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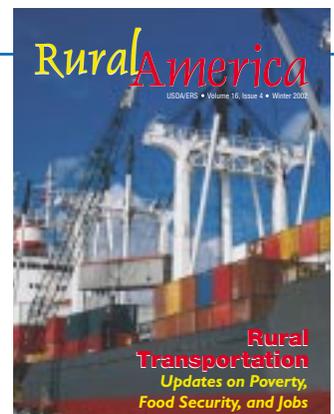
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On the cover:
*Container ship. Photo courtesy
Digital Stock, Corbis Corporation.*



RuralAmerica

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This issue of *Rural America* features two articles on rural transportation, which has seen significant change in the past quarter century. Eileen S. Stommes and Dennis M. Brown survey rural transportation over the last 25 years and discuss the implications of recent changes for rural policy. Deregulation has brought greater competition—especially for trucking—but rural rail and bus service has shrunk and air service has suffered in some rural areas. Major improvements in infrastructure will be necessary for rural roads, bridges, inland waterways, and airports. Devolution of some Federal regulatory functions to States has made community involvement in transportation planning more important.

Next, Dennis M. Brown takes a closer look at inland waterways. Traversing the vast Mississippi River system as well as several shorter ones, barges are the low-cost carriers of over half the corn and soybeans exported, as well as large shares of wheat, sorghum, other grains, fuel, and fertilizers. Waterways also play a significant developmental role in many communities. Much of the lock and dam infrastructure is now aging and may require a considerable investment to upgrade.

Popular perceptions of agriculture and its importance to the economy will certainly have an influence on the pending farm bill. Cheryl J. Wachenheim and Richard Rathge surveyed residents in the most agricultural part of the country, the North Central region, and found a high regard for farming and its importance overall. However, respondents living in towns or unfamiliar with livestock operations were most likely to be concerned with farming's impact on the environment. Respondents from counties losing population were the most likely to believe that agriculture played an important role in the local economy.

The recent slowing of the U.S. economy has renewed concerns over the impacts of losing a major employer in a rural community. F. Larry Leistriz and Kenneth A. Root studied five communities in Minnesota and North Dakota that experienced such a loss between 1994 and 1998. The communities that coped best had strong local leadership, had a regional or local economic development agency, and had received advance warning of the impending closure. Communities with several important employers or with many commuting workers were better able to recover.

Dean Jolliffe opens our Rural Updates section with a discussion of changing rural poverty rates. Between 1996 and 1999 the rural poverty rate declined from 15.9 to 14.2 percent, the lowest since 1979. Declines occurred in all regions and for all age groups. Although urban poverty dropped even faster—widening the rural-urban poverty gap—rural poverty became less severe as a higher proportion of the poor attained incomes within 75-99 percent of the poverty line.

Food-insecure households are those not able to depend on the availability of enough food for an active and healthy life. Mark Nord's update of food security data for 2000 shows that 11.5 percent of nonmetro households (versus 10.2 percent of metro) fell into this category, almost unchanged from 1998. Food insecurity was especially high in Black and Hispanic households, in single-parent families, and among children. Poverty-related hunger affected 3.4 percent of nonmetro households.

Nonfarm jobs increased just 1.5 percent in nonmetro areas during 1998-99, as reported by Linda M. Ghelfi, a rate below the 2.4 percent for metro areas and also less than the nonmetro growth rates earlier in the 1990s. Real earnings per nonfarm job also increased by 1.3 percent during 1998-99. Nonmetro workers now earn just 68.7 percent of metro earnings, the lowest ratio in more than 30 years.

Peggy J. Cook provides new data on transfer payments, which are mainly social security, medicare, and Medicaid funds. Rural areas received more transfer payments per capita than urban areas throughout the 1990s, and they accounted for a substantially greater portion of personal income. The growth rate for transfer payments fell in the late 1990s because of stronger earnings growth.

Douglas E. Bowers

Transportation in Rural America

Issues for the 21st Century

Eileen S. **Stommes**
Dennis M. **Brown**

In 1991, the Intermodal Surface Transportation Efficiency Act (ISTEA) devolved much of the Federal highway planning to the States, which, along with local areas, own the vast majority (95 percent in 1997) of roads (fig. 1). ISTEA initiated a comprehensive planning process that enlisted local, State, tribal, and public/private interest groups, and emphasized stronger links between the environmental impact of transportation improvements on clean air and water quality. Furthermore, the Act sought to integrate community development with transportation enhancements. (Nonmetro funding under ISTEA is illustrated in figure 2.)

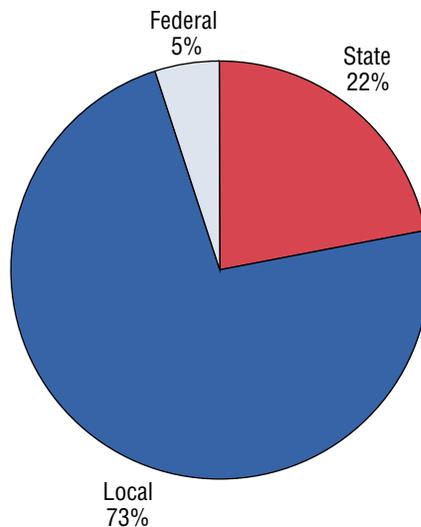
The 1998 Transportation Equity Act for the 21st Century (TEA-21), ISTEA's successor legislation, reinforced State and local transportation roles and the broad strategic and oversight responsibilities of the Federal Government. The Surface Transportation program gave States and localities more flexibility in

Eileen S. Stommes is a sociologist and Dennis M. Brown is a regional economist in the Rural Business and Development Policy Branch of the Food and Rural Economics Division, ERS. This article was written prior to September 11, 2001, and therefore does not reflect changes in the Nation's transportation system resulting from these events.

In the last 25 years, transportation in rural America has been transformed by deregulation, devolution of Federal responsibilities to State and local governments, and traffic growth created by the booming economy of the 1990s. All modes of rural transportation—highways, passenger service (transit, intercity bus, and passenger rail service), trucking, inland waterways, rail freight service, and passenger air service—have been affected. By linking rural residents with distant jobs and services and by enabling commercial shipping, transportation is a cornerstone of rural economic development. However, rural transportation is still beset by higher commuting and shipping costs due to widely dispersed population and industry.

allocating highway and bridge funding, a portion of which must be spent in rural America. Bridge funds, in particular, must be spent

Figure 1
Rural public road maintenance, 1997
County, town, and municipal governments are responsible for 73 percent of rural roads



Source: Table HM-10, 1997 Highway Statistics, U.S. Department of Transportation, Federal Highway Administration, Washington, DC.

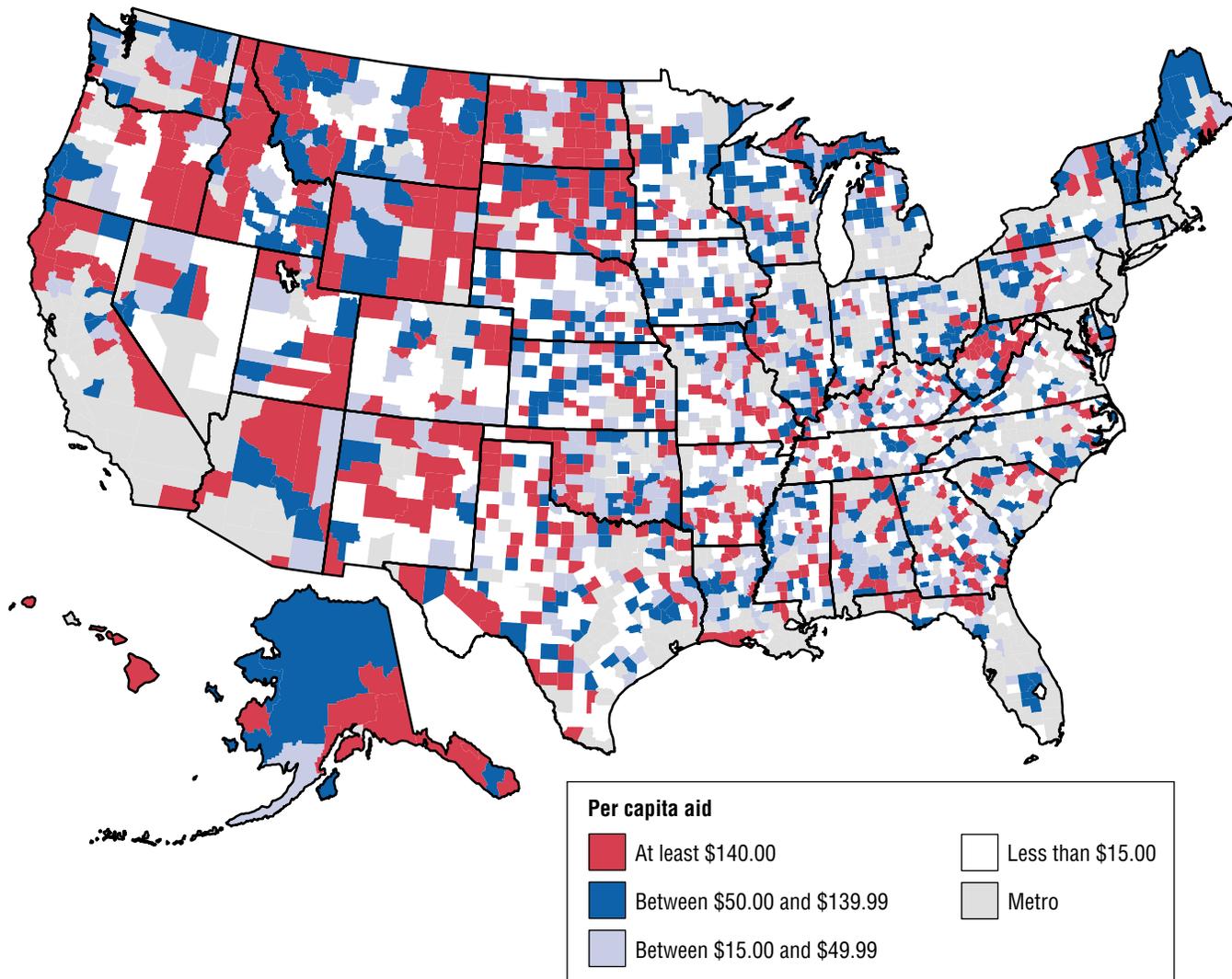
on lower/local road classifications, many of which are in rural areas.

Under ISTEA and TEA-21, each State was required to set up a statewide transportation planning process (incorporating environmental concerns and intermodal connectivity), a transportation plan, and a transportation improvement program. States also were required to include local governments as well as other public and private organizations in the transportation planning process. While metro areas had Metropolitan Planning Organizations, rural areas previously had no organizational structure to carry out transportation planning.

ISTEA and TEA-21 adopted a systemic approach to transportation that recognized its multiple functions, including its impact on the environment, the economy, and passenger and freight mobility. Yet, 10 years after ISTEA, several key rural surface transportation issues remain.

While ISTEA and, more importantly, TEA-21 emphasized involve-

Figure 2
Nonmetro per capita Federal highway aid under ISTEA, FY1997
Funding was highest for counties in the West



Source: Calculated by ERS using data from the Bureau of Labor Statistics and the U.S. Department of Commerce.

ment of local rural officials in statewide transportation planning, participation varies widely across States, as both State and local governments adjust to their new, devolved transportation roles. The U.S. Department of Transportation (DOT) continues to develop inclusive planning procedures to ensure local involvement. However, without such administrative procedures, rural areas may not receive either

the necessary funding or the statewide attention needed to maintain an adequate transportation infrastructure.

Traffic levels have increased sharply throughout the United States since 1991. While congestion in metro regions has been amply publicized, many rural areas adjacent to metro areas and those with amenity-based economies also face increased traffic. More cars and

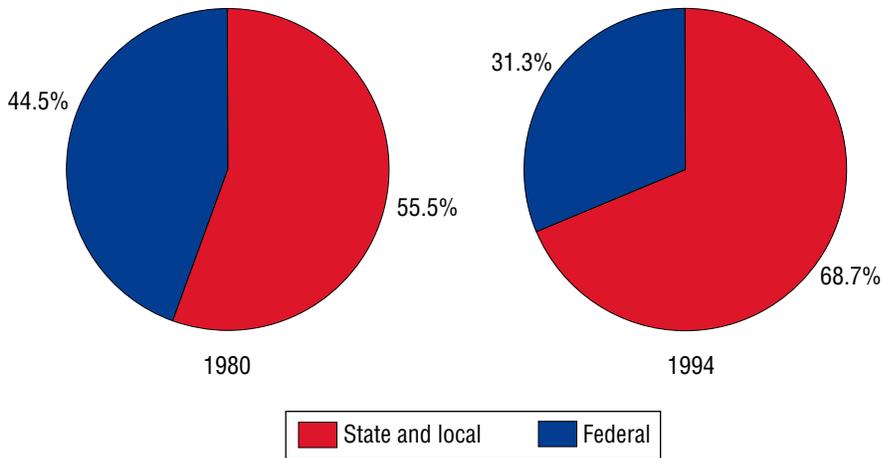
trucks add to local maintenance costs and detract from rural quality of life. Rural officials sometimes complain that State/Federal highways actually exacerbate these conditions (Brown et al.).

Globalization of trade, as exemplified by the North American Free Trade Agreement (NAFTA), has created additional highway traffic along U.S. borders, along north-south trade corridors, and around

Figure 3

Government outlays for transportation, 1980 and 1994

Most outlays come from State and local sources



Source: Bureau of Transportation Statistics, U.S. Department of Transportation.

Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) apply advanced technologies including information processing, electronics, and communication, in combination with management strategies to improve overall transportation system operations. Federally funded rural ITS priorities under TEA-21 reflect rural conditions, namely longer local travel distances, lower traffic volumes, longer emergency response times, a sparse telecommunications infrastructure, and a dispersed overall system with high per-unit costs. Rural ITS applications include weather and road condition information for rural highway users, the use of automatic vehicle location and computer-aided dispatch systems for rural transit, automated collision notification, and better tourism/travel information to improve safety and security for users of rural transportation infrastructure.

major U.S. ports. Much of the spillover traffic uses the local road system, adding to the fiscal pressure on local governments to maintain or upgrade local roads. Federal highway outlays have increased, but State and local expenditures far surpass Federal spending (fig. 3).

Intelligent Transportation Systems (ITS), which employ new technologies to help solve transportation problems, are being emphasized under TEA-21 to enhance rural safety information and rural passenger transportation (see "Intelligent Transportation

Systems"). ITS applications could be used to leverage existing transportation resources in rural communities. However, it may be necessary to increase Federal resources in new technology or facilitate innovative partnerships to apply ITS in rural areas.

Many Rural Areas Lack Passenger Service

Rural passenger service is perhaps best described as a composite of separate programs, including rural transit, specialized services for the elderly and handicapped, and

transportation for those enrolled in human services programs. Intercity bus and passenger rail (Amtrak) also serve rural residents.

Rural public transit, the rural analogue to bus service in metro areas, is available in approximately half of the rural counties nationwide, for a total of about 1,200 systems. These "5311" transit systems are county-based and tend to be found in the more populated rural areas (see "Section 5310 and Section 5311 Transit Systems," p. 7). Few are found in the most rural, isolated areas (fig. 4). These systems range in size from 1 to over 50 vehicles. According to a recent survey, from 1994 to 1999, the average fleet size in rural areas increased by 60 percent, with ridership increasing by 62 percent (Community Transportation Association of America).

Specialized transportation services for the elderly and persons with disabilities are available under the Section 5310 program. Federal funding is provided to private non-profit groups and certain public organizations for capital expenses, including purchase-of-service agreements whereby an agency pays a transportation provider for services. There are approximately 3,700 of these systems throughout the country and they serve both urban and rural clients.

Human service agencies often provide transportation. Some purchase vehicles and hire drivers, while others contract with rural transit operators. However, caseworker time, vehicle expenses, and contract costs are often not classified as transportation but rather as meeting the service needs of a particular client. Given client-based cost accounting, it is difficult to measure rural transportation as provided by human service agencies.

about half of all passenger routes were taken over by Amtrak, and many rural towns lost passenger rail service at that time. Although Amtrak offers a national network, it mainly links major metropolitan areas, with fewer than 200 non-metro communities on its routes and minimal passenger rail connections with county transit systems. Amtrak is required by Congress to become operationally self-sufficient by 2003 (with capital grants continuing in the future). However, it is not clear whether Amtrak can operate without public subsidies.

Difficulties Remain in Serving Rural Transit Needs

The current state of rural passenger transportation highlights several issues that may affect successful implementation of other Federal programs. First, county-level duplication of federally funded transportation services exists alongside some remote rural counties with little or no coverage. Coordinating the many funding sources and reporting requirements unique to each federally funded program has given rise to the Federal Coordinating Council for Access and Mobility (CCAM), which brings together the relevant agencies within DOT and the U.S. Department of Health and Human Services.

Second, although rural transit may meet the mobility needs of the local traveler, service often stops at the county line, creating a disconnect that leads to a balkanized rural transit system. For example, an individual using a county-based transit system to visit a medical facility in another county cannot connect seamlessly with another county-based transit system—the two county transit systems must establish a special connection to

serve the individual. A key issue is whether this assortment of county transit operations can be unified to provide a seamless system of transit beyond the local community.

Third, intercity bus transportation is poorly linked with other types of county transit systems in much of rural America. While TEA-21 provides funding to encourage intercity bus companies to "interline" with rural transit, those linkages are fairly limited, taking place in only a few nonmetro communities.

Although Amtrak offers a national network, it mainly links major metropolitan areas, with fewer than 200 nonmetro communities on its routes and minimal passenger rail connections with county transit systems.

Fourth, rural passenger transportation has become increasingly important since welfare reform was enacted in 1996. Nationally, fewer than 1 in 10 recipients of public assistance owns a car, and nearly 40 percent of the 10 million daily public transit riders are considered low-income. Nationally, one in four families receiving public assistance lives in a rural area, and a disproportionate share of rural residents lives in poverty-level households. However, the limitations of existing transit in terms of scheduling and routing may impede the ability of welfare recipients to obtain employment, make necessary

childcare arrangements, and keep a job. Although the Department of Transportation has funded the Job Access and Reverse Commute program to encourage innovative mobility options, pilot projects are just now getting underway, and hence, little information exists on their success at moving people to work reliably and efficiently.

Trucking Services Expanded Sharply Under Deregulation

The Motor Carrier Act of 1935 brought trucks and buses under the regulation of the Interstate Commerce Commission (ICC). Agricultural commodities were exempted from regulation by this Act. By the mid-1970s, growing public concern about the inefficiency of regulating the motor carrier industry led the ICC to loosen entry requirements, and the Motor Carrier Act of 1980 further relaxed barriers to entry.

Deregulation led to explosive growth in small trucking companies as the cost of entry declined. Existing carriers expanded into new territory, and new, smaller companies responded to market demand. Companies retired company-owned truck fleets and turned to independent, for-hire trucking firms for lower rates and improved service. Today, there are nearly 500,000 trucking companies in the Nation, with most owning 6 or fewer trucks (U.S. Department of Transportation, 2000).

Trucking firms have become increasingly competitive since deregulation, offering more frequent service, smaller loads, and faster service times. "Hub-and-spoke" systems have evolved to facilitate faster, more efficient delivery, aided by the Internet and computerized coordination of services and product purchases. Trucks can

now transport an assortment of products to several customers, feeding just-in-time inventory systems (McMullen).

Two motor carrier issues of particular importance remain for rural areas. First, an increasing number of highway fatalities have involved large trucks. The Motor Carrier Safety Improvement Act of 1999 created the Federal Motor Carrier Safety Administration to increase roadside inspections, conduct compliance reviews, increase education, and better monitor new drivers.

Second, the trucking boom has increased the cost of road maintenance for local governments, which maintain 80 percent of rural roads. Larger trucks increase wear and tear on an aging rural road and bridge system designed for lighter, smaller vehicles. One study estimates additional costs of heavy truck damage ranging from an average of \$0.075 per ton-mile for county/local roads to \$0.05 per ton-mile for State roads (U.S. Department of Agriculture). To reduce road costs, rural areas have instituted year-round and seasonal weight restrictions, limited-access postings, and tax increases to meet road maintenance needs.

Inland Waterways Ship Bulk Commodities Cheaply

The national inland waterway system—including the Mississippi River and its tributaries, the Snake River-Columbia River system, and the Great Lakes-St. Lawrence Seaway—provides a low-cost, effective means of transporting bulk products over long distances. The U.S. Army Corps of Engineers is charged with maintaining and improving the waterway system as well as balancing the interests of all user groups.

The inland waterway system is important for agriculture, particularly the export grain industry. It is the cheapest means of transporting bulk, low-value products. Further, barge rates are not subject to regulation by the Federal Government, allowing barge companies to price according to market demand. In 1996, approximately 54 percent of all U.S. corn exports and 40 percent of all soybean exports moved by barge along the Illinois and Mississippi River systems to export elevators on the Gulf Coast. U.S. bulk-grain exports are highly competitive in the global marketplace because the U.S. transportation system efficiently moves bulk com-

modities from the interior of the Nation to export destinations. Some farm groups are concerned that waterway infrastructure improvements in grain-producing competitor nations, including China and Argentina, may erode the U.S. price advantage in world grain markets (U.S. Department of Agriculture).

Today, the traditional commercial use of the marine transportation system—and the U.S. inland waterway system in particular—is facing a number of challenges from its diverse users. A Corps of Engineers study of the Upper Mississippi River-Illinois River system, comprised of locks and dams originally constructed during the 1930s, was initiated in 1993 to determine its structural needs over the next 50 years. As this ongoing study has progressed, the Corps has seen its economic assumptions and modeling challenged by environmentalists, recreational users, and agricultural interests. Other than routine maintenance of existing infrastructure (locks and dams), new construction awaits a long-term plan based on the study findings. A recent National Academy of Sciences technical review of the study urged the Corps to consider less costly ways to alleviate barge traffic, including barge tolls and better scheduling. At present, the evolving nature of this debate means that rural implications remain unclear.

Deregulation Spurs Railroad Consolidation

Faced with increased competition from the trucking industry, inland waterway transportation, and pipelines, the national rail network has been steadily shrinking from 254,000 miles in 1916 to 171,000 miles by 1997, a 33-per-

Section 5310 and Section 5311 Transit Systems

Section 5310 of the Federal Transit Act authorizes capital assistance to States for transportation systems serving the elderly and persons with disabilities. States, in turn, distribute the funding in both rural and urban areas to non-profit organizations or lead agencies in coordinated transportation programs. Funding cannot be used for operating expenses, only for capital expenses.

Section 5311 of the Federal Transit Act is a formula grant program that authorizes both capital and operating assistance grants to public transit systems in areas with populations of less than 50,000. The Federal share for capital and administrative expenses is 80 percent and the local share is 20 percent; the Federal share of operating expenses is up to 50 percent.

cent reduction (U.S. Department of Transportation, 1999). This trend became more pronounced with the passage of the Staggers Rail Act of 1980, which deregulated the rail freight industry. Before deregulation, rail infrastructure had been overbuilt, but Federal regulation had required railroads to maintain both track and service levels, regardless of their profitability. With deregulation, carriers aggressively streamlined rail infrastructure (track, railyards, and stations) to reduce unprofitable routes and consolidated operations to improve their profitability, resulting in a high degree of concentration among Class I railroad companies, or those with annual revenues of at least \$250 million.

Unlike the trucking industry, which has relatively low fixed costs, the railroad industry, which owns and maintains the track, has high startup costs. Consequently, deregulation in the railroad industry has largely resulted in consolidation among existing railroads. By 1998, there were fewer than 10 Class I railroads, down from over 100 in 1960.

In recent years, Federal regulators have approved several major railroad mergers. Mergers have resulted in abandonment of unprofitable rural track, leading to loss of rail service in rural communities. As a consequence, these consolidations have sometimes disrupted rail service, an issue of particular concern for agriculture and other rail-dependent industries. The risks for agricultural and rural communities of decreased rail freight competition may be significant when areas served by two railroads lose one of their lines due to a consolidation.

Consequently, in June 2001, the Surface Transportation Board, the Federal agency responsible for

overseeing railroad mergers, issued new rules for mergers involving two or more Class I railroads. These new rules increase the burden on merger/consolidation applicants to demonstrate that the proposed action would be in the public interest, particularly that the new, merged operation would enhance competition for rates and services for smaller railroads, ports, and passenger and commuter services.

Consolidation in the rail freight industry has led to the growth of short-line and regional railroads (collectively referred to as "small railroads"), which usually operate on lighter density lines abandoned by major railroads. Since the railroad industry was deregulated in 1980, small railroads have been established in many rural areas, helping to mitigate the negative effects of mergers. By 1996, small

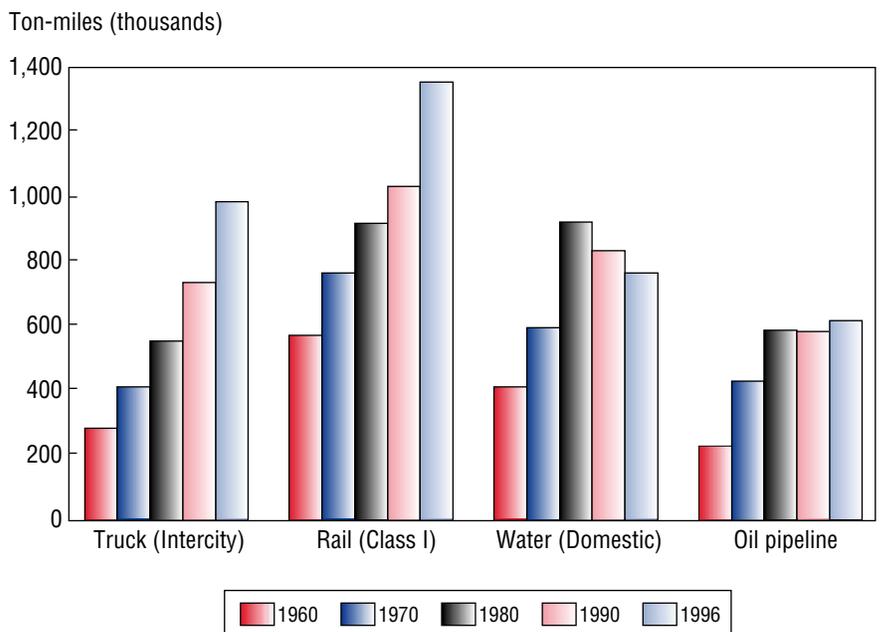
railroads accounted for about a third of all rail route miles in the Nation, 9 percent of the rail industry's total freight revenue, and 11 percent of railroad employment nationwide.

Loss of rural rail service also has increased truck traffic on rural roads. While competition from trucking may have helped keep rail rates down, it has resulted in greater deterioration of rural roads, most of which are funded by local governments. In fact, increases in freight traffic have occurred across all transportation modes serving rural America since the early 1960s (fig. 5).

Deregulation Brings Cheaper, More Frequent Passenger Air Service

The airline industry was deregulated by the Airline Deregulation

Figure 5
Ton-miles of freight shipments, 1960-96
Deregulation spurred freight increases in rail and trucking shipments in recent years



Source: Bureau of Transportation Statistics, U.S. Department of Transportation.

Act of 1978. This legislation eliminated the Civil Aeronautics Board and allowed air carriers to enter and exit markets and adopt rate structures of their own choosing. To ensure continued service to smaller and more isolated communities, the legislation established the Essential Air Service program, which provides subsidies directly to airlines to maintain service to those small communities that were served at the time of deregulation. This program, with an annual funding level of \$50 million, supports scheduled air service to more than 100 rural communities, mainly in the Midwest, the Rocky Mountain States, and Alaska.

Deregulation of the domestic airline system resulted in a sharp increase in overall domestic airline traffic, with air carriers concentrating their operations around hub airports. Deregulation has transformed the level and types of service provided to all communities. Some rural communities have experienced significant declines in their air service, while others have benefited from increased service, and still others have experienced relatively stable service since 1978. Much of this is determined simply by passenger demand.

On average, airline deregulation has been a boon to the flying public, producing lower fares and expanded service. With the development of "hub-and-spoke" networks, many small communities receive better service than before deregulation because they are connected by nonstop flights to hub airports that offer nonstop services throughout the country. Moreover, the number of communities throughout the Nation served by more than one carrier has grown with deregulation. In many cases, the equipment is better matched to



Photo courtesy AMTRAK Public Affairs, Washington, DC.

the levels of traffic in individual communities and has resulted in qualitative improvements such as greater flight frequencies and better connecting opportunities. These improvements, however, are not universal.

Although many community leaders feel that airline service is critical to the rural economy, the relationship between airports and rural development is uncertain. While some studies show that airports spur local economic development, especially in the high-tech sector (Reeder and Wanek), the strength of the relationship appears to vary depending on local factors, including industry mix, the diversity of the economy, the existing regional transportation infrastructure, and local employment level. Furthermore, while most studies of business location choices do not identify the availability of local scheduled air service as an important factor influencing location decisions, business and community leaders often cite lack of convenient, affordable air service as a disadvantage of rural business locations (Gale and Brown).

Authorized funding for airport construction and development was sharply increased in early 2000 under the \$40 billion Aviation

Investment and Reform Act for the 21st Century (AIR-21), a 3-year bill that increases aviation investment by \$10 billion over previous levels. Most of the money will be used for radar modernization and airport construction. AIR-21 also authorized a number of provisions covering airports in small communities, including increased funding for nonhub airports, the development of an incentive-based program that helps airlines buy jets to serve small airports, and the creation of a new funding program to help small, underserved airports market and promote their air service. However, to date, Congress has not appropriated any funds to carry out the latter two programs.

Several airline competition and quality-of-service issues remain. DOT recently examined whether anticompetitive practices by major carriers stifle competition from small, startup airlines, which are important in many rural areas. DOT also has been investigating other competition-related practices at airports and among major airlines, including whether airport landing fees and the spending practices of major carriers put small airlines at a disadvantage.

Some contend that rural areas have been hurt by the tightening of

safety and maintenance standards on commuter aircraft that serve 10 or more passengers—the so-called Commuter Safety Rule. More stringent Federal safety standards may have contributed to the loss of air service for some small communities as the costs of operating commuter air service have increased. Many commuter airlines phased out their 19-seat aircraft in favor of larger planes that are not as well suited to small rural markets.

Conclusions

Transportation in rural areas today is still in transition after a quarter century of deregulation, Federal devolution, and significant traffic increases across all modes. Deregulation has in fact created significant benefits for rural areas. Rural areas are better served by the airlines, a more efficient rail system, an expanded trucking system, and increased charter bus tour opportunities. Federal devolution of transportation policy through ISTEA and TEA-21 has given States and local governments increased authority over transportation planning and funding decisions.

Not all changes, however, have benefited rural America. Some feel air service levels in remote rural areas have declined; a streamlined rail system has left many rural areas with reduced or no rail service; trucking safety concerns remain and road maintenance costs have risen; bus deregulation led to fewer rural bus stops. While ISTEA and TEA-21 gave maximum planning flexibility to States and local governments, rural community involvement in planning and funding transportation continues to evolve. **RA**

For Further Reading . . .

Dennis Brown, Rick Reeder, and Kevin McReynolds, "Rural Sprawl: The Experience of Eight Nonmetropolitan Counties," paper presented at the 97th annual meeting of the Association of American Geographers, New York, Feb. 27- March 3, 2001.

Jon E. Burkhardt, James L. Hedrick, and Adam T. McGavock, *Assessment of the Economic Impacts of Rural Public Transportation*, Transit Cooperative Research Program, Report 34, Transportation Research Board, National Research Council, National Academy Press, Washington, DC, 1998. www.nas.edu/nrc.

Community Transportation Association of America, Institute for Economic and Social Measurement, *Status of Rural Public Transportation-2000*, prepared for Rural Transit Assistance Program, Federal Transit Administration, U.S. Department of Transportation, April 2001.

Fred Gale and Dennis Brown, "How Important Is Airport Access for Rural Business?" *Rural America*, Sept. 2000, pp. 16-25. www.ers.usda.gov.

B. Starr McMullen, "The U.S. Motor Carrier Industry at the Millennium," *Journal of the Transportation Research Forum*, Vol. 39, No. 4, Fall 2000, pp. 141-50.

Richard Reeder and Cory Wanek, "The Importance of Local Airports to Rural Businesses," in D.W. Sears and J.N. Reid (eds.), *Rural Development Strategies*, Chicago: Nelson-Hall Publishers, 1995.

U.S. Department of Agriculture, Agricultural Marketing Service, "Transportation and Marketing, Marketing and Transportation Analysis," in *Agricultural Transportation Challenges for the 21st Century: A Framework for Discussion*, National Agricultural Transportation Summit, Washington, DC, July 27-28, 1998.

U.S. Department of Transportation, *The Changing Face of Transportation*, Washington, DC, 2000. www.bts.gov/transtu/cft.

U.S. Department of Transportation, *Transportation Statistics Annual Report*, Bureau of Transportation Statistics, Report No. BTS99-03, 1999. www.bts.gov/transtu/tsar/tsar1999.

U.S. Department of Transportation and U.S. Department of Agriculture, *Rural and Agricultural Transportation: Data and Information Resources*, www.bts.gov/ntl/ruraltransport.

The Nation's Inland Waterway System and Rural America

Dennis M. Brown

The Nation's inland waterway system—the internal network of rivers and the Great Lakes - St. Lawrence Seaway, plus coastal waterways—provides a low-cost means of transporting bulky goods over long distances. Inland waterways, critical in moving farm commodities, inputs, and other raw materials, face a number of challenges. These include the deterioration of many locks and dams, particularly on the Upper Mississippi - Illinois River system, and the controversy over the best use of the waterway system in the Pacific Northwest.

By facilitating the reciprocal movement of farm commodities and inputs, such as grain and fertilizer, the U.S. inland waterway system is crucial to the Nation's agricultural sector. Its vital role is underscored by the fact that most of the Nation's agricultural production occurs inland, far from both domestic and foreign markets. Covering more than 25,000 miles of navigable inland waterways (fig. 1), the system contains: (1) the Mississippi River and its tributaries; (2) the Columbia - Snake River system; (3) the Great Lakes - St. Lawrence Seaway; and (4) other rivers, canal systems, and coastal waterways.

Mississippi River—Stretching over 2,300 miles from its source in Minnesota to the Gulf of Mexico, this river is central to the Nation's waterway transportation system, providing a critical link for the movement of bulk commodities. The Mississippi is comprised of two separate components—an upper portion, upstream from St. Louis, and a lower section downstream. Locks and dams are almost exclusively on the Upper Mississippi,

between Minneapolis and St. Louis, because this portion is less navigable in its natural state than the lower section of the river.

Large-scale commercial use of the river began in the early 19th century (Fruin and Baumel), but its utility was soon overshadowed by the Erie Canal, which was completed in 1825 and facilitated the east-west movement of goods. Previously, goods were moved down the Mississippi through New Orleans and subsequently routed through New York City. Competition from the railroads, along with the difficulties of navigating an unpredictable river, kept the Mississippi relatively unused until the early 20th century.

By the 1930s, the Mississippi re-emerged as an important route for freight traffic. During the Great Depression, the Federal Government undertook a massive construction project consisting of 28 locks and dams on the Upper Mississippi. This, along with dredging, greatly enhanced navigability of the waterway. Locks and dams

were also constructed on many of the Mississippi's main tributaries, including the Illinois, Ohio, and Arkansas Rivers. Navigability on the Missouri River, another important tributary, was enhanced by straightening portions of it downstream from Sioux City, Iowa.

Today, agricultural products, in particular, corn and soybeans, are the primary commodities transported on the Mississippi, accounting for over half of all tonnage shipped on the upper portion (Casavant). In 1996, nearly 55 percent of total U.S. corn exports and 40 percent of soybean exports were transported by barges on the Upper Mississippi and Illinois Rivers. Other important commodities served by this waterway system include fertilizer, coal, steel, cement, and petroleum products (Bertels, 1998b).

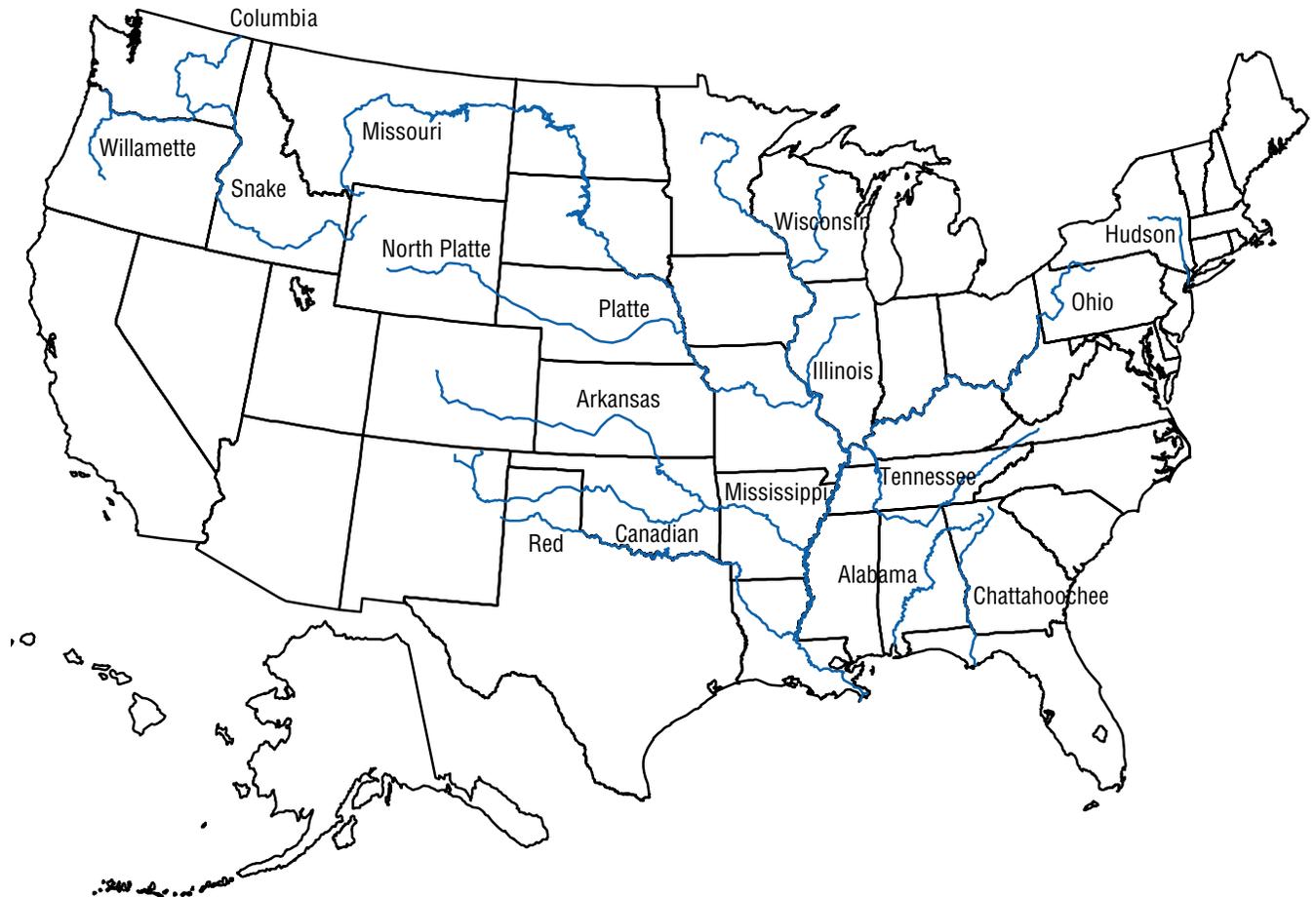
Having expanded its original infrastructure facilities, the Upper Mississippi currently has 29 dams with 35 lock chambers (Casavant). The Illinois River, which flows into the Upper Mississippi just above St. Louis, has an additional 8 locks.

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Figure 1

Major river systems in the U.S.

The Mississippi is the Nation's most important waterway



Source: Prepared by the Economic Research Service.

The average age of this infrastructure is approaching 60 years on the Upper Mississippi and is several years older on the Illinois (Bertels, 1998b). Consequently, design capacities for some locks and dams have already been reached. For example, current capabilities in the barge "towing" industry allow a single towboat to push a tow of 15 barges, which is approximately 1,200 feet in length. However, only three locks are currently long enough to handle such tows. The remainder of the locks have 600-

foot chambers, so each tow must be separated and "double-locked," which is costly, time-consuming, and increases congestion on the waterway.

Columbia - Snake River—This waterway, which flows through large portions of Idaho and Washington and forms the northern border of Oregon, has 8 locks and 8 dams originally developed for hydroelectric production in the early 1900s. The waterway's completion in 1975 opened up interior points in Washington, Oregon, and Idaho to commercial barge traffic.

Agricultural products, mostly wheat, generally move downstream on this river system, and account for 40 percent of all shipments (by weight) in an average year (Casavant). Forest products, which also usually move downstream, account for 15-22 percent of all tonnage shipped. Fuels and fertilizers usually move upstream and account for over 80 percent of upriver traffic (Lee and Casavant).

Great Lakes - St. Lawrence Seaway—Shared with Canada, this system comprises the five Great Lakes (Superior, Michigan, Huron,

Erie, and Ontario) and the St. Lawrence River, and stretches over 2,000 miles from Minnesota to the Atlantic Ocean. Agricultural products account for about 40 percent of all its trade, with most grain products destined for export. Agricultural commodities shipped include wheat, corn, soybeans, barley, oats, and flaxseed.

The St. Lawrence Seaway was completed in 1959 at a cost of about \$1 billion and provided Midwestern locations direct access to overseas markets (Fruin and Baumel). Comprised of a series of locks on the St. Lawrence River and Welland Canal (which connects Lake Erie to Lake Ontario), the system allows oceangoing vessels and "lakers" (ships primarily confined to the Great Lakes) a direct route from Duluth, Minnesota, at the western end of Lake Superior, to the Atlantic Ocean.

Other Major Components—The Tennessee - Tombigbee River system flows through Tennessee, Alabama, and Mississippi. In the 1970s and 1980s, a series of locks and dams was constructed on the Tennessee and Tombigbee Rivers, which opened up a 230-mile, 9-foot deep channel, and provided barges from Appalachia with access to the Gulf of Mexico (Fruin and Baumel).

In addition, the New York State Barge Canal System connects Lake Ontario to the Hudson River. And, although not technically part of the inland waterway system, the Atlantic Intracoastal Waterway and the Gulf Intracoastal Waterway make up the Intracoastal Waterway System, which connects ports along the eastern and southern coasts of the Nation. It provides a protected route for a variety of ships, including pleasure craft and small commercial vessels, and stretches from Boston, Massachusetts, to Browns-

ville, Texas, with the Gulf section heavily used by the petroleum industry.

The Federal Role in the Inland Waterway System

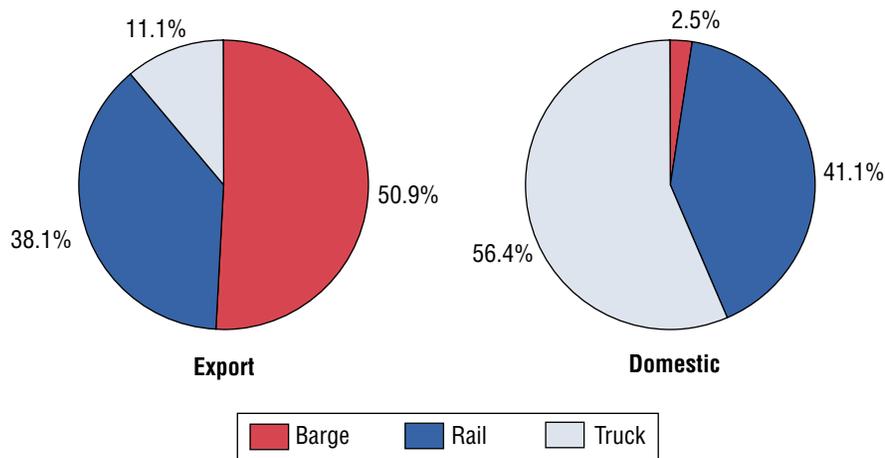
The role of the Federal Government has historically been to build and maintain the system of locks, dams, and channels (Bronzini). Low-cost water transportation, it was argued, served the interests of society as a whole and hence should be exclusively funded by the Federal Government.

The funding situation changed when the Inland Waterways Trust Fund was set up in 1980 to receive and disburse funds collected by a newly imposed fuel tax on barge companies. The tax is currently set at 20 cents per gallon and is designed to pay a portion (usually 50 percent) of the cost of modernizing locks, although current infrastructure needs are probably greater than the available trust fund money. The remainder of

infrastructure funding typically comes from Treasury funds, appropriated to the U.S. Army Corps of Engineers, which oversees such projects. Operation and maintenance costs for locks, dams, and dredging are also usually paid for by the Federal Government (Bertels, 1998b).

The barge industry has benefited greatly from this Federal investment in waterways. Barges, which operate in a highly competitive industry characterized by very low barriers to entry, transport over half of domestically produced grains and oilseeds destined for export, about 67.6 million tons in 1995 (fig. 2) (Eriksen et al.). Barge transportation is less important in the domestic grain and oilseed market, accounting for about 6 million tons or 3 percent of domestic shipments. Altogether, barge transportation accounted for about 19 percent of all grain and oilseed shipments in 1995, a ratio largely unchanged since the late 1970s.

Figure 2
Modal shares of grain and soybean shipments, 1995
Barge transportation is most important in the export grain and soybean market

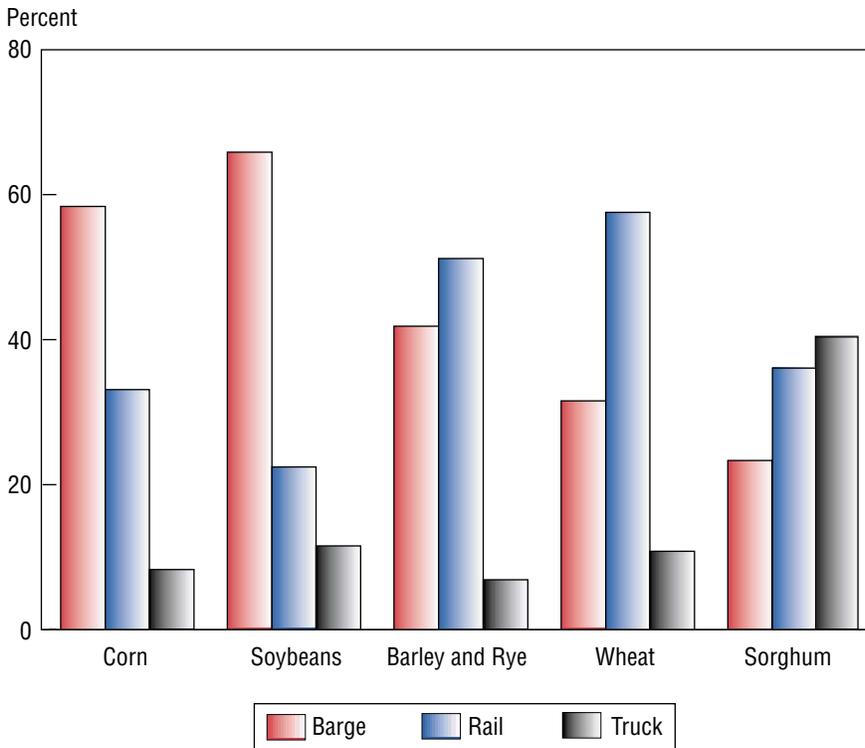


Note: Totals may not add up to 100 percent due to rounding.
 Source: Eriksen et al.

Figure 3

Modal shares of export grain and soybean shipments by type of grain, 1995

Barges are most important for corn and soybean shipments



Source: Eriksen et al.

Barge transportation is most important in the export corn and export soybean markets, where it accounted for 58 percent and 66 percent of shipments in 1995 (fig. 3). Most corn and soybeans are grown near the Mississippi River system. Barge transportation is also important in the barley, rye, wheat, and sorghum export markets.

With the Federal Government's investment in waterways, the barge industry, some argue, has unfairly benefited from a public subsidy (Bronzini). The railroad industry, in particular, has cited its competitive disadvantage as a result of the continued public support of the Nation's inland waterway infrastructure. The waterway industry counters that railroads massively

benefited from the granting of public lands by the Government in the 19th century, and that rail labor benefits from public subsidies of the Railroad Retirement System. Sussman summarizes the argument for continued public support this way: "Given the close ties between the waterways and the Nation's resource base and the lack of a private sector entity that could effectively provide and manage the physical facilities that support navigation, it seems reasonable to conclude that the Federal Government will be heavily involved in this system for many decades to come."

Nearly all commodities that use the waterway system use multiple modes of transportation, including trucking, rail, or pipelines. For

example, export corn shipments coming from the Midwest typically arrive at a riverside grain elevator on the Mississippi by either truck or rail. If each mode is to be used to best advantage, the entire transportation network must be optimized. If any link in the system is underfunded, then the entire network suffers.

Inland Waterways Reduce Costs, Encourage Development

Inland waterways offer a number of economic benefits. According to one study, economic activity on the waterway system creates an estimated \$4 billion in Federal tax revenue (U.S. Army Corps of Engineers, 1995). An estimated 800,000 jobs in the agriculture, manufacturing, and mining industries are linked to the origination or receipt of barge-oriented shipments (Mercer Management Consulting). The inland barge industry annually moves some 1 billion barrels of petroleum products and 450 million barrels of chemicals to domestic users or terminals, with 169 million tons of coal and 94 million tons of farm and food products transported on inland waterways in 1995 (U.S. Army Corps of Engineers, 1996). These all are important industries in rural America.

Since the early 1960s, domestic shipments on inland rivers have generally increased, while those on the Great Lakes have declined (fig. 4). By 1997, domestic waterborne commerce on all components of the inland waterway system accounted for over 738 million short tons (a short ton is equivalent to 2,000 pounds) of freight shipments, representing about 70 percent of all domestic waterborne freight shipments in the Nation. The remainder is made up of

coastal, intraport, and intraterritorial shipments.

One of the main advantages of waterway transportation is its very low rate structure, averaging 0.73 cent per ton-mile in 1995, versus 2.49 cents for railroads, the next cheapest transportation mode (Haulk). This low rate structure fosters competition and exerts downward pressure on the rates of alternative modes of transportation, most notably rail. The waterways' cost effectiveness enables export price advantages for some U.S. exports. For example, corn produced in Iowa cost \$2.33 per bushel to grow and harvest in 1996, compared with \$1.33 per bushel in Argentina. However, after domestic transportation, the cost

of Argentine corn delivered to the mouth of the Plata River increases to \$3.21 per bushel, compared with \$3.01 per bushel for U.S. corn delivered to the Gulf of Mexico (Haulk).

Waterways offer a number of other benefits. The inland navigation system is, by far, the safest mode of transportation. For example, the death rate for barge tows in 1993 was 0.01 death per billion ton-miles, compared with 0.84 for trucks and 1.15 for railroads (Haulk). And barges are more than 200 times safer than railroads in terms of injuries. Barges tend to operate in less congested environments than other freight transportation modes and their slow speeds typically allow other water-

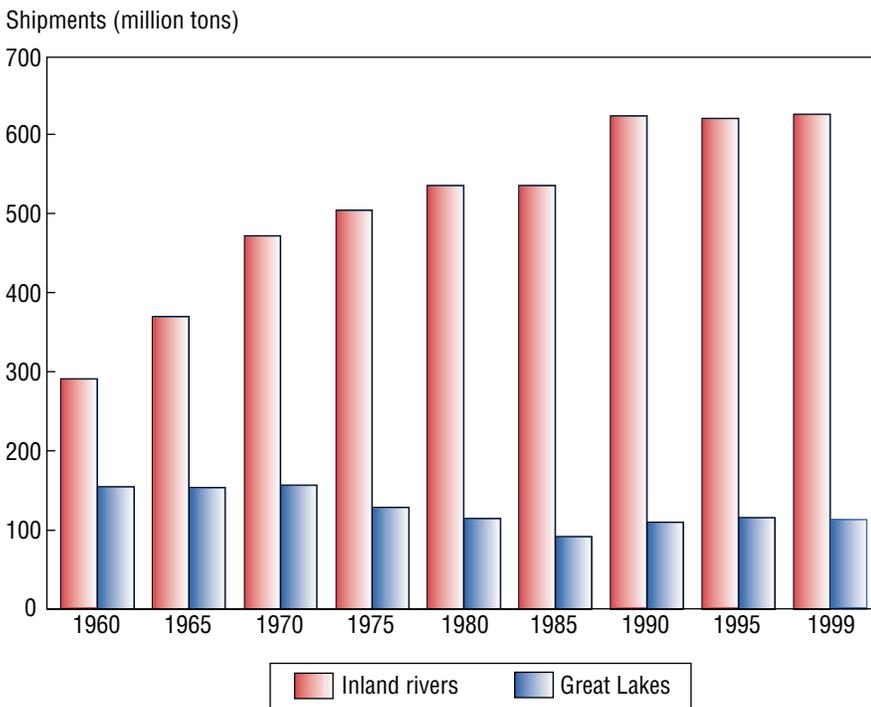
way users sufficient time to avoid accidents.

The waterway system also offers various environmental advantages. Barge transportation not only emits fewer hydrocarbons, carbon monoxide, and nitrous oxide per ton-mile than rail or trucking, but pollutants tend to be emitted in more remote locations, which further reduces the impact of pollution on population centers (U.S. Department of Transportation).

Waterways can promote rural economic development in a number of ways. The system of locks and dams provides reliable, year-round sources of water supply for local communities, and can mitigate floods. Waterways enable private boating and commercial use by the gambling and pleasure cruise industry. Waterfront property can accelerate residential and commercial development in many areas. Finally, about 50 lock-associated dams nationwide have hydroelectric power capabilities.

Potential benefits of the waterway system must be balanced with associated costs. For example, commercial and recreational use of the waterway system has raised environmental concerns over fish and wildlife populations, water quality, streambeds, and shorelines. Although this increasingly contentious issue often focuses on the Upper Mississippi, it affects many navigable waterways throughout the Nation. Moreover, undertaking improvements to the waterway system can impair the recreational value and scenic beauty of some natural areas, degrade wildlife habitat, increase turbidity of water, interrupt fishing, and increase flooding in some low-lying areas.

Figure 4
Domestic waterborne commerce on inland rivers and Great Lakes, 1960-99
Freight shipments increased on inland rivers, decreased on the Great Lakes



Source: U.S. Army Corps of Engineers, *Waterborne Commerce of the United States*, 1999.



Helicopter carrying grain inspectors from the Illinois Department of Agriculture prepares to land on a grain-laden barge tow on the Mississippi River near East St. Louis, Illinois. Photo courtesy USDA/ERS.

Also, the commercial use of waterways requires a number of special considerations. Because barge transportation is very slow, averaging only 6 miles per hour, products that require either rapid or precise scheduling requirements, such as high-value or differentiated commodities, may opt to use faster modes of transportation. And because rivers rarely travel in straight lines, point-to-point distances for barge transportation are usually greater than for other modes, although this disadvantage is usually overcome by low rates. Barge transportation can be affected by lock and dam delays. And waterways tend to be more directly affected by adverse weather conditions than railroads, particularly in the north where the inland waterway system is unusable for 3-4 months during the winter.

Challenges Facing the Inland Waterway System

Inland waterways face a number of pressing challenges, infrastructure foremost among them. With over 170 lock sites and 210 lock chambers nationwide, many facilities are in various stages of disrepair (Casavant). In particular, the system of locks and dams on

the Mississippi and Illinois Rivers, mostly constructed between 1930 and 1950, is aging. Also, many Upper Mississippi locks cannot fully meet the needs of current barge traffic.

The Army Corps of Engineers is responsible for routine maintenance of navigation channels, including dredging and channel widening. However, upgrading and repairing the system can cost \$100 million or more per lock. Mississippi River Lock 26, near Alton, Illinois, was replaced in 1994 at a cost of \$950 million. Whether the benefits of the projects justify the costs—and determining who should fund the projects—has been the subject of much public debate. Since 1993, the U.S. Army Corps of Engineers has been reviewing the long-term structural needs of the Mississippi River system. As of this writing, the outcome of this debate is still unresolved.

Also uncertain is the future status of four dams on the Lower Snake River. Some have argued for "breaching" (or removing) the dams, or constructing bypasses to allow salmon to reach spring breeding sites further downstream. At this debate's core is the question of the river's primary use. Is it mainly

a low-cost transportation waterway that brings grain to northwestern export elevators, a source of hydroelectric power, or a natural resource harboring endangered species of salmon? Waterways throughout the Nation, most notably Maine's Kennebec River, have had dams removed in recent years when the environmental benefits of breaching were thought to outweigh commercial benefits.

Railroad capacity issues also affect use of the Nation's inland waterway system. Stemming from deregulation of the railroad industry in 1980 under the Staggers Rail Act, rail carriers have recently initiated aggressive restructuring to improve their profitability, which has engendered a high degree of concentration among major (Class I) railroads. These consolidations have resulted in several notable disruptions of rail service in recent years. For example, traffic flows along the rail network were severely disrupted in mid-1997 and 1998 when the largest rail freight company, Union Pacific, experienced difficulties in absorbing operations of the Southern Pacific railroad, following its merger in 1996. As bulk shippers shifted to other transportation modes, waterways experienced heavier traffic volumes. This has been of particular concern for agriculture and other rail-dependent industries.

Globalization is another issue increasingly affecting the Nation's inland waterways. By one estimate, total agricultural trade with Mexico has increased by over 50 percent since the institution of the North American Free Trade Agreement (NAFTA) in 1994 (Casavant). In recent years, this increased commerce has created transportation bottlenecks along the U.S.-Mexico border, at times disrupting rail and

truck service. Some have speculated that the Mississippi River may become a new outlet for Canadian grain destined for international markets, such as Mexico (Casavant).

Future use of the inland waterway system will continue to be affected by factors external to the

domestic waterway transportation industry. For example, foreign competitors in the grain and oilseed trade—primarily Argentina, Brazil, and China—are undertaking significant improvements in their domestic transportation systems (Bertels, 1998a). The loss of a U.S. cost

advantage deriving from the inland waterway system may reduce demand for shippers using America's inland waterways. And, as of this writing, it is still unclear how the incidents of Sept. 11, 2001 will affect the waterway system. **RA**

For Further Reading . . .

Paul J. Bertels, *Infrastructure Improvements by International Competitors*, U.S. Dept. of Agriculture, Agricultural Marketing Service, July 1998a.

Paul J. Bertels, *Long-term Capacity of the Upper Mississippi and Illinois Waterways*, U.S. Dept. of Agriculture, Agricultural Marketing Service, July 1998b.

Michael S. Bronzini, "Inland Waterways: Still or Turbulent Waters Ahead?" *Annals of the American Academy of Political and Social Science*, Vol. 553, Sept. 1997, pp. 66-86.

Ken Casavant, *Agricultural Transportation Challenges of the 21st Century: Inland Waterborne Transportation - An Industry Under Siege*, U.S. Dept. of Agriculture, Agricultural Marketing Service, Nov. 2000.

Ken A. Eriksen, Jerry D. Norton, and Paul J. Bertels, *Transportation of U.S. Grains: A Modal Share Analysis, 1978-95*, U.S. Dept. of Agriculture, Agricultural Marketing Service, Mar. 1998.

Jerry E. Fruin and C. Phillip Baumel, "How Much Transportation Infrastructure does Rural America Need?" Paper presented to the Hubert H. Humphrey Institute of Public Affairs Transportation and Economic Development in the Upper Midwest Research Roundtable and North Central Regional Research Committee NC-137 on Agricultural and Rural Transportation, Washington, DC, April 17, 1992.

C. Jake Haulk, "Inland Waterways as Vital National Infrastructure: Refuting 'Corporate Welfare' Attacks," Report No. 97-04, Allegheny Institute for Public Policy, Pittsburgh, Pennsylvania, 1998.

Nancy S. Lee and Ken Casavant, *Waterborne Commerce on the Columbia-Snake System*, Eastern Washington Intermodal Transportation Study (EWITS) Research Report #12, Dept. of Agricultural Economics, Washington State University, Oct. 1996.

Mercer Management Consulting, *The Importance of Inland and Intracoastal Waterways to State Economies*, Lexington, Massachusetts, Aug. 1995.

Joseph M. Sussman, "Transportation's Rich History and Challenging Future - Moving Goods," *Transportation Research Circular*, Vol. 461, Aug. 1996, p. 18.

U.S. Army Corps of Engineers, *Navigation: The Role of the U.S. Army Corps of Engineers*, Navigation Analysis Division, Institute for Water Resources, Water Resources Support Center, 1995.

U.S. Army Corps of Engineers, *The U.S. Waterway System - FACTS*, Navigation Analysis Division, Institute for Water Resources, Water Resources Support Center, Dec. 1996.

U.S. Department of Transportation, *Environmental Advantages of Inland Barge Transportation*, Office of Ports and Intermodal Transportation, Maritime Administration, Aug. 1994.

Residence and Farm Experience Influence Perception of Agriculture

A Survey of North Central Residents

Cheryl J. **Wachenheim**
Richard **Rathge**

Although competitive market forces mainly determine the mix of productive activities in a given region, individuals, interest groups, government agencies, and others also influence the type, structure, and practices of local industry. Legislation governing the conduct of industry participants is supposed to be designed to reflect the best interests of all constituents. Therefore, policymakers must know what the preferences and perceptions are.

In developing agricultural policy, policymakers have traditionally relied on input from farmers and their interest groups. Accordingly, the literature has focused on the farm policy goals of those directly involved in production agriculture. However, as farmers have become

Inhabitants of the North Central region have a favorable view of agriculture, regarding farmers as beneficial to the local economy and good environmental stewards. Survey respondents felt that existing environmental regulations are appropriate; that consolidation of agriculture will hurt the environment, society, and local economies; and that government should do more to help local farmers stay in business. Rural nonfarm residents, versus those residing on a farm or in a town or city, were more convinced of farmers' positive impact on the local economy, but were less concerned about the effect of farm consolidation.

fewer and rural residents are increasingly removed from the daily activities of production agriculture, nonfarm residents have become more prominent in farm and environmental policy. Their knowledge, perceptions, and policy goals are increasingly solicited, but are somewhat unknown.

Most of the existing literature considers individual States, narrowly defined issues (e.g., the environmental impact of production agriculture), or a narrow set of individuals (e.g., high school students). In one exception, Roper Starch Worldwide, Inc., compared perceptions of consumers with those of farmers and found a surprising lack of knowledge among consumers regarding modern agricultural production practices. While consumer perceptions often paralleled farmers', the level of concern about the impact of farming was often much higher among consumers.

It is no longer possible to ignore mounting evidence that rural nonfarm residents care about the impact of agriculture on their econ-

omy and the environment. Their input in the agricultural policy process is likely to continue to increase. Furthermore, as rural communities expand through residential development, the resulting mix of rural nonfarm residents may be both more aware of, and less familiar with, production agriculture.

This study solicited perceptions about agriculture and identified how those perceptions differ based on the occupation/situation of North Central residents. The North Central region was selected because it contains the highest share of farm-dependent counties, those from which more than 20 percent of proprietor earnings come from agriculture.

Overall Perceptions of Agriculture Were Positive

The majority of respondents strongly agreed that farmers have a positive impact on their local economy (71 percent); noise, odor, and other environmental issues associated with farming in their area are minimal (62 percent); the loss of

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Table 1

Responses to statements regarding farming*Overall, respondents had a favorable view of farmers*

Statement	Mean	Strongly Disagreed	Strongly Agreed
		<i>Percentage of valid responses</i>	
Farmers have a positive impact on the local economy in my area	4.46	3.8	70.9
Most of the agricultural supplies (e.g., seeds, fertilizers, feed) used by farmers in my area are purchased locally	4.02	5.2	47.4
Loss of farmers in the region will greatly hurt our local economy	4.13	9.6	61.8
The government should do more to help farmers in this area stay in business	3.99	8.6	51.5
Farmers in this region are creating an environmental concern that should be addressed	2.69	32.0	19.7
The noise, odor, and other environmental issues associated with farming in this area are minimal	4.29	5.6	62.4
In farming areas, nonfarm residents need to become accustomed to the noise, odor, and other concerns associated with farming	3.86	7.1	41.2
Environmental protection laws regulating farming practices are too strict	3.04	14.7	18.6
As residential development of cities/towns moves closer to farming areas, more restrictive ordinances regarding noise, odor, and other environmental concerns should be allowed	2.57	31.2	12.3
There should be no restrictions on the size of livestock operations even though they may be in close proximity to residential development of cities/towns or public recreational areas	2.70	24.7	15.5
The replacement of smaller family farms in this area by large-scale farms using hired labor will have an undesirable economic and social consequence	3.87	6.5	44.9
Poor economic conditions will likely lead to the replacement of family farms in this area by large farms run by hired labor	3.84	8.3	43.2
More environmental concerns are created by large-scale farms using hired labor than by small family farms	4.06	4.9	49.1

Note: Means are based on a Likert scale with 1 being "strongly disagree" and 5 being "strongly agree." The response of "Do not know" was excluded from the mean.

Source: C. J. Wachenheim and R. Rathge, *A Survey of Residents of the North Central Region*, 2000.

farmers in the region will greatly hurt the local economy (62 percent); and government should do more to help farmers in their area stay in business (52 percent) (table 1). Forty-seven percent

strongly agreed most agricultural supplies used by farmers are purchased locally.

Respondents tended to be negative about evolving farm structure. Nearly half strongly agreed that

large-scale farms create more environmental concerns (49 percent) and that their replacement of smaller farms will have undesirable economic and social consequences (45 percent).

Perceptions Differ Depending on Location and Association with Livestock

Social and physical distance from production agriculture can influence perception. Differences in perception can result, for example, from unfamiliarity with farm practices (Thelen). In the current study, we investigated whether the experience or residence of respondents influenced their perceptions and found they did. How agriculture is perceived differed among farm, rural nonfarm, and city or town residents; between those with a livestock association and others; and between those residing in a county that is rural versus nonrural, farm-dependent versus nonfarm-dependent, or growing versus declining in population. We discuss differences in perceptions between these groups in three areas: the environmental impact of production agriculture and its appropriate regulation, perceptions about the changing structure of production agriculture, and the economic impact of production agriculture on local communities.

Environmental Impact of Greatest Concern to Those Further Removed from Farming

Overall, respondents indicated that farmers are good environmental stewards and that existing environmental regulations are appropriate. Sixty-two percent of respondents minimized the significance of environmental issues associated with farming; 41 percent strongly agreed that, in farming areas, nonfarm residents need to become accustomed to noise, odor, and other concerns associated with farming (table 1). More respondents strongly disagreed (32 and 31 percent, respectively) than strongly agreed (20 and 12 percent) that

farmers are creating an environmental concern and that more restrictive ordinances should be imposed to address environmental concerns as residential development moves closer to farming. Although this supports the perception of farmers as good environmental stewards among residents of the North Central region, differences in perception were at times substantial.

Perceptions of farmers' environmental stewardship differed by locale (table 2). Farm residents were less apt than city residents to think farmers were creating an environmental concern, more apt to minimize environmental issues associated with farming, and more inclined to find laws regulating farming practices too strict (table 2). Farmers were more apt (mean level of agreement was higher) than other rural and city residents to feel that nonfarm residents need to become accustomed to concerns related to farming and less apt to favor more restrictive ordinances as residential development moves closer to farming. Finally, farm residents were more likely to favor no restrictions on the size of livestock operations, regardless of locale.

Given the distinct perceptions of individuals grouped by residence, it was surprising that perceptions about agriculture and the environment did not differ between residents of counties with differing rural classifications (table 3). If anything, those in nonrural counties (with an urban population of more than 20,000 or more than 2,500 and adjacent to a metropolitan area) are more supportive of agriculture's role in the environment, though it is not clear why.

There were few differences in perception between residents of farm-dependent versus nonfarm-

dependent counties (table 4). In general, those in farm-dependent counties more strongly agreed that there were environmental concerns associated with farming and less strongly agreed that there should be additional restrictions under residential development, although the numeric differences were not statistically significant. Those in farm-dependent counties less strongly agreed that there should be no restrictions on the size of livestock operations. The difference was significant.

Residents living in counties that had gained population over the past two decades more strongly agreed than those in counties losing population that farmers in the region were creating an environmental concern that should be addressed (table 5). And, while population-gain counties more strongly favored restrictive ordinances as residential areas develop, they also more strongly opposed restrictions on the size of livestock operations regardless of proximity.

Livestock farmers (those receiving some portion of their net income from or having worked with livestock within the past 5 years) more strongly disagreed that environmental issues associated with farming exist, that additional environmental legislation is necessary, and that more strict ordinances should be allowed as rural areas develop (table 6). They were more likely to agree that environmental issues associated with farming are minimal, that nonfarm residents need to become accustomed to farming practices, that environmental protection laws regulating farming practices are too strict, and that there should be no limit on the size of livestock operations regardless of their proximity to urban development.

Table 2

Perception comparison by residence

Farm residents expressed greater concern about the impact of farm consolidation and perceived there to be less of an environmental concern associated with agriculture

Statement	Onfarm population	Rural area, not farm	City or town
	<i>Mean response</i>		
Farmers have a positive impact on the local economy in my area	4.40	4.53	4.44
Most of the agricultural supplies (e.g., seeds, fertilizers, feed) used by farmers in my area are purchased locally	4.06	4.16	3.88
Loss of farmers in this region will greatly hurt our local economy	4.33	4.02	4.09
The government should do more to help farmers in this area stay in business	3.83	4.03	4.05
Farmers in this region are creating an environmental concern that should be addressed	2.45	2.72	2.81
The noise, odor, and other environmental issues associated with farming in this area are minimal	4.46	4.29	4.19
In farming areas, nonfarm residents need to become accustomed to the noise, odor, and other concerns associated with farming	4.20	3.90	3.62
Environmental protection laws regulating farming practices are too strict	3.22	3.00	2.92
As residential development of cities/towns moves closer to farming areas, more restrictive ordinances regarding noise, odor, and other environmental concerns should be allowed	2.21	2.56	2.82
There should be no restrictions on the size of livestock operations even though they may be in close proximity to residential development of cities/towns or public recreational areas	2.87	2.58	2.70
The replacement of smaller family farms in this area by large-scale farms using hired labor will have an undesirable economic and social consequence	4.01	3.77	3.86
Poor economic conditions will likely lead to the replacement of family farms in this area by large farms run by hired labor	4.00	3.67	3.87
More environmental concerns are created by large-scale farms using hired labor than by small family farms	4.14	4.15	3.94

Note: Means are based on a Likert scale with 1 being "strongly disagree" and 5 being "strongly agree." The response of "Do not know" was excluded from the mean.

Source: C. L. Wachenheim and R. Rathge, *A Survey of Residents of the North Central Region*, 2000.

Table 3

Perception comparison by metro residents versus rural, mean response

Metro residents concurred with those who lived in rural areas regarding the impact of agriculture on the environment and the impact of the changing structure of agriculture on the environment and local economy

Statement	Metro and adjacent counties	All other counties	Nonrural counties	Rural counties
	<i>Mean response</i>			
Farmers have a positive impact on the local economy in my area	4.49	4.43	4.55	4.41*
Most of the agricultural supplies (e.g., seeds, fertilizers, feed) used by farmers in my area are purchased locally	4.17	3.89***	4.21	3.90***
Loss of farmers in this region will greatly hurt our local economy	4.23	4.04*	4.26	4.06*
The government should do more to help farmers in this area stay in business	3.95	4.03	3.95	3.99
Farmers in this region are creating an environmental concern that should be addressed	2.65	2.72	2.62	2.73
The noise, odor, and other environmental issues associated with farming in this area are minimal	4.32	4.26	4.38	4.22
In farming areas, nonfarm residents need to become accustomed to the noise, odor, and other concerns associated with farming	3.95	3.78*	3.99	3.79*
Environmental protection laws regulating farming practices are too strict	3.02	3.05	3.04	3.06
As residential development of cities/towns moves closer to farming areas, more restrictive ordinances regarding noise, odor, and other environmental concerns should be allowed	2.51	2.64	2.58	2.59
There should be no restrictions on the size of livestock operations even though they may be in close proximity to residential development of cities/towns or public recreational areas	2.77	2.64	2.82	2.64
The replacement of smaller family farms in this area by large-scale farms using hired labor will have an undesirable economic and social consequence	3.85	3.89	3.81	3.88
Poor economic conditions will likely lead to the replacement of family farms in this area by large farms run by hired labor	3.87	3.81	3.85	3.82
More environmental concerns are created by large scale farms using hired labor than by small family farms	4.00	4.12	3.96	4.13

Note: Means are based on a Likert scale with 1 being "strongly disagree" and 5 being "strongly agree." The response of "Do not know" was excluded from the mean. Significance of two-tailed F-statistic is denoted as * (< .10), ** (< .05), and *** (< .01). Nonrural counties were defined to include those with an urban population of 20,000 or more or an urban population of more than 2,500 and adjacent to a metropolitan area (ERS).

Source: C. J. Wachenheim and R. Rathge, *A Survey of Residents of the North Central Region*, 2000.

Table 4

Perception comparison, farm-dependent versus nonfarm-dependent counties

Respondents in farm-dependent counties agreed that farmers had a more positive impact on the local economy and expressed greater concern about the consolidations of production agriculture

Statement	Farm-dependent counties	Nonfarm-dependent counties
	<i>Mean response</i>	
Farmers have a positive impact on the local economy in my area	4.66	4.40***
Most of the agricultural supplies (e.g., seeds, fertilizers, feed) used by farmers in my area are purchased locally	3.92	4.06
Loss of farmers in this region will greatly hurt our local economy	4.42	4.06***
The government should do more to help farmers in this area stay in business	3.91	3.99
Farmers in this region are creating an environmental concern that should be addressed	2.77	2.65
The noise, odor, and other environmental issues associated with farming in this area are minimal	4.16	4.32
In farming areas, nonfarm residents need to become accustomed to the noise, odor, and other concerns associated with farming	3.84	3.91
Environmental protection laws regulating farming practices are too strict	2.95	3.10
As residential development of cities/towns moves closer to farming areas, more restrictive ordinances regarding noise, odor, and other environmental concerns should be allowed	2.45	2.64
There should be no restrictions on the size of livestock operations even though they may be in close proximity to residential development of cities/towns or public recreational areas	2.48	2.79**
The replacement of smaller family farms in this area by large-scale farms using hired labor will have an undesirable economic and social consequence	4.04	3.81*
Poor economic conditions will likely lead to the replacement of family farms in this area by large farms run by hired labor	4.15	3.74***
More environmental concerns are created by large-scale farms using hired labor than by small family farms	4.17	4.01

Note: Means are based on a Likert scale with 1 being "strongly disagree" and 5 being "strongly agree." The response of "Do not know" was excluded from the mean. Significance of two-tailed F-statistic is denoted as * (< .10), ** (< .05), and *** (< .01). Farm-dependent counties are those with 20 percent or more of labor and proprietor income from farming.

Source: C. J. Wachenheim and R. Rathge, *A Survey of Residents of the North Central Region*, 2000.

Table 5

Perception comparison by population change

Respondents in counties that have experienced a population loss more strongly agreed that farmers had a positive impact on the local economy, and that changes in the structure of production agriculture have negative consequences

Statement	Loss	Population Gain
	<i>Mean response</i>	
Farmers have a positive impact on the local economy in my area	4.63	4.30***
Most of the agricultural supplies (e.g., seeds, fertilizers, feed) used by farmers in my area are purchased locally	4.09	3.92
Loss of farmers in this region will greatly hurt our local economy	4.33	3.94***
The government should do more to help farmers in this area stay in business	3.95	4.02
Farmers in this region are creating an environmental concern that should be addressed	2.81	2.57*
The noise, odor, and other environmental issues associated with farming in this area are minimal	4.32	4.26
In farming areas, nonfarm residents need to become accustomed to the noise, odor, and other concerns associated with farming	3.93	3.80
Environmental protection laws regulating farming practices are too strict	3.02	3.05
As residential development of cities/towns moves closer to farming areas, more restrictive ordinances regarding noise, odor, and other environmental concerns should be allowed	2.47	2.68*
There should be no restrictions on the size of livestock operations even though they may be in close proximity to residential development of cities/towns or public recreational areas	2.57	2.83**
The replacement of smaller family farms in this area by large-scale farms using hired labor will have an undesirable economic and social consequence	4.10	3.64***
Poor economic conditions will likely lead to the replacement of family farms in this area by large farms run by hired labor	4.12	3.57***
More environmental concerns are created by large-scale farms using hired labor than by small family farms	4.16	3.96**

Note: Means are based on a scale from 1 to 5, with 1 being "strongly disagree" and 5 being "strongly agree." "Do not know" was excluded from the mean. Significance of two-tailed F-statistic is denoted as * (< .10), ** (< .05), and *** (< .01).

Source: C. J. Wachenheim and R. Rathge, *A Survey of Residents of the North Central Region*, 2000.

Table 6

Perception comparison by experience with livestock

Those who have worked with livestock—or have close friends or relatives who have—were more supportive of the current role of agriculture in the environment, were more likely to agree that environmental protection laws regarding farming practices are too strict, and were more readily opposed to restrictions on the size of livestock operations

Statement	Livestock farms	All others	Livestock associates	All others
	<i>Mean response</i>			
Farmers have a positive impact on the local economy in my area	4.55	4.43	4.54	4.18***
Most of the agricultural supplies (e.g., seeds, fertilizers, feed) used by farmers in my area are purchased locally	4.01	4.03	4.03	3.99
Loss of farmers in this region will greatly hurt our local economy	4.24	4.09	4.16	4.02
The government should do more to help farmers in this area stay in business	3.91	4.01	3.94	4.15
Farmers in this region are creating an environmental concern that should be addressed	2.59	2.73	2.64	2.84
The noise, odor, and other environmental issues associated with farming in this area are minimal	4.46	4.23**	4.29	4.31
In farming areas, nonfarm residents need to become accustomed to the noise, odor, and other concerns associated with farming	4.09	3.78***	3.94	3.61**
Environmental protection laws regulating farming practices are too strict	3.34	2.91***	3.12	2.71***
As residential development of cities/towns moves closer to farming areas, more restrictive ordinances regarding noise, odor, and other environmental concerns should be allowed	2.36	2.65**	2.50	2.86**
There should be no restrictions on the size of livestock operations even though they may be in close proximity to residential development of cities/towns or public recreational areas	2.89	2.64*	2.81	2.34***
The replacement of smaller family farms in this area by large-scale farms using hired labor will have an undesirable economic and social consequence	4.01	3.82	3.92	3.69*
Poor economic conditions will likely lead to the replacement of family farms in this area by large farms run by hired labor	4.01	3.78*	3.85	3.79
More environmental concerns are created by large-scale farms using hired labor than by small family farms	4.01	4.02	4.10	3.92

Note: Means are based on a scale from 1 to 5, with 1 being “strongly disagree” and 5 being “strongly agree.” “Do not know” was excluded from the mean. Significance of two-tailed F-statistic is denoted as * (< .10), ** (< .05), and *** (< .01).

Source: C. J. Wachenheim and R. Rathge, *A Survey of Residents of the North Central Region*, 2000.

There were similar perceptions when the livestock group was defined as livestock associates, those individuals associated with another who works or has worked on a livestock farm. However, unlike livestock farmers, livestock associates did not differ from other respondents in mean level of agreement that environmental concerns associated with farming are minimal.

Farm Size Seen As a Potential Problem

North Central respondents generally believe that poor economic conditions will likely lead to the replacement of family farms by larger farms and that this will have undesirable consequences. Two-thirds of respondents agreed that poor economic conditions will likely mean displacement of family farms in their area by large farms run by hired labor; only 19 percent disagreed. Sixty-four percent agreed that such displacement will have undesirable economic and social consequences; only 16 percent disagreed. Finally, nearly three-fourths of respondents thought that large farms using hired labor create more environmental concerns than small family farms, while only 12 percent disagreed. These findings concur with others regarding perceptions about farm structure, although the real effects of changes in farm structure on agriculture, society, and the environment are far from definitive (Wachenheim and Lesch, Drabenstott).

Farmers were more apt than rural nonfarm residents to see the replacement of smaller family farms by large-scale farms as having undesirable consequences and as following from poor economic

conditions (only the latter difference was statistically significant). Rural residents were more apt than city residents to view large-scale farms as creating greater environmental concerns. The difference was not statistically significant.

Residents of farm-dependent counties and those that had experienced a population loss more strongly agreed (than nonfarm-dependent or population-gain counties) that the displacement of smaller farms will have undesirable economic and social consequences and that poor economic conditions will likely hasten this replacement. Both groups also more strongly agreed that large farms create more environmental concerns, but only the difference between the counties by population loss/gain was significant.

Economic Impact of Farming Seen as Positive

North Central respondents overwhelmingly agreed that farmers have a positive impact on their local economy. While 71 percent strongly agreed (table 1), only 5.5 percent disagreed. Over 70 percent believed that most of the agricultural supplies used by farmers are purchased locally, while only 10 percent did not. Three-fourths agreed, most of them strongly, that a loss of farmers in the region would greatly hurt the local economy. Over two-thirds agreed that the government should do more to help area farmers stay in business. Regardless of how they were defined, there were no significant differences between groups of respondents on whether the government should do more to help farmers stay in business.

Some evidence suggests that perceptions about the economic impact of agriculture should differ

by the size of the nearby community (Wachenheim and Lesch). In the current study, perceptions did not, in general, differ between individuals residing near different size towns or cities. One exception was respondents near very small towns (population of the nearest town is less than 250), who were less likely to agree than those near larger towns that most agricultural supplies used by farmers are purchased locally. One explanation is that towns of fewer than 250 inhabitants are generally not large enough to support agricultural input suppliers. The same respondents were more likely than those near larger towns to agree that a loss of farmers in the region would greatly hurt the local economy. Finally, persons residing near towns of more than 2,500 inhabitants were less likely than persons near smaller towns to agree that farmers have a positive impact on the local economy.

Residents in a metro adjacent or in a nonrural county more strongly agreed than those in non-metro or rural counties that most of the agricultural supplies used by area farmers are purchased locally and that the loss of farmers would greatly hurt the local economy. This is contrary to our expectations, but also demonstrates that the perception of farmers as shopping locally is stronger when there is a population base large enough to support local suppliers.

As expected, residents of farm-dependent counties more strongly agreed than residents of nonfarm-dependent counties that farmers have a positive impact on the local economy and that the loss of farmers would greatly hurt the local economy. The same differences in perceptions were evident between

Who Are the Respondents?

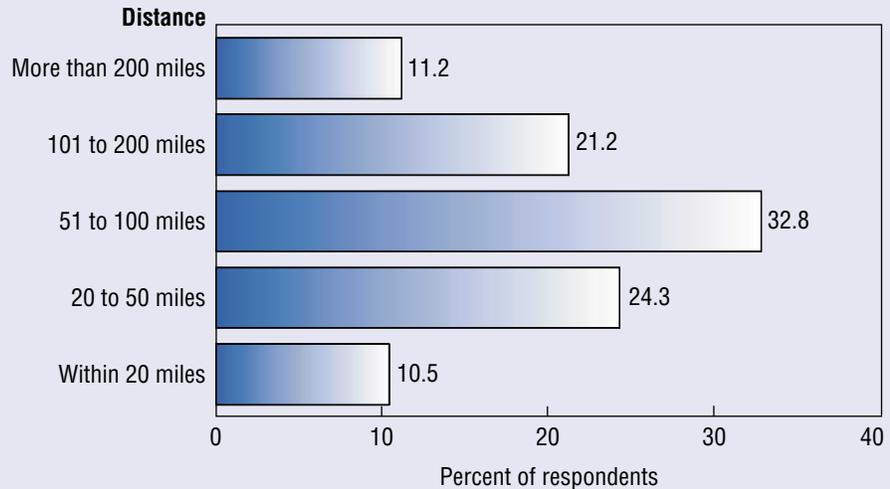
Characteristics of respondents reflected a rural population. A majority of those surveyed were long-term residents of rural areas. Forty-two percent lived in a city or town, 33 percent in a rural area but not on a farm, and 25 percent on a farm. Among those not currently living on a farm, a slight majority had previously lived on a farm, over two-thirds of them for more than 15 years.

Most respondents have had experience with or, because of close proximity, exposure to both crop and livestock farming. Almost 90 percent lived within 5 miles of a farm; 56 percent lived within 1 mile. Among those who lived more than 5 miles from a farm, 48 percent said they had at one time lived within 5 miles of a farm. Of all respondents who do live or have lived within 5 miles of a farm, over three-fourths said the nearest farm raised both livestock and crops. More than half of respondents had either lived on or within 5 miles of a farm for more than 15 years, nearly 80 percent for more than 5 years.

About 28 percent of respondents reported owning or operating a farm. Most farms were classified as individual or family farms (94 percent). Over half of those owning or operating a farm said none or less than one-fourth of their net household income came from their farming operation during the past 5 years. Overall, 97 percent of respondents had finished high school or obtained their GED. Fifty-four percent had attended college. A lower percentage of those owning or operating a farm (19 percent) had completed a bachelor's degree than did others (28 percent).

Distance respondents live from a city of at least 100,000 inhabitants

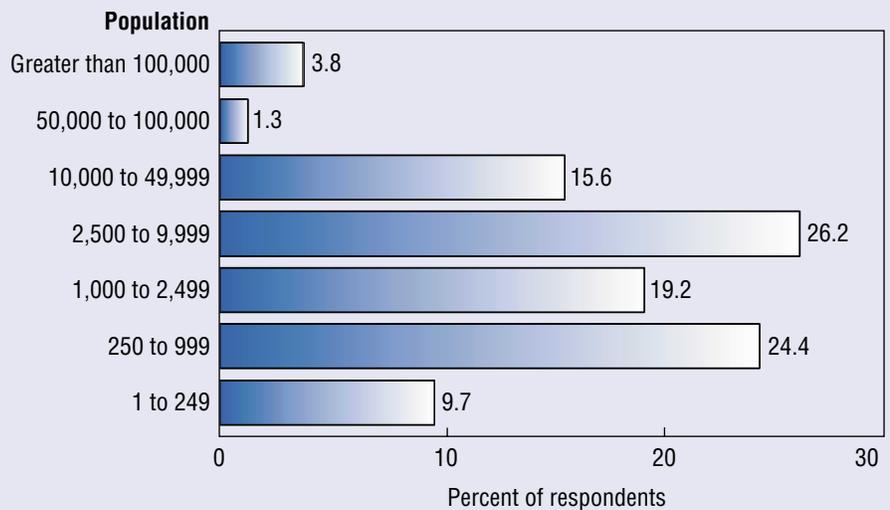
Respondents lived an average of 108 miles from a city with at least 100,000 inhabitants



Source: C. J. Wachenheim and R. Rathge, *A Survey of Residents of the North Central Region*, 2000.

Population of nearest city or town to respondents

Slightly more than half of respondents said the city or town closest to them had fewer than 2,500 inhabitants



Source: C. J. Wachenheim and R. Rathge, *A Survey of Residents of the North Central Region*, 2000.

Methods

Data were derived from a telephone survey of households in the 12-State North Central region using a 2-stage disproportional random sample. Residents in 63 counties were surveyed. All but three counties are classified as nonmetro (ERS). Of these, 27 are adjacent to a metropolitan county.

Counties in the region were first stratified into 12 groups by location relative to a metropolitan center and by population change between 1980 and 1998. Counties were categorized as metropolitan and adjacent or nonmetro and nonadjacent counties. Within each locational category, counties were split into six population categories: population increase from 1980 to 1998 of less than 10 percent, between 10 and 30 percent, and more than 30 percent, and population decrease of less than 5 percent, between 5 and 10 percent, and more than 10 percent.



Next, 10 households within each of 5 counties in a strata were surveyed by telephone. An equivalent number of households was selected for survey regardless of the population within the county or the State, and responses, as reported, were not weighted. Thus, responses represent only the respondent group and not the general population of the region.

Farm perceptions were measured by respondents' level of agreement with statements modified from those originally designed by Buttel and Jackson-Smith (used for a study exploring Wisconsin farmers' views on livestock expansion) and Wachenheim and Lesch (used to explore rural residents' perceptions of corporate and family farms in Illinois). Respondents were asked to indicate their level of agreement with a series of statements regarding farming using a five-point Likert scale. The 13-item index was designed to represent 5 specific themes: (1) the impact of agriculture on the local economy; (2) farmers' interaction with the environment; (3) the effect of farm structure on the environment, economy, and society; (4) responsibilities of nonfarm residents; and (5) the role of government in assisting farmers, protecting the environment, and restricting the size of livestock farms. The total usable sample was 584. The refusal rate was 55 percent.

those residing in counties that had experienced population loss (more strongly agreed) than residents of counties experiencing population gains.

Farm residents were more apt to cite the potential loss of farmers in the region as greatly hurting the local economy than were rural nonfarm residents. Ironically, city residents more strongly agreed than farm residents that government should do more to help farmers stay in business. This finding concurs with Leistritz and Ekstrom, who found nonfarm residents more

inclined to support government financial aid for farmers than farmers themselves.

Implications for Rural America

This effort contributes to a small but growing body of literature about perceptions of agriculture and its role in the environment, economy, and society. In general, North Central respondents have a favorable view of agriculture. They overwhelmingly agreed that farmers have a positive impact on their local economy. Three-fourths agreed that a loss of farmers in the

region would greatly hurt the local economy; respondents living near small towns were more likely to agree than those living near larger towns or cities.

Overall, farmers were considered good environmental stewards, and existing environmental regulations were perceived as appropriate. A majority of respondents agreed that noise, odor, and other environmental issues associated with farming in their area are minimal. Respondents had strong negative opinions about how the consolidating structure of agriculture will

influence the environment, society, and local economies, and a majority agreed the government should do more to help farmers in their area stay in business.

The current study concurs with existing literature in finding that an individual's experience with and proximity to agriculture influences their perception. Residents living in or near small towns expressed a greater concern about the effect of fewer farmers in the region. Respondents tied to livestock production were less likely to agree that environmental issues associated with farming exist and that additional environmental legislation is needed. Farm residents expressed greater concern about the impact of farm consolidation, perceived less of an environmental concern associated with agriculture, and more strongly approved of existing legislation regulating agriculture than did nonfarm residents. Residents living in farm-dependent and population-loss counties showed the greatest level of concern about changes in farm structure, and most strongly agreed that farmers contribute to the local economy and that their loss would be felt.

Knowing residents' perceptions is important in its own right. These perceptions have been shown to influence the priorities and legislative agendas of governmental agencies (Nordstrom et al.). If these perceptions are inaccurate, individuals, interest groups, and even policy-makers may unwittingly work against the competitive forces otherwise defining the role of farms.

Inaccurate perceptions can be corrected. A good example of correcting misperceptions by educating nonfarmers about agriculture is reported in Knapp and Griffieon. Presentations and farm tours were used to educate nonfarmers about

agriculture in Polk County, Iowa. To accurately evaluate the need for educational efforts, we must first identify existing gaps between reality and perception. That is, we need to know the facts and the perceptions.

Equally important to knowing the perceptions of rural America is recognizing that they cannot be represented as a single viewpoint. Perceptions of individuals with different characteristics and experiences may be unique and perhaps predictable. As demonstrated here, there is likely some correlation between the characteristics defining a group (for example, the size of the nearby town, level of exposure to production agriculture, or farm

or nonfarm residence) and the priorities and values they hold. Values and priorities are often difficult to change. However, the position an individual takes on legislation that will influence the viability of agriculture may be based less on these values and priorities and more on the information that is available to them. If the perceptions of individuals differ by characteristics or experiences that can be used to group them, and if group perceptions differ in part because the knowledge they have differs in level and/or accuracy, then it may be useful for groups promoting particular agricultural policies to target educational campaigns to particular segments of the population. **RA**

For Further Reading . . .

Frederick H. Buttel and Douglas B. Jackson-Smith, "Getting Bigger" *Wisconsin Farmers' Views on Livestock Expansion*, PATS Research Report No. 2, Program on Agricultural Technology Studies, Cooperative Extension, University of Wisconsin-Extension, 1997.

Mark Drabenstott, "Industrialization: Steady Current or Tidal Wave?," *Choices*, Vol. 9, No. 4, 1994, pp. 4-8.

Jill Knapp and LaVon Griffieon, "Non-farmers Guide to Agriculture (Polk County)," Leopold Center Competitive Grant Report 98-57, 1999, pp. 17-19.

F. Larry Leistritz and Brenda L. Ekstrom, "North Dakota Farm and Nonfarm Residents' Views on Financial Assistance Policies," *North Central Journal of Agricultural Economics*, Vol. 10, No. 1, 1988, pp. 125-134.

Patty A. Nordstrom, Martha J. Richards, Lowell L. Wilson, Timothy W. Kelsey, and Charles W. Pitts, "Perceptions of Individuals With and Without Agricultural Experience on the Relation of Livestock Production and Environmental Quality," *NACTA Journal*, Vol. 44, No. 4, 2000, pp. 48-53.

Roper Starch Worldwide Inc., "Gap Research: Consumer and Farmer Opinions about Food and Agriculture," Philip Morris, 2000.

Kurt D. Thelen, *Right to Farm—Environmental Complaint Response*, Michigan Department of Agriculture, Lansing, Michigan, 1991.

Cheryl J. Wachenheim and W. Lesch, "Public Views on Family and Corporate Farms," *Journal of Agriculture and Food Information*, forthcoming.

Rural Community Response to Closure or Downsizing of a Major Employer

F. Larry Leistriz
Kenneth A. Root

Rural communities across the United States are undergoing dramatic economic restructuring. Many communities in the Upper Midwest have suffered economic turbulence associated with changes in agriculture, mining, and manufacturing. The “farm crisis” of the 1980s beset not only farm families but also businesses and public service providers in agricultural trade centers, and recently sluggish prices for major commodities suggest that these problems may recur. The fortunes of some Midwest communities are likewise tied to mining and that industry has undergone both expansion and contraction when market conditions or resource exhaustion dictate. Finally, closure or downsizing of public facilities has led to substantial economic adjustments in some communities.

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Rural communities across the country are sometimes forced to cope with the closure or downsizing of a major employer. Five communities in Minnesota and North Dakota recently coped with these events. Interviews with community leaders, together with a survey of almost 600 residents, revealed that community adjustments were facilitated by the presence of an active local or regional economic development organization, by substantial lead time prior to the closure or downsizing, and by cohesive local leadership with connections to State and regional organizations.

Past research has found that fallout from facility closure and/or industry downsizing can be quite variable, ranging from mild negative economic effects that result in few community problems to devastating downward spirals of lost employment, dwindling income, population loss, shrinking tax base, and reduced ability of small-town governments to maintain basic services. Because locales differ greatly on economic, demographic, and related factors that influence the extent of impacts and the potential for recovery, it is difficult to generalize common findings from community-level studies. One aim of this article was to identify some of these community-level differences that might determine the success of local economic recovery. Specific objectives were to:

- Study the approaches that Midwestern communities have used to maintain or restore their economic vitality in the face of plant closings and/or downsizings;

- Describe the economic, community, and organizational factors related to the effectiveness of these community development efforts; and
- Apply that knowledge to assist rural communities in responding to economic restructuring.

Study Communities and Their Closure Experiences

The study communities ranged in size from less than 400 residents (Altura, MN) to about 10,000 (Worthington, MN) (table 1). The communities also differed substantially in their proximity to larger cities. Altura and Courtland, MN, in particular, are within a relatively short commuting distance of larger cities (Rochester and Winona for Altura, Mankato and New Ulm for Courtland), whereas Bowman, ND, is about 85 miles from the nearest city with 10,000 or more people and 150 miles from the nearest Metropolitan Statistical Area (MSA) (fig. 1). Each community had recently experienced the closure or

downsizing of a major employer. However, the effects of these events and the communities' responses to them differed substantially.

Altura, Minnesota

With a population of just over 350, Altura was the smallest of the five communities we examined. In May 1996, the community lost its dominant employer, a turkey processing plant that employed 222 and had been in existence for over 65 years. Although the plant was later purchased by another firm for use as a processing and freezing facility, by the end of our study (mid-1999) there had been no employees at the facility for more than 2 years. The nature of the facility limited its reuse options, but local impacts were mitigated in that most of the displaced workers were commuters rather than local residents. Workers at the shuttered processing plant reportedly came from 11 Minnesota communities, some as distant as 40 miles, and 3 Wisconsin towns, each about 60 miles away.

The closure had an immediate impact on some Altura businesses, as well as on the city budget. Roughly half the business of a

nearby grocery-grill was from workers at the plant. Since the closure, the store has expanded its catering service and reduced its staff. When the turkey processing plant was operational, it used about 85 percent of the city's water and 90 percent of its waste treatment operating capacity. Consequently, the city is now overbuilt, but the city council has elected not to pass on rate increases to residents, instead running those charges on a deficit out of the city budget. The closure also resulted in a loss of local property tax revenue (roughly \$3,000 annually) as a result of the difference between the sale price and previous assessment of the processing plant.

Local leadership was initially stymied in developing a plan to respond to the closure, in part because the sale of the plant to a beef processing firm in nearby Rochester, MN, failed to result in any new employment. Lack of available land for either commercial or home development appeared to limit the possibilities of growth. However, 3 years after the closure, the city council has moved to develop a number of new home sites. New residents could poten-

tially commute to jobs in Rochester or Winona, Minnesota, each about 25 miles away.

Bowman, North Dakota

Bowman and three other small communities were within 25 miles of the Gascoyne coal mine, which closed in 1995. The 53 displaced workers were locals, but most transferred to jobs at other facilities owned by the Knife River Coal Company. Immediate local impacts were associated with loss of the mine payroll and tax revenue and increased outmigration, rather than substantial unemployment. The outmigration of mine workers and their households exacerbated long-term trends of population decline in the affected communities, and because the miners were well paid, the loss of the mine payroll was significant. Loss of coal severance tax payments represented a substantial revenue reduction for counties, cities, and school districts (totaling about \$500,000 annually). The combination of declines in population and local tax revenue have placed added stress on local schools, businesses, and public services. One school has closed since the mine closure, while Bowman area residents have been concerned for several years about the future of their hospital.

The impacts of the mine closure were offset somewhat by an expansion of oil and gas activity in the area. Local officials did not perceive dramatic local impacts from the mine closure per se. However, the losses of tax revenue, mine payroll, and workers and families have added to the challenges of maintaining local businesses and public services in the face of steadily declining farm numbers and rural population base.

Table 1

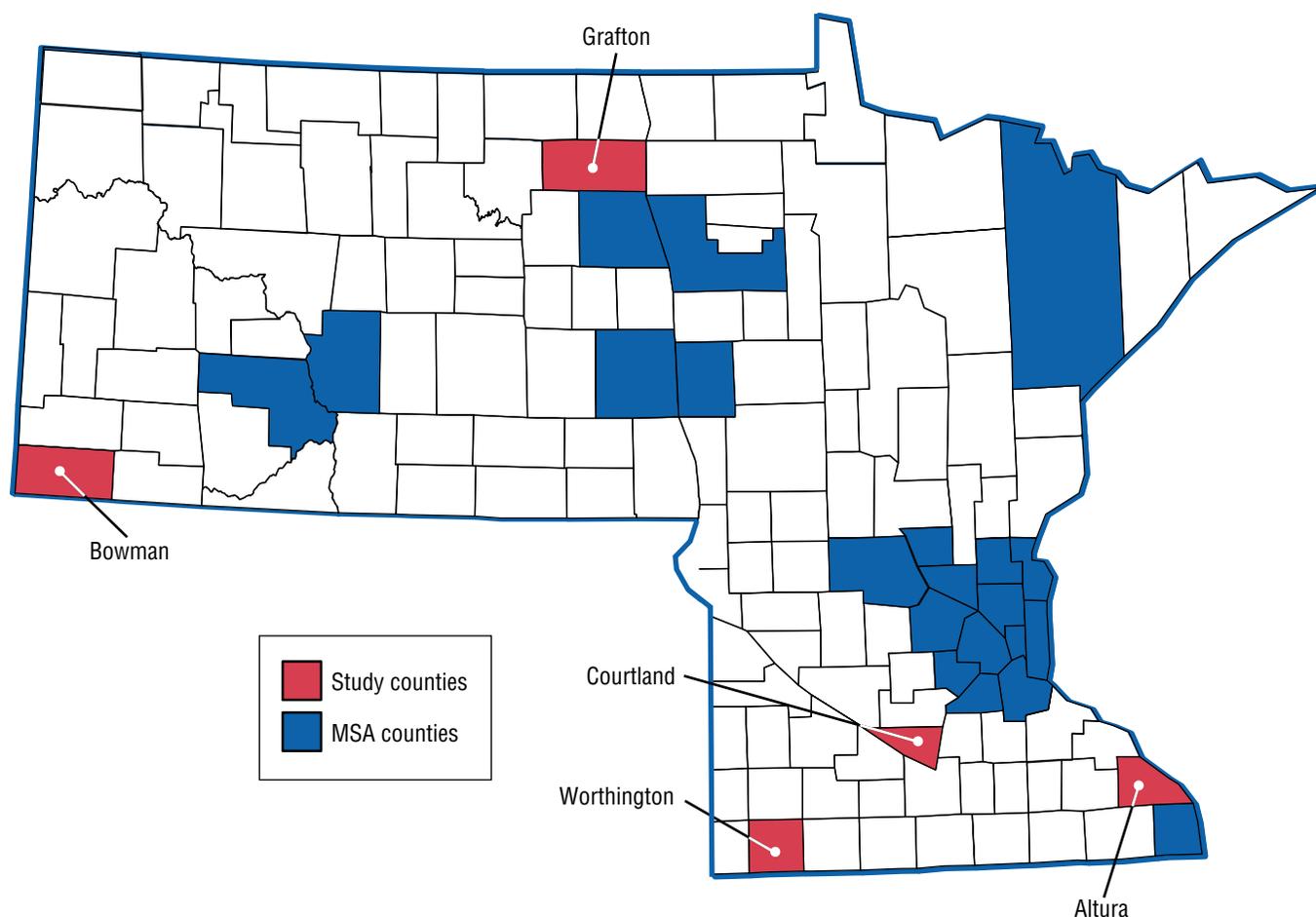
Population of study communities, 1970-96

Communities varied both in size and population trend

Town	Population			
	1970	1980	1990	1996
Minnesota:				
Altura	334	354	349	377
Courtland	300	399	412	458
Worthington	9,825	10,243	9,977	10,321
North Dakota:				
Bowman	1,762	2,071	1,741	1,602
Grafton	5,946	5,293	4,884	5,480

Source: U.S. Department of Commerce, Bureau of the Census.

Figure 1
Study community location and metropolitan statistical areas



Community efforts to respond to the closure were aided by the fact that Knife River Mining gave almost 18 months notice before closure began. This allowed the affected area to apply for a Title 9 grant from the U.S. Economic Development Administration, which was used to fund a jobs committee. Over its 3-year life, the committee has attempted both to find alternative uses for the mine site and to support other types of economic development in the region, with the aim of replacing the lost jobs. Several of the efforts that have been supported appear to have

promise, but none have created any new jobs yet.

The Gascoyne mine closure demonstrates that economic recovery/community development efforts can take a long time to show results. The jobs committee, 3 years into its tenure, had many projects still in the feasibility analysis and/or planning stages and had yet to launch viable local businesses. Because of this, it may be unrealistic to believe that a community response effort can generate new jobs in time to prevent the relocation of displaced workers. Rather, the nurturing of businesses that

may, in time, grow enough to replace the lost jobs and tax revenues may be a community's best hope.

Courtland, Minnesota

Courtland, with 458 residents, is 8 miles west of New Ulm in south-central Minnesota. The proximity of Courtland to New Ulm and its labor needs underpins the vitality of the town. Most employed Courtland residents work in New Ulm, and locals acknowledge the "bedroom community" feature of their town.

Courtland experienced the closure of a livestock research farm located within Courtland city limits. Most displaced farm workers (30 total) were not Courtland residents and were readily absorbed in the Courtland-New Ulm labor market. The research lab associated with the operation continued to operate, retaining all of its 23 employees. Local residents indicated that the community lost only one family as a result of the closure.

Courtland has the great advantage of proximity to a larger city with extensive labor needs. Good roads over a short distance facilitate the commute to New Ulm. While the research farm's closure has not prompted much insight into the problems and pitfalls of downsizing, the community is vacillating over the appropriate level of future growth. Some focus on future planning is mandated by continued population growth in the community, but planning issues could have been stimulated as well by the adjustment to a shutdown. In short, the range of options for Courtland is extensive, but the size of the closure, the strong economy at the time of the downsizing, and the fact that not all displaced workers were Courtland residents made the community adjustment minimal.

Grafton, North Dakota

Grafton is a community of about 5,000 located in the northern Red River Valley region of North Dakota and is the county seat of Walsh County. The State Developmental Center was established in Grafton in 1904 and grew to be the town's largest employer, with about 1,040 full-time equivalent (FTE) positions (and nearly 1,200 total personnel) in the late 1980s. Over 1989-95, the center downsized to less than 500 FTE positions, as

more than 80 percent of the clients were moved into group homes and other facilities around the State.

Local officials and Developmental Center personnel indicated that many previous employees probably left the area. Others remained, often because of family ties, and commuted to jobs within 1 hour driving time from Grafton. Local leaders added that the immediate impacts of the downsizing were mitigated because many of the center's personnel had been commuting from outside Grafton.

Overall, respondents did not recall dramatic impacts from the downsizing. Some separated personnel later rejoined the center staff in another capacity. The reduced demand for housing led to lower values and rents, but the community did not experience widespread vacancies. Main Street businesses felt considerable pressure during the late 1980s and early 1990s, but similar problems plagued virtually every small trade center around North Dakota, as the State's largest urban centers captured increasing shares of retail and service activity.

The Grafton area's response to the downsizing took two forms: (1) efforts to establish other uses for the Developmental Center facilities that were being vacated, and (2) more general economic development efforts aimed at establishing "replacement jobs" in the area. Local resources were mobilized through the Walsh County Jobs Development Authority (JDA), funded through a countywide property tax levy (3.6 mills), as well as the Grafton Growth Fund, funded from a local option sales tax (1 percent). In addition, the Red River Regional Council has provided technical assistance to the county and community.

These entities have succeeded in both their objectives. They obtained grants, developed a new industrial park, built a speculative building at the park, and attracted a major manufacturing employer to the community. However, local development officials emphasized that several years of effort were required before employment gains were realized. (The JDA was established in 1988 and the Growth Fund in 1990, and the new employer announced its relocation in late 1996.)

Efforts to develop alternative uses for the Developmental Center facilities resulted in a plan to rehabilitate two buildings, demolish one, and reserve a fourth for future use. The two rehabbed buildings will be developed for senior housing, one at market rates and the other as affordable housing. The building planned for future use is expected to be an assisted living facility.

An important lesson learned from the Grafton experience is that it is possible for a community to recover from a major employment loss. Grafton represents a community in an area characterized by declining employment and population, but nevertheless has replaced the jobs lost in the downsizing. Another lesson from the Grafton experience is that economic recovery/community development efforts can take a considerable time to show results.

Worthington, Minnesota

Worthington, Minnesota, is the largest community in southwest Minnesota and, with a population of about 10,000, the largest in our study. In mid-May 1997, the Campbell Soup company announced that its Worthington chicken processing plant would close on

or about August 1, 1997. More than 400 unionized production workers were terminated in the shutdown, along with 35 office personnel. The Campbell Soup closure in Worthington was one of three Campbell operations closed nationwide when the company decided to purchase their meat supply less expensively. About 70 percent of the Campbell Soup employees were Worthington residents; the remaining workers resided in 20 other Minnesota communities and 8 Iowa towns within a 30-mile radius of Worthington. The Campbell workers were generally long-term workers, averaging over 13 years on the job. The average age of the predominantly female workforce was 43, and the average wage was nearly \$9 per hour.

The termination of 435 Campbell employees represented 4.4 percent of Nobles County 1996 total employment. Still, Campbell Soup was not the dominant meat processing employer in the community. The local pork processing unit of Swift & Co. employs about 1,600. Other substantial employers include the public school system (500 employees), a plastics manufacturer (400), and a mobile home manufacturer (200).

A task force was created to study options for the community. The Job Service and the Worthington Chamber of Commerce sponsored a job fair for the soon-to-be displaced Campbell's workers, and the State contributed \$600,000 for retraining needs. Because of these measures, and because the pork plant was expanding, the outmigration of dislocated workers was minimal.

One of the chief characteristics of the Worthington community response, as identified by local respondents, was the cohesion of community agencies and resources. Turf issues disappeared, and the various groups focused on getting new industry for the Campbell facility that would employ local residents, pay area farmers who had contracted to provide grower facilities for Campbell, and purchase water and power through city-owned utilities. The community created a working partnership with the county, and involved local and State economic development offices.

The Worthington experience demonstrates that city leaders need to support displaced workers and that activity needs to be coordinated. Finding replacement jobs through recruiting new industry and retraining terminated workers provides continuity and growth for the community as a whole. A second lesson learned is that turf issues are less important than the total program. Leaders now have experience in coordinating their efforts, and in so doing they are not only ready for the next challenge, but they are also able to see the positive side of any downturn and make it work for community betterment. Responsive leadership has increased city-county economic development, and as a result of marketing, a number of potential employers loom as possible county residents. Further, joint planning on the part of city-county offices means that new efforts are being made to make the community attractive for both new industry and new residents. These efforts include providing natural gas for potential employers and coordination with other communities in establishing an increased water source.

Survey of Study-Community Residents

To gain a better understanding of the effects of the closures/downsizings on the study communities, a survey of area residents was conducted. Residents of the study communities were asked what steps had been taken by the employer to ease problems associated with the closure or downsizing. Transferring workers to other employer-owned units was the employer action reported most often (47 percent), followed by providing workers with a significant severance package (31 percent), assisting workers in finding other jobs (26 percent), and assisting local officials in finding new uses or tenants for the closed facility (21 percent). Many respondents (41 to 55 percent for the actions cited) indicated that they did not know whether the specified steps had been taken.

The frequency with which employer actions were reported varied substantially by community. More than three-fourths of Altura and Bowman respondents reported that their respective employers had transferred workers, compared with only 22 percent for Courtland. Significant severance packages were reported by 48 percent of respondents in Worthington and 33 percent of those in Bowman, compared with only 17 percent of those in Grafton. Employer assistance in helping displaced workers to find other jobs was reported most often by respondents from Bowman and Worthington, and least often by those from Grafton. On the other hand, Grafton respondents most frequently reported that the employer had assisted local officials in finding new uses/tenants for the facility, while respondents from Altura and Courtland reported this least often. These results are

consistent with information gathered from local officials and representatives of the closed/downsized facilities.

Survey respondents were also asked about steps taken by local officials to respond to the closure/downsizing. About 30 percent overall indicated that local officials helped displaced workers find other work, 23 percent reported that local officials attempted to recruit other employers, and 16 percent indicated that local leaders offered incentives or concessions to the employer to maintain jobs. The share of respondents who reported the different actions again varied

substantially by community. Sixty-one percent of Worthington respondents reported that local officials assisted displaced workers, compared with only 15 percent of Altura respondents. Forty-one percent of respondents from Worthington and 33 percent from Grafton reported that local officials had recruited other employers, compared with 8 percent in Courtland and 9 percent in Altura. (About 40 percent of Grafton residents indicated that their local leaders had lobbied State officials to maintain jobs at the Developmental Center, a State facility.) Respondents who indicated that incen-

tives/concessions had been offered to the employer ranged from 13 percent for Worthington to 3 percent for Altura. As with employer actions, many residents indicated that they did not know whether the local officials had initiated various actions, ranging from 45 percent for assisting displaced workers to 59 percent for incentives/concessions.

Effects of Closure on Respondent and Family

A series of questions explored effects of the closure/downsizing on the respondents or members of their immediate family (husband/wife, son/daughter, father/mother, sister/brother). Nearly 13 percent of the respondents had worked at the facility that was closed/downsized, ranging from 29 percent of Grafton respondents to 3 percent of those in Bowman (table 2). About 5 percent of the respondents had lost their jobs as a result of the closure/downsizing. Another 18 percent had immediate family members who had worked at the facility, and 10 percent had one or more immediate family members who lost their job as a result of the closure/downsizing. The response to this question varied substantially by community, in part reflecting the dominance of the various employers in their respective communities.

For residents who did not work for the closed/downsized facility, almost one-fourth (24 percent) reported that their employer had lost business as a result of the closure/downsizing, ranging from 15 percent in Altura and Courtland to 32 percent in Worthington (table 2). Of this group, 3 percent reported losing their jobs as a result of the other facility's closing/downsizing, while another 6 percent reported that their hours and/or pay were

Procedures

The research plan first required selection of nonmetropolitan communities to be studied. The authors developed lists of communities in Minnesota and North Dakota that had experienced the closure or downsizing of a major employer (affecting 25 or more workers) between July 1994 and January 1998. From more than 40 communities initially identified, 5 were selected based on factors such as community size, proximity to other market areas, and the nature of community response to the closure; the aim was to represent small as well as larger towns, and those with highly organized as well as less structured responses.

In each of the five case study communities, the authors used common formats in conducting indepth interviews with a cross-section of community leaders, to gain an understanding of the communities (i.e., population characteristics, economic base, etc.), the circumstances of the closure/downsizing that occurred, the effects of the closure/downsizing, and the community's response. These persons were identified based on their elected or appointed governmental positions (e.g., mayor, economic development director) and roles in business, community, and educational organizations. Other community leaders were identified using a snowball technique, whereby individuals interviewed were asked to suggest others who would be knowledgeable concerning the issues discussed. The individuals interviewed (between February and November of 1988) thus included both formal and informal leaders.

Subsequently (January-February 1999), a short survey was mailed to a random sample of residents in each of the study communities. The survey focused on the effects of closure on the community and the respondent, responses to the closure, and the respondent's satisfaction with the efforts made by company officials and community leaders. The survey resulted in 571 usable responses, without followup mailings, for a 33-percent completion rate.

Table 2

Effects of closure/downsizing on respondents and their families*A majority of respondents were not directly affected*

Effect	Community					Overall
	Altura	Bowman	Courtland	Grafton	Worthington	
	<i>Percent</i>					
Respondent worked for employer that closed/downsized	5	3	12	29	9	13
Respondent lost job	0	2	8	8	6	5
A member of respondent's immediate family worked for employer that closed/downsized	18	8	13	36	13	18
Family member lost job	12	4	13	10	11	10
Respondent's employer lost business as a result of closure/downsizing	15	27	15	25	32	24
Respondent lost job	2	1	5	4	5	3
Respondent's hours and/or pay were reduced	6	7	4	5	7	6
Business that respondent owned or managed lost business due to closure/downsizing	11	18	16	14	18	16
Respondent's income was reduced	11	18	5	13	18	14
Respondent was not directly affected by closure/downsizing	65	51	67	60	56	59

Source: Plant closure survey.

reduced. Sixteen percent of the respondents reported that a business that they owned or managed had lost business (revenue) as a result of the closure/downsizing, and 14 percent reported that their income had been reduced. Overall, about 59 percent of the respondents reported that their employment had not been directly affected by the closure/downsizing, ranging from 51 percent for Bowman to 67 percent for Courtland.

Effects of Closure on Community

Employment opportunities were the community attribute that the most respondents (75 percent) felt was hurt by the closure/downsizing, followed by local businesses (74 percent) and income of area residents (67 percent). These attributes were the three most often identified by residents of all five study communities (table 3). Other attributes seen as hurt by at least one-third of respondents, overall,

were city government (46 percent), property values (46 percent), schools (43 percent), quality of life (41 percent), and social organizations (40 percent).

Priority Given to Future Closures/Downsizings

Community residents were asked what priority should be given, by several groups, to future closures/downsizings. The respondents felt that residents, business people, and city government should

give this issue high priority (data not shown). More than 75 percent of respondents from each community felt that community residents should give high priority to future closures/downsizings, while more than two-thirds felt that business people and city government should give this issue high priority. Somewhat lower percentages of the respondents, overall, felt that coun-

ty officials (61 percent), State officials (60 percent), and religious leaders (48 percent) should give high priority to closures/downsizings.

Satisfaction with Community

The respondents were asked to rate satisfaction with their community both before and after the closure/downsizing. Overall, more

than three respondents in four were somewhat or very satisfied with their community before the closure/downsizing (data not shown). Their rating of the community after the closure was 20 percentage points lower (58 percent versus 78 percent were somewhat or very satisfied). Residents' ratings of the community fell after closure in all communities but Courtland.

Table 3
Effects of closure/downsizing on selected community attributes
Job opportunities, local businesses, and residents' incomes were most often affected

Attribute	Community					Overall
	Altura	Bowman	Courtland	Grafton	Worthington	
	<i>Percent who reported a negative effect</i>					
Employment opportunities	6	71	84	69	80	75
Local businesses	75	74	65	72	80	74
Income of area residents	59	70	64	65	75	67
City government	50	47	43	50	41	46
Property values	38	53	16	45	61	46
Schools	30	66	15	49	38	43
Quality of life	30	32	33	47	53	41
Social organizations	30	55	32	40	37	40
County government	18	48	16	34	33	32
Ethnic minorities	38	6	4	26	50	26
Crime	12	9	3	21	31	17

Source: Plant closure survey.

Conclusions and Implications

While numerous factors affect communities' ability to cope with the effects of a major job loss, some insights can be drawn from the experiences of these communities. Case study communities tended to adjust "better" when there was/were:

- An economic development organization (regional, if not local) in place prior to the closure;
- Cohesion of community and agency leaders who were not concerned with "turf" issues;
- A focus on both assisting displaced workers and economic development;
- A breadth of contact and networking with State agencies, consultants, and community leaders from other communities that had already weathered a dislocation;
- Substantial lead time prior to closure/downsizing;
- An understanding that the adjustment period from downturn to upturn was not overnight, but might take months or even years;
- A closure/downsizing that was not the sole or dominant employer;
- Some displaced workers who were not local residents, but were commuters;
- A range of alternative reuse options for the closed facility; and
- Job alternatives available in nearby communities. **RA**

For Further Reading . . .

Tim Knapp, F. Larry Leistritz, and Kenneth Root, "A Bumpy Economic Road for Rural Communities," *Small Town*, Vol. 27, No. 2, 1996, pp. 12-19.

F. Larry Leistritz and Rita R. Hamm, *Rural Economic Development 1975-1993: An Annotated Bibliography*, Westport, CT: Greenwood, 1994.

Kenneth A. Root and F. Larry Leistritz, "Community Concerns with the Threat of Job Loss," *Research in Community Sociology*, Vol. 10, 2000, pp. 267-288.

Rural Poverty Rate Stayed Under 15 Percent in 1999

Dean Jolliffe

centage points in the 1990s. However, the widening of the rural-urban gap in the late 1990s seems to halt any trend toward eliminating the rural-urban poverty gap in the near future.

Composition of the Urban and Rural Poor

The incidence or rate of poverty measures the percentage of the population who are poor, but this is just one of many ways to measure poverty. There are also poverty indices that provide information on the severity of poverty as well as the incidence. To examine rural-urban differences in the severity of poverty, poor persons can be categorized as those in extreme poverty with an income of less than half the poverty line, those whose

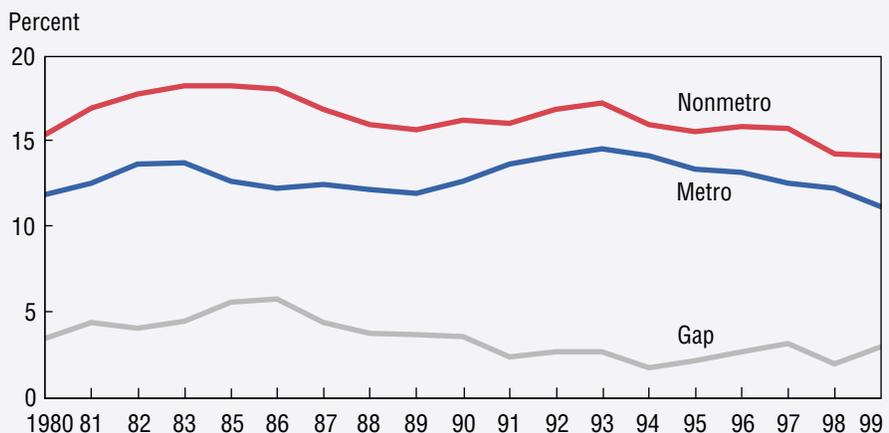
income is between half and three-quarters of the poverty line, and those with an income greater than 75 percent of the line. While the incidence of poverty is higher in rural areas than in urban areas, the proportion of the poor living in extreme poverty is lower in rural areas. Of the urban poor in 1999, 40.5 percent were extremely poor versus 35.3 percent of the rural poor. Similarly, 38 percent of the rural poor have incomes between 75 and 100 percent of the poverty line, while the rate for the urban poor is only 32.1 percent.

The distribution of urban poor persons remained essentially unchanged between 1996 and 1999. This contrasts with the improving income distribution of the rural poor between 1996 and

Approximately 7.4 million persons who live in rural (nonmetro) areas were poor in 1999. The rate of rural poverty for 1999 was 14.2 percent, essentially unchanged from 1998 when 14.3 percent of rural persons were poor. Rural poverty rates were not under 15 percent for two consecutive years at any other time in the 1980s or 1990s. The rural poverty rate for 1999 was the lowest since 1979, and similarly the national and urban poverty rates in 1999 were also at their lowest levels since 1979 (fig. 1). These relatively low levels of poverty coincided with the continuation of the economic boom in the United States.

Compared with the small decline in the rural poverty rate, the urban poverty rate declined at a greater pace—from 12.3 percent in 1998 to 11.2 percent in 1999. This widened the gap in rural-urban poverty rates to 3 percentage points from a gap of 2 percentage points in 1998. Throughout the 1980s, the difference in poverty rates between urban and rural areas averaged about 4.4 percentage points, but this average narrowed to 2.6 per-

Figure 1
Poverty rates by residence, 1980-99
Nonmetro poverty remained under 15 percent in 1999



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Note: Metro status of some counties changed in 1984 and 1994; 1984 has been omitted.
Source: Prepared by the Economic Research Service using data from the U.S. Census Bureau's Current Population Survey, March Supplement.

How Is Poverty Defined?

Any individual with total income less than an amount deemed to be sufficient to purchase basic needs of food, shelter, clothing, and other essential goods and services is classified as poor. The amount of income necessary to purchase these basic needs is the poverty line or threshold and is set by the Office of Management and Budget (OMB). The 1999 poverty line for an individual under 65 years of age was \$8,667, while the poverty line for a two-person household with one child and one adult was \$11,483, and for a household with two adults and three children the poverty line was \$19,882. An individual's or household's total income includes cash income (pretax income and cash welfare assistance), but excludes in-kind welfare assistance, such as food stamps and Medicare. The poverty line changes over time to correct for inflation, and it is also adjusted to reflect differences in household composition and size. Adjustments for household composition are intended to address the concern that children and adults consume different types and quantities of basic goods and services. Adjustments for household size are intended to address the concern that some basic goods can be shared within a household and therefore the per-person cost of purchasing basic needs declines with each additional person.

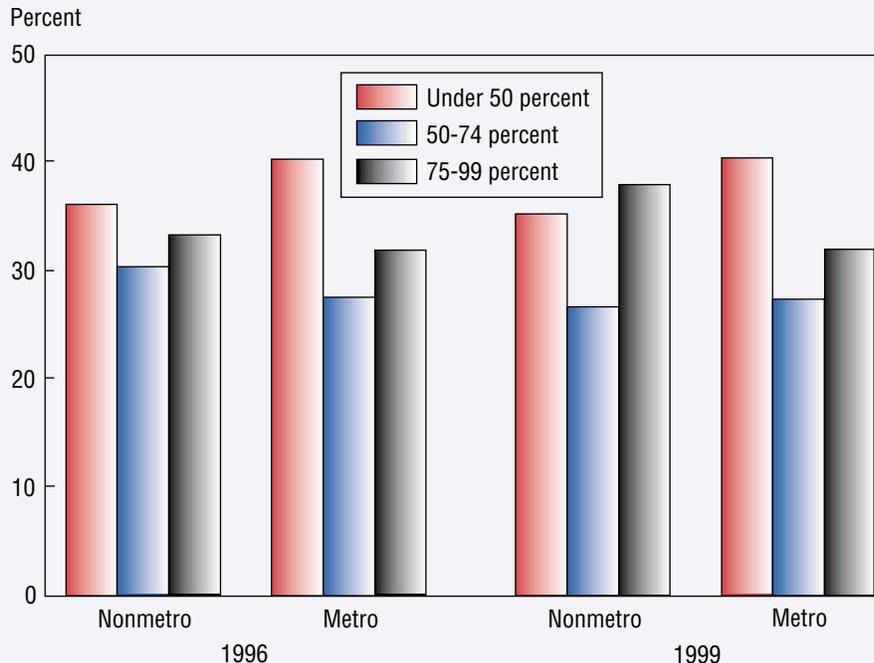
1999. In 1996, 33.4 percent of the rural poor had incomes that were between 75 and 100 percent of the poverty line. This proportion increased 4.6 percentage points by 1999. Figure 2 shows that a measure of poverty that is sensitive to the distribution of income of poor persons will present a different picture of the urban-rural poverty gap than when simply looking at the incidence of poverty.

Rural and Urban Poverty by Geographic Region

Over 1996-99, the relative poverty ranking of U.S. regions remained unchanged, with the South having the highest rate of rural poverty and the Northeast the lowest (fig. 3). The difference between urban and rural poverty rates also remained quite similar across the regions. In both 1996 and 1999, the largest rural-urban gaps in the poverty rates were in the South. In 1996, the rural-urban difference in the South was 4.7 percentage points. This had increased slightly by 1999 to 5.1 percentage points.

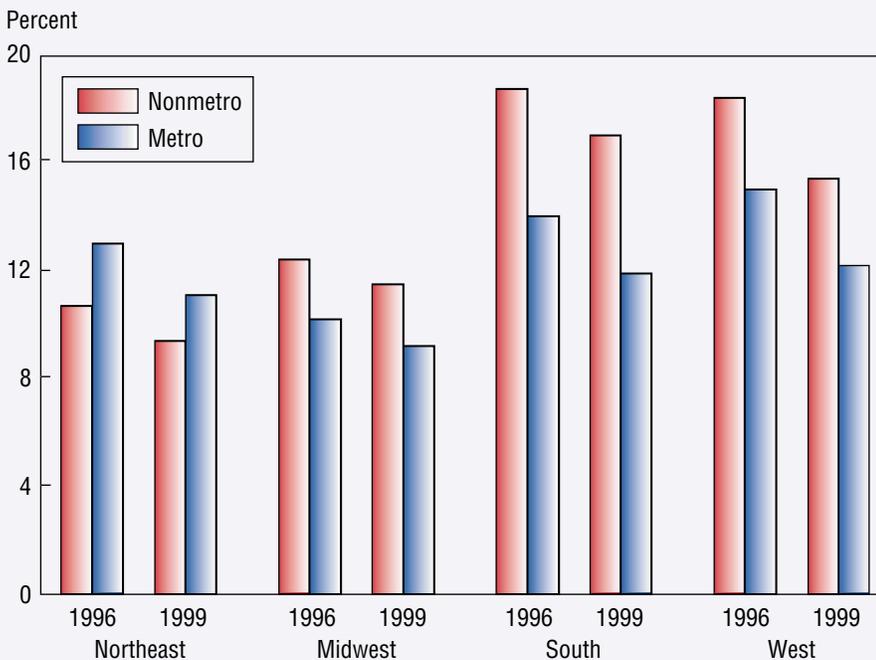
The most striking change in regional poverty rates is the improvement in rural and urban poverty rates in the West. The largest decline in the regional poverty rates between 1996 and 1999 (3 percentage points) was in the rural West. In 1996, the rural poverty rate in the West was 18.4 percent, which placed it essentially on par with the South and significantly worse than the Northeast and the Midwest. It then dropped to 15.4 percent in 1999.

Figure 2
Income-to-needs ratio, distribution of the poor by residence, 1996 and 1999
Income distribution of the nonmetro poor has improved since 1996



Source: Prepared by the Economic Research Service using data from the U.S. Census Bureau's Current Population Survey, March Supplement.

Figure 3
Poverty rates by region and residence, 1996 and 1999
Poverty decline was largest in the nonmetro West



Source: Prepared by the Economic Research Service using data from the U.S. Census Bureau's Current Population Survey, March Supplement.

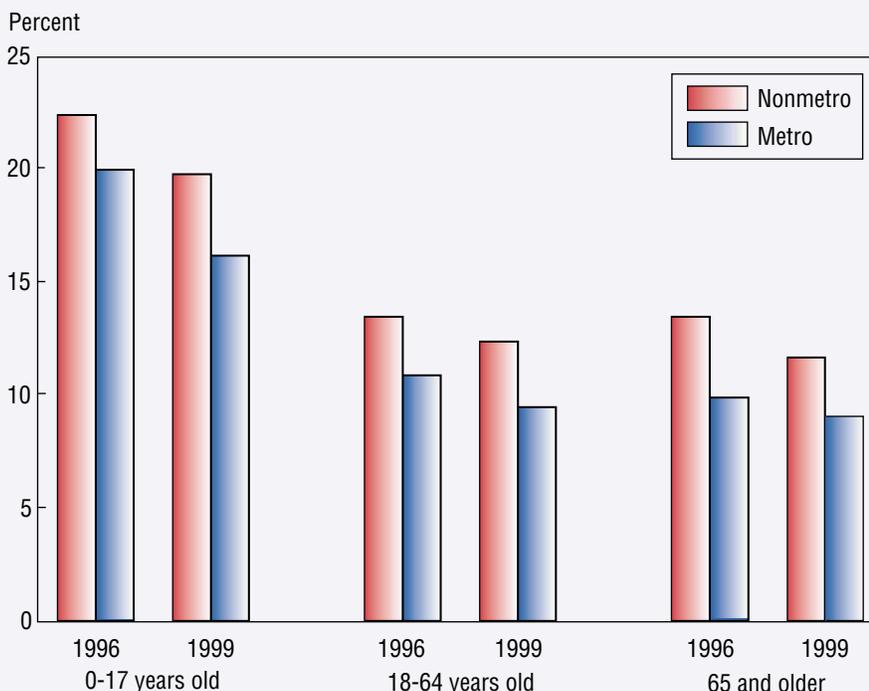
the child poverty rate, which fell from 22.4 percent to 19.8 percent. The largest decline in percentage terms was for the elderly living in rural areas. As a result of the urban poverty rate for children declining by 3.8 percentage points from 1996 to 1999, the urban-rural gap in poverty rates for children increased from 2.4 to 3.6 percentage points. In 1996, the largest difference in urban-rural poverty rates was for the elderly, but due to the slower improvement for rural children, the largest urban-rural gap in poverty rates in 1999 was for children. **RA**

Poverty Rates by Age

For all three age categories (under 18 years, 18-64 and over), rural poverty rates were higher than urban rates in both 1996 and 1999. In every case, children had significantly higher rates of poverty than adults and the elderly (fig. 4). The 1999 rural poverty rate for children was 19.8 percent, or 2.7 million children. This poverty rate was 7.4 percentage points greater than the rate for adults and 8.1 percentage points greater than the poverty rate for elderly persons living in rural areas.

Between 1996 and 1999, poverty rates declined for all three age categories in both urban and rural areas. The largest absolute decline in rural poverty rates occurred for

Figure 4
Poverty rates by age and residence, 1996 and 1999
Nonmetro children have the highest poverty rates



Source: Prepared by the Economic Research Service using data from the U.S. Census Bureau's Current Population Survey, March Supplement.

Rates of Food Insecurity and Hunger Unchanged in Rural Households

Mark Nord

The proportion of households that were food insecure—that is, they were not consistently and dependably able to get enough food for an active and healthy life—remained unchanged in nonmetro areas from 1998 to 2000, while declining in metro areas. Single-parent families and racial and ethnic minorities had rates of food insecurity and hunger higher than the national average.

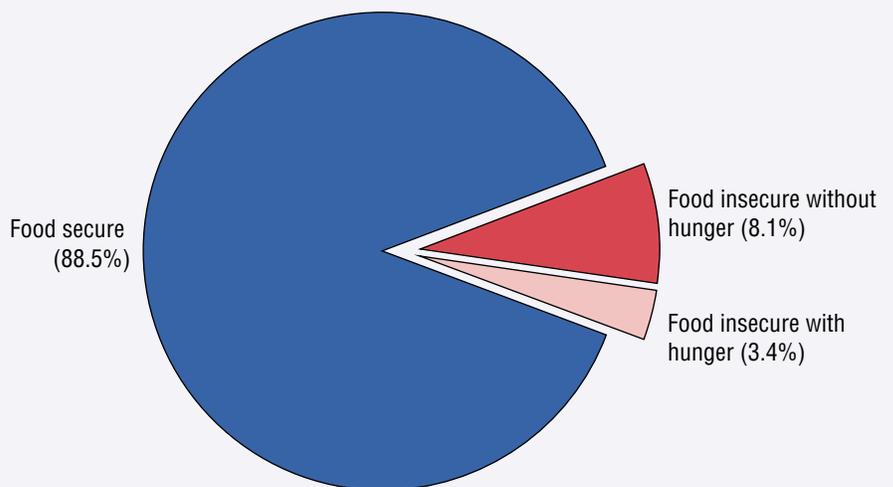
During the year ending in September 2000, 88.5 percent of nonmetro households were food secure throughout the entire year (fig. 1). The food-secure households included 79.8 percent that were fully food secure—reporting no problems or concerns in meeting their food needs—and 8.7 percent that reported one or two indications of difficulty in meeting their food needs. The remaining 11.5 percent of nonmetro households, about 2.4 million, were food insecure at some time during the year. That is, they were uncertain of having or were unable to acquire enough food to meet basic needs for all household members because they had insufficient money and

other resources for food. About two-thirds of the food-insecure households avoided hunger, in many cases by relying on a few basic foods and reducing variety in their diets. But 700,000 households (3.4 percent of all nonmetro households) were food insecure to the extent that one or more household members were hungry, at least some time during the year, because they could not afford enough food.

Food security is one of several necessary conditions for a population to be healthy and well nourished. Households are food secure when they have assured access at all times to enough food for an active healthy life, with no need for recourse to emergency food

sources or other extraordinary coping behaviors to meet their basic food needs. They experience food insecurity when they do not have this assured access to enough food to fully meet basic needs at all times. As food insecurity increases in severity, the quality and variety of meals are reduced and food intake may become irregular. At still more severe levels, insufficient or irregular food intake results in periods of hunger for at least some family members. In households with children, adults usually restrict their own food intake first to provide enough food for the children. Thus, children usually do not go hungry except in households with more severe levels of adult hunger.

Figure 1
Food security, food insecurity, and hunger in nonmetro households, 2000
A large majority of nonmetro households were food secure



Source: Prepared by ERS using data from the Current Population Survey Food Security Supplement, September 2000.

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Prevalence of Food Insecurity and Hunger in Nonmetro Areas Unchanged, 1998-2000

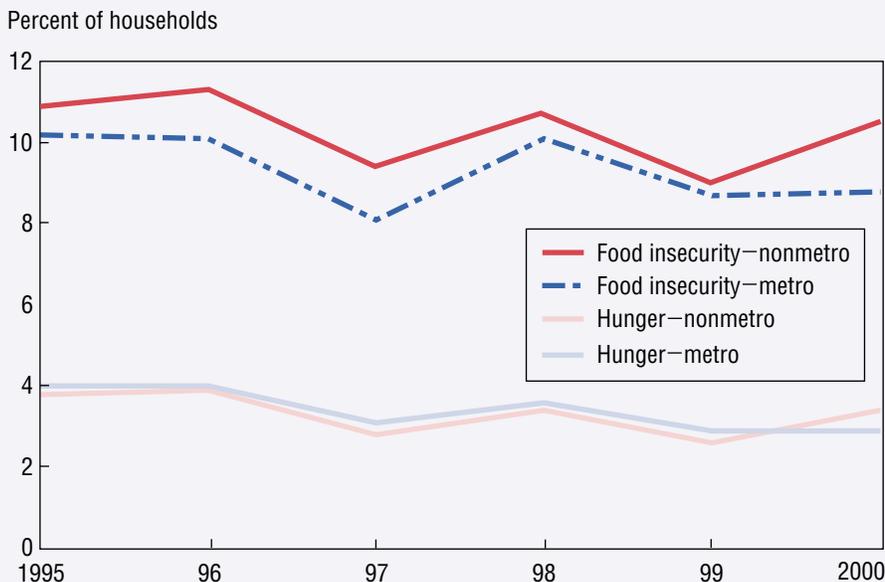
Rates of food insecurity and hunger were unchanged from 1998 to 2000 in nonmetro areas, while declining in metro areas. USDA monitors food security, food insecurity, and hunger in the United States through a nationally representative food security survey, conducted annually since 1995 by the U.S. Census Bureau as a supplement to the monthly Current Population Survey. Food insecurity and hunger declined from 1995 to 1999 in both nonmetro and metro areas (fig. 2).

The year-to-year deviations from a consistent trend include a substantial 2-year alternation that is believed to result from a seasonal influence on food security prevalence rates. The food security surveys were conducted in April in odd-numbered years and in August or September in even-numbered years. Measured rates of food insecurity were higher in the August/September collections. Even though the questions ask about conditions and behaviors over the past 12 months, respondents remember events that occurred in the near past more clearly than those that occurred almost a year earlier. To assess recent trends without this seasonal bias, comparisons are most appropriately made between 1998 and 2000 rather than from 1999 to 2000. During this 2-year period, changes in the rates of food insecurity and hunger in nonmetro areas were small and not statistically significant. In metro areas, the prevalence of food insecurity declined 1.6 percentage points, and the prevalence of hunger declined 0.7 percentage point.

Figure 2

Rates of food insecurity and hunger, by residence, 1995 to 2000

Food insecurity and hunger remained unchanged in nonmetro areas from 1998 to 2000 after declining somewhat from 1996 to 1998



Note: Data were adjusted so that prevalence rates are strictly comparable for all years. These adjustments are necessary because screening procedures to reduce respondent burden changed each year until they were standardized in 1998. The adjustments result in somewhat lower prevalence estimates than those presented in figure 1 and tables 1-3, which are based on unadjusted data.

Source: Prepared by ERS using data from the Current Population Survey Food Security Supplements, 1995-2000.

Food Insecurity Rates Higher in Nonmetro Areas

In 2000, the rate of food insecurity was higher in nonmetro than in metro areas (table 1). To be classified as food insecure, a household must report at least three indicators of food insecurity, most commonly that (1) they worried that their food would run out before they got money to buy more, (2) the food they bought did not last and they did not have money to get more, and (3) they could not afford to eat balanced meals. More serious indicators, including indicators of disrupted eating patterns and reduced food intake, were also reported by many food insecure households. Food insecurity was more prevalent in nonmetro than in metro areas in all four geographical regions and for almost all types of households

analyzed. Not all of the nonmetro-metro differences were statistically significant, but only two categories—Hispanics and elderly—registered rates lower in nonmetro than in metro areas.

Nonmetro West, Minorities, and Single-Parent Families Were Most Food Insecure

Regionally, food insecurity rates were highest in the nonmetro West and South and lowest in the Midwest. Food insecurity was almost three times as prevalent among nonmetro Blacks as among nonmetro Whites, and for nonmetro Hispanics the rate was over twice that of nonmetro Whites. These differences reflect the higher poverty rates of racial and ethnic minorities. For Blacks and Whites, food insecurity was more prevalent

Table 1

Households with food insecurity, 1998 and 2000

Food insecurity was higher in nonmetro than in metro households, and most prevalent in single-parent families with children and among racial and ethnic minorities

Category	Nonmetro 1998	Nonmetro 2000	Metro 2000	U.S. total 2000
<i>Percent (households)</i>				
All households	11.8	11.5*	10.2*	10.5
Census region:				
Northeast	9.7	10.3*	8.6*	8.8
Midwest	8.3	8.9	8.6	8.7
South	14.1	12.5	11.6	11.8
West	14.4	15.5*	11.2*	11.7
Race and ethnicity (of household head):				
White non-Hispanic	9.6	9.6*	7.0*	7.6
Black	27.9	25.8*	19.8*	20.5
Hispanic	21.2	21.1	21.4	21.4
Household structure:				
Two-parent families with children	12.8	13.1*	10.3*	10.9
Single-parent families with children ¹	34.0	31.5*	27.8*	28.5
Multiple-adult households--no children ¹	5.8	6.1	5.5	5.6
Single men living alone	12.8	9.8	8.8	9.0
Single women living alone	9.8	10.6	10.0	10.1
<i>Percent (persons)²</i>				
Age:				
All ages	13.7	13.4*	11.9*	12.1
0-17	20.4	20.5*	17.4*	18.0
18-64	12.8	12.4*	10.7*	11.0
65 and over	5.0	4.6	5.3	5.2

*Difference between nonmetro and metro prevalence rate is statistically significant at 90-percent confidence level.

¹Statistics for single-parent families with children and multiple-adult households with no children in 1998 are revised from those published in *Rural Conditions and Trends*, Vol. 11, No. 2, 2000. Category definitions have been revised to be consistent with the national statistical series published by ERS.

²Food insecurity is measured at the household level. In the age breakdown, the numbers represent the percentage of persons in each age category living in households classified as food insecure.

Source: Prepared by ERS using data from the Current Population Survey Food Security Supplements, August 1998 and September 2000.

in nonmetro than in metro areas, while the rate for Hispanics was about the same in nonmetro and metro areas.

One out of five nonmetro children lived in food insecure households, reflecting the greater economic difficulties faced by many rural families with children. Food insecurity was much higher in single-parent families with children than in any other household type. This was especially true in nonmetro areas, where almost one in

three single-parent families (31.5 percent) was food insecure sometime during the year ending in September 2000. The incidence of food insecurity was also higher in two-parent families with children than in households with no children, although less than half that of single-parent families. The lowest rates of food insecurity were in multiple-adult households with no children present (6.1 percent) and for single men living alone (9.8 percent).

In 2000, 13.4 percent of the nonmetro population lived in food insecure households. This proportion was slightly higher than the proportion of households because larger families are more likely to be food insecure than are smaller families and persons living alone. The elderly were less than half as likely as working-age adults to live in food-insecure households. Food access and preparation problems not measured by the food insecurity scale, such as limited mobility,

Table 2

Households with poverty-related hunger, 1998 and 2000*One or more household members experienced poverty-related hunger in 3.4 percent of nonmetro households, unchanged from 1998*

Category	Nonmetro 1998	Nonmetro 2000	Metro 2000	U.S. total 2000
<i>Percent (households)</i>				
All households	3.4	3.4	3.0	3.1
Census region:				
Northeast	2.0	2.8	2.7	2.7
Midwest	2.3	2.4	2.7	2.6
South	4.1	3.8	3.3	3.4
West	5.1	5.3*	3.2	3.5
Race and ethnicity (of household head):				
White non-Hispanic	2.8	3.0*	2.2	2.4
Black	7.2	6.8	6.4	6.5
Hispanic	6.5	5.1	4.8	4.8
Household structure:				
Two-parent families with children	2.3	2.2	1.9	1.9
Single-parent families with children ¹	9.8	7.9	8.0	8.0
Multiple-adult households—no children ¹	1.9	2.3	1.8	1.9
Single men living alone	5.6	4.0	4.2	4.2
Single women living alone	3.7	5.2*	3.8	4.0
<i>Percent (persons)²</i>				
Age:				
All ages	3.4	3.3	3.1	3.1
0-17 ³	4.5	4.2	4.1	4.1
18-64	3.5	3.5	2.9	3.0
65 and over	1.4	1.2	1.3	1.3

*Difference between nonmetro and metro prevalence rate is statistically significant at 90-percent confidence level.

¹Statistics for single-parent families with children and multiple-adult households with no children in 1998 are revised from those published in *Rural Conditions and Trends* Vol. 11, No. 2, 2000. Category definitions have been revised to be consistent with the national statistical series published by ERS.

²Hunger is measured at the household level. In the age breakdown, the numbers represent the percentage of persons in each age category living in households that registered hunger.

³Children usually do not experience hunger except in households in which adults experience more severe and prolonged hunger (see table 3). Thus, the prevalence rates for children shown in this table should be interpreted as the proportion of children living in households with hunger among adults. Most of these children were eating diets of reduced quality and variety.

Source: Prepared by ERS using data from the Current Population Survey Food Security Supplements, August 1998 and September 2000.

poor health, and inadequate facilities for food preparation, pose additional challenges for some elderly people.

Hunger Due to Lack of Money Reported in 3.4 Percent of Nonmetro Households

In about one-third of food insecure nonmetro households—those in which food shortages were more serious or prolonged—food intake

was curtailed at times to the extent that one or more household members were hungry. These households reported experiences and behaviors associated with more severe levels of food insecurity. Adults reported eating less than they felt they should and cutting and skipping meals repeatedly due to lack of money for food. Households with children reported inability to feed the children bal-

anced meals and reliance on only a few kinds of low-cost food for the children. One or more household members, mainly adults, in 3.4 percent of nonmetro households (0.7 million households) experienced such hunger during the year prior to the survey; this proportion was not significantly different in metro areas (table 2).

The pattern of hunger rates across the regions, racial-ethnic groups,

Table 3

Households with poverty-related hunger among children, 1998 and 2000*One half of 1 percent of nonmetro households with children reported hunger among the children*

Category	Nonmetro 1998	Nonmetro 2000	Metro 2000	U.S. total 2000
	<i>Percent (households)¹</i>			
All households with children	1.1	0.5	0.7	0.7
Race and ethnicity (of household head):				
White non-Hispanic	1.0	.3	.3	.3
Black	1.1	1.1	1.7	1.6
Hispanic	2.8	1.8	1.4	1.4
Household structure:				
Two-parent families with children	.3	.4	.3	.4
Single-parent families with children	2.8	1.0	1.5	1.4
	<i>Percent (children)²</i>			
Children	1.0	.6	.8	.8

¹Households classified as having hunger among children reported multiple indicators of reduced food intake among children, including cutting the size of children's meals, children not eating enough, and children being hungry because they couldn't afford more food. Households with no children were excluded from the denominator.

²Children's hunger is measured at the household level. In the bottom row, the numbers represent the percentage of children living in households in which any children were hungry.

Source: Prepared by ERS using data from the Current Population Survey Food Security Supplements, August 1998 and September 2000.

household types, and age groups followed closely that of food insecurity. In both nonmetro and metro areas, 8 percent of single-parent families had episodes of hunger during the year.

Poverty-Related Hunger Rare Among Rural Children

Although 4.2 percent of nonmetro children lived in households classified as food insecure with hunger (table 2), the children themselves in most of these households were not hungry. In most U.S. households, children—especially younger children—are protected from reductions in food intake unless the level of adults' depriva-

tion is quite severe. Only about 0.5 percent of nonmetro households had levels of food insecurity so severe that children were also hungry at times (table 3). Rates of hunger among children did not differ significantly between nonmetro and metro areas.

Households classified as having hunger among children responded "yes" to at least five of the eight questions in the food security survey that asked specifically about children's experiences of food stress. These households typically reported all of the following: they relied on a few kinds of low-cost food to feed the children because

they were running out of money to buy food; they couldn't afford to feed the children balanced meals; the children were not eating enough because the family could not afford enough food; they cut the size of the children's meals because there was not enough money for food; and the children were hungry, but the family could not afford more food.

Children's hunger was more than twice as prevalent in single-parent families as in two-parent families. Rates of hunger among children were higher among Blacks and Hispanics than among non-Hispanic Whites. **RA**

USDA Reports on Food Security and Hunger

The following reports on the Food Security Measurement Project are available from USDA:

- *Household Food Security in the United States in 1995: Summary Report of the Food Security Measurement Project*
- *Household Food Security in the United States in 1995: Technical Report*
- *Household Food Security in the United States, 1995-1998*
- *Prevalence of Food Insecurity and Hunger, by State, 1996-1998*
- *Household Food Security in the United States, 1999*
- *Household Food Security in the United States, 2000*
- *Guide to Measuring Household Food Security, Revised 2000*

Links to these reports and other information on the Federal Food Security Measurement Project are available from the ERS Food Security Briefing Room on the World Wide Web at:

<http://www.ers.usda.gov/briefing/foodsecurity>

Nonfarm Jobs and Earnings Grew Faster in Metro Than Nonmetro Areas in 1999

Linda M. Ghelfi

Between 1998 and 1999, nonfarm jobs increased at a slower rate in nonmetro (1.5 percent) than in metro areas (2.4 percent) (table 1). Both areas had averaged 2.1 percent annual job growth in the 8 years (1991-99) since the 1990-91 recession. Compared with those rates, nonmetro job growth slowed in 1999 while metro growth picked up.

During 1998-99, mining and manufacturing lost jobs in both nonmetro and metro areas, with slightly larger declines in metro areas (fig. 1). Wholesale trade grew in metro areas, while nonmetro areas lost a small number of such jobs. In all other major industries, the number of jobs increased in both metro and nonmetro areas, with nonmetro growth usually less.

Nonmetro job growth in 1998-99 was slowest in the Southwest, while metro job growth was slowest in the Great Lakes (table 1). Metro areas in the Rocky Mountain region led all other regions in job growth (3.2 percent). Nonmetro New England led all nonmetro regions (2.3 percent).

Earnings Per Nonfarm Job

Real earnings per nonfarm job increased during 1998-99, by 1.3 percent in nonmetro areas and 2.5 percent in metro areas (table 2). This is down from the 2.7- and 3.5-percent growth nonmetro and metro areas experienced in 1997-98, but is still a better-than-average year for both areas. Since the last recession ended in 1991, real earnings per job have grown at annual average rates of 0.8 and 1.5 percent in nonmetro and metro areas.

The earnings of nonmetro jobs in all industries, except transportation and public utilities, more than kept up with inflation during 1998-99. The fastest earnings growth in nonmetro areas was among agricultural services, forestry, and fishing jobs, followed by jobs in the Federal military and construction. In metro areas, jobs in mining had the fastest earnings growth (despite loss in jobs), followed by wholesale trade and the agricultural services, forestry, and fishing group.

In all regions, real earnings per job increased in both metro and nonmetro areas, with metro growth outpacing nonmetro growth (fig. 2). Among nonmetro regions, earnings growth was highest in the Plains and Rocky Mountain regions (1.6 percent) followed by New England. Among metro regions, earnings growth was highest in the Far West (3.9 percent) followed by the New England and Rocky Mountain regions.

Trends in Earnings Per Nonfarm Job, 1969-99

Nonmetro earnings have not kept pace with metro earnings since 1979 (fig. 3 and table 3). The ratio of nonmetro to metro earnings increased during 1969-79, reaching a peak of 80.8 percent in 1979. That ratio fell consistently to 68.7 percent in 1999, with only a slight upward blip in 1993-94. The gap between metro and nonmetro earnings per job reached \$11,483 in 1999, the widest gap over the 31-year period.

County-Level Jobs and Earnings

Not every nonmetro county experienced job growth during 1998-99. Counties losing jobs numbered 718, or some 31 percent of all nonmetro counties (fig. 4). Job-growth counties are divided into three groups (about 520 counties each). Job growth in the top two groups more than compensates for the loss and slow-growth groups, resulting in the overall 1.5-percent job growth for nonmetro areas as a whole.

Figure 5 shows nonmetro counties by quartiles of earnings per nonfarm job. The lowest quartile, about 570 counties with earnings per job of less than \$20,669, is concentrated in the center of the country. While comparison of figures 4

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Table 1

Nonfarm jobs, by industry and BEA region, 1999

	1999 jobs		1998-99 change		1991-99 annual change	
	Nonmetro	Metro	Nonmetro	Metro	Nonmetro	Metro
	Thousands		Percent			
Total nonfarm jobs	26,573	134,013	1.5	2.4	2.1	2.1
By industry:						
Agricultural services, forestry, fishing, and other ¹	517	1,531	1.8	4.1	3.5	4.0
Mining	321	461	-7.4	-8.4	-3.3	-3.3
Construction	1,677	7,577	3.6	5.5	4.1	3.9
Manufacturing	4,380	14,872	-1.1	-1.4	0.8	0.0
Transportation and public utilities	1,167	6,804	1.8	3.6	2.0	2.5
Wholesale trade	882	6,583	-0.2	1.2	1.3	1.5
Retail trade	4,824	22,086	2.0	2.2	2.4	2.0
Finance, insurance, and real estate	1,476	11,503	4.2	4.2	3.8	2.5
Services	6,883	44,786	2.4	3.2	3.2	3.5
Government and government enterprises ²	4,445	17,811	1.2	1.2	1.0	0.5
Federal civilian	362	2,423	-0.2	-0.9	-0.8	-1.5
Federal military	367	1,707	-0.8	-2.0	-2.8	-3.1
State	995	3,865	1.4	1.2	1.3	1.0
Local	2,721	9,816	1.6	2.4	1.9	1.6
By BEA region:						
New England	1,198	7,371	2.3	1.9	1.7	1.6
Mideast	1,862	24,133	2.0	2.2	1.3	1.1
Great Lakes	4,536	21,726	1.6	1.8	2.2	1.9
Plains	4,119	7,907	1.4	2.1	2.1	2.3
Southeast	8,809	29,643	1.2	2.7	2.1	2.8
Southwest	2,498	14,700	0.7	2.5	2.2	3.3
Rocky Mountain	1,609	4,074	2.1	3.2	3.6	3.8
Far West	1,942	24,459	1.8	2.7	2.2	1.8

¹Other is employees of foreign embassies working in the United States.

²Government enterprises are government agencies that cover a substantial portion of their operating costs by selling goods and services to the public and that maintain their own separate accounts—for example, the U.S. Postal Service.

Source: ERS analysis of Bureau of Economic Analysis data.

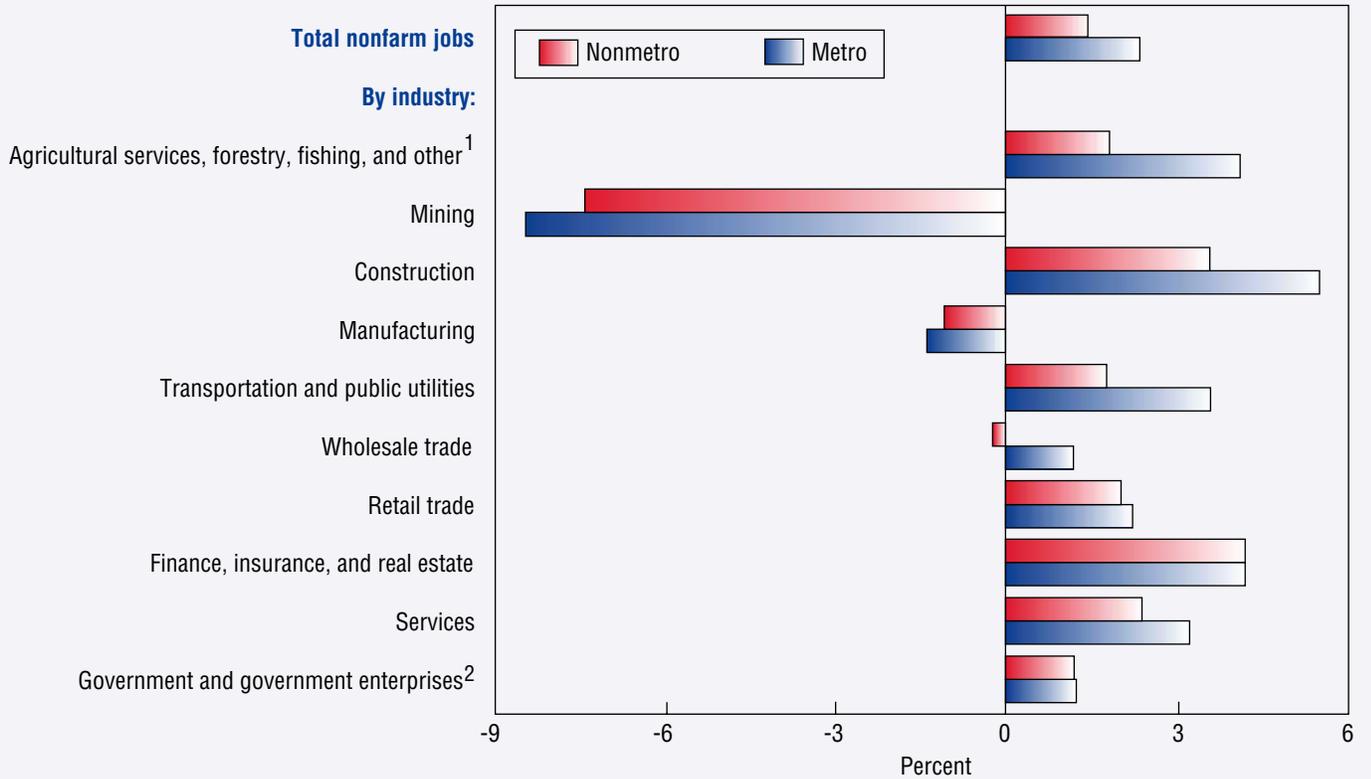
and 5 shows obvious overlap of job loss and low earnings, job loss also occurred in more than 100 counties in each of the higher earnings quartiles. The lack of a strong relationship between level of earnings per job and change in the number

of jobs suggests that specific events, such as business closures/layoffs or business openings/expansions, are driving county-level job change, not systemic trends toward areas with higher earnings or away from areas with lower earnings. **RA**

Figure 1

Change in the number of jobs by industry, 1998-99

Jobs in most industries grew faster in metro areas, but nonmetro areas had slower declines in mining and manufacturing



¹Other is employees of foreign embassies working in the United States.

²Government enterprises are government agencies that cover a substantial portion of their operating costs by selling goods and services to the public and that maintain their own separate accounts, such as the U.S. Postal Service.

Source: Calculated by ERS from Bureau of Economic Analysis data.

Table 2

Earnings per nonfarm job, by industry and BEA region, 1999

	1999 earnings		1998-99 change		1991-99 annual change	
	Nonmetro	Metro	Nonmetro	Metro	Nonmetro	Metro
	Dollars		Percent			
Earnings per nonfarm job	25,201	36,684	1.3	2.5	0.8	1.5
By industry:						
Agricultural services, forestry, fishing, and other ¹	15,004	20,074	4.1	3.8	-0.6	0.6
Mining	43,942	71,528	2.6	5.2	1.7	6.4
Construction	27,080	37,451	2.8	2.8	0.5	0.7
Manufacturing	33,945	50,948	2.0	3.1	1.2	1.7
Transportation and public utilities	38,612	49,215	-0.4	2.5	1.0	1.4
Wholesale trade	30,529	48,924	2.3	3.9	1.4	2.0
Retail trade	15,136	19,491	2.3	2.8	0.7	1.3
Finance, insurance, and real estate	18,538	42,269	0.6	2.1	1.8	4.4
Services	20,291	33,204	1.5	3.0	1.2	1.6
Government and government enterprises ²	31,875	42,126	1.2	1.2	1.0	1.1
Federal civilian	55,047	65,768	1.2	2.9	1.8	2.0
Federal military	27,523	36,063	2.9	2.1	1.1	1.2
State and local	30,047	38,695	1.1	0.8	1.0	0.9
State	33,534	38,908	1.0	1.1	0.8	0.9
Local	28,772	38,611	1.2	0.7	1.1	1.0
By BEA region:						
New England	27,205	40,483	1.5	3.5	0.7	1.9
Mideast	27,105	42,102	0.9	2.2	0.7	1.6
Great Lakes	26,203	36,103	1.1	1.8	1.0	1.5
Plains	23,479	33,547	1.6	2.1	1.1	1.5
Southeast	25,090	32,257	1.3	1.8	0.9	1.3
Southwest	23,679	35,198	0.9	2.2	0.5	1.9
Rocky Mountain	24,130	33,418	1.6	3.4	0.7	2.0
Far West	26,804	38,526	1.3	3.9	0.1	1.6

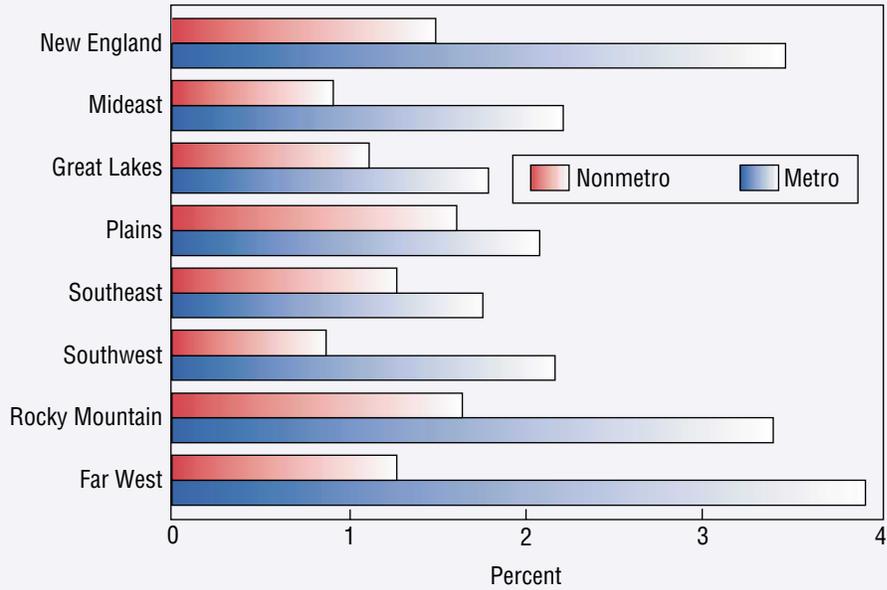
Note: Changes, from 1998 and 1991 to 1999, are measured in real 1999 dollars. Previous year's earnings were converted to 1999 dollars using the chain-type personal consumption expenditures price index.

¹Other is employees of foreign embassies working in the United States.

²Government enterprises are government agencies that cover a substantial portion of their operating costs by selling goods and services to the public and that maintain their own separate accounts—for example, the U.S. Postal Service.

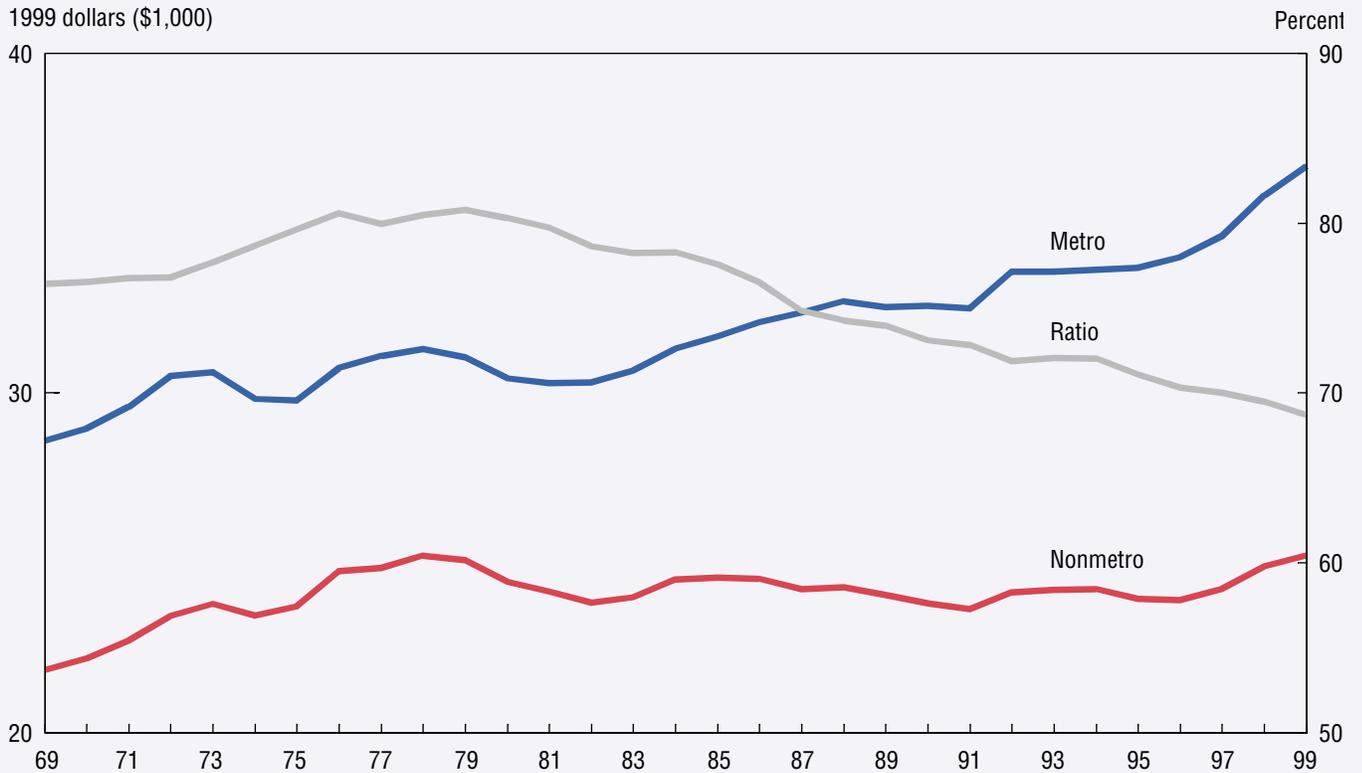
Source: ERS analysis of Bureau of Economic Analysis data.

Figure 2
Change in real earnings per job by BEA region, 1998-99
Metro earnings growth exceeded nonmetro growth in all BEA regions, often by very wide margins



Source: ERS analysis of Bureau of Economic Analysis data.

Figure 3
Real earnings per nonfarm job, 1969-99
Metro earnings grew much faster in the 1990s, widening the metro-nonmetro earnings gap



Notes: Previous year's earnings converted to 1999 dollars using the chain-type personal consumption expenditures price index. Ratio is nonmetro earnings as a percentage of metro earnings.
 Source: ERS analysis of Bureau of Economic Analysis data.

Table 3

Real earnings per nonfarm job, 1969-99

	Nonfarm earnings per job			Metro-nonmetro earnings gap ¹	Earnings ratio ²	Change from previous year	
	U.S.	Nonmetro	Metro			Nonmetro	Metro
	1999 dollars					Percent	
1969	27,417	21,843	28,586	6,743	76.4	NA	NA
1970	27,782	22,170	28,961	6,790	76.6	1.5	1.3
1971	28,376	22,706	29,581	6,875	76.8	2.4	2.1
1972	29,248	23,422	30,494	7,073	76.8	3.2	3.1
1973	29,423	23,788	30,623	6,835	77.7	1.6	0.4
1974	28,695	23,453	29,812	6,359	78.7	-1.4	-2.6
1975	28,704	23,705	29,774	6,068	79.6	1.1	-0.1
1976	29,669	24,766	30,734	5,969	80.6	4.5	3.2
1977	29,966	24,850	31,076	6,227	80.0	0.3	1.1
1978	30,218	25,196	31,300	6,104	80.5	1.4	0.7
1979	30,005	25,089	31,054	5,966	80.8	-0.4	-0.8
1980	29,383	24,428	30,427	6,000	80.3	-2.6	-2.0
1981	29,234	24,154	30,298	6,144	79.7	-1.1	-0.4
1982	29,190	23,830	30,307	6,476	78.6	-1.3	0.0
1983	29,508	23,980	30,651	6,671	78.2	0.6	1.1
1984	30,159	24,514	31,311	6,797	78.3	2.2	2.2
1985	30,472	24,556	31,658	7,101	77.6	0.2	1.1
1986	30,839	24,542	32,081	7,538	76.5	-0.1	1.3
1987	31,015	24,217	32,351	8,134	74.9	-1.3	0.8
1988	31,319	24,285	32,691	8,406	74.3	0.3	1.1
1989	31,144	24,056	32,528	8,471	74.0	-0.9	-0.5
1990	31,129	23,800	32,566	8,767	73.1	-1.1	0.1
1991	31,024	23,651	32,487	8,836	72.8	-0.6	-0.2
1992	31,990	24,131	33,569	9,438	71.9	2.0	3.3
1993	32,000	24,200	33,578	9,378	72.1	0.3	0.0
1994	32,040	24,223	33,637	9,414	72.0	0.1	0.2
1995	32,040	23,948	33,693	9,746	71.1	-1.1	0.2
1996	32,282	23,895	33,986	10,092	70.3	-0.2	0.9
1997	32,855	24,220	34,602	10,383	70.0	1.4	1.8
1998	33,983	24,884	35,804	10,920	69.5	2.7	3.5
1999	34,784	25,201	36,684	11,483	68.7	1.3	2.5

Note: Earnings were converted to 1999 dollars using the chain-type personal consumption expenditures price index.

NA = Data for prior year not available to compute change.

¹Earnings gap is the difference between metro and nonmetro earnings in 1999 dollars.

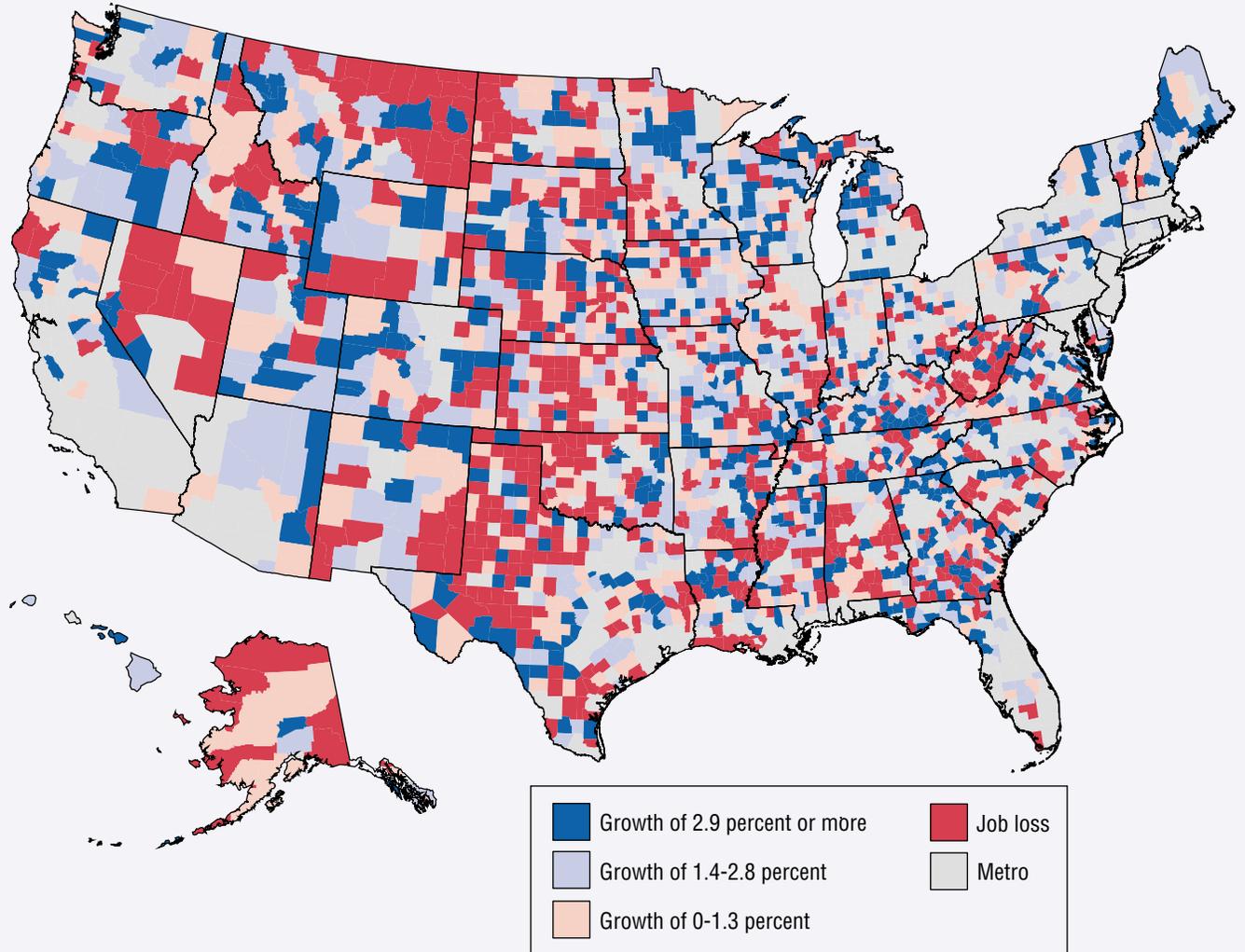
²Earnings ratio is nonmetro earnings as a percentage of metro earnings.

Source: ERS analysis of Bureau of Economic Analysis data.

Figure 4

Nonmetro county change in number of jobs, 1998-99

While job loss was concentrated in a band from Montana and North Dakota through Texas, at least one nonmetro county in most States lost jobs

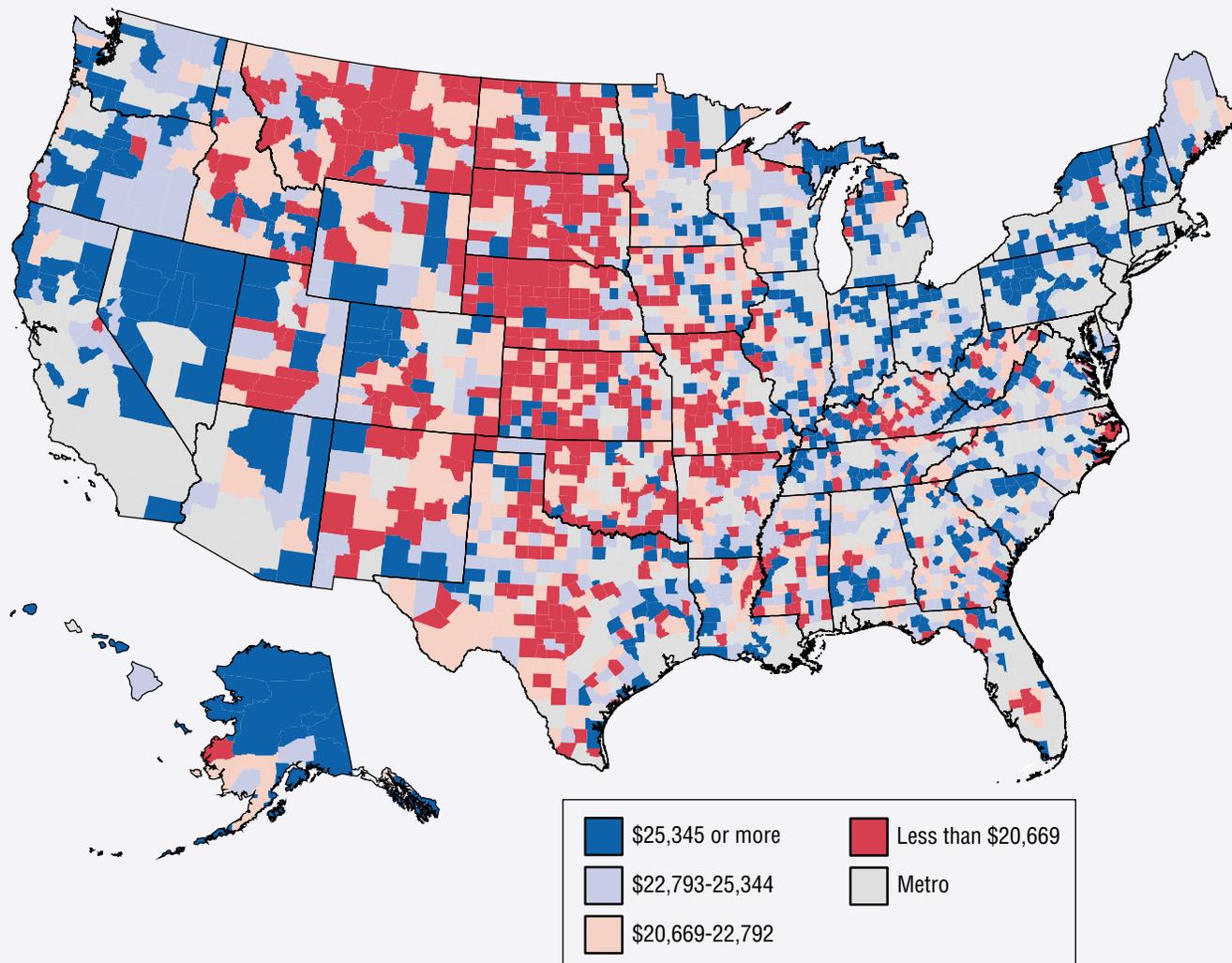


Source: ERS analysis of Bureau of Economic Analysis data.

Figure 5

Nonmetro earnings per job, 1999

Nonmetro counties in the lowest earnings quartile are concentrated down the center of the country



Source: ERS analysis of Bureau of Economic Analysis data.

Rural Reliance on Transfers Income Remained Steady During the 1990s

Peggy J. Cook

Federal, State, and local governments transferred about \$1 trillion to individuals, organizations, businesses, and administrative and service costs in 1999. Total transfer income may be slightly lower than amounts reported in the past because of definitional changes by the Bureau of Economic Analysis (see "About the Data"). Of the \$924.4 billion distributed directly to individuals in 1999, rural (nonmetro) areas received \$207.4 billion or \$3,828 per capita. Urban (metro) areas received \$756.8 billion or \$3,462 per capita (table 1).

In keeping with past trends, per capita transfer payments in rural areas were higher overall than in urban areas, but levels varied by region (fig. 1). Per capita payments were highest in the urban Northeast (\$4,510). Only in the Northeast did urban transfer payments exceed the rural amount. In other regions, the urban per capita payments lagged rural payments by at least \$300, with the largest differential occurring in the South. Per capita transfers were approximately \$4,000 in the rural South (as well as

in the rural Northeast). Factors such as differences in population size, numbers and concentrations of eligible populations, and the predominance of various programs help shape the regional variations.

The rural-urban gap in per capita transfer payments, however, fails to capture the relative economic importance of transfer payments to overall well-being. In 1999, transfer payments represented about 18 percent of total rural personal income, compared with 11 percent of urban personal income. The degree of reliance on transfer payments—both rural and urban—remained steady between 1994 and 1999 (fig. 2).

As in the past, retirement and disability payments (primarily Social Security benefits) and medical benefits (primarily Medicare and Medicaid) accounted for the bulk—over 80 percent—of transfer income in 1999. Income maintenance programs such as Supplemental Security Income (SSI), Temporary Assistance for Needy Families (TANF), and food stamps represented an additional 10 percent. The remainder consisted of a variety of other small-scale programs (table 1).

Rural per capita benefits exceeded urban benefits in all program categories except family assistance (Temporary Assistance for Needy Families)—\$38 in rural areas versus \$72 in urban areas in 1999. This may reflect State differences in benefit levels or differing levels of participation between rural and urban residents. The passage of

welfare reform legislation in 1996 under the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) prompted State variations in the creation, tailoring, and operation of welfare programs. State programs now reflect considerable differences in eligibility criteria, work requirements, and referrals to alternative forms of assistance. The extent to which factors such as differences in State programs, voluntary and involuntary withdrawals from assistance programs, the decisions of eligible family heads to initially participate in family assistance programs, and differences in per capita benefit levels affect rural-urban differentials in participation is not fully understood.

Overall Transfer Payments Fluctuate With Earnings

Between 1994 and 1999, per capita transfer payments grew 1.8 percent per year in rural areas and 1.0 percent in urban areas. Growth in rural per capita earnings increased by 2.0 percent per year, while urban per capita earnings increased 3.2 percent. Transfer income generally rises and falls inversely with increases and decreases in earnings. During 1994-97 when per capita earnings growth was relatively weak (slightly over 1 percent in rural areas and over 2 percent in urban areas), transfer payments were growing between 1.5 and 2.5 percent per year. Between 1997 and 1999, when per capita earnings growth quickened, growth in transfer pay-

Peggy J. Cook recently retired as a sociologist with the Food Assistance and Rural Economy Branch, Food and Rural Economics Division, ERS. Questions about transfer payments may be directed to Linda M. Ghelfi (202-694-5437, lghelfi@ers.usda.gov).

Table 1

Per capita income and transfer payments by residence, 1999, and average annual changes in transfer payments, 1994-99¹

Item	1999		Average annual change ²			
	Income	Share of transfers	1994-99	1994-97	1997-99	1998-99
	<i>Dollars</i>	<i>Percent³</i>	<i>Percent</i>			
Nonmetro:						
Personal income	21,384	NA	2.3	2.0	2.7	1.9
Earnings	13,124	NA	2.0	1.3	2.9	2.3
Transfer payments	3,828	100.0	1.8	2.4	0.8	1.0
Retirement/disability	1,695	44.3	1.4	1.4	1.3	0.7
Social security	1,610	42.1	1.6	1.7	1.4	0.8
Medical	1,496	39.1	3.0	4.7	0.6	1.4
Medicare	776	20.3	2.9	6.4	-2.3	-2.6
Medicaid	712	18.6	3.4	2.9	4.2	6.1
Income maintenance programs	389	10.2	0.3	0.5	0.1	1.5
Supplemental security income	117	3.1	0.1	0.2	-0.01	-1.2
Family assistance ⁴	38	0.1	-9.8	-12.4	-5.9	-1.5
Food stamps	65	1.7	-8.2	-8.7	-7.6	-5.6
Other income maintenance ⁵	169	4.4	10.8	14.5	5.2	7.3
Unemployment insurance	80	2.1	-3.0	-4.6	-0.6	0.5
Veterans' benefits	113	2.9	1.7	1.2	2.5	2.1
Other transfer programs ⁶	53	1.4	3.4	6.4	-1.1	-2.0
Metro:						
Personal income	30,346	NA	3.0	2.5	3.7	2.8
Earnings	20,984	NA	3.2	2.4	4.5	3.8
Transfer payments	3,462	100.0	1.0	1.6	0.2	0.5
Retirement/disability	1,422	41.1	0.8	1.1	0.5	-0.1
Social security	1,339	38.7	1.1	1.3	0.7	0.02
Medical	1,455	42.0	2.3	3.8	0.1	0.9
Medicare	760	22.0	2.4	5.8	-2.6	-3.0
Medicaid	688	19.9	2.4	1.8	3.4	5.6
Income maintenance programs	380	11.0	-1.4	-1.9	-0.5	0.8
Supplemental security income	113	3.3	0.7	0.5	1.0	-0.1
Family assistance ⁴	72	2.1	-7.2	-11.0	-1.6	2.0
Food stamps	55	1.6	-10.3	-9.1	-12.0	-9.1
Other income maintenance ⁵	140	4.1	7.6	9.6	4.6	5.4
Unemployment insurance	75	2.2	-5.9	-9.0	-1.3	1.7
Veterans' benefits	82	2.4	1.1	0.9	1.4	0.9
Other transfer programs ⁶	47	1.4	2.4	5.3	-1.9	-0.6

NA = Not applicable.

¹Government transfer payments to individuals (about 95 percent of all transfer payments).

²Change in real 1999 dollars

³Percentage shown for the major categories sum to 100. Subcategories may not sum to the category value because only selected programs are included.

⁴Formerly Aid to Families with Dependent Children, replaced by Temporary Assistance for Needy Families (TANF) in 1996.

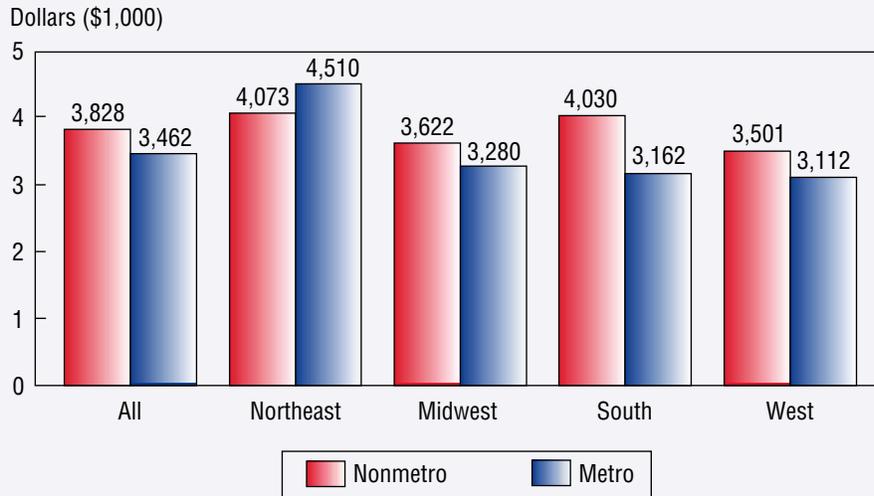
⁵Consists largely of general assistance, refugee assistance, foster care and adoption assistance, earned income tax credits, and energy assistance.

⁶Includes Federal education and training payments and payments for miscellaneous programs.

Source: Calculated by ERS using data from the Bureau of Economic Analysis.

Figure 1

Per capita transfer payments to individuals by residence and region, 1999
Nonmetro areas received higher per capita transfer payments than metro areas overall, but patterns differed by region



Source: Calculated by ERS from Bureau of Economic Analysis data.

ments fell to under 1 percent per year in both rural and urban areas (table 1).

Rates of Change Vary by Program

In comparison to overall transfer payments, the patterns of growth (or decline) varied considerably by the major program categories. During 1994-99, per capita benefits for retirement/disability programs grew more slowly while per capita medical benefits grew faster than overall transfer payments in both rural and urban areas. A decline in Medicare benefits during 1997-99 in both rural and urban areas, however, could signal a reversal to the long-term trend of rising per capita medical payments.

Per capita payments for income maintenance increased marginally in rural areas and declined in urban areas from 1994 to 1999. Furthermore, rates of change varied sharply among the different programs comprising the category.

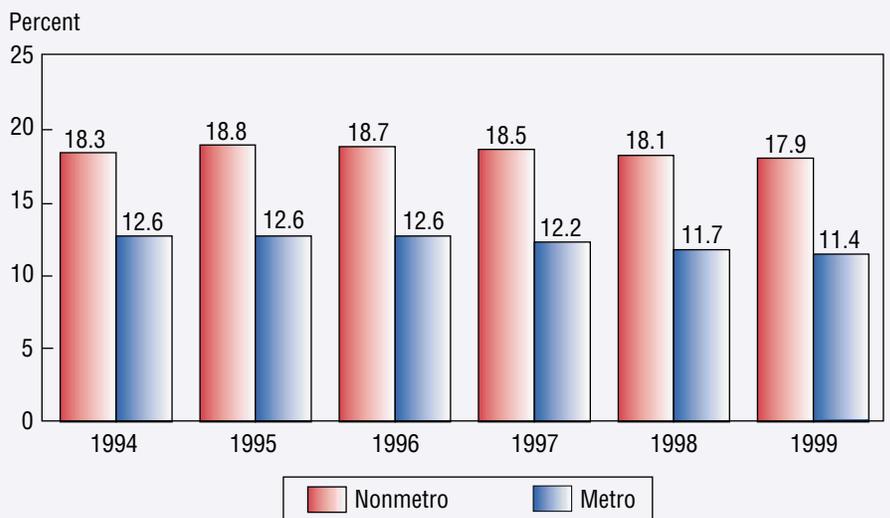
The higher rates of growth in “other maintenance programs” observed in both rural and urban areas were likely driven by an

increase in earned income tax credits, a major component of the category.

Per capita benefits for two programs—family assistance and food stamps—exhibited sharp declines during 1994-99 (rural and urban alike). These declines in benefits are in keeping with declines in program participation levels since welfare reform, although declining participation in the food stamp program was not necessarily anticipated. The patterns, however, differed for rural and urban areas. In rural areas, per capita benefits for family assistance and food stamps declined during 1997-99 at slower rates than those in 1994-97, although per capita benefits for family assistance slowed more rapidly than food stamp benefits (table 1). In urban areas, however, rates of decline in family assistance benefits during 1997-99 slowed markedly from 1994-97 rates, but the rate of decline in food stamp benefits

Figure 2

Transfer payments as shares of personal income, by residence, 1994-99
Transfer payments accounted for larger shares of personal income in nonmetro than in metro areas

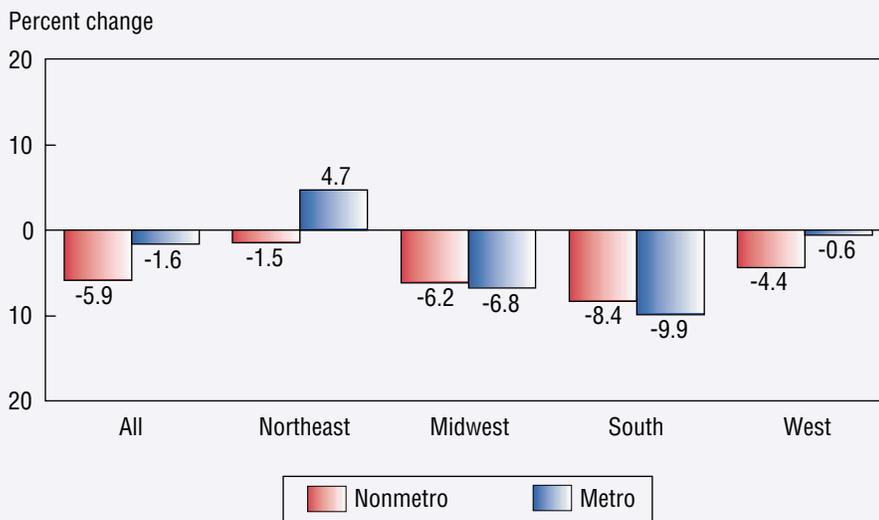


Source: Calculated by ERS from Bureau of Economic Analysis data.

Figure 3

Annual average change in real per capita benefits for family assistance, by residence and region, 1997-99

Nonmetro benefits for family assistance payments declined more rapidly than metro benefits; overall regional patterns varied



Source: Calculated by ERS from Bureau of Economic Analysis data.

quickened by about 3 percentage points per year. During 1998-99, urban per capita family assistance benefits even showed slight growth.

Patterns of growth and decline for family assistance and food stamps varied across regions during 1997-99. Rural per capita family assistance benefits declined most rapidly in the South, followed by the Midwest, West, and Northeast (fig. 3). Urban family assistance benefits declined by nearly 10 percent in the South, but grew by nearly 5 percent in the Northeast.

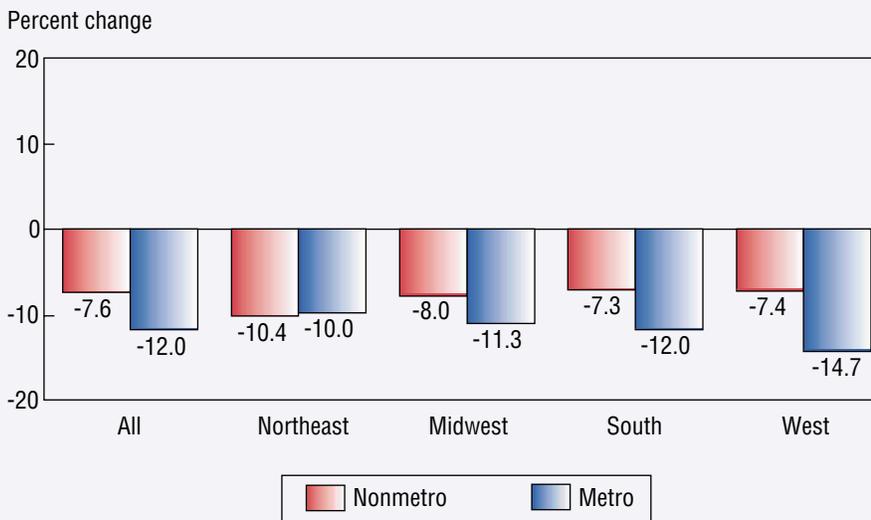
Rural per capita food stamp benefits declined at rates varying from 7.3 percent in the South to 10.4 percent in the Northeast. In urban areas, the decline in per capita benefits was highest in the West (14.7 percent). Benefits in other urban regions declined over 10 percent (fig. 4).

While the differences in rural-urban patterns are not fully understood, contributing factors—especially involving the food stamp program—include the concentrations of immigrant populations in urban areas, State demographic differences, and program changes affecting different client groups. ERS is currently, through its Food Assistance and Nutrition Research Program, studying reasons underlying declining participation in the food stamp program. *RA*

Figure 4

Annual average change in real per capita benefits for food stamps, by residence and region, 1997-99

Food stamp payments declined in all regions; metro declines were generally sharper than nonmetro declines



Source: Calculated by ERS from Bureau of Economic Analysis data.

About the Data

The Bureau of Economic Analysis releases annual estimates of payments for cash or goods made by Federal, State, and local governments to people, non-profit organizations, and some businesses (for example, liability payments). Recipients of transfer payments do not perform work in exchange for benefits, although they may have performed work earlier to be eligible for benefits. For example, retired people receive Social Security because they worked earlier in their lives and paid taxes to fund the program.

Government transfers to individuals are reported for the following categories: retirement and disability programs (mainly Social Security), medical programs (Medicare, Medicaid, military insurance programs), income maintenance programs (Supplemental Security Income for poor elderly, disabled, and blind; family assistance; food stamps; and other income maintenance such as earned income tax credits), unemployment insurance, veterans' programs, and other. The transfer data series currently encompasses 1969 to 1999.

BEA annually releases another year of estimates, including revisions made for the two years prior. Periodically, BEA recalculates all data for all years to match adjustments it made to accounting rules used in producing national income and product accounts. In 1998, payments to retirees from Federal, military, and State and local government retirement programs were no longer treated as transfers. Before this adjustment, the retirement and disability category accounted for about 50 percent of nonmetro transfer payments to individuals (as of 1997). After the adjustment, the category accounted for about 44 percent of nonmetro transfer payments to individuals (as of 1999).



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