

# RuralAmerica

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**Douglas E. Bowers**, Executive Editor  
**Carolyn Rogers**, Associate Editor  
**Dale Simms**, Managing Editor  
**Victor B. Phillips, Jr.**, Layout and Design

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*Agricultural Outlook, FoodReview, and Rural America* will continue publishing through December 2002.

This issue of *Rural America* focuses on the older population in rural areas. Older Americans are better educated and more prosperous than previous generations, but their increasing longevity and growing numbers are drawing attention to the societal implications of such growth. Moreover, those age 85 and older have been increasing more rapidly than any other age group. With the leading edge of the baby boom generation reaching age 65 in 2011, policymakers, researchers, and community leaders must plan for their health and economic needs.

Rural areas have a higher proportion of older persons (20 percent) in their total population than do urban areas (15 percent). And as Carolyn Rogers demonstrates in her article, the older rural population, like the rural population generally, is increasingly heterogeneous. The young old (age 60 to 85) and the oldest old (85 and older) exhibit clear differences in social and economic well-being. With advancing age, the oldest old are more likely to experience widowhood, health problems, and poverty.

Glenn V. Fuguitt, Calvin L. Beale, and Stephen J. Tordella find that the nonmetro population 65 and older grew more slowly than the rural nonelderly between 1990 and 2000, and attribute this to declines in both elderly natural increase (fewer people turning 65) and net migration. Growth of the older population varies considerably by region, with agriculture-dependent areas of the Great Plains experiencing the largest decline in population 65 and older in the 1990s.

Richard J. Reeder and Samuel D. Calhoun find that—despite recent declines in the numbers of elderly—most counties with disproportionately older populations are highly rural, farming areas in the Great Plains and such counties have special needs. Nonmetro elderly counties (at least 20 percent of the population 65 or older) received more Federal funding per capita than other counties, and relied heavily on agricultural/natural resources programs and income support programs.

Fred Gale finds that older farmers are leaving farming more slowly than in the past. The percentage of U.S. farmers age 65 and older has risen steadily since 1978, accelerating in the 1980s and 1990s. This is due to an absolute increase in numbers as well as a steady decrease in the number of farmers under age 65. Tellingly, older farmers own one-third of farm assets.

The growth of the older population is not unique to the United States. In Australia, Gerald Haberkorn finds that the older population quadrupled between 1950 and 2000. Growth of the older population there is not evenly dispersed, but fastest in metro and coastal areas. The implications for an aging Australian population are similar to those for the United States, raising issues relating to able stewardship of agriculture and natural resources, the viability of remote rural communities, and equitable provision of services for older Australians.

Also in this issue, Faqir Singh Bagi examines the unique problems of rural water systems. Often too small to achieve economies of scale, rural water systems must pay dearly for capital expenditures and maintenance, which raises rates for consumers. Rural systems also have a harder time complying with Safe Water Drinking Act requirements, although 1996 amendments have helped ease this burden.

Darryl S. Wills looks at rural housing prices in the 1990s using three different measures, including measures that adjust for differences in housing quality. All show that rural housing prices increased substantially faster than urban housing prices—from 15 to 24 percent faster according to the method used. Migration to rural areas in the 1990s inflated the cost of housing, as did rising household income.

F. Larry Leistritz, Nancy M. Hodur, and Dean A. Bangsund use a survey of 16 North Dakota counties to explore the effects of USDA's Conservation Reserve Program (CRP). Like much of the Great Plains, North Dakota farmers have embraced the CRP. Surveyed farmers rated the CRP as both cost-effective and highly beneficial to the environment and recreation. Community leaders agreed about the environmental and recreational benefits, but expressed concern about the effects of the program on local economies.

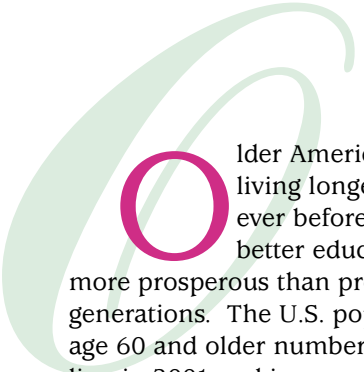
Jack L. Runyan provides new data on hired farmworkers using the Current Population Survey for 2001. The number of hired farmworkers dropped to 745,000 in 2001, the lowest level in over a decade. It is too early to tell, however, whether this represents a new trend. Earnings for hired farmworkers moved up slightly in 2001, but not enough to change their position as one of the lowest paid occupations.

Finally, Richard J. Reeder and Samuel D. Calhoun analyze the different types of Federal funds going to nonmetro areas and their regional distribution. Nonmetro counties still receive fewer funds per capita than metro counties, 4.5 percent less in 2000, mainly because metro counties get more from Federal contracts and salaries. The South leads all regions in per capita Federal funds due to higher transfer payments. Farm program payments give the most remote rural counties higher average Federal funds than other nonmetro counties.

Carolyn C. Rogers & Douglas E. Bowers

# The Older Population in 21st Century Rural America

Carolyn C. Rogers



Older Americans are living longer than ever before, and are better educated and more prosperous than previous generations. The U.S. population age 60 and older numbered 43 million in 2001 and is expected to double by 2050. Moreover, the population age 85 and older has been increasing more rapidly than any other age group. Continued growth of the older population will greatly impact resources such as medical care facilities, nursing homes, Medicare/Medicaid, and Social Security funds. Consequently, policymakers, researchers, and community leaders must better understand and anticipate the health and economic needs of this segment of American society.

Throughout the Nation, rural areas generally have a higher proportion of older persons in their total population than do urban areas. Rural areas are aging as a result of aging-in-place, outmigration of young adults, and inmigration of older persons from metro areas, straining community resources to provide adequate health care, housing, and trans-

*Older Americans are increasing steadily in number and proportion of the total population, especially those age 85 and older. Rural areas generally have a higher proportion of older persons in their total population than do urban areas. Although poverty rates of older persons have generally declined, a metro-nonmetro gap persists, with the rural elderly more likely to be poor than the urban elderly. Rural areas differ widely in terms of population trends and the socioeconomic mix of their older population, and policies and programs for the older population that recognize these rural differences will be the most effective.*

portation. The rural elderly have higher poverty rates and poorer health than the urban elderly, implying a greater need for services and resources. Recent policy changes affecting rural health care delivery will have a major impact on rural areas that are more limited in their health care services and facilities, increasing demands for medical and social services and long-term care.

This article examines demographic and socioeconomic characteristics of the older population by metro-nonmetro status, and implications for current and future rural policy decisions in terms of resources, services, and programs. How does metro-nonmetro residence affect the social and economic well-being of the older population? And what subgroups are most vulnerable?

The article is based on data from the March 2001 (and previous years) Current Population Survey (CPS). Because the CPS excludes the institutional population, such as those in nursing homes, the num-

ber of older persons is underestimated. This underestimate is more pronounced at advanced ages, as seen in the 2000 census—1.1 percent of persons age 65-74 were in nursing homes, as were 4.7 percent of those age 75-84 and 18.2 percent of those age 85 and older.

## Older Population Is Aging, With the Fastest Growing Segment Age 85 and Older

In 2001, 43.4 million Americans (16 percent of the total population) were elderly, or age 60 and older; this represents an increase of 7 percent in the older population since 1991. The aging of the baby boom generation, born between 1946 and 1964, will accelerate the growth in the older population, as the leading edge of the cohort reaches age 65 in 2011. Already, the aging of the baby boom has led to an increase in the median age from 33 in 1991 to 35 in 2001 (table 1). The nonmetro median age was 38.0 in 2001, compared with 34.0 for the metro population.

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Carolyn C. Rogers is a demographer with the Food and Rural Economics Division, Economic Research Service, USDA.



The metro older population grew by 11 percent between 1991 and 2001, while nonmetro areas lost persons 60 and older, mostly in the early 1990s. Nonmetro counties with declining older populations are concentrated in the Great Plains, Corn Belt, and lower Mississippi Valley (see “Recent Trends in Older Population Change . . .” elsewhere in this issue). Urban proximity facilitates growth, as retirees move toward facilities and resources in urban areas as well as to places with cultural or recreational amenities.

Rural areas generally have a higher proportion of older persons in their total population (20 percent) than do urban areas (15 percent) (table 1). Rural areas have dif-

ferent needs for health care delivery, transportation, and access to social services. For example, accessing health care services can be difficult in low-density, sparsely populated rural communities, which are often far from comprehensive, state-of-the-art medical care and facilities (Buczko; Rogers, 2002). Rural areas also have fewer physicians and smaller hospitals (Rogers, 2002).

The older population is concentrated in the South, with 16 million persons age 60 and older in 2001; 28 percent of these older persons reside in nonmetro areas. Of the nonmetro population nationwide, 45 percent of the older population resides in the South and 31 percent in the Midwest.

The proportion of the population age 60 and older varies among States and counties. Counties age at various rates due to the population shift (by metro-nonmetro status) in recent decades and differences in the rate at which local populations enter older status. The share of the total county population that is elderly is affected by the mortality rate, the number of older persons who migrate to a county, and the number of younger persons who move out of the county. The pattern of internal migration has produced changes in the older population in many nonmetro areas. Retirement areas benefit from high immigration, while high elderly concentration in many other nonmetro counties is due to outmigration of young persons and aging-in-place (or the aging of late middle-aged people into old age).

The oldest old (age 85 and older) is currently the fastest growing segment of the older population and is expected to grow faster than any other age group. The oldest old comprised a larger share of the older population (8 percent) in 2001 than in 1991 (6 percent). The U.S. Census Bureau projects that the oldest old population could grow from about 4 million in 2000 to 19 million by 2050. By 2050, nearly 24 percent of the older population is projected to be 85 years and older. This projection has implications for the health care system because those 85 and older tend to be in poorer health and require more services than the younger old. This finding is especially relevant to nonmetro areas as these communities have a slightly higher share of their older populations in the 85-and-older group.

Table 1

**Age distribution of the older population by metro-nonmetro residence, 1991, 1996, and 2001**

*The aging of the U.S. population is reflected in the increase in the median age, from 33 in 1991 to 35 in 2001*

Residence and year	Median age	60 years and older		85 years and older	
		Number	Share of total population	Number	Share of 60-and-older population
			Percent		Percent
<b>1991:</b>					
U.S. total	33.0	40,745,000	16.4	2,390,000	5.9
Metro	32.0	30,081,000	15.6	1,724,000	5.7
Nonmetro	34.0	10,664,000	19.0	666,000	6.2
<b>1996:</b>					
U.S. total	33.0	41,442,000	15.7	2,819,000	6.8
Metro	33.0	31,926,000	15.0	2,245,000	7.0
Nonmetro	35.0	9,516,000	18.3	574,000	6.0
<b>2001:</b>					
U.S. total	35.0	43,425,000	15.7	3,293,000	7.6
Metro	34.0	33,336,000	14.8	2,505,000	7.5
Nonmetro	38.0	10,089,000	19.7	787,000	7.8

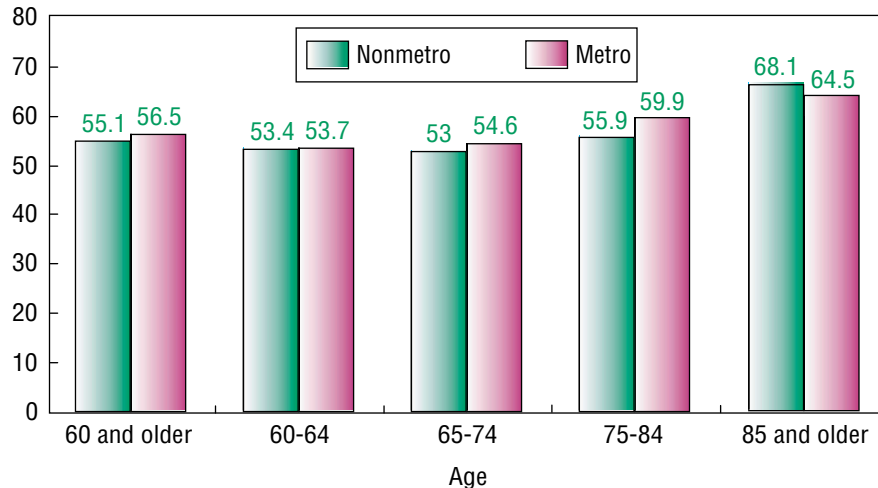
Source: Calculated by ERS from March Current Population Survey (CPS) data files for 1991, 1996, and 2001.

Figure 1

**Older women as a percentage of the population by age and residence, 2001**

*With advancing age, women comprise a larger share of the older population*

Female share of population (Percent)



Source: March 2001 Current Population Survey (CPS) data file.

**Older Women Are More Likely To Be Widowed Than Older Men**

Women constitute a larger share of the older population, especially among the oldest old. In nonmetro areas, women represented 53 percent of the population age 60 to 64 and 68 percent of the population age 85 and older in 2001 (fig. 1). Older women are less likely than older men to be married and are more likely to live alone. Because women live longer than men, they are more likely to experience declining health and the dwindling economic resources of advanced age.

Today's older population is predominantly White, but as the older population increases, it is becoming more racially and ethnically diverse. In 2001, 92 percent of the nonmetro older population was White, 6 percent Black, and only 2 percent Hispanic (fig. 2). Minorities, elderly or not, are more likely to live in metro areas than nonmetro areas. In the South, Blacks comprise a larger share of

the older population in both nonmetro (12 percent) and metro (14 percent) areas than they do elsewhere (fig. 2).

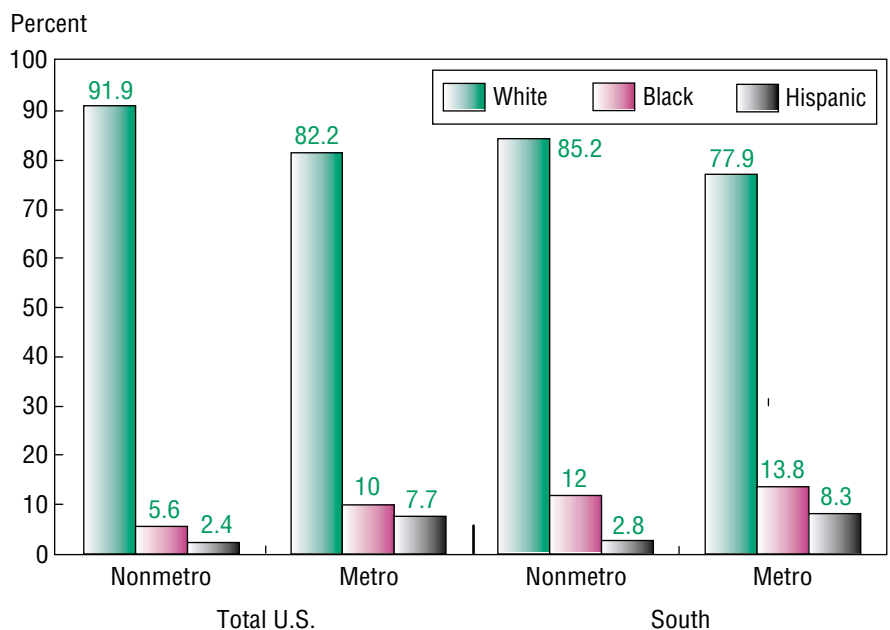
Black and Hispanic older persons are more likely to be younger than their White counterparts. In 2001, 77 percent of nonmetro older Hispanics were age 60-74, compared with 68 percent of Blacks and 63 percent of Whites. Hispanics are growing faster than other race-ethnic groups of the older population, contributing to the growing diversity.

Marital status can strongly influence a person's emotional and economic well-being by influencing living arrangements and the availability of caregivers. In 2001, 62 percent of nonmetro older persons were married and 27 percent were

Figure 2

**Persons age 60 and older by race-ethnicity, residence, and region, 2001**

*Minorities are less likely to live in nonmetro areas; however, in the South, a larger share of the older population is Black*

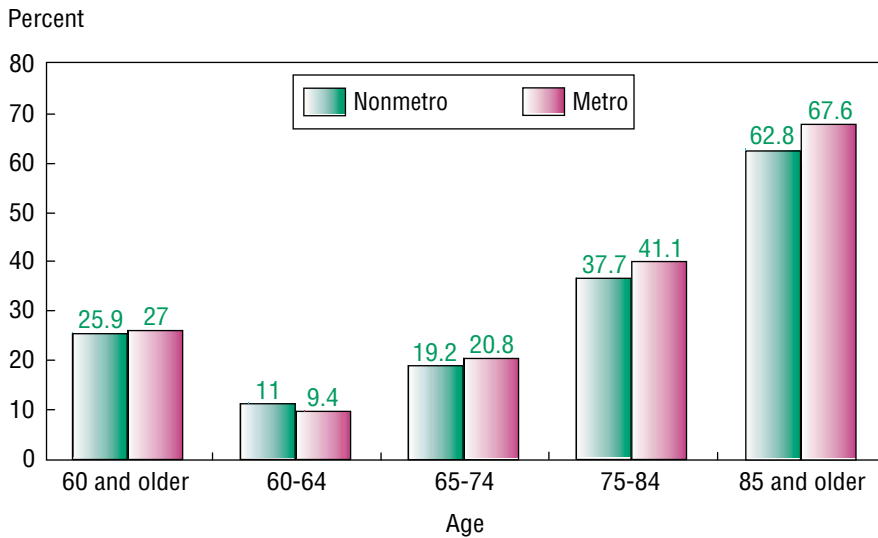


Source: March 2001 Current Population Survey (CPS) data file.

Figure 3

**Persons age 60 and older who are widowed, 2001**

*By age 85, about two-thirds of older persons are widowed*



Source: March 2001 Current Population Survey (CPS) data file.

widowed, versus 58 and 27 percent for metro older persons. Older women are more likely to be widowed than are older men due to differences in life expectancy, the tendency for women to marry men who are slightly older, and higher remarriage rates for older widowed men than widowed women. In nonmetro areas, 76 percent of older men were married and 11 percent were widowed in 2001, versus 51 and 38 percent for older women.

Widowhood increases with advancing age and is more prevalent among older women than men. In 2001, 79 percent of nonmetro men age 60 to 74 were married and only 7 percent were widowed, compared with 63 and 24 percent for comparable women. At age 85, a higher proportion of both men and women are widowed, though women are more than twice as likely to be widowed than men. For example, 59 percent of nonmetro men age 85 and older were married and 30 percent widowed,

compared with only 13 percent of nonmetro women 85 and older who were married and 78 percent widowed.

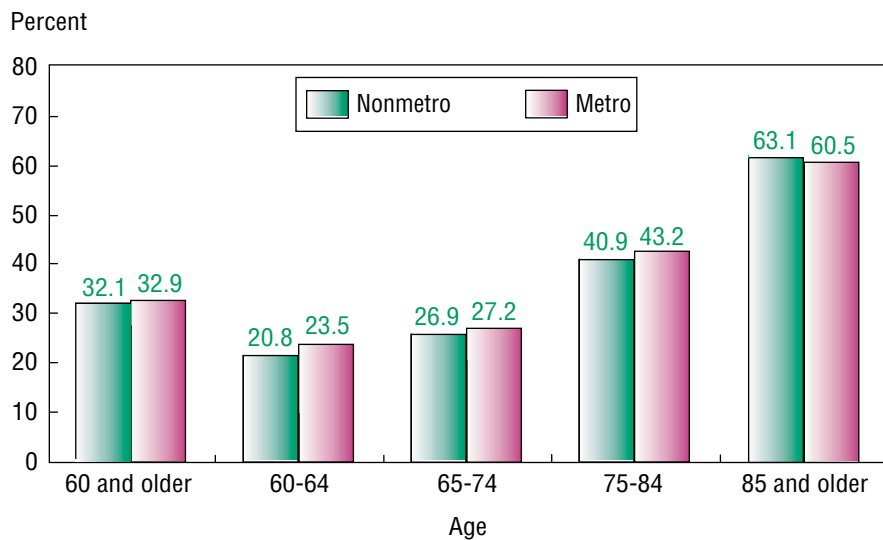
The likelihood of living alone also increases with advancing age. Only 11 percent of nonmetro persons age 60-64 were widowed in 2001, but by age 85, about two-thirds were widowed (fig. 3). Similarly, one-third of all older persons lived alone in 2001, and by age 85, nearly two-thirds lived alone (fig. 4). Many older persons who are widowed live alone and are more likely to lack social support networks, to report themselves in poorer health, and to experience poverty than other older persons.

Higher levels of education are usually associated with higher incomes, higher standards of living, and above-average health among older Americans. The current generation of older Americans is more highly educated than previous cohorts of older persons, and this trend is expected to continue. Gains in educational attainment over time are reflected in the

Figure 4

**Persons age 60 and older who live alone, 2001**

*One-third of all older persons live alone; by age 85, nearly two-thirds live alone*



Source: March 2001 Current Population Survey (CPS) data file.

higher educational levels of the younger old compared with the oldest old. In 2001, half of the nonmetro elderly age 85 and older had not completed high school, versus just 26 percent of nonmetro 60-to-64-year-olds (fig. 5). Furthermore, a higher proportion of the younger elderly had some college training than did the oldest old. Despite the overall increase in educational attainment, substantial educational differences among racial and ethnic groups still exist.

A much higher proportion of older persons in metro areas completed high school than did their nonmetro counterparts. This edu-

cational gap has contributed to a financial disadvantage for nonmetro persons throughout their working careers, resulting in higher current poverty rates and lower retirement incomes.

### Most Older Persons Under Age 85 Assess Their Health As Good or Excellent

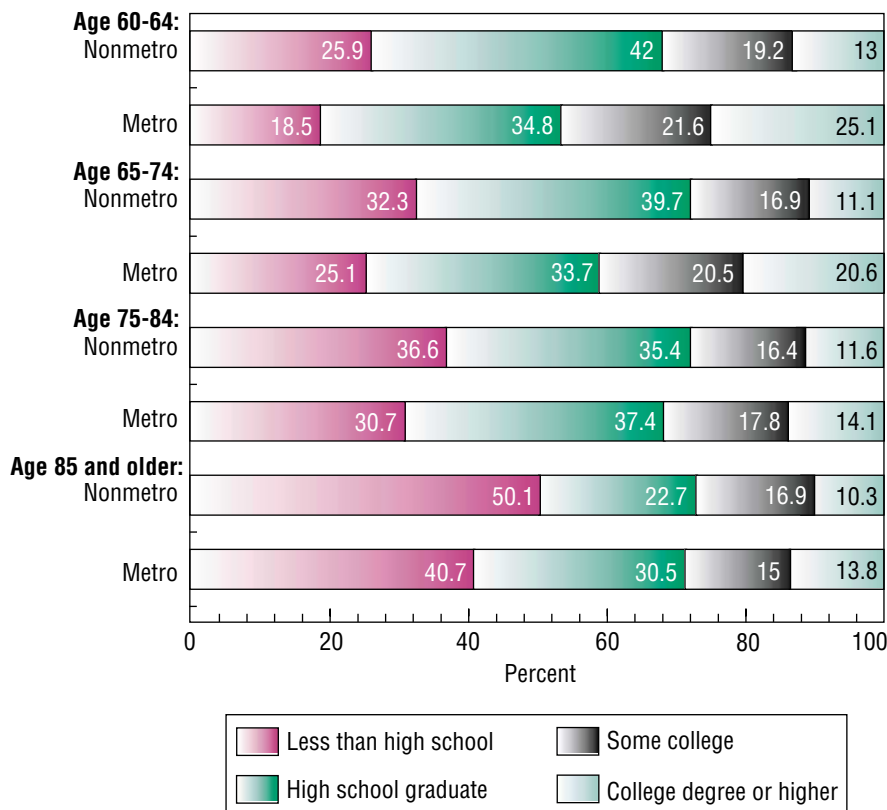
Self-reported health correlates closely with measures of physical functioning and mortality, but also reflects emotional and social aspects of well-being. Most persons age 60-85 assess their health as good or excellent, with metro elders reporting somewhat better

health across all age groups. Better health prevails among older persons living with their spouses. With advancing age, self-assessments of health as well as physical functioning consistently decline. In 2001, 40 percent of nonmetro elders age 60-64 reported excellent or very good health; by age 85, only 21 percent did so (fig. 6).

As people live longer, many are active and healthy well past retirement. Still, many in their 80s are at increased risk of certain diseases and disorders and have to cope with chronic disabilities and declines in physical functioning. Difficulties in performing personal care tasks and home management tasks are referred to as “functional limitations.” Here too, a higher proportion of elders in nonmetro than metro counties reported a functional limitation—40.5 percent in adjacent nonmetro areas and 37.6 percent in nonadjacent nonmetro areas versus 34.3 percent in metro areas (Coburn and Bolda).

Many older Americans suffer from chronic health conditions such as arthritis, diabetes, and heart disease, which can affect physical functioning and the ability to live independently. Nonmetro elders are more likely to have certain chronic conditions (for example, arthritis and hypertension) that downgrade self-assessed health status and impair their mobility (Rogers, 2002). Nonmetro elders are also more likely to have characteristics associated with poorer health because they tend to be less educated and financially worse off than the metro elderly, and lower socioeconomic status is strongly associated with poor health. Hence, the rural elderly may have a greater need for health care services than their urban counterparts. Chronic conditions can become a

Figure 5  
**Educational attainment of persons age 60 and older, by age and residence, 2001**  
*The younger old are more highly educated than the oldest old*



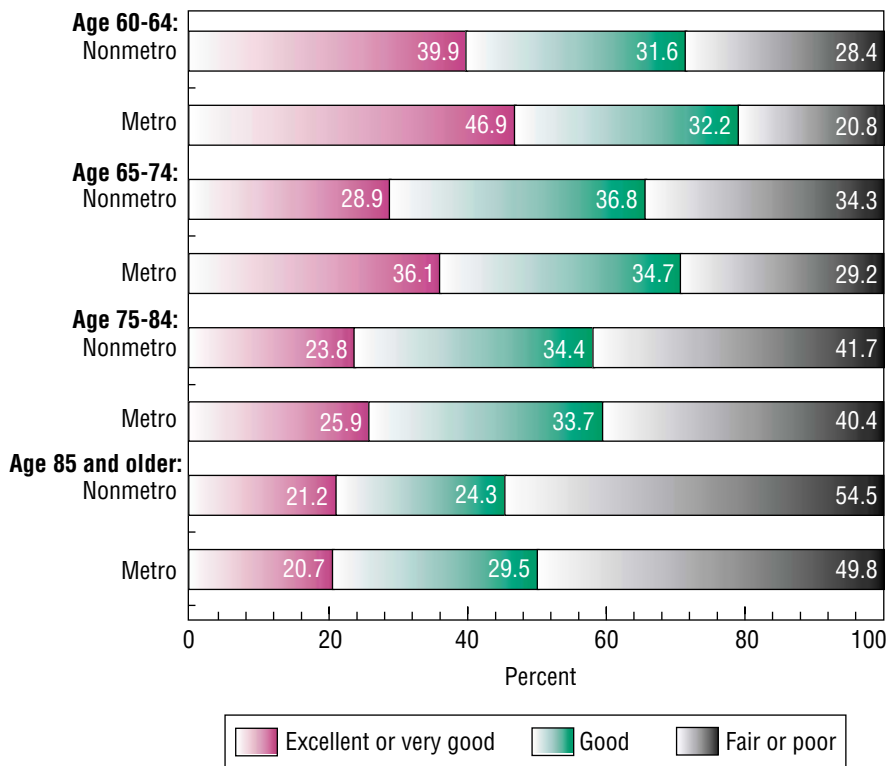
Source: March 2001 Current Population Survey (CPS) data file.



Figure 6

**Health status of persons age 60 and older, by age and residence, 2001**

*Most older persons under age 85 rated their health as good or better*



Source: March 2001 Current Population Survey (CPS) data file.

major health and financial burden not only to those with the condition, but also their families and the Nation’s health care system.

Most elderly persons have some form or combination of health insurance coverage. In 2001, 97 percent of the nonmetro elderly were covered by Medicare, as were 96 percent of the metro elderly. About 10 percent of all elderly persons had Medicaid coverage. A slightly higher share of the nonmetro elderly (64 percent) had private insurance in 2001 than the metro elderly (61 percent) (Rogers, 2002). This includes “Medigap” policies that fund various services not covered by Medicare such as prescription drugs.

Expenditures on health care cover the cost of physicians’ services, hospitalizations, home health care, nursing home care, medications, and other products and services used in treating or preventing disease. Such outlays by older people are closely associated with age and disability status. In 1996, the average annual expenditure on health care (both out-of-pocket and covered by insurance) was \$5,864 among persons age 65-69, but \$16,465 for those age 85 and older. Health care can be a major expense for older Americans, and a financial burden for individuals with limited income who have a chronic condition or disability. This affects the rural elderly more than the urban elderly because rural elders are

more likely to be poor or have limited resources.

**Poverty Rates for the Elderly Have Declined**

Generally, the economic status of older people has improved markedly over the past few decades, and poverty rates have declined. In 2000, 10 percent of persons 60 and older were poor, a poverty rate that was on par with that for working-age persons and lower than that for children (16 percent). A metro-nonmetro gap persists, with the rural elderly more likely to be poor than those in urban areas. Thirteen percent of nonmetro elders (60 and older) were poor in 2000, compared with 9 percent of metro elders (fig. 7). With advancing age, economic well-being tends to decline and the metro-nonmetro poverty gap spread. In 2000, 20 percent of nonmetro persons age 85 and older were poor, compared with 12 percent of the metro “oldest old” (fig. 7).

The most remote rural areas have the highest poverty and also slower growth in population and tax bases. Among nonmetro counties, the poverty rate for older persons increases with greater rurality, from 12.8 percent for counties of 20,000 population and adjacent to a metro area to 20.6 percent for nonadjacent, completely rural counties (Rogers, 1999). Completely rural counties, which represent 13 percent of all nonmetro counties, often lack the institutional resources to provide needed services to the older population.

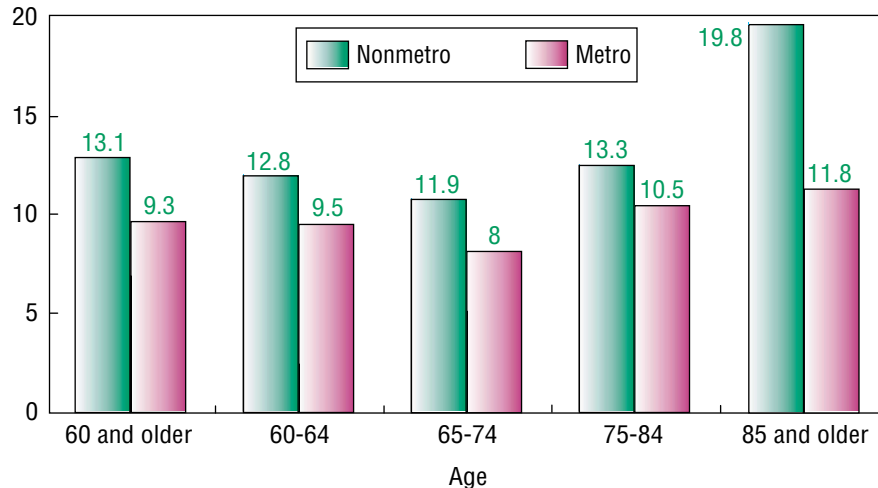
There are wide disparities in poverty rates among the elderly. Poverty is more pronounced among older women, older persons living alone, and the oldest old. Older women are much more likely to be

Figure 7

**Older persons below the poverty level, by age and residence, 2000**

*Nearly one-fifth of nonmetro persons 85 years and older are poor*

Percent



Source: March 2001 Current Population Survey (CPS) data file.

poor than older men; 15 percent of nonmetro women age 60 and older were poor in 2000, compared with 11 percent of men (fig. 8). By age 85, both men and women have higher poverty rates, with the rates for women still exceeding those for men. In 2000, 66 percent of nonmetro older persons age 60 and above with family incomes less than \$10,000 were women. By age 85, 80 percent of the elderly with low income were women, illustrating the economic vulnerability of older women, especially the oldest old.

Older persons living alone are considerably more likely to be poor than are older persons who live with their spouse or another person. In 2000, 28 percent of nonmetro elders living alone were poor, compared with 6 percent of nonmetro elders who did not live alone. By age 85, nearly one-third of nonmetro older persons living alone were poor.

**Social Security Payments Are Critical for Many**

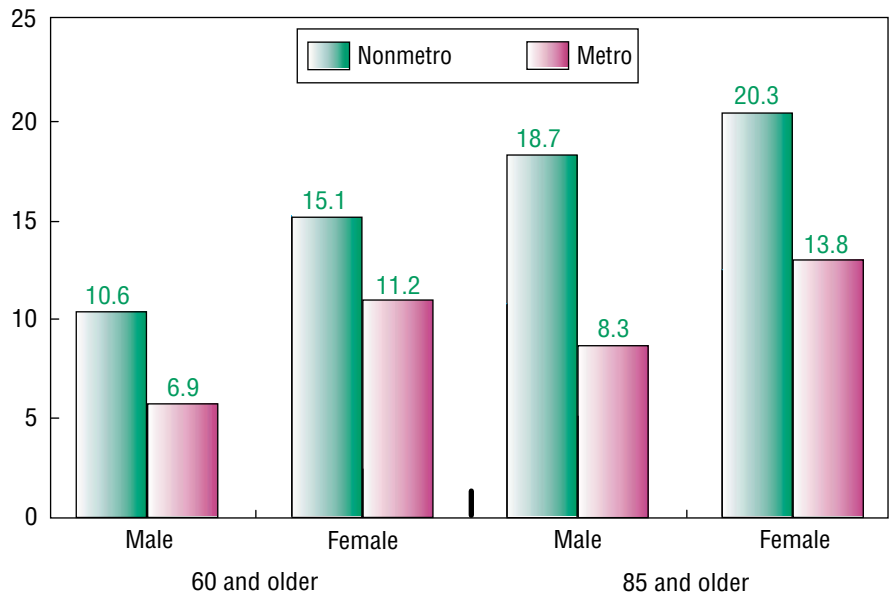
Most older persons are retired from full-time work. Social Security was started in 1935 as a protection for their economic well-being, to be supplemented by other pension income, income from assets, and to some extent, continued earnings. Since the early 1960s, the proportion of income for older Americans derived from Social Security and pensions has increased, and the proportion from earnings has declined. Today, Social Security benefits provide about two-fifths of the income of older persons, while asset income, pensions, and personal earnings each provide about one-fifth of total income. For persons age 85 and older, Social Security and

Figure 8

**Older persons below the poverty level, by age, sex, and residence, 2000**

*Older women have higher poverty rates than older men, especially at age 85 and older*

Percent



Source: March 2001 Current Population Survey (CPS) data file.

assets account for a larger proportion of total income, and earnings and pensions a smaller proportion, compared with persons age 65-74.

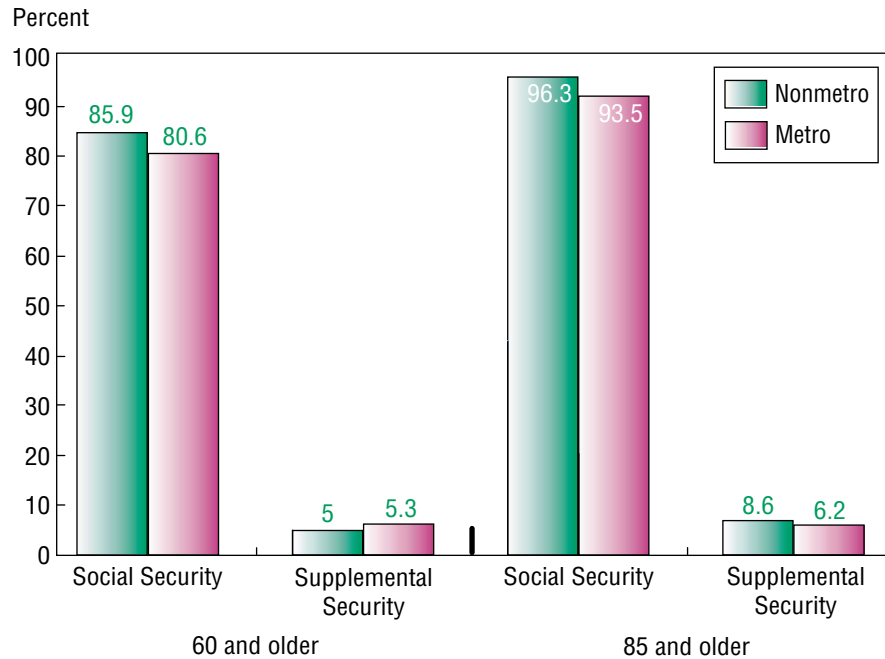
The nonmetro elderly depend more on Social Security income than the metro elderly, who are more likely to have other sources of retirement income. In 2000, 86 percent of nonmetro elders (60 and older) received Social Security, compared with 81 percent of metro elders (fig. 9). However, Social Security benefits are less for older beneficiaries in nonmetro areas than for metro beneficiaries. Five percent of persons age 60 and older, regardless of residence, received Supplemental Security Income (SSI) benefits, a program that provides income to needy disabled, blind, and elderly persons.

A large share of the elderly, including the most affluent, receive pensions and asset income in addition to Social Security benefits, if not earnings. Assets include interest, dividends, income from estates or trusts, and net rental income. Sixty-three percent of older persons receive income from assets (Rogers, 1999). Assets accumulated during a retiree's working years supplement earnings and other income in retirement.

Home equity is by far the single most valuable type of asset held by the elderly. Most older persons own their own homes; in 2001, 89 percent of nonmetro persons 60 and older owned their homes, as did 83 percent of nonmetro persons age 85 and older (fig. 10). Nonmetro elders were more likely to own their homes than were metro elders (84 percent). Furthermore, nonmetro elderly homeowners tend to have small or no mortgages and thus lower housing costs than metro elders (Rogers, 1999). Most older people live in adequate,

Figure 9  
**Older persons receiving Social Security and Supplemental Security (SSI) benefits, by age and residence, 2000**

*Nonmetro elders depend more on Social Security income than metro elders*



Source: March 2001 Current Population Survey (CPS) data file.

affordable housing, but some older Americans need to allocate a large proportion of their total expenditures to housing. When housing expenditures comprise a high proportion of total expenditures, less money is available for health care, savings, and other vital goods and services.

### Rural Implications

Greater life expectancy and changing family and work patterns are recasting the “golden years” of older Americans. The older population is also becoming more ethnically diverse. Older people today are more educated, healthier, and have greater financial resources than previous generations. Age is an important factor in well-being, and significant differences are found in terms of marital status,

health, and educational/economic standing between the younger old (under age 85) and the oldest old (age 85 and above). The latter are the most likely to need health care and economic and physical support.

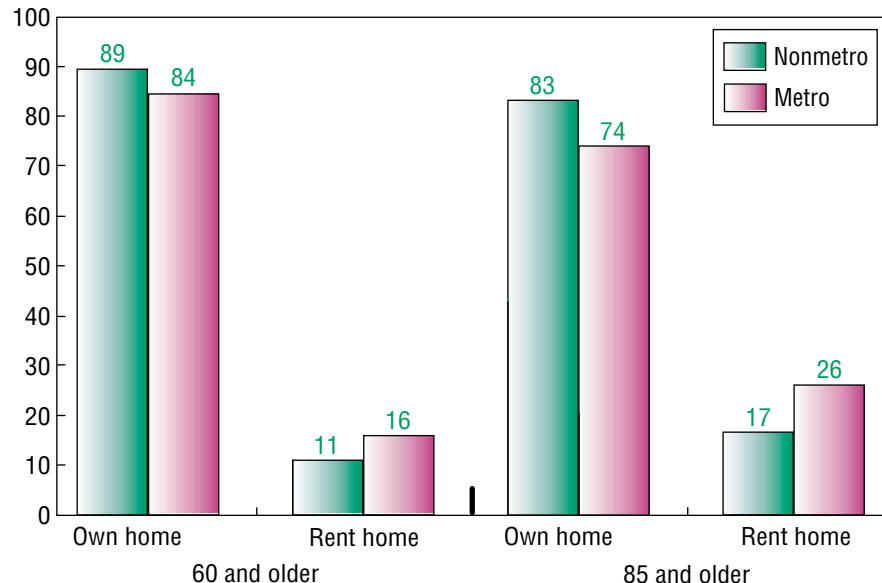
The aging of the population has wide-ranging consequences for rural communities. The diversity of rural areas in terms of the size, distribution, and socioeconomic status of the older population affects the demand for and availability of services, resources, and programs for the rural elderly. For example, rural retirement areas are benefiting from growth, as immigrating retirees boost the tax base and help sustain local businesses. On the other hand, rural areas dependent on farming and mining have been losing younger working-age persons

Figure 10

### Home ownership of older persons by age and residence, 2001

A larger share of nonmetro older persons own their own homes

Percent



Source: March 2001 Current Population Survey (CPS) data file.

and experiencing declining populations and tax bases. Residential differences in physical limitations as well as ease of access to services need to be considered in planning for services in particular communities. Changes in State and Federal policy will affect the rural elderly because Social Security, Supplemental Security Income, and Medicare programs account for a major part of their incomes and also provide critical support for local service providers. Understanding the diversity within the older population and their varied needs is critical in designing effective programs and services for the growing older population. <sup>RA</sup>

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# Recent Trends in Older Population Change and Migration for Nonmetro Areas, 1970-2000

Glenn V. Fuguitt  
Calvin L. Beale  
Stephen J. Tordella

We have become accustomed to hearing about the rapidly rising number of older people in the Nation's population, and with good reason. The population at age 65 and older more than doubled from 16.6 million in 1960 to 35.0 million in 2000, while the rest of the population rose by just one half. Increasing length of life and the aging of ever-larger numbers of middle-aged people both contributed to this trend. The aging of the population is already having considerable impact on such major social issues as future funding of the Social Security program and the

Glenn V. Fuguitt is professor emeritus of rural sociology and sociology at the University of Wisconsin-Madison; Calvin L. Beale is senior demographer, Economic Research Service, USDA; Stephen J. Tordella is President, Decision Demographics, Arlington, VA. This research was supported by the College of Agricultural and Life Sciences, University of Wisconsin-Madison, and the Economic Research Service, through a cooperative agreement, and by Decision Demographics, through a grant from the National Institute on Aging. Support also has been given by the Center for Demography and Ecology, University of Wisconsin-Madison, through a grant from the Center for Population Research of the National Institute for Child Health and Human Development. The assistance of Richard Gibson and John Fulton, formerly of the University of Wisconsin-Madison, Thomas Godfrey of Decision Demographics, and Kathleen Kassel of Economic Research Service is gratefully acknowledged.

*Rural areas and small towns tend to have larger proportions of older people than the country as a whole because many young adults have moved away—especially from farming areas—and because many rural locales have attracted urban retirees. The older nonmetro population did not grow as rapidly as the younger population in the 1990s. Its growth was much slower than in the 1980s, and it did not contribute to the overall rebound in nonmetro population growth that was so prominent in the 1990s. The reduction in growth stemmed mostly from smaller numbers of people reaching age 65. There were wide differences in the extent of older population growth by regions and types of counties. As the “baby boomers” begin to reach age 65 late in this decade, the older nonmetro population is once again likely to increase rapidly.*

funding and provision of health care for the elderly.

Yet, there is substantial variation in the growth of the elderly at both the regional and metro-nonmetro level. This follows from the general locational shift of the U.S. population in recent decades, along with differences in the age composition of local populations. This article compares population growth of the older and younger populations since 1970, comparing metropolitan (metro) and non-metropolitan (nonmetro) areas, but with emphasis on the nonmetro sector where the elderly can face unique problems due to small population size and distant services. Also emphasized are the separate roles of migration and aging-in-place in determining growth or loss in the older population. Because of expected differences in trends by region and types of counties, we

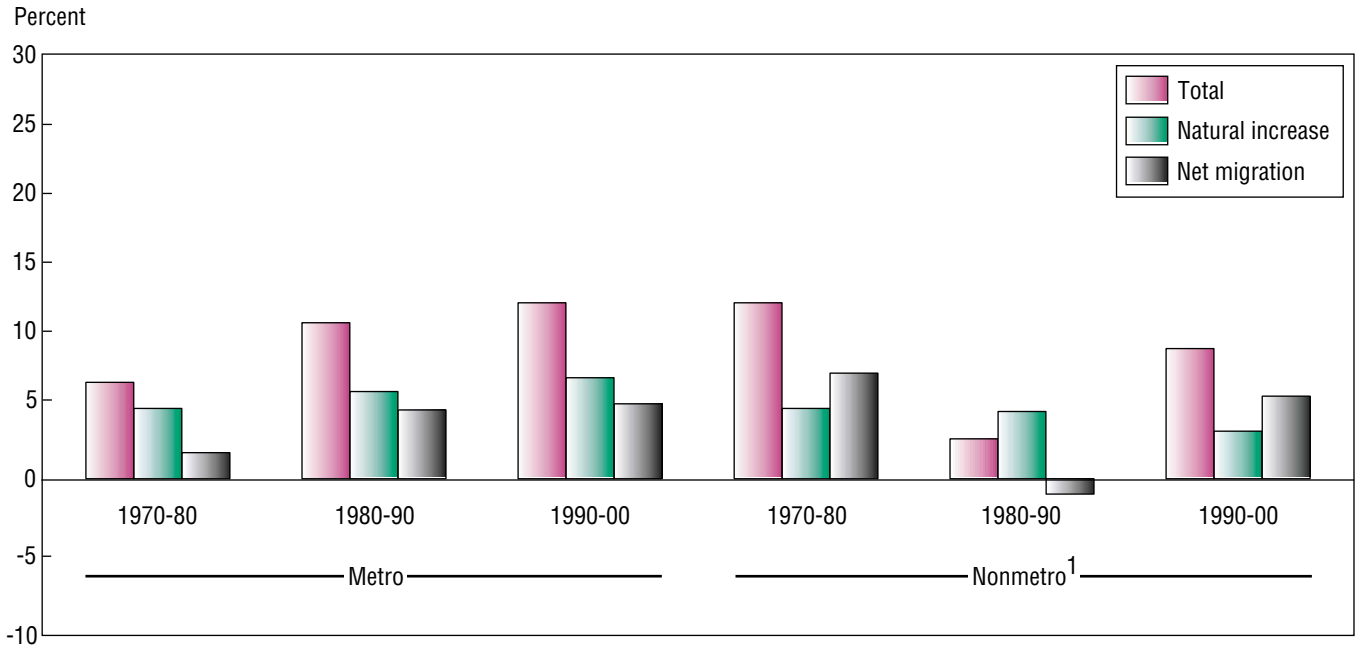
also examine data for six regions and for nonmetro counties grouped by primary economic function.

Since 1970, internal migration has affected the older population in many nonmetro areas. Many older people left the rural North for traditional southern metro retirement areas, such as in Florida or Arizona, and were lost to the nonmetro community. But in the 1970s especially, a rapidly growing number of nonmetro counties with attractive amenities became retirement destinations for both metro and nonmetro retirees. This rapid growth occurred also in areas far removed from warm winter climates, such as the Upper Great Lakes country and parts of New England and the Northwest, along with the Ozarks, the Blue Ridge mountains, and the Atlantic coast. For nonmetro areas as a whole, this inmovement more than offset the loss of older people

Figure 1

**Growth of the population under age 65 by components, metro and nonmetro**

*Metro growth and migration increases; nonmetro areas recover from the 1980s reversal*

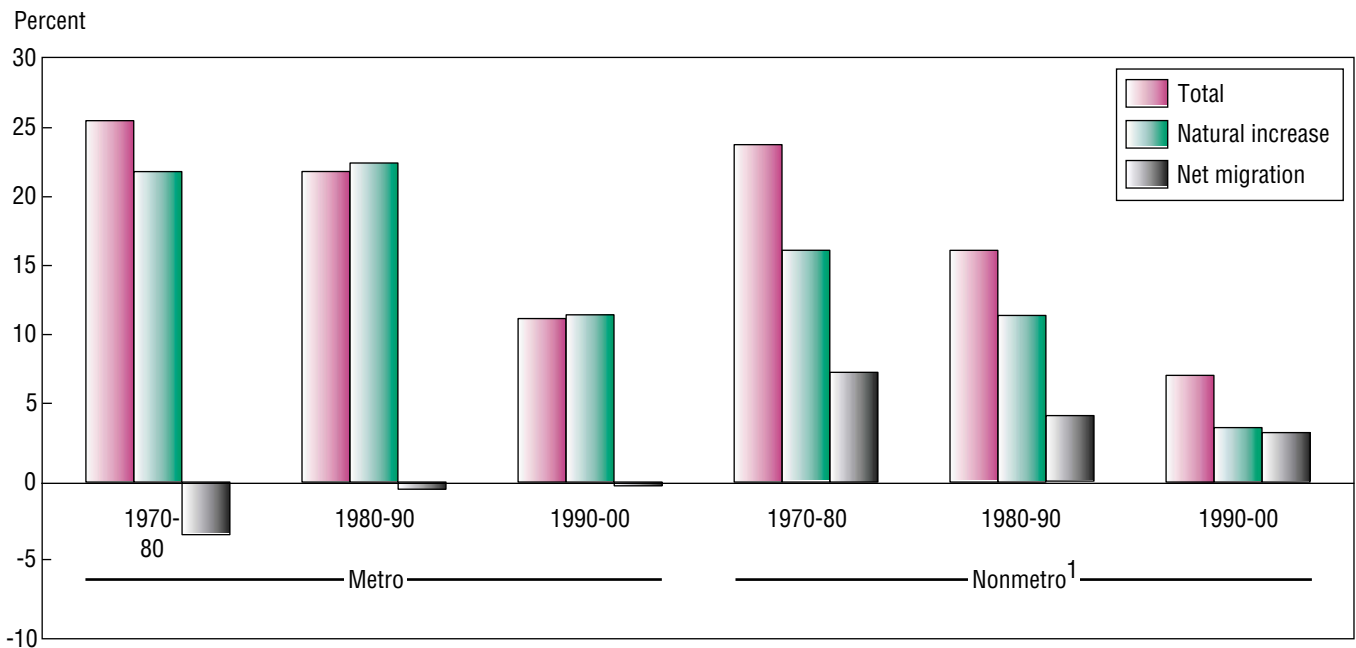


<sup>1</sup>Nonmetropolitan as of the beginning of each decade.  
Source: Analysis by authors from Census Bureau data.

Figure 2

**Growth of the population age 65 and over by components, metro and nonmetro**

*Metro and nonmetro growth and natural increase declined*

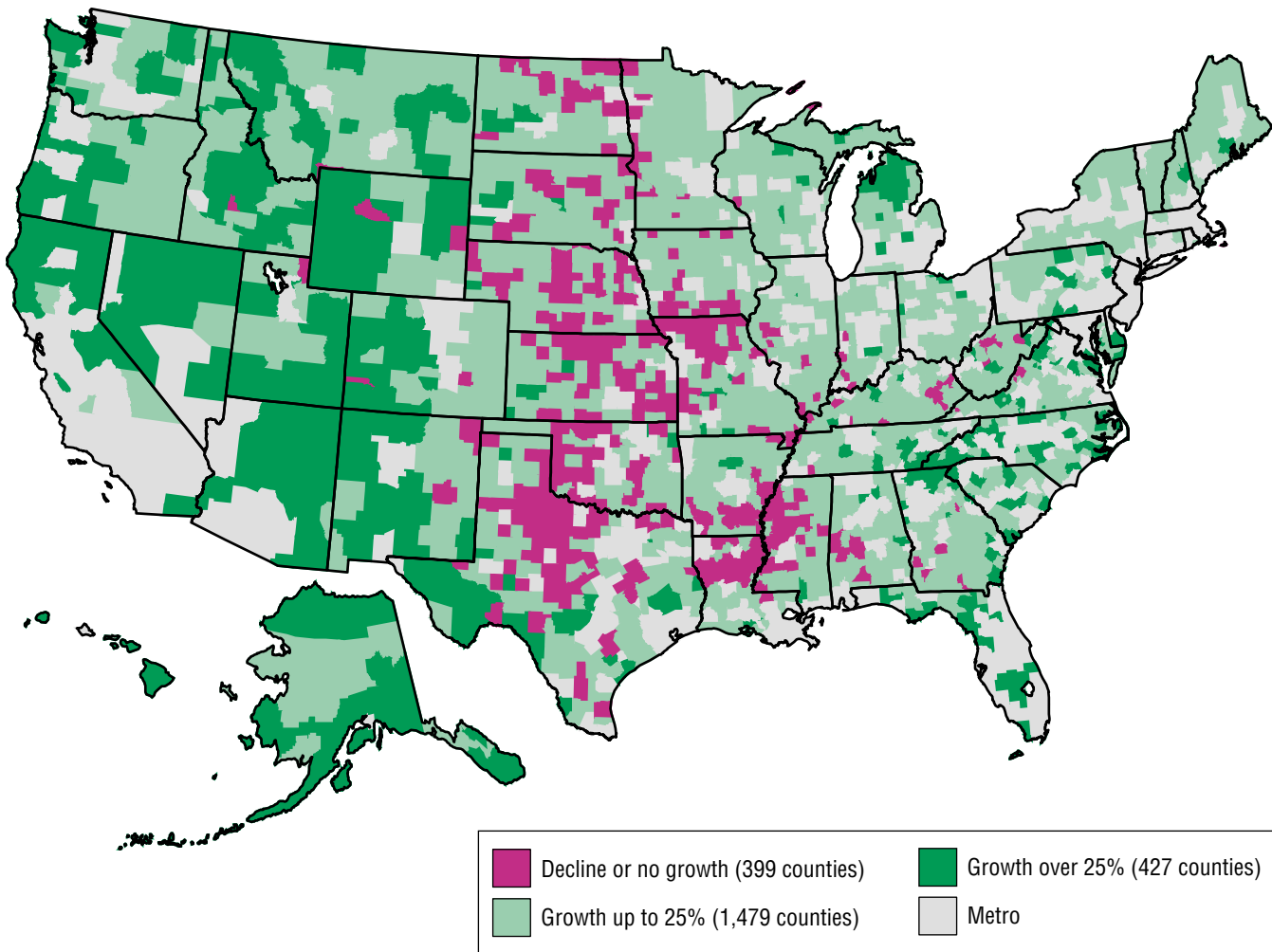


<sup>1</sup>Nonmetropolitan as of the beginning of each decade.  
Source: Analysis by authors from Census Bureau data.

Figure 3

### Change in the nonmetro population age 65 and over, 1980-90

Most nonmetro counties experienced growth among the elderly in the 1980s



Source: Prepared by ERS using data from the Census Bureau.

from other nonmetro settings, such as the Corn Belt and the Great Plains.

In many areas, however, the process of elderly natural increase or aging-in-place has been even more important than migration in changing the number of older people. Natural increase of the elderly—that is, the growth of the older population from the aging of late-middle-aged people, minus the deaths of older people—may be influenced not only by birth rates six decades before, but also by migration into or out of an area since that time. Thus, aging-in-

place growth is now low or absent altogether over broad areas, due to the prior chronic outmigration of young adults from rural and small-town places, especially in the post-World War II era when millions of people left farming.

#### Nonmetro Population Rebound Absent Among the Elderly

A comparison of growth rates of the population under age 65 for recent decades shows three distinctive metro-nonmetro patterns: (1) the turnaround of the 1970s, with higher nonmetro than metro total growth and net movement of many

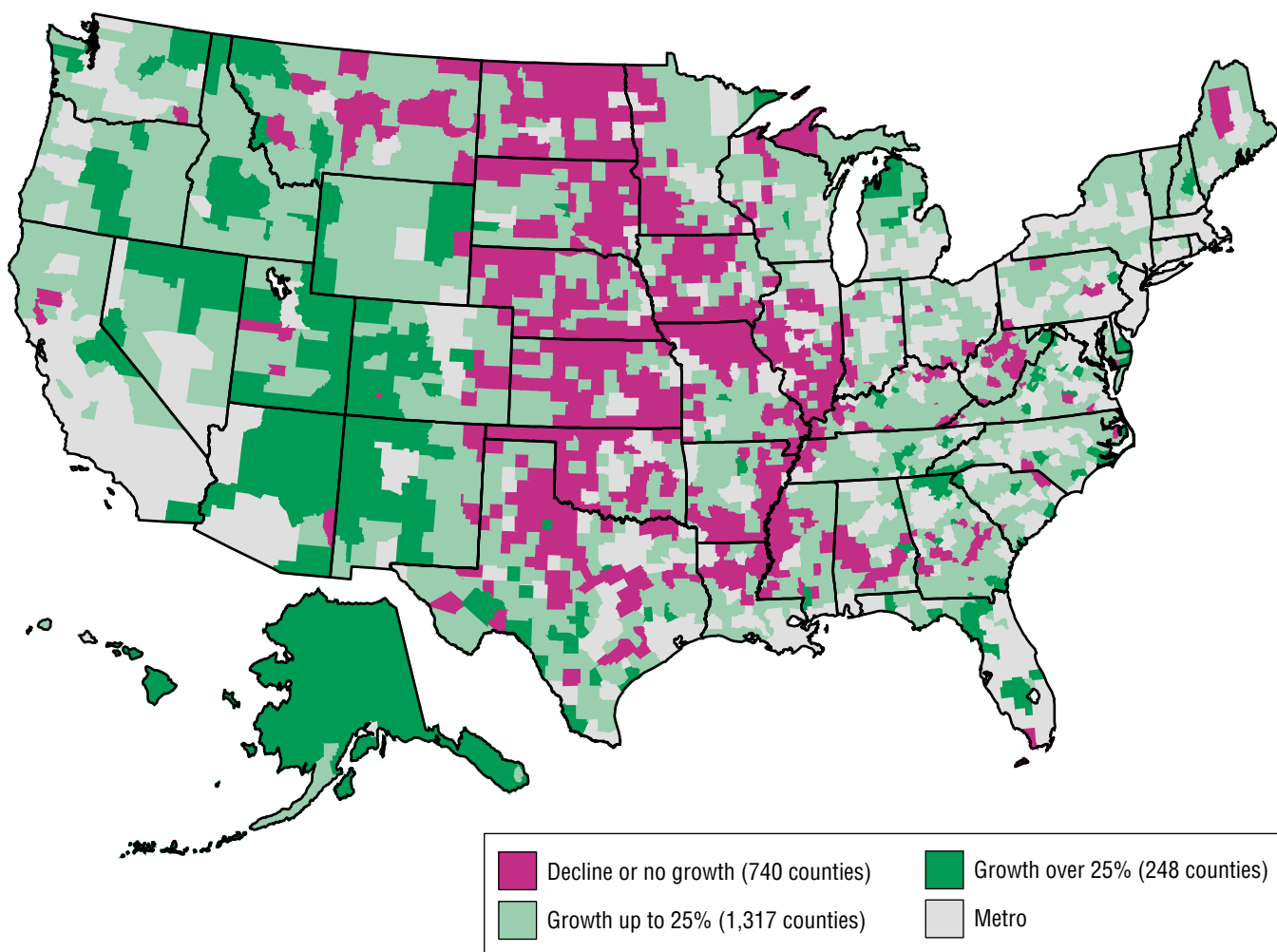
people into nonmetro areas; (2) the reversal of the 1980s, with considerably slower growth in nonmetro than in metro areas, and net outmigration from nonmetro areas; and (3) the rebound of the 1990s, with a marked increase in nonmetro total growth compared with the preceding decade caused by resumed net immigration (fig. 1).

In the 1990s, the nonmetro net migration rate was about the same as the metro rate, but figure 1 shows a continuation and widening of another trend—the difference between metro and nonmetro natural increase, with metro rates

Figure 4

### Change in the nonmetro population age 65 and over, 1990-2000

The number of nonmetro counties with declining elderly population increased sharply in the 1990s



Source: Prepared by ERS using data from the Census Bureau.

about twice as high as nonmetro rates by 2000. This widening is due to growing differences in age composition that produced a higher nonmetro average age—leading to a higher death rate in nonmetro areas—and to an unprecedented shift to lower levels of childbearing in nonmetro than metro areas. As a consequence, persons under age 65 continued to increase more rapidly in metro than in nonmetro areas during 1990-2000, despite the slightly higher nonmetro net in-migration rate (fig. 1) for both residence groups. Although precise data are not available to subdivide

the migration rate into domestic migration and foreign immigration, it is known that the net flow of domestic migration was from metro to nonmetro locations. All of the net movement into metro areas in the 1990s was from immigration, whereas that into nonmetro areas stemmed from both metro flight and foreign immigration.

The 1990s pattern is rather different for the population 65 and over, which had no recent rebound of nonmetro growth or net in-movement (fig. 2). Across the three decades since 1970, there was instead a consistent decline in

both natural increase and net migration for the older nonmetro population. By the 1990s, the contribution of elderly natural increase was only one-fourth as high as in the 1970s, falling from 15.8 to 3.8 percent, and the rate of net migration also dropped, from 7.5 to 3.5 percent. In the entire period, metro rates of elderly natural increase have been above nonmetro levels, although both declined considerably in the 1990s when the small birth cohorts of the 1930s Great Depression era began to reach age 65. The nonmetro elderly net migration gains of the 1970s were



paired with metro net migration losses, but in the two succeeding time periods, metro rates were essentially zero while nonmetro rates continued to be positive, though lower than before. (Because of immigration from abroad, it is not necessary for the two residence groups to have opposite trends in net migration. Both can be positive.)

Overall, the nonmetro elderly population grew at a high rate in the 1970s, slightly above that of the metro population. But by the 1990s, the growth rate of the nonmetro elderly was only two-thirds that of the metro elderly. The coincidence of the small 1930s Depression-era birth cohort begin-

ning to reach age 65 in the 1990s with the entry of millions of young adults through immigration caused the national percentage of the population 65 and over to decline for the first time in U.S. history, although the change was nominal (from 12.46 percent in 1990 to 12.43 in 2000).

There has been a growing incidence of nonmetro counties with declining older population. In the 1980s, 399 nonmetro counties (of 2,305 total) had a decline in persons 65 and older (fig. 3). In the 1990s, the number rose to 740 counties, or 33 percent of all nonmetro counties (fig. 4). These counties were concentrated in the Great Plains, the Corn Belt, and the

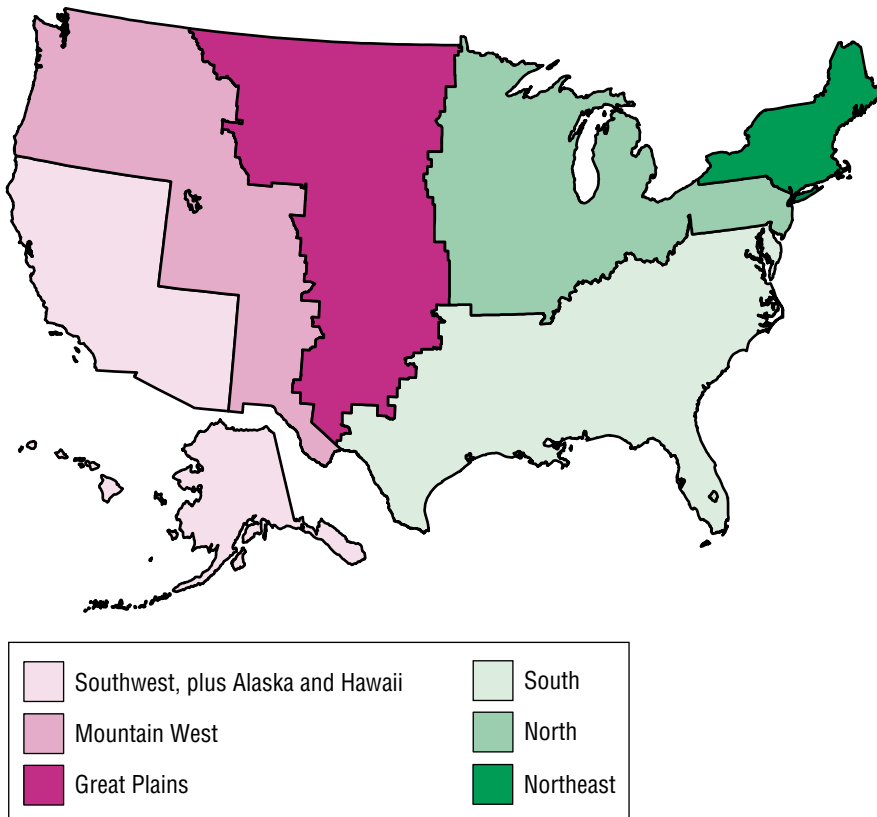
lower Mississippi Valley, where decades of outmigration of younger people have resulted in the recent outright decline of the elderly, as those reaching age 65 are outnumbered by the deaths or outmovement of those who are already 65 or older. These counties had more than double the rate of natural decrease for the elderly (-4.9 percent) as they had from net migration loss (-2.1 percent). Thus, natural decrease, rather than outmigration, has been the major cause of the loss in the number of elderly persons in counties where they have declined.

In contrast, 248 counties had an exceptionally rapid increase of older people (25 percent or more) in the 1990s (fig. 4). These counties are in many parts of the West and in scattered retirement centers in the East. In line with the general downturn in growth of older people, the number of such counties was considerably smaller than it had been from 1980 to 1990 (fig. 3).

### Regional Change Varied Widely

There was much regional variation in trend across the 1970-2000 period. Therefore, we define six geographic areas as a framework for highlighting these differences (fig. 5). Because not all of nonmetro America experienced the 1990s population rebound that characterized the country as a whole, we first identified regions that were such exceptions. A large area in the Southwest had substantial population growth, but at a slower pace than in the 1980s (table 1). At the opposite end of the country in the Northeast (New England plus New York), nonmetro population also increased more slowly in the 1990s, but from a much lower rate of former popula-

Figure 5  
Regions for use in growth analysis



Source: Prepared by ERS using data from the Census Bureau.

Table 1

**Nonmetro growth by components, elderly and nonelderly, by geographic region, 1970-2000<sup>1</sup>***The Mountain West and Southwest had the most rapid growth and net migration*

Decade/region <sup>2</sup>	Younger than 65			65 and older		
	Total	Natural increase	Net migration	Total	Natural increase	Net migration
<i>Percent change</i>						
<b>1990-2000:</b>						
Nonmetro total	8.5	3.1	5.4	7.4	3.8	3.6
Northeast	1.6	2.3	-0.7	8.3	6.5	1.8
North	4.9	2.1	2.8	2.9	1.2	1.7
South	10.3	2.8	7.6	9.1	4.9	4.2
Great Plains	0.5	4.2	-3.8	-1.4	-1.3	-0.1
Mountain West	19.2	6.0	13.2	18.4	7.0	11.4
Southwest	16.9	6.8	10.0	22.5	14.3	8.2
All U.S. counties	10.9	5.9	5.0	10.3	9.7	0.6
<b>1980-1990:</b>						
Nonmetro total	2.6	4.5	-1.8	16.0	11.5	4.5
Northeast	7.2	3.4	3.8	13.5	11.7	1.9
North	-2.9	3.1	-6.0	10.8	9.2	1.7
South	3.9	3.6	0.3	17.5	12.6	4.9
Great Plains	-6.0	7.6	-13.6	6.7	5.5	1.2
Mountain West	5.8	8.4	-2.6	28.6	17.6	11.0
Southwest	25.6	9.4	16.2	44.6	22.0	22.6
All U.S. counties	8.5	5.4	3.1	20.0	19.1	0.8
<b>1970-1980:</b>						
Nonmetro total	11.5	4.6	6.9	23.3	15.8	7.5
Northeast	8.1	3.2	4.9	19.4	14.5	4.9
North	6.3	3.5	2.8	15.8	11.6	4.2
South	13.0	4.6	8.4	29.3	18.9	10.4
Great Plains	5.3	5.6	-0.3	14.4	13.0	1.4
Mountain West	24.7	8.1	16.6	30.8	21.3	9.5
Southwest	30.2	7.4	22.8	47.3	21.8	25.5
All U.S. counties	7.7	4.6	3.1	22.1	22.2	-0.1

<sup>1</sup>Nonmetropolitan designation as of the beginning of each decade.<sup>2</sup>See text for regional definitions.

Source: Analysis by authors from Census Bureau data.

tion growth than was true of the Southwest.

All six regions had lower growth of older population in the 1990s than in either the 1970s or 1980s (table 1). This pattern held true both for natural increase and immigration. Lower 1990s growth was also true of the population under 65 in the Southwest and in the Northeast. Thus, from a broad geographic and age standpoint, the 1990s nonmetro population rebound as a whole was produced only by trends in the population under 65 outside of the Southwest and Northeast.

In the nonmetro **Southwest**, the net influx of older people had been the fastest among all six regions in both the 1970s and the 1980s, but slowed dramatically in the 1990s, dropping to just 8.2 percent compared with 22.6 percent in the 1980s (table 1). Despite this major slowdown, the growth rate of the older Southwestern population in the 1990s was still higher than that of any other region because of a natural increase rate of the elderly (14.3 percent) that was by far the highest in the country. This unusual level of natural growth stems in part from the high rate of inmove-

ment of younger people to this region in earlier decades who are now reaching retirement age, and to some extent from the presence of minority populations whose life expectancy is rising. In both the Southwest and the Northeast, the older population grew more rapidly than the population under 65 in the 1990s, from natural increase and immigration alike.

Both older and younger populations grew rapidly in the 1990s in the **Mountain West** (18.4 percent for persons 65 and over and 19.2 percent for those under 65). This region has a variety of retirement situations ranging from the coast of Puget Sound, to Cascade and Rocky Mountain resorts, to the mild winter climates of southern New Mexico and southern Utah. Immigration of older people remained high at 9.5 percent to 11.4 percent per decade from the 1970s to the 1990s. Migration of the younger population was much more volatile, becoming slightly negative in the 1980s, with the retrenchment in mining and timber work in that decade, before rebounding in the 1990s from amenity-based settlement.

In the **Great Plains**, where dependence on agriculture has been highest, overall nonmetro population growth has been negligible to nonexistent for the past two decades. And in the 1990s, the population 65 and over showed a small decline (-1.4 percent), in contrast to other regions (table 1). This came almost entirely from the onset of natural decrease of older people in the region for the first time. Yet despite a declining older population, the Great Plains region fared better in retention of those under 65 in the 1990s (0.5-percent increase) than it had during the farm crisis of the 1980s, when the

under-65 age group fell by 6.0 percent. For many counties in the Plains, “rebound” consisted of population decline in both decades, but at a slower pace in the 1990s than in the 1980s. Also embedded in the region are a majority of the Nation’s counties where the 1980s loss was followed by more severe loss in the 1990s, but most of these counties are so thinly settled that they carry little demographic weight in the overall regional picture.

East of the Plains, we have divided the country into two regions (fig. 5), along North-South

lines, except for the Northeast region discussed earlier. In line with the general southward drift of U.S. population for many years, the growth of nonmetro population—older and younger—was consistently higher in the South than in the North over each of the last three decades, from both natural increase and net migration. The natural increase of older people in the **North** was just 1.2 percent in the 1990s, versus 9.2 percent a decade earlier (table 1). The western parts of the North have many farming counties that share some of the demographic history of the Great

Plains and have little or no recent natural increase of older population. The eastern part has many diminished industrial areas where population retention is difficult and natural increase is low.

The **South** covers a large territory from Delaware into Texas. Although it contains economically struggling subregions such as the Delta or the southern coal fields, much of the region has had “Sun Belt” growth ever since the 1960s. Nonmetro population increase occurred at about equal rates in the 1990s for persons under 65 (10.3 percent) and 65 and over (9.1 percent). But whereas immigration was by far the principal source of under-65 growth, natural increase somewhat exceeded immigration among older people, despite the presence of many well-known retirement areas. In part, this may reflect the fact that people retiring and moving before age 65 are eventually counted as aging-in-place natural increase for the 65-and-over group in their new location rather than as immigrants.

### Older Population Growth Highest by Far in Recreation Counties

Another way to consider the diversity of nonmetro America is to distinguish counties by dominant economic character. We first employ a classification of nonmetro counties specializing in recreational activity, such as lake and ocean resorts, ski resorts, national parks, or second homes (Beale and Johnson). Such counties have attracted both elderly and younger migrants in recent decades. Then, all nonrecreation counties were typed by whether they specialized in one of three major economic activities—manufacturing, farming, and mining—or were in a residual group dependent

Table 2  
**Nonmetro population growth, elderly and nonelderly, by economic function, 1970-2000<sup>1</sup>**

*Recreation counties have the highest growth and net migration in each decade; growth and net migration decline for the elderly across all decades for all functions*

Decade/Function	Younger than 65			65 and older		
	Total	Natural increase	Net migration	Total	Natural increase	Net migration
<i>Percent change</i>						
<b>1990-2000:</b>						
Recreation	15.5	2.7	12.8	18.6	6.3	12.2
Manufacturing	7.8	2.7	5.1	7.3	5.7	1.6
Farming	7.2	3.4	3.9	0.1	-2.0	2.1
Mining	-0.3	2.1	-2.4	3.8	7.1	-3.3
Other nonmetro	8.0	4.0	4.0	5.4	2.3	3.2
<b>1980-1990:</b>						
Recreation	10.8	4.7	6.2	27.6	14.0	13.6
Manufacturing	.9	3.2	-2.3	15.7	14.7	1.2
Farming	-2.1	4.7	-6.8	8.9	4.8	4.1
Mining	-6.3	5.5	-11.8	12.1	15.7	-3.6
Other nonmetro	4.8	5.5	-0.7	15.4	9.4	6.0
<b>1970-1980:</b>						
Recreation	20.2	4.0	16.1	32.4	15.7	16.7
Manufacturing	8.1	4.2	3.9	22.5	19.3	3.2
Farming	4.0	3.8	0.2	15.2	10.6	4.7
Mining	15.3	6.1	9.2	20.3	21.2	-0.8
Other nonmetro	14.6	5.2	9.4	25.3	13.8	11.4

<sup>1</sup>Nonmetropolitan designation as of the beginning of each decade.  
Source: Analysis by authors from Census Bureau data.

## Methods

Elderly natural increase is the number of people reaching the onset of old age—here age 65—over a time interval, minus those elderly persons who die during the interval. Natural increase of the younger population is the number of births minus the number who attain age 65 or who die over the interval. Net migration for either age group is simply the number of persons moving into any area minus the number moving out over the interval.

County net migration estimates for persons age 0-64 and 65 and over, 1970-1980, were taken from files prepared by White, Mueser, and Tierney. The authors prepared the estimates for 1980-1990 (Fuguitt and Beale, 1993) and for 1990-2000, as reported here. Each set of migration estimates was derived by subtracting a measure of natural increase from population change over the period, with a positive or negative difference being attributed to net migration. Estimates of this nature are not perfect, but we believe them to be adequately reliable. Errors in estimating natural increase and differing errors in measuring undercount and overcount for each census affect the results obtained.

Because of differences in completeness between the censuses of 1970 through 2000, the reported population data for 1970-1980 and for 1980-90 were adjusted by using age-sex-race undercount estimates from demographic analysis made by the Census Bureau at different times. Similarly, for 1990-2000, we used the 1990 undercount estimates cited above and for 2000 abridged estimates (five age groups by sex and race) reported by Robinson. Thus, changes in the number and proportion of elderly population across the decades are measured using these adjusted figures.

In comparing population change for the three 10-year time periods, we used rates per 100 population. These rates were allocated into additive components due to natural increase or net migration by weighting the total growth rate for an age group by the proportion of absolute increase over the time period attributable to natural increase or to net migration. **For further details on our methods, contact Glenn Fuguitt, 608-263-7976.**

on services and trade or unspecialized economies (Cook and Hady). There is no overlap among the five groups. This classification is for the 1980s, currently the only period for which the recreation variable is available.

All growth rates for both elderly and younger people are much higher for nonmetro recreation counties than for any of the other functional groupings (table 2). In the 1990s, both older and younger populations had net migration into the recreation counties of better than 12 percent. No other county type had more than 3.2 percent in-movement of the elderly or 5.1 percent of younger people in the 1990s. The recreation counties are not concentrated geographically. Some are in warm winter places such as Florida, Arizona, or Hawaii, but most are in such scattered locations as the lake country of

the upper Midwest, or the hills and mountains of the Ozarks, the Adirondacks, the Catskills, the Great Smokies, and the Rockies. Although many of these areas are meccas for the retired, they also attract younger people at by far the highest rates of all functional types. Counties that receive elderly migrants have an economic stimulus from this in-movement that produces growth in the working-age population as well. And the presence of recreation and related amenities is attractive to younger adults as it is to older people, whether for vacationing or permanent residence.

Among the functional groupings, manufacturing counties had the second highest level of growth for those 65 and over, except in the 1970s (table 2). All of the groups had their lowest levels of elderly growth and migration gain during

the 1990s. For the elderly population, all of the nonrecreational types had low net in-migration rates for each period, and even net out-migration from mining counties. Farming counties consistently had the lowest elderly growth, and in the 1990s shifted to elderly natural decrease (-2.0 percent).

As a result of earlier out-movement of working-age people, there were smaller numbers of people remaining to enter old age than there were older people who died. In contrast, mining counties—although not numerous—had the largest rate of elderly growth by natural increase in the 1990s (7.1 percent). Although the younger population of these counties grew more slowly than that of farming counties in the 1990s, it had grown considerably faster in the 1970s. It is evidently this cohort, with rapid in-movement at younger ages in the



mining boom of the 1970s, that swelled the aging-in-place elderly growth for the mining counties in the 1990s.

For the population under age 65, all economic groups follow the general pattern of having lowest levels of growth and migration gain during the 1980s, between the 1970s turnaround and the 1990s rebound.

### Conclusion and Implications

During the 1990s, the growth rate of the older nonmetro population slowed disproportionately, even before all of the small Depression-born cohorts of the 1930s entered this age group. This slowdown can be attributed to declines in both elderly natural increase and net immigration. One result is the emergence of a large block of nonmetro counties with a decreasing older population, especially in agriculturally dependent areas. But over much of the country, nonmetro immigration of persons under 65 rebounded in the 1990s to near-1970s levels. This was true for each county economic type and four of the six geographic regions. With this rebound of the young and middle-aged population, and a slackening of growth in the older population, the overall growth rate of the older nonmetro population in the 1990s was below that of younger people for the only time in the 20th century.

The decline in elderly natural increase appears to be due largely to the smaller cohort of people reaching age 65 in the 1990s (a result of the low birth rates of 1925-35), and to the pattern of outmigration of younger adults from farm-dependent areas in the 1940s and 1950s. The low nationwide rate of elderly natural increase in

the 1990s also reduced the pool of potential retirees available to migrate to nonmetro places from metro areas. The decline in rates of elderly net migration across most functional groupings and four of the six geographic areas may be explained in part by aging within the elderly cohort.

Previous research has shown some return movement of the oldest retiree migrants to metro areas, often to allow them to be near their children or other relatives in advanced age or widowhood. As a retirement destination matures, one would expect a higher proportion of the population to be of advanced age and subject to some outmigration, thus offsetting somewhat the continued inmovement of persons in their 60s or early 70s. This point warrants further research.

We should stress that the systematic downturn in nonmetro elderly population growth does not invalidate the attention that has been given to retirement-destination counties as a rapidly growing type of nonmetro area. Their high growth continues, but

only because their population has been bolstered by increased numbers of younger migrants whose entry has offset a reduced although still large influx of older people.

To the extent that traditional rural and small-town counties have come to be seen as places with a serious surfeit of older people, the current trend is serving to ease this burden slightly, and should do so until after 2010 when the baby boomers begin their entry into old age. Ironically, in many small counties with declining numbers of elderly, nursing homes are among the largest employers, and unless there are increased admission rates, their level of occupancy and need to employ could be reduced. For thinly settled counties with limited nonagricultural economies, this reduction in older residents could continue for some time. In most areas, though, the 1990s and the current decade are just an intermission before major resumed growth of the nonmetro elderly, both from aging of the very large middle-aged group and outflow of retirees from the cities. <sup>RA</sup>

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# Federal Funding in Nonmetro Elderly Counties

Richard J. Reeder  
Samuel D. Calhoun

Some 300 counties located outside of metropolitan areas and having disproportionately old populations stand out as nonmetro elderly counties. This article examines demographic and socioeconomic conditions in these counties, along with Federal spending patterns, using data from the 2000 Consolidated Federal Funds Reports compiled by the U.S. Bureau of the Census. These counties and their older populations tend to have special needs and rely heavily on certain types of Federal programs.

## Defining Elderly Counties

While there is no set age at which someone is considered old, age 65 is commonly used in analysis and programs. But what percentage of population should be elderly before a county is considered an elderly county? The average share of population 65 or older in nonmetro counties in 2000 was 14.6 percent. Elderly counties are thus defined here as those with at least 20 percent of the population 65 or older, yielding 300 such

*Most counties with disproportionately older populations are highly rural, farming counties in the country's midsection. These places face significant challenges from small and declining populations, as well as low incomes and tax bases. Because of age-related income security payments and farm program payments, these counties receive more Federal funds, per capita, than other types of counties, and their future hinges in part on what happens to these age- and farm-related Federal programs.*

counties out of a total of 2,259 nonmetro counties. Only 20 metro counties (out of 826) qualified as elderly under this definition.

The location of the nonmetro elderly counties may surprise some people. They are not generally in the Sun Belt or in places with amenities that attract retirees. For example, only 24 percent of the counties ERS identifies as retirement-destination counties (those attracting 15 percent or more immigration of people age 60 and over during the 1980s) are also nonmetro elderly counties. Most retirement counties do not have disproportionate shares of the elderly because their amenities attract the young as well. Instead, nonmetro elderly counties are concentrated in the country's midsection where farming still prevails (fig. 1). Almost half (47 percent) of these counties are in the Great Plains. These places have grown old not through immigration of the elderly but through outmigration of the young, which some call "aging in place."

## What Challenges Do Elderly Counties Face?

In comparing nonmetro elderly counties with ERS's nonmetro county typologies, two-thirds of the elderly counties are totally rural and only 2 percent have substantial urban populations (fig. 2). Farming counties (having at least 20 percent of personal income from farming) account for 65 percent of nonmetro elderly counties, versus 24 percent of all nonmetro counties. No other ERS typology fits very closely with these counties. Only 17 percent of the nonmetro elderly counties were classified as retirement-destination counties. Another 17 percent were transfer-dependent, receiving at least 25 percent of income from government transfer payments. Elderly counties get a lot of transfers like Social Security, but, because incomes are not extremely low, transfers generally do not exceed the 25-percent threshold in elderly counties. Only 7 percent of nonmetro elderly counties had significant and persistent poverty, and

Richard J. Reeder and Samuel D. Calhoun are both economists in the Food and Rural Economy Branch, Food and Rural Economics Division, Economic Research Service, USDA.

only 3 percent had significant commuting to central cities of metropolitan areas.

In short, nonmetro elderly counties are not closely connected to big cities. Their populations tend not to live even in moderately sized municipalities, most living in small towns and open country in totally rural settings. This implies considerable isolation and limited access to public or private services that are only available in larger towns. Given that older populations tend to have disabilities and difficulty in driving, as well as fixed incomes, this settlement pattern presents a particular problem for the elderly in nonmetro elderly counties.

The heavy reliance on farming in these counties implies that the situation is unlikely to improve. The farming industry continues to experience consolidation and reductions in the number of farmers. Because many places in the Great Plains have few alternative sources of employment, they are under the constant pressure of declining populations. Population decline reduces the supply of volunteers in the social network that supports the elderly, undermines the tax base of local communities, and makes it more expensive to provide public and private services.

A particular problem in these places is attracting doctors, who

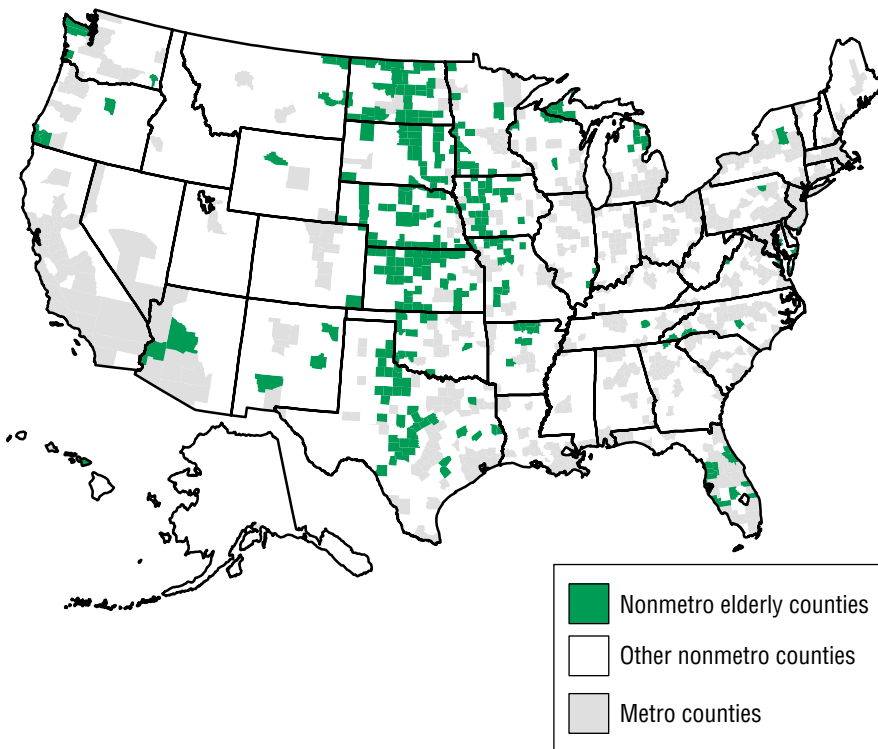
must contend with too few patients to pay the bills. Thus, older people often have to travel long distances to larger cities to gain access to doctors and hospitals. These communities suffer from many other related problems, affecting both the elderly and nonelderly. With declining populations and tax bases, roads may have to be abandoned and schools closed. Similarly, local businesses, like restaurants, drug stores, and grocery stores, may be forced to close.

Elderly counties are quite different in metro and nonmetro areas. In metro areas, elderly counties average over 300,000 residents, while the average population for nonmetro elderly counties is less than 12,000, and the typical (median) nonmetro elderly county has only about 6,000 population (table 1). This small population size makes it difficult and costly to provide public and private services.

Total population growth in the 1990s was relatively large (19.8 percent) for metro elderly counties and small (9.8 percent) for nonmetro elderly counties. But the growth in overall population for nonmetro elderly counties is misleading, since this growth mainly occurred in a minority of these counties—those that had relatively large populations. Most nonmetro elderly counties lost population in the 1990s; the median population change was a decline of 3.6 percent (table 1).

The 12.2-percent average poverty rate for nonmetro elderly counties (in 1999) was slightly lower than that for the U.S. as a whole, and significantly lower than that for nonmetro counties in general. However, it was higher than the poverty rate of metro elderly counties.

Figure 1  
**Nonmetro elderly counties, 2000**  
*Most nonmetro elderly counties are in the Great Plains*

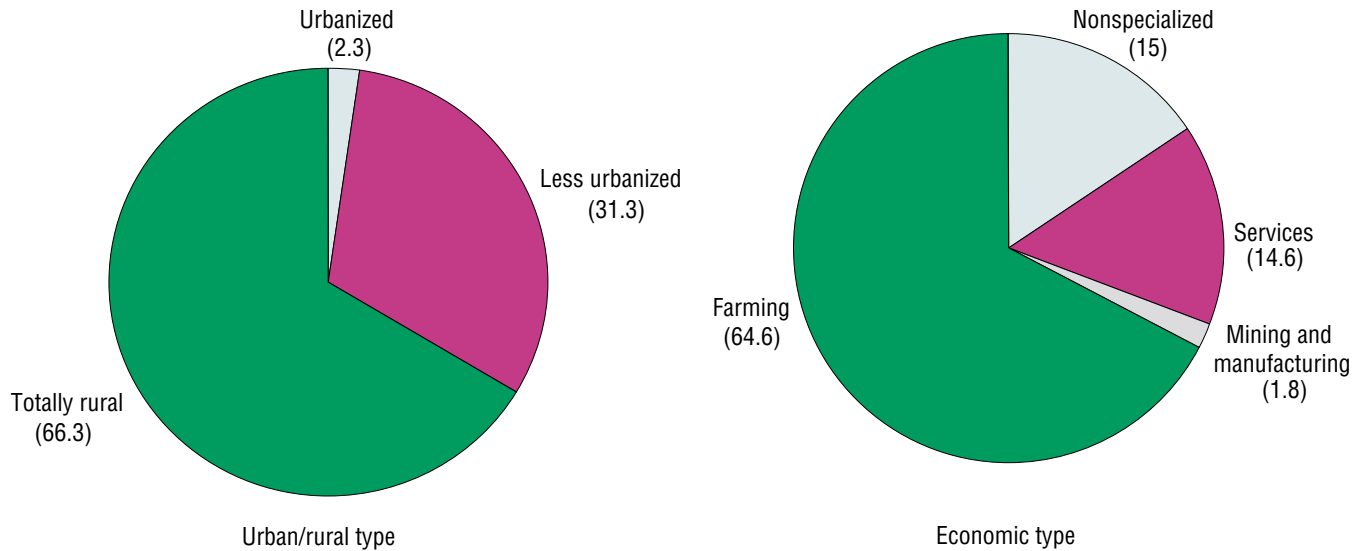


Note: Elderly counties are defined as having at least 20 percent of population age 65 or over.  
 Source: Calculated by ERS using data from the Bureau of the Census.

Figure 2

**Percentage of nonmetro elderly counties by urbanization and economic county type**

*Most nonmetro elderly counties are totally rural and dependent on farming*



Source: Economic Research Service.

In the aggregate, nonmetro elderly counties have a higher unemployment rate than metro elderly counties and U.S. counties in general. However, the median unemployment rate for nonmetro elderly counties is only 3.2 percent, lower than the U.S. average, indicating that most nonmetro elderly counties have relatively low unemployment rates, while a minority of these counties—those with larger populations—have higher unemployment rates. So at any one point in time, few people are without jobs in most nonmetro elderly counties. But this does not mean that there is no need for assistance in creating jobs. Many of these counties lost population due to contraction in agriculture. Lacking alternative job opportunities, the young simply leave for other places and never enter the local job market.

Nonmetro elderly counties, like nonmetro counties in general, exhibited generally low per capita incomes. Per capita income for nonmetro elderly counties (in the

aggregate) was \$22,845 in 2000, versus \$30,848 for metro elderly counties and \$29,469 per capita for the U.S. as a whole (table 1). With relatively low income levels, indi-

Table 1

**Demographic and socioeconomic conditions in elderly counties**

*The typical (median) nonmetro elderly county has a small and declining population, with relatively low per capita income and unemployment*

County	Average county population, 2000	Elderly population, 2000	Population change in the 1990s	Poverty rate, 1999	Unemployment rate, 2000	Per capita income, 2000
	Number		Percent			Dollars
United States	89,594	12.4	13.1	12.4	4.0	29,469
Metro	269,453	11.9	13.8	11.8	3.8	31,364
Nonmetro	24,362	14.6	10.3	14.6	5.0	21,858
Elderly	30,188	23.8	19.4	10.8	3.7	28,053
Metro	311,692	24.4	19.8	9.9	3.5	30,848
Nonmetro	11,545	22.7	9.8	12.2	4.1	22,845
Median <sup>1</sup>	6,192	22.1	-3.6	12.2	3.2	22,219

<sup>1</sup>Median of nonmetro elderly counties.

Source: ERS computations based on data from the following sources: population and poverty—Bureau of the Census; unemployment rates—Bureau of Labor Statistics; per capita income—Bureau of Economic Analysis.

Table 2

**Per capita Federal funds by program function and type of nonmetro county, fiscal year 2000***Nonmetro elderly counties receive more Federal funds than other types of counties*

County type	All Federal funds	Agriculture and natural resources	Community resources	Defense and space	Human resources	Income security	National functions
<i>Dollars per person</i>							
United States	5,690	116	680	678	119	3,276	822
Metro	5,743	39	728	771	113	3,182	910
Nonmetro	5,481	427	486	303	143	3,656	467
By degree of urbanization:							
Urbanized	5450	166	499	592	144	3446	602
Less urbanized	5384	463	471	185	140	3717	407
Totally rural	6030	940	527	101	152	3916	394
By economic county type:							
Farming-dependent	6,845	2,006	563	154	151	3,576	394
Mining-dependent	5,635	201	446	79	175	4,072	661
Manufacturing-dependent	4,813	200	432	148	120	3,575	337
Government-dependent	6,414	157	571	1,380	219	3,467	620
Services-dependent	5,498	347	490	196	118	3,709	639
Nonspecialized	5,251	405	482	88	139	3,760	376
By policy county type:							
Retirement-destination	5,176	75	477	288	104	3,885	347
Federal lands	5,311	96	631	303	154	3,319	808
Commuting	4,712	257	449	228	115	3,412	250
Persistent poverty	6,050	549	491	159	257	4,154	440
Transfer-dependent	6,328	299	507	119	243	4,656	505
Elderly counties (320)	6,262	424	517	264	85	4,635	336
Metro (20)	6,082	7	568	395	72	4,714	326
Nonmetro (300)	6,682	1,169	453	93	107	4,522	338

Note: Individual figures may not sum to total because of rounding.

Source: Calculated by ERS using Federal funds data from the Bureau of the Census.

viduals and families in nonmetro elderly counties often lack the private financial assets to pay for the escalating health care costs of the elderly. Meanwhile, local governments also come up short when it comes to tax base required to support public hospitals, clinics, public transportation, and other public services required by the elderly and other local residents.

While our nonmetro elderly counties by definition all have at least 20 percent of their populations age 65 and older, most do not exceed this threshold by very

much. The nonmetro county with the highest share of older population in 2000 was McIntosh County, North Dakota (34.2 percent elderly). The metro county with the highest share of older population was Charlotte County, Florida (34.7 percent elderly). The average share of 65-and-older in nonmetro elderly counties is 22.7 percent (24.4 percent in metro elderly counties), versus the national average of 12.4 percent elderly. So while the elderly make up a significantly higher percentage of population in nonmetro elderly counties, they still

account for less than one-fourth of local population for most of these counties and must compete with other groups for public services.

### Which Programs Most Benefit Nonmetro Elderly Counties?

Our analysis of county-level receipts of Federal funding revealed that nonmetro elderly counties received substantially more Federal funding, per capita, than other counties. Nonmetro elderly counties received \$6,682 per capita in fiscal year 2000, compared with \$5,690 for the U.S. as a whole and



\$5,481 for U.S. nonmetro counties (table 2). Nonmetro elderly counties also received more Federal funding, per capita, than all of ERS's county typologies except farming-dependent counties. They also received more funds than metro elderly counties—mainly due to their high levels of agricultural payments.

Nonmetro elderly counties relied heavily on two types of programs—agricultural/natural resources programs and income security programs. Nonmetro elderly counties received \$1,169, per capita, in agriculture/natural resources payments (table 2). Among ERS's county typologies, only farm-dependent counties received more from these kinds of programs. Their heavy reliance on agricultural payments follows from the fact that most nonmetro elderly counties are farm-dependent.

More important, income security payments for nonmetro elderly counties amounted to \$4,522 per capita, more than any other nonmetro county type except transfer-dependent counties (which by definition rely heavily on these kinds of payments). This is testimony to the high percentages of the elderly in these counties and their substantial receipts of Social Security, Medicare, and other age-related income security payments. The 20 metro elderly counties also received high levels of these income security payments.

Altogether, 50 Federal programs accounted for over 97 percent of the \$6,682 total received by nonmetro elderly counties. The five largest programs for nonmetro elderly counties, providing 53 percent of their total Federal funding, included four income security programs tied to Social Security and Medicare (programs targeted to

Table 3

**Fifty largest Federal programs for nonmetro elderly counties, fiscal 2000**

*The largest programs for these counties are for retirement, health insurance, and agriculture*

Program	Nonmetro			U.S.
	Elderly	Total	Metro	
<i>Dollars per capita</i>				
Social security—retirement	1,612	1,045	909	943
Medicare—hospital	608	475	454	455
Feed grain production stabilization	453	168	8	42
Social security—survivors	446	350	267	287
Medicare—supplemental	437	306	311	307
Medicaid	433	538	403	429
Commodity loans and purchases (direct loans)	249	80	4	21
Social security—disability	248	267	190	208
Federal retirement and disability—civilian	226	152	158	157
Federal salaries and wages—postal	154	123	193	175
Federal retirement and disability—military	152	105	112	114
Crop insurance	149	44	3	12
Highway planning and construction	143	171	64	88
Commodity loans and purchases (purchases)	111	49	8	18
Federal salaries and wages (nondefense/nonpostal)	88	140	256	225
Veterans compensation—service disabilities	87	68	48	54
Social security—supplemental	86	137	122	124
Procurement contracts—defense	79	355	526	474
Farm operating loan guarantees	73	26	1	6
Conservation Reserve Program	62	18	0	4
Mortgage insurance—homes	55	91	349	286
Social insurance for railroad workers	46	41	24	29

older populations) and USDA's feed grain farm support program (table 3). Nonmetro elderly counties received more from each of these five programs than did nonmetro counties as a whole, which received 44 percent of their funding from the five programs.

The next five largest programs for nonmetro elderly counties included two programs targeted to elderly populations (Social Security disability and Federal retirement and disability/civilian), another

farm program (commodity loan guarantees), and salaries and wages for the U.S. postal service.

However, only two of these programs (commodity loan guarantees and Federal civilian retirement and disability) provided more funding per capita to nonmetro elderly counties than to nonmetro counties in general.

Like other nonmetro counties, nonmetro elderly counties receive relatively high funding, per capita, from highway planning and con-

Table 3 (Continued)

Program	Nonmetro			U.S.
	Elderly	Total	Metro	
	<i>Dollars per capita</i>			
Section 8 low-income housing assistance	45	75	129	117
Food stamps	43	59	52	53
Procurement contracts—postal	42	33	52	48
Temporary assistance for needy families	30	47	66	60
Procurement contracts—other nondefense	28	235	280	270
Rural electrification guarantees*	27	23	4	8
Rural telephone guarantees*	26	9	1	2
Educationally deprived children (Title I)	25	41	23	27
Farm ownership loans (guaranteed)	24	13	1	3
National school lunch program	22	27	20	21
State children's insurance program (CHIP)	19	23	16	18
Small business loan guarantees	19	18	29	26
Low-income housing guarantees*	18	20	4	7
Farm operating loans (direct)	18	9	0	2
Veterans compensation—service death	18	14	11	12
Veterans nonservice disability pension	15	14	6	8
Business & industrial guarantees*	14	15	2	5
Supplemental food (WIC)	11	22	11	13
Head start	11	16	12	13
Veterans housing loans (guaranteed/insured)	11	15	27	25
Water and waste disposal system loans*	10	9	1	3
Low-income energy assistance	10	11	5	7
Water and waste disposal system guarantees*	10	6	0	2
Farm ownership loans	9	4	0	1
Low-income housing loans	9	9	2	4
Federal employees compensation	8	7	7	7
Salaries and wages (civilian defense)	8	86	101	99
Federal credit system—farmland acquisition	8	1	0	0

\* = U.S. Department of Agriculture, Rural Development; WIC = Women, Infants, and Children.  
Source: Economic Research Service, using data from the Bureau of the Census

struction (table 3). They also receive significant amounts from programs benefiting the poor, but these low-income assistance programs appear to benefit other counties more.

USDA's most important rural development programs—including low-income housing, rural electric and telephone, business and industry loans, and water/waste disposal loans and grants—are among the top 50 programs benefiting rural elderly counties. (USDA's rental

housing assistance payments ranked 51st). Nonmetro elderly counties received close to the same amount, per capita, as all nonmetro counties from most of these programs, though rural telephone guarantees disproportionately benefited nonmetro elderly counties.

These rural development programs are part of ERS's functional category of community resources programs, which also includes programs provided by agencies other than USDA. Nonmetro elderly

counties did not fare as well from these other agency programs. For example, the Department of Housing and Urban Development's main mortgage insurance program, which financed \$349 per capita of mortgages in metropolitan areas in 2000, financed only \$90 of nonmetro mortgages, and only \$55 of nonmetro elderly county mortgages. Overall, nonmetro elderly counties received \$453 per capita from all community resources programs, less than nonmetro counties in general and also less than metro elderly counties (table 2).

Elderly counties (metro and nonmetro) received relatively less funding from defense and space and other national functions. Most nonmetro elderly counties are geographically isolated, far from metro areas where large Federal installations and procurement industries are generally located.

Elderly counties also received relatively small amounts from human resources programs, which consist largely of education, employment, and training programs. Older populations tend to make little use of such services. Some of the largest programs in this category had to be excluded from our analysis (see "Federal Funds Data and Programs Excluded From Our Analysis") because they are State pass-through programs for which we do not have accurate county-level data.

### Why Are These Federal Funding Patterns Important?

The elderly have been viewed by some as dependent on family members and on the community for assistance. While this is true in some respects, particularly for the very old, the opposite is also true for many rural counties across the country—those where a high

## Definitions Used In Tables

### Program Functions

ERS's six broad function categories for Federal programs are as follows:

- **Agriculture and natural resources** (agricultural assistance, agricultural research and services, forest and land management, water and recreation resources);
- **Community resources** (business assistance, community facilities, community and regional development, environmental protection, housing, native American programs, and transportation);
- **Defense and space** (aeronautics and space, defense contracts, defense payroll and administration);
- **Human resources** (elementary and secondary education, food and nutrition, health services, social services, training and employment);
- **Income security** (medical and hospital benefits, public assistance and unemployment compensation, retirement and disability—includes Social Security);
- **National functions** (criminal justice and law enforcement, energy, higher education and research, and all other programs excluding insurance).

### County Types

We use the Office of Management and Budget definitions for Metropolitan Statistical Areas (MSAs), based on population and commuting data from the 1990 Census of Population and the Current Population Survey data for 1993. In this article, “metro” refers to people and places within MSAs, while “non-metro” refers to people and places outside of MSAs.

When distinguishing nonmetro counties with different degrees of urbanization, we relied on the definitions used in Margaret A. Butler and Calvin L. Beale, *Rural-Urban Continuum Codes for Metro and Nonmetro Counties, 1993*, Staff Report No. AGES 9425, U.S. Department of Agriculture, Economic Research Service, Sept. 1994. The other county typologies used in the tables are those described in Peggy J. Cook and Karen L. Mizer, *The Revised ERS County Typology: An Overview*, RDRR-89, U.S. Department of Agriculture, Economic Research Service, Dec. 1994. For more about ERS definitions and typologies, see <http://www.ers.usda.gov/briefing/rurality/>.

percentage of the population is elderly. In these nonmetro elderly counties, the community depends on the older population to attract large amounts of Federal funds, principally in the form of Social Security and medical payments.

Most nonmetro elderly counties are located in farming areas in the Great Plains. This means that the long-term fate of many of these communities rests on a population

expected to decline in numbers over time. These communities also depend a great deal on a few large programs that benefit the aged. As such, the communities are potentially vulnerable to reduction in such programs as the baby boom generation retires and the burden of financing these programs grows for those remaining in the workforce. Most of these counties are also heavily dependent on Federal

farm programs, so their elderly populations are much affected by changes in farm policy.

Because many of the nonmetro elderly counties are in lightly populated, highly rural areas with declining populations, the cost of providing public services is high per person. These counties also tend to have relatively low incomes and tax bases. Local governments and nonprofits that supply these services therefore need more money than elsewhere. Our data show that these counties in fact currently receive lower Federal payments for community resource programs than do other types of rural counties. This may make it more difficult for these places to meet the needs of their elderly residents.

Not all nonmetro elderly counties are lightly populated farming areas in the Great Plains. Many are located elsewhere, some have growing urban populations, some do not

### For Further Reading . . .

Richard J. Reeder and Nina L. Glasgow, “The Economic Development Consequences of Growing Elderly Populations in Nonmetro Counties.” Paper prepared for the Southern Regional Science Association’s annual meeting, Chapel Hill, NC April 1989.

Richard J. Reeder and Samuel Calhoun, “Federal Funds in Rural America: Funding Is Less in Rural Than in Urban Areas, but Varies by Region and Type of County,” *Rural America*, Vol. 16, No. 3, Fall 2001, pp. 51-54.

Rick Reeder, Faqir Bagi, and Samuel Calhoun, “Which Federal Funds Are Most Important For The Great Plains?” *Rural Development Perspectives*, Vol. 13, No. 1, June 1998, pp. 52-58.

## Federal Funds Data and Programs Excluded From Our Analysis

Our data come from the Consolidated Federal Funds Reports data, provided annually by the Bureau of the Census. We included 703 programs in our analysis. We excluded 462 programs—those for which over 25 percent of Federal funding was either not reported at the county level or went to counties containing State capitals. Excluded programs accounted for about 11 percent of all Federal funds (excluding certain insurance programs, such as the main flood insurance payment programs). With a few exceptions, such as programs for people with disabilities and the Labor Department's special programs for the aging, the excluded programs are not particularly relevant to elderly populations. The largest programs excluded were for payments for excess earned income tax credits, student loans, unemployment benefits and insurance payments, Federal employee life/health insurance premium payments, foster care, adoption assistance, child care, day care payments to States, Workforce Investment Act payments, handicapped State grants, State administration grants for food stamps, substance abuse grants, disaster assistance, class size reduction, Environmental Protection Agency capitalization grants for State revolving loan funds, vocational education, rehabilitation service—basic support, home investment in affordable housing, Interior Department payments to States, and the State-administered (rural) portion of community development block grants.

For more details on the data and methods used, see the ERS Federal Funds Briefing Room, <http://www.ers.usda.gov/briefing/federalfunds/>. This web site also provides maps for different program functions, access to individual county-level data, plus research focusing on selected rural regions (such as Appalachia, the Black Belt, and the Great Plains).

## Smaller Programs Particularly Important for the Elderly

We have identified the largest programs that particularly benefit the elderly, including Social Security and other Federal retirement programs, Medicare, and Medicaid. However, many smaller programs not among the top 50 programs target assistance to the elderly.

For example, the Department of Health and Human Services (HHS) offers a group of programs called special programs for the aging. These include grants for supportive services and senior centers; long-term care ombudsman services for older individuals; training, research, and discretionary projects and programs; programs for prevention of elderly abuse, neglect, and exploitation; disease prevention and health promotion services; Native American programs; and nutrition services (the elderly nutrition program).

USDA also offers nutrition programs that particularly benefit the elderly. These include food stamps, the nutrition program for the elderly, the commodity supplemental food program, the child and adult care food program, and the emergency food assistance program. In addition, USDA's community facilities program helps finance a wide range of facilities, including senior centers, assisted living facilities, health clinics, and hospitals.

Several housing programs offered by the Department of Housing and Urban Development target assistance to the elderly. These include supportive housing for the elderly; mortgage insurance for rental housing for the elderly; and multifamily housing service coordinators.

Among other programs particularly benefiting the elderly: (1) the senior community service employment program (Department of Labor); (2) the retired and senior volunteer program (Corporation for National and Community Service); (3) the capital assistance program for elderly persons and persons with disabilities (Department of Transportation—Federal Transit Administration); (4) the national family caregiver support program (HHS); (5) rehabilitation services-independent living services for older individuals who are blind (Department of Education); and (6) aging research (HHS). In addition, the Department of Veterans Affairs has many programs that benefit the elderly.

rely much on farming, and some have significant poverty. As baby boomers age, the number of non-metro elderly counties will

increase, and more of these counties are likely to have urban or non-farm characteristics. Their well-being will depend more on a differ-

ent set of Federal programs, including social welfare programs and nonfarm economic development programs. <sup>RA</sup>



# The Graying Farm Sector

## Legacy of Off-Farm Migration

Fred Gale

There have been concerns about the “graying” of the farming occupation ever since young men and women began leaving farming in large numbers in the 1940s and ‘50s. In a 1963 article, “Aging Farmers and Agricultural Policy,” in the *Journal of Farm Economics*, economist Marion Clawson wrote,

*“Farmers in the United States are growing old, largely because men once fully committed to farming leave it reluctantly and slowly; but also because young men refuse to enter farming in past numbers as long as income prospects are so poor.”*

(Clawson, p. 13)

In the early 1960s, the farm sector was in the midst of a dramatic release of labor to nonagricultural work and rapid consolidation of farms that began in the 1940s. Farm numbers fell by 50 percent in two decades—from over 6 million in 1940 to 3 million in 1964. As Clawson pointed out in the quote above, young persons at the begin-

*The graying trend among U.S. farmers is not new, but it seems to have accelerated during the 1980s and ‘90s. Older farmers are leaving the sector at slower and slower rates. One fourth of U.S. farmers and half of farm landlords are at least 65 years old. Farmers and landlords aged 65 and older own a combined one-third of farm assets. Historical experience suggests that there will be a gradual turnover of farm assets as farm operators leave the sector at increasingly advanced ages.*

ning of their careers found it much easier to leave farming (or not enter farming in the first place) than did older, experienced farmers. The result was an aging population of farmers.

Demographic analysis suggested that the age distribution of farmers would be skewed toward older ages until this large “bulge” of older farm operators gradually left the sector in the 1970s and ‘80s through retirement and death. However, as we look back now, four decades later, agricultural census statistics show that the “graying” trend in the farm sector actually accelerated during the 1980s and ‘90s.

### The Trend Accelerated

Figure 1 shows that the share of principal farm operators who were ages 65 and older was relatively stable at about 16 percent from 1959 through 1978, as both older and younger operators decreased in number. After 1978, the percent of farm operators aged

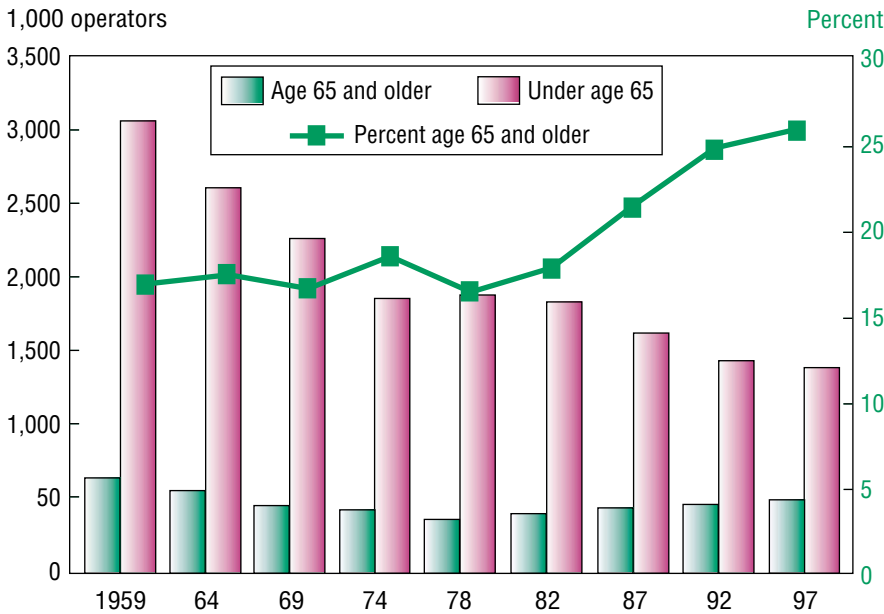
65 and older rose steadily until it reached 26 percent in 1997. Thus, over one-fourth of U.S. farm operators were at least 65 years old—beyond conventional retirement ages. By comparison, about 3 percent of the U.S. labor force falls in this age group.

The rising share of older farmers is due to an absolute increase in their numbers as well as a steady decrease in the number of farmers under age 65. The number of 65-and-older farm operators reached its lowest point at 370,000 in 1978 and rose to 500,000 in 1997. Between 1978 and 1997, the number of operators under age 65 fell from 1.9 million to 1.4 million. From 1978 to 1997, the total number of U.S. farms fell by a modest 15 percent, much slower than in earlier decades. That modest decline conceals a 34-percent increase in the number of farm operators age 65 and older that partly offset a 25-percent decline in the number of farm operators under age 65.

Fred Gale is a senior economist in the Market and Trade Economics Division, Economic Research Service, USDA.



Figure 1  
**U.S. farm operators by age group and share age 65 and older, 1959-97**  
*The share of operators age 65 and older has risen steadily since 1978*



Source: Census of Agriculture.

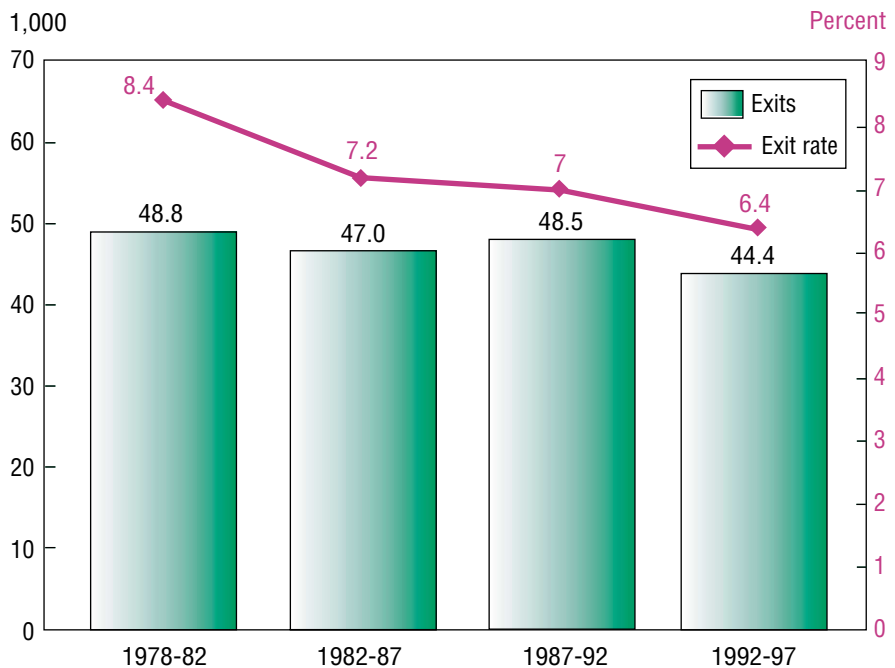
Improved health and longevity may have reduced the exit rate of older farmers by allowing individuals to continue operating a farm at advanced ages that may have precluded strenuous farm work in earlier generations. Farming may also be an increasingly popular part-time retirement activity for persons who have retired from either full-time farming or from a nonfarm occupation. Gale estimated that about 25,000 operators in the 65-and-older age group entered farming each year from 1978 to 1992.

The growing population of older farmers may in part reflect the weakening of “family farm” institutions, including life-cycle patterns of farmland acquisition and disposal and intergenerational transfer of farm assets. Farm families have a strong tradition of transferring farm businesses from parent

### Falling Exit Rates

The aging trend seems to be mostly due to older farmers leaving farming at a slower rate than in the past. Gale’s (1996) historical estimates of net exit rates by older farm operators showed a plunge in exit rates after 1978. Gale estimated that 49 percent of farm operators aged 55 and older in 1982 had withdrawn from farming by 1992. Similar estimates for earlier decades (1954-78) found much higher withdrawal rates of 68 percent. Another study by Gale (2003) showed that a steady stream of about 48,000 farm operators aged 65 or older exited farming each year from 1978 to 1992, with a slight dip to 44,000 per year during 1992-97 (fig. 2). However, the rate at which older farm operators exited fell from 8.4 percent per year during 1978-82 to 6.4 percent during 1992-97.

Figure 2  
**Estimated farm exits and exit rate by operators age 65 and older, 1978-97**  
*The exit rate for older farm operators has fallen*



Source: Estimated by Gale (2003) from Census of Agriculture data.



Photo courtesy USDA, OC/Photography Center.

to child. For example, Laband and Lentz, in a 1983 study, found that children of farmers were 30 times more likely than the average worker to follow their parents' occupational or business choice.

More recently, the traditional pattern of intergenerational transfer of family-operated farm operations from parent to child has reportedly become less common as fewer farm children choose farm careers. Gale (2003) estimated that the annual number of new farm entrants under age 35 declined from 39,300 during 1978-82 to 15,500 during 1992-97. There are anecdotal reports of older farmers who have no adult children interested in taking over their farm operation. Aging farmers who have no heir interested in taking over their farm may continue farming at advanced age, or rent/sell their farm land, buildings, equipment, and livestock to others.

### Concentration of Farm Assets

One of the results of the breakdown of intergenerational transfer of farms is a concentration of farm assets in the hands of elderly farm operators and landlords. Analysis of USDA's 1999 Agricultural Economics and Land Ownership Survey (AELOS) shows that farm operators and landlords aged 65 and older owned a combined one-third of the value of farm assets (fig. 3). The AELOS data show that one-fourth of farm operators (542,000) and half of farm landlords (1.15 million) were aged 65 or older in 1999. Operators aged 65 and older owned farm assets worth \$280 billion (18 percent of the total) and landlords aged 65 and older owned farm assets valued at \$256 billion (16 percent of the total). Thus, for operators and landlords combined, the share of farm assets owned by persons aged 65 and older was 34 percent in 1999. A similar analysis of earlier AELOS

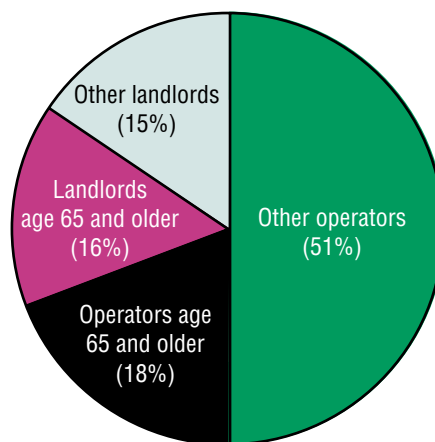
data shows that the share of assets owned by persons aged 65 and older was just 17 percent in 1988.

The farmer aging trend is seen in quite a different light today as compared with the 1960s. In the 1960s, poverty of aging farmers was a concern, but today average farm household income (over \$64,000 in 1999 according to USDA/ERS statistics from the Agricultural Resource Management Survey) equals or exceeds the average for nonfarm households. Older farmers have lower average incomes (\$40,000 in 1999) than other farmers, reflecting their partially retired status and smaller farm size. However, older farmers have considerable wealth. Analysis of the 1999 AELOS data indicates that the average value of assets owned by operators aged 65 and older was over \$500,000, and the average for landlords aged 65 and older was over \$200,000.

### Mass Retirements?

When presented with statistics depicting the "graying" of the farm sector, many have jumped to the conclusion that major changes due to mass retirements of farmers are in the offing. However, mass retirements have never occurred in the four decades since aging of farmers was first raised as an issue. Instead, older farmers seem to have foiled the predictions of social scientists by continuing to farm at ever-increasing ages and quitting at slower and slower rates. For example, Gale (1996) predicted a decrease in farm numbers of 225,000 between 1992 and 1997, but farm numbers actually decreased by less than 15,000 over that period, in part because older farmers exited at a much slower rate than in previous years.

Figure 3  
**Value of farm assets, 1999**  
*Operators and landlords age 65 and older own a combined 34 percent of farm assets*



Source: USDA Agricultural Economics and Land Ownership Survey, 1999.

It is interesting to note that today's 65-year-old farmers would have been 25 years old in the early 1960s when Clawson wrote about aging farmers. They would have been just beginning their careers when off-farm migration was near its peak. Many of these men and women chose farming when most of their neighbors were leaving for nonfarm careers. Thus, they have a strong commitment to farming. Their low exit rates suggest that

Clawson's statement (quoted above), "...men once fully committed to farming leave it reluctantly and slowly" still holds true.

The number of older farmers may stabilize as the falling exit rate is tempered by declining size of successive cohorts of farmers entering the 65-and-older age group. Note that the number of operators age 60-64 was 248,000 in 1987 and just 205,000 in 1997. There will be gradual turnover in

the assets of older farmers through bequests, sales, and rentals. Their land and other assets will be rented or purchased by other farmers and agricultural businesses or be absorbed by residential and commercial development. Rising farm asset values in recent years suggest that there is plenty of demand for those assets when they become available. <sup>RA</sup>

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# Aging in Rural and Regional Australia

Gerald Haberhorn

**A**s in the United States, population aging has important implications for social and economic policy and planning in Australia. In 1946, Australians age 65 and older numbered 600,000, or 8 percent of 7.5 million people nationwide. By 2000, older Australians had quadrupled to 2.36 million people, 12 percent of the population (Australian Bureau of Statistics, 2002). And in another 50 years, this proportion is expected to double with one in four Australians, or 6 million people, age 65 and over (Haberhorn; Australian Bureau of Statistics, 1996, 1999b).

This development is characterized by sustained fertility declines and improved longevity, with international migration exerting only a modest impact. If net migration were zero between 1999 and 2051, instead of the 70,000 per year projected by the Australian Bureau of Statistics, the median age of the projected 2051 population would be 47 instead of 44 years (Australian Bureau of Statistics, 1999a). The accelerated increase in the number of older Australians over the next 50 years, compared with the previous 50 years, is the result

Gerald Haberhorn is principal research scientist, Bureau of Rural Sciences in Agriculture, Fisheries, Forestry—Australia.

*This article examines the spatial dimension of population aging in Australia, which over the past five decades saw the number of Australians 65 and older quadruple to 2.36 million people in 2000. It reviews some basic sociodemographic and socioeconomic attributes characterizing older Australians, and discusses likely future scenarios, and some of the more immediate social and economic implications for rural and regional Australia, such as aging's impact on agriculture and natural resources management, and the viability of rural communities.*

of Australia's baby boomers' steady march toward retirement and old age. Improvements in living standards and conditions have boosted life expectancies to 77 years for men and 82 years for women. Yet, unlike most other developed countries, which have both high rates of urbanization and geographically balanced populations, Australia's physical and population geography adds a different dimension to population aging. With 83 percent of Australia's population living within 50 kilometres of the coast, with half the continent accounting for just 0.3 percent of the population, and with internal migration rather than natural increase determining regional growth and population distribution, some parts of the country age considerably faster than others.

## Population Aging in Rural and Regional Australia

According to the current Australian Standard Geographic Classification System (Australian Bureau of Statistics, 1999a), rural Australia comprises populations liv-

ing in population centers of less than 1,000 people. This amounts to 14 percent of the population, a percentage that has remained unchanged over the past 20 years. Population centers between 200-999 residents are referred to as bounded rural localities and those with less than 200 people are referred to as rural (Australian Bureau of Statistics, 1999a). Everything else is considered urban. Since small population enclaves outside capital cities or other major regional centers are more often than not urban "sleeping/commuting" settlements rather than "rural" communities with agricultural or other related amenities, and since larger communities can be both urban (size) and rural (economic/biophysical amenities) in nature (Haberhorn), this article refers to rural and regional Australia in terms of geographic accessibility and remoteness. Hence, rural encompasses coastal, inland, and remote regions (fig. 1), in line with a recent classification system proposed by the Australian

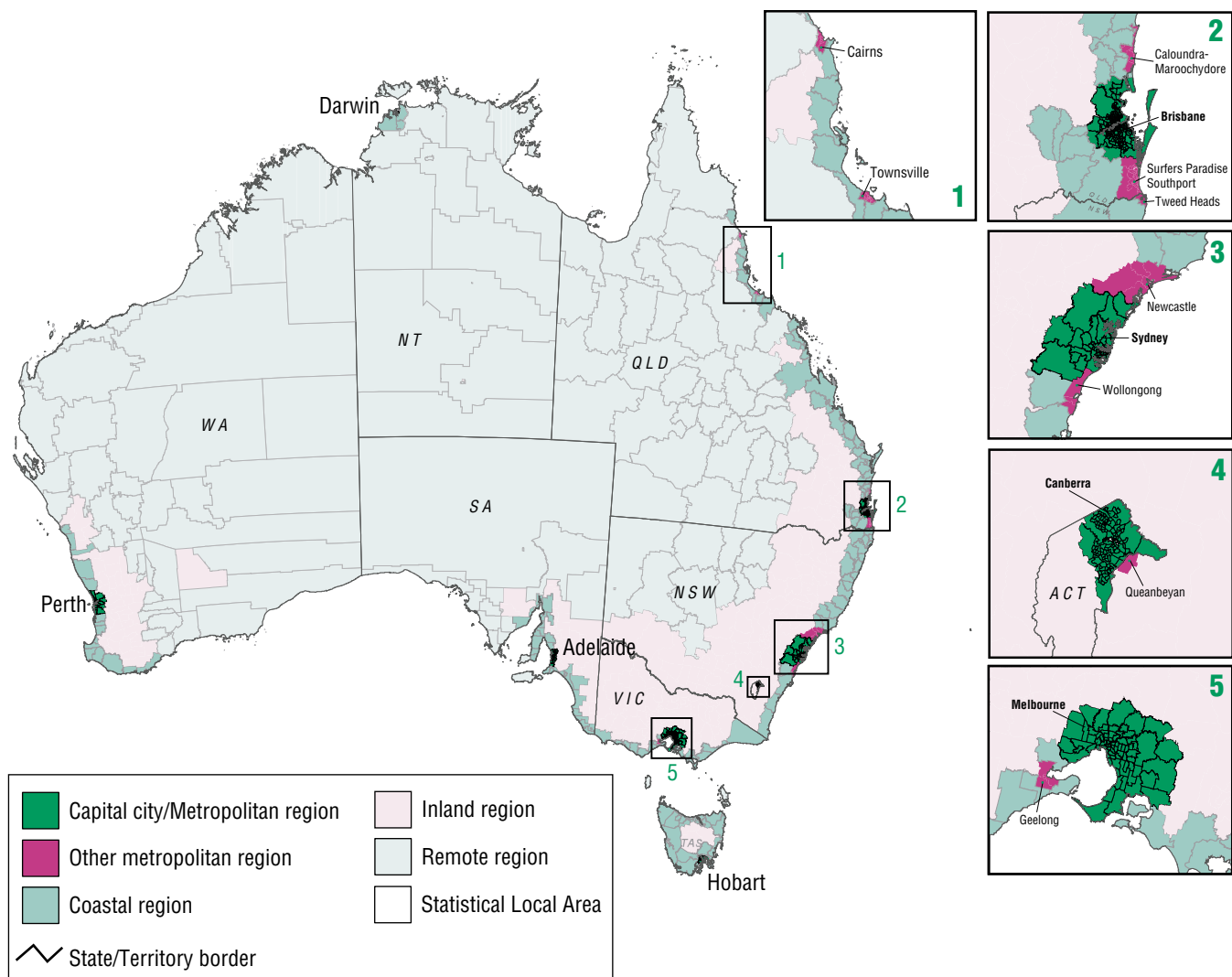
Bureau of Agricultural and Resource Economics.

Applying this typology highlights some immediate contrasts in terms of regional population aging. Older Australians account for just 6.6 percent of the population in remote Australia, versus 14.2 percent throughout coastal Australia

where some of the more popular areas already have 20 percent or more of their populations age 65 and older (table 1). While small overall populations, a more pronounced presence of indigenous Australians in remote areas, and their much higher mortality rate may account for some of these dif-

ferences, internal migration has a more prominent impact on the population makeup and on aging right across rural and regional Australia (Hugo; Australian Bureau of Statistics, 2002). Retirement-motivated migration to coastal areas and major regional centers largely accounts for the smaller

Figure 1  
**Regional Australia**



Source: Australian Bureau of Statistics, Statistical Local Area Boundaries (1996); Australian Bureau of Agricultural and Resource Economics (ABARE) Regional Classification (2001); and Country Australia; 2001 Garnaut et al., 2001.



Table 1

**Sociodemographic and socioeconomic attributes of older Australians***The number of older Australians is expected to increase 56 percent by 2017*

Attribute	Metropolitan	Other metro	Coastal	Inland	Remote	Total
<b>Total population, 1999</b>	12,109,873	1,732,783	2,207,174	2,432,080	481,382	18,963,292
Older Australians (65+)	1,419,248	235,388	313,457	321,867	31,918	2,321,878
Share of total population (percent)	<b>11.7</b>	<b>13.6</b>	<b>14.2</b>	<b>13.2</b>	<b>6.6</b>	<b>12.2</b>
<b>Annual population growth (65+)</b>						
Annual growth 1991-96 (percent)	<b>2.2</b>	<b>3.5</b>	<b>3.3</b>	<b>2.2</b>	<b>2.9</b>	<b>2.5</b>
Proportional increase (percent)	11.8	19.0	17.8	11.4	15.3	15.3
<b>Sex ratio (males/100 females)</b>	70	76	83	76	105	74
<b>Labor force participation (percent)</b>						
Total	5.3	3.8	5.7	9.8	11.2	5.9
Females	2.9	2.2	3.2	5.4	7.0	3.3
Males	8.6	5.7	8.6	15.3	15.0	9.3
<b>Ratio of full to part-time employment</b>						
Females (percent)	0.4	0.4	0.7	1.1	1.1	0.6
Males (percent)	1.0	0.8	1.4	2.0	1.8	1.2
<b>Median individual income (percent)</b>						
< A\$ 200/week, Females	58	59	61	60	60	59
< A\$ 200/week, Males	50	51	54	54	52	51
> \$400/week: Females	7	5	5	5	7	6
> \$400/week: Males	17	13	13	12	13	15
<b>65+ population growth, 1999-2017</b>						
No. of older Australians in 2017	2,229,601	376,928	506,960	451,057	47,528	3,612,074
Increase in share	57	60	62	40	49	56
Annual growth rate (percent)	2.5	2.6	2.7	1.9	2.2	2.5
Numerical aging (increase in no.)	810,353	141,540	193,503	129,190	15,160	1,290,196
Structural aging (percent)	(12 -> 16)	(14 -> 18)	(14 -> 20)	(13 -> 19)	(7 -> 10)	(12 -> 17)

Note: where not otherwise indicated, figures refer to 1996.  
Source: Australian Bureau of Statistics data.

proportion of older Australians living in remote Australia.

Consequently, the number of people 65 and older in other (mainly coastal) metropolitan areas and coastal Australia increases 3.5 and 3.2 percent per year, compared with a national average of 2.5 percent. The more popular coastal destinations in the heavily populated Southeast showed 65-and-over populations growing in excess of 7 percent per year. At these rates,

their current older population would double in just 10 years.

### Characteristics of Older Australians

Given greater life expectancies for women (82 years) than men (77 years), older women constitute a much larger proportion of Australia's older population. In 1999, women accounted for 58 percent of Australia's population age 65 and older. This pattern holds true everywhere but for

remote Australia, where men outnumber women (105 to 100, versus a national average of 74 per 100). This discrepancy reflects gender-specific migration. With a much smaller proportion of older women currently married (42 percent) than older men (71 percent), women living alone are more prone to do so in larger regional centers in coastal or metropolitan Australia, areas with more comprehensive social services and amenities catering to older Australians.

Marital status and current living arrangements vary considerably between older men and women, and to some extent between different parts of Australia (table 1). There is a greater share of widows (47 percent) than widowers (15 percent) among older Australians, which is the result of various factors: different life expectancies, a tendency for women to marry older partners, and a higher incidence of widowers remarrying or entering de facto unions. This pattern, as well as the incidence of living alone, holds true across Australia with the exception of remote Australia, which has a higher proportion of older men living alone and a smaller proportion of older women doing so.

Major changes occur in people's sources and levels of income as they grow older, with average incomes falling markedly with age (Australian Bureau of Statistics, 1999c). The vast majority of older Australians is retired from full-time work, supported by government pensions and allowances (74 percent) and superannuation (9 percent)—a retirement scheme where employers and employees contribute a fixed percentage of employee income into a retirement fund that is accessible upon retirement, but not before one's 55th birthday. Another source of income is assets and investments.

Six percent of older Australians are still in the labor force, and male labor force participation (9.3 percent) is three times that of women (3.3 percent). Labor force participation also varies dramatically between regions: 15 percent of older men across inland and remote Australia are still working, about twice the rate compared with metropolitan and coastal regions. A similar pattern holds for women

(table 1). Higher labor force participation rates among the elderly in inland and remote Australia are primarily linked to agriculture. Most farmers and graziers do not necessarily retire at age 60 or 65, as indicated by their highest median age across occupations (Haberkorn et al.). And many coastal regions, particularly in the country's populated Southeast, are popular retirement destinations.

Nationally, about equal numbers of older Australian men still in the labor force are full-time and part-time, while part-time workers are more prominent among older women. A different pattern emerges across rural and regional Australia. Nearly twice as many older men in inland and remote

Australia, and a slightly higher proportion of older women, are engaged in full-time than part-time employment. This regional difference is due to a continued involvement in agriculture well past retirement age, the possibility of a greater economic need for older Australians in rural and regional Australia to remain economically active, and a labor market offering fewer part-time employment opportunities than in metropolitan Australia.

No such regional differences emerge in terms of incomes of older Australians (table 1). About 55 percent of older Australians in 1996-97 earned less than A\$ 200 per week, and only 10 percent enjoyed earnings of more than

## Regional Classification

### Metropolitan

All of Australia's capital cities, which, with the exception of Canberra, are all located along the coastline.

### Other metropolitan

All statistical local areas, other than those on a capital city, that contain whole or part of an urban centre with more than 100,000 population. These are Cairns, Townsville, Sunshine Coast, Gold Coast-Tweed (Queensland), Newcastle, Wollongong (New South Wales) and Geelong (Victoria)—all of which are located along the coastline.

### Remote

Statistical local areas classified as "remote" or "very remote" in the Accessibility/ Remoteness Index of Australia (1999). Remoteness is related to the minimum road distances between each populated locality in the statistical local area and the nearest urban centre in four categories, ranging from 5,000 to 100,000 people.

### Coastal

Statistical local area in coastal areas that are not remote but are generally within 80 km of the coastline. A few statistical local areas with little settlement on the coast but a large area inland are classified as inland.

### Inland

Remaining statistical local areas.

Source: J. Garnaut et al.

A\$ 400 per week. Older men fare better than older women, with fewer in the lower income group, and more than twice as many earning more than A\$ 400 a week. Given the average Australian taxable weekly income of around A\$ 600 in 1996-97 (Haberhorn et al.), this situation illustrates the high level of dependence by older Australians on government pensions and allowances, which currently represent the principal source of income for three in four older Australians. The proportion of people age 45 and over holding employment-sponsored or private superannuation coverage has increased from 35 percent to 58 percent from the mid-1980s to the late 1990s (Australian Bureau of Statistics, 1999c). This will reduce the proportion of older Australians' dependence on government pensions. However, growing numbers of older Australians, and of older Australians living longer, will mean continued and additional demands for government support and services.

### Older Australians in 2017

According to recent population projections by the Australian Bureau of Statistics (ABS, 1997), Australia's population is expected to grow by 13 percent to around 21.5 million people by 2017. The number of older Australians is expected to increase by 56 percent, reaching 3.6 million people during the same time period, with the oldest old (Rogers)—age 85 and over—increasing even faster (75 percent) and expected to top 420,000 people in 2017. Thus, in 2017, Australia is expected to have about 2.5 million people more than in 1999, with half of this increase (1.29 million) comprising people age 65 and older.

Not surprisingly, most of this growth will be concentrated in metropolitan Australia (63 percent) and other metropolitan centers (11 percent), as well as along Australia's coastline in southeastern and western Australia (15 percent). This estimated growth translates into an additional 1 million older Australians across the country's major cities, and an additional 200,000 older Australians along the coast, boosting the number of older Australians there to just over half a million people in 2017 (table 1). Coastal Australia leads the nation in both numerical and structural aging (Jackson), with an estimated 62-percent increase in the number of older Australians residing there between 1999 and 2017, and with the proportion of older Australians estimated to make up 20 percent of the coastal population in 2017.

While only 1.2 percent of the additional 1.29 million older Australians is expected to reside in the more remote parts of rural and regional Australia, this still represents a 50-percent increase in the number of older Australians in the most remote parts of the country. Inland Australia shows the smallest growth of older Australians; however, in terms of structural aging, its older population is still expected to grow to 19 percent of the total population in 2017, largely as the result of younger people migrating elsewhere.

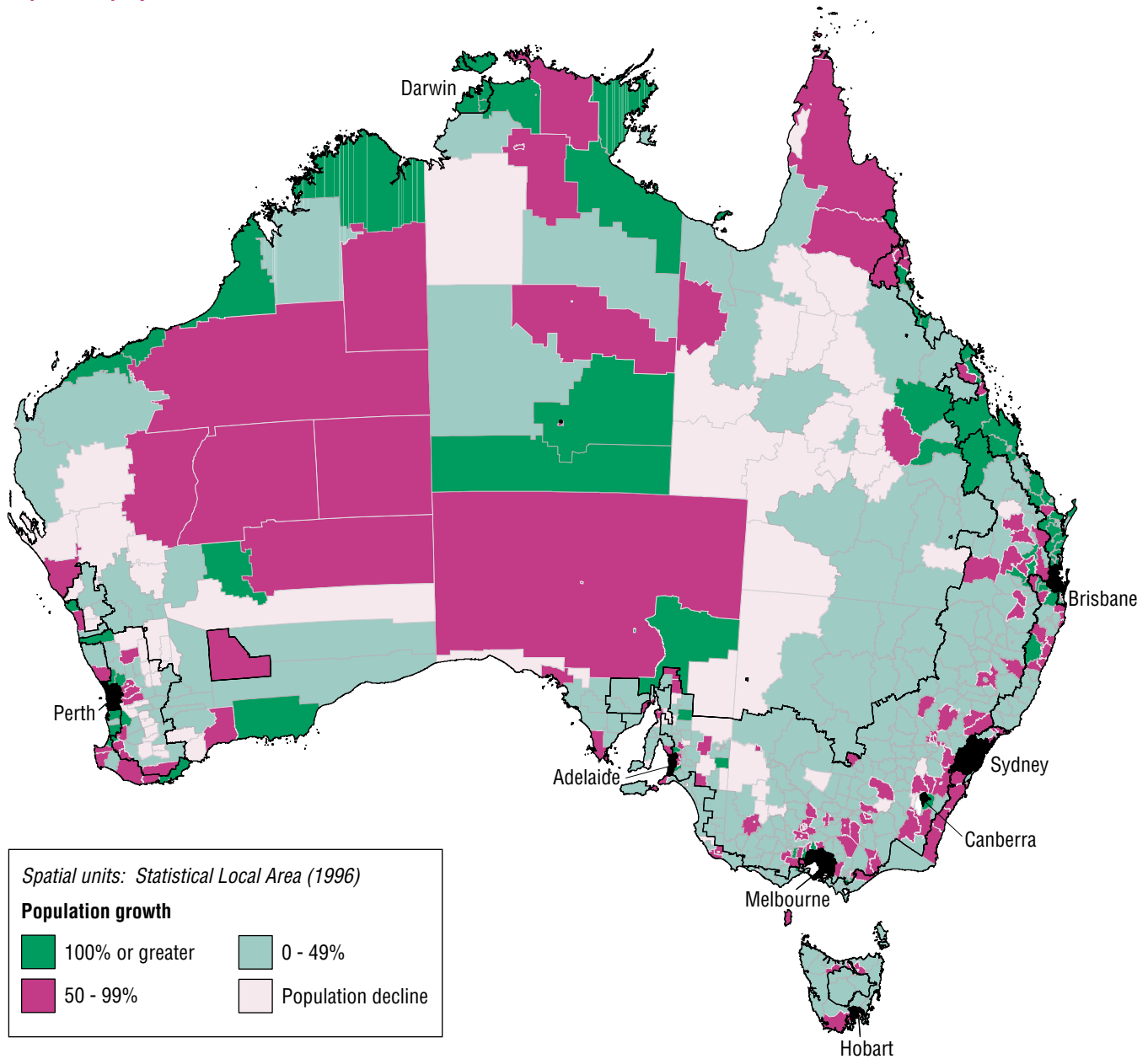
Statistical local areas (SLA), which in most of nonmetropolitan Australia are synonymous with Local Government areas (the Australian equivalent to U.S. counties), further illustrate that population aging over the coming years is expected to vary considerably across the continent (fig. 2). This

has important policy and planning implications for rural and regional Australia. With metropolitan and coastal Australia leading in numerical aging, and coastal Australia attracting the highest proportional increase of its older population, there are also 35 SLAs in remote rural and regional Australia expected to more than double their current populations of older Australians, with an additional 48 SLAs showing an increase of more than 50 percent. While some of these very high growth rates—such as in the Northern Territory and central Western Australia—are based on small population numbers, they nevertheless highlight that some major demographic shifts are taking place in these communities. An additional 100 people 65 and older between now and 2017 in a remote community may not be considered a policy priority, but with these areas already experiencing great difficulties regarding the provision of specialized services for the elderly, they might experience disproportionate difficulties accommodating growing demands in the future.

### Implications of Aging for Australia

Population aging poses many important challenges for planners and policymakers at all levels of government, as well as for the private sector. Rural and regional Australia must brace for the impact on agriculture and natural resources management, the declining social capital and viability of remote rural communities, and the emergence of growing equity issues regarding the provision of services for the elderly.

Figure 2  
**Population projections, 1999-2017**



Source: Australian Bureau of Statistics, Statistical Local Area Boundaries (1996); Australian Bureau of Agricultural and Resource Economics (ABARE) Regional Classification (2001); and Country Australia; 2001 Garnaut et al., 2001.

## Impact on agriculture and natural resources management

Since the median age of Australia's farmers is currently 50 years (and in some broadacre farming areas over 55 years), there is a growing concern that there may be insufficient numbers of younger workers to replace the current generation. A recent study (Barr) suggests that by 2021, the number of farmers may have declined by 40 to 60 percent. With a large proportion of rural properties changing ownership and corporate agriculture gaining in prominence, it remains unclear what impact this change will have on Australian farming and the rural social landscape. However, given the modernization of farming and reduced attractiveness of the farm lifestyle to many young rural people (Cary et al.), both farm and rural populations, as well as agricultural production systems, are expected to vary considerably from what is found today.

From a simple production and economic angle, it could be argued that farmers in their late 50s are likely to respond differently to specific policies or programs (such as accepting an agricultural restructuring package or considering diversifying into new crops or rural-based industries) than colleagues 20 years younger. Policy and program success will vary with age, as farmers nearing the end of their working life will have different motivations than colleagues with 15 to 20 years left in the industry.

The aging of farmers and land managers also has important implications for resource management practices and outcomes. Older farmers are often categorized as less likely to adopt sustainable

practices and more traditional in their approaches to management. As such, the rapid aging of key natural resources managers does not augur well for much of the Australian environment, which faces unprecedented dryland and water salinity problems.

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***Smaller families, a much greater incidence of single-person households and childlessness, and booming divorce rates mean that when baby boomers turn 65, they will have fewer family resources to rely on.***

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Rural aging is critical when it comes to intergenerational transfers of land and agricultural production. This appears to be most problematic in the case of marginal farming operations, particularly wool- and sheep-dependent enterprises in the rangelands, where older graziers may hang on to their properties, unable to sell or transfer their properties to their sons and daughters. Increased life expectancies coupled with economic hardships may postpone succession planning to a time when heirs have already left the area. An immediate consequence of such scenarios could be a gradual amalgamation of already quite large properties into even more expansive grazing operations. This development could set

off a dynamic of its own, with growing areas of land occupied by declining populations having potentially more adverse impacts on land use, environmental management, and the continued viability of local communities.

## Impact on agriculture and natural resources management

With many young adults leaving rural and regional communities for education and employment elsewhere (Hugo), important local social capital is lost. Such abandoned communities struggle to redefine themselves in a rapidly changing environment. This situation is exacerbated by the departure of entire families. With populations small and widely dispersed, many rural and regional communities find it hard to offer basic schooling and sporting competitions, activities that youngsters and their families in most urban areas take for granted. The movement of entire families puts even greater pressure on those remaining behind, thus perpetuating a vicious circle of rural outmigration.

The continued viability of small rural and regional communities is also threatened when older residents retire to larger regional centers or the coast, which offer (or are perceived to offer) better basic services and a wider range of services and activities for older Australians. In these circumstances, equally valuable social capital is lost, particularly considering that older people donate proportionately more time to voluntary activities than younger generations (Australian Bureau of Statistics, 1997). This is particularly critical in the absence of, for example, organized child care, and where older relatives (grandparents,



uncles/aunts) perform the roles and tasks undertaken by specialized service providers in more populated areas.

### Access to services

Pronounced shifts in the age structure of rural and regional Australia, particularly in communities small in population but large in area, pose formidable challenges to service providers, public and private. As with rural outmigration, particular developments feed on a momentum of their own. For example, specialist services for older people, particularly in health and social services, often do not exist or gradually disappear because of a declining customer base or considerations of economies of scale, as reflected in the growing amalgamation of services. Older people leave not only, or primarily, due to declining services and social/community amenities, but this certainly enters into their decision to leave.

Australia's population over the coming 50 years will age primarily due to the graying of its baby boomers. It is important to acknowledge in this context that many sociodemographic developments associated with the baby boom generation, and those born in the 1970s, will have significant bearings on their future well-being. Smaller families, a much greater incidence of single-person households and childlessness, and booming divorce rates mean that when baby boomers turn 65, they will have fewer family resources to rely on. The good news is that many aging baby boomers will be better off in terms of superannuation, investments, savings, education, and professional versatility than

their parents. The downside is that demands for nursing home places will increase dramatically because of declining or non-existing family resources on hand, rapidly growing numbers, and increased longevity. If the U.S. experience serves as an

example, where "aged care facilities serve only 5 percent of the elderly at any one point in time, but consume the largest proportion of public dollars spent on the elderly" (Rogers), Australia can anticipate a similar challenge. <sup>RA</sup>

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# Small Rural Communities' Quest for Safe Drinking Water

Faqir Singh **Bagi**

**C**ongress passed the Safe Drinking Water Act (SDWA) in 1974 and amended it in 1986 and 1996. Safe drinking water is important for all 180,364 public water systems, but the rules and regulations of the SDWA and subsequent amendments apply only to community drinking water systems.

This article examines some of the challenges facing the approximately 50,000 community water systems, which constitute only 28 percent of all public systems but serve 92.5 percent of the population served by all public water systems (see “Types of Public Water Systems”). The smaller systems typical of rural communities must combat high per unit costs. These same diseconomies of scale hinder the ability of rural communities to comply with regulations to improve the quality of drinking water. To indicate the severity of these challenges, this article presents financial data provided by the Environmental Protection Agency (USEPA), broken down by size of water system.

*The overwhelming majority of drinking water systems are small and in small rural communities, serving primarily residential customers with few, if any, commercial or industrial customers. Because they are unable to achieve economies of scale available to larger systems serving urban populations, small water systems face high investment, operational, maintenance, and compliance costs, and charge relatively high water rates. Meanwhile, most of their customers have relatively low per capita income. This creates a dilemma for small water systems—how to provide water at an affordable rate while charging a price that will cover all costs.*

## **Small Water Systems Primarily in Small Rural Communities**

The problems associated with small systems are of greatest concern to rural areas because small rural communities are typically served by such systems. According to the 1990 census, two-thirds of all incorporated communities with populations below 10,000 were in rural areas, as were three-fourths below 2,500, and four-fifths under 1,000 (Bagi). More than 70 percent of all community water systems serve fewer than 1,000 residents and 93 percent serve communities with 10,000 or fewer residents (USEPA, 1997b). Highly rural counties are particularly prevalent in the Great Plains, the South, and Appalachia, so water systems there may be particularly stretched.

## **Characteristics of Community Drinking Water Systems**

The size of the population served by any water system determines important operating ratios. The capacity-to-daily-production ratio shows that water production

is well below full capacity at systems of every size, but it is more pronounced among smaller systems (table 1). The inverse relationship between the ratio of peak daily water production to average daily production shows that smaller systems experience higher fluctuations in water production during different times of the day. Since smaller systems more often lack storage facilities for their treated water, they have to meet any increases in demand by increasing the amount of treated water at that time. With larger systems, storage facilities can meet increased demand by releasing treated water, helping such systems regulate and manage their daily production of treated water more efficiently.

The length of distribution and transmission pipes per connection generally increases as the system size decreases. The median pipe length per connection for the smallest water systems, serving 25-100 persons, is more than double that for the largest systems (serving over 10,000 persons) which have

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Faqir Singh Bagi is an economist with the Rural Economy Branch of the Food and Rural Economics Division, Economic Research Service, USDA.

the lowest median pipe length per connection. The median number of persons served per mile of pipe directly increases with (publicly owned) water system size (table 1). Consequently, smaller systems have to spend more, per connection, on installing, maintaining, and repairing the transmission and distribution pipe.

The smallest water systems produce water almost exclusively for residential customers. Eighty-

seven percent of all community water system connections are residential connections, but only 47 percent of total water is delivered to residential customers. Annual median water sales per connection to residential and nonresidential customers are \$218 and \$1,177. Each nonresidential connection delivers 7.4 times more water and earns 5.4 times more revenue than a residential connection.

The share of revenue earned from residential customers declines rapidly, while that from nonresidential customers rises rapidly with the increasing size of the community water system.

For the smallest size systems, the share of revenue from nonresidential customers is only 5.5 percent, while it is nearly half (46.4 percent) for systems serving populations larger than 10,000. The share of water connections fitted

Table 1

### Profile of community drinking water systems

*Small community water systems dominate in numbers, serve more dispersed populations, and are less able to operate close to their maximum design*

Item	System size (Number of persons served per system)					
	25-100	101-500	501-1,000	1,001-3,300	3,301-10,000	Over 10,000
Percent of all community water systems <sup>1</sup>	27.4	30.7	13.0	13.9	8.2	6.8
Average water delivery connections per system <sup>1</sup>	28.4	114	310	732	2145	32295
Median number of persons served per system <sup>2</sup>	58	225	726	1,775	5,474	23,000
Daily water production per connection (gallons)	250	304	296	361	393	1,200
Mean daily water produced (million gallons) <sup>1</sup>	0.012	0.034	0.093	0.314	0.933	16.939
<i>Density or dispersal of population served:</i>						
Median miles of pipe per connection	0.030	0.026	0.026	0.033	0.023	0.014
Persons served per mile of existing pipe: <sup>3</sup>						
Publicly owned systems	100	117	172	122	161	347
Privately owned systems	151	160	101	102	97	236
<i>Percent</i>						
<i>Design capacity and daily production:</i>						
Design capacity to average daily production ratio <sup>1</sup>	6.3	6.3	5.0	4.5	2.7	2.4
Design capacity to peak daily production ratio <sup>1</sup>	2.5	2.4	2.2	2.0	1.6	1.4
Peak daily to average daily production ratio <sup>1</sup>	2.0	2.0	2.2	1.9	1.7	1.5
Percent of systems without treated water storage	59	36	19	16	9	3
<i>Source of raw water:</i>						
Ground water	95.7	85.2	76.6	68.2	57.6	47.4
Surface and purchased water	4.3	14.8	23.4	31.8	42.4	52.6
<i>Treatment and system operator profile:</i>						
Participating in source water protection <sup>1</sup>	27.5	31.2	38.5	35.0	40.1	50.3
Percent of systems without water treatment <sup>1</sup>	30.5	15.7	10.7	11.8	4.7	0.6
Average number of water treatment operators <sup>1</sup>	0.6	1.2	1.6	2.2	3.2	9.4

<sup>1</sup>Adapted by ERS from EPA, 1995 Community Water System Survey: Volume II: Detailed Survey Result Tables and Methodology Report, January 1997c.

<sup>2</sup>Adapted by ERS from EPA, National Characteristics of Drinking Water Systems Serving Population Under 10,000, July 1999.

<sup>3</sup>Adapted by ERS from EPA, 1995 Community Water System Survey, Volume I: Overview, January 1997b.

Table 2

**Violations of SDWA rules and regulations***Smaller community water systems account for a greater share of total violations*

Systems violations	System size (Population served per system)			
	<500	501- 3,300	3,301- 10,000	>10,000
	<i>Percent</i>			
Maximum contaminant limit (MCL) rule <sup>1</sup>	65.2	21.3	7.3	7.4
Treatment technology (TT) rule <sup>2</sup>	45.1	32.5	11.6	10.8
Monitoring and reporting (M/R) rule <sup>3</sup>	71.4	19.2	5.2	4.2
Other rule and regulation violations <sup>4</sup>	66.7	21.2	6.3	5.7

<sup>1</sup>Under the Safe Drinking Water Act of 1974 and subsequent amendments of 1986 and 1996, U.S. Environmental Protection Agency has set the maximum limit for about 90 contaminants. MCL is the highest level of a contaminant permitted in drinking water, consistent with a level safe for human consumption, the best available treatment technology, and at affordable cost.

<sup>2</sup>Specifies the best available technology for all systems and also affordable for small systems serving 3,300 or fewer persons.

<sup>3</sup>Schedule prescribed to the operators of water systems, for monitoring and reporting any violations to the designated local or regional office of the Environmental Protection Agency.

<sup>4</sup>All rules and regulations, other than the above three, prescribed and enforced by the Environmental Protection Agency.

Source: Adapted by ERS, from the EPA, *National Characteristics of Drinking Water Systems Serving Populations Under 10,000*, July 1999.

with water meters also increases rapidly with the increasing size of the community water system. Less than 37 percent of the smallest systems have metered connections, versus 97 percent of the large systems. Without metered connections, small systems must charge a flat rate per connection, which discourages an efficient use of water.

### Small Systems Account for Most SDWA Violations

The overriding objective of the Safe Drinking Water Act (SDWA) and subsequent amendments is to protect human health from waterborne diseases and contaminants.

Protecting source water and wellheads can reduce contamination, decrease the incidence of waterborne diseases, and reduce outlays for treatment facilities and technology. Community water systems that monitor and prevent con-

taminants can reduce water rates charged to customers. But data show that the smaller the system, the fewer participate in programs designed to protect source water or wellheads. Some systems pump out groundwater and deliver it to their customers without treating it. But as system size increases, more systems install filtration for removing iron and manganese, softening hard water, and filtering out organic matter.

In 1998 (latest data available), only a fraction of community water systems in each size group violated important SDWA rules or regulations. However, the share of total violations of any given SDWA rule was inversely related with the size of the community water system. Systems serving 25-500 persons, which account for only 27 percent of community water systems, incurred 65 percent of all violations

of the maximum contaminant limit (MCL), 45 percent of all treatment technology violations, and 71 percent of all of monitoring/reporting violations (table 2).

Such high incidence of SDWA rule violations may be caused, at least in part, by the lack of full-time, trained, and State-certified operators. In 1998, 62 percent of all community water systems did not hire any operators. The average number of water system operators is directly related to the size of the water system (table 1).

### Financial Health of Small Community Water Systems

The basic indicator of financial difficulty is either a deficit (for a public system) or a loss (for a private system). Recent (1995) EPA data showed that small systems had a higher incidence of deficits and losses than larger systems (table 3). Smaller systems undoubtedly have greater difficulty borrowing funds, because of their smaller cash flow relative to debt.

To determine the source of the financial problem, the *operating ratio* is calculated by dividing a water system's operating revenues by its operating and maintenance expenses. An operating ratio equal to 1.0 implies that a water system's operating revenues exactly cover its operating and maintenance expenses. A ratio less than 1.0 indicates that the system's revenues are insufficient to cover its expenses. Operating ratios indicate how common it is (one out of every three of the smallest size systems) for small systems to fail to pay for their own current operating costs.

In addition to operating costs, water systems must pay for the cost of borrowing—*debt service cost*. The debt service ratio is calculated by dividing net available revenue by

annual principal and interest (debt service) charges, where net available revenue is measured by subtracting operating and maintenance expenses from total revenues. The smaller the size of the water system, the larger the share of systems with a debt service ratio less than 1.0, and thus unable to service debt using available system revenues.

Another useful financial indicator is the *net takedown ratio*, calculated by dividing net available revenue (as defined above) by total gross revenue (which includes both operating and nonoperating revenues). The net takedown ratio is an indicator of a water system's profitability. Lenders prefer a ratio greater than 20 percent. The small-

er the water system (in 1995), the less likely it was to have a takedown ratio greater than 20 percent (table 3).

The ratio of total debt to total annual revenue measures a water system's ability to support additional debt: the lower the ratio, the greater the ability to service additional debt. This ratio, in general, is inversely related with system size (table 4)—the smaller the system, the lesser its ability to service additional debt.

The higher the total-assets-to-total-revenue ratio, the lower the return on assets. This ratio is quite high for all systems, but it is almost twice as high for the smallest size systems—more than 250 percent higher for systems serving 101-500 persons and, on average, 150 to 400 percent higher for all water systems than for investor-owned electric and gas utilities. This is inherent in water treatment technology, and is aggravated by the inadequate water storage capacity of small systems.

In sum, smaller systems are more likely than large systems to have deficit or loss, lower operating ratios, lower debt service ratios, and lower takedown ratios, but higher assets-to-revenue ratio. All of these financial measures reinforce each other and clearly show that the smaller the water system, the weaker its financial health is likely to be.

### Small Systems Charge Higher Water Rates and Increase Them More Frequently

The smallest systems had higher water rates than other systems and increased their rates more frequently. Their rate increases were also the highest of all system sizes; annualized rate increases from 1986 to 1995 were higher than all other system sizes (table 4).

Table 3

#### Financial ratios of drinking water systems

*Smaller community water systems have less favorable financial performance measures*

Financial performance measure	System size (population served per system)			
	<500	501-3,300	3,301-50,000	>50,000
<i>Percent of systems</i>				
<i>Operating ratio:</i>				
Public—				
<1.0	34.8	19.0	14.4	8.3
1.0 - 1.2	17.8	23.5	10.8	9.5
>1.2	47.4	57.4	74.8	82.2
Private—				
<1.0	32.3	17.2	6.0	6.4
2.0 - 1.2	19.6	18.7	16.8	5.1
>1.2	48.1	64.1	77.2	88.5
<i>Debt service coverage ratio:</i>				
Public—				
<1.0	52.1	41.5	25.7	15.7
1.0 - 1.5	19.3	16.5	21.0	21.2
>1.5	28.6	42.0	53.3	63.1
Private—				
<1.0	46.7	28.5	15.4	7.7
1.0 - 1.5	12.6	11.4	14.8	3.1
1.5	40.7	60.1	68.8	89.2
<i>Net takedown ratio:</i>				
Public—				
<0.0%	29.6	13.0	10.0	8.0
0.0 % - 20%	11.2	22.9	13.5	8.0
>20%	59.2	64.1	76.5	84.0
Private—				
<0.0%	19.7	10.2	5.6	7.7
1.0 % - 20%	9.6	18.6	14.0	3.0
>20%	70.7	71.2	80.4	89.3
<i>Systems with deficit or loss:</i>				
Public systems	42.5	34.3	25.3	16.4
Privately owned systems	39.6	35.0	19.2	6.1

Source: Adapted by ERS from the EPA, *1995 Community Water System Survey, Volume I: Overview*, January 1997b.



Table 4

**Financial profile of community drinking water systems**

*Smaller community water systems have higher per capita total expenses, charge higher water rates, and raise water rates more frequently and by higher margins*

Item	System size (number of persons served per system)					
	25-100	101-500	501-1,000	1,001-3,300	3,301-10,000	Over 10,000
Percent of revenue from residential customers <sup>1</sup>	94.5	81.9	73.5	62.6	58.3	53.6
Metered customer connections (percent) <sup>1</sup>	36.6	71.8	87.4	93.7	92.0	97.0
<i>Water rates and revenue:</i>						
Water rates (cents/1,000 gallons) <sup>1</sup>	321	306	312	255	252	190
Years since last residential rate increase <sup>1</sup>	2.5	3.8	2.9	3.8	3.3	2.5
Last rate increase (percent) <sup>1</sup>	37.2	22.2	24.7	28.4	16.3	14.5
Average of last two rate increases (percent) <sup>1</sup>	25.6	17.7	20.7	24.5	16.5	12.2
Annualized rate increase 1986-1995 (percent) <sup>2</sup>	14.8	5.8	8.6	7.4	4.9	6.0
<i>Dollars</i>						
Total expenses per capita <sup>1</sup>	205	100	112	107	99	96
Total assets to total revenue ratio	12.8	17.1	6.7	6.5	6.4	6.9
Total assets per connection <sup>1</sup>	1,081	3,013	1,702	1,733	1,803	2,297
Total liabilities per connection <sup>1</sup>	1,201	1,791	925	1,000	866	1,154
Total net assets per connection	-120	1,222	777	733	937	1,143
Per connection investment from 1987 to 1995 <sup>1</sup>	859	1,412	1,242	705	766	656
<i>Ratio</i>						
<i>Total debt to total revenue:<sup>1</sup></i>						
Public systems	3.34	2.38	1.82	2.47	2.02	1.42
Privately owned systems	2.23	1.76	1.94	1.89	1.85	1.39

<sup>1</sup>Adapted by ERS from EPA, *1995 Community Water System Survey: Volume II: Detailed Survey Result Tables and Methodology Report*, January 1997c.

<sup>2</sup>Adapted by ERS from EPA, *1995 Community Water System Survey, Volume I: Overview*, January 1997b.

Small systems have few, if any, wholesale, commercial, and industrial customers, for whom water expenses are business costs, which they can pass on to customers. As such, commercial and industrial customers may be better able to absorb water rate increases. For very small systems serving 25-1,000 persons, residential share is over three-quarters of total water revenue (table 4). For residential customers, water rate increases are quite unpopular because they must cut spending elsewhere to pay for increased water bills.

Revenue earned from residential customers has generally been increasing since 1975 for all system sizes. Systems serving fewer than 10,000 persons have been charging higher rates than those serving larger populations due to diseconomies of scale and the smaller customer base over which to spread investment costs and operating/maintenance costs.

### Water Infrastructure Needs Through 2015

Eighty-five percent of all community drinking water systems serve 3,300 or fewer persons. Capital investment needs of these

small systems, which account for only about 10 percent of the service population, amount to \$37.2 billion (27 percent of the estimated total investment capital needed for all community drinking water systems) over the 1995-2015 period. These capital needs, however, are underestimated because some small systems either did not identify every need or did not document it as specified by the Environmental Protection Agency (1997a). (These estimates include neither the infrastructure needs of non-community water systems nor those of some 56 million Americans living in

unincorporated areas not connected to public water systems.)

The investment need per household over 1995-2015 rapidly decreases with increasing system size: \$3,300 for systems serving 25-3,300 persons, \$1,200 for systems serving 3,301-50,000 persons, and \$970 for systems serving 50,000 or more persons (USEPA, 1997a). Other sources show that about 58 percent of all community water systems serve 500 or fewer persons, and their capital needs per household are likely to be much higher than \$3,300.

The largest investment need for community water systems is the installation and repair of transmission and distribution pipes. For systems serving 3,300 or fewer persons, this category accounts for \$23.8 billion of their total capital investment need of \$37.2 billion. Any breakdown in transmission lines can interrupt water treatment and raise water treatment costs. Deteriorating distribution pipes can contaminate water and interrupt water delivery to customers. Most of the need in this category is for replacing deteriorated or severely undersized pipes. The smallest systems also have a greater share of capital investment need for water storage capacity (USEPA, 1997a).

### 1996 Amendments Begin To Reduce Small System Problems

In 1994, 85 percent of community water systems served 3,300 or fewer persons. All of these are technically eligible for all special assistance provisions of the 1996 amendments to the SDWA. Another 7 percent—systems serving 3,301 to 10,000 persons—are also eligible for nearly all of the provisions.

These special provisions for the small systems can reduce: (1) the costs of monitoring and testing for contaminants not likely to be present in a water systems, (2) the cost of printing and mailing consumer confidence reports to all customers, and (3) the cost of operator training and certification. The provision that the EPA should identify feasible and affordable technology for small systems is limited to technologies necessary for meeting the requirements of the new rules.

Although these provisions can reduce some of the costs to small systems of new regulations, most costs would still be borne by the communities. For example, with regard to the hiring of water system operators (required by SDWA amendments), only expenses incurred in the training and State certification of hired operators would be reimbursed. Systems would still have to pay compensation to the newly hired operators. Then, after training and State certification, operators might leave for better paying jobs at larger systems.

In 1998, 62 percent of community water systems had no regular operators. This requirement will substantially increase the operating expenses of these systems.

According to the 1996 amendments to the SDWA, small water systems will not be required to test for contaminants that are known to be absent from their water system. This is a helpful rule in that it lowers costs, but it makes it difficult to discover any new pollutants entering the source water.

Another provision allows States to exempt a water system from mailing consumer confidence reports to every customer. This would reduce printing and mailing costs, but would customers be promptly informed about any harmful violations at such a system? Is it a benefit to the water system at the expense of its customers' health?

SDWA provisions reduce neither the capital investment need for 1995-2015 nor current maintenance/replacement costs. Amendments do not help pay off any

### Types of Public Drinking Water Systems

A public water system is either a community or a non-community water system. It has at least 15 service connections or regularly provides water for human consumption to at least 25 persons daily, for at least 60 days out of the year. A public water system is called a community water system (CWS) if it has at least 15 service connections used by year-round residents or if it regularly serves at least 25 year-round residents (USEPA, January 1997b). The remaining public water systems, which do not meet the above condition, are called non-community water system (NCWS).

There were 180,364 public water systems as of 1995. Out of them, 50,289 were community water systems, which served 243 million people; the remaining 130,075 were NCWSs, serving about 20 million people (USEPA, January 1997b). Three out of ten NCWSs are restaurants or hotels/motels, and two out of five are other sites that include highway rest stops, factories, office/industrial parks, and large shopping malls. The remainder were churches (9.8 percent), schools (7.8 percent), recreation places—summer camps, campgrounds, and RV parks—(10.8 percent), and medical facilities and nursing homes (1 percent) (USEPA, July 1999).

existing debt, except in the case of some “disadvantaged communities” plagued by very high unemployment and poverty, low personal income, and limited credit. Such disadvantaged communities are eligible for additional financial assistance for loan subsidies and forgiveness of principal, but the State must decide how much of such assistance to provide.

### Conclusions

Smaller community water systems face a number of challenges. They are less able to operate near capacity, experience greater fluctuations in daily water production, and more frequently fail to meet SDWA rules. They deliver much less water, install more miles of pipe, spend more on maintenance and replacement of water pipes, and are often unable to achieve economies of scale. Thus, smaller community water systems have higher total per capita expenses, charge higher water rates, raise water rates more frequently and by larger margins, and suffer weaker financial position.

Smaller water systems are located primarily in small rural communities and serve primarily residential customers. Small rural communities typically have a greater share of retired and older residents, higher rates of unemployment and underemployment, and lower per capita income (Reeder). Thus, the share of rural household income spent on the capital needs of drinking water systems (and all other environmental protection programs and utilities) are higher than for urban residents, even those living in small metro areas. <sup>RA</sup>

### For Further Reading . . .

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Richard J. Reeder, “Environmental Costs: Rough Weather Ahead for Small Communities?” *Choices*, Third Quarter, 1995, pp. 8-12.

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## Coming in February 2003 . . .



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back cover.**

# Rural Housing Prices Grew Rapidly in the 1990s

Darryl S. Wills

**A**fter the recession of the early 1990s, the U.S. economy experienced the longest economic expansion on record (NBER). During the 10-year expansion from March 1991 to March 2001, non-metro residents shared in the rising economic fortunes of the Nation, as is well documented. Employment growth, falling unemployment, and rising incomes were hallmarks of the extended period of growth (Kusmin; Dagata).

The improvement in general economic conditions during the 1990s stimulated housing markets in urban and rural areas. Rising income levels together with public policies helped make homeownership affordable for more households, and the rate of homeownership increased in both urban and rural areas (Mikesell). The quality of homes increased as the prevalence of inadequate housing fell and the rural-urban gap in housing quality shrank (Whitener).

The increased demand for owner-occupied housing and improved housing quality should lead to higher home prices. Little

*Rural housing prices rose faster than housing prices in metro areas during the 1990s. Between 1989 and 1999, the median price of owner-occupied homes increased by 59 percent in nonmetro areas compared with 39 percent in metro areas. Constant-quality measures find that a gap holds even after controlling for differences in housing quality. Net migration and household income growth drove the rapid growth of nonmetro housing prices. Still, nonmetro prices are significantly lower than prices in metro areas for comparable housing.*

attention, however, has focused on the course of housing prices in rural areas during the 1990s and how this compared with urban areas. Yet, rural housing prices are an important indicator for a variety of purposes.

This article examines housing prices in rural areas—how they compare to urban housing prices and how they changed during the 1990s. Using data for 1989 and 1999 from the American Housing Survey and the Office of Federal Housing Enterprise Oversight, we compare housing prices between urban and rural areas, demonstrate how various measures of housing prices corroborate the change in rural housing prices during the 1990s, and explore the impact of migration and income growth on rural housing prices.

## **Rural Housing Prices Are an Important Indicator**

Rural housing prices are an important indicator for market participants and observers of rural housing markets. Housing prices

are important to rural homeowners because their homes are a major component of household wealth and changes in housing values determine the return to this major investment. Potential rural homebuyers also are concerned with home prices because they affect the feasibility of home ownership and the desirability of a rural location over an urban one. For banks and other mortgage lenders, changes in house prices provide signals about the possibility of foreclosure and the riskiness of lender portfolios. Rural home prices can also indicate to homebuilders the quantity and characteristics of homes that builders construct for the market. Local governments in rural areas also are attuned to housing prices, especially since property tax payments are based on the assessed value of homes. Housing prices are a major component of the local cost of living and thus affect local efforts to attract and retain firms and workers. Finally, economists and other researchers need measures of rural

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Darryl S. Wills is a visiting scholar in the Rural Economy Branch of the Food and Rural Economics Division, Economic Research Service, USDA.





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housing prices in order to study the operation of rural housing markets and the impact of government policies on the performance of those markets.

Given the many reasons for tracking changes in rural housing prices, it is important to have accurate measures of price change appropriate for these uses (Pollakowski). However, data for measuring rural housing prices are not as readily available as for housing in urban locations. Furthermore, measuring housing prices accurately is not a simple matter. We cannot talk about the price of housing as we do about the price of a bushel of corn or wheat. Individual housing units vary a great deal with respect to structural features and neighborhood. Simply put, there is no standard measure of a unit of housing.

Attempts to measure housing prices accurately must address this fundamental heterogeneity of housing units. Three common measures of housing price change are median prices, hedonic price indexes, and repeat-sales price indexes. Each measure has its advantages and disadvantages with respect to coverage, data availability, and ease of

preparation and use (Pollakowski). What do these alternate measures tell us about rural housing prices during the 1990s?

### Median Housing Values Rose Faster in Rural Areas

Median prices are the most commonly cited home price measure. The median is the price of the house in the middle of the price distribution and is estimated using a census or survey sample. The 1999 American Housing Survey (AHS) allows us to compare median housing prices by metro status (see

box, "American Housing Survey"). Median housing values in nonmetro areas (\$79,000 in 1999) are substantially lower than in metro areas (\$121,000) (table 1). Within both metro and nonmetro areas, locations may be classified as either urban or rural based on population density, providing a richer and more complicated picture of housing markets. Within metro areas, for example, the median home was valued at about \$101,000 in central cities, \$136,000 in the urban suburbs, and \$115,000 in the rural suburbs (table 1). Outside metro areas, median home values were nearly identical at about \$79,000 in urban and rural locations.

The number of homes in rural areas represented by these median prices is large and growing rapidly. According to the 1999 AHS, 25 million owner-occupied housing units, comprising 36 percent of the Nation's total, were in rural locations (table 2). The designations rural and nonmetro are often used interchangeably. Because metro areas consist of entire counties, however, they often contain rural sections.

Table 1

#### Median value of owner-occupied units, 1989 and 1999

*Median home values grew fastest in rural and nonmetro areas during the 1990s*

Metro status	1989	1999	Growth
			Percent
	<i>Dollars</i>		
Central city	74,667	101,396	35.8
Urban suburbs	101,086	135,973	34.5
Rural suburbs	78,633	114,924	46.2
Total metro	87,123	120,933	38.8
Nonmetro urban	49,515	79,356	60.3
Nonmetro rural	49,772	78,581	57.9
Total nonmetro	49,670	78,841	58.7
U.S. total	75,359	108,300	43.7

Source: Calculated by ERS from the 1989 and 1999 American Housing Survey.



Table 2

**Owner-occupied units by metro status, 1989 and 1999**

*The number of owner-occupied housing units grew rapidly in rural suburbs and nonmetro rural areas*

Metro status	1989	1999	Growth
	<i>Millions</i>		<i>Percent</i>
Central city	14.8	15.5	5.1
Urban suburbs	20.8	23.8	14.1
Rural suburbs	9.5	12.3	29.2
Total metro	45.1	51.5	14.3
Nonmetro urban	4.8	5.0	3.0
Nonmetro rural	10.0	12.3	22.7
Total nonmetro	14.8	17.3	16.3
U.S. total	59.9	68.8	14.8
Urban	40.4	44.2	9.5
Rural	19.5	24.6	25.9

Source: 1989 and 1999 American Housing Survey.

Rural homes were evenly divided between rural suburbs inside and remote rural locations outside of metro areas. Although nearly three-quarters of nonmetro homes were in rural locations (12.3 million), using nonmetro units to represent rural housing units would lead to a substantial undercount of all rural owner-occupied housing. Similarly, using the change in nonmetro housing units would lead to a significant understatement of the growth in rural housing units. During the 1990s, the number of owner-occupied housing units in rural locations grew rapidly, both inside and outside of metro areas. In the rural suburbs (rural locations within metro areas), the number of homes increased by 29 percent; in nonmetro rural locations, the number grew by 23 percent. In contrast, owner-occupied units increased by only 5 percent in central cities, 14 percent in the urban suburbs, and 3 percent in nonmetro urban locations (table 2).

As the number of owner-occupied housing units in rural areas swelled during the 1990s, so did their median value. While metro values as a whole increased by 39 percent, the median home value in the rural suburbs of metro areas increased by 46 percent (table 1). In nonmetro areas, the value of the median home increased by 59 percent—60 percent in urban locations and 58 percent in rural locations. In contrast, median home prices in

metro areas rose by only 36 percent in central cities and by 35 percent in the urban suburbs.

### Constant-Quality Housing Prices Also Rose Faster in Nonmetro Areas

Because the housing stock is heterogeneous, changes in median values may reflect differences in housing characteristics as well as in price. Thus, researchers have developed constant-quality indexes that measure changes in the price of a hypothetical standard housing unit. Using data from the American Housing Survey, we calculate one such measure, a hedonic price index (see “Data, Definitions, and Methods” for more detail). The hedonic price index is a constant-quality index that allows us to compare the price of a hypothetical standard housing unit in different locations for a given year as well as for one location over time. For example, within a census region, we can see how the value of a standard housing unit differs by metro status. In the Midwest, the average 1999 estimated price of a standard housing unit was \$88,500 in central cities (table 3). In the urban suburbs, the price of the same housing unit was \$113,000 while in

Table 3

**Price of a standard owner-occupied housing unit, 1999**

*The constant-quality price of housing is lower in rural and nonmetro areas*

Metro status	Northeast	Midwest	South	West	U.S.
<i>Dollars</i>					
Central city	126,679	88,479	88,394	167,026	114,545
Urban suburbs	138,415	112,615	101,072	168,582	128,389
Metro rural	115,016	94,922	88,082	146,121	102,365
Nonmetro urban	82,044	81,353	77,412	110,008	85,920
Nonmetro rural	89,001	82,252	77,862	113,629	84,742
Total	123,262	95,111	88,678	155,232	109,666

Source: Calculated by ERS using the 1999 American Housing Survey.

## American Housing Survey

The AHS is conducted biennially by the Bureau of the Census for the U.S. Department of Housing and Urban Development. The survey is designed to provide detailed information on the structural, neighborhood, and financial characteristics of the Nation's housing units. Data are weighted to reflect the U.S. population. The analysis employs the responses of about 30,000 owner-occupants in both 1989 and 1999. The AHS employs two, overlapping geographic schemes: metro-nonmetro and urban-rural. A location is classified as metro if it is within the boundaries of a metropolitan statistical area (MSA) as defined by the Office of Management and Budget. An MSA is an area with at least 100,000 population that consists of a central city of at least 50,000, the county containing that city, and surrounding counties that are economically integrated with the central county. In New England, MSAs are defined in terms of cities and towns rather than counties. Locations outside the boundaries of an MSA are classified as nonmetro.

Definitions of MSAs include entire counties if those counties meet certain thresholds of economic integration with the central county. Yet within many such counties, there are large areas that are sparsely settled. On the other hand, in nonmetro counties there are often small urban centers of higher population density than the surrounding countryside. In order to deal with the varied character of locations within metro and nonmetro counties, the AHS also uses the designations urban and rural. Places are defined as urban if they are part of a densely settled urbanized area or if they are outside urbanized areas but have population exceeding 2,500. Places not defined as urban are rural.

The result of the crosscutting metro-nonmetro and urban-rural designations is that locations may be designated as metro urban (which includes central cities and urban suburbs), metro rural (rural suburbs), nonmetro urban, or nonmetro rural. The designation of metro and urban status in the AHS since 1985 is based on 1983 definitions, which allows for continuity in how locations are designated over time. A disadvantage of this practice is that as rural areas urbanize and nonmetro areas become classified as metro, the survey overstates the current number of rural and nonmetro housing units.

Estimates of constant-quality housing prices also allow us to compare housing prices over time. In all four census regions, constant-quality housing prices grew fastest in the rural suburbs of metro areas and in nonmetro urban and rural locations. Nationwide, constant-quality housing prices increased by 30 percent in the rural suburbs, and by more than 41 percent across nonmetro urban and rural locations (table 4). In contrast, prices increased by 21 percent in central cities and by only 15 percent in the urban suburbs.

Price changes varied significantly by region. In the Northeast, constant-quality housing prices actually fell in central city, urban suburb, and nonmetro urban locations. In contrast, constant-quality housing prices grew strongly regardless of metro status in the Midwest, at rates ranging from 40 percent in the urban suburbs to 60 percent in nonmetro rural locations. Prices also rose rapidly in the rural suburbs and in the nonmetro urban and rural locations of the South and West.

the rural suburbs the price was \$95,000. Outside of metro areas, the standard housing unit was worth \$81,000 in urban locations and \$82,000 in rural locations. This basic pattern is repeated in the other census regions: the price of an identical housing unit rises as we move from the central city to the urban suburbs then declines as we move to the rural suburbs. Outside of metro areas, the constant-quality price of housing is much lower, but comparable in urban and rural locations.

Table 4

### Change in the price of a standard owner-occupied housing unit, 1989-99

*Constant-quality housing prices rose faster in rural and nonmetro areas*

Metro status	Northeast	Midwest	South	West	U.S.
	<i>Percent</i>				
Central city	-5.4	43.3	22.2	26.0	21.3
Urban suburbs	-4.7	40.3	23.1	17.9	15.4
Rural suburbs	9.7	49.2	34.2	44.8	29.8
Total metro	-2.7	43.0	25.3	23.5	19.3
Nonmetro urban	-2.5	47.0	37.7	62.0	41.9
Nonmetro rural	10.6	60.0	42.7	52.6	43.1
Total nonmetro	7.6	55.2	41.2	56.7	42.6
Total	-2.0	45.8	29.2	26.4	22.9

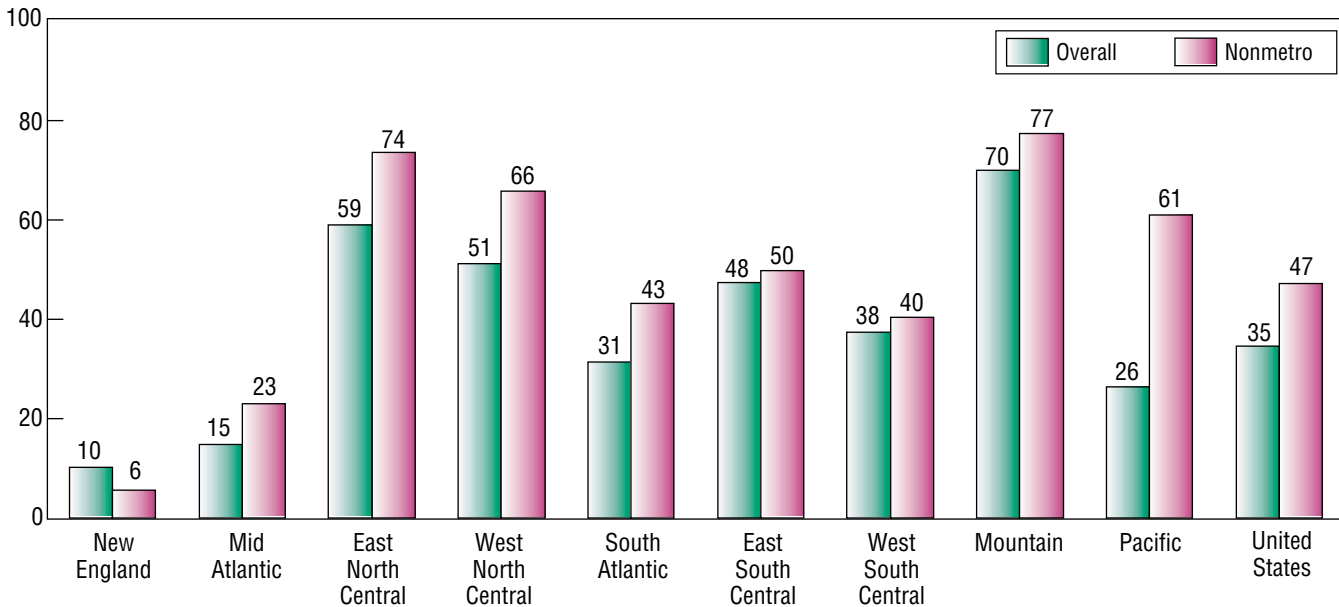
Source: Calculated by ERS using the 1989 and 1999 American Housing Survey.

Figure 1

**OFHEO repeat-sales price index growth: 1989-99**

*Nonmetro housing prices rose faster than overall housing prices in eight of the nine census divisions*

Percent



Source: Calculated by ERS using data from the OFHEO House Price Index.

**House Price Index from OFHEO Tracks Individual Houses**

An alternative measure of constant-quality housing prices is the repeat-sales index. This technique controls for quality by measuring changes in the sale price of individual homes over time. The most well known example of a repeat-sales price index is the index computed by the Office of Federal Housing Enterprise Oversight (OFHEO). OFHEO is the Federal agency charged with overseeing the operations of the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation, better known as Fannie Mae and Freddie Mac. These federally chartered government-sponsored enterprises buy mortgages from banks and other lenders and package them into securities, which are then sold to investors.

This process increases the funds available to mortgage lenders, enhancing their ability to provide mortgages and lowering the cost to homebuyers. In overseeing Fannie Mae and Freddie Mac, OFHEO accumulates a large database of mortgage transactions. By matching properties in the database that appear in repeat transactions, OFHEO can track changes in the prices of individual properties over time (see “Data, Definitions, and Methods”).

According to OFHEO’s rural house price index, constant-quality prices in nonmetro areas nationwide increased by 47 percent between 1989 and 1999 (fig. 1). By census division, nonmetro price growth varied widely, with prices growing most slowly in New England (6 percent) and most rapidly in the Mountain States (77 per-

cent) and the East North Central (74 percent). In every division but New England, the OFHEO nonmetro repeat-sales index grew faster than the overall index.

**Comparing Measures of Rural Housing Price Change**

Given the differences in data sources, coverage, and methods of calculation, how do the three methods of measuring housing price change compare in describing rural home price changes during the 1990s? Because data are not available below the regional level, our comparison of nonmetro housing price changes is by census region (fig. 2). Nationwide, nonmetro housing prices rose by 59 percent from 1989 to 1999 as measured by the AHS median, but by only 43 percent as measured by the AHS-based hedonic index. Furthermore,

## **Data, Definitions, and Methods**

This study uses data from the American Housing Survey (AHS), the Repeat-Sales Price Index from the Office of Federal Housing Enterprise Oversight for 1989 and 1999, and the Consumer Price Index from the Bureau of Labor Statistics.

### **Census Divisions**

The Census divisions consist of the following States:

New England (CT, ME, MA, NH, RI, VT)  
Mid Atlantic (NJ, NY, PA)  
East North Central (IL, IN, MI, OH, WI)  
West North Central (MN, IA, MO, ND, SD, NE, KS)  
South Atlantic (DE, DC, FL, GA, MD, NC, SC, VA, WV)  
East South Central (AL, KY, MS, TN)  
West South Central (AR, LA, OK, TX)  
Mountain (AZ, CO, ID, MT, NM, NV, UT, WY)  
Pacific (AK, CA, HI, OR, WA)

### **Census Regions**

The Census regions consist of the following Census divisions:

Northeast (New England, Mid Atlantic)  
Midwest (East North Central, West North Central)  
South (South Atlantic, East South Central, West South Central)  
West (Mountain, Pacific)

### **Methods**

#### ***Median Prices***

The median is the price of the house in the middle of the price distribution, such that half of all houses have a lower price and half have a higher price. The American Housing Survey (AHS) is the only source that provides median prices of homes in rural areas on a nationwide basis between census years. The AHS actually provides owners' estimates of housing values rather than actual sales prices. Because only a fraction of existing homes at a given point in time are recent sales, a representation of the entire stock of owner-occupied units must rely on estimates of value instead of transaction prices. Although evidence suggests that owners tend to overestimate the value of their homes by a small amount, owner estimates of value appear to be sufficiently accurate for measuring changes in housing prices (Kiel and Zabel). However, median values from the AHS have several shortcomings. The AHS sample size makes it impossible to provide rural housing price data for geographic areas below the census region and the estimates are only available on a biennial basis. More important, median prices fail to adequately control for the heterogeneity of housing units. For example, the median-priced house in the central city might be a townhouse while the median-priced house in a non-metro rural area might be a single-family detached house. Comparing median prices in this situation mixes true differences in housing prices with differences in housing quality.

### ***Hedonic Price Index***

The hedonic price model is a commonly used method of deriving constant-quality price indexes for goods that are heterogeneous, such as housing. A housing unit can be thought of a bundle of various characteristics, each of which has an implicit price. The overall price or value of the housing unit is the weighted average of these implicit prices where the weights are the amount or presence of each characteristic that the housing unit possesses. Using microdata from the AHS we estimate these implicit prices by regressing the overall house value on a set of structural, neighborhood, and geographic characteristics. The structural characteristics include variables such as the structure type (attached, detached, or mobile home), the number of rooms, the type of heating equipment, and similar variables. Neighborhood variables include the presence of noise, litter, and crime. Geographic variables include the census region, climate zone, metro-nonmetro and urban-rural designations, and dummy variables for specific metro areas when identified in the survey. Separate equations are estimated for 1989 and 1999.

We then define a standard housing bundle that has the average value of each of the structural housing attributes in the sample. For each sample unit's location, the price of the standard housing bundle is calculated using the estimated characteristics' prices from the 1989 regression equation. Then the standard bundle is priced in the same location using the estimated prices from the 1999 equation. The difference between these calculated values provides a measure of the constant-quality change in the price of housing in that location between 1989 and 1999.

The hedonic price index constructed using the AHS has a number of advantages over the median house price series from the same survey. First, it controls for differences in housing quality. Second, because it models overall housing value as a function of individual unit characteristics, it uncovers the implicit values that homeowners place on these characteristics. Furthermore, the definition of the standard housing unit is flexible, which can illuminate different patterns of regional and historical price variation for different types of housing. However, the hedonic technique also has a number of disadvantages. Because in this case it uses the AHS, the hedonic measure suffers from the same lack of geographic detail below the census region as the AHS median prices and is subject to the same biennial frequency.

### ***Repeat-Sales Index***

The OFHEO rural house price index is published at the census division level by quarter. Indexes are available for the 50 States and the District of Columbia, the nine census divisions, individual metro areas, and the nonmetro portions of census divisions. In order to compare it to measures derived from the AHS, the quarterly indexes are first converted into annual averages for 1989 and 1999. Then the division-level annual indexes are aggregated into their appropriate census regions using the number of nonmetro owner-occupied housing units by census division from the 1990 Census of Housing and Population as weights. The OFHEO repeat-sales index provides more regional data for nonmetro housing prices than the AHS. In addition, the OFHEO rural house price index is calculated quarterly. However, the repeat-sales index is designed to measure constant-quality changes in housing prices but not constant-quality price levels. Thus, a repeat-sales index cannot be used to compare the costs of housing units in urban and rural locations at a given point in time. Furthermore, the repeat-sales index by OFHEO, in particular, provides data only on a metro-nonmetro basis without the additional distinction between urban and rural made in the AHS. Finally, the OFEHO index includes only single-family detached properties financed by conforming conventional mortgages. Thus attached, multi-unit, and mobile homes are excluded as are homes financed with government-insured loans or properties that exceed the loan limits on mortgages purchased by Fannie Mae and Freddie Mac (Office of Federal Housing Enterprise Oversight).

### ***Real Household Income***

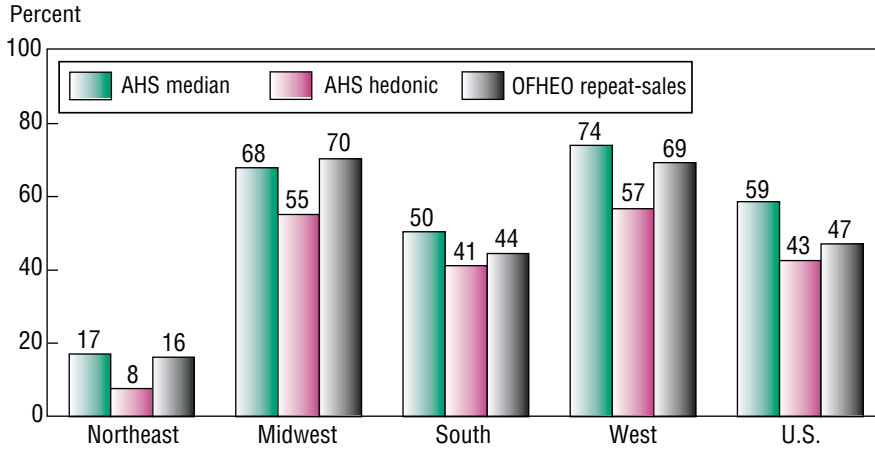
Measures of average household income by metro status are calculated from the AHS microdata for 1989 and 1999. Values for 1989 are adjusted to 1999 dollars using the Consumer Price Index.



Figure 2

**Measures of nonmetro housing price change, 1989-99**

*Different measures paint a similar picture of nonmetro housing price change during the 1990s*



Source: Calculated by ERS using data from the American Housing Survey and the OFHEO House Price Index.

in each region, median prices rose more rapidly during the 1990s than did the hedonic price index (for example, 50 percent vs. 41 percent in the South). This result is not surprising, since the median tracks the house price in the middle of the distribution while the hedonic index measures changes in the price of a constant-quality house. If the average quality levels of housing are rising over time, then median prices capture changes in constant-quality prices plus changes in housing quality levels.

The OFHEO repeat-sales index provides another measure of constant-quality housing prices, and it too rises less rapidly than median prices. Nationwide, it estimates that nonmetro home prices rose by 47 percent during the 1990s (fig. 2). In each region, repeat-sales prices rose faster than constant-quality hedonic prices.

Given the differences in data sources and methodology, one would not expect the two measures of constant-quality housing price

change to agree precisely. However, the fact that the repeat-sales index rises faster in every region suggests that it may systematically estimate higher price growth than the hedonic index. This could occur because the repeat-sales index may not con-

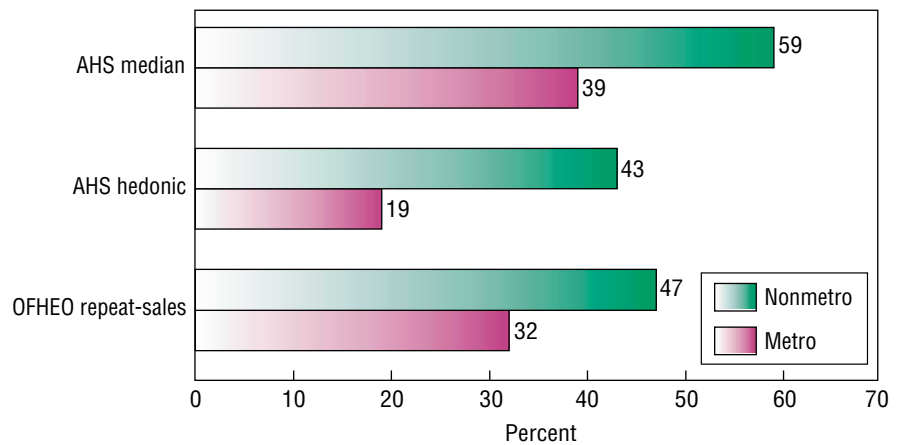
trol for differences in quality to the same degree as the hedonic index. For example, a repeat-sales index does not adjust for the fact that an owner may have made value-enhancing improvements (Pollakowski). In such a case, the quality level of the housing unit has risen and therefore the increase in its sales price would overstate the price increase that would have occurred if the house were unimproved. Also, prices of the type of house covered by the OFHEO repeat-sales index may have risen faster than the prices of the broader range of housing types covered by the AHS.

Despite the differences among the measures of housing price change, they concur on many points. Nonmetro home prices rose fastest in the West, followed by the Midwest and the South, and rose most slowly in the Northeast. Whether measured by median prices, the AHS-based hedonic price index, or the OFHEO repeat-sales index, nonmetro housing prices

Figure 3

**Metro and nonmetro home price change, 1989-99**

*By any measure, nonmetro housing prices rose faster than metro housing prices*

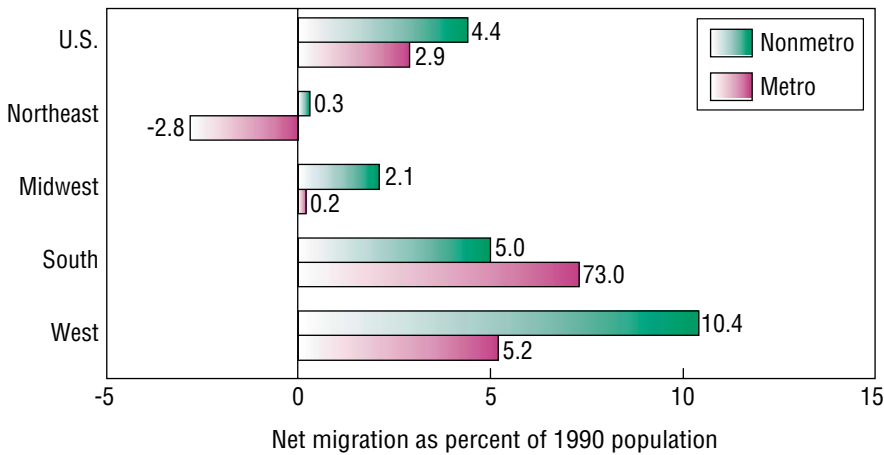


Source: Calculated by ERS using data from the American Housing Survey and the OFHEO House Price Index.

Figure 4

**Net migration rates, 1990-99**

*Nonmetro net migration rates exceeded metro net migration rates in the Northeast, Midwest, and West*



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

rose more rapidly than housing prices in metro areas during the 1990s (fig. 3).

**Migration and Income Growth Drove Up Rural Housing Prices**

The rapid increase in rural housing prices during the 1990s resulted from a major increase in the demand for rural housing. The number of owner-occupied households in rural areas grew much more rapidly than in metro areas during the 1990s (table 2). Driving the increase in housing demand were strong net migration to nonmetro areas and rapid income growth. Between 1990 and 1999, net migration to nonmetro areas totaled 2.2 million while net migration to metro areas totaled 5.8 million (Beale). However, the rate of net migration was much greater for nonmetro areas, increasing their population by 4.4 percent over the period compared with 2.9 percent in metro areas (fig. 4).

Partly as a consequence of higher net migration, the constant-quality price of housing in nonmetro areas increased by 42.6 percent during the period 1989-99, versus 19.3 percent in metro areas (table 4). The link between migration and housing prices is also evident at the regional level. Nonmetro

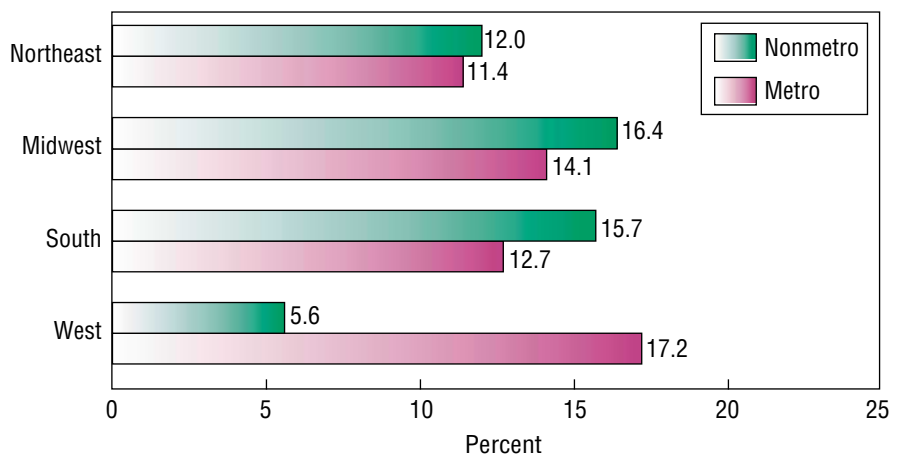
net migration rates exceeded metro area migration rates in the Northeast, Midwest, and West (fig. 4). The hedonic index indicates that nonmetro constant-quality housing prices in those regions rose faster than metro housing prices (table 4). Furthermore, among these three regions, housing price growth accelerated with the rate of net migration. Thus, the nonmetro Northeast, with the smallest rate of net migration (0.3 percent), saw housing prices grow just 7.6 percent, while the nonmetro West (with rapid net migration of 10.4 percent) saw the fastest increase in housing prices (56.7 percent).

Household income is another important determinant of housing demand. Increases in real household income tend to increase the demand for owner-occupied housing. According to income data from the American Housing Survey (adjusted to constant 1999 dollars; see “Data, Definitions, and Methods”), average real household income of homeowners in nonmetro areas grew faster between

Figure 5

**Homeowner real income growth, 1989-99**

*Real household income of homeowners grew faster in the nonmetro Northeast, Midwest, and South during the 1990s*



Source: Calculated by ERS using data from the American Housing Survey and the Consumer Price Index.

1989 and 1999 than in metro areas in the Northeast, Midwest, and South (fig. 5). And in these three regions, the increase in constant-quality nonmetro housing prices tracked the growth in real homeowner income. For example, both real household income of homeowners (up 16.4 percent) and constant-quality housing prices (up 55.2 percent) grew fastest in the nonmetro Midwest (table 4, fig. 5).

### Conclusion

Evidence from the American Housing Survey and the OFHEO Rural House Price Index indicates that housing prices in rural and nonmetro areas increased rapidly during the 1990s. Rapidly rising housing prices are a boon to current homeowners, who receive an increase in wealth through the rising return on their investment. For renters in rural areas striving to become homeowners, however, rising home prices make homeownership harder to obtain. Although the growth rate of rural housing prices began to level off in the late 1990s (Office of Federal Housing Enterprise Oversight), the higher level of home prices poses a particular challenge for renters with lower incomes. Policies designed to help residents of rural areas become homeowners must take into account regional differences in the price of housing of a given quality as well as changes in those prices over time. <sup>RA</sup>

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# Socioeconomic Impacts of the Conservation Reserve Program in North Dakota

F. Larry **Leistriz**  
Nancy M. **Hodur**  
Dean A. **Bangsund**

**L**ong-term retirement of cropland has been used for nearly 50 years in the United States as a policy tool to both control agricultural supply and promote conservation. Land retirement programs have been particularly important to the Great Plains States, where much of the farmland is semi-arid, subject to wind erosion, and in some areas economically marginal for crop production. Since 1985, cropland retirement has been an integral part of U.S. farm policy through the Conservation Reserve Program (CRP). Implemented as part of the 1985 Food Security Act (Public Law 99-198), the program was designed to protect highly erodible lands, as well as to augment supply control efforts. In exchange for a rental payment, landowners agree to retire from crop production land that meets

*Long-term land retirement is an important agricultural policy tool, particularly in the Great Plains States. This article examines the effects of the Conservation Reserve Program (CRP) for participating landowners and for communities in areas with high CRP participation. Landowners generally felt that the CRP had produced substantial environmental benefits while providing income stability for participants. Community leaders also recognized the environmental and recreational benefits of the CRP, but were concerned about negative impacts on agricultural supply and service sector firms.*

eligibility criteria. The CRP was renewed in the 1990 Farm Bill, but the eligibility criteria were revised to place more emphasis on water quality, wildlife habitat, and other environmental concerns. The 1996 Farm Bill (Federal Agricultural Improvement and Reform Act of 1996) again revised the program's enrollment criteria, placing even more emphasis on environmental sensitivity. By fall 2000, the program had enrolled about 31.4 million acres nationwide. North Dakota ranked third among States, with 3.2 million contracted acres, or 11 percent of the State's total cropland. Although a fuller understanding of the socioeconomic impacts of the CRP nationwide must await studies in other regions, the North Dakota experience provides important clues as to the program's effects.

While long-term land retirement programs are popular with participating landowners and offer a combination of supply control

and environmental benefits, their economic impacts in areas with high participation have long been a concern. Reductions in cropland acreage reduce demand for agricultural inputs such as fuel, fertilizer, chemicals, farm labor, and machinery. Fewer inputs, coupled with fewer crops produced and marketed, can hurt farm supply and service sector businesses, as well as force farm operators to seek off-farm income opportunities, speeding farm consolidation and rural-to-urban migration. Even so, land retirement has a number of benefits. The CRP has enhanced wildlife habitat in the Northern Great Plains region, which has rejuvenated wildlife populations, expanded hunting opportunities, and boosted recreation-related expenditures. In addition, the CRP has helped to stabilize the revenue stream of participating landowners during a period characterized by both adverse weather and volatile market conditions.

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F. Larry Leistriz is a professor, Nancy M. Hodur is a research associate, and Dean A. Bangsund is a research scientist in the Department of Agribusiness and Applied Economics, North Dakota State University, Fargo. The article is based on work supported by the North Dakota Agricultural Experiment Station and the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, as part of the Regional Center for Rural Development in North Dakota.

Table 1

### Changes in population, employment, and farm numbers by study county, North Dakota

*Population and number of farms have declined*

County	Population		Employment	Number of farms	CRP acreage	
	2000	1990-2000	1990-2000	1987-1997	1996-2000	Share of cropland
	<i>Number</i>	<i>Percent change</i>			<i>Percent</i>	
Adams	2,593	-18.3	-1.0	-10.5	-12.6	21.5
Bowman	3,242	-9.8	1.1	-8.2	-29.5	20.8
Hettinger	2,715	-12.2	-17.9	-17.0	10.6	18.7
Burke	2,242	-25.3	-7.0	-8.8	-8.7	11.2
Divide	2,283	-21.3	3.6	-10.7	-25.1	15.1
Eddy	2,757	-6.6	-7.0	-11.7	26.9	27.1
Griggs	2,754	-16.6	23.6	-19.6	105.2	21.4
Nelson	3,715	-15.8	-15.3	-16.5	108.1	24.2
Kidder	2,753	-17.4	-17.9	-7.9	3.2	26.4
Logan	2,308	-18.9	-10.0	-24.5	4.6	22.5
Stutsman	21,908	-1.5	23.8	-12.0	8.6	18.1
McHenry	5,987	-8.3	-8.4	-6.1	-3.1	17.2
Pierce	4,675	-7.5	2.3	-15.1	-2.8	17.5
Sheridan	1,710	-20.4	-16.3	-19.1	27.9	18.0
Ransom	5,890	-0.5	22.0	-2.6	66.3	19.6
Sargent	4,366	-4.0	42.4	-17.0	45.5	10.2

Source: Compiled by the authors from Census Bureau, Farm Service Agency, and North Dakota Job Service data.

### Study Counties Suffered Population Decline

Interviews were conducted with a cross-section of agricultural and community leaders in each study county in order to gain an understanding of recent socioeconomic changes in the area (population trends, economic shifts), the effects of the CRP on various aspects of the community, and the leaders' overall evaluation of those effects (see "Procedures"). Leaders in all study counties identified the long-term trends of farm consolidation (fewer, larger farms), declining populations, and depressed com-

modity markets as major issues affecting their communities. Farm consolidation was prominent in each study area, and viewed as a catalyst for outmigration and depopulation, further pressing local businesses already subject to growing competition from larger communities.

Each of the study counties lost population during the 1990s, with losses ranging from 0.5 to 25.3 percent (table 1). Nine counties recorded declines in total employment from 1990 to 2000, ranging from 1 to 17.9 percent, while seven registered gains of 1 to 42 percent.

The number of farms also dropped in all counties between 1987 and 1997, with reductions ranging from 2.6 to 24.5 percent (table 1).

One positive trend noted by some leaders was increased recreational activity, especially hunting, in their areas. In recent years, wildlife populations have rebounded, attracting hunters from other parts of the State and out of State. Recreational spending was perceived to be very positive for local businesses, such as motels, cafes, gas stations, and grocery stores. In some areas, guide services, outfitters, and bed and breakfast operations had recently grown.

### CRP Effects Viewed as Mixed

Most leaders identified both positive and negative effects of the CRP. The following are the positive aspects most frequently mentioned:

- *Income stability for participating landowners.* The guaranteed income from CRP rental payments in some cases improved farm viability. Some farm operators were able to stay in business while others used the payments to help transition to another career or to retire.
- *Environmental benefits.* Thriving wildlife populations have opened up recreational opportunities, particularly hunting. The influx of visitors has benefited select local businesses, particularly motels, restaurants, gas stations, and hunting related services. On the other hand, some leaders reported heightened concerns over hunting access, especially for local residents.

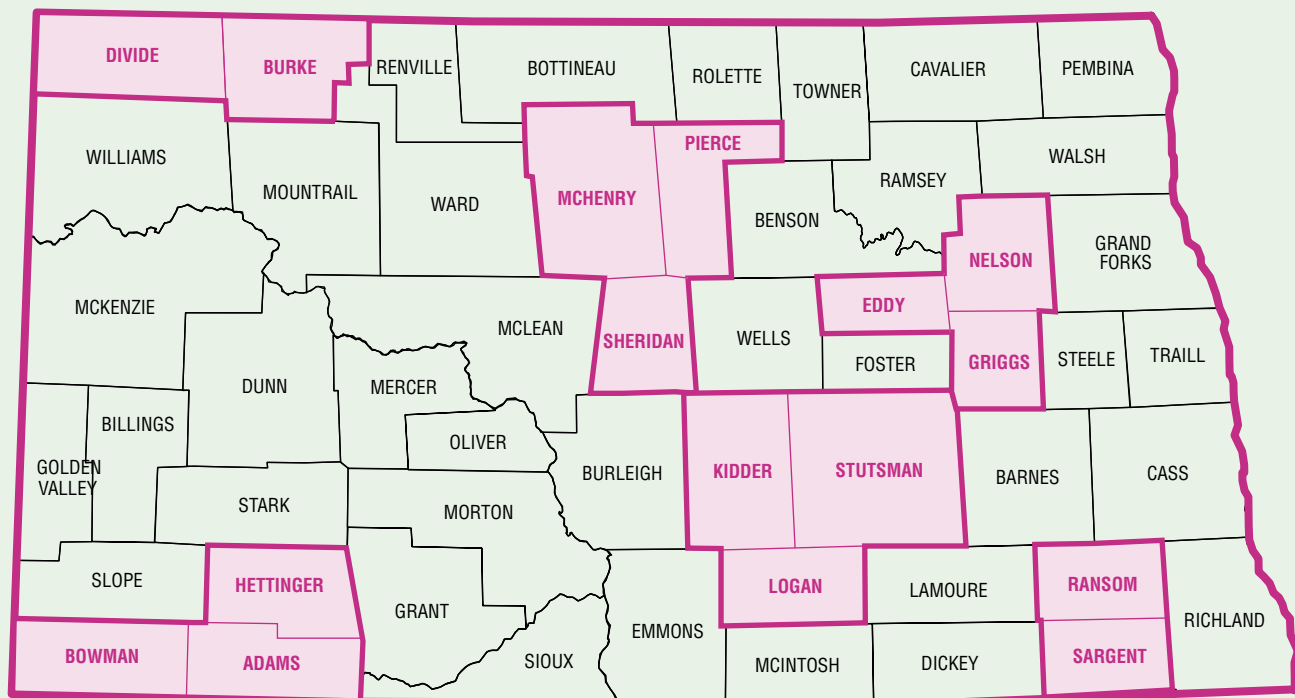


## Procedures

Sixteen North Dakota counties with relatively high CRP participation were selected and grouped into six study areas. Each study area and the counties that comprise the study area were selected to represent the diverse agriculture and natural resource characteristics in North Dakota. Data collection was divided into three distinct components: (1) personal interviews with community leaders, (2) a CRP contract holder survey, and (3) a community leader survey. Individuals to be interviewed were identified based on their roles as elected or appointed governmental officials (e.g., mayor, county commissioner, economic development director), their roles in business (elevator and implement managers, bankers, small business operators), the community (county weed board, newspaper editors, clergy), and educational organizations (county extension agents, school administrators). Other community leaders were identified using a snowball technique, whereby individuals interviewed were asked to suggest others who would be knowledgeable about the issues discussed. The individuals interviewed thus included both formal and informal leaders. In addition to the personal interviews, the leaders were also asked to fill out a written questionnaire. Of the 92 individuals who participated in the leadership interviews, 57 (62 percent) completed and returned their questionnaire.

A list of current CRP contract holders in the 16 study counties was obtained from the Farm Service Agency (FSA), USDA. The FSA administers the program and awards contracts to landowners based on a landowner's ability to meet program eligibility criteria. An Environmental Benefits Index prioritizes contract offers and determines program eligibility (P.L. 104-127). A survey was mailed to a random sample of 3,150 North Dakota CRP contract holders (program participants) in February 2001. One followup mailing resulted in 1,018 usable surveys for a response rate of 32.3 percent. The questionnaire addressed a number of topics, including (1) CRP land characteristics; (2) effects of the CRP on area agriculture, agribusinesses, and on the respondent's farming operation (if applicable); (3) CRP effects on recreation; (4) respondent's attitudes toward CRP; and (5) respondent characteristics. Because most of the contract holders surveyed were also landowners, the terms contract holder and landowner are used interchangeably.

## Study Areas



- *Emergency haying and/or grazing.* The CRP contains provisions to allow contract holders to hay and/or graze land enrolled in the program under certain emergency conditions. While leaders agreed that emergency haying and/or grazing was very helpful to livestock producers, possibly enabling some to retain their herds during periods of drought or flooding, some felt that opening CRP land put landowners without CRP land at an unfair disadvantage. Others felt that opening CRP land for haying and/or grazing depresses prices, hurting individuals that sell hay.

Negative aspects most often identified by leaders included:

- *Contraction of the farm supply and service sector.* Reduced demand for farm inputs (seed, fuel, fertilizer, chemicals, crop insurance) and a smaller crop to market were reported to lead to contractions for farm supply businesses and elevators in the area. These effects were sometimes exacerbated by the concentration of CRP acreage in certain localities (i.e., areas with high percentages of highly erodible land).
- *Decline of rural populations.* Participants were reported to use the program to transition to retirement or to another career, leaving the area and taking their CRP income with them. Further, many leaders felt that the program has made it more difficult for young people to assemble enough land for an economic farming unit, or for

an established operator to find land to augment an existing unit, further exacerbating depopulation trends.

- *Noxious weed problems.* Absentee CRP landowners were often criticized for neglecting weed problems until complaints were registered with the county weed board. In some cases, the board seemed unable to deal with the problem.

Across the six study areas, about 34 percent of the local leaders interviewed indicated that the overall effect of the CRP was positive, while 43 percent believed the effect was negative. The remainder (23 percent) felt that the effects were mixed and did not wish to rate them as either positive or negative. In four of the six study areas, the positive evaluations outnumbered the negative ones. The areas where negative evaluations predominated were the two eastern county groups (i.e., Eddy, Griggs, and Nelson Counties; Ransom and Sargent Counties). These counties all experienced substantial increases in CRP acreage over 1996-2000 (table 1), which may have contributed to the leaders' concerns.

The leaders who felt the CRP had an overall negative effect generally cited the program's impact on the farm supply and service sector and its role in farm consolidation and the declining general population. These leaders often stated that the program was enrolling too much productive farmland and bidding up rental rates. They felt that the change in enrollment criteria to include environmental benefits (e.g., water quality), rather than considering only highly erodible land for enrollment, was a mistake.

Leaders who viewed the CRP positively believe that farm consolidation and depopulation would have occurred regardless of the CRP and that the program was simply part of the transition. These leaders often stated that the CRP helped many farmers, giving them a return on their less productive land, some of which should never have been tilled in the first place. For others, it offered a graceful transition to retirement or another occupation. They believe the CRP has helped make farming in their area more sustainable, both economically and environmentally. Further, leaders who view the CRP positively almost universally cited the program's environmental and wildlife/recreational benefits, viewing hunting and other recreation as a basis for local economic growth.

### **Most Contract Holders Were Farmers or Retired**

Contract holders' average age was 61, with 76 percent over age 50. This supports the observations of community leaders that the CRP has been popular with older landowners. About 61 percent of landowners lived in the county where their CRP tract was located, 16 percent lived in an adjacent county, 10 percent lived elsewhere in North Dakota, and only 13 percent lived outside the State. Wherever they were residing, the respondents typically had been long-term residents. On average, the contract holders reported living in their county of residence for 43 years. Only 11 percent had lived in their county of residence less than 10 years. These findings appear to refute the local leaders' observation that many CRP participants left the area after enrolling their land.

Half of the respondents were currently farming, of which 83 percent had been farming 20 years or more. When asked if they had ever considered farming to be their primary occupation, 66 percent responded affirmatively. When those who no longer farm were asked if participation in the CRP influenced their decision to quit, only 23 percent indicated that it had.

### Most CRP Tracts Were Relatively Small

Most contract holders enrolled relatively small tracts of land into the CRP. The average acreage enrolled was 283 acres, 42 percent of contract holders had enrolled 150 acres or less, and less than one-third reported enrolling more than 300 acres. The average farm size for those who still farm was 1,778 acres. Thus, the tracts enrolled in the CRP were typically small and only a fraction of the land needed for an economically viable farming unit in the area. Respondents indicated that the yields on land enrolled in the CRP were generally lower than yields on their other land—5.3 percent lower on average. On the other hand, input costs (e.g., fertilizer, chemicals, fuel) were generally reported to be the same on CRP land as on other land.

Leading reasons for enrolling land in the CRP were to reduce erosion/increase soil fertility (24 percent), reduce income risk (23 percent), benefit economically (22 percent), and provide a transition to retirement (11 percent). The responses were similar across the six study areas, although soil fertility/erosion issues were more important in the two western areas while

respondents in the two eastern areas most often regarded the program as economically attractive.

### CRP Reduced Landowners' Risk and Stabilized Income

Among the respondents who were currently farming, 72 percent indicated that CRP participation had reduced their income risk or stabilized their income, while 40 percent credited the program with helping their transition to retirement. About 35 percent indicated that CRP helped them transfer their farm property to the next generation, but only 22 percent felt that enrollment increased the value of their land or made it easier to sell. The responses to these questions varied among the study areas, but the role of the CRP in reducing income risk was widely recognized—at least 65 percent of contract holders in each study area indicated that this was important to them.

The respondents who currently farmed also were asked whether various aspects of the CRP were important in keeping their farm operation viable. Removing marginal land from production was seen as important by 59 percent of respondents (table 2), while almost 60 percent indicated the program provides a more stable income than crop production. The role of CRP income in helping pay long-term debt was viewed as very or somewhat important by 37 percent of contract holders, while about one-third recognized the importance of CRP income to offset losses from other land, to pay family living expenses, or to pay short-term debt (table 2). However, only 4 percent felt that the opportunity to supplement income with hunting revenue was important. When contract holders were asked if the CRP had been instrumental in keeping them on the farm, 31.5 percent of respondents somewhat or strongly

Table 2  
**Importance of various aspects of the Conservation Reserve Program in keeping farms viable, North Dakota, 2001**  
*Retirement of marginal land and income stability are rated highly by CRP participants*

CRP benefit	Average score <sup>1</sup>	Percent very or somewhat important
Provide more stable income than crop production	2.4	59.5
Remove marginal land from production	2.4	59.4
Help pay long-term debt	3.1	36.9
Offset income loss from other cropland	3.2	33.6
Provide income for family living expenses	3.2	31.7
Help pay short-term debt	3.2	31.6
Supplement income with hunting revenue	4.7	4.3

<sup>1</sup>Based on a scale of 1 for very important to 5 for not important. Lower numbers indicate a greater importance than higher numbers.  
 Source: North Dakota Conservation Reserve Program Survey.

Table 3

### Effects of the Conservation Reserve Program on agricultural service businesses, North Dakota, 2001

*Agricultural supply/service businesses were seen as negatively affected*

Type of business	Average score <sup>1</sup>	Percent slight or substantial negative effect <sup>2</sup>
Elevators and grain handling facilities	3.7	65.5
General farm supply	3.7	65.4
Machinery and equipment dealers	3.6	64.5
Custom operators	3.4	52.5
Agricultural lenders	3.1	39.3

<sup>1</sup>Based on a score of 1 to 5, where 1 is substantial positive and 5 is substantial negative.

<sup>2</sup>Respondents who answered "do not know" were excluded from the calculation of these percentages.

Source: North Dakota Conservation Reserve Program Survey.

agreed, supporting leaders' observation that the CRP helped some farm and ranch operators stay in business.

#### CRP Had Little Effect on Rental Rates

Contract holders were asked to evaluate the effect of the CRP on cash rental rates and on the availability of land to rent in their area. Responses varied by area, but most respondents believed that local cash rents were either higher than or equal to their CRP payment. About 28 percent of respondents indicated that cash rents for similar land in their county were higher than their CRP payment (by an average of \$9.11 per acre), whereas 18 percent felt that cash rents were lower than their CRP payment (by an average of \$8.82 per acre). The remaining respondents (54 percent) believed that cash rents and CRP payments were nearly the same. When asked if the CRP had increased or decreased cash rents in their area, 66 percent of respondents felt the CRP had no effect on rental rates, while 32 percent said cash rents had increased as a result of the CRP and 2 percent felt they

had decreased. When responses were averaged, cash rental rates were estimated to have increased by 4.4 percent as a result of the CRP. Responses were similar when contract holders were asked if the CRP had affected the amount of cropland for rent in their area. More than 59 percent of respondents indicated that the CRP had reduced the amount of cropland for rent, while 39 percent reported there had been no effect and 2 percent felt the amount of land available for rent had increased.

Contract holders generally bemoaned the effects of the CRP on agricultural supply and service sector businesses (table 3). Almost two-thirds of respondents felt the CRP had negative effects on (1) elevators and grain handling facilities, (2) general farm supply businesses, and (3) machinery and equipment dealers. Just over half felt that custom operators (i.e., persons who perform selected agricultural activities, such as spraying or harvesting, for hire) had been hurt, but only 39 percent perceived negative effects for agricultural lenders. In general, the contract holders appeared to agree with the agricultural and

community leaders in their view that the CRP had a generally negative effect on the agricultural supply and service sector.

#### CRP Boosts Wildlife and Recreation

Most survey respondents believe that the CRP has led to population growth of major wildlife species in North Dakota. Almost 82 percent of respondents believed that the CRP had contributed to increased upland game populations (e.g., pheasant, grouse), and more than half believed that the increase was 25 percent or more (table 4). More than 90 percent of respondents believed that the CRP contributed to growing big game populations (e.g., deer), and about 63 percent suspected substantial growth. About three-fourths of respondents indicated that the CRP had contributed to growing waterfowl populations as well.

Survey respondents indicated that hunting and trapping in their county had also increased as a result of CRP (table 4). Overall, 67 percent of respondents indicated that hunting and trapping had increased, and 32 percent felt the increase had been substantial. More than 46 percent of landowners indicated that wildlife viewing/bird watching had increased; a similar percentage believed there was no effect. About 69 percent of respondents believed that convenience stores had benefited from CRP-enhanced recreation, while more than 60 percent rated the effects on restaurants, motels, and sporting goods stores as positive (table 4).

As wildlife populations have grown, access to them has become an issue. Respondents in each area believed that the amount of land posted as "no hunting" in their area

had increased since the CRP began. Overall, 61 percent of respondents indicated that posting had increased, while 36 percent indicated it had remained the same. When asked if their posting practices on their own land had changed since enrolling in the CRP, 89 percent of all respondents indicated that it had not changed.

When asked to describe hunter access to their own CRP land, respondents most often indicated that their CRP land was not posted (43 percent), whereas 40 percent post their CRP land but grant permission to hunters. About 11 percent indicated that only their family and friends are allowed to hunt,

and 4 percent allow no hunting. Although fee hunting and leasing of hunting rights have become an issue in some parts of North Dakota, only about 1.6 percent of respondents indicated that they lease their CRP land (either to an outfitter/guide or to individuals) or charge a fee for hunting.

### Landowners See CRP Benefits

More than 91 percent of the contract holders agreed that the CRP has been effective in reducing soil erosion, and more than 82 percent agreed with the statement that the CRP benefits farmers and sportsmen (table 5). Nearly three-fourths of respondents also agreed

that the CRP is a cost-effective program to idle cropland, that the CRP has helped reduce flooding, and that the CRP had improved water quality. Opinions were more mixed regarding the CRP's effect on crop prices, the appropriateness of enrollment criteria, and the right of CRP contract holders to charge for hunting access. While a majority of respondents agreed that crop prices would be lower without the CRP, that enrollment criteria should focus on farmland characteristics (i.e., erodability) rather than wildlife habitat values, and that CRP landowners should have the right to charge for access, 20-24 percent of respondents disagreed with each of these statements (table 5).

### Leaders Less Positive Than Landowners About CRP Effects

Most of the agricultural and community leaders interviewed also completed a survey similar to the one mailed to contract holders. The two groups' opinions were in sync on many of the issues, but there were some differences. Both groups agreed that the CRP has helped stop soil erosion, benefits farmers and sportsmen, has helped reduce flooding, and has improved water quality (table 5). Local leaders more strongly felt that enrollment criteria should focus on farmland characteristics, not wildlife habitat values, and that CRP is facilitating the spread of fee and lease hunting.

However, leaders were less inclined to think that the CRP had a positive effect on local and State economies. Similarly, fewer leaders agreed that crop prices would be lower without CRP and that CRP is a cost-effective program to idle cropland. The greatest difference in opinions between the two groups concerned whether CRP contract

Table 4  
**Effect of the Conservation Reserve Program on wildlife populations, recreational activities, and local businesses, North Dakota, 2001**

*Enhanced wildlife and recreation are CRP benefits*

Items	Effect of CRP			
	Substantial <sup>1</sup>	Slight <sup>2</sup>	No effect	Negative
	<i>Percentage of respondents<sup>3</sup></i>			
Type of wildlife:				
Upland (pheasants, grouse)	55.5 <sup>1</sup>	31.1 <sup>2</sup>	12.5	1.2
Big game (deer)	62.9 <sup>1</sup>	27.9 <sup>2</sup>	8.4	0.8
Waterfowl	46.6 <sup>1</sup>	28.3 <sup>2</sup>	22.9	2.1
Type of recreation:				
Hunting and trapping	31.8	35.6	28.5	4.1
Bird watching/wildlife viewing	13.8	32.4	48.6	5.3
Camping	2.9	12.0	83.1	2.0
Horseback riding	3.3	13.0	80.7	3.1
Type of business:				
Restaurants and motels	22.1	40.4	31.4	6.3
Sporting goods/supplies	19.4	44.1	34.2	2.4
Taxidermy/game processing	13.7	41.3	43.1	1.9
Convenience store	23.8	45.4	26.9	3.9
Guide services & outfitters	15.4	28.8	53.6	2.3

<sup>1</sup>For wildlife, change in population of 25 percent or more.

<sup>2</sup>For wildlife, change in population of 1 to 25 percent.

<sup>3</sup>Respondents who answered "do not know" were excluded from the calculation of these percentages.

Source: North Dakota Conservation Reserve Program Survey.



Table 5

**Contract holders' and leaders' opinions regarding the Conservation Reserve Program, North Dakota, 2001***North Dakota landowners were more positive than community leaders about CRP effects*

	Strongly or somewhat agree		Strongly or somewhat disagree		Average score <sup>1</sup>	
	Contract holders	Local leaders	Contract holders	Local leaders	Contract holders	Local leaders
	<i>Percent of respondents</i>					
CRP has helped stop soil erosion on marginal cropland (n)	91.2	93.0	3.8	5.3	4.5 (958)	4.5 (57)
CRP benefits farmers and sportsmen (n)	82.1	82.4	8.5	14.1	4.1(952)	3.9 (57)
CRP is a cost-effective program to idle cropland (n)	76.6	57.2	9.9	35.7	4.0 (932)	3.3 (56)
CRP has helped reduce flooding by reducing water runoff (n)	70.7	61.4	9.7	15.8	3.9 (949)	3.7 (57)
CRP has improved water quality in adjacent wetlands, lakes, and streams (n)	69.4	63.1	6.5	7.1	3.9 (951)	3.8 (57)
Crop prices would be lower without CRP (n)	58.9	36.8	19.7	40.4	3.6 (938)	3.0(57)
Enrollment criteria should focus on farmland characteristics, not wildlife habitat values (n)	54.0	64.9	23.8	19.3	3.5 (933)	3.7 (57)
CRP contract holders should have the right to use that land for fee and lease hunting (n)	54.9	36.8	23.7	52.6	3.5 (951)	2.7 (57)
More land should be enrolled in the CRP (n)	47.6	19.3	21.9	57.9	3.4 (949)	2.3 (55)
CRP is facilitating the spread of fee and lease hunting (n)	42.6	63.2	15.2	10.5	3.4 (932)	3.6 (57)
CRP has had a positive effect on the state economy (n)	42.7	28.1	27.1	45.6	3.2 (939)	2.7 (57)
CRP has had a positive effect on local economies (n)	36.1	26.8	34.0	55.4	3.0 (944)	2.5 (56)

<sup>1</sup>Based on a score of 1 to 5, where 1 is strongly disagree and 5 is strongly agree.

holders should have the right to charge for recreational access and whether more land should be enrolled in the CRP. Contract holders registered a moderate level of agreement with both of these statements, whereas the leaders disagreed.

### Leaders Suggest Program Changes

When community leaders were asked for suggestions to improve the program, their responses varied. One group felt that CRP criteria should focus on highly erodible land and that recent changes in enrollment criteria have allowed too much productive farmland to

be enrolled. However, others believe that the environmental benefits gained by the focus on environmental/wildlife values outweigh the loss of agricultural land. Another group argued for periodic haying and/or grazing of CRP land (e.g., every third or fourth year) to both improve the land's wildlife habitat and provide a feed base for

livestock producers. That issue was addressed in the 2002 Farm Bill (Farm Security and Rural Investment Act of 2002) with legislative language that allows for haying and grazing in a manner consistent with program objectives. The language also specifies that the rental payment be reduced by an amount commensurate with the economic value of the activity.

Finally, a number of leaders in each study area suggested ways to increase access to CRP land for recreational activities. These leaders felt that increased recreational activities (primarily hunting) offer their communities a means to offset some of the economic losses associated with land retirement. To address the recreational access issue, the North Dakota Game and Fish Department has recently initiated two companion programs. Both programs offer incentives to CRP landowners for allowing public access while one offers incentives for developing food plots (for game) and establishing woody cover.

## Conclusion

Interviews with agricultural and community leaders in six rural areas of North Dakota revealed that the CRP was perceived to have both positive and negative effects. Agricultural and community leaders considered the program greatly beneficial to landowners, enabling them to obtain a guaranteed income that was often equal to or higher than prevailing cash rents from some of their least productive land. In addition, the environmental benefits of the program were widely recognized by the leaders. These included reduced soil erosion, improved water quality, and enhanced wildlife populations (especially deer and upland birds). Many leaders cited the positive eco-

nomics benefits from increased recreational activities associated with enhanced wildlife populations. Negative feedback focused on the adverse impacts of cropland retirement on the farm supply and service sector, particularly in areas where CRP acreage was highly concentrated, and the role of the CRP in farm consolidation and rural depopulation.

While landowners' motivations for enrolling land in the CRP were primarily economic, the program appears to have successfully targeted more erodible, less productive farmland. Contract holders reported that the land enrolled in the CRP had lower yields than their other land or other land in the area, by an average of 5 percent. Environmental benefits such as reduced soil and water erosion were also widely recognized by contract holders. Participants also cited the program's positive effect on wildlife populations and subsequent benefits to relevant sectors of the local economy. Most contract holders believe that the CRP benefits both farmers and sportsmen.

The effects of the CRP on producers' decisions to continue farming or leave the industry appear mixed. Of the contract holders who had once farmed but were no longer doing so, 23 percent indicated that the CRP influenced their decision to quit farming. On the

other hand, of the respondents who were currently farming, 31 percent indicated that the CRP had been instrumental in keeping them on the farm. The CRP appeared to be particularly attractive to older farmers transitioning to retirement. However, the fact that a large majority of contract holders live either in the county where their CRP tract was located or in an adjacent county does raise some questions about the validity of the local leaders' concern that many CRP participants left the area after enrolling their land in the program. Like local leaders, contract holders generally lamented the effect of the CRP on the agricultural supply and service sector.

Previous analyses of the local economic effects of the CRP have sometimes suggested mitigation measures—such as tax credits or low-interest loans for affected businesses and training programs or relocation assistance for displaced workers—to address the economic effects from reductions in agricultural production and input use. A more realistic scenario for many of the North Dakota communities in this study may be to develop businesses that can capitalize on the enhanced recreational opportunities and subsequent economic development opportunities provided by the CRP. <sup>RA</sup>

### For Further Reading . . .

Sandra S. Batie, Mary B. Schulz, and David B. Schweikhardt, *A Continuation of Environmental Conservation Policy: The Conservation Reserve Program*, Staff Paper 97-16, East Lansing: Michigan State University, Department of Agricultural Economics, 1997.

Timothy L. Mortensen, F. Larry Leistritz, Jay A. Leitch, Randal C. Coon, and Brenda L. Ekstrom, "Socioeconomic Impact of the Conservation Reserve Program in North Dakota," *Society and Natural Resources*, Vol. 3, 1990, pp. 53-61.

# Hired Farmworkers' Earnings Increased in 2001 But Still Trail Most Occupations

Jack L. Runyan

After an increase between 1999 and 2000, the number of people employed as hired farmworkers decreased from 878,000 in 2000 to 745,000 in 2001, according to data from the 2001 Current Population Survey (CPS). Whether this decrease marks a new trend in farm labor numbers or represents a temporary adjustment to changes in the farm labor market remains to be seen. Although the number of hired farmworkers decreased, their median weekly earnings (in 2001 dollars) increased from \$288 to \$300. Still, hired farmworkers earn about the lowest earnings and family incomes.

The agricultural workforce consists of farm operators, unpaid workers, and hired farmworkers (persons who do farm work for cash wages or salary). According to data from the National Agricultural Statistics Service, hired farmworkers have increased their share of the agricultural work force since the 1940s and accounted, on average, for over one-third of agricultural employment in the 1990s (table 1). Hired farmworkers provide labor when demand exceeds the labor capabilities of operators and their families, which usually occurs

during critical production periods. Hired farmworkers include persons who reported their primary employment during the survey week as farm managers (10 percent), supervisors of farmworkers (5 percent), nursery workers (3 percent), and farmworkers engaged in planting, cultivating, and harvesting crops or tending to livestock (82 percent).

## After a 1-Year Decrease, Real Earnings of Hired Farmworkers Increased in 2001

Although the number of hired farmworkers declined, the median weekly earnings (in 2001 dollars) of those employed increased 5 per-

cent for those working full-time and 4 percent for all farmworkers (table 2). In comparison, the weekly earnings for full-time wage and salary workers increased only 0.7 percent. Despite hired farmworkers, both full-time and total, gaining on the relative earnings all workers, they are still one of the lowest paid of the 14 major occupational groups (fig. 1).

The increase in weekly earnings of hired farmworkers did not translate into increased family income, nor did their distribution by family income group change significantly between 2000 and 2001 (table 3). Although the weekly earnings for all wage and salary

Table 1

### Average U.S. farm employment by decade, 1910-1999

*Hired workers are becoming a larger part of total farm employment*

Years	Total workers employed		Family workers employed		Hired workers employed	
	1,000	Percent	1,000	Percent	1,000	Percent
1910-19	13,523	100	10,123	75	3,400	25
1920-29	13,047	100	9,670	74	3,377	26
1930-39	12,343	100	9,420	76	2,923	24
1940-49	10,382	100	8,010	77	2,372	23
1950-59	8,481	100	6,407	76	2,074	24
1960-69	5,837	100	4,290	73	1,547	27
1970-79	4,260	100	3,023	71	1,246	29
1980-89	na		na		na	
1990-99	3,103	100	1,974 <sup>1</sup>	64	1,129 <sup>2</sup>	36

na = data not available for all years in the decade because of budget considerations.

<sup>1</sup>Beginning in 1980, the work force was divided into self-employed workers (operators or partners), unpaid workers (anyone other than a self-employed worker), and hired workers. For purposes of this analysis, self-employed and unpaid were grouped under family workers.

<sup>2</sup>Beginning in 1980, agricultural service workers were reported separately from hired farmworkers, but their numbers were included in data shown for 1990-99 to make the estimates comparable to that of earlier decades.

Sources: Calculated by ERS using data from *Farm Employment and Wage Rates 1910-1990* and *Farm Labor*, National Agricultural Statistics Service, U.S. Department of Agriculture.

workers did not change between 2000 and 2001, the percentage of workers with family incomes of \$50,000 or more increased significantly (table 3).

Family incomes varied widely among hired farmworkers by race/ethnicity. White (non-Hispanic) workers and those who were U.S. citizens were more likely to have higher family incomes: 28 percent of White workers had family incomes of \$50,000 or more, over four times that of other farmworkers (table 4). Although the Hispanic and noncitizen groups may overlap (about 95 percent of noncitizens are Hispanic), over half of both groups had family incomes amounting to less than \$20,000 in 2001.

Few differences exist in family incomes by region and establishment (crop production, livestock production, and agricultural services). However, hired farmworkers in the Midwest were more likely to have incomes of \$50,000 or more (32 percent) than those in the West (12 percent). (In the Midwest, 93 percent of the hired farm workforce were White and citizens, and nearly two-thirds had completed 12 or more years of education. In the West, over 72 percent of the hired farm workforce were Hispanic, and over 58 percent were noncitizens.) Family incomes of crop and livestock workers did not differ from all hired farmworkers, but over 45 percent of agricultural service workers (who perform farmwork for others under contract) had family incomes under \$10,000. About 55 percent of the agricultural service workers were Hispanic and employed in the West, and about 47 percent were not U.S. citizens.

Table 2

**Median weekly earnings (in 2000 dollars) of hired farmworkers and all wage and salary workers, 1990-2001**

*Average weekly earnings of hired farmworkers as a percent of weekly earnings for all wage and salary workers has not changed significantly*

Year	Annual averages					
	Full-time workers			All workers		
	All wage and salary workers	Hired farm workers	Hired farmworkers/all wage and salary	All wage and salary workers	Hired farmworkers	Hired farmworkers/all wage and salary
	\$ per week	Percent		\$ per week	Percent	
1990-2001	546	316	56	488	271	57
1990	549	325	59	488	271	56
1991	557	312	56	481	273	57
1992	557	303	54	480	252	53
1993	558	306	55	490	270	55
1994	552	299	54	478	281	59
1995	558	302	54	465	279	60
1996	543	313	58	468	282	60
1997	552	306	55	478	276	58
1998	565	313	55	494	282	57
1999	585	340	58	509	298	59
2000	592	328	55	514	288	56
2001	596	345	58	510	300	59

Note: None were significantly different from 1990-2001 percent at the 95-percent confidence level.

Source: Calculated by ERS using data from the Current Population Survey earnings microdata file.

**Other Demographic Characteristics of Hired Farmworkers Remain Constant**

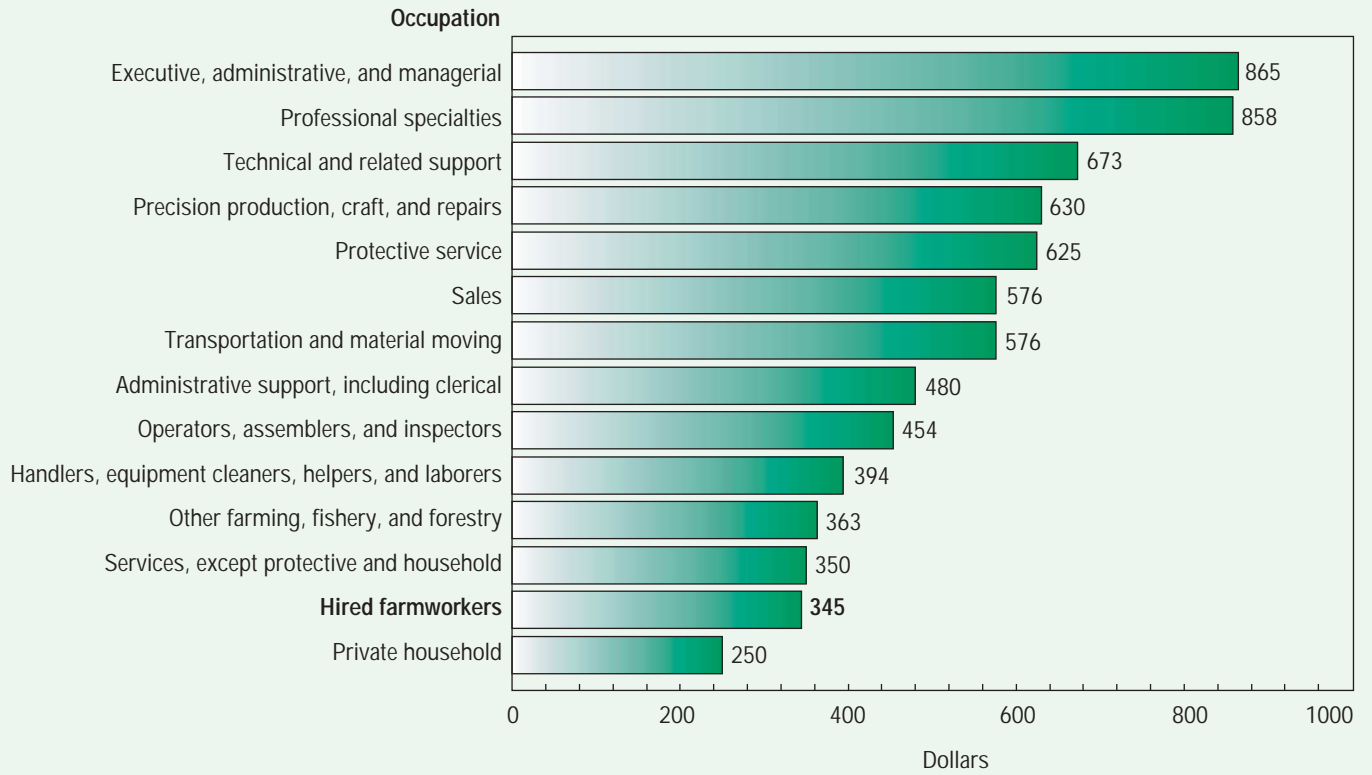
In 2001, over 80 percent of hired farmworkers were male, nearly 46 percent Hispanic, and nearly three-fourths younger than 45. More than one-half had not finished 12 years of school, and over one-third were not U.S. citizens (table 5). By contrast, slightly more than half of all wage and salary workers were male in 2001, over 70 percent were White, two-thirds were under 45 years of age, more than half had 13 or more years of school, and more than 90 percent were U.S. citizens.

The demographic characteristics of hired farmworkers (and all workers) have remained fairly constant since 1990 (tables 6 and 7). However, the share of Hispanics in both workforces has been increasing recently. Black and other non-Hispanic workers have been decreasing as a share of hired farmworkers, while minorities have been increasing as a share of all (wage and salary) workers. Both workforces are aging. The share of all (wage and salary) workers with 13 or more years of education is increasing, though this is not so for hired farmworkers. <sup>RA</sup>

Figure 1

**Median weekly earnings of full-time workers, by occupation, year**

*Hired farmworkers rank near the bottom of major occupation groups*



Note: All listed occupations are significantly different from hired farmworkers at the 95-percent confidence level.  
Source: Calculated by ERS using data from the Current Population Survey earnings.



Table 3

### Family income of hired farmworkers and wage/salary workers, 2000 and 2001<sup>1</sup>

Family incomes of hired farmworkers did not change between 2000 and 2001 and remained significantly lower than for all wage and salary workers

Item	Annual averages							
	Hired farmworkers				All wage and salary workers			
	All		Full-time		All		Full-time	
	2001	2000	2001	2000	2001	2000	2001	2000
	<i>Thousands</i>							
Total workers	745	878	601	708	120,836	120,979	99,600	99,949
	<i>Percent</i>							
Family income:								
Less than								
\$10,000	21.8 <sup>2</sup>	26.4 <sup>2</sup>	22.3 <sup>3</sup>	25.8 <sup>3</sup>	16.2	16.0	15.6 <sup>2*</sup>	15.2 <sup>2</sup>
\$10,000-\$19,999	19.8 <sup>2</sup>	19.9 <sup>2</sup>	21.8 <sup>3</sup>	20.8 <sup>3</sup>	7.3*	7.9	6.7 <sup>2*</sup>	7.3 <sup>2</sup>
\$20,000-\$29,999	20.7 <sup>2</sup>	19.3 <sup>2</sup>	22.2 <sup>3</sup>	21.4 <sup>3</sup>	10.4*	11.3	10.4*	11.4
\$30,000-\$39,999	13.2	11.7	14.0	12.2	11.4*	12.0	11.5*	12.2
\$40,000-\$49,999	6.7 <sup>2</sup>	6.5 <sup>2</sup>	5.2 <sup>3</sup>	6.6 <sup>3</sup>	9.7	9.9	9.8*	10.1 <sup>2</sup>
\$50,000 or more	17.8 <sup>2</sup>	16.2 <sup>2</sup>	14.5 <sup>3</sup>	13.2 <sup>3</sup>	45.0*	42.9	46.0 <sup>2*</sup>	43.8 <sup>2</sup>

<sup>1</sup>Combined income of all family members during the past 12 months. Includes money from jobs; net income from businesses, farms, and rents; pensions, dividends, interest, and social security payments; and any other money income received by family members who are 15 and older.

<sup>2</sup>Significantly different from all wage and salary workers at the 95-percent confidence level.

<sup>3</sup>Significantly different from full-time wage and salary workers at the 95-percent confidence level.

\*Significantly different from percentages in 2000 at the 95-percent confidence level.

Source: Calculated by ERS using data from the Current Population Survey earnings microdata file.

Table 4

**Family income of hired farmworkers by race/ethnic group and citizenship status, 2001<sup>1</sup>***Hispanic hired farmworkers and those who are not U.S. citizens have lower family incomes*

Item	Annual averages					
	All workers	Race/ethnic group			Citizenship status	
		White	Hispanic	Black and other	U.S. citizen	Not U.S. citizen
-----Thousands-----						
Total workers	745	366	341	38	477	268
-----Percent-----						
Family income:						
Less than \$10,000	21.8	18.6	24.7	--	18.8	27.0 <sup>4</sup>
\$10,000-\$19,999	19.8	14.0 <sup>2</sup>	25.8 <sup>3</sup>	--	16.6	25.5 <sup>4</sup>
\$20,000-\$29,999	20.7	15.8 <sup>2</sup>	26.4 <sup>3</sup>	--	18.2 <sup>2</sup>	25.1
\$30,000-\$39,999	13.2	13.7	13.3	--	12.4	14.8
\$40,000-\$49,999	6.7	9.5	3.7 <sup>3</sup>	--	9.0	2.82 <sup>4</sup>
\$50,000 or more	17.8	28.4 <sup>2</sup>	6.12 <sup>3</sup>	--	25.0 <sup>2</sup>	4.82 <sup>4</sup>

<sup>1</sup>Combined income of all family members during the past 12 months. Includes money from jobs; net income from businesses, farms, and rents; pensions, dividends, interest, and social security payments; and any other money income received by family members who are 15 and older.

-- Percentages not shown where base is less than 50,000.

<sup>2</sup>Significantly different from all hired farmworkers at the 95-percent confidence level.

<sup>3</sup>Significantly different from white workers at the 95-percent confidence level.

<sup>4</sup>Significantly different from U.S. citizens at the 95-percent confidence level.

Source: Calculated by ERS using data from the Current Population Survey earnings microdata file.

Table 5

**Demographic characteristics of hired farmworkers and wage/salary workers, 2001**

*Almost all demographic characteristics of the hired farm workforce differ from those of all wage and salary workers*

Characteristic	Annual averages			
	Hired farmworkers		All wage and salary workers	
	Thousands	Percent	Thousands	Percent
All	745	100	120,836	100
<b>Gender:</b>				
Male	601	80.7*	62,734	51.9
Female	144	19.3*	58,102	48.1
<b>Racial/ethnic group:</b>				
White	366	49.1*	87,289	72.3
Hispanic	341	45.7*	13,815	11.4
Black and others	38	5.1*	19,732	16.3
<b>Age:</b>				
Less than 20	109	14.6*	7,116	5.9
20-24	87	11.7	12,994	10.8
25-34	171	23.0	28,664	22.9
35-44	189	25.3	32,079	26.6
45-54	108	14.5*	25,417	21.8
55 and over	81	10.9	14,566	12.0
<b>Median age (years)</b>		35*		39
<b>Marital status:</b>				
Married	410	55.1	67,821	56.1
Widowed, divorced, or separated	62	8.3*	17,605	14.6
Never married	273	36.6*	35,409	29.3
<b>Schooling completed:</b>				
0-4 years	79	10.6*	899	0.8
5-8 years	158	21.2*	3,191	2.6
5-11 years	174	23.3*	11,374	9.4
12 years <sup>1</sup>	203	27.3	37,195	30.8
13 or more years	131	17.6*	68,176	56.4
<b>Citizenship status:</b>				
U.S. citizen	477	64.0*	111,031	91.9
Not U.S. citizen	268	36.0*	9,804	8.1
<b>Employment status:</b>				
Full-time	601	80.7	99,600	82.4
Part-time	144	19.3	21,235	17.6

<sup>1</sup>Schooling completed: 12 years means that a person received a high school diploma, GED, or equivalent degree.

\*Significantly different from wage and salary workers at the 95-percent confidence level.

Source: Calculated by ERS using data from the Current Population Survey earnings microdata file.

Table 6

**Demographic and earnings characteristics of hired farmworkers, 1990-2001***Although the number of hired farmworkers and their earnings have fluctuated, most demographic characteristics have remained stable*

Characteristic	Annual averages											
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	<i>Thousands</i>											
Number of workers	886	884	848	803	793	849	906	889	875	840	878	745
	<i>Percent</i>											
<b>Gender:</b>												
Male	82.9	82.4	83.8	84.7	83.7	84.5	84.2	83.3	83.8	80.7	82.1	80.7
Female	17.1	17.6	16.2	15.3	16.3	15.5	15.8	16.7	16.2	19.3	17.9	19.3
<b>Racial/ethnic group:</b>												
White	61.0	60.3	59.7	57.5	51.3	53.5	58.9	52.4	52.4	50.1	47.2	49.1
Hispanic	29.4	28.3	30.7	33.6	41.3	41.1	36.0	41.0	41.8	43.0	46.4	45.7
Black and other	9.6	11.4	9.6	8.9	7.4	5.3	5.1	6.6	5.8	6.4	6.4	5.1
<b>Age:</b>												
Less than 25	31.5	25.0	24.7	27.2	28.0	30.1	27.9	30.7	28.4	30.4	26.0	26.2
25-44	47.6	51.6	52.6	51.1	48.8	44.2	46.0	45.6	46.7	44.0	46.9	48.4
45-59	14.4	15.1	16.3	16.2	17.2	18.2	19.1	17.1	17.8	18.8	19.6	19.9
60 and older	6.5	8.3	6.4	5.5	6.0	7.5	7.0	6.6	7.1	6.8	7.5	5.5
Median age (years)	28	30	30	29	32	32	34	33	33	33	35	35
<b>Marital status:</b>												
Married	53.3	53.4	53.5	51.8	58.5	58.5	56.3	52.1	51.9	55.5	55.0	55.1
Widowed, divorced, or separated	8.9	11.2	10.1	9.5	8.7	7.5	8.1	8.4	9.3	6.9	8.3	8.3
Never married	37.8	35.4	36.4	38.6	32.8	34.0	35.6	39.5	38.8	37.6	36.7	36.6
<b>Schooling completed:</b>												
0-4 years	11.1	11.5	14.1	16.4	13.4	14.2	13.1	12.2	10.9	11.3	13.4	10.6
5-8 years	21.6	21.2	16.0	17.4	22.9	22.5	19.9	22.1	21.1	22.6	21.0	21.2
9-11 years	22.8	22.6	27.0	21.8	22.7	22.7	24.2	24.8	24.9	20.7	21.2	23.3
12 years <sup>1</sup>	31.4	31.0	26.9	27.0	25.9	25.9	25.4	22.3	26.5	27.1	25.7	27.3
13 years or more	13.1	13.7	16.0	17.4	15.6	14.7	17.4	18.6	16.6	18.3	18.7	17.6
<b>Employment status:</b>												
Part-time	21.8	22.8	21.1	22.9	20.1	18.3	22.4	18.5	18.6	20.5	19.3	19.3
Full-time <sup>2</sup>	78.2	77.2	78.9	77.1	79.9	81.7	77.6	81.5	81.4	79.5	80.7	80.7
	<i>Dollars</i>											
<b>Median weekly earnings:<sup>3</sup></b>												
Full-time workers <sup>2</sup>	325	312	303	306	299	302	313	306	313	340	328	345
All workers	271	273	252	270	281	279	282	276	282	298	288	300

<sup>1</sup>Schooling completed: 12 years means that a person received a high school diploma, GED, or equivalent degree.<sup>2</sup>Full-time workers usually work 35 or more hours per week.<sup>3</sup>Median earnings are in 2000 dollars.

Note: Data for 1994 and later years are not directly comparable with data for 1993 and earlier years, and data for 2000 and later years are not directly comparable with data for 1999 and earlier years because of changes in survey design.

Source: Calculated by ERS using data from the Current Population Survey earnings microdata file.

Table 7

**Demographic and earnings characteristics of wage and salary workers, 1990-2001***The demographic characteristics of all wage and salary workers have remained relatively unchanged*

Characteristic	Annual averages											
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	<i>Thousands</i>											
Number of workers	104,351	103,166	104,054	105,407	108,166	110,220	112,142	114,697	116,882	119,130	120,971	120,836
	<i>Percent</i>											
<b>Gender:</b>												
Male	52.7	52.5	52.2	52.1	52.4	52.4	52.2	52.2	52.2	52.0	52.0	51.9
Female	47.3	47.5	47.8	47.9	47.6	47.6	47.8	47.8	47.8	48.0	48.0	48.1
<b>Racial/ethnic group:</b>												
White	78.3	78.1	77.9	77.7	76.3	76.2	75.0	74.0	73.4	73.1	72.4	72.3
Hispanic	7.9	8.0	8.0	8.2	9.3	9.5	9.7	10.4	10.6	10.8	11.3	11.4
Black and other	13.8	13.9	14.1	14.1	14.4	14.3	15.3	15.6	16.0	16.1	16.3	16.3
<b>Age:</b>												
Less than 25	15.8	17.2	16.7	16.6	17.1	16.8	16.2	16.4	16.7	16.8	17.0	16.6
25-44	56.5	55.4	55.2	54.7	54.3	53.9	53.8	53.0	52.1	51.2	50.2	49.5
45-59	21.8	21.7	22.5	23.2	23.4	24.0	24.7	25.4	25.9	26.6	27.2	28.1
60 and older	5.9	5.7	5.6	5.5	5.2	5.3	5.3	5.2	5.3	5.4	5.6	5.8
Median age (years)	33	34	34	34	36	37	37	37	38	38	38	39
<b>Marital status:</b>												
Married	58.2	58.5	58.3	58.2	57.9	58.0	58.0	57.0	56.4	56.2	55.9	56.1
Widowed, divorced, or separated	14.3	14.3	15.4	14.6	14.5	14.4	14.5	14.6	14.7	14.6	14.7	14.6
Never married	27.5	27.2	27.2	27.1	27.6	27.6	27.5	28.4	28.9	29.2	29.4	29.3
<b>Schooling completed:</b>												
0-4 years	1.0	0.9	0.9	0.8	0.8	0.8	0.7	0.8	0.8	0.7	0.8	0.8
5-8 years	4.0	3.7	3.0	2.8	2.8	2.7	2.7	2.8	2.7	2.7	2.7	2.6
9-11 years	10.8	10.2	10.1	9.8	9.5	9.5	9.7	10.0	10.2	9.9	9.7	9.4
12 years <sup>1</sup>	39.4	39.2	35.0	34.4	33.3	32.7	32.4	32.4	31.8	31.6	31.2	30.8
13 years or more	44.8	46.0	51.0	52.2	53.6	54.3	54.4	54.0	54.5	55.1	55.6	56.4
<b>Employment status:</b>												
Part-time	18.4	19.6	19.9	19.9	20.3	19.0	18.9	18.4	18.2	18.0	17.4	17.6
Full-time <sup>2</sup>	81.6	80.4	80.1	80.1	79.7	81.0	81.1	81.6	81.8	82.0	82.6	82.4
	<i>Dollars</i>											
<b>Median weekly earnings:<sup>3</sup></b>												
Full-time workers <sup>2</sup>	549	557	557	558	552	558	543	552	565	585	592	596
All workers	488	481	480	490	478	465	468	478	494	509	514	510

<sup>1</sup>Schooling completed: 12 years means that a person received a high school diploma, GED, or equivalent degree.<sup>2</sup>Full-time workers usually work 35 or more hours per week.<sup>3</sup>Median earnings are in 2000 dollars.

Note: Data for 1994 and later years are not directly comparable with data for 1993 and earlier years, and data for 2000 and later years are not directly comparable with data for 1999 and earlier years because of changes in survey design.

Source: Calculated by ERS using data from the Current Population Survey earnings microdata file.



# Payments Vary by Region and Type of County

Richard J. Reeder  
Samuel D. Calhoun

In an earlier article, “Federal Funds in Nonmetro Elderly Counties,” we showed how Federal funding varies geographically for different program functions, such as agriculture, community resources, human resources, and income security. In this article, we examine variations for different types of Federal payments and variations by region.

The eight main funding types (or objects) identified by the Bureau of the Census in their Consolidated Federal Funds Reports—our source of data for this analysis—are grants, direct loans, guaranteed loans, direct payments to individuals for retirement purposes, other direct payments to individuals, direct payments not to individuals, Federal salaries and wages, and Federal procurement. We excluded several insurance programs and programs that exclusively benefit the U.S. territories from our analysis. We also excluded data from programs that we deemed inaccurate at the county level. However, we covered about 90 percent of total Federal funding.

## Nonmetro Areas Receive Less Funding Than Metro Areas

Rural (nonmetro) areas received a total of \$5,481, per capita, in Federal receipts in fiscal year 2000 (table 1). This was about \$261 less than in urban (metro) areas, representing a 4.5-percent gap. Most of the gap is explained by significantly lower Federal procurement contracts and salaries in nonmetro than metro areas.

Nonmetro areas received significantly more funding, per capita, from retirement and disability payments, and also benefited disproportionately from other direct payments (especially farm payments) and grants.

Nonmetro areas benefited more than metro areas from direct loans, but received significantly less than metro areas from guaranteed loans (includes home mortgage insurance).

## Funding Varies by Type of Nonmetro Area . . .

Nonmetro funding was higher in totally rural areas than in other rural areas, and highest in farming-dependent areas (\$6,845). This reflects the unusually high level of farm payments in recent years, plus relatively high levels of grants and direct loans. Persistent-poverty areas (\$6,050) and government-

dependent areas (\$6,414) also received higher than average funding. The former benefited particularly from direct payments (other than retirement) and from grants and direct loans, while the latter benefited particularly from grants, procurement, and Federal salaries. As might be expected, transfer-dependent counties benefited disproportionately from direct payments to individuals, including both retirement and other direct payments to individuals.

Nonmetro Federal funding was lowest, per capita, in manufacturing-dependent areas (\$4,813), and in commuting areas (\$4,712). In both cases, they received less than average funding for all types of Federal payments.

## . . . And by Region

Nonmetro Federal funding levels were highest in the South (\$5,625 per capita) and lowest in the Northeast (\$5,256). Nonmetro areas received less than metro areas in the South and Northeast, but more in the Midwest and West (table 2).

Richard J. Reeder  
(rreeder@ers.usda.gov, 202-694-5360)  
and Samuel D. Calhoun (scalhoun@ers.usda.gov,  
202-694-5339) are economists in the  
Rural Economy Branch,  
Food and Rural Economics Division,  
Economic Research Service, USDA.

Table 1

## Per capita Federal funds by type of payment and type of nonmetro county, fiscal year 2000

County type	All Federal funds	Grants	Direct loans	Guaranteed loans	Retirement/disability payments	Other direct payments for individuals	Direct payments not for individuals	Procurement contracts	Salaries and wages
<i>Dollars per person</i>									
United States	5,691	857	36	408	1,955	964	100	732	639
Metro	5,742	835	14	450	1,890	967	50	833	703
Nonmetro	5,481	943	123	240	2,214	950	298	330	383
By degree of urbanization:									
Urbanized	5,450	853	57	251	2,158	915	117	496	603
Less urbanized	5,384	949	136	232	2,226	969	322	262	288
Totally rural	6,030	1,156	238	249	2,304	951	665	216	252
By economic county type:									
Farming-dependent	6,845	1,020	530	387	2,098	955	1,339	204	311
Mining-dependent	5,635	1,123	56	144	2,445	1,036	145	389	298
Manufacturing-dependent	4,813	855	71	208	2,152	933	141	239	212
Government-dependent	6,414	1,189	55	235	2,098	853	106	667	1,211
Services-dependent	5,498	835	79	241	2,332	975	280	445	313
Nonspecialized	5,251	932	132	250	2,251	988	274	186	238
By policy county type:									
Retirement-destination	5,176	663	71	233	2,612	946	44	197	411
Federal lands	5,311	934	42	289	2,167	773	62	501	543
Commuting	4,712	814	89	249	2,068	851	182	291	169
Persistent poverty	6,050	1,518	127	181	2,175	1,086	428	244	292
Transfer-dependent	6,328	1,514	104	170	2,568	1,197	210	268	297

Note: Individual figures may not sum to total because of rounding.

Source: Calculated by ERS using Federal funds data from the Bureau of the Census.

Most rural (and urban) Federal funds come from transfer payment programs, such as retirement, disability, and welfare payment programs. This explains why transfer-dependent counties receive high levels of Federal funds. This also explains why the nonmetro South,

which has the largest concentration of low-income residents, received more in total Federal funds, per capita, than did other regions.

However, the South was outpaced by other regions in nonmetro receipts from some types of assistance. Nonmetro areas in the

West ranked first in funding from guaranteed loans and from Federal salaries and procurement. The nonmetro Midwest ranked first in direct payments not for individuals, reflecting relatively high levels of farm payments. <sup>RA</sup>

#### For more information . . .

For more details on definitions, data, and methods used, see the Federal Funds Briefing Room on the ERS web site, [www.ers.usda.gov/briefing/federal-funds](http://www.ers.usda.gov/briefing/federal-funds). This web site also provides maps for different program functions, access to individual county-level data, plus research focusing on selected rural regions (such as Appalachia, the Black Belt, and the Great Plains).

Table 2

**Federal funds per capita by type of payment and region, fiscal year 2000**

County type	All Federal funds	Grants	Direct loans	Guaranteed loans	Other direct Retirement/ disability payments	Direct payments for individuals	payments not for individuals	Procurement contracts	Salaries and wages
<i>Dollars per person</i>									
United States	5,691	857	36	408	1,955	964	100	732	639
Metro	5,742	835	14	450	1,890	967	50	833	703
Nonmetro	5,481	943	123	240	2,214	950	298	330	383
South	6,260	806	36	447	2,073	948	103	982	865
Metro	6,469	731	15	525	1,997	915	55	1,192	1,039
Nonmetro	5,625	1,031	100	211	2,300	1,045	247	349	342
Northeast	5,674	1,099	11	315	2,032	1,196	45	528	448
Metro	5,721	1,115	9	329	2,006	1,220	46	548	448
Nonmetro	5,256	965	29	193	2,253	984	28	355	449
Midwest	5,029	761	71	324	1,922	921	182	411	437
Metro	4,938	761	19	346	1,840	931	65	496	480
Nonmetro	5,286	764	216	260	2,153	892	513	172	316
West	5,475	831	20	510	1,736	836	57	838	647
Metro	5,457	799	12	543	1,683	847	34	882	657
Nonmetro	5,587	1,025	72	311	2,062	768	200	563	586

Note: Individual figures may not sum to total because of rounding.

Source: Calculated by ERS using Federal funds data from the Bureau of the Census.

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