



**AgEcon** SEARCH

RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.*

# Population Change in the Great Plains

## A History of Prolonged Decline

*Agricultural restructuring has dramatically redistributed population in the Great Plains. The region's few counties with large urban centers have grown while the majority of counties, mostly rural, have declined. Prolonged outmigration of young families has distorted the age distribution in many counties and further perpetuated population loss by creating high proportions of elderly and by increasing natural decline.*

The issue of population loss in the Great Plains is somewhat complex and controversial. From a regional perspective, the Great Plains actually increased its population base by more than 3.7 million people between 1950 and 1996. Hidden in the aggregate regional totals, however, is a very different picture of population redistribution. Most of the residential growth has been confined to metro counties. In fact, nonmetro counties lost nearly 223,000 people over the 46-year period.

Although the exact boundaries of the Great Plains are debated (see "What is the Great Plains?" on p. 5), one thing is clear: This 11-State area from Montana and North Dakota to New Mexico and Texas has lagged behind population advances in other regions for more than five decades. Most researchers attribute this situation to the region's dependence on agriculture.

### **Largest Cities Attract Great Plains Residents**

The consolidation of residents in metro areas in the Great Plains was dramatic between 1950 and 1996 (table 1). During that time, the number of people living in metro areas grew by nearly 4 million (152 percent). What is particularly noteworthy is that the growth was sustained

over each decade. In contrast, the nonmetro population declined by 5 percent. The limited residential growth that was sustained in nonmetro areas over the period occurred in larger urban centers. Urban nonmetro counties with a city of at least 20,000 people grew by 39 percent. The less urban nonmetro counties (with a city between 2,500 and 19,999) only managed minor growth spurts during the decades of the 1950's and 1970's. Although recent population estimates indicate this county grouping is once again growing, the aggregate population total for less urban counties in the region is still down slightly from what it was in 1950. Rural nonmetro counties (those that lacked a city of at least 2,500 people) showed the most dramatic decline, losing more than a third of their population base between 1950 and 1996.

This pattern of population redistribution is disturbing when placed in context. The 40 metro counties represent only 8.4 percent of all counties in the region but account for 93 percent of the total residential growth between 1950 and 1996 (fig. 1). When you combine the 40 metro counties with the 25 nonmetro counties containing large urban centers you find that almost all of the region's aggregate population growth since 1950 was concentrated in less than 14 percent of the region's counties. Most counties (52 percent) in the Great Plains are rural and their aggregate losses totaled over a half million people. In total, 323 of the region's 478 counties (68 percent) had a smaller population base in 1996 than they did in 1950. Thus, the aggregate population totals are misleading because they suggest that the entire region is growing when in fact

---

Richard Rathge is a professor in the departments of Agricultural Economics and Sociology at North Dakota State University and director of the North Dakota State Data Center. Paula Highman is a graduate assistant in the department of Sociology at North Dakota State University and researcher at the North Dakota State Data Center. This research was a cooperative project with Kansas State University through a grant from the Economic Research Service, USDA.

Table 1

**Total population change in the Great Plains by county type, 1950-96***Population growth is concentrated in the metro counties*

Year	Total	County type				
		Metro	Nonmetro*			
			Total	Urban	Less urban	Rural
Number						
1950	7,053,856	2,603,544	4,450,312	785,667	2,188,804	1,475,783
1960	8,170,205	3,719,812	4,450,393	942,341	2,203,542	1,304,463
1970	8,562,139	4,386,611	4,175,528	970,156	2,068,663	1,136,645
1980	9,738,476	5,345,311	4,393,165	1,052,342	2,238,912	1,101,845
1990	10,116,614	5,931,534	4,185,080	1,061,915	2,133,919	989,194
1996	10,781,828	6,554,125	4,227,703	1,095,273	2,162,748	969,682
Change 1950-96: Population	3,727,972	3,950,581	-222,609	309,606	-26,056	-506,101
Percent						
Rate	52.9	151.7	-5.0	39.4	-1.2	-34.3

\* Nonmetro counties are classified into three subtypes: Urban nonmetro counties are counties with a city of at least 20,000 people, less urban nonmetro counties are counties with a city between 2,500 and 19,999 people, and rural nonmetro counties are counties without a city of at least 2,500 people.

Source: U.S. Bureau of the Census, decennial census counts and estimates from the Federal-State Cooperative for Population Estimates.

more than two-thirds of the counties in the region have declined in population.

### Population Change a Mixed Bag

The history of population change in the Great Plains is marked by a mixture of growth and decline. Nearly 53 percent of the counties in the region had some period of growth between 1950 and 1996, but fewer than 9 percent of the counties posted continuous population gains (fig. 2). What is striking, however, is the fact that more than 38 percent of the counties consistently declined since 1950. Of the 184 continuous-decline counties, nearly one in five lost population at a rate in excess of 5 percent per decade. The areas dominated by persistent decline were in the Dakotas, northern Kansas, and north Texas where population losses are exacerbated by the sparsely populated character of the location. The most recent ranking of all 3,142 U.S. counties highlighted these trends, showing that two-thirds of the 50 counties posting the greatest proportional losses between 1950 and 1996 were from the Great Plains.

The Great Plains has been undergoing residential concentration for decades. Fifty-eight percent of the metro counties in the region sustained continuous population growth since 1950, while the remaining 42 percent had a mixed growth record (table 2). Nonmetro counties with large urban centers had a less impressive growth trend with a little over one in four sustaining constant growth.

Nonetheless, none of these 25 counties consistently declined over the 46-year period. In contrast, over 48 percent of the rural nonmetro counties continuously declined since 1950, and 15 percent of the less urban nonmetro counties had a similar pattern of constant residential loss.

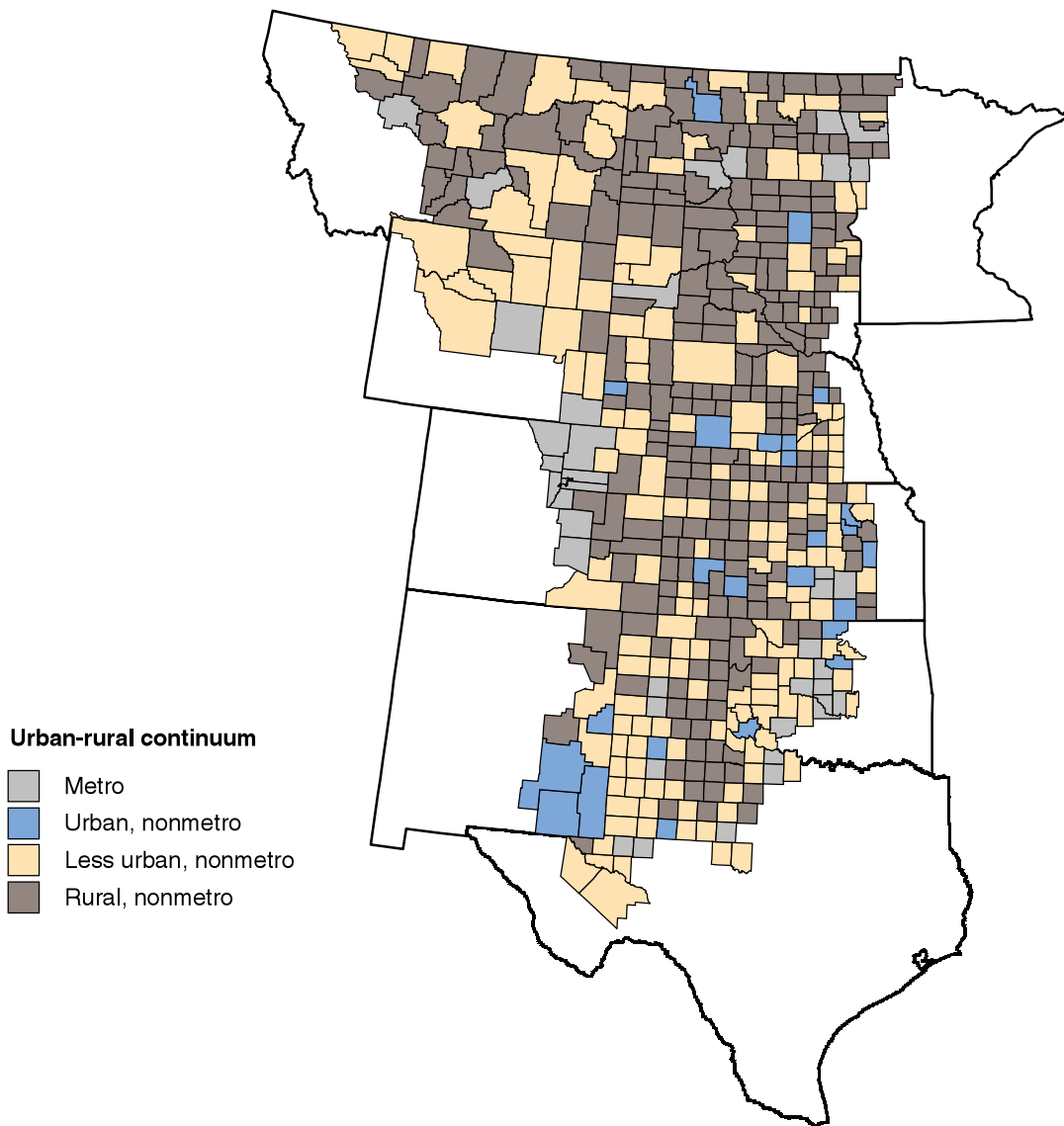
### Agricultural Dependency Major Source of Population Loss

The Great Plains economy is still dominated by agriculture, and the majority of nonmetro counties in the region are classified as farm-dependent. Farm-dependent counties are those in which at least 20 percent of the total labor and proprietor income is derived from farming. Rural residential loss, especially in farm-dependent counties, is largely due to a lack of employment opportunities. Technological advances in agriculture have dramatically reduced the need for labor by increasing production and the amount of land one person can efficiently operate. For example, the index of agricultural output per hour of farm work rose about 1,300 percent between 1940 and 1989. Productivity has more than doubled per acre, while harvested cropland has remained relatively stable over the past four decades. As a result, average farm size has dramatically increased in the region, translating into reduced farm numbers and farm population. This downsizing has spilled over into neighboring farm communities in the form of fewer demands for services, which in turn, has reduced related employment opportunities in these communities.

Figure 1

## Classification of counties in the Great Plains based on an urban-rural continuum

*The Great Plains is dominated by nonmetro counties, especially those lacking an urban place*



Source: U.S. Department of Agriculture, ERS, 1993 Beale codes.

The magnitude of farm population losses due to agricultural restructuring is overwhelming. For example, in 1940, those living on farms in the United States topped 30 million, or one-fourth of the Nation's population. Recent estimates suggest fewer than 5 million farm residents, representing less than 2 percent of the Nation's current population.

Evidence of the selective nature of rural population loss in the Great Plains is shown in figure 3. More than half of the continuously declining counties in the region had at least 38 percent of their total employment based in agriculture. In contrast, only 2 percent of the counties with that level of agricultural employment consistently grew since 1950. On the other hand, more than three-quarters

of continuous-growth counties had an agricultural employment base under 16 percent.

### Few Youth and More Elderly in Great Plains

A consequence of the selective nature of population redistribution in the region is a changing age profile. Residents who leave, especially for employment reasons, tend to be in their early or midcareer stages. This form of selective migration distorts the age structure of a county by decreasing the number of young adults and enlarging the proportion of elderly. Nearly half of the continuously declining counties had a median age above 35 years (fig. 4). In contrast, the median age in more than two-thirds of the continuous-growth counties was under 29 years.

This disparity highlights a growing elderly population located largely in rural counties that are consistently declining. For example, seniors (age 65 and over) averaged more than 15 percent of the total population since 1950 in nearly one-third of the Great Plains counties. Seniors represented only 8 percent of the national population in 1950, and their proportion is still under 13 percent today. Two-thirds of these counties with high concentrations of elderly have consistently declined since 1950, while none have consistently grown. This imbalance reflects the disproportional movement of young adults and families from rural counties to larger metro centers.

Thus, the elderly who remain behind represent a growing proportion of the rural population.

A deficit of young adults has important ramifications for the county's ability to grow. The loss of young families results in a corresponding reduction in children. An imbalance in the age structure caused by the outmigration of young adults leads to a natural decrease (when more people die in a county than are born). Natural-decrease counties are extremely vulnerable, because population growth depends on their ability to offset natural decline with net immigration.

Table 2

**Growth pattern in the Great Plains by county type, 1950-96**

*Sustained population growth occurred predominately in metro counties, while continuous population loss was found mainly in rural nonmetro counties*

Growth pattern	County type									
	Total		Metro		Nonmetro*					
	No.	Pct.	No.	Pct.	Urban		Less urban		Rural	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Continuous growth	39	8.2	23	57.5	7	28.0	8	4.8	1	0.4
Mixed growth-decline	294	61.5	17	42.5	18	72.0	133	80.1	126	51.0
Continuous decline	145	30.3	0	0	0	0	25	15.1	120	48.6
Total	478	100.0	40	100.0	25	100.0	166	100.0	247	100.0

\* Nonmetro counties are classified into three subtypes: Urban nonmetro counties are counties with a city of at least 20,000 people, less urban nonmetro counties are counties with a city between 2,500 and 19,999 people, and rural nonmetro counties are counties without a city of at least 2,500 people.

Source: U.S. Bureau of the Census, decennial census counts and estimates from the Federal-State Cooperative for Population Estimates.

**Data and Definitions**

**Data**

Data were obtained from the U.S. Bureau of the Census from three major sources: decennial census, from 1950-90; population estimates from the Federal-State Cooperative for Population Estimates (FSCPE); and various editions of the *County-City Data Book*.

**Definitions**

*Growth county codes—*

Continuous-growth counties included those counties that had consistently higher decennial census counts between 1950 and 1990 and higher population estimates in 1996 than in 1990. Mixed-growth counties posted a decennial gain between 1950 and 1990, or a higher population estimate in 1996 than in 1990, but had interrupted growth during that time span. Continuous-decline counties had consistently lower decennial census counts between 1950 and 1990 and a lower 1996 population estimate than 1990.

*County codes—*

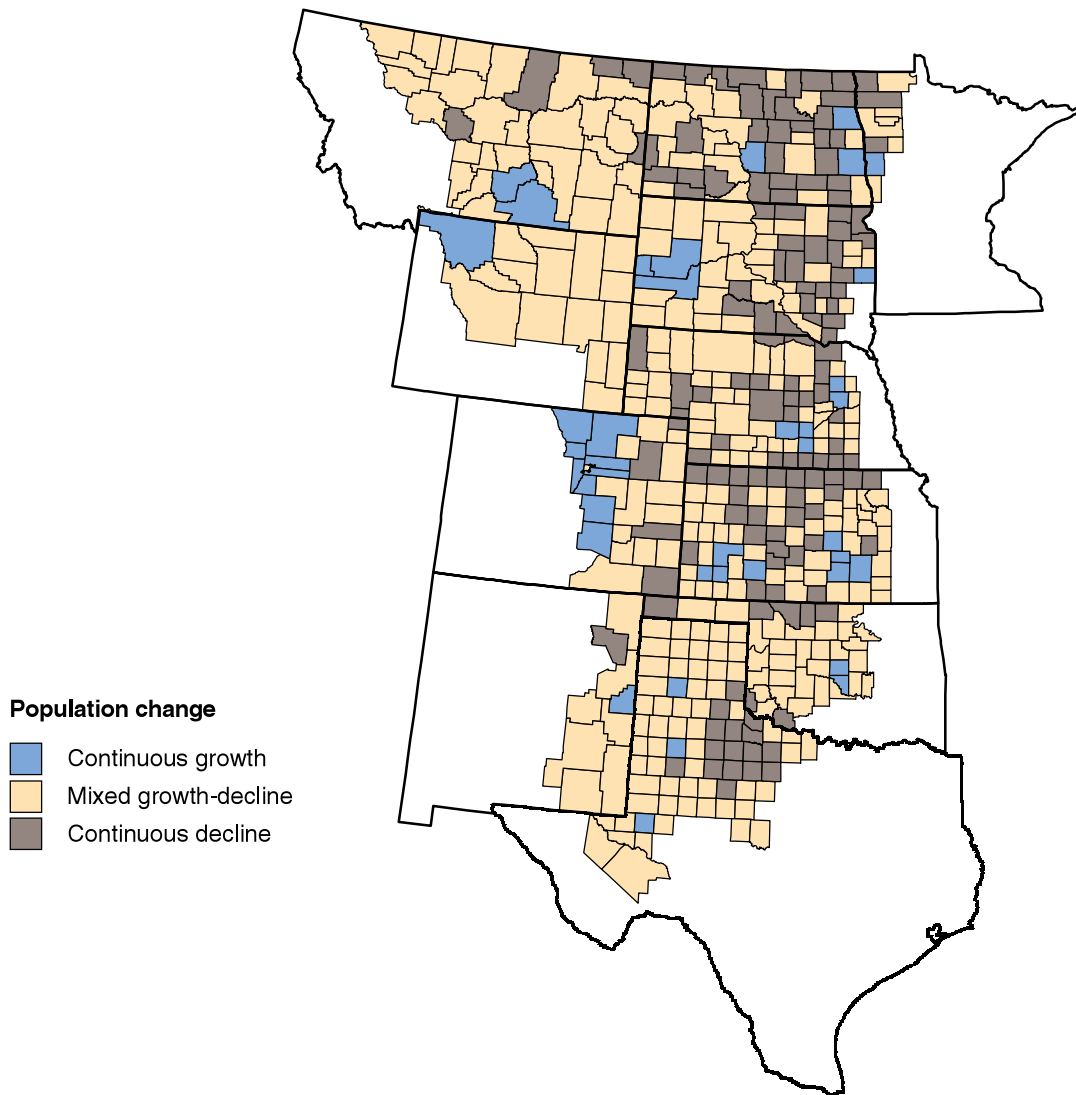
Metro counties contained either a place with a minimum population of 50,000 or an urbanized area with a total population of at least 100,000. Nonmetro counties were divided into three groups based on the size of their largest city: (1) urban counties had a city of at least 20,000 residents, (2) less urban counties had a city of between 2,500 and 19,999 residents, and (3) rural counties lacked a city of at least 2,500 residents.

Median age was abstracted from census data for the years 1960, 1970, 1980, and 1990. An average was calculated to serve as our point estimate. Agricultural employment was based on the percentage of total employment in agriculture. Prior to 1970, total employment was based on civilians 14 years of age and over and then shifted to 16 years of age and over. A four-decade average was used in the analysis.

Figure 2

## Pattern of population change in the Great Plains, 1950-96

*Although population change in the Great Plains has been mixed, very few counties have sustained continuous growth*



Source: U.S. Bureau of the Census, Decennial Census counts and estimates from the Federal-State Cooperative for Population Estimates.

Natural decrease in the Great Plains is a pressing concern (fig. 5). Forty-one percent of the counties in the region experienced a natural decrease between 1950 and 1996. Closer inspection shows that nearly two of three naturally declining counties have been losing population consistently since 1950. The viability of many of these rural counties is not optimistic. Unless economic development activities dramatically alter their employment potential, the likelihood that these counties will break their downward cycle of population loss is slim.

### Collaboration and Continued Research Key to Great Plains Future

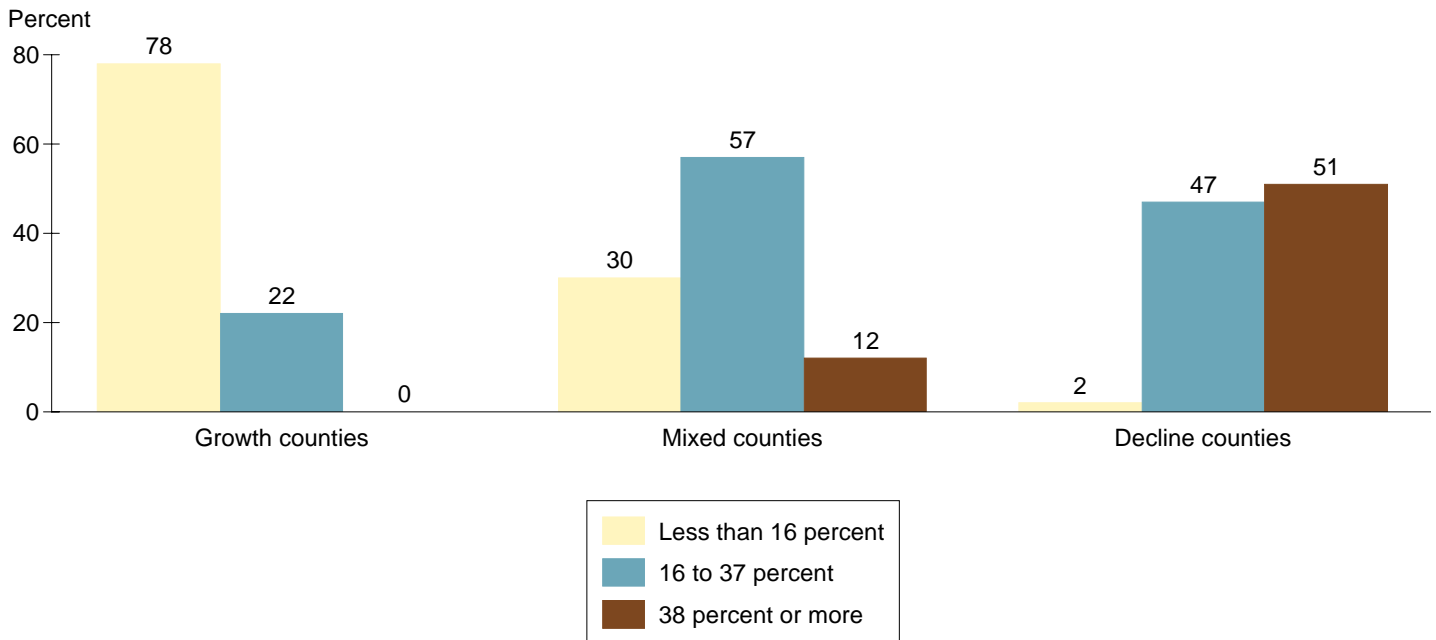
The general trend derived from this research is that agriculture-dependent counties (those with high concentrations of agricultural employment) are at greatest risk of persistent population loss. Technological advances, along with increased global competition, have dislocated agriculture-related labor. Migration of young adults compounds the situation by intensifying the concentration of elderly remaining in economically vulnerable counties. The cumulative effect of agricultural restructuring is a region with numerous counties ill-positioned for future viability. This situation requires the attention of researchers and policymakers.



Figure 3

### Distribution of Great Plains Counties by proportion employed in agriculture

Counties with declining population are the most dependent on agriculture



Note: Figures are based on an average over four decades.

Source: U.S. Bureau of the Census, *County-City Data Book*; various years.

One area that deserves attention by researchers is the limitation of regional analysis. This research clearly shows how impressions of residential change may be misleading based on regional totals. The implicit assumption of regional analysis is that regions are homogenous. Such an approach may detract from our ability to adequately explore smaller trends within a region. For example, two prominent themes that emerged from our research are the common difficulties among agriculture-dependent counties and the resultant high concentrations of elderly in economically depressed counties.

Additionally, this study shows the important need for continued research and policy initiatives regarding rural development, especially those targeting continuously declining areas. We need to understand these areas better to design innovative solutions. Some recent technological advances are providing more employment opportunities for rural areas simply by reducing the barrier of distance. However, many rural areas are not well positioned to adjust to the global economy in which they will need to compete.

Policymakers and planners also face a formidable challenge in dealing with persistently declining counties. Some observers feel that not all communities are viable; therefore, programs and initiatives should be selectively targeted to use scarce resources effectively. Great Britain's

success in rural community triage is often cited as an illustration of such a policy approach. Others argue for a more collaborative approach to community development that focuses on cooperative ventures among varied levels of government or organizations. Some note that an important starting point should be the reexamination of traditional community boundaries. More effective communication and transportation systems have dramatically changed access and have opened the opportunity for community clusters in such areas as public service delivery or infrastructure, education, public safety, health care, and emergency services. Researchers have concluded that the benefits of a collaborative approach include (1) economic efficiencies arising from economies of size, (2) more access to resources, (3) expanded markets, and (4) synergism.

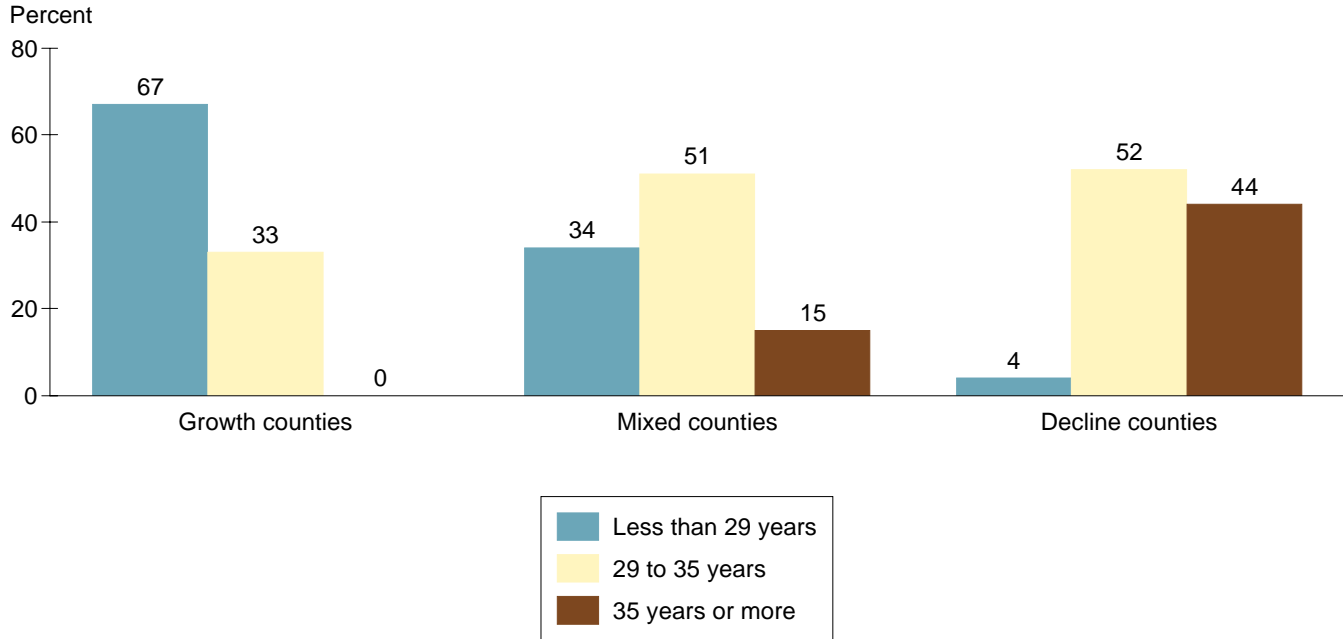
However, collaborative action also has its limitations and barriers. Cooperation is one of the more difficult hurdles to overcome because of issues of local pride and jealousy. Other obstacles include maintenance of the collaborative efforts, undermining of local organizations and voluntary efforts, and issues of political jurisdiction.

Greater efforts need to be directed at improving the situation in the Great Plains. New legislation from the farm law to welfare reform will have a significant impact on many rural areas of the region, especially those that rely

Figure 4

### Distribution of Great Plains counties by median age, 1950-90

Counties with declining population have a higher proportion of older residents



Note: Figures are based on an average over four decades.

Source: U.S. Bureau of the Census, *County-City Data Book*; various years.

heavily on Federal funds. It is important, therefore, that continued research and attention be given to this unique region of the United States.

#### For Further Reading . . .

Don E. Albrecht, "The Renewal of Population Loss in the Nonmetropolitan Great Plains," *Rural Sociology*, Vol. 58, No. 2, 1993, pp. 233-246.

Thomas L. Daniels and Mark B. Lapping, "Small Town Triage: A Rural Settlement Policy for the American Midwest," *Journal of Rural Studies*, Vol. 3, No. 3, 1987, p. 273-280.

Glenn V. Fuguitt, David L. Brown, and Calvin L. Beale, *The Population of Rural and Small Town America*, New York: Russell Sage, 1989.

Great Plains Agricultural Council, *Implications of Changing Patterns of Government Expenditures in the Great Plains*, Government Expenditures Task Force of the Great Plains Agricultural Council Economic Committee, 1995.

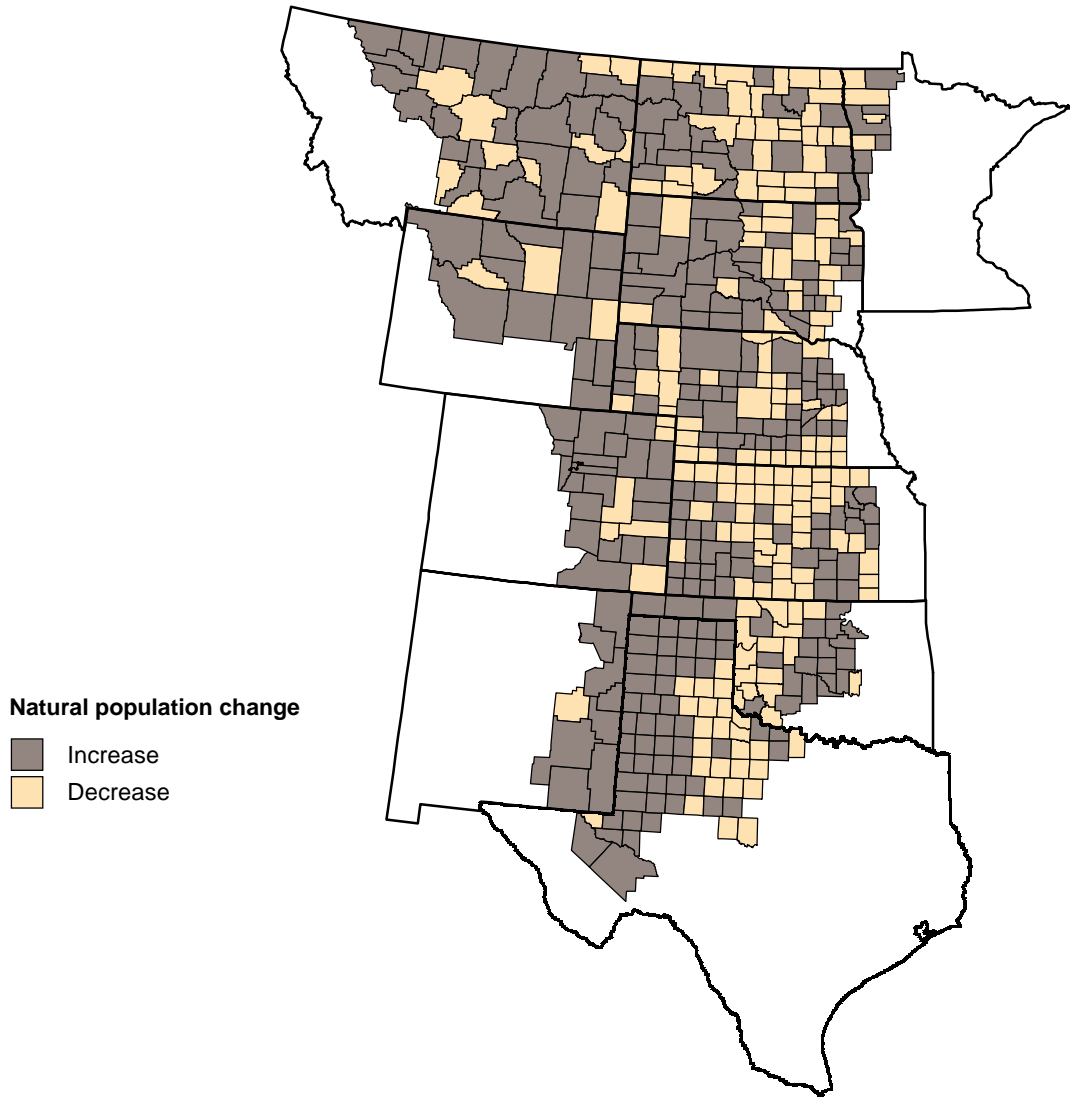
P. F. Korsching, T. O. Borich, and J. Stewart (eds.), *Multicommunity Collaboration: An Evolving Rural Revitalization Strategy*, Ames, IA: North Central Regional Center for Rural Development, 1992.



Figure 5

**Natural increase and decrease counties in the Great Plains, 1990-96**

*More deaths than births occurred in 41 percent of the Great Plains counties and the vast majority of these counties have experienced continuous population loss since 1950*



Source: U.S. Bureau of the Census, Federal-State Cooperative for Population Estimates.