations. Important as these activities are, the majority of the money moving from local establishments and households is earned from the provision of services. This transformation is associated with growing wealth and leisure time in our culture in general, and specifically within the metropolitan population. While the Crow River Watershed is still a place for the production of agricultural commodities and manufactured goods, it is increasingly seen as place to live by many workers commuting to jobs in the west Metro area.

Because the boundaries of the watershed do not coincide with the various political boundaries in the area, it is not possible to derive a precise population of the watershed. However, the U.S. Census Tracts that are either entirely within, or are partially within the watershed, contained 261,753 people in 2000. The vast majority of this population lives in the suburban fringe of the metro area and four of the larger independent towns. Although the town of Willmar is not entirely within the watershed, its eastern expansion is quite important. Despite growth in each of the larger towns in the watershed, the vast majority of growth results from the expansion of the Twin Cities along the four primary transportation corridors, I-94, and Highways, 55, 12 and 7. As a result, western Hennepin and eastern Wright Counties are the largest growth areas in the watershed.

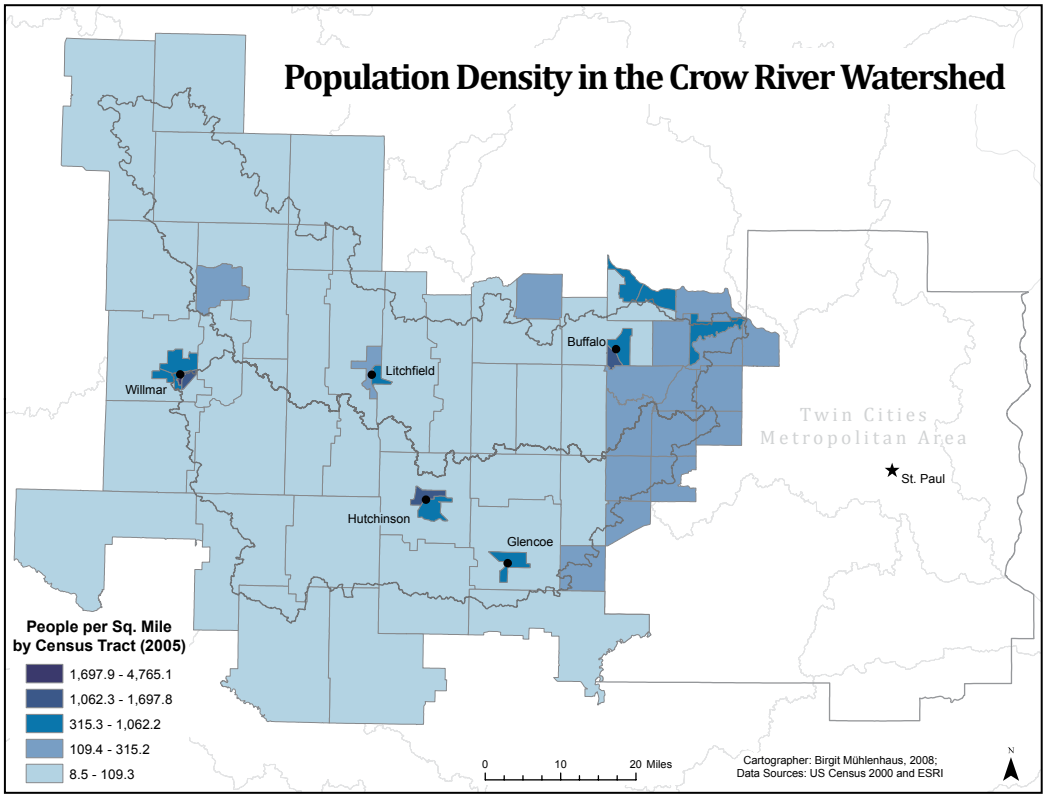
Three general types of urbanization are visible in the region. One is the growth of towns that were founded to serve the agriculturalists in the region and have been able to attract new forms of economic activity. Hutchinson and Litchfield are good examples of this type of town. The second and most important type of urbanization is the expansion of the Twin Cities suburban fringe that is engulfing older towns such as Rockford, Delano and Buffalo. The third type includes the

Figure 1. Rails to trails. *Photo by Victoria Harris.*

free standing subdivisions and individual houses that have been developed on lakeshores and attractive landscapes in the area. The diverse stories behind these developments are hard to synthesize, but in the most general terms these developments house retirees and those who are willing to commute long distances to gain the opportunity of raising families in the less crowed communities of the watershed. These large lot developments with individual water supplies and waste removal systems have the potential to greatly impact the landscape but their characteristics are hard to generalize, making it difficult to predict the future of this lowest density expansion. The establishment of these new residential areas is clearly impacted by accessibility and the lower costs for construction and taxes; their particular sites are the result of idiosyncratic decisions.

Finally, there are areas on the southern and western edges of the watershed that are losing population. These are largely agricultural areas with small populations. Although their declines have great local significance, the total decline is greatly offset by expansion elsewhere (see map on page 14).

This is now an opportune time to describe the nature of the basin. We are on the brink of a new era of urbanization and agricultural development. With this Atlas, we create a baseline against which future changes can be measured and evaluated. The maps reflect just a small sample of the changes occurring in the watershed. While we think they are of great significance, we also acknowledge that they are only a handful of topics worthy of careful analyses and discussion.

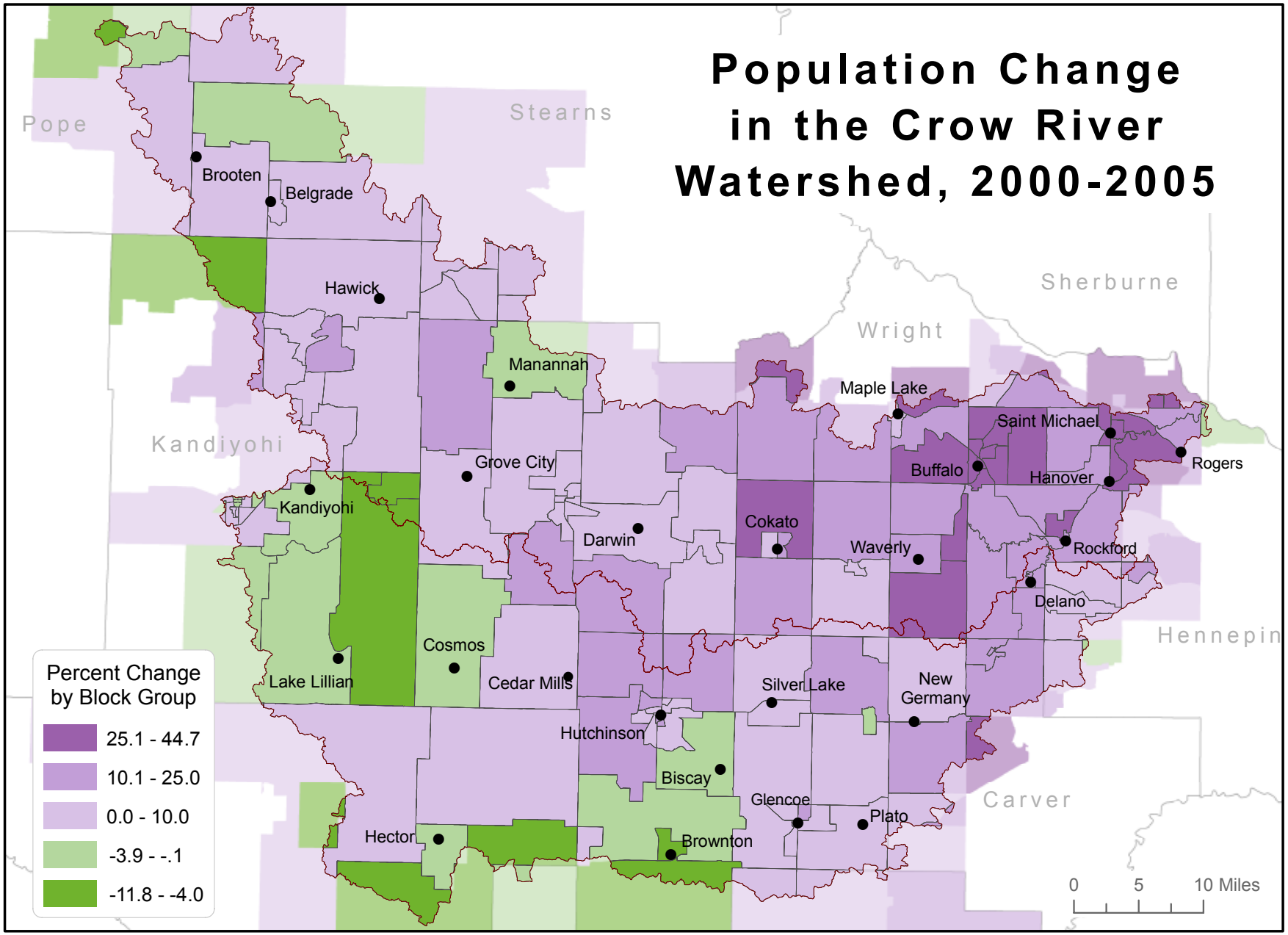


Overview of Chapters

The Atlas is divided into three main sections, each focused on a major component of the quality of life in the watershed. The first, *Demographics and Social Fabric*, addresses the changing structure and distribution of the population. The maps and text in this section depict subthemes that range from declining household size and migration, to education, labor force participation, and emergency facilities.

The second section, *Economic Development*, deals with a variety of economic topics that range from developments in agribusiness, to the expanding suburban fringe and the maintenance of the architectural fabric of the watershed's communities.

The focus of the final chapter, *Environmental Perspectives,* includes environmental issues and public policies affecting the watershed. Unfortunately, the research and cartographic team was not able to investigate *all* topics of concern and interest to residents of the watershed and citizens of the State of Minnesota. More research on the changing nature of agribusiness and land use, patterns of immigration, and the nature of environmental change, must be conducted before definitive predictions about the watershed future can be made.



Cartography by Birgit Mühlenhaus and Elise Pagel; April 2008; Data Source: ESRI; Projection: NAD83 UTM Zone 15N; Please Note: The data for the 2005 Population is an estimate.

Chapter One:

Demographics and Social Fabric of the Crow River Watershed

Linear Development in Rural Fringe Communities: A Case Study, *by Matt Malmberg, Map by Elise Pagel*

Metropolitan areas across the country have been experiencing the changing process of suburbanization for many years. Considering the reality of the auto-centric design of today's American cities it is important to recognize the linear fashion of suburban development occurring along arterial roadway corridors. Since the beginning of the auto era, cities have seen flight from urban core while undergoing significant suburban development that is increasingly encroaching upon rural landscapes and communities. While there are universal characteristics of American suburban development it remains important to identify place specific factors and indicators of development in outlying rural/suburban communities. This essay aims to identify, examine, and compare the factors and quantifiable indicators of the rate and nature of linear development in outlying communities in the Crow River Watershed located to the west of the Twin Cities metropolitan area. The three towns of Rogers, Rockford, and Delano, located on different arterial roadway corridors will serve as case studies within the general growth corridors of Interstate 94 (Rogers), Minnesota State Highway 55 (Rockford), and U.S. Highway 12 (Delano). This essay analyzes the concrete variables and indicators affecting growth and development in each of the towns including transportation, physical geography, land availability, and population /demographic data.

Transportation

Transportation corridors are among the most influential factors affecting linear development in fringe communities. The more traffic that travels along a certain section of highway the more desirable it is for development. All three of the towns are between 25 and 30 miles from downtown Minneapolis and have approximate travel times between 30 and 40 minutes. None of these towns are within range of metro transit bus services.

Interstate 94 is the principle four lane arterial roadway in Rogers' transportation corridor connecting St. Cloud and the Twin Cities. I-94 is also intersected by trunk highway 101 in Rogers bringing additional traffic to and from the north along I-94.

Photo by Matt Malmberg.

With increasing traffic levels on both roadways, Rogers has become a major commercial development. The commercial strip along I-94 functions as a specialized district for the northland recreation outfitter. Numerous boat, camper, and sporting good dealers are found here. Rogers has also become a satellite employment center outside the Twin Cities, supporting a two-way commuter flow.[1]

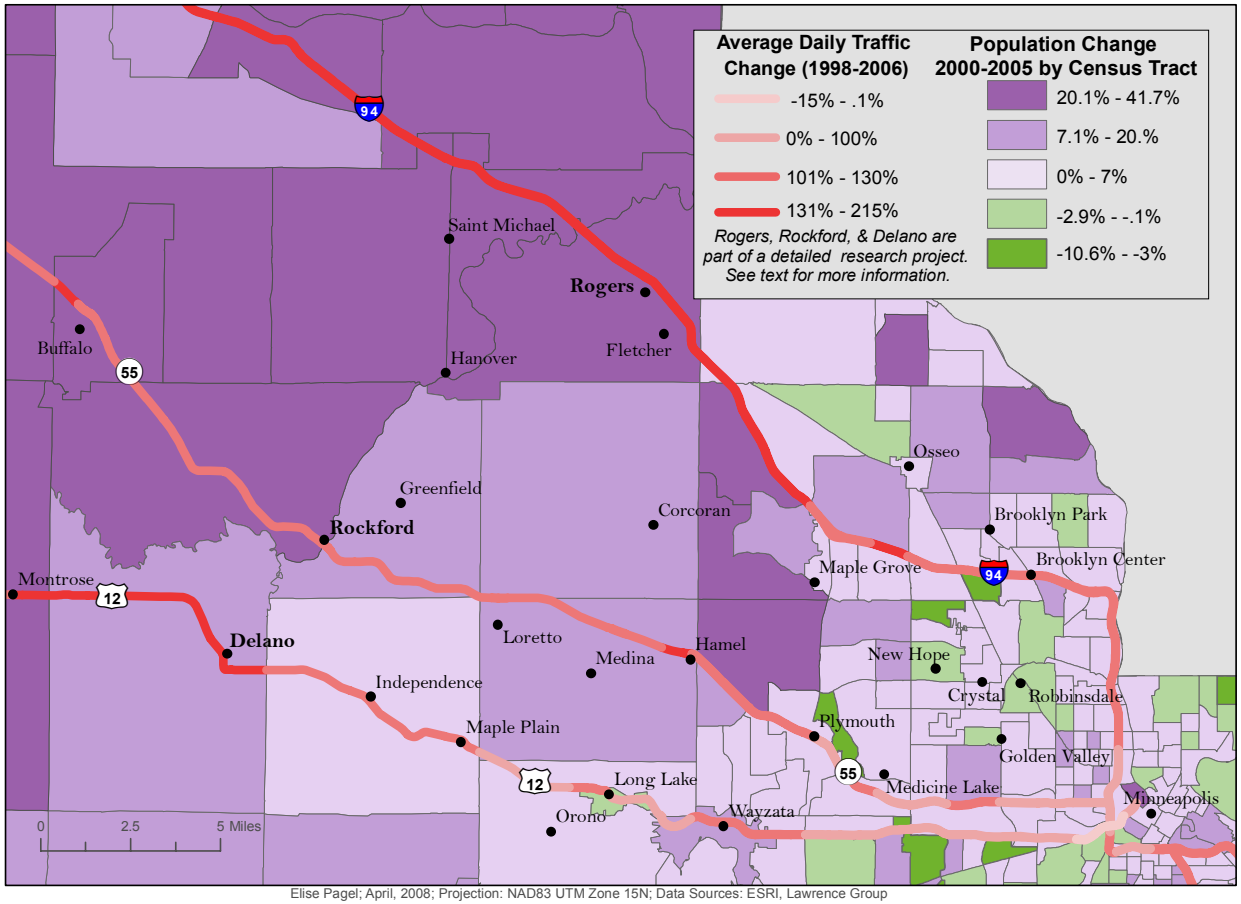
State highway 55 is Rockford's primary regional connection to and from the Twin Cities. Due to increasing traffic volumes MNDOT has been planning an upgrade to highway 55 between I-494 in Plymouth, and west towards Annandale. The expansion of the roadway, while addressing traffic flow issues, will also have some impacts on existing and future commercial development. The arterial classification of highway 55 as well as MNDOT restrictions exacerbates issues with access points and right of way needs to and from commercial establishments. In addition to the highway, the Canadian Pacific Railroad has created limitations for roadside commercial development as it runs parallel to the highway leaving no developable land between the railroad and the highway.[2]

Delano's arterial roadway is US Highway 12 which connects Delano with the Twin Cities and other communities of greater Minnesota. Highway 12 is currently under construction to upgrade the roadway into a super two lane. This upgrade is in response to increased traffic volumes and safety concerns. The vast majority of Delano's commercial development is

located along Highway 12 and is generally geared towards automotive and recreational services.[3]

Examining traffic counts is an effective indicator of recent and future development potential. Based on traffic data from the Lawrence Group, samples from 1998 and 2006 were taken from each of the three highways on both the eastern and western sections of the towns. Interstate 94 proved to have the highest traffic volumes far exceeding the other two highways with both sections of the highway showing significant increases in traffic counts. The 2006 sample of the eastern section of road showed the highest counts totaling 93,000 cars per day with a percent change of 134.8% based on the 1998 count of 69,000 cars per day.[4] The fact that Highway 55 in Rockford and Highway 12 in Delano are not classified as interstate highways made their counts more comparable. Highway 12 showed a greater increase jumping from 14,100 to 18,500 cars per day on the eastern section of the road, a 131.2% change. Rockford only showed a 111.8% change on its eastern section only increasing from 14,300 to 16,000.[5] Interestingly all three roadways showed greater increases on their western sections compared with their eastern sections. Rockford in particular even has higher overall counts on its western section. These greater increases on the western sections indicate that there is linear growth occurring beyond the three study towns.

Changes in Population and Traffic, 1998-2006



Elise Pagel; April, 2008; Projection: NAD83 UTM Zone 15N; Data Sources: ESRI, Lawrence Group

Physical Geography

The physical surroundings of a town play a number of important roles in planning for and predicting future growth. Soils play a role in determining the type of development that will occur in a certain area, having implications for sewer and water services as well as building and infrastructure capabilities. Environmentally sensitive areas such as river corridors, wetlands, floodplains, steep slopes, and water tables also play a role in the way an area develops as extra consideration is necessary before development can occur.

As identified in Roger's comprehensive development plan, Roger's soils have been a factor in the way that it has developed. Originally, residential development in Rogers was very slow, however when more rapid commercial and industrial growth began to occur due to exposure from I-94

in the 1970's there became a need for more residential development.[6] The first residential development was constructed as a Rural Planned Unit Development, but the developers were forced to put a strong emphasis on soil suitability for on-site septic systems and drain fields. The lands with difficult soils were annexed into Rogers so that they could be served with public utilities and created significant acreage for new residential development. According to Chief City Planner Charles Burnham, Rogers public sewer/water utilities are expected to reach capacity by 2015; at this point Rogers is expected to be included within the MUSA line and will then rely on the Metropolitan Council to supply utilities to new developments.[7]

Urban development in Rockford and Delano has been slowed by difficult soils steep slopes, and the 100 year floodplain of the Crow River. Future developments in the areas with the steepest slopes those most prone to season flooding or with the worst soils are discouraged.[8] Significant portions of Rockford and Delano are located within the 100 year floodplain of the Crow River. This includes much of their central business districts; despite the value of the river as a water drainage system and aesthetic and recreational amenity, it has also been established as a hindrance to commercial and residential development in both cities.[9,10]

Land Availability

In order for a town to accommodate new development there needs to be access to undeveloped land within the city's corporate boundaries. Once a town has developed all their usable land within corporate boundaries, the only way that growth and development can continue is through the annexation of additional acreage of developable land into the city. Annexing land requires that the city's sewer and water utilities are capable of serving additional developments having large implications on the rate at which new land is annexed for new developments.[11] Examining the recent and projected land annexations is a good measure of how a given community is developing.

The increasing amount of commercial and industrial development that occurred throughout the 1980s and 1990s created a need for more developable land for residential growth and pressure developed to annex portions of Hassan Township into Rogers As a result 1,033 acres of Hassan Township have been incorporated into Rogers. A second annexation of 1,593 acres is planned for August 15, 2010 an additional annexation is planned for August 15, 2030; when the remaining 11,666 acres will be joined to Rogers.[12]

Like Rogers, Delano has grown by annexation, over the past decade Delano has annexed approximately 725 acres from Franklin Township.[13] Based on previous growth patterns the city has created a growth management plan that estimates an average of 166 new households per year and annexation of new land will occur on an as-needed basis.[14]

The City of Rockford, like Delano, has limited supply of undeveloped land within its boundaries yet the city welcomes further urban growth. For this reason the city has established a growth staging plan that will moderate growth in an orderly and fiscally responsible manner; this will help avoid premature growth, resulting in economic burdens and problems with service capabilities for the city. Based on numbers of new home construction between 1993 and 2004 the city's "very conservative"estimate accounted for about 40 new homes per year.[15] These housing projections were translated into land absorption projections over the period of 2005 to 2020 to estimate likely demand for developable parcels. Based on the conservative estimate of 40 new homes per year the city may absorb an additional 218 acres of land for residential uses by 2020. Given the recent increases in development activity they also calculated an overage estimate that increases the projection by 50 percent to about 329 acres.[16]

Population Growth

Population change is the most basic aspect of urbanization. In 2000 the towns were approximately the same size but had very different growth rates over the subsequent six years. Rogers increased by almost 75% from 3,588 to an estimated 6,277. Delano increased 30% while Rockford grew only of 11%.[17] Based on recent population, housing, and annexation trends population projections have been made up to 2020. Rogers and Delano both project much more rapid population increases than Rockford. Metropolitan Council estimates that Rogers will reach 14,400 by 2020[18] while the Delano city staff projects 12,800 by 2020.[19] Rockford on the other hand projects their slower growth rate will result in 5,607 residents in 2020.[20]

Other factors such as household income and educational attainment can serve as indicators of the future of a town. Based on estimates from 2005

Rogers households were making about $20,000 more per year than households in both Rockford and Delano. There are also clear differences in average educational attainment between the towns; 33% of Roger's residents have bachelor's degrees or higher compared with 24% in Delano and 15% in Rockford.[21] Given the higher income and educational attainment of Rogers's residents it is likely that many residents are commuting to professional jobs in the city which would indicate a bedroom community, however the prevalence of commercial development the city of Rogers is bringing workers into the town; making it a two-way system and not just a bedroom community. Delano in contrast, does seem to be developing into a potential bedroom community as they have a good portion of professionals commuting to the city but lack the commercial development to attract workers into the town. As for Rockford many indicators allude to a more rural small town type of development; growth projections, educational attainment, and eastern traffic counts are lower than the other towns indicating lower commuter levels as well as less exposure to attract new residents.

Conclusion

Through examination and comparison of the growth and development process of these towns indicates that urban expansion is the result of a number of factors. Location on an arterial roadway is important but as the growth of Rockford indicates is not an independent catalyst for development. Physical landscapes, population characteristics, and the availability of undeveloped land play important roles in determining the rate and nature of development. In addition to these quantifiable factors it is important to consider the unique elements of individual towns. In smaller communities residents have a direct impact on the desired future of their towns; there is often a conflict of interest in growing rural fringes as well established residents fight to maintain their pastoral atmosphere while new residents bring consumer power that fosters new development that may be change the local culture. For this reason many communities have established growth management plans in attempts to accommodate both new and old residents. The ever changing national economy will also play a role in determining the rate of growth in rural fringe communities; if the price of gas and other goods and services continue to rise, housing in these areas becomes less affordable, this fact is evident in recent foreclosures in metro and collar counties.[22] Given the factors contributing to and inhibiting growth, it is likely that these three towns will continue to grow at differing rates. Rogers will likely continue to grow rapidly over the next twenty years, move within the MUSA line, and become an outer ring suburban community. The city of Delano has made high predictions for its growth rate almost tripling in size over 25 years; given the ability to annex new land into the town for development projects and reasonable economic conditions the city has potential to develop into a bedroom commuter community. The city of Rockford seems to desire a much slower rate of growth and will likely continue to develop as a small town rather than a suburban or bedroom community.

Sources

1 Burnham, Charles. 2008. *Development in Rogers.* Interview. Rogers.

2 *City of Rockford Comprehensive Plan.*2006. Rockford: City of Rockford.

3 City *of Delano Comprehensive Plan Development Framework.*2002. Delano: City of Delano.

4 Pagel, Elise. 2008. *Changes in Population and Traffic: 1998-2006.* Oakdale: ESRI, Lawrence Group.

5 Ibid.

6 *City of Rogers Comprehensive Plan.*2000. Plymouth: McCombs Frank Roos Associates, Inc.

7 Burnham, Charles. 2008. *Development in Rogers.* Interview. Rogers.

8 City of Delano Comprehensive Plan Development Framework.2002. Delano: City of Delano.

9 *City of Rockford Comprehensive Plan.*2006. Rockford: City of Rockford.

10 City of Delano Comprehensive Plan Development Framework.2002. Delano: City of Delano.

11 Rhineberger, Barry. 2008. *Growth and Development in Wright County.* Personal communication. Buffalo.

12 Burnham, Charles. 2008. *Development in Rogers.* Interview. Rogers.

13 Kern, Phil. 2008. *Growth and Development in Delano.* Personal communication. Delano.

14 City of Delano Comprehensive Plan Development Framework.2002. Delano: City of Delano.

15 *City of Rockford Comprehensive Plan.*2006. Rockford: City of Rockford.

16 Ibid.

17 City Profiles. in On Board LCC. [Database online]. 2008Available from www.city-data.com.

18 Population Forecasts. Metropolitan Council [database online]. 2008Available from http://www.metrocouncil.org/metroarea/RDF-forecasts.pdf.

19 City of Delano Comprehensive Plan Development Framework.2002. Delano: City of Delano.

20 *City of Rockford Comprehensive Plan.*2006. Rockford: City of Rockford.

21 City Profiles. On Board LCC. [Database online]. 2008Available from www.city-data.com.

22 Kern, Phil. 2008. *Growth and Development in Delano.* Personal communication. Delano.

CHAPTER 1: Demographics and Social Fabric

Patterns of Latino Migration, *by Claire Reuning, Maps by Christine Chung and Claire Reuning*

As the cliché goes, the United States is a nation of immigrants. When questioned about their ancestry, U.S. Americans readily answer. In Minnesota, longtime residents pride themselves on their Scandinavian and German roots, but there are new arrivals from different parts of the globe making up new generations of Minnesotans in communities across the state. Central Minnesota's Crow River Watershed (CRW) is a traditionally homogenous area currently undergoing a demographic shift. Beginning in the mid-1980s, the CRW has seen its Latino population change from seasonal agriculture workers into residents living and working there year-round.[1] In Minnesota, Latinos come to rural areas "to take advantage of employment opportunities and the small-town living that many left back home."[2] Latinos are a young, hardworking population who choose the CRW due to the prevalence of jobs that allow them to support family here and back home, as well as educational opportunities for their children.[3] The result of permanent settlement is an emerging second generation of Latinos who are CRW natives that actively maintain Latino culture. Overall, Latinos living in the CRW are an established population that fills significant economic and social gaps within the region. Analysis of the current Latino population and population change shows not only spatial and demographic patterns of Latinos, but points to the vital economic role Latinos serve in the Crow River Watershed.

In order to conduct this research both quantitative and qualitative data were gathered. The US Census Bureau and Claritas provided demographic data used to make maps and population pyramids that describe demographic and spatial trends. However, this numeric data alone paint an incomplete picture of Latinos in the CRW. Interviews were conducted to augment these numbers. A total of seven interviews took place, and all participants were officials working closely with the Latino community through the Catholic Church. The Catholic Church is a natural place to look for individuals familiar with CRW Latinos because of the relationship between Catholicism and Latino culture. A literature review of Latinos in the Midwest was conducted in addition to the data collection. This chapter is divided into a discussion of current population and population change for CRW Latinos. It concludes with a call for future action and the significance of these findings.

Latinos in the Crow River Watershed

Current Population

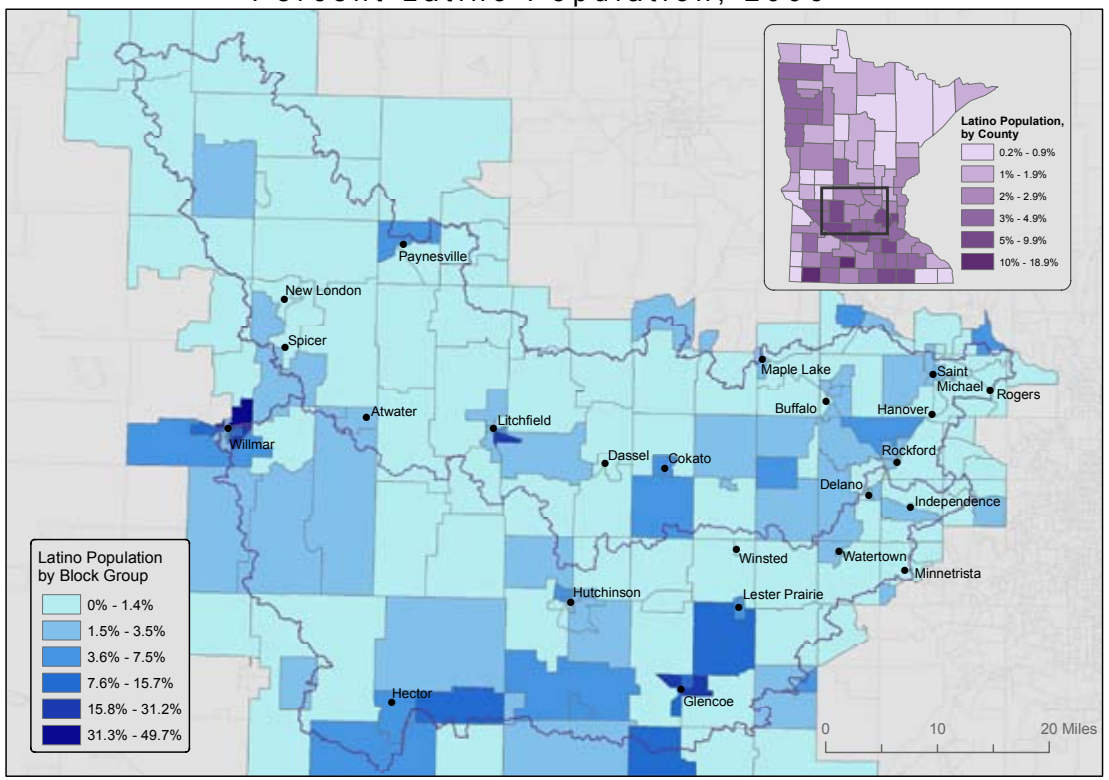
As early as the 1920s, Latinos from the southwestern United States and Mexico came to the CRW to do seasonal agriculture work, but today the economic impact of Latinos is more diverse.[4] Most participants report that Latinos no longer depend on seasonal agriculture work, and instead most work year-round in food processing and small manufacturing, with a smaller percentage in the service industry and schools, and still fewer in professional fields. This employment structure differs from urban areas where larger numbers of Latino are service workers and professionals. The economic restructuring in the rural areas of the Midwest has resulted in the marked increase of low-skilled industrial jobs and a decrease in agricultural employment.[5] CRW Latinos tend to be from rural areas where educational levels are lower. Therefore low-skill jobs with minimal English requirements, but opportunities for overtime, appeal to Latino workers who need to make enough to support their families here and send remittances home.[6] Because Latinos living in the CRW work in low-skilled occupations, the location of these jobs determines the location of Latino communities.

The first map, (see *Percent Latino Population, 2006*, p. 21) illustrates the distribution of Latinos within the CRW and across Minnesota. As the inset map shows, the southern section of the CRW is the northern border of southern Minnesota, where Latino populations are highest. Within the CRW, Willmar, Litchfield, Glencoe, Lester Prairie and Hector have larger Latino communities. Each of these cities has a major employer that hires people to perform low-skilled jobs. Latinos find their way to these jobs through informal networks. In the 1970s some companies, such as Seneca (formerly Green Giant) formally recruited Latino workers, but this is no longer the case.[7] Now Latinos learn about CRW job opportunities through word-of-mouth. As one participant said,

> everybody knows somebody and has a friend somewhere, a *comadre, una tia* [a close family friend, an aunt].[8]

This change from Seneca's formal recruitment 30 years ago, to current informal recruitment is typical as kinship networks grow in the CRW.[9]

Family is highly valued in Latino culture, therefore kinship networks are strong and most Latinos do not come to the CRW without family/friend connections. Participants report that most CRW



Cartographers: Claire Reuning & Christine Chung. 18 April 2008. Projection: NAD83 UTM Zone 15N. Data Sources: Claritas, 2006; ESRI, 2006.

Latinos come from southern Texas and Mexico, but there are also smaller numbers of Hondurans and Guatemalans. Although the stereotype of Latino workers in the U.S. is that they all are undocumented, this is not universally true in the CRW. Latinos from southern Texas are born with US citizenship and many Latino migrants from outside the U.S. have the correct documentation.[10] But, documented or not, kinship networks and economic opportunities are responsible for drawing large numbers of working-age Latinos to the CRW.

Analysis of Latino and White non-Latino* population pyramids (Fig. 1) illustrates how Latinos contribute to the working-age population of the CRW.** The Latino population is concentrated around the ages of 20-34, particularly on the male side.

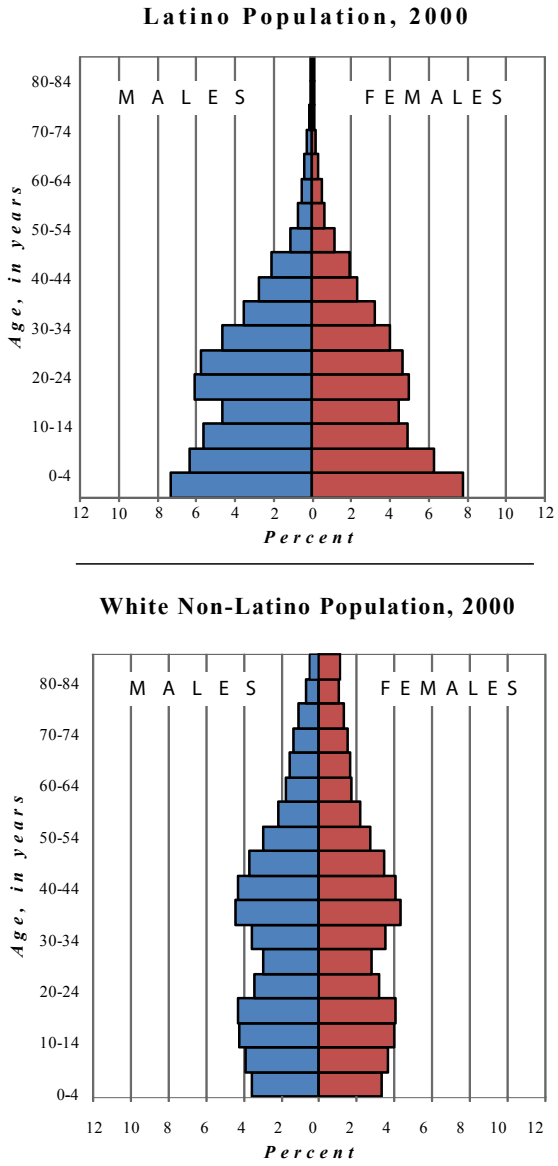


Figure 1. Latino and White Non-Latino Populations, 2000. Counties include Carver, Kandiyohi, McLeod, Meeker, Pope, Renville, Sibley, and Stearns. *Source: U.S. Census Bureau, 2000.*

* Throughout this chapter, the term "White" refers to individuals who identify themselves as White non-Latino in the 2000 U.S. Census.

** These pyramids use data from the 1990 or 2000 U.S. Census Bureau to breakdown the Latino and White population living in the CRW by age and sex. They include people living in counties touching the CRW, with the exception of Hennepin County. Due to the urban nature of Hennepin County, it was excluded from the pyramids as to maintain the rural character of the CRW population.

This is the same segment in the White population where the hourglass-shaped pyramid is cinched in. The bottoms of the pyramids also differ. Where the White pyramid narrows towards the base, the Latino pyramid's base widens. Latinos provide children and workers in cohorts where the White population lacks people; this creates more even population distribution. When young White people in the CRW reach their 20s, the data leads one to believe that many of them leave the area. As they leave the area, Latinos replace them as workers.

Though some long-term residents may feel there is competition between themselves and Latinos, various participants report that there is no actual competition. Popular propaganda against immigration promotes the myth that immigrants "steal" jobs from native-born U.S. American citizens. Such negative attitudes about immigration are often felt more strongly in rural and exurban areas.[11] According to professionals in the CRW, Latinos are not only *not* stealing jobs but are the workers who help keep local factories *open*.

When participants were asked who would work these jobs if Latinos were to leave, every single participant paused for a second, then replied in so many words, "I don't know." Most participants believe that the Latino community is vital to the CRW in part because of the workforce they provide. To counter the myth of job stealing, one participant rhetorically asked,

> why are we bringing people in [to work] when the young people can work…young people don't want to do it [agriculture and industrial jobs], it's too hard.[12]

In terms of the agribusiness and manufacturing jobs, another participant stated,

> Latinos are doing jobs that other's don't want. They [the jobs] aren't pleasant.[13]

Thus Latinos supply a critical source of labor in the CRW that population growth highlights.

Population Change

The 1990s saw the Latino population establish itself in the CRW. Comparing Latino population pyramids from 1990 and 2000 illustrates this establishment and implies future growth of Latinos. The 1990 population pyramid (Fig. 2) represents approximately 3,000 people, and therefore contains irregularities. Two of these are the large number of male children ages 0-4, and the small number of woman ages 25-29. By 2000, the pyramid represents approximately 8,000 people and has filled out. The number of women increases in the 2000 pyramid, although is still not equal to the male population. This increased number of women describes how the CRW Latino community currently consists of more young families than single young men, but still lacks an older population.

The Latino community is described as "artificially young" due to the small numbers of people over the age of 50.[14] Unlike the Latino population, the White population pyramids in both 1990 (Fig. 2) and 2000 describe a community with elders. Small numbers of Latino elders, and large numbers of Latino babies express the idea of an artificially young community. One participant, a priest, described how he buries few Latino elders, but baptizes significantly more Latino infants than White infants.[15] There are less White infants than Latino infants, and less White infants in 2000 than 1990. The narrowing base in the 2000 pyramid is one of

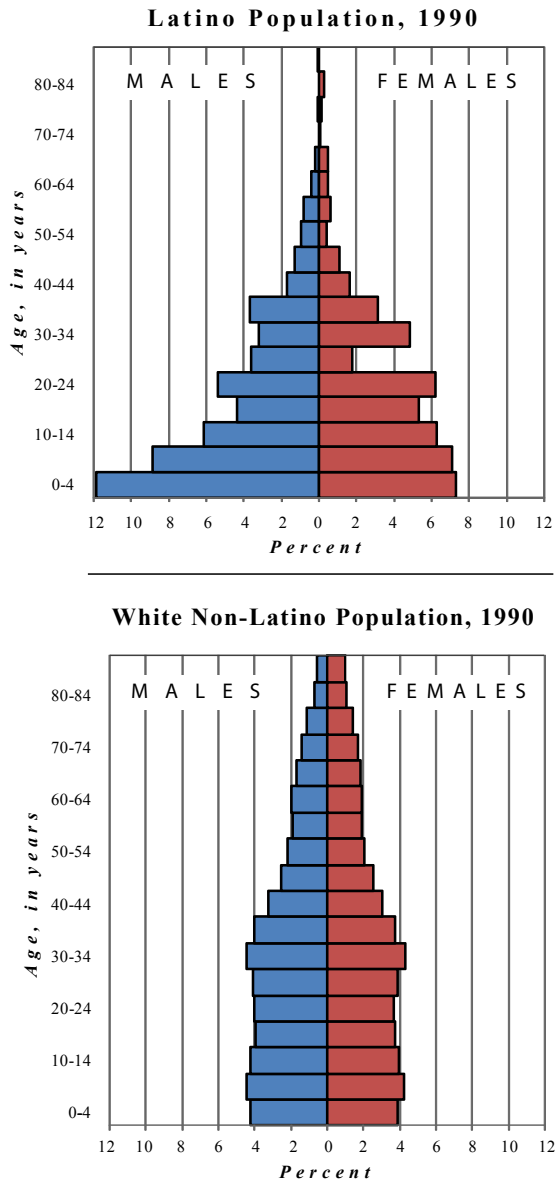


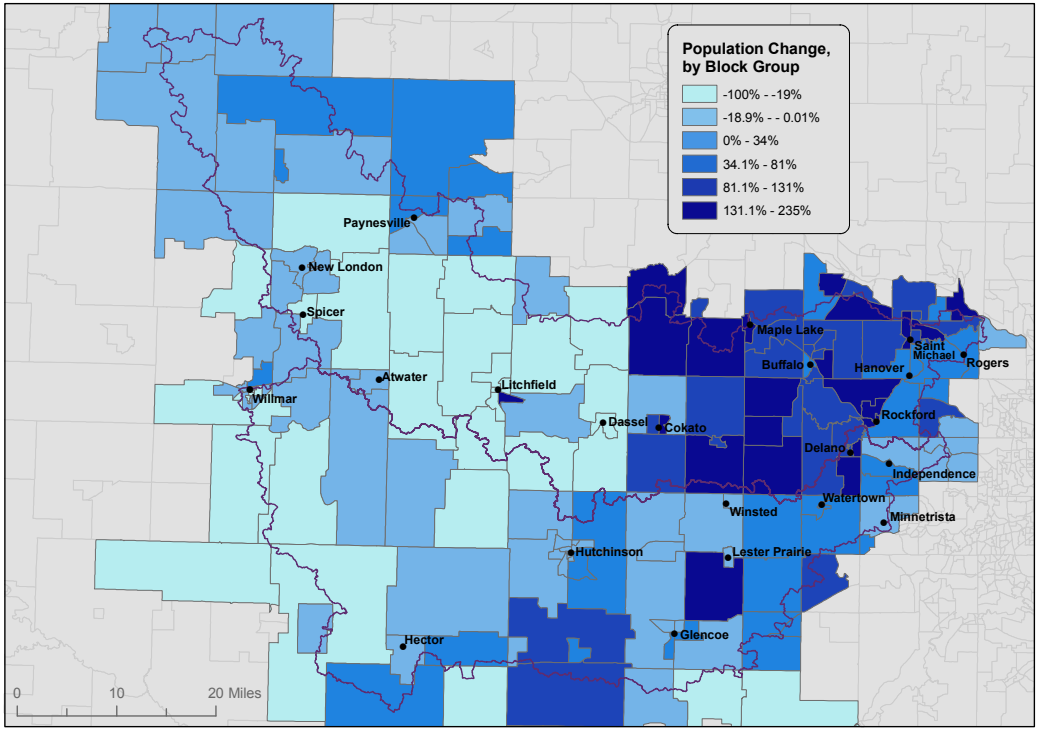
Figure 2. Latino and White Non-Latino Populations, 1990. Counties include Carver, Kandiyohi, McLeod, Meeker, Pope, Renville, Sibley, and Stearns. *Source: US Census Bureau, 1990.*

the major differences between the pyramids. The drastic change in overall shape in the White pyramids from 1990 and 2000 could be due to many factors outside the scope of this chapter. However, the overarching implication of all the pyramids is that the Latino population in the CRW is going to grow larger at a more rapid pace than the White population. Mapping demographic data from 2006 show both the rate of this increase and its distribution.

The second map (see *Percent Latino Population Change, 2000-2006*) shows key areas of growth. The northeastern section of the CRW contains the most rapid growth, up to 235% in some locations. This area is where rapid growth is occurring in general, so it unsurprising that it is the location of high Latino growth. Latino growth here could be from Latino professionals relocating from the Twin Cities to the suburban and exurban areas. Growth rates slow down as one moves west across the CRW, as the data tracts become larger and less densely populated. Movement out is magnified in less populated tracts because of the sparse population. Also of note is the fluid nature of Latino populations within the CRW. Participants report that some individuals and families frequently migrate between CRW cities for job opportunities. Therefore, population loss in one tract is not necessarily due to Latinos leaving the CRW.

Another surprising element of the pattern is that key cities from "Latino Population, 2006" do not report the growth fastest rates. However, this trend corresponds to participant data that did not report large numbers of new migrants coming into the western CRW. Latino growth occurs within families settled in the CRW, creating a second generation of Latino CRW residents. Population pyramids and maps illuminate what the Latino population in the CRW looks like today. As this population grows, the current economic and social role within the CRW will also grow. Latinos will keep spending money in the CRW, opening more businesses and sending their children to school. The future of the Latino community is important to the CRW as a whole.

Percent Latino Population Change, 2000-2006



Cartographers: Christine Chung & Claire Reuning. 18 April 2008. Projection: NAD83 UTM Zone 15N. Data Sources: US Census Bureau, 2000; Claritas, 2006; ESRI, 2006.

The Future

A second generation of Latinos is growing in the CRW, and it is vital that this generation be understood as part of the CRW community. Currently there seems to be limited connections between the Latino communities and the rest of the population, which can be partially explained by the lower economic standing of the new migrants. Researchers have found that "Latinos' concentration in low-skill jobs, limited English skills, limited education and limited capital have restricted their opportunities for social and economic advancement in rural communities."[16] Most participants agree that established Latinos, new Latinos and the non-Latino communities need to work together to increase the civic engagement of the Latino community. Communication barriers, extending beyond Spanish-English language challenges, must be broken down so that dialogue between the communities can begin. Latinos should no longer be considered as migrant labor, but as residents and citizens whose input is valued. La-

tinos must be taught how to lead their community within the framework of U.S social structure and norms. Church officials in the CRW report promoting Latino leadership at a church level, but it is crucial that this occurs at city-wide levels as well. As the economic and social influence of Latinos in the CRW increase, holistic integration of Latinos of all ages into the fabric of the CRW must occur.

Conclusion

The last 20 years has been a period of growth for Latinos in the Crow River Watershed. They have come to the CRW for jobs, and have established themselves as key players in the CRW's economy. But they are not simply physical bodies filling job openings. They are a growing community that lives, works, and plays in the CRW. As their numbers increase, they will continue to make economic contributions by opening businesses and spending money in the CRW. While this happens, they will be a force of cultural change as well. Latinos bring with them their own cultures that will enliven the CRW. Perhaps in the future, traditional foods in the Crow River Watershed will no longer be limited to *lutefisk* and *lefse*, but will include *ceviche* and *tortillas*.

Sources

1 Participant 1. Personal interview with the author. 18 March 2008.

2 Bushway, D. (2001). The vitality of Latino communities in rural Minnesota/*La vitalidad de las comunidades latinas en Minnesota*. University of Minnesota, Mankato: Center for Rural Policy and Development: 1.

3 Participant 3. Personal interview with the author. 19 March 2008.

4 Participant 5. Personal interview with the author. 20 March 2008.

5 Cantú, L. (1995). The peripheralization of rural America: A case study of Latino migrants in America's heartland. *Sociological Perspectives*, 38 (3), 399-414.

6 Participant 6. Personal interview with the author. 28 March 2008.

7 Participant 2. Personal interview with the author. 18 March 2008.

8 Participant 6. Personal interview with the author. 28 March 2008.

9 Cantú, L. (1995). The peripheralization of rural America: A case study of Latino migrants in America's heartland. *Sociological Perspectives*, 38 (3), 399-414.

10 Post, T. (2008, April 10). "A year later, Willmar still feels effects of immigration raids." *Minnesota Public Radio*. Retrieved April 11, 2008, from http://minnesota.publicradio.org/display/web/2008/04/09/willmar_immigration_raid_anniversary/

11 Schwei, D. and Fennelly, K. (Winter 2007). Diversity coalitions in rural Minnesota communities. *CURA Reporter*, 13-22.

12 Participant 6. Personal interview with the author. 28 March 2008.

13 Participant 2. Personal interview with the author. 18 March 2008.

14 Participant 2. Personal interview with the author. 18 March 2008.

15 Participant 2. Personal interview with the author. 18 March 2008.

16 Bushway, D. (2001). The vitality of Latino communities in rural Minnesota/*La vitalidad de las comunidades latinas en Minnesota*. University of Minnesota, Mankato: Center for Rural Policy and Development: 2.

Ethnic Diversity and Crow River Schools: Overview of ELL Programs in the Watershed

by Katherine Bristol, Map by Christine Chung

Public schools should provide a learning environment that allows all students to participate in a diverse classroom; to develop the knowledge, skills and values necessary for participation as democratic citizens. However, schools' egalitarian format can be compromised by the tension between demands of federal government and abilities of local administrators. One population affected by funding restrictions are English language learners (ELL). While the majority of immigrants settle in large urban areas, their numbers are increasing dramatically in rural areas, where 57 percent (up from 48 percent in the 1980's) are of Mexican origin. Poultry processing plants and meatpacking firms are attracting immigrants to rural areas in record numbers. New pressures to accommodate this population have arisen, most apparently, within the public school system. Since the implementation of No Child Left Behind (NCLB) in 2001, schools across the nation have been forced to employ radically different English language learner (ELL) curriculums to accommodate the burden of yearly testing. Under Title III of NCLB, ELL students must show an increase in academic achievement in specified academic areas each year, while simultaneously demonstrating an improvement in English language acquisition. Rural schools often face many challenges and opportunities when educating ELL students. However, many of the common challenges, such as a shallow tax base for funding, isolation from support, and an ability to retain properly trained educators, can be helped. Interviews with administrators, teachers, and superintendents indicate that strong leadership and guidance by superintendents can help to alleviate some of the issues of educating ELL students within the Crow River. This unique finding differs from other research in the field that correlates student success with parental involvement. However, with low amounts of parental involvement but consistent graduation rates, it appears that the role of involved superintendents in these small communities is key for the success of ELL teachers and students.

Table 1. *Number of Teachers and ELL Students in Each District*

School District	Number of ELL Students	Number of Teachers	Student to Teacher Ratio
Buffalo	153	5	30-1
Hutchinson	47	2	24-1
Glencoe	152	4	38-1
Willimar	478	21	23-1

Teacher Involvement

Many of the districts reported difficultly in recruiting and retaining properly trained ELL teachers. In fact, out of the four districts evaluated for this project, only two towns, Willimar and Buffalo, had properly licensed bilingual teachers. The other schools trained previously employed counselors and special needs instructors in ELL curriculum to accommodate the growing number of students (see Table 1). A few teachers, especially those in smaller districts such as Hutchinson, complained that the pressure of NCLB forced them to teach to the test rather than to the student's needs. Generally, the more teachers who were designated ELL within a district, the better the students performed. All of the teachers and superintendents claimed

Table 2. *Results of Survey from ELL Teachers and Administrators*
(* Values based on the following scale: 1- Low, Negative 5- High, Positive)

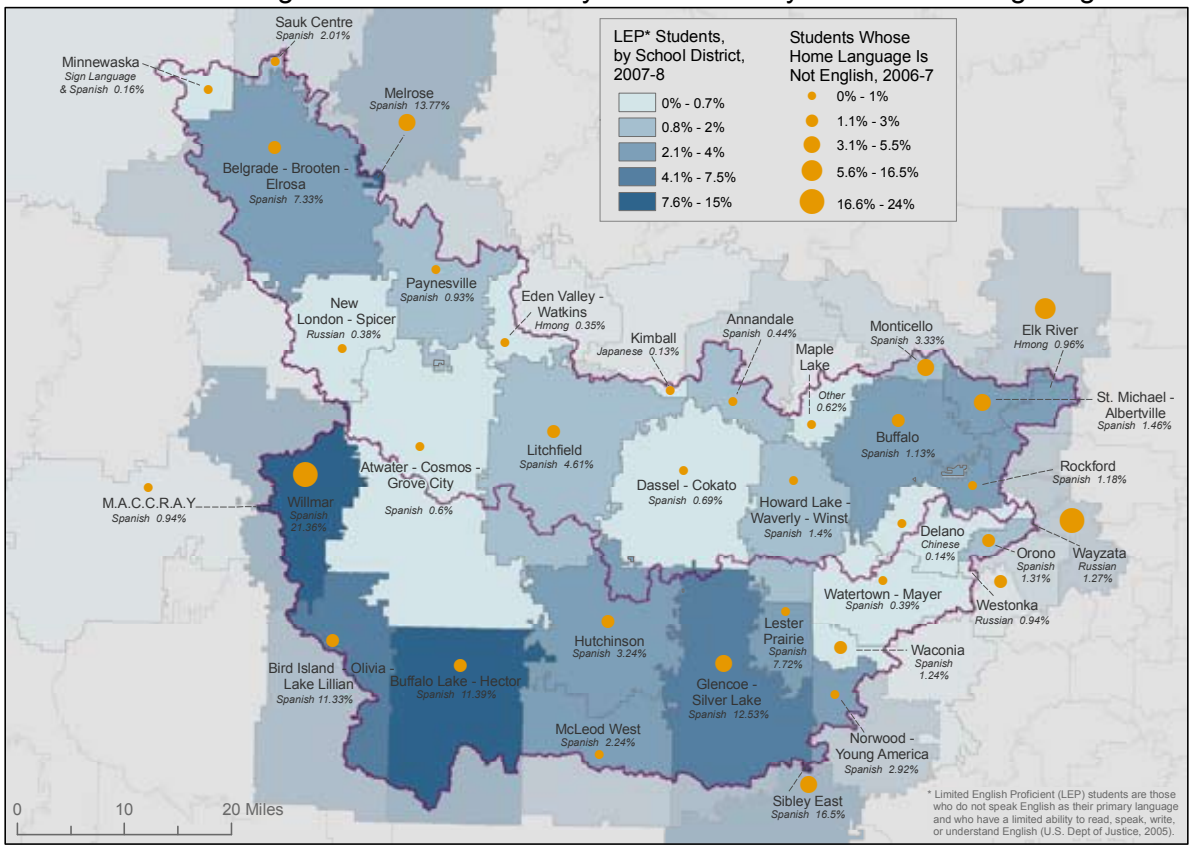
School District	Involvement of Superintendent in ELL Program*	Satisfaction with Current ELL Program*	Effect of NCLB on Curriculum and/or ELL Program*	ELL Population Growth in Last Five Years (%)	ELL Student Graduation Rate (%)	Amount of Parental Involvement in ELL Program*
Buffalo	3	4	3	5%	88%	2.5
Hutchinson	3.5	4	2	7%	90%	3
Glencoe	2.5	3.5	3	17%	65%	1.5
Willmar	3.5	2.5	4	74%	72%	2

the largest adversity the schools faced was properly allocating funding for the ELL students. However, districts such as Glencoe and Buffalo had positive reports as to the implementation of NCLB and the progress of their ELL program. These schools previously had one or two ELL teachers, and no formal testing or curriculum for the bilingual students. However, the association of funding and standardizing testing forced these schools to increase their ELL staff. Overall, the effects of NCLB high stakes funding had mixed reviews based on the size of the ELL program and amount of ELL trained teachers present at the school before NCLB was implemented.

Parent and Community Involvement

Another commonly reported problem was direct community and parental involvement. "We have a lot of trouble getting parents to come in for parent /teacher conferences, let alone get involvement in their child's education. Due to issues with immigration, we can rarely even contact the parents," reports Lisa Kraft the head of the ELL program in Hutchinson. Out of the four districts evaluated for this project, two of the districts reported little to no parental involvement (see Table 2, p. 26). These districts also had issues with enrolling, maintaining, and exiting the ELL students within the school's program. The other two districts reported moderate involvement of parent and community members in the ELL program. While most research has indicated that parental involvement is necessary in monitoring student success, the small size of the community paired with the influential role of the superintendent proved to be somewhat compensatory for the overall lack of parental participation.

Limited English Proficiency & Primary Home Language



Cartographer: Christine Chung. Date of Publication: 30 April 2008. Projection: NAD83 UTM Zone 15N. Data Sources: Minnesota Department of Education, 2007; ESRI 2006.

Figure 1. ELL populations compared to the primary home language of the population. The main purpose of this map is to evaluate how accurate the reporting of ELL students is based on testing and recommendations. As you can see, the districts chosen for this report have a fairly accurate representation of the alternate language population, while other districts have high rates of under or over reporting.

Superintendent Involvement

While exemplary and open leadership is necessary at every level within the educational system, it is the superintendent who can provide the structure and guidance that will ensure programs are proper-

ly implemented and maintained. Willmar, a district with a high number of ELL students that increased tenfold in the past seven years, has looked to their superintendent for direction as to how the program should be run within the school. " We need a spearhead leader to make this program work," claims a Willmar ELL teacher, " if we did not have strict guidance and close supervision, the program would fall apart." There was a higher report of happiness with student success and program allocation from the ELL teacher's who reported a strong positive relationship with their superintendent.

The main indication of the anecdotal research indicates that a well run ELL program within the Crow River Watershed districts needs strong parental and community support or a figure to assume a leadership role for the program to garner success. The district that lacked both of these key components had lower graduation rates within their ELL program and complained of lack of trained staff or adequate funding.

Case Study: Unique Features of The Crow River Watershed Towns

Compared to other towns of similar size and situation nationwide, the districts surveyed for this study are welcoming and understanding of the changes occurring within their schools. After interviewing teachers and a few students from each of the districts, it was clear that proper cultural and academic education, accommodation, and understanding are paramount. The openness of these communities gives the schools an advantage. Districts such as Buffalo and Hutchinson have independently developed ELL-related professional workshops based on student and teacher surveys. These workshops include information on second language acquisition, adapting content area instruction for ELL students, welcoming newcomers to the program, and collaborative techniques. Willmar and Glencoe have strong lines of communication between ELL instructors and in-classroom teachers, ensuring that the curriculum is relevant and successful. The investment of the teachers in these districts gives the students an advantage that raises the overall success of these programs.

Empowerment at the community, school and individual levels bestows control to members of marginalized communities who have often been denied that privilege. That control fosters senses of ownership and pride. When superintendents are empowered to be involved in their schools, schools are empowered to take control of their own resources, parents are empowered to take initiative in their children's learning, and young people are empowered to get involved in their communities, the end result will be improved outcomes for everyone.

Looking Ahead and Further Research

If ELL students are going to develop their English at an adequate proficiency levels, the program must be comprehensive enough to meet both their social and academic needs. Superintendents of the four districts report a lack of properly trained staff which can be attributed to low salaries, social and geographic isolation, and lack of adequate housing. To address these issues, superintendents have used a variety of methods to attract new teachers. One administrator found success in advertising for positions within the local paper, while another began to actively recruit online or from substitute teacher lists. Where one district lacks the proper testing tools, another did not have a licensed administrator for state-required testing. With cooperation, districts have the potential to pool their resources to form a stronger and more cohesive program for their ELL students. This kind of cross-district collaboration is crucial to relieve two of the chief burdens of low-incidence rural schools: strained or nonexistent staff and a lack of in-service and professional training for ELL teachers.

Overall, building and implementing a comprehensive curriculum that addresses the academic and social needs of ELL students requires attention to leadership, instructional capacity, and limitations. In addition, collaboration across districts and parent and community involvement could help the watershed address the pressing issue of educating their linguistically diverse students.

CHAPTER 1: Demographics and Social Fabric

Social Well-Being in the Crow River Watershed, *by Christine Chung and Claire Reuning, Maps by Christine Chung and Claire Reuning*

An individual's well-being* is a measure of the quality of life or standard of living that he/she experiences. Quality of life, or well-being, can generally be divided into economic well-being, environmental or ecological well-being, and social well-being. It is the latter category which is the focus of the maps in this section. There are several characteristics which can be used to assess one's quality of life, or social well-being, including one's access to the following services:

- Basic needs, such as food, shelter and clothing
- Social services, recreation, cultural and community centers and religious places
- Affordable health care
- Affordable housing and overall, cost of living
- Employment
- Transportation and mobility

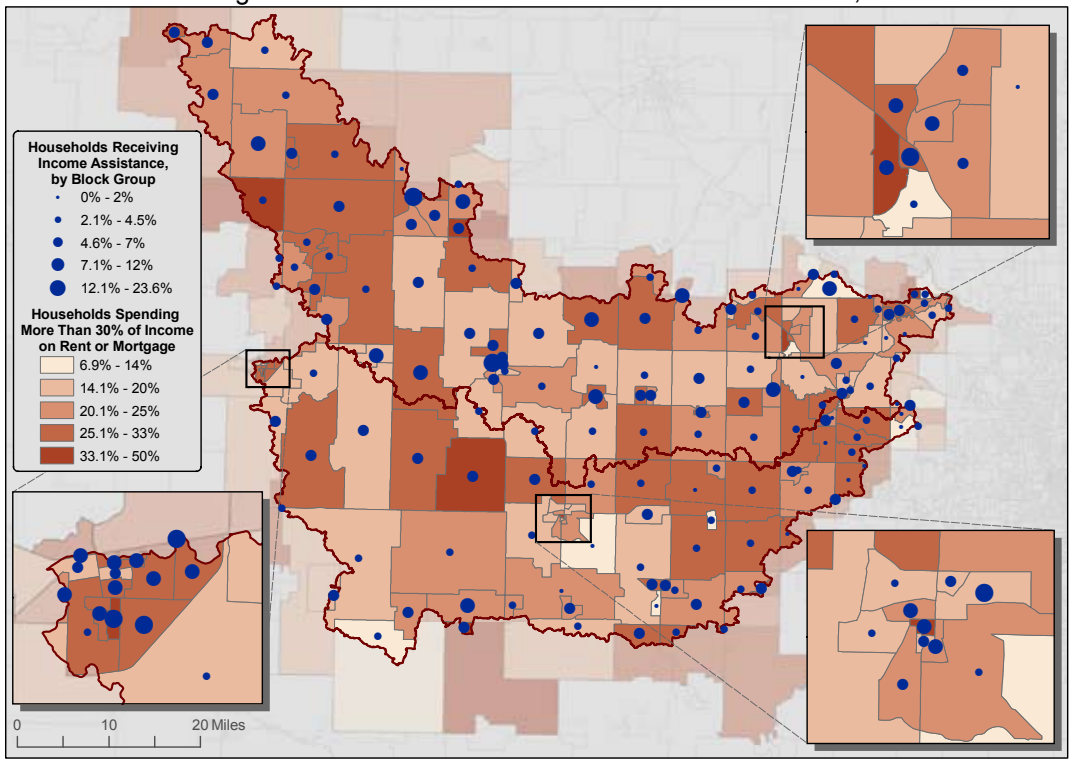
While food, shelter and clothing are basic human needs, other components of well-being are quite subjective.

Nevertheless, social well-being is important to measure because traditional measures of development largely ignore the social quality of life. In addition, the quality of life of rural populations is also another largely ignored dimension. Therefore, this is an attempt to not only map some measure of social well-being in the Crow River Watershed, but also part of a broader effort to bridge the gap between social well-being and economic well-being.

Map 1: Housing Cost Burden & Income Assistance

An important part of social well-being is the availability and access to shelter. It is both having a place to live, and more significantly, affording the place you live in. According to the Department of Housing and Urban Development (HUD), households that spend more than 30 percent of their household incomes on housing (rent or mortgage) are "cost burdened"[1]. This means that they are allocating a disproportionately large share of their monthly household budget towards housing, deflecting from other necessities. Housing cost burden (the ratio of housing costs and income) is a measure of housing affordability and to a larger extent, economic hardship, which further affects the overall well-being of households. An indirect way of examining economic hardship in the Crow River Watershed is the percentage of the population that is receiving some form of income assistance. However, this can be an incomplete measure because not everyone who is in need of assistance, based on income and resources, actually applies and/or qualifies for the aid. In addition, some

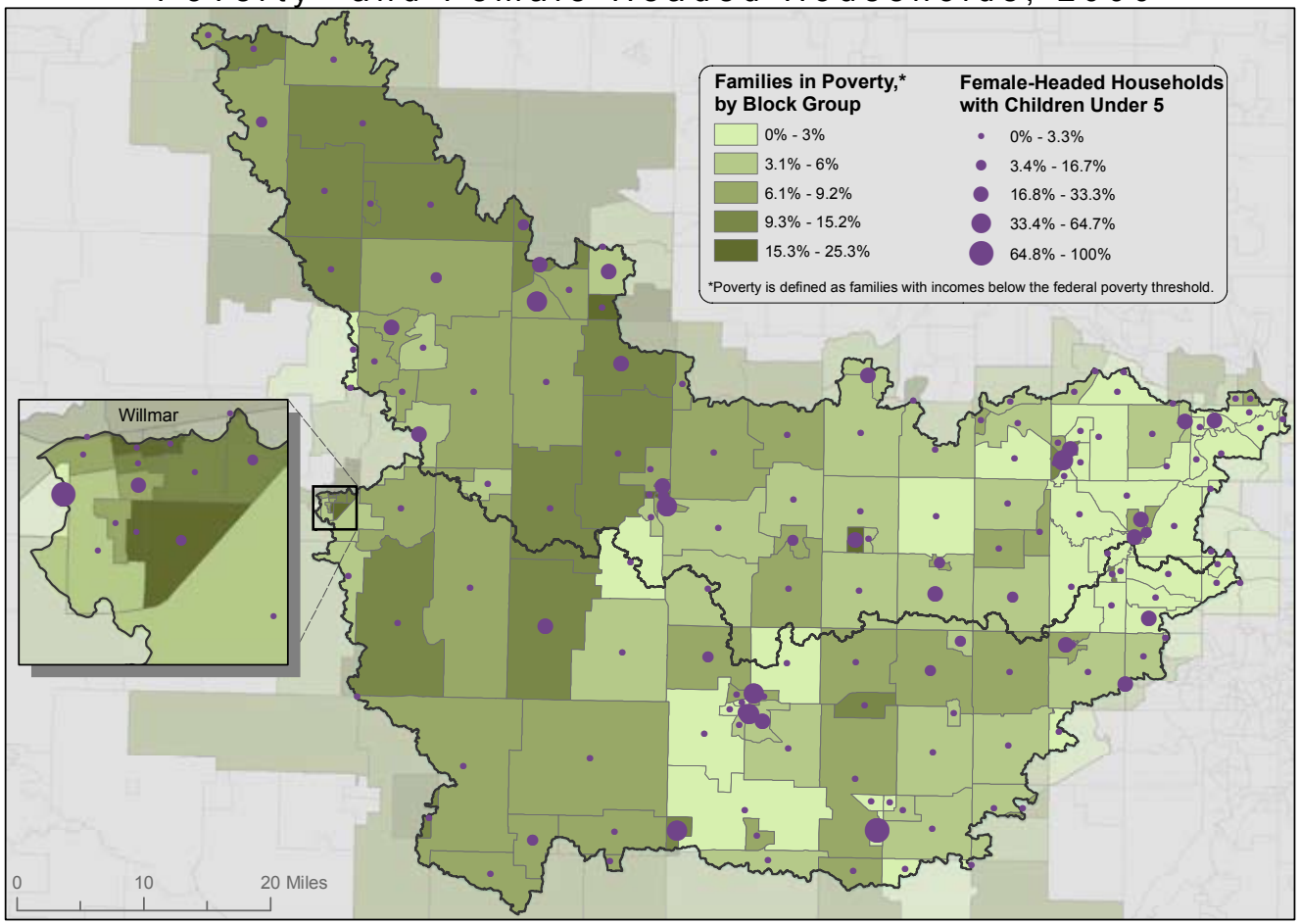
Housing Cost Burden & Income Assistance, 2000



Cartographers: Christine Chung & Claire Reuning. 30 April 2008. Projection: NAD83 UTM Zone 15N. Data Sources: US Census Bureau 2000, ESRI 2006.

* a good or satisfactory condition of existence; a state characterized by health, happiness, and prosperity; welfare / Source: Dictionary.com Unabridged (v 1.1). Retrieved March 30, 2008, from Dictionary.com website: http://dictionary.reference.com/browse/well-being

Poverty* and Female-Headed Households, 2000



Cartographers: Claire Reuning & Christine Chung. 5 April 2008. Projection: NAD83 UTM Zone 15N. Data Sources: US Census Bureau, 2000; ESRI, 2006.

households may qualify for only a limited duration.

The correlation between housing cost burden and income assistance provides a useful perspective to assess the availability and access to social services. The first map shows clusters where a high proportion of the households receive income assistance, including Willmar, Hutchinson, Litchfield and Buffalo. Even though there is a statistically significant relationship between housing cost burden and income assistance, there is only a relatively weak correlation between the two variables. This may indicate that there may not be a direct causal relationship between housing cost burden and the receipt of Supplemental Security Income and/or Public Assistance in the Crow River Watershed, and that other factors may be involved.

Map 2: Poverty & Female-Headed Households

Women with young children represent a vulnerable subset of the population. Poverty maps tend to mask variations within the general population itself, not accounting for differences in age, sex/gender, race and ethnicity. Map 2 focuses on female-headed households, whose income in 1999 is below poverty level, with children under 5 years. Apparent clusters exist in the cities, such as Willmar, Glencoe, Hutchinson, Litchfield, Buffalo, Rockford, Cokato and Paynesville. In fact, for one block group in Willmar, 100 percent of its families (n = 7) are female-headed households with children under 5 years. It is important to remember that even if a relatively small percentage of families live at or below the poverty level, in some communities, that percentage is frequently comprised of this particularly vulnerable group.

The ultimate objective of these maps is to create awareness and highlight social issues concerning the well-being of the population in the Crow River Watershed. The patterns established indicate the need for increased availability and access to services tailored to women and children, and services for those who are experiencing economic hardship in general.

Sources

1 U.S. Department of Housing and Urban Development. (17 April 2008). "Affordable Housing." Available at www.hud.gov/offices/cpd/affordablehousing

CHAPTER 1: Demographics and Social Fabric

That's Women's Work: A Case Study of Childcare and Women's Decision to Work

by Jessica Mowles, Map by Hannah Gelder

According to national statistics, women in Minnesota are some of the hardest-working in the United States. For over thirty years, the astonishingly high percentage of Minnesotan women in the formal labor force has been significantly greater than national rates. For example, in 2000, 58% of women nationally participated in the formal labor force, whereas 66% of Minnesotan women did the same, ranking the state first in the nation in terms of women workers.[1] The rate of Minnesotan women with children has risen most dramatically over time, climbing 40% from 1970 to 2000 compared with 30% nationally.[2]

This study seeks to better understand one factor behind women's decision to work, recognizing that many are in fact at play. Utilizing data on licensed child care centers in the Crow River Watershed region and percentages of working women, I seek to draw links between availability of child care and women's decision to engage in formal work. To show the relationship between these variables, I will discuss trends in Minnesota state investment in childcare, employ a spatial analysis of the Crow River Watershed region, and perform a statistical analysis. From these outcomes, I conclude that child care accessibility in Minnesota has increased due to state investment and has certainly positively influenced the number of working women.

From this departure, it is essential to understand that this study narrowly defines "work" as labor that is paid and included in the formal sector. Many feminist geographers have problematized this definition of work as excluding much of the work that women perform on a daily, non-paid basis: child care, housework, volunteer or community work, etc. Unfortunately, because these activities are nearly impossible to track, very little data exists on this kind of work, which necessarily excludes it from studies such as this. However, by focusing on the variable of child care as it relates to women entering the formal workforce, I hope to implicitly emphasize the variety, complexity, and vast scope of all women's work.

Crow River Watershed Region

As the Twin Cities of St. Paul and Minneapolis continue to grow as urban and industrial hubs, many parts of the Crow River Watershed region of Minnesota are quickly urbanizing as well, into suburbs and exurbs of the Cities. Whereas most towns in the region were traditionally oriented around agriculture and the nearby Crow River, even some of the smallest towns in the region are now engaged in processes of attracting greater industry, providing more jobs, and enticing more residents, due in part to the region's proximity to the Twin Cities. As urban planners, economic analysts, and local government officials search for sound strategies through which to address increasing development, it is essential that they understand the nature of regional employment patterns, and what kinds of factors either encourage or discourage women from working in the formal labor force. Given widespread revitalization efforts and increased marketing of watershed towns – topics addressed elsewhere in this atlas – it becomes essential to address the work decisions of women.

Women's Work and Barriers to Mobility

Driving down County Road 6 in Carver County, about an hour outside the Twin Cities, one sees multiple housing developments and sites of construction for new developments: Forest Hills, Riverpointe, Fairway Estates, etc. The expansive, gray-sided houses – isolated by long county roads from any grocery, post office, or place of work – evoke the scholar Ann Markusen's ideas about how the spaces occupied by single, suburban-dwelling families inherently limit women's participation in the formal workplace by confining women to residential areas lacking formal work opportunities.[3]

Feminist geographers Hanson and Pratt agree, bringing an argument about distance to the debate. Because men and women have different resources, they explain, women's mobility is often limited by what they call 'friction of distance', or barriers to mobility like lack of transportation, primarily childcare responsibilities, less-developed professional networks, etc.[4] Indeed, Earline King, a teacher in Watertown, remembers demanding her family's one car in order to be able to go to work in the late 1960s. "That was around the time of women's liberation," she said, "so I just told my husband I had to have the car to go to work. You could say I was liberating myself."[5] While many families might own two cars in our present era, other fundamental barriers to mobility remain central to creating a gendered labor market—that is, certain jobs being more or less available to men or women. Household and childcare duties, traditionally assigned to female household members, exist as one prominent barrier for women enter-

ing the formal workforce. The lack or availability of affordable, quality childcare can greatly impact a woman's decision to formally work or not.

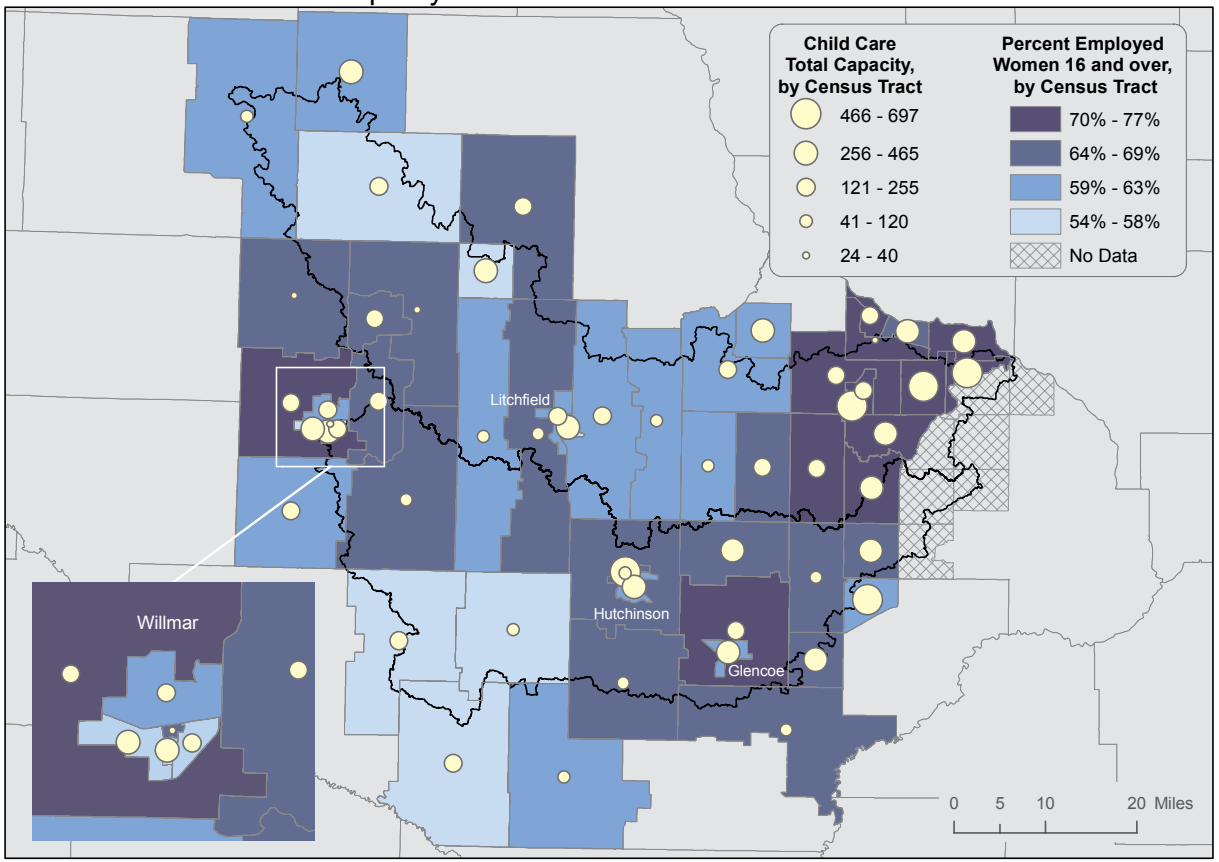
Childcare and the Decision to Work

Women with children in Minnesota work disproportionately more than their national counterparts: one 1997 survey estimated 77% of women with young children work in Minnesota compared to 63% nationwide.[6] Widespread changing cultural expectations and rising costs in living generally explain the nationwide increases, but other factors specific to Minnesota must exist to explain the disparity between these Minnesotan and national rates. *Minnesota Economic Trends* magazine explains that state government funding and tax breaks have been largely responsible for influencing women with children to decide to work.[7] State (as well as federal) funding for childcare increased exponentially throughout the 1990s, channeled largely through the Minnesota Family Investment Program which provides low-income families with sliding-scale reimbursement for childcare. Further, two state tax credits assist families in recovering a portion of childcare costs. These are the Minnesota Working Family Credit and the Dependent Care Credit, and in 1998 were claimed on about 250,000 total tax returns.[8]

Through this information, we see how Minnesota in particular has invested in state programs which endeavor to increase the availability of childcare, therefore influencing the decision of women with children to enter the labor force. To explore the relationship between child care availability and women in the labor force in the Crow River region, I utilized data on number, location, and size of licensed child care providers from the Minnesota Child Care Resource and Referral Network, and percentages of women working in the formal labor force from the 2000 Census. By mapping the percentage of women working by census tract (a geographic area smaller than a county), and plotting the child care centers on top of this information, we see a spatial pattern of where women work and where childcare is most available.

Using these same two variables, I conducted a statistical analysis on the data to explore whether or not the links between the variables were statistically significant. The regression analysis proved that there is no apparent link, in fact, between the variables I tested. However, the statistical test assumes that women utilize childcare centers and work in the same census tract, which is probably not the

Female Employment and Child Care Resources



Cartographer: Hannah Gelder. 25 April 2008. Projection: NAD 83 UTM Zone 15N. Sources: 2000 Census; The Lawrence Group; MN Child Care Resource and Referral Network; ESRI.

case for all women. Further, other factors influence women's decision to work, in addition to childcare, including education levels, cost of living, types of jobs available, etc. These diverse and complex factors also impact the decision of women to work, but are not represented in this particular study.

Conclusion

While statistical analysis proves there is no direct link between childcare availability and percentage of working women, it is clear that childcare remains a significant consideration in women's decision to work. This fact is especially apparent in light of the discussions of feminist geographers on barriers of mobility that are specific to women and inherently limit their participation in the formal workforce. Minnesota's emphasis on encouraging affordable, accessible childcare options no doubt results in higher percentages of women working than states with less investment in childcare. In summary, Minnesotan women sure do work hard—both in the workplace and outside of it!

Sources

1 Trent, Judith, and Casale, Oriane. Why are so many women working? Minnesota Economic Trends Newsletter, published by the Minnesota Department of Employment and Economic Development. December 2000/January 2001. http://www.deed.state.mn.us/lmi/publications/trends/1200/woment.htm.

2 Trent, Judith, and Casale, Oriane. Why are so many women working? Minnesota Economic Trends Newsletter, published by the Minnesota Department of Employment and Economic Development. December 2000/January 2001. http://www.deed.state.mn.us/lmi/publications/trends/1200/women.htm.

3 Markusen, Ann. City spatial structure, women's household work, and national urban policy. In Catharine Simpson, Elsa Dixler, Martha J. Nelson, and Kathryn B. Yatralcis, eds. Women and the American City. Chicago, University of Chicago Press, 1980.

4 Hanson, Susan and Pratt, Geraldine. *Gender, Work, and Space*. New York: Routledge, 1995.

5 Personal interview with Earline King, April 5, 2008.

6 Casale, Oriane. Supporting the workforce: Child day care services in Minnesota. Minnesota Economic Trends Newsletter, published by the Minnesota Department of Employment and Economic Development. March 2000. http://deed.state.mn.us/lmi/publications/trends/0300/child.htm.

7 Casale, Oriane. Supporting the workforce: Child day care services in Minnesota. Minnesota Economic Trends Newsletter, published by the Minnesota Department of Employment and Economic Development. March 2000. http://deed.state.mn.us/lmi/publications/trends/0300/child.htm.

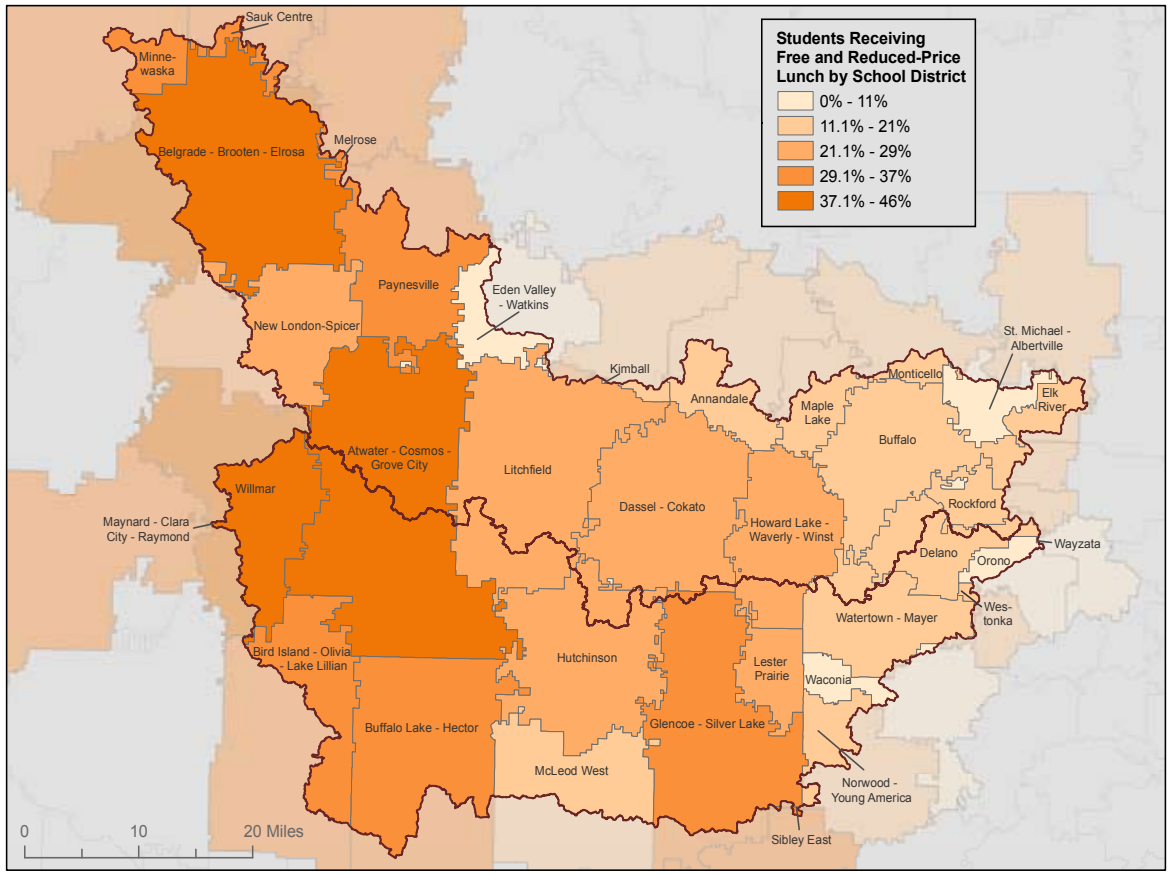
8 Casale, Oriane. Supporting the workforce: Child day care services in Minnesota. Minnesota Economic Trends Newsletter, published by the Minnesota Department of Employment and Economic Development. March 2000. http://deed.state.mn.us/lmi/publications/trends/0300/child.htm.

Students Receiving Free and Reduced-Price Lunch

by Christine Chung and Claire Reuning, Map by Christine Chung and Claire Reuning

The free and reduced-price lunch program is a part of the national School Lunch Program, which requires schools to "serve meals without cost or at reduced cost to children who were determined by local school authorities to be unable to pay the full cost of the lunch, and not to segregate or discriminate against such children in anyway."[1] The government decides whether or not students in a family can receive free or reduced lunches based on established standards for income and how many people live in each household.[2] Students who live in large households and/or in households with low incomes can receive free and reduced-price lunches in public school. These are students who, without the School Lunch Program, would not have enough to eat every day and are considered to be a vulnerable population. The free and reduced-price lunch program is designed to provide low-income children with at least one solid meal a day. Mapping the number of students in this program in the Crow River Watershed gives a good idea of the economic well-being for households with children in the public school districts. While this means that Crow River Watershed households without children in the public schools are not included in this map of economic well-being, it still illustrates the distribution of one of the most vulnerable populations in the Watershed.

Students Receiving Free and Reduced-Price Lunch, 2006



Cartographers: Christine Chung & Claire Reuning. 5 April 2008. Data Projection: NAD83 UTM Zone 15N. Data Sources: Minnesota Department of Education 2006; ESRI, 2006.

There is a distinct pattern visible on the map seen in how the colors darken as they move west across the map. This indicates a trend where the farther west of the Twin Cities a school district is located, the higher the percentages of students receiving free and reduced-price lunches are likely to be. This east-west pattern is also apparent when looking at the actual percentages. The school district with the highest percentage of students receiving free and reduced-price lunch is 46% in Willmar Public School District (in the western Watershed), and the lowest is 5% in the Orono Public School District (in the eastern Watershed). Overall, this map demonstrates that the western portion of the Watershed generally has a higher percentage of vulnerable students than the eastern portion. Mapping this vulnerable student group provides an indication of the overall well-being throughout the Watershed.

The decision to map the percentage of students receiving free and reduced-price lunches reflects

a desire to map general well-being in the Crow River Watershed. To make maps of wellbeing, both social and economic information must be used. There are many different ways to map social and economic data, but the distribution of the percentage of students in the free and reduced-price lunch program highlights the wellbeing of one of the most vulnerable groups, children. Mapping the percentage of students receiving free and reduced-price lunch helps illustrate both the social aspect of a familiar school district area together with local economic circumstances of the Watershed.

Sources

1 Gunderson, G. The National School Lunch Program Background and Development. Accessed 29 February 2008. <http://www.fns.usda.gov/cnd/Lunch/AboutLunch/ProgramHistory_5.htm>

2 "Child Nutrition Programs—Income Eligibility Guidelines." Federal Register 72 (27 February 2007). Accessed 29 February 2008. <http://www.fns.usda.gov/cnd/governance/notices/iegs/IEGs07-08.pdf>

Competitive Charity: Meanings of Healthcare Ownership in Hutchinson, Minnesota,

by Emily Gerteis, Map by Stephanie Kleinschmidt

Hutchinson, Minnesota is in many ways much like other parts of Minnesota: it claims a predominantly Scandinavian ancestry, exhibits a flat, but iconic, mid-western landscape, and provides many fried foods-on-sticks. However, this town, located to the west of the Twin Cities in south-central Minnesota, has a unique political and economic environment. Who provides their electricity? The City of Hutchinson. Who picks up their trash, recycling, and (even) compost? The City of Hutchinson. Who owns their liquor store? Again, the City of Hutchinson.

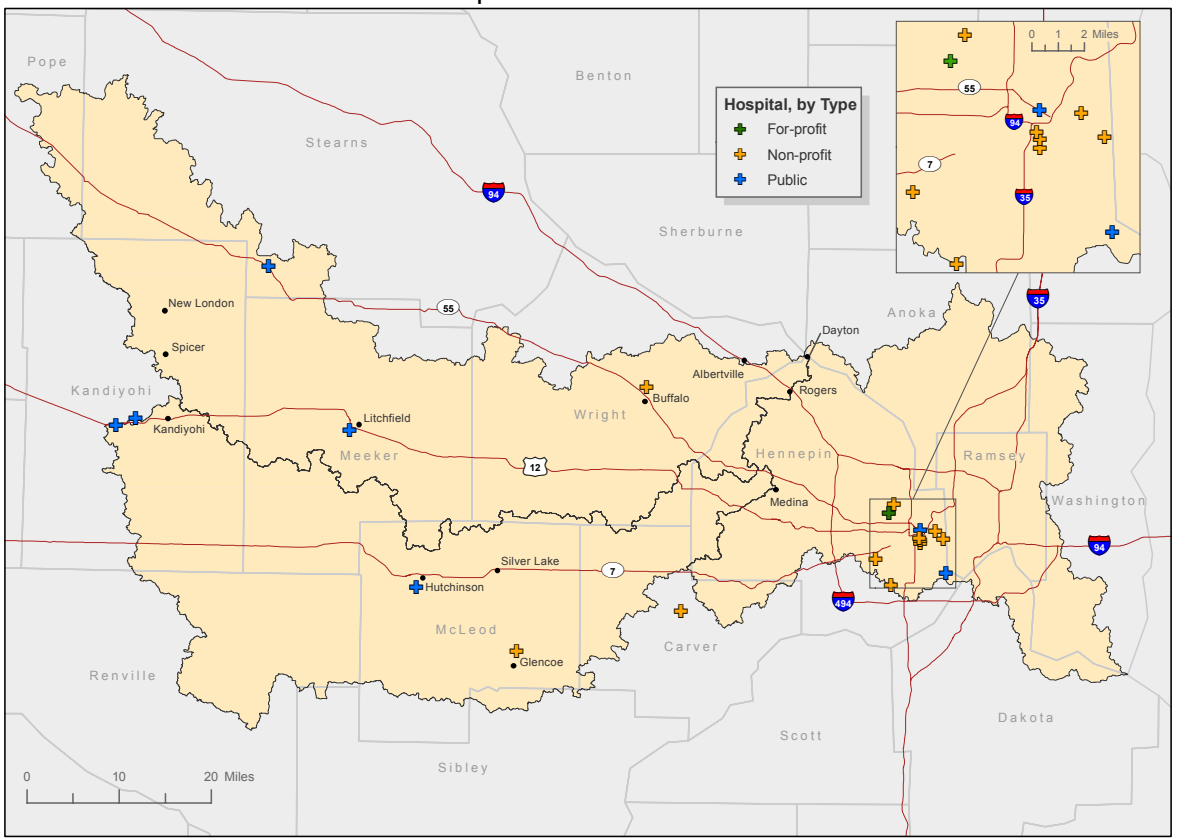
For years, the city has owned and run almost one hundred percent of the local social services.[1] However, as of January 1, 2008, Hutchinson Area Health Care converted from a publicly owned hospital, to a private, non-profit organization with a contracted management from a for-profit corporation. The switch was fuelled by the hospital's need to compete with other hospitals in the area, and to increase the quality of care for its patients. Although privatization is a common regional trend for hospitals across the United States, this change means something specific to the citizens of Hutchinson—something that was community owned for so long is now becoming private, even corporate. Will the new ownership mean a loss of community values in the hospital?

Hutchinson is a unique place. The fact that the nation-wide trend of privatization and corporatization of hospitals is affecting even this publicly-owned town is significant, and presents somewhat of an extreme case. As regional market forces compete with local concerns, documenting the process of a change in hospital ownership as it occurs helps us understand the reasons for it, and the ways it is carried out locally. In the case of Hutchinson, the change in hospital ownership was conducted with responsiveness to local community values. Therefore, with Hutchinson illustrating this national trend, I argue that the increasing competition and corporatization among hospitals does not necessarily indicate a complete dissociation from community values.

Going Corporate: Hutchinson in Context

Hutchinson Area Health Care is now "managed by a hybrid of traditional and corporate managements: a governing board of directors with community roots and values, and a corporate management by Allina."[2] Before the switch on January 1, business decisions went slowly. All of the hospital's business was conducted in public—every meeting, every contract, every major purchase.

Distribution of Hospitals in Crow River Watershed



Cartographer: Stephanie Kleinschmidt. 30 April 2008. Projection: NAD83 UTM Zone 15N. Data Sources: ESRI 2000.

The time and oversight connected with publicly run services slows down business and limits the administration from making timely decisions.[3]

The market-driven competition between private and public hospitals was not an issue until the creation of Medicare and Medicaid in 1965. Before 1965, the poor and the elderly struggled to pay for any sort of health care. But, with government aid, hospitals could now treat all people that came to them for care, regardless of their ability to pay.[4] Furthermore, it became profitable for hospitals to treat as many patients as possible, and a business-like atmosphere was created in which different hospitals had to compete against each other for the most business.[5]

Hutchinson Area Health Care has to compete with three other area hospitals, including Glencoe Regional Health Services, Ridgeview Medical Center in Waconia, and Buffalo Hospital.[6] (See *Distribution of Hospitals in Crow River Watershed,* p. 38). All four of these healthcare centers were publicly owned, until recent years. This put Hutchinson Area Health Care at a disadvantage; as a public institution, all of their meetings, contracts, and decisions were public information, and therefore available to their competitors.[7]

Traditionally, hospitals had a charitable status within communities, and were not forced to compete with other hospitals in this way. But with the creation of Medicare and Medicaid, there was a surge in the numbers of for-profit hospitals.[8] These hospitals were able to quickly enter areas of rapid civilian growth, meeting the need for those communities where non-profits were slow to respond.[9] This corporatization of health care led to its disengagement from local communities, which is what prompted concern for citizens in Hutchinson.

But scholars have more recently been discussing the option of a private, non-profit status with a more effective, organized, corporate management. To keep their competitive edge against for-profit hospitals, non-profits must have both their charitable, trustworthy characteristics, but also have a strong management style, like that of a corporate hospital. By converting to non-profit, Hutchinson's hospital could keep its community identity and continue to serve specific community needs. With a private status and a contracted management, it could conduct business at a much faster pace than with the public system.

For example, if the hospital was looking to purchase a new medical technology, as a public institution, the barriers with acquiring this technology would be monumental. Not only would it have to be completely public with its interest in and intent to purchase this technology, but "by law, they have to solicit competitive bids, and take the lowest one. This takes a lot of time, sometimes up to several months."[10] However, as a private hospital, it could conduct a search, negotiate with companies, and take any contract most beneficial to the hospital. As a private institution, with business done behind closed doors, competition can be maintained more effectively.

Keeping it Local:
Responsiveness to Community Needs

Although the ownership switch was good for the regional competitiveness of the hospital, for the citizens of Hutchinson this change meant something entirely different. The ways in which the hospital interacted with Hutchinson would be changing with its ownership. How would the change in ownership alter these interactions and relationships, and what could those changes mean for the people and the city?

Three main concerns arose during the transition from public to private: (1) an impact on the community and patient concerns, (2) employer changes and employee concerns, and (3) the effect on the city and their continued voice in the hospital's management. However, it was the reaction to these public concerns that made this process so unique. Not only were these issues recognized, but comprehensive steps were taken by the hospital administration and the city to respond to each concern in order to preserve local values in the new management.[11]

For patients and potential patients, there was a general fear of change. Something that was community owned for so long was becoming private, and potentially falling out of community hands. This group feared that the change would have negative effects on the quality of healthcare that the hospital would provide, especially their personal connections with specific doctors and nurses. However, Marc Sebora, Hutchinson's Civic Attorney, made sure to convey that nothing would change at the hospital. Through public media, they ensured the citizens that nothing significant was going to change, and that they would have the same doctors and nurses they had before.

Doctors, nurses, and staff of the hospital were concerned about lay-offs. With corporate influ-

ence coming into the hospital, would jobs be cut? Additionally, by working in a public hospital the staff were essentially working for the government of Hutchinson. Employees had great government benefits and pensions that were perceived to be in jeopardy. Again, Sebora took the initiative to organize workshops and meetings to inform the staff of the changes and new benefits, that were guaranteed to keep their needs in mind.

The city was not immune to the fear of change common in the general community. From the city's perspective, they were losing control of an important industry in their town. No longer would the board of directors at the hospital be completely overseen by the Hutchinson city government. However, they understood the benefits a change in ownership could bring to the city. As a way to preserve the community perspective in the hospital's management, one of the city's stipulations was to keep several city council members on the board of directors. This was also to ensure that the hospital was not sold for a profit to some other company, without the city's input.

The ways in which the change in ownership was conducted clearly show responsiveness to community needs. Not only was it the intent to address community concerns about the effects of going private, but it was a part of the entire process. Although citizens feared a loss of community connection to the hospital as in the case of many for-profit institutions, the combined non-profit status and contracted management seems to be the best of both worlds—preserving community identity in an important social service, and maintaining the effectiveness of a for-profit management. In the case of Hutchinson, increasing competition and corporatization of its hospital did not indicate a disassociation from community values.

Conclusion

Hutchinson, Minnesota provides a current story of a change in hospital ownership, and what that change means at local and regional levels. It also provides somewhat of an extreme case when considering that almost 100% of social services were previously owned by the city. This case study can add to the dialogue on hospital ownership, and important concepts of space and identity to the conversation. If Hutchinson had not been a publicly owned town, would the change have been so concerning? Further study in the area of social services and community identity should be conducted in order to gain a better understanding of these concepts. But in Hutchinson, it seems clear that "the change will be positive. The hospital will be able to try new things with more flexibility, and there will be no changes for citizens and patients, or employees. No dissatisfaction."[12]

Sources

1 City of Hutchinson Official Website; New Resident Information. Accessed at: http://www.ci.hutchinson.mn.us/newresident.htm, on 22 April 2008.

2 Interview with Marc Sebora, Hutchinson Civic Attorney. Conducted by phone. 2 April 2008.

3 Interview with Marc Sebora, Hutchinson Civic Attorney. Conducted by phone. 2 April 2008.

4 Stevens, Rosemary. 2007. Chapter 5: "Anatomy of a Dilemma: Creating and Implementing Medicaid, 1965-1970" in The Public Private Health Care State: Essays on the history of American health care policy. New Brunswick, NJ: Transaction Publishers.

5 Gray, Bradford H. and Mark Schlesinger. 2002. "Health" in The State of Non-profit America. Lester M. Salamon, Editor. Washington D.C.: Brookings Institution Press.

6 Interview with Marc Sebora, Hutchinson Civic Attorney. Conducted by phone. 2 April 2008.

7 Hanneman, Doug. "Hospital expert offers insights: Task force takes in more information to decide city hospital's future". *Hutchinson Leader,* 6 January 2005, 6A.

8 Gray, Bradford H. and Mark Schlesinger. 2002. "Health" in The State of Non-profit America. Lester M. Salamon, Editor. Washington D.C.: Brookings Institution Press. Cited: p.77.

9 Bays, Carson W. 1983a. *Why Most Private Hospitals are Non-profit*. Journal of Policy Analysis and Management, Vol. 2, No. 3, pp. 366-385. Cited: p.374

10 Interview with Marc Sebora, Hutchinson Civic Attorney. Conducted by phone. 2 April 2008.

11 Interview with Marc Sebora, Hutchinson Civic Attorney. Conducted by phone. 2 April 2008.

12 Interview with Marc Sebora, Hutchinson Civic Attorney. Conducted by phone. 2 April 2008.

Veterans Organizations and Military Recruitment, *by Robert Heyman, Map by Robert Heyman and Sandy Robson*

In looking at both Military Recruitment and the location of Veterans' Social Organizations we are considering two sides of the same coin. The Veterans' halls, so prominent in the local landscapes of small towns and cities across America, are a reflection of our nation's past propensity to take up arms and a testament to the service of its citizens. The existence of these halls tells us something about the history of our nation's foreign policy, its commitment to civic duty, and the past prevalence of strong social communities and organizations. The location of these halls in the center of town or in some other prominent location speaks to the importance that the military and military service have had in the American psyche.

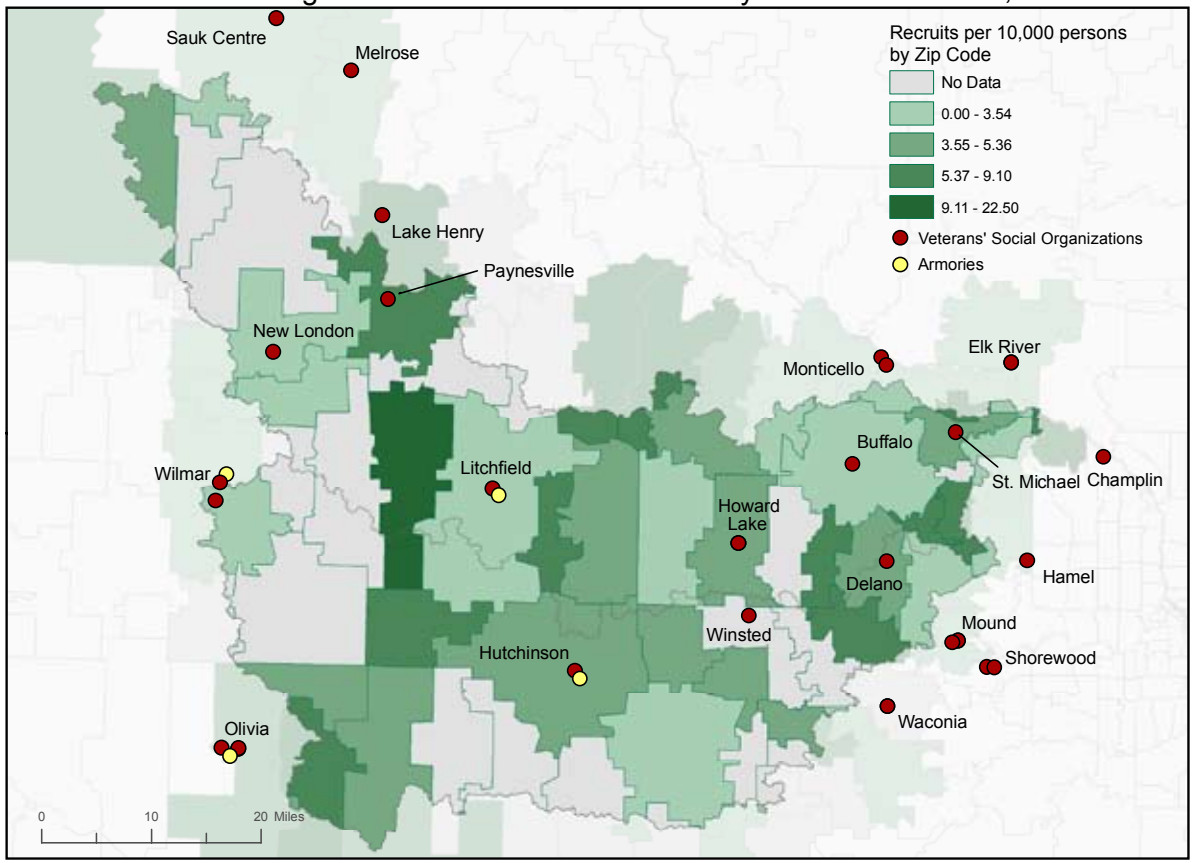
Also included are the locations of National Guard Armories, but those do not seem to have a significant impact or role in the issue.

The distribution of recruits illustrates the present importance of the military in American civic life. Indeed, the impression one garners from looking at the recruitment data is the distinct lack of a pattern. The locations of the Veteran's Organizations, discussed above, seem to have no correlation with the propensity of a place to produce recruits. The most important thing indicated by the recruit data is that, with the exception of one zip code, all areas show low levels of propensity for military service. Given that recent research indicates that propensity towards military service now is largely determined by value specific decisions on the level of individuals[1,2], it appears that these low levels of recruitment indicate a shift on the part of the population away from military service.

This observation is startling, but especially important given our presence in two wars overseas. It appears that a generational break has occurred regarding propensity to join the military, one that likely also affects Americans' desires for future military action. Such a finding seems to be in line with the frequent reports that the military is either failing to meet its recruitment quotas or having to lower standards in order to meet them[3]. There appears to be evidence here that a significant change is coming in the ways Americans approach foreign policy with this resulting from a shift in societal values towards rejecting military force as an implement of policy.

Finally, these trends do not bode well for the future of Veterans Social Organizations such as the American Legion and VFW. If the trend identified here is correct, they would be left as a vestige of

Veterans' Organizations and Military Recruitment, 2004



Cartographers: Robert Heyman & Sandy Robson. 05 March 2008; Projection: NAD 83 UTM Zone 15 N. Data Sources: National Priorities Project (2004), ESRI (2006), YellowBook.Com (2007).

a past era in American society. While this would have an impact on our nation's military and foreign policy, its greatest impacts would likely affect the social capital of the towns and cities they serve. If the presence of these organizations declines, with no apparent successor, many communities could be deprived of one of their main centers for community cohesion and collective action. Indeed, should this decline occur, one of the most interesting things going forward, especially for places like the towns depicted, will be to see if and how such organizations are replaced.

This map page 42 depicts the locations of Veterans' Social Organizations (American Legion and Veterans of Foreign Wars Halls) and National Guard Armories over a data layer showing the number of military recruits, for all regular duty branches and the Army Reserve, per 10,000 residents in each zip code. The National Priorities Project collected the recruitment data in 2004, and the locations of Veterans' Social Organizations and National Guard Armories were obtained from YellowBook.com.

Photo courtesy of Victoria Harris.

Sources

1 Eighmey, John. "Why do Youth Enlist? Identification of Underlying Themes." Armed Forces and Society. Vol. 32, Number 2. (2006): 307-328.

2 Woodruff, Todd, Ryan Kelty, and David R. Segal. "Propensity to Serve and Motivation to Enlist among American Combat Soldiers." Armed Forces and Society. Vol. 24, Number 3. (2006): 353-366.

3 Gehring, John. "Army Launches Plan To Recruit High School Dropouts." Education Week. Vol. 19, Issue 23. 16 Feb. 2000: 3.

CHAPTER 1: Demographics and Social Fabric

Mental Maps and Spatial Behavior in the Crow River Watershed, *by Elana Dahlberg, Maps by Wade Miller*

Learning how local residents perceive and react to the changes happening in the Crow River Watershed in Central Minnesota is a crucial way for discovering and confronting problems that arise from urbanization. This chapter is focused on several questions about sense of place and spatial behavior. How do eighth and ninth grade students in the Crow River Watershed organize space? What is the students' sense of place and how do they behave spatially? What impact do the students' perceptions have on the impending urbanization in the Crow River Watershed? This topic is important because it will help residents and others understand how the students perceive the changes happening in their local town/environment due to the urbanization, confront or ignore the difficulties and issues associated with this urbanization, and accept/deny the impending urbanization in the Crow River Watershed.

The approach to this project was to work with students in the Crow River Watershed to understand their sense of place and how their perceptions will impact the impending urbanization on the area. A group of twenty eighth and ninth grade students from Hutchinson, Litchfield, and Rockford were chosen as participants. These towns were chosen because they provided a varied sample of the small towns in the Crow River Watershed. All three towns are currently in different stages of development. Table 1 and 2 include some of the main demographics of the towns and the students sampled.[1] The expansion of urbanization has affected the towns differently due to their varied population, economics, and distance from the Twin Cities.

Methodology

Students were interviewed in their classrooms where they participated in sketching mental maps, filling out questionnaires, and logging time diaries for two weeks. During this period observations were made to gather the natural perceptions and languages that the students shared with each other and the interviewer while discussing their town. The students completed questionnaires that included questions such as: how long the students had lived in their neighborhood, describing their neighborhood, where their guardians worked, what they like to do in their spare time, etc. This background information provides a better understanding of the foundation to their perceptions.

A person's perception of the world is known as a mental map. A men-

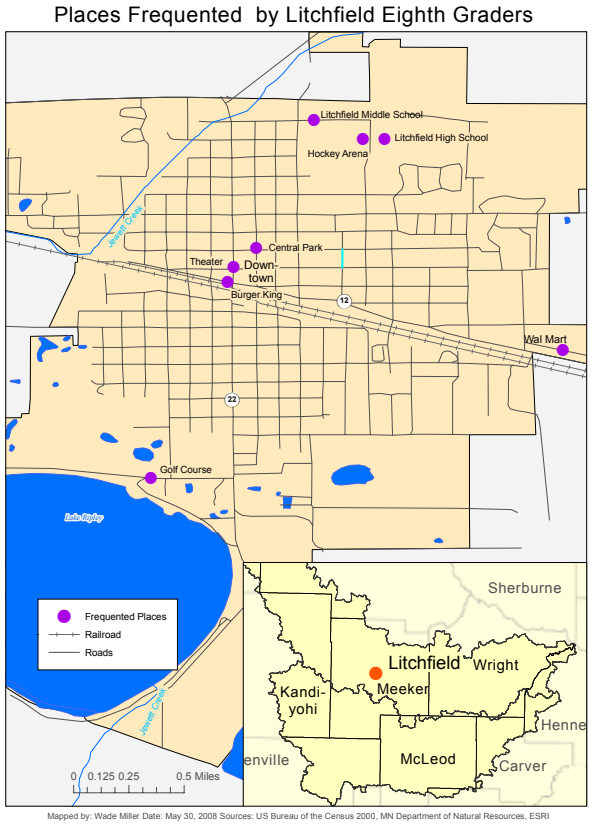
Table 1. *Demographic of Towns*

Town	Population*	Racial Makeup*	Median Income*	Distance from Minneapolis	Economy
Hutchinson	13,080	96.24% white	$42,278	60.92 miles 1 hr. 21 min commute	Hutchinson Technology and 3M
Litchfield	6,562	94.6% white	$36, 021	66.6 miles 1hr. 24min commute	Farming and Railroad
Rockford	3,484	97.56% white	$51,349	27 miles 35min commute	Farming and Commuting

Sources: Data marked with an asterisk (*) were taken from the US Census Bureau's 2000 Census.

Table 2. *Demographic of Student Sample*

Town	Class Included Students From the Following Places	Age of Students	Average Number of Years in Current Neighborhood	Percent of Students Defining Their Neighborhood as Rural	Percent of Students Who Have at least One Parent Commuting
Hutchinson	Primarily Hutchinson. Also Stewart, and Buffalo Lake	13 & 14	11 yrs	11%	38%
Litchfield	Primarily Litchfield. Also Kingston and Buffalo Lake	14 & 15	7.9 yrs	56%	56%
Rockford	Rockford, Corcoran, Greenfield, and Buffalo	13 & 15	7.3 yrs	63%	*89%*



tal map is an individual's own internal map of their known world. Mental maps help determine from the public such subjective qualities as personal preference and practical uses of geography like driving directions. Students were asked to sketch three mental maps, each on a blank white sheet of printer paper. First they drew a map of their town, then a map of the Crow River Watershed, and finally a map of places they like to visit that they can travel to and from in a day. The students were encouraged to include as much detail as they could and attempt to incorporate all five elements of mental maps: nodes, districts, landmarks, edges, and intersections. This technique was taking from the book *The Image of the City*,[2] written by Kevin Lynch who developed this methodology. The study's goal was to find patterns throughout each town and the watershed as to how the students organize and order space.

The last research method asked the students to keep a diary for two weeks in which they recorded an entry for every time they traveled somewhere. They included the time, where they traveled, and how they got there for every entry whether it was to the gas station on their bike or driving across the state. Time geography or time-space geography traces its roots back to the Swedish geographer Torsten Hagerstrand who stressed the temporal factor in spatial human activities.[3] Space-time diaries are an important way of collecting information on the students' personal experiences. This material showed individual patterns for each of the three towns as well as patterns throughout the whole watershed.

Litchfield

Many of the students in Litchfield organized their town referencing commercial space along with Lake Ripley, the Railroad, and Main Street. Main Street in Litchfield includes a teen "hangout", the local movie theater. This suggests that the students did not include Main Street for its historical importance but rather because it holds an individual location relative to them. Much of Litchfield's commercial development is recent. For example, Wal-Mart has been built within the last year. Generally the students are very excited for Wal-Mart and are anticipating further commercial development. The students put a lot of emphasis on traveling outside of Litchfield. They link themselves with the cities and Hutchinson because of shopping. They also pride themselves with the Largest Ball of Twine in nearby Darwin. For the students, the Ball of Twine is a source of identity that is known outside the watershed. It is an important landmark that attracts outsiders to the area. **(**See Figure 1**)**

Hutchinson

In Hutchinson students put more detail into their local map. They were not as concerned about other areas of the Watershed. Their maps were primar-

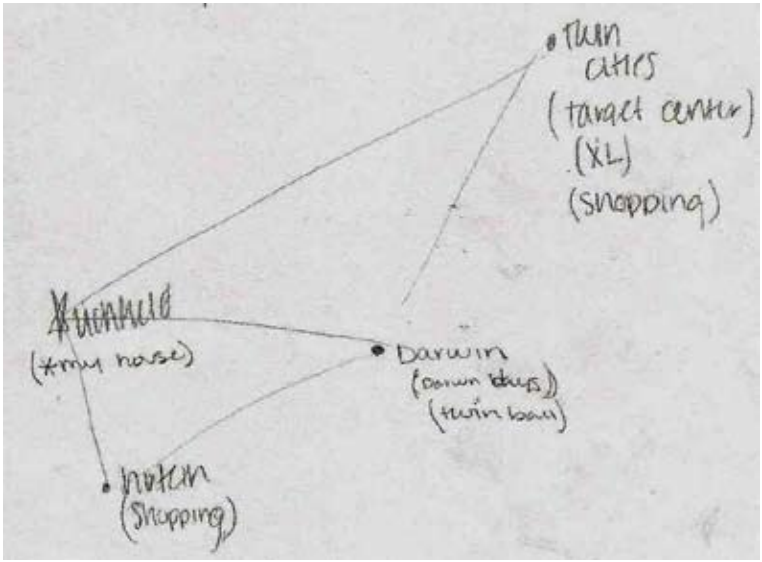


Figure 1. A student's mental map of Litchfield.

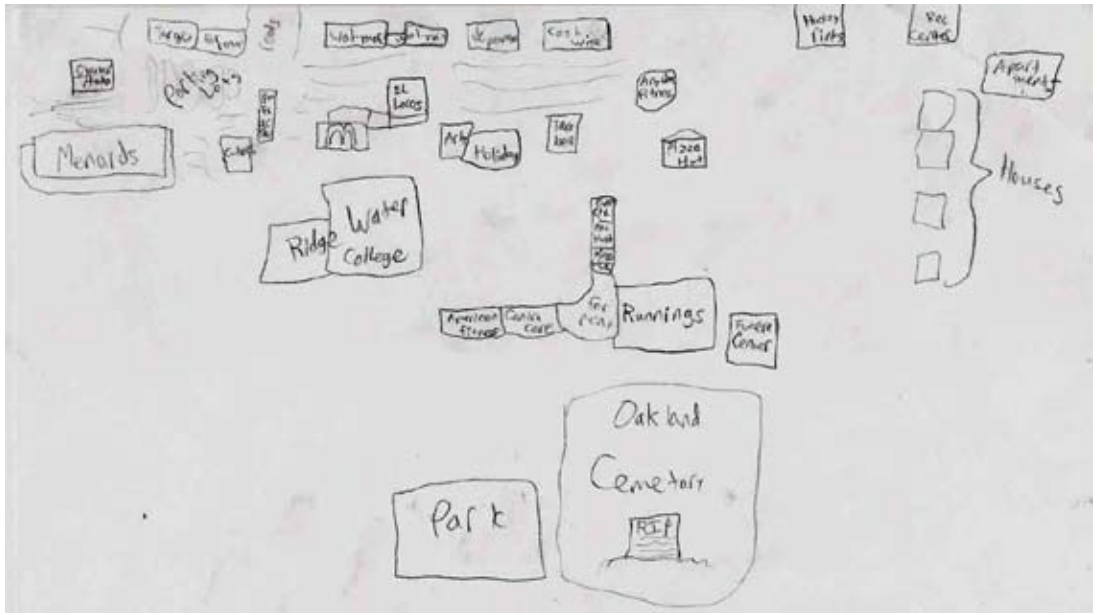


Figure 2. A student's mental map of Hutchinson.

ily organized around the commercial space. The commercial development in Hutchinson is much greater than that of Litchfield. The large box stores such as Target and Wal-Mart have existed for longer and attracted additional commercial development. As can be seen in the mental maps the students' perceptions have been dominated by commercial space. Many students ignored prominent elements of the landscape including the Crow River, Railroad, 3M, and even roads to and from the commercial areas. The time diaries showed that the students frequently visit commercial stores such as the fast food chains, Wal-Mart, Target, and the Mall. They are not just traveling to these stores because their parents need to shop, but rather they are choosing to walk or bike there with friends and often "hanging" out or walking around without purchasing anything. The mall phenomena of indoor urban malls becoming a teen hangout have been occurring for over a decade. However, it appears that large individual stores are becoming similar destinations in rural areas to the urban malls. (See Figure 2)

Rockford

The greatest impact of residential development occurred in Rockford where the students focused on the development of houses, rather than commercial development. The students talked about the town becoming a "suburb" and enjoying living in cul-de-sacs. Even the rural farm students chose to include cul-de-sacs rather than farms when sketching Rockford (see Figure 3 on p. 47). Most students were more interested in going to Target in nearby Medina or shopping elsewhere rather than spending time in Rockford. Many of them referenced their houses in terms of biking distance or time to Target. It was notable that most preferred hang ing out at Target rather than the local recreation center. Overall, the students enjoy the towns growing population because it meant the arrival of new friends. However, they talked negatively about the high income homes or "million dollar homes" being built in the area. (See Figure 3)

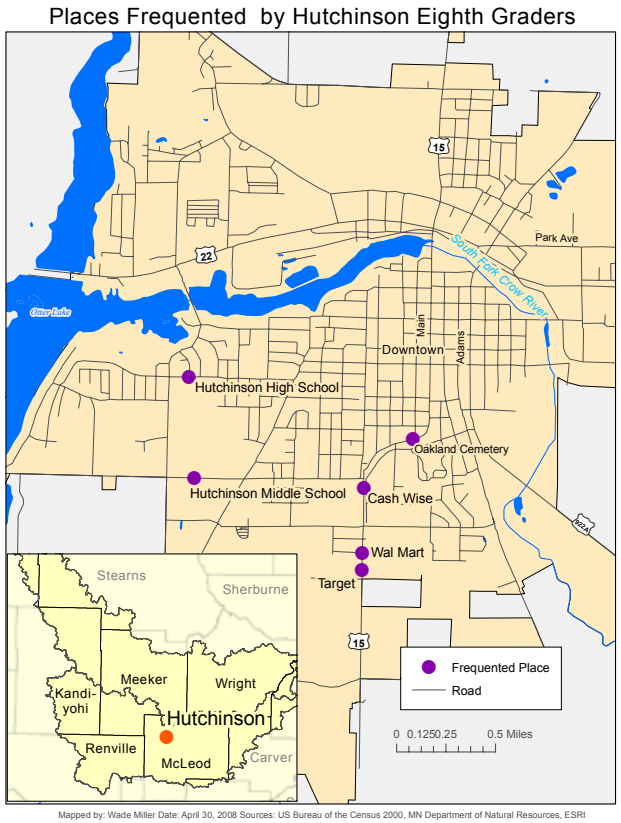


Figure 3. A student's mental map of Rockford.

Patterns throughout Watershed

Throughout the watershed the students tended to organize space by commercial and public areas rather than open and natural space. They do not frequent the historic parts of towns or the Main Streets and instead hang out at a single store like Target or Wal-Mart. In addition, the students frequently described themselves as "hicks". This suggests that many of the students still perceive the watershed as a rural area even though they tend to ignore the open and natural space. They also often used "hood, ghetto, gangs" when referring to the Cities. The students made a clear distinction between themselves and residents in the Twin Cities.

Future

The research in this section provided evidence that the students support both the growing population and commercial activity of their towns. As a trend the students approve of the population growth because "it means there will be more friends", said one student. However, they expect for these new residents to have the same background as them. Yet, as demographic characteristics of their towns continue to change some issues may occur with these students accepting a more diverse community in regards to race and income. The students associate the Twin Cities most commonly with the Mall of America and Xcel Energy Center. However, they also describe it as "ghetto-that's where the black people live", said one student. This perception may create difficulties in their community to accept the demographic changes that come with urbanization including diversity and income levels.

This field research showed a lack of the students' sense of understanding for the environmental and historical degradation occurring because of the growth of commercial activity. It is not expected for the students at their age to have the background information to have understood and integrated the repercussions of commercial development in their community. However, it is important for them to begin receiving education on smart consumerism and the importance of environmental and historical preservation. Continued research on this topic and interactions with local individuals is an important step to help understand and tackle present and future concerns in the Crow River Watershed.

Sources

1 Census Bureau. 2000. February 28, 2007. <www.census.gov>

2 Lynch, Kevin. The Image of the City, Kevin Lynch. 1960. Massachusetts Institute of Technology and the President and Fellows of Harvard College.

3 Pred, Allan (ed.); 1981; Space and Time in Geography - Essays Dedicated to Torsten Hägerstrand; CWK Gleerup, Lund.