



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

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

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

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

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



Rural Area Brain Drain: Is It a Reality?

By Georgeanne Artz

Brain drain, the out-migration of young, college-educated workers from the nation's rural areas, poses a serious threat to the social and economic vitality of rural America. Anecdotal accounts from the Midwest to Maine describe an exodus of young college graduates, lured away by big-city living and better-paying jobs. Yet, nationwide the number of college graduates has steadily increased over the past few decades. In fact, between 1970 and 2000, the share of the population over age 25 with a college education rose in every U.S. county but five.

The rising level of human capital, reflected in the increased share of the U.S. population with a college education, is an important trend. Recent studies have shown that capital and skilled labor are complements, so as advances in technology reduce the cost of capital, the demand for skilled workers increases. Other research suggests that the clustering of college-educated workers may have spillover effects, enhancing a region's productivity and the potential for economic growth. The trend has also implications for income inequality, because the wage gap between those with a college degree and those without is widening.

Is brain drain a reality? Are some parts of the country able to retain and attract college-educated workers at the expense of other regions? If so, how pervasive is the problem and what does it mean for rural areas?

Putting it in Perspective

Most recent studies of brain drain in the United States have concentrated on the migration patterns of recent college graduates—in particular on their first move after college. However, many college-educated workers face national job markets and enter professions in which experience is important for career advancement. Younger people may move away from home after finishing school in order to find suitable entry-level positions, or they may be

attracted to the social environment of big cities. But as people age, they gain experience in their professions, their lifestyles change, and they may choose to move again. If we are to fully understand the forces shaping brain drain, we need to better understand the location of all college-educated workers, not just those in their twenties. This article uses U.S. Census data, shift-share analysis, and the concept of a “competitive share” to describe changes in the location of the nation's college-educated workforce from 1970 to 2000.

Figure 1 shows U.S. counties' competitive share for college-educated population as a percent of total population over age 25 from 1970 to 2000. For about 60% of the counties (shown in red), the competitive share is negative, indicating that the college graduate share is rising more slowly than the national average. Some general patterns are evident; in particular, the southern and western regions gained while the middle and northern regions lost. Figure 2 shows the average competitive share by U.S. Census Region. Three regions experienced a brain drain on average: East North Central (-1.3%), West North Central (-5.2%), and Middle Atlantic (-4.0%). In the Mountain and South Atlantic regions, the average competitive share is positive and quite large, which suggests these regions have a big advantage in attracting college-educated workers.

Defining Competitive Share

Shift-share analysis, as it is traditionally applied, allows for the measurement of a local economy's *competitive share*: the region's ability to capture an increasing share of a particular sector's employment growth. A positive competitive share indicates that the region has a particular advantage in attracting jobs in that sector relative to the rest of the nation. Similarly, a negative competitive share signals a relative disadvantage (Hustedde, Shaffer, & Pulver, 1996). By applying this technique to college-educated workers, the competitive share can be interpreted as the region's “brain gain” if positive or “brain drain” if negative.

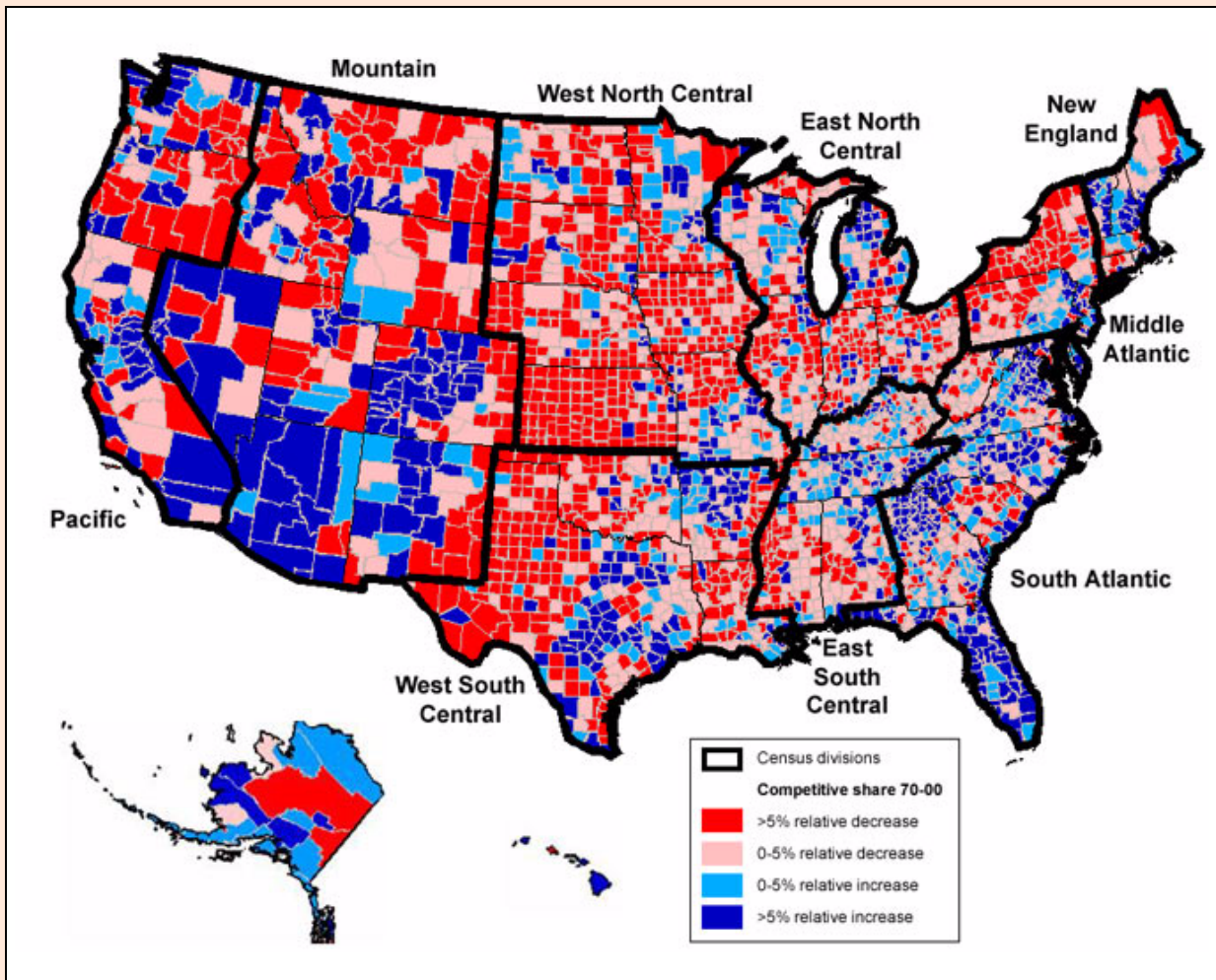


Figure 1. U.S. brain drain/gain by county, 1970-2000.

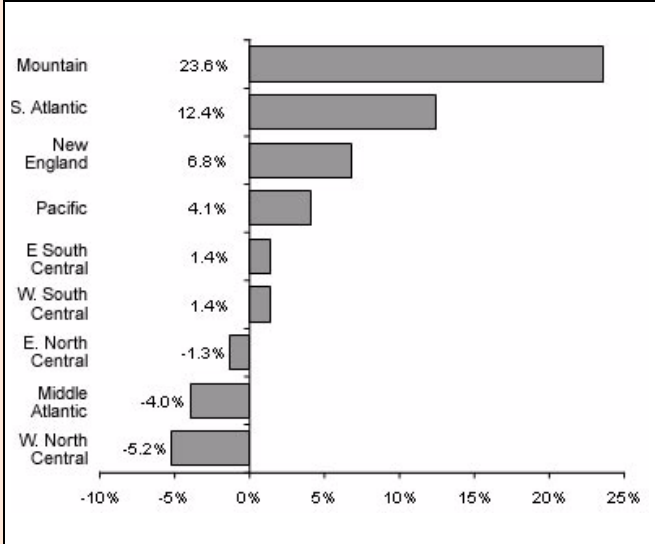


Figure 2. Average county competitive share by region, 1970-2000.

The share of a county's population that is college-educated may decline over time either because the college-educated population is decreasing relative to the overall population or because the overall population is increasing while the college-educated population remains stable. On average, counties that lost population over the past three decades also experienced brain drain, regardless of their regional location. In most regions, these counties accounted for a rather small proportion of the total number of counties. However, in the West North Central region, more than one third of the counties experienced population loss over this time. In the East North Central, West North Central, and Middle Atlantic regions, even counties with a growing population experienced a brain drain on average during this time period. In all cases, growing counties either lost less or gained more college-educated workers than shrinking counties.

Table 1. Average competitive share by region and Beale Code, net of regional effect.

Region	Major metro area	Metro area	Nonmetro, adjacent to metro	Nonmetro, not adjacent to metro	Rural
All regions	31.1%	7.5%	1.2%	-3.2%	2.2%
E. North Central	14.6%	-3.4%	-3.4%	-2.6%	3.7%
E. South Central	18.0%*	12.8%	-2.2%	-4.2%	-2.6%
Middle Atlantic	2.2%	0.2%	-1.9%	-6.2%	9.7%*
Mountain	178.9%*	-1.6%	6.2%	-19.6%	8.9%
New England	-9.3%*	-2.5%	0.8%	1.3%	15.1%*
Pacific	12.2%	0.8%	-0.3%	-2.4%	-2.3%
South Atlantic	38.0%	5.5%	-3.7%	-11.5%	-5.7%
W. North Central	24.7%	6.7%	1.6%	-3.4%	-1.2%
W. South Central	61.9%	5.8%	-2.5%	-8.2%	-3.5%

*Fewer than ten counties are included in these averages.

Many accounts of brain drain describe the loss of educated youth from rural to metropolitan areas. Studies have shown that returns to skill and education are higher in urban areas, giving cities an advantage in attracting college-educated workers. Table 1 categorizes the average competitive share by 1983 Beale Code and by Census region. Beale codes classify counties along a rural-urban continuum based on the U.S. census as well as geographic proximity. In order to eliminate the region effect, the overall average for the region (shown in Figure 2) was subtracted from the county-type averages. This allows for within-region comparisons across county types.

Nationwide, all types of metropolitan counties enjoyed a brain gain on average, with major metropolitan areas gaining the most. On average, non-metropolitan counties that were not adjacent to a metropolitan area fared the worst. Somewhat surprisingly, all rural counties enjoyed a brain gain on average. With the exception of New England, the major metropolitan areas enjoyed a relatively large brain gain in every region, while the nonmetropolitan, nonadjacent counties suffered brain drain. Rural counties gained on average in some regions and drained on average in others. However, three fourths of the nation's rural counties are located in the West North Central, West South Central, East South Central, and South Atlantic regions, where the rural counties' average competitive share was negative. The average competitive share for non-metropolitan counties that were adjacent to a met-

ropolitan area varies across regions, but is negative for six of the nine regions.

Rural area brain drain is a real trend. Absent regional effects, metropolitan areas have gained college-educated workers at the expense of nonmetropolitan and rural areas. In addition, brain drain goes hand in hand with population decline. Only 11% of counties lost population between 1970 and 2000; of these counties, 96% experienced brain drain and 95% were nonmetropolitan or rural. There are exceptions. Rural and non-metropolitan counties in the Mountain states, New England, Middle Atlantic, and East North Central regions have attracted college graduates on average, but most of the nation's rural counties are not located in these regions.

Plugging the Drain

A number of strategies for recruiting and retaining college graduates in the nation's more rural states have been proposed in recent years. From tax incentives for science and technology graduates to letter-writing campaigns inviting former residents to return "home," these policies are at best partially informed. Before truly effective approaches can be designed for attracting and retaining college-educated workers in the nation's nonmetropolitan areas, a better understanding of the forces underlying brain drain is needed.

Most of the research on this question has focused on recent college graduates in the very short time period after graduation. In general these studies find that college educated individuals are

more likely to migrate from their home regions after completing school, drawn by higher returns to education in urban areas. They suggest that the economic conditions of the home region may influence migration decisions, but individual characteristics are more important for understanding who moves and who stays. If young, educated workers are moving into metropolitan areas to take advantage of higher returns to education, should we try to stop them?

Policies designed to keep rural area college graduates “home” when they would be better off someplace else are clearly inefficient from society’s point of view. However, strategies to attract experienced college-educated workers may not be. The current debate over brain drain overlooks the possibility that individuals’ reasons for moving and their preferences for certain locations may change with age. Younger people move to take advantage of school and job opportunities. However, as people marry, have children, and acquire job experience, they may choose to relocate for “quality of life” reasons. There is little information about the motivations and choices of “reverse” migrants opting to relocate in mid-life. Policy makers should be concerned about the supply of all educated workers not just young educated workers.

Furthermore, some rural areas are gaining college-educated workers. These areas tend to be “amenity-rich”—a quality research has shown is important for attracting highly skilled workers. Moreover, these areas may have additional resources that attract college-educated labor. For example, if capital and skilled labor are complements in production, variations in capital stock across rural areas might help explain these differences.

In a recent *Choices* article, Brian Whitacre and Bradford Mills report a substantial difference between metropolitan and nonmetropolitan areas regarding access to high-speed Internet service, whereas the difference in dial-up phone access is minimal. Although dial-up service may be sufficient for home use of the Internet, telecommuting requires faster connections. There is no correlation between brain drain and access to high-speed Internet service for metropolitan counties, because nearly all these counties have high-speed access. Among rural counties, however, variation in high-speed service is much greater. For these counties, the correlation coefficient between brain drain/gain

and high-speed Internet access is 0.15. Although this relationship is not strong, it does suggest that some educated workers are attracted to or stay in more remote locations when they can access the urban labor market through the Internet. More careful analysis may overturn this result, or it may prove to be even more important than the simple correlation would suggest.

Overall

Brain drain is an important economic development concern. Higher levels of human capital are associated with higher levels of income, increased productivity, and economic growth. Although the majority of rural counties have fallen behind in attracting and retaining college-educated workers, other rural counties have not. This suggests that brain drain is not an inherent problem for rural counties, but something that might be overcome with properly designed, well-informed policies.

For More Information

- Feser, Edward J., & Sweeney, Stuart H. (1998). *Out-migration, population decline, and regional economic distress*. Washington, DC: Economic Development Administration.
- Heminway, Merritt T. (2002, May). *Maine’s disappearing youth: Implications of a declining youth population*. Paper prepared for Maine Leadership Consortium, Augusta, Maine.
- Huang, Tzu-Ling, Orazem, Peter F., & Wohlge-muth, Darin. (2002). Rural population growth, 1950-1990: The roles of human capital, industry structure and government policy. *American Journal of Agricultural Economics*, 84, 615-627.
- Hustedde, Ronald J., Shaffer, Ron, & Pulver, Glen. (1996). *Community economic analysis: A how to manual*. Madison, WI: University of Wisconsin Extension.
- Kodrzycki, Yolanda. (2001). Migration of recent college graduates: Evidence from the national longitudinal survey of youth. *New England Economic Review*, 2001(1), 13-34.
- McGranahan, David A., & Beale, Calvin L. (2002). Understanding rural population loss. *Rural America*, 17, 2-11.
- Mills, Bradford, & Hazarika, Gautam. (2001). The migration of young adults from non-metropoli-

tan counties. *American Journal of Agricultural Economics*, 83, 329-340.

Von Reichert, Christiane. (2002). Returning and new Montana migrants: Socio-economic and motivational differences. *Growth and Change*, 33, 133-151.

Whitacre, Brian, & Mills, Bradford. (2003). Bridging the metropolitan-nonmetropolitan digital divide in home internet use. *Choices*, June 2003.

Georganne Artz is an extension program specialist at Iowa State University.

