

## School Quality as a Tool for Attracting People to Rural Areas

By Alexander W. Marré, David A. Price, and Anil Rupasingha

Many rural localities are interested in strategies for retaining residents and attracting newcomers. Recent research indicates that one promising strategy for rural development is maintaining and improving the quality of an area's public schools. In this research, which is the first national study of the relationship between school quality and migration flows in and out of rural areas, better outcomes for students in a rural county's schools were associated with higher migration into that county.

Over the past century, many rural areas of the United States have struggled with low or negative population growth. This phenomenon has been driven in part by migration from rural areas to metropolitan areas and by low rates of migration to rural areas. From 2010 through 2015, the total population of rural areas (taking into account births and deaths as well as migration) actually declined overall for the first time. (See Figure 1 on the following page.) The population of rural America increased slightly in 2016–17, by 0.1 percent, but attracting newcomers to rural areas remains a concern. During the period from 2012 through 2017, some 42 percent of rural counties, many of them poorer and more remote, saw a decrease in net migration.<sup>1</sup>

Efforts to promote migration into rural areas and to retain current residents have often centered on economic development incentives for companies — a strategy sometimes criticized as leading to a costly, zero-sum competition among states and localities. In addition, communities seeking to attract newcomers often highlight natural

amenities, such as lakes, rivers, and mountains, for outdoor recreation and scenic beauty. But the existence of such amenities is only partly within a locality's control, if at all. Could another approach to attracting and retaining residents, one that complements other strategies, lie in a locality's public schools? That is, do higher-quality public schools help attract and retain residents?

Research by two of the authors of this *Economic Brief*, recently published in the *Journal of Regional Science*, has considered this question using national data for the first time.<sup>2</sup> Alexander Marré of the Richmond Fed and Anil Rupasingha of the U.S. Department of Agriculture used several measures of school quality to assess whether the quality of public schools increased migration into rural (nonmetropolitan) areas. They found that public school quality did, on average, seem to have such an effect, even after adjusting for the fact that higher-quality schools tend to be located in communities with higher incomes. These results point to improvement in school quality as a plausible development strategy for rural areas.

### Past Evidence on School Quality and Migration

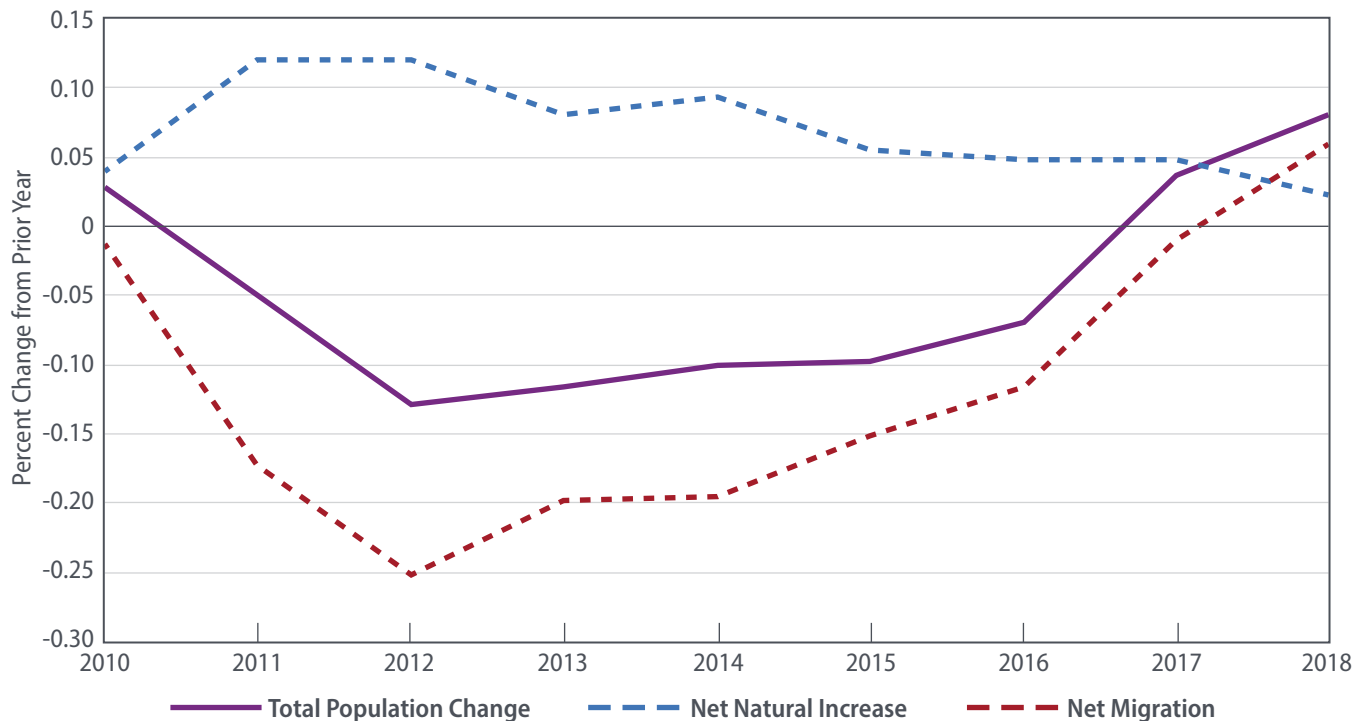
A number of earlier studies have looked at the effects of school quality on migration with respect to specific areas. For example, a 2006 study by Isaac Bayoh, Elena Irwin, and Timothy Haab of Ohio State University looked at the migrations of homeowners who moved among seventeen school districts in the Columbus, Ohio, area.<sup>3</sup> While factors such as taxes and commuting time played a role, the researchers found that the largest influence on decisions to move from the city school district to suburban (not necessarily rural) school districts was school quality. They estimated that a 1 percent increase in the measured quality of the city school district would increase the probability of a household choosing a city residence by 3.7 percent.

More recently, qualitative research has suggested that school quality is influential in the decision to relocate to a rural area. In a 2015 study by John Cromartie of the U.S. Department of Agriculture and Christiane

von Reichert and Ryan Arthun of the University of Montana, the researchers interviewed roughly 300 individuals who had gone to high school in remote rural counties, moved away, and then returned.<sup>4</sup> The interviews took place at the returnees' high school reunions. Respondents cited a number of reasons for returning to their former hometowns, including a slower pace of life, proximity to parents, and the perception that the communities were generally better places for raising children. A significant part of the latter perception was the belief that the schools were superior to those of the communities they had left.

As attendees at high school reunions are not a random sample, and as returnees to rural areas are not necessarily representative of all individuals who migrate there, the interviewees were probably not a representative sample of metropolitan-to-rural migrants. Nonetheless, their responses, as well as the results of local quantitative studies, invite closer study of school quality as a factor in rural relocation.

**Figure 1: Rural Population Change (Solid Line) and Components of Change (Dashed Lines)**



Source: U.S. Census Bureau, County Population Estimates

Notes: "Net natural increase" refers to population change from births and deaths. Nonmetropolitan (rural) or metropolitan (urban) status for each county is based on the 2013 metropolitan area definitions from the Office of Management and Budget.

## Measuring School Quality

Some past research related to school quality has used expenditures as a measure of quality. Spending, however, is only one input into the education process. Myriad other factors — such as teacher quality, curricular choices, pedagogy, and peers — may also shape outcomes. While some of those factors, such as teacher quality, might interact with spending, spending alone is an incomplete and possibly unreliable measure.

Instead of spending, Marré and Rupasingha used three more direct measures of quality. Two were based on student test scores in reading and math at the school district level, collected in the Global Report Card database of the George W. Bush Institute. The Global Report Card standardizes each district's scores to form comparisons across districts and states. Marré and Rupasingha aggregated the district-level scores into county-level scores. The third measure was high school dropout rates at the county level, measured as the share of the civilian population between the ages of sixteen and nineteen who do not have a high school diploma and are not enrolled in school, based on the 2000 census.<sup>5</sup>

To account for the fact that higher-quality schools are more likely to be located in areas with higher incomes, the researchers also created income-adjusted versions of the three measures using a technique pioneered by Raj Chetty and Nathaniel Hendren of Harvard University and Patrick Kline and Emmanuel Saez of the University of California, Berkeley. This technique regresses the counties' median household incomes on the given measure of school quality and treats the residuals of those regressions as measures of school quality stripped of income effects.<sup>6</sup>

## Testing the Effects of School Quality

To measure migration, Marré and Rupasingha used data on flows from metropolitan and rural counties into rural counties during 2005 through 2009 from the U.S. Census Bureau's American Community Survey. The data included both interstate and intrastate moves. Each data point represented the number of people moving from one metropolitan or rural

county to one rural county; the dataset was made up of more than six million such county pairs. (Because the study period includes the 2007–09 recession, the researchers separately checked the effect of the recession on migration rates and found that it had little effect.)

In addition to school quality and migration flows, the researchers' statistical model included each county's average wages, population density, job growth, an index of natural amenities, the percentage of the population over age sixty-four, local taxes per capita, local government spending per capita, unemployment, and median housing value. Their model also included the distance in miles between each pair of counties.

## Results

Marré and Rupasingha found that during the 2005–09 period, the quality of public schools in rural counties affected migration to those counties: higher-quality schools had a pull effect, while lower-quality ones were associated with fewer migrants. This finding held across the three measures of school quality — reading scores, math scores, and high school dropout rates. In particular, a 1 percent increase in the share of students rated as proficient in reading yielded a 1.8 percent increase in the expected number of migrants into a county; a 1 percent increase in the share of students rated as proficient in math yielded a 1.4 percent increase in the expected number of migrants; and a 1 percent increase in the measure of high school dropouts yielded a 1.7 percent reduction in the expected number of migrants.

When the income-adjusted measures of school quality were used, the magnitude of the effect on migration decreased modestly, but the effect remained statistically significant. The magnitude decreased from 1.8 percent to 1.5 percent for reading; from 1.4 percent to 1.1 percent for math; and from 1.7 percent to 1.4 percent for dropout rates. This implies that higher-quality schools tended to attract migrants regardless of whether the community was affluent.

The researchers also carried out separate statistical models for rural counties that are adjacent to met-

ropolitan areas and those that are not adjacent to metropolitan areas. The measures of school quality were associated with higher migration in both sets of counties, but the effects of school quality were stronger in the nonadjacent counties, which were more remote from cities. This pattern suggests that school quality is potentially a more powerful development tool for more remote areas.

Marré and Rupasingha noted that while some drivers of migration, such as natural amenities, are largely outside the control of policymakers, the quality of public schools is an area in which state and local policymakers exercise significant control and one where they have multiple levers with which to pursue improvements. ■

Alexander W. Marré is a regional economist and David A. Price is an editor in the Research Department at the Federal Reserve Bank of Richmond. Anil Rupasingha is chief of the Economic Impact Branch of the Rural Development Innovation Center at the U.S. Department of Agriculture.

## Endnotes

- <sup>1</sup> John Cromartie and Dennis Vilorio, "[Rural Population Trends](#)," U.S. Department of Agriculture *Amber Waves*, February 15, 2019. For more on rural migration generally, see Alexander Marré, "[Rural Population Loss and Strategies for Recovery](#)," *Econ Focus*, First Quarter 2020, vol. 25, no. 1, pp. 27–30.
- <sup>2</sup> Alexander Marré and Anil Rupasingha, "[School Quality and Rural In-Migration: Can Better Rural Schools Attract New Residents?](#)" *Journal of Regional Science*, January 2020, vol. 60, no. 1, pp. 156–173.
- <sup>3</sup> Isaac Bayoh, Elena Irwin, and Timothy Haab, "[Determinants of Residential Location Choice: How Important Are Local Public Goods in Attracting Homeowners to Central City Locations?](#)" *Journal of Regional Science*, February 2006, vol. 46, no. 1, pp. 97–120. Other localized quantitative studies are cited in Marré and Rupasingha (2020), p. 159.

<sup>4</sup> John Cromartie, Christiane von Reichert, and Ryan Arthun, "[Factors Affecting Former Residents' Returning to Rural Communities](#)," U.S. Department of Agriculture, Economic Research Report No. 185, May 2015.

<sup>5</sup> For more on dropout rates, see Jessie Romero, "[The Dropout Dilemma](#)," *Econ Focus*, Third Quarter 2014, vol. 18, no. 3, pp. 12–16.

<sup>6</sup> Raj Chetty, Nathaniel Hendren, Patrick Kline, and Emmanuel Saez, "[Where Is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States](#)," *Quarterly Journal of Economics*, November 2014, vol. 129, no. 4, pp. 1553–1623.

This article may be photocopied or reprinted in its entirety. Please credit the authors, source, and the Federal Reserve Bank of Richmond and include the italicized statement below.

*Views expressed in this article are those of the authors and not necessarily those of the Federal Reserve Bank of Richmond or the Federal Reserve System.*

