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GREAT PLAINS RESEARCH
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RURAL COMMUNITIES AND SCHOOL CONSOLIDATION

CENTER FOR GREAT PLAINS STUDIES
UNIVERSITY OF NEBRASKA–LINCOLN
**GREAT PLAINS STUDIES**

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THE CENTER FOR GREAT PLAINS STUDIES is a regional research and teaching program established in 1976 at the University of Nebraska. The mission of the Center is to foster the study of the people and the environment of the Great Plains.

- A sparsely-populated region with highly variable weather set against grassy, rolling land, the Great Plains stretches westward from the Missouri River at Omaha and Kansas City to the Rocky Mountains, and northward from the Texas Panhandle into the Canadian Prairie Provinces.
- The region invites inquiry into the relationships between its natural environment and the cultures brought to it by its various inhabitants, as scholars and residents work both to preserve healthy eco-systems and build thriving human communities.

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GREAT PLAINS RESEARCH is a peer-reviewed, biannual, multidisciplinary science journal, which publishes original research and scholarly reviews of important advances in the natural and social sciences with relevance to the Great Plains region and with special emphases on environmental, economic, and social issues. It includes reviews of books.

Articles include:
- **original research findings**, such as have been published in GPR since 1991;
- **synopses** of the “state of the science” on topics relevant to the Great Plains;
- **overviews** of critical environmental, economic, and social issues for the plains;
- **reviews** of knowledge on important questions and their regional application; and
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Rural Communities and School Consolidation

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*Richard Edwards and Peter Longo*
INTRODUCTION

This special issue of Great Plains Research focuses on rural communities and school consolidation. It publishes some of the contributions, both essays and research articles, first presented at the Center for Great Plains Studies' 39th Annual Symposium at the University of Nebraska at Kearney on April 5–6, 2013. It also includes some images from a special Chuck Guildner photographic exhibition staged at the Museum of Nebraska Art. The symposium broadly addressed the connection between rural schools and rural communities, including a particular focus on the gains and losses from school consolidation.

Good schools are essential to the good life. Americans are optimistic, future-looking people, and we focus much of our hopes on our kids and their schooling. There is little wonder, then, that Americans worry so much about how good the schools are—a concern that is doubly true for rural schools. Despite a widely held norm that good schools are vital to community life, the declining population of many rural towns in the Great Plains combined with tight budgets and intense competition for state aid has often driven both state and local school policy toward school consolidation as a common political response. During consolidation, small communities lose their schools in favor of larger, presumably better or more efficient consolidated schools elsewhere.

Consolidation has a long history in the United States, including the Great Plains, starting in the nineteenth century. For example, in 1913 N.C. Macdonald, the North Dakota State Inspector of Consolidated, Graded and Rural Schools wrote,

We have too many small and weak rural schools in the state and nation. In the majority of our rural schools the attendance is poor, the teachers are poorly trained and underpaid, supervision is pitifully inadequate, high school privileges are lacking, opportunities to satisfy the civic-social life interests are also lacking, too many classes are taught for one teacher to teach properly, the work is poor and the results are of low grade. . . . There is only one way to improve these schools in a large and rapid way and that is to consolidate them. This means the organizing of a consolidated school which . . . [has] at least two teachers. (Macdonald 1913, 5)

The modern movement for consolidation began roughly in the 1930s and continues down to the present, and it remade American public education (Berry and West 2010). Consolidation reduced both the number of school districts and the number of schools. As late as 1932 there were more than 127,000 school districts in the United States operating small, local schools, most employing but a few or even a single teacher; over the following decades the number of districts fell, so that today there are fewer than 13,000 districts. The number of schools has also fallen, from nearly 259,000 in 1932—including more than 143,000 schools with but a single teacher—to roughly 99,000 schools in 2010–11. Average elementary school size in the United States increased from 89 students in 1932 to 446 in 1999–2000, a fivefold increase.1 In the process, school districts evolved into public agencies professionally run by educational bureaucracies, some educating tens or even hundreds of thousands of students.2

Consolidation had largely concluded in urban and suburban areas by 1980, but it continues today in rural areas, including in the Great Plains, where Nebraska leads the way. Between 1990–91 and 2012–13, 653 Nebraska school districts were dissolved and merged into receiving districts.3 The process can be seen in detail, for example, in rural southeast Nebraska during the past decade. The small towns of Adams and Filley consolidated their schools in 1998. The same year rival school districts Diller and Odell merged to become Diller-Odell Public Schools. Table Rock and Steinauer merged and then joined Humboldt, which had previously merged with
Figure 1. Plain Valley District #13 Schoolhouse. Photo by Janet Sanders. This former one-room schoolhouse is being restored and repurposed for use as the Loup Rivers Scenic Byway Interpretive and Tourist Information Center in Burwell, Nebraska.
(8) A Detailed Statement of the Benefits of Consolidation.

1. Increases the attendance.
3. Increases the enrollment.
4. Keeps the older pupils in school longer.
5. Provides high school privileges at one-third the cost.
6. Makes possible the securing of better trained teachers.
7. Results in higher salaries for better trained teachers.
8. Makes possible more and better grade work.
9. Improves industrial conditions in the country.
10. Enriches the civic-social life activities.
11. Conserves more largely the health and morals of the children.
12. Increases the number of eighth grade completions.
13. Provides adequate supervision.
14. Reduces truancy and tardiness.
15. Develops better school spirit.
16. Gives more time for recitations.
17. Increases the value of real estate.
18. Produces greater pride and interest in country life.
19. Prevents the drift to the larger towns and cities.
20. Brings more and better equipped buildings.
21. Eliminates the small weak school.
22. Creates a school of greater worth, dignity and usefulness.
23. Makes possible a more economical school.
24. Provides equal educational opportunities.
25. Gives much greater and better results in every way.

Figure 2. This "Detailed Statement of the Benefits of Consolidation" constitutes the last chapter in the 1913 report by N.C. Macdonald, state inspector of Consolidated, Graded, and Rural Schools for the State of North Dakota. The report also contains photos of new school buildings which, Macdonald writes, "present a strong argument for consolidation of rural schools in North Dakota" (Macdonald 1913, 33, 12).
part of Elk Creek. In 2004, Dawson-Verdon closed and joined Humboldt–Table Rock–Steinauer. Elk Creek, Burr, Lorton, Cook, and Talmage combined to form Nemaha Valley. Then Tecumseh and Nemaha Valley Schools consolidated in 2007 to form Johnson County Central.

Most commonly, consolidation results from attempts to lower costs of operation, typically through state school-aid formulas that encourage consolidation. For example, the California legislature’s nonpartisan Legislative Analyst’s Office issued a report in 2011 acknowledging that “Neither the academic research nor our own review offers persuasive evidence that consolidating small districts would necessarily result in substantial savings or notably better outcomes for students;” but not much later in the report the authors seem to take it all back:

We recommend the state eliminate the substantial fiscal advantages that enable districts to remain small, often as single—school districts—particularly since we find little proof that being small leads to better student outcomes. We also recommend the state remove existing disincentives for districts to consolidate. (Legislative Analyst’s Office 2011)

Citing concerns about inefficiencies and accountability, they recommend that California raise the required minimum size for districts and establish a minimum for schools.

Sometimes consolidation occurs because of legislative fiat. For example, in June 2005 Nebraska’s legislature passed LB 126 abolishing elementary-only (so-called Class 1) school districts; even though LB 126 was overturned by Nebraska voters by referendum in November 2006, most Class 1 schools had been dissolved in the interim and could not be resuscitated.

But is consolidating rural schools a good idea? Is it a necessary cost-saving measure—the perhaps unfortunate, sad, but entirely predictable outcome for towns with too few students or too little money? And what considerations or criteria should policy makers and educators use to evaluate this question? Understandably studies of school consolidation have mainly targeted its effects on cost savings for taxpayers and equitable access for students. But perhaps policy makers should include a wider set of considerations. As we learn from the essay by Gary Green, rural schools are crucial to healthy rural communities for many reasons beyond just the schooling they provide. The loss of a town’s school leaves a void in the community, reducing its capacity to sustain itself and improve its residents’ quality of life. School buildings often function as centers of community activity and nurture public participation in civic and community affairs. They not only host sporting events, PTA fundraisers, and school board meetings but also town theatrical productions, charity benefits, political rallies, and other community-building activities. Connected to the very life of the community, rural schools serve as symbols of community autonomy, vitality, and identity. Moving the school out of town may rupture the link between the school and its surrounding community, reducing everyday interactions among residents and diminishing civic engagement. In losing its school, Green notes, a town may experience negative effects on property values, business activity, social capital, and community identity. These losses may need to be weighed against consolidation’s putative benefits in efficiency and access.

Marty Strange argues forcefully in his essay that whereas the early phase of consolidation was “led by education professionals genuinely convinced it would improve teaching and learning,” today the process is propelled by public officials “whose driving concern is saving money and exercising greater control over the conduct of the educational process.” Yet Strange finds both rationales lacking, based on his review of evidence from the Great Plains and cases from Maine to Michigan to Arkansas, including both rural and urban school consolidations. Rural schools like other schools receive state and federal aid, bringing with it intrusion into local-community school self-governance. In many cases such oversight may be beneficial, if it overrides local discriminatory practices or raises standards of student performance. But it also brings growing bureaucratization and, as Strange argues, removes actual decisions from the community so that few local residents see the benefit of serving on school boards or in other ways. He concludes that “small schools work because people participate in them . . . [and] people served by these schools feel they own them.”

Determining school boundaries and school structure would seem to be intrinsically political issues, but as Steven Willborn discusses in his essay, a different process operates in cities—residents signal their tax and school-quality preferences by moving into or out of school districts that match their preferences, a process known as “Tiebout sorting”; policy makers thereby gain access to much information about residents’ preferences. But, Willborn argues, Tiebout sorting tends not to work well in rural areas, making it more difficult to ascertain to what extent rural residents desire to obtain the benefits of consolidation versus maintaining smaller, local schools; the result is that such questions as school consolidation
become inevitably political. He proposes some methods by which policy makers might obtain richer data about how rural residents value school quality, school location, and associated taxes.

Schools also play a crucial role in developing future leadership for rural towns and communities, and in their essay Christie Maloyed and J. Kelton Williams raise the question of whether there is a pending rural leadership crisis due to depopulation and youth out-migration. They argue that civic education in rural schools “needs to be reformed specifically to train and retain rural youth for leadership positions.” They favor place-based civic education, which they see as hindered by “rigid state standards” and “easily testable learning objectives” but potentially offering “avenues to engage students directly in their communities” and hence address the rural leadership crisis.

Rural areas, no less than urban ones, are places of considerable and, in many areas, growing diversity. Andrea Miller, herself an enrolled member of the Oglala Lakota Tribe, challenges policy makers and educators sponsoring school consolidations to consider the special obstacles facing Native American students and the potential detrimental effects on them of creating large and “efficient” schools. (Issues of consolidation and diversity are also central to the article by William England and Edmund Hamann.) In Miller’s essay she notes that among other concerns, “loss of a low student/teacher ratio, loss of connection with the school community, and loss of autonomy or control of schools are of particular importance.”

To the extent that consolidation is driven by the desire to cut costs, there remain some fundamental questions: Does it in fact do so? And if so, by how much? These are the central questions addressed by Bree Dority and Eric Thompson in their article. Assessing recent research on the topic, they find that the results are quite mixed; for example, one review study found that “although there is some evidence of increased fiscal efficiencies from consolidation, the overall benefit to the state is minimal,” whereas other studies suggest “cost savings may exist by increasing district sizes from fewer than 500 students to 2,000–4,000 students.” Dority and Thompson proceed to provide a rigorous econometric analysis using Nebraska data of the relationship between per-pupil spending and district size, the role of property values, and the impact of consolidation on per-pupil spending. Their results are stunning: using cross-sectional data, they find that there is a potential monetary cost savings (not counting students’ and parents’ travel costs) from school district consolidation; however, using time-series data, they found no consistent evidence that consolidated school districts actually experienced lower per-pupil spending.

Dority and Thompson suggest several possible reasons for these seemingly contradictory findings: (1) consolidation’s expected reductions in costs, such as fewer under-enrolled classes and reduced numbers of administrators-per-pupil, may be more than offset by other outcomes that raise costs, such as paying all teachers on a higher (consolidated) scale, increased transportation costs, and growing bureaucratization. (2) Perhaps “higher spending per student in [fewer-student] school districts . . . may reflect a desire by high resource districts to spend more on education as much as it reflects technical economies of size [in delivering educational services]”; this possibility emerges from Dority and Thompson’s intriguing finding that per-pupil property tax declines with rising school district size; that is, small school districts tend to have more taxable resources per pupil than do larger districts. (They found this relationship to hold in both 2006 and 2011, indicating that it is not an artifact of the recent rapid run-up in farmland prices.) Thus, while many questions remain, the Dority-Thompson results challenge the simple premise that consolidation reduces school costs.

The most powerful force driving consolidation in the Great Plains is a declining population in many rural towns and counties. Robert Blair, Jerome Deichert, and David Drozd survey the principal demographic trends, particularly the movement from rural regions to large urban areas (Metropolitan Statistical Areas) and their adjacent counties and to smaller cities (Micropolitan Statistical Areas, between 10,000 and 50,000 population). In addition to geographic redistribution they document the changing characteristics of the rural population—an aging white population, a growing proportion of Latinos, and continuing substantial rates of poverty. Their article shows the intimate link between population dynamics and school consolidation.

Consolidation has been proposed for “equity” as well as cost reasons, although that term carries a variety of meanings. Sometimes it refers to rebalancing access to school resources for children of disadvantaged racial, ethnic, or class groups. Sometimes it refers to redressing the differences between what in a nonconsolidated situation would be disparities between poorer districts and richer districts. Sometimes it is advanced on the grounds that small-school (mainly rural) students deserve access to an enriched curriculum—including, for example, AP courses and pre-calculus—which would not be possible in unconsolidated schools. When implemented consolidation is likely to create numerous changes, both intended
and unintended, in the affected schools and communities. William England and Edmund Hamann trace the experience of one Nebraska county, Dawson—home to the small city of Lexington, which attracted a new meatpacking plant and a subsequent large in-migration of Latino families. Although consolidation has often been expected to reduce educational disparities, in Dawson County the opposite occurred. The concatenation of rapid meatpacking expansion, explosive growth of (primarily Latino) immigration, and school consolidation ironically created new segregations and growing inequalities. The state’s school-aid formula seemingly reinforced rather than reduced these disparities.

So, too, consolidation is sometimes said to be needed for rural areas to be able to attract new teachers, who are said to value the greater professional opportunities available to them in consolidated schools. Wendy Smith, W. James Lewis, and Ruth Heaton, however, in an article focusing on math teachers, show that great gains in rural math teaching and student performance appear to be available by building professional networks and training teachers who themselves come from rural areas. Arguing that “good teaching matters,” they report on two innovative programs built around “two recurring features that can support teachers’ success in effectively teaching students mathematics: high-quality, longitudinal professional development and professional connections.” Their empirical results show that rural math teachers in both elementary and middle grades strengthened their deep mathematical knowledge, increased their confidence and motivation, and reduced their anxiety. Students in the one district for which they were able to obtain data scored markedly higher than average on statewide math tests. Achieving stronger math education in rural areas appears to require investing in high-quality teacher professional development and supporting teachers as members of a professional math community.

K–12 schools are just one component of a much broader educational system that also includes preschools, higher education, and lifelong learning opportunities; all components are necessary contributors to the quality of rural life and the health of rural communities. John Reinhardt (dean of the University of Nebraska College of Dentistry) and Kimberly McFarland explore the problem of limited access to quality dental care in rural areas and the associated shortage of rural dentists. As they note, high-quality care requires access to the oral health system throughout one’s life. As they see it the problem of rural dental care will best be solved by recruiting quality students from rural regions to dental school, which is why the College of Dentistry participates with other medical disciplines in the University of Nebraska Medical Center’s Rural Health Opportunities Program, a program encouraging rural residents to pursue careers in the health professions. Equally important is supporting rural dentists through postgraduate opportunities, teledentistry, and in other ways to connect practicing rural dentists with dental faculty and research. Their findings are important as delivery of health, dentistry, and all allied health care fields is of vital significance to the quality of rural life.

This issue also contains a photo essay by noted photographer Chuck Guildner, who in the years between 2002 and 2006 photographed a number of currently operating one-room and one-teacher rural schools. His images provide texture to rural realities.

Education has been a relevant concern to those seeking good governance and ultimately a good life. Indeed Aristotle suggested that “the legislator should direct his attention above all to the education of youth; for the neglect of education does harm to the constitution” (Aristotle 1985, 2121). Local schools provide life-sustaining roots for many citizens. For some citizens, the local school imbues that which is good in a community or a place. In rural towns the local school is often viewed as the unifying focus of the community.

Because schools are so important it is no surprise that they figure so prominently in our politics; in particular, conflicts over state aid—More or less for urban or rural areas? More or less for small schools or large ones?—have become routine features of state legislative sessions. The Oklahoma City Journal Record reported on January 9, 2013,

Every year during the legislative session, the issue of school consolidation is revisited. In an effort to put a face to this debate, Professional Oklahoma Educators has filmed and produced a documentary about rural schools and school consolidation. . . . We Are Rural tells the story of six rural Oklahoma schools in their fight to stay autonomous while they face a greater push for consolidation each year. (Gilmore 2013)

The Omaha World Herald on June 2, 2013, in its lead editorial, scolded,

As for state aid to K–12, the Legislature nearly tore itself apart over the issue this year. . . . The emotion and my-way-or-the-highway attitudes displayed during that bitter debate are not the way Nebraska needs to decide policy of this magnitude. School districts, education associations and their lobbyists
need to be prepared for reasonable compromise. Senators need to be wary of rigid parochialism and understand that this issue will require serious give-and-take that balances the interests of all types of school districts and taxpayers.

Perhaps so. Parochialism aside, certainly we all have a stake in sustaining quality education in the Great Plains. Schools are a vital piece of building the good life, and the vitality of our democracy is intimately linked to our public schools. Rural towns must be prepared to deal with the gains and losses from school consolidation, and being prepared means being informed across the rural and urban citizenries. It is abundantly clear that all of us, rural and urban residents alike, have a stake in the quality of rural education and should join the effort to support it. This special Symposium Issue offers insights into possible paths for sustaining rural schools and rural communities throughout the Great Plains.

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NOTES


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SCHOOL CONSOLIDATION AND COMMUNITY DEVELOPMENT

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ABSTRACT—The linkages between schools and community are seldom discussed in the research on school consolidation. Most of the focus of this body of literature is on the effects of school consolidation on efficiency and equity. In this essay I discuss the importance of school-community relationships and the critical role schools can play in community development. School consolidation can have several negative impacts on the local economy, social capital, and community identity. Assessments of the benefits and costs of consolidation need to consider more carefully the impacts on communities and the potential of building a stronger relationship between schools and communities.

Key Words: community development, school consolidation, asset-based development, social capital

INTRODUCTION

School consolidation continues to spark controversy across the Great Plains and other rural regions of the United States (Blauwkamp et al. 2011). Population loss, especially of young adults, is a major factor in the school consolidation movement in many rural areas. Although we frequently think of school consolidation in the context of smaller rural communities, it is rapidly becoming an issue facing urban areas as well. Population decline in many inner cities has forced school districts to close schools in some neighborhoods while building new facilities in rapidly growing suburbs. There is often a groundswell of opposition to school closings and consolidation. In our search to find political solutions to these issues we need to better understand why school consolidation is so controversial and ignites such intense opposition from community residents. Unfortunately the literature on school consolidation does not provide many insights into the emotional reaction to these issues.

The voluminous literature on school consolidation has focused on two key issues: efficiency and equity. Supporters of school consolidation contend that it will lead to greater efficiency—large schools and districts will provide education to students at a lower cost due to economies of scale. Large schools, and districts, have lower costs per student because the fixed costs are spread across more students. Of course transportation costs can offset many of the fiscal benefits of consolidation in rural areas with low population density.

Supporters of school consolidation argue that small schools are unable to provide the breadth and depth of educational programs that are offered in large schools. Thus students in small schools may not have access to the same quality of education that is available in large schools. For example, it may not be possible to offer as many foreign languages or advanced courses in smaller schools. In the end consolidated school districts should provide improved test scores and other outcomes indicators for students. Technological advancements, such as online courses, may help overcome some of these disadvantages. These arguments for school consolidation, however, have been effective in many state legislatures, especially when faced with the severe fiscal stress of recent years.

I approach the issue of the impacts of school consolidation, however, from a community development perspective. I am primarily interested in how school consolidation affects the capacity of communities to collectively improve their quality of life. The loss of a school leaves a void in communities. School consolidation makes it more difficult for students to be engaged in their community and for the school to serve the broader population. Community capacity can in turn affect the quality of education in school districts as well. As communities in a school district decline, the educational system suffers.

Although the research on the impacts of school consolidation on efficiency and equity continues to be de-
bated, there is much more of a consensus in the research on the impacts on community (Miller 1993). Consolidation tends to undermine the capacity of communities to enhance their well-being. Along with other broader social and economic forces it undermines community autonomy, community identity, and collective action. Schools can, however, play a critical role in promoting community development. Yet this promise is often unrealized and is threatened even more by school consolidation.

One of the difficulties in this debate over school consolidation is how to weigh the costs and benefits of the efficiency, equity, and community impacts of consolidation. Some of the impacts are more quantifiable than others, which leaves legislators and administrators with only the quantifiable results. In the next section I briefly review some of the empirical research that has examined the impacts of school consolidation on communities.

COMMUNITY IMPACTS OF SCHOOL CONSOLIDATION

Research on the impacts of school consolidation on communities consistently reveals that consolidation undermines the social and economic capacity of localities. As key social institutions in most communities, schools provide an anchor for other institutions and organizations. Research on the community impacts of school consolidation has concentrated on several key areas: property values, business activity, social capital, and community identity.

Property Values

School quality has a major impact on local property values. Districts that are perceived to have higher-quality schools experience more demand for housing. This relationship is ultimately reflected in the community's property values. Property values in turn shape the fiscal capacity of school districts and influence school consolidation. Thus, as property values decline, the resources available to schools decrease. Similarly, as the property tax base declines, school administrators look for strategies to cut costs, such as consolidation.

School consolidation can have a direct impact on property values as well. Lyson (2002) found that small communities in New York State that do not have schools tended to have lower property values than those that did have schools. Brasington (2004) also found that after controlling for student performance and property tax rates, school consolidation lowered property values about $3,000 per household on average.

Property values reflect the demand for housing in an area and the evidence suggests that families prefer to live in a community where there is a school in proximity. Similarly, the perceived quality of the school will influence the demand for housing. In most states public schools are funded largely through property taxes, so these dynamics create a downward cycle for school districts that attempt to consolidate schools in response to fiscal problems.

Business Activity

The local economy also may be affected by school consolidation. Sell and Leistritz (1997) found that communities that have lost schools experience a greater loss in retail sales and number of businesses. Similarly, Lyson (2002) found that business activity was much higher in rural communities that have schools than those that do not. Business activity is affected by the loss of student and faculty expenditures, as well as that of the school's expenditures on supplies and services in the local economy. Schools also stimulate local economies by paying faculty and staff salaries.

Social Capital

Schools remain one of the few local institutions that provide residents with an opportunity to interact on issues of common concern. Consolidation reduces the opportunity for social interaction within localities (Elliott 2012; Hani-fan 1916). Proximity does influence the amount and type of social interaction that occurs at the local level.

Social interaction at the local level is important for several reasons. First, residents develop trust with others in the community in the course of local interaction. Trust is important because it helps improve flows of information and ties with others and ultimately facilitates collective action. Second, local interaction is essential for developing the capacity to work through differences and provide an understanding of opposing interests and concerns. In this sense it is critical to the development of democracy. Finally, social interaction at the local level is crucial for identifying areas of common concern, which ultimately improves the capacity of residents to improve their community’s quality of life. Thus the loss of local schools decreases the level of social capital.

Empirical studies have consistently shown a loss of civic participation as a result of school consolidation. In their study of North Dakota communities Post and Stam-bach (1999) found lower levels of participation in local organizations after consolidation. Similarly, parental in-
volvement in school activities declines when schools are consolidated (Duncombe and Yinger 2001). This decline in involvement is at least partially due to the greater distance that parents have to travel in consolidated districts.

**Community Identity**

School consolidation is typically viewed as a threat to community identity (Warner et al. 2010). Where one goes to high school, for example, provides a signal or information to others outside the community. The loss of a school threatens this sense of place or community. Many rural communities today lack theaters or shopping malls, so athletic events and school-sponsored activities have become the key element of their community. Parents often experience the loss of identity when their children can no longer attend the same school they had attended. They do not have the same type of attachment with a consolidated school.

**SCHOOLS AND COMMUNITY**

Schools and communities have mutual interests, but several forces work against realizing those common interests (Chung 2002). Professionalization and bureaucratization have especially contributed to the loss of school engagement in communities. These processes push administrators and teachers to focus their attention on the internal dynamics of schools while downplaying the linkages to the broader community. Professionalization limits community participation in education decisions as well. School officials, it is argued, have the training and experience necessary to make good decisions about education.

Bureaucratization also tends to make it more difficult for local residents to access school facilities or other resources. It could be reasoned that this narrowing of the mission of schools is a positive development given the limited resources devoted to education. But this criticism misses the point about the educational value of engaging students in real-world issues and applying the concepts they learn in the classroom. In other words, greater engagement in the community rather than less may be a more appropriate response to the fiscal stress facing many school districts.

Professionalization and bureaucratization also have shaped the community development field in recent decades. Emphasis on finance and housing, the bread and butter of many community development programs, has largely ignored the potential of working with schools to help address community issues. Professionalization has contributed to a narrowing of the field of community development. There is much less emphasis on community organizing and more on accessing external resources as a means of promoting development (Stoecker 1997). Professionalization of the community development field has even restricted the role of residents in shaping development efforts because they may have limited information and knowledge about the technical issues related to housing and finance. These processes have also moved community development professionals away from working through local organizations and institutions.

There are numerous reasons, however, why schools logically should be the focus of community development practitioners. In many communities schools are one of the few local institutions that remain. Local businesses have been replaced with regional, national, and international chains. Independent hospitals and healthcare organizations have been acquired by outside organizations. Many small-town banks have become branches of national, and even international, holding companies. As these organizations and institutions have become more integrated into the larger society, communities have lost much of their autonomy. Decisions affecting the community are increasingly made by outside agencies and organizations. The disappearance of these local institutions often results in a net economic loss to the community as purchases of goods and services become more centralized (usually outside the community). Support for other local organizations also declines as these institutions restructure their relationship to the community. Schools can potentially play an important community function because they have this localized relationship that other social institutions lack today.

Schools provide the potential for regular interaction among community residents. The decline in levels of participation in local institutions and organizations has been well documented (Putnam 2000). Although much of this decline can be attributed to broader social forces, I believe the lack of meaningful opportunities to address issues of common concern in communities is also a major contributor to this decline. Public education is frequently a common concern among residents (and businesses). It cuts across class, race, ethnicity, and sex. Some of the most successful community development cases in recent years that have worked across racial and ethnic lines have focused on schools (Warren 2001). The lesson is that among various local institutions, schools have the greatest potential of uniting citizens in ways that improve their quality of life. Thus it provides opportunities for collective action.
Schools also offer the potential of learning citizenship through community engagement (Peshkin 1978).

Because each field (education and community development) has narrowed its focus, we tend to lack holistic approaches to address interrelated issues such as local economic development, racial and income segregation, suburban sprawl, and the achievement gap in schools. Paul Grogan and Tony Proscio (2000, 220–21) make this connection between schools and community development in their book on neighborhood revival:

From the perspective of community development groups, education is the next frontier. For decades, they had found themselves hamstrung by the impenetrable wall around their neighborhood public schools. They could fix housing, revive shopping areas, raise the level of public services, even reduce crime. But the schools—probably the biggest factor in families’ decision about whether to remain or flee—were simply beyond the realm of the organized community. Many critics of community development correctly pointed out that, even when community development corporations visibly transformed their communities into livable, attractive places, the middle class sometimes kept moving out.

The definition of community has been one of the most widely debated concepts in social scientific literature. For my purposes in this essay, there are three important elements (Wilkinson 1991). First, I am referring to communities of place (not interest). Communities of place are based in a specific territory, whereas communities of interest tie individuals to each other through religion, values, politics, or similar concerns. One of the key issues in defining communities of place is the boundary of a community. For some it may be a small neighborhood, and for others it can be as large as a county. School attendance areas form the community boundaries in many places. Schools generate issues of common concern across an area. Research suggests that some of the strongest factors influencing social interaction at the local level are having school-age children and homeownership (Kasarda and Janowitz 1974).

Second, community requires local social organizations and institutions that can provide routinized social interaction. Local cafes, coffee shops, taverns, bookstores, and hair salons also can provide these opportunities (Oldenburg 1999). The loss of these places can be devastating to community life. In many localities schools fulfill this function. This does not mean that communities require a full set of institutions that enable them to become self-sufficient. In the past residents in small towns could meet most of their needs through local organizations and institutions. Today, however, small communities are likely to rely on many institutions outside their borders.

Finally, the concept of community involves social interaction on matters of common interest. This definition implies that community does not exist simply when you have local institutions; residents must interact on something that they have in common. This issue is somewhat controversial because critics charge that social class and race/ethnic differences divide communities so deeply that it is difficult to mobilize residents around issues that they have in common. The concept of community does not deny that there may be deep social divisions and different interests and values in a community. It does suggest, however, that many of the residents in a specific area may be faced with some of the same issues and concerns. Environmental pollution, for example, may affect most residents in a place and spark collective action in response to this threat. The quality of public education may be another factor that can influence community quality of life, even if residents do not have school-age children. Although there may be racial and class differences in how these issues affect households due to unequal resources, they do still have an impact on most residents in the locality.

There is considerable debate as to whether the concept of community is still relevant in today’s global society. In the past people lived, worked, and consumed in the same places. These functions, however, do not overlap as much as they once did. Urbanization and bureaucratization of our institutions contribute to the loss of a sense of community. Social scientists have argued that these processes change the nature of social relationships by contributing to increased individualism and social isolation. This is especially the case in many urban neighborhoods that have experienced deindustrialization and racial segregation (Wilson 1987), but also in suburban areas that are characterized by low-density development. Technology also may affect these relationships because it loosens the bonds at the local level and enables individuals to develop less place-bound communities. Similarly, mass communication and global culture may reduce some of the place-specific attributes that contribute to a sense of community. The central concern with the loss of community is that residents lose the capacity to address issues of common concern.

Although these social processes are real and have undeniably weakened community bonds at the local level, there is substantial evidence that residents continue to
interact on community matters, and that this interaction is an important component of their quality of life. Social networks may have become denser over time, but community residents continue to interact with neighbors helping each other and by participating in social events (McPherson et al. 2006). Community may not have been lost, but instead has been transformed and liberated.

School consolidation can be considered an element of urbanization and bureaucratization (Sher 1977). The loss of local institutions and the growing linkages to the larger society and economy have been part of the process of modernization and urbanization of communities over the past century and a half. This has been referred to as the “Great Change” by some sociologists (Warren 1978). With these changes individuals have tended to be more isolated and less connected to one another.

In response to the growing divide between schools and communities, there has been discussion around the promotion of community schools over the past few decades. The basic definition of a community school is one that seeks to integrate children into the community through selected activities other than academics and at the same time serves as a community center for recreation and adult education. Community schools promote student engagement through activities such as community service-learning and school enterprises. School facilities can be used to help provide social services. Businesses are actively involved in providing apprenticeship programs as well. Community schools build on the assets that are available in these institutions.

SCHOOLS AS COMMUNITY ASSETS

The community development field has shifted its orientation from needs assessment to asset-based development over the past two decades (Green and Goetting 2010; Green and Haines 2011). This asset-based approach attempts to maximize and leverage the use of available community resources rather than focus on the problems the community faces. This approach to community development views schools as assets that can contribute to the well-being of the larger community and not as problems that need to be addressed.

The emphasis on needs and problems tends to render communities powerless. Schools are frequently identified as problems that need to be fixed. This labeling of schools as problems pushes communities to seek external resources (especially financial assets and technical expertise) to address these challenges. This dependence on external resources undermines community capacity building. In addition solutions are proposed before the sources of the so-called problem are really understood. For example, the achievement gap is addressed by curriculum reform, while many of the sources of the gap are based outside the school.

The asset-based development approach empowers communities to build on their resources and identify the strategies that can enhance their assets. Kretzmann and McKnight (1993) identify three different types of assets: individual gifts, associations, and local institutions. Individuals have gifts, experiences, and skills that contribute to the well-being of communities. These gifts often are overlooked or ignored in the community. Informal organizations can provide social networks and contacts that are essential to the mobilization of communities. Finally, formal institutions can provide a wide variety of resources, as well as establish regular contact and trust among community members.

Asset-based development begins with the mapping of the gifts, associations, and institutions in the community. This stage of the organizational effort enables developers to identify the kinds of resources that are available to them. It does not mean that communities rely entirely on local resources. Instead local assets can be leveraged to be more effective. The key, however, is that local actors need to maintain control over the community development process. Mapping these individual assets provides communities with an opportunity to develop a vision based on the resources that are available to them.

After mapping the assets community organizers build consensus by forging identifying goals that can be achieved by leveraging community resources (Green and Goetting 2010). Asset-based development approaches tend to be less conflict oriented than other community development strategies. Organizers build on consensus and mobilize residents around common goals. Consensus organizing can build stronger support, with less resistance, for efforts to promote community well-being (Eichler 2007).

How can schools serve as a community resource or an asset? First, school facilities are underutilized because they are typically used for only a part of the day. School facilities can provide a meeting place for community organizations, business groups, and informal organizations (e.g., book clubs). Community organizations, especially those serving youth, can use recreational facilities. Most communities struggle to find facilities for artists and musicians, and schools can cooperate with local organizations to provide these key resources. School grounds are increasingly used for community gardens. These gardens
not only improve food security in the community, but they also provide an educational opportunity for students.

Second, schools often have equipment that could benefit the broader community. For example, there is growing interest in the concept of community kitchens that provide equipment and facilities to entrepreneurs that are too small to procure their own. Access to this equipment and facilities can help entrepreneurs overcome some of the barriers they face in the startup phase. Thus, schools can serve as incubators for promoting certain types of entrepreneurship in the community.

Third, schools can stimulate the local economy through their purchasing power. Rather than purchasing goods and services outside the community, schools can support local businesses with their purchases. The growing number of farm-to-school programs is an excellent example of going local. In an effort to introduce more fresh fruits and vegetables into school lunch programs, many schools are purchasing products from local farmers and ranchers rather than from wholesalers. These programs benefit the schools because they not only provide nutritious food, but they also are frequently used to educate children about food and nutrition. At the same time, these purchases help support local farmers, who benefit from these direct purchases.

Fourth, schools can offer courses to the broader community. Many schools offer courses in English as a second language. Local schools are best prepared to reach out to local residents that may not have the resources to obtain this training elsewhere. The potential ties to students can be an effective way of reaching this audience.

Schools have the potential of making a broad set of contributions to community development. These benefits are seldom discussed in the debates over school consolidation. Closing a school typically has devastating impacts on the community and ignores the potential contribution schools make to the broader community. The loss of a local school has a multiplier effect in the community because it means a loss of many of these key resources for community development.

**CONCLUSIONS**

Education can be enhanced by a strong relationship between schools and community. Consolidation however, presents obstacles to building these relationships. Many of the educational innovations, such as community service-learning, that are being promoted within the educational field today run counter to the movement to consolidate schools and districts. At a minimum it is more difficult to get students in consolidated schools engaged in their communities.

We need to look more carefully at institutional innovations that provide school districts with the financial and programmatic benefits of economies of scale, while rebuilding the relationship between schools and the local community. Here it is important to distinguish between administrative and educational consolidation. Administrative consolidation can be achieved without affecting the size of schools or communities. Shared services across school districts can be an effective strategy for providing economies of scale without consolidating attendance areas (Howley et al. 2012).

The field of community development also needs to recognize the importance of school-community relationships. Schools are often the major employers in most communities. Through their purchases of goods and services, they have an impact on the local economy. Schools also have many underutilized resources that can facilitate the community development process. Community organizers need to consider school administrators, faculty, and students as important stakeholders in the community development process. School administrators can serve on committees and boards in the community. They provide access to a wide variety of networks in the community and can offer an important perspective on development issues.

The arguments for school consolidation lend themselves to a standard cost-benefit analysis. When the fiscal benefits of school consolidation exceed the costs, it appears to be a rational decision to find ways of consolidating schools and districts. Including the element of community into this analysis, however, is problematic and tends to draw on emotions rather than rationality. I have argued that in the long run the element of community may ultimately play a major role in the quality of education. By integrating the importance of community into these decisions, it is possible to build on the mutual relationships between schools and community.

**REFERENCES**


Chung, C. 2002. *Using Public Schools as Community-
Development Tools: Strategies for Community-Based Developers. Harvard University Joint Center for Housing Studies, Cambridge, MA.


ABSTRACT—Pressure to force or induce the consolidation of rural schools through legislation is common across the United States. Whereas consolidation was once chiefly about school improvement, today it is more likely to be about fiscal savings. Legislative battles have produced many lessons for rural school advocates which are discussed here. Consolidation is also on the agenda of many of the school reform movements at work in the United States, many of which see rural schools as too numerous, too attached to the communities they serve, and too democratically managed to reform from without. As reformers grapple with the resistance to reform in many rural community schools, they assume the haughty and arrogant style of the fading English aristocracy that Oscar Wilde lampooned in The Importance of Being Earnest. The essay closes with a caricature of the “education reform aristocracy” attributing to it some of the sentiments expressed by Wilde’s pompous characters.

Key Words: school consolidation, school district consolidation, Great Plains schools, rural school reform, education reform elites, school consolidation politics, rural school closure, reform and consolidation

INTRODUCTION

The movement to consolidate schools has lost its innocence. It was once led by education professionals genuinely convinced it would improve teaching and learning by establishing specialized instruction and by getting professionals to replace backward and provincial elected school boards as the primary forces controlling schools. It was about reallocating, but not saving money. It was about sheltering educators from democracy.

Now, although a bit of the rhetoric about school improvement still garnishes the call for consolidation, the movement is led not by educators but by state officials—governors, legislators, and chief state school officers—whose driving concern is saving money and exercising greater control over the conduct of the educational process. This control is ostensibly about quality but mostly about the metrics of accountability that separate so-called good schools from bad schools, allowing officials to claim they are giving taxpayers more for their money.

The effort to force consolidation of schools or districts by mandates, incentives, or penalties imposed by state law is tireless and pernicious. Although the intensity of the pressure has varied from time to time, it is never far from the debate in any state with a substantial rural population.

The Great Plains has been a laboratory for the political process of opening and closing schools. While population was growing in the rural areas of the Plains, school districts were created with abandon. The thirst for consolidation emerged in the 1920s and especially the 1930s, when motorized transport and improved roads made busing children within larger catchment areas possible. Federal encouragement followed in the 1960s with funding for the Great Plains School Re-organization Project, an unabashed program of persuasion favoring consolidation. While this met with resistance, the fact is that many rural schools and districts were closed in the Great Plains in the 1960s (Wishart n.d.). But rural resistance stiffened, and by the late 1980s even the state’s own consultant was telling Nebraska that there was little of value to be gained by a policy of consolidation (Sher 1988).

But the pressure to close schools continues unabated. In general, four factors quicken the appetite for political pressure to consolidate: (1) declining enrollment and rising per pupil costs; (2) state fiscal crisis demanding budget cuts; (3) a court finding that the state’s school funding system is inequitable and/or inadequate, requiring more money be spent on education (woe to rural plaintiffs who win such a lawsuit); (4) a “disparity of fortune” where urban and suburban areas are prosperous and rural areas are in distress, prompting resentments toward laggard regions (Strange 2011).

The last decade has seen an almost perfect medium for
incubating the fertile egg of school consolidation. Legislation addressing school consolidation in one form or another has been considered in at least 35 legislatures in the past decade and it has been a leading education issue in many of those states. As these battles have been fought, certain common experiences have unfolded that should serve as political lessons for rural communities trying to resist forced consolidation.¹

**Lesson 1: It Is Always about Schools, Not Districts**

Whether the professed objective is to improve education or to save money through increased efficiency, any assertion that consolidators want only to close districts, not schools, has proven to be disingenuous. Closing districts does not save enough money to make much difference and all hope for improving schools has to take place in classrooms, not administrative offices. In fact, among the greatest challenges rural school leaders face is assembling and retaining a well-qualified teacher corps in the face of budget constraints. To cut costs of rural education more than they already have been cut, the consolidators have to increase school size and class size and fire teachers. The purpose of closing districts has time and again proven to be the elimination of the community-based political apparatus that protects the schools.

In Arkansas a campaign that began with the objective of closing districts, not schools, succeeded with passage of legislation that resulted in consolidating 67 districts in 2004. Among the 134 schools operating in those 67 districts, 47 (35%) were closed within two years. In the 88 schools operating in small districts that were absorbed into larger districts (annexed) that year, nearly half (42 of 88) were closed within two years (Johnson 2006). It was supposed to be about administrative efficiency. It was about schools.

**Lesson 2: The Facts Are Not as Important as the Message and the Messenger**

The literature about the efficacy of small schools is vast and substantially conclusive. It has been summarized many times, most recently by the National Education Policy Center (Howley et al. 2011).

But small-school advocates can put all the research in their behalf on the political table to no avail. The consolidators just do not believe it. Having this research distilled to talking points is useful, because it supports small-school advocates’ case, but who delivers this message and how they deliver it are far more important.

In West Virginia, a state crusade to close rural schools went unabated for 10 years and the consolidators worked their will, spending over a billion dollars to build consolidated schools absorbing students from over 300 closed schools. Promises about improved curriculum were made and broken. Costs did not decline but increased. Administrator numbers did not decrease but increased (Eyre and Finn 2002).

None of that mattered until a rural group called Challenge West Virginia got an investigative reporter from the Charleston Gazette to ride a school bus. He waited with the first pupil, a kindergartner, to be picked up in the predawn darkness and get on the bus for a ride of more than an hour. The storyline for his scathing report must have been written in the first ten minutes of that horrific, loud, and bumpy ride to school.

Now this issue came to life for West Virginians, rural and urban. It was no longer about the efficiency or effectiveness of schools. It would not be settled by scholarly research. No one needs a scholar to tell him that it is wrong to put a five-year-old on a bus at 6:30 a.m. for a ride of more than an hour to school. The issue now was official child abuse. On that issue rural West Virginia began to prevail. Corruption in the state bonding authority that financed construction of the consolidated schools was revealed, people went to jail, and a governor opposed to consolidation was elected. The closings slowed to a crawl.

**Lesson 3: Don’t Ask for Whom the Bell Tolls**

The political strategy of the consolidators almost always involves dividing and conquering potential consolidation targets. This is evident especially in the case of legislation that imposes sanctions or mandates on school districts based on student enrollment or other size measures. In these cases legislators know that those in schools who think they will survive a consolidation battle are willing to throw their neighbors under the consolidation bus.

Nobody talks about it that way, but the political math is unmistakable. A consolidation bill that starts out mandating the closure of districts with fewer than, say, 2,000 students will likely be bid down to lower levels with a keen eye as to which schools in which legislative districts will be chosen to survive and absorb their smaller neighbors. This process is deliciously cynical. Rural legislators are the targets in this game of musical chairs because they are as much hostage to the interests of the potential survivors as they are to the interests of the likely victims.
computers will find the right number to reach the requisite balance of interests for consolidation in the requisite number of rural districts.

But the reality is that the survivors are safe only for a while. The day will come when what was once big enough to pass the political test is no longer big enough. Those who rely on any compromise that spares them for now can expect to hear the bell tolling for them soon enough.

**Lesson 4: Might Makes Right**

Consolidation is forced by those who have the political power on those who lack the power to stop them.

In Arkansas those schools that were closed within two years of the 2004 forced consolidation had 21% higher student poverty rates and served nearly three times higher percentages of African American students as the schools allowed to remain open in the consolidated districts. If you were an African American student, there was a 69% chance that your school would be closed. If you were not African American, the chance was 31% (Johnson 2006).

But this lesson also applies where race is not an issue. In 2007 legislation was proposed in Maine to require all school districts, without exception, to participate in good-faith negotiations with nearby school districts to reach consolidation plans that would leave no district with fewer than 2,500 students.

As consolidation plans developed they were submitted to the state department of education for an assessment of their impact on, among other factors, local property tax rates. When larger and wealthier districts saw what it would cost them to absorb smaller and poorer districts, especially under a uniform teacher pay schedule, they asked the legislature to exempt them, since they were already above 2,500. The legislature did. Eighty school systems left the consolidation dance floor.

Other exemptions soon followed for this reason or that. When all was said and done 57% of Maine’s public school students were in districts that did not have to make more than minimal changes or none at all, and only 27% were in districts forced to consolidate. The remaining 15% of the students were in rebellious districts that refused to comply with the law and were being fiscally penalized with reduced state aid.

The districts forced to consolidate or punished for refusing are mostly Down East, in the far North, and in the rural rim of towns that lie between the Interstate corridor and the Northern Woods, the regions of rural Maine that struggle the most economically.

Opposition to consolidation persists among these districts. After waiting the mandatory 30 months about 40 formerly independent districts exercised their right to petition for removal from the consolidated district.

**Lesson 5: If You Can’t Win in the Legislature, Don’t Bother to Try to Win in the Courts**

One of the drivers of school consolidation is a funding system that deprives small school districts of adequate funding. These districts often defer maintenance and otherwise make damaging fiscal decisions in order to meet operational costs, primarily to pay teachers. Sometimes, but not always, these funding systems are unconstitutional. Many rural school advocates have sought relief from the courts. In fact 35 of the most recent lawsuits over school funding have been brought by rural plaintiffs. They have won complete or partial victories in many of them.

In the case of Vermont, a sweeping court decision declaring both the funding system and the tax system that supported it unconstitutional was followed by a well-organized legislative effort that within months had completely overhauled both the tax system and the funding system. But that is the exception, not the rule.

In the cases of Ohio, West Virginia, Arkansas, and many other states, court victories by rural plaintiffs resulted in prolonged legislative battles they were unable to win, and in each case, rural districts were ultimately punished with consolidation. In the case of Arkansas, the tiny high-poverty school that fought the court battle alone for 10 years, winning a stunning change in the school funding system, was forced to close by the very legislation that implemented its court victory.

**Lesson 6: Organizing Makes a Difference, if Early Enough and if Focused on School Improvement**

Unless rural school supporters are well organized, politically skilled, and united, the pace of forced consolidation will continue to increase.

The biggest barrier to organizing is the tendency to discount the dangers of forced consolidation until legislation is actually moving toward passage. It is often too late to organize, educate, and pressure.

It is important that rural organizing on this issue reach deep into communities, and not just schools, for leadership and support. By far the best strategy is to form statewide or substate regional rural organizations concerned
broadly with school improvement—people who want to improve, not just save, their schools.

A prime example is the Rural Community Alliance (RCA) in Arkansas. Organized in 2003 in response to the legislative school funding and consolidation battle, it had a moderating effect on the legislation that ultimately passed. RCA has local school/community chapters throughout the state and is focused on school improvement, community development, and preventing further consolidations. It has chapters in the poorest regions, both African American and white, and has a deep board and a strong staff of six. It has produced videos of students telling the story of how school closings have affected them and their communities. This organization is a model of what effective rural organizing can do to make good schools close to home in small places.²

THE EDUCATION REFORM ARISTOCRACY

In many school consolidation battles these days, the consolidators in state government are budget hawks wrapped in the sheep’s clothing of reform. They often identify with the rhetoric of a larger reform movement, or a diverse group of reform movements that share an attitude of superiority on the subject of what makes a good school.

This elite education reform aristocracy, is a posse of consultants, academics, interest group lobbyists, philanthropists, and think tank experts, as well as the elected officials who use and are used by them to peddle reforms that serve their purposes, including ideological and political purposes. Their agendas vary, but all parties are dead sure they have the answer to school improvement across all environments. They are busy crafting public relations mantras that all children can do this and no child should be that; preaching accountability (of which they have none themselves); creating assessment systems that induce teaching to the test, cheating, and easing poor test takers out of school; and always trying to get five quarts out of every gallon of teacher compensation.

Many, not all, have a pecuniary motive. They have reform models to sell to the U.S. Department of Education, which has spent billions on various reform models with little to show for it in terms of improved student achievement—the standard they all set for themselves.

But remember the education reform aristocracy is not a unified aristocracy. In fact they compete furiously for policy makers’ attention and often regard each other with open contempt. The only things they have in common are that they each have a reform package to promote, they think schooling is too important to be left to people in schools and communities, and they go catatonic at mention of the word “rural.”

The education reform aristocracy has a big house, and in nearly every room in that house there is a fondness for school and district consolidation. That is largely because they do not have a clue about what to do with struggling rural schools other than close them.

The reformers are themselves almost entirely focused on the problems of urban education, but the idea that their reforms might not be suitable in a rural context is alien to them. In the first round of competition for one of the U.S. Department of Education’s Investing in Innovation grants (a feed bunk for reformers trying to develop, validate, and move their reforms to scale), applicants were given extra points if their proposed project would serve high-needs rural schools. Among the many proposals that included token rural participation was one from the Board of Education of the City of New York. The proposal made no pretense that it would actually serve rural schools—all activities would be in the five boroughs of New York City. But the proposal writers reasoned that if an innovation could make it in New York, it could make it anywhere. Rural schools would therefore ultimately benefit (Strange et al. 2011). It was on its face a presumptuous argument. But the decision by two of three proposal readers to award them rural bonus points was an outrage.

But if they know nothing about rural education, the education reform aristocracy will not admit it. In fact they are downright certain they know one thing about rural education: there are too many schools. One cannot get reform to scale with all those administrators and teachers and democratically elected school boards. Consolidate them so they can be reformed.

THE TRIVIAL AND THE IMPORTANT

The penultimate reform to emerge from the education reform aristocracy is the No Child Left Behind Act, a hideously flawed set of mandates, punitive accountability measures, and obsessive standardized tests—all couched in uncouthly politically correct platitudes. Although it might have been launched from the visionary platform of standards-based reform, it had to come to grips with congressional politics, and by the time the law was passed in 2002 it had descended from vision to ideology and dogma.

In the wake of this descent schools have become battlegrounds of hostility and blame. Teachers take early retirement or simply leave the profession rather than endure the relentless criticism and teaching to the test. Ir-
rational and punitive accountability systems have induced shameful cheating. Many schools have become shallow test preparation centers devoted to math and English. Conforming to “drill and kill” rote pedagogy and keeping score is all that matters. No Child Left Behind is an education reform aristocracy catastrophe.

And it is now politically correct manners to say so. Indeed the education reform aristocracy barely recognizes its firstborn. The reform argument often now has nothing to do with what is best for the kids, which is what drove No Child Left Behind. Now, likely as not, the case for reform is made on the basis of what is best for the country and its competitive position in a global economy that apparently requires skills we were not going to get from No Child Left Behind.

Small schools and small school districts are regarded by reformers as no better suited to preparing people for the global economy than they were suited to preparing them for standardized tests. In states with large rural areas that are struggling economically, the arguments for school consolidation have now been artfully focused on competitiveness, access to costly technology, and educational efficiency. It is still about the money.

These school consolidation arguments are made by the education reform aristocracy and their political agents with the same superficially earnest arrogance exhibited by the wasting English aristocracy that Oscar Wilde lampoons in his best-known play, The Importance of Being Earnest. Like the play, the staged implementation of reform and the drive for rural school consolidation have become a comedy of manners. In the polite company of reformers one never admits that all children cannot learn to the same high standards, that standardized tests are among the least valuable of all assessment methods, or that—in schooling—bigger is not better. But reformers always understand the importance of being earnest, especially when it is for show. Wilde summed up the aristocratic state of mind he parodies in The Importance of Being Earnest thus: “We should treat all the trivial things of life seriously, and all the serious things of life with sincerity and studied triviality” (McKenna 2005).

The English aristocracy was, in Wilde’s time, cascading toward irrelevance, stubbornly entrenched in its pompous manners, social customs, and standards. The same is happening to the education reform aristocracy. Among its most earnest crusades is the campaign to close schools that resist their dubious reforms. With Wilde’s help, we look again at the school consolidators, sorting out the trivial from the important.
form aristocrats defend these vulnerable neighborhoods, or stand behind the reform minded public officials who are closing their schools rather than downsize the urban schools that were too big to be effective? Mostly they are looking the other way.

Getting to Scale Means Less than They Think

He has nothing, but looks everything. What more can one desire?
—Lady Bracknell, in The Importance of Being Earnest

Big schools are about more—more curricula, more technology, more co-curricular activity, more specialists, more services, more sports, more of everything. Getting to scale is what reform is all about. And there are no two ways about it. When you enter a modern, 3,000-student high school, you are in a state-of-the-art instructional facility.

Indeed it is a place where you can get lost, and they will not come looking for you if you fail to sign up for physics.

The odd thing about big schools is that they do not necessarily end up costing less, even on a per-pupil basis. The bigger institutions are, the more complicated they are. The more complicated they are, the more management they require. Costs of communication increase, time absorbed in meetings increases, and decision making slows down and is farther removed from the people whose input is critical.

That is why beyond a certain point per-pupil costs actually increase. Michigan researchers calculated the optimal size for school district efficiency in the state, then calculated the theoretical cost savings if all students attending smaller, higher-cost districts were placed in districts of optimally efficient size. They concluded taxpayers might save about $31 million per year through this consolidation. But they found that 70% of Michigan students attend a district that is larger—and less efficient—than the most cost effective–sized district. If these inefficiently large districts could be broken up into smaller, optimum-sized districts, $363 million might be saved (Coulson 2007). Where money is concerned, there is more to gain from deconsolidation than from consolidation.

Small schools are not about more, they are about better, for all the reasons noted above. Big schools look everything, but offer less than appearances, to Lady Bracknell’s delight.

The Hidden Efficiency in Small Schools: Economies of Scope

I hope you have not been leading a double life, pretending to be wicked and being really good all the time.
—Cecily, in The Importance of Being Earnest

When it comes to small schools, consolidators and reformers could stare at a bowl of cherries and see nothing but the pits.

What small schools lack in low costs, they more than make up for in the efficiency of operating at a human scale. Rather than do one thing well—operate cheaply—small schools do many things well. They keep track of kids, provide more individualized instruction and opportunities for participation, they have teachers who know their students and their parents, and they know when kids need help. The cost disadvantage of a small scale is offset by advantages in the scope of its effectiveness.

The Rural School and Community Trust identified ten research-based reasons why small works: (1) students participate more, both in curricular and co-curricular activities participation (2) small schools are safer; (3) students feel they belong; (4) there is more individualized instruction; (5) good teaching methods are easier to use; (6) teachers feel better about their work; (7) there is less ability grouping and higher expectations for all children; (8) multiage classes promote personalized learning and encourage positive social interactions; (9) smaller districts mean less bureaucracy; and (10) wider grade span configurations mean fewer transitions to new schools. (Jimerson 2006).

These mutually reinforcing success factors lead to better outcomes by multiple measures. According to education scholar Mary Ann Raywid, children learn more and better in small schools, make more rapid progress toward graduation, are more satisfied, less likely to drop out, and behave better in small schools. “All of these things we have confirmed with a clarity and at a level of confidence rare in the annals of education research” (Raywid 1999).

Reformers may pretend these schools are wicked, but they are really good all the time.

The Curse of Being Plain, and Plainly Working

The only way to behave to a woman is to make love to her, if she is pretty, and to make love to someone else, if she is plain.
—Algernon, in The Importance of Being Earnest
It bothers the education reform aristocracy that small schools work despite their indifference to any heralded reforms.

The Rural School and Community Trust looked at rural high schools in nine southern states that were below median size and above median student poverty rates, scored above the mean on all state mandatory assessments, and met federal standards for adequate yearly progress at the school level and for all student subgroups.

One common denominator among these schools was that they made little or no use of the packaged and approved comprehensive school reform models. Instead, they used “diverse proven practices widely recognized as effective pedagogy, blended together to suit local needs.”

What was unmistakable among these schools was the quality of human relationships within them. They exuded a sense of pride and a determination to beat the odds against high academic performance. Students said they felt they belonged, were needed, and got attention. They wanted to “do better than they expect us to,” and to “do good so they can’t close our school.” At one school they were asked what would happen if a student failed to appear for detention. They were baffled and could not imagine that ever happening. These small schools were about relationships, attitudes, and respect (Rural School and Community Trust 2004).

None of the attributes that make small work in schools bears any reformer’s imprimatur. There is nothing to copyright, trademark, brand, or package for sale.

Rural schools and the communities they serve have taught children problem-solving skills, real-world—especially natural-world—relationships, and how to get along with people. That is what small schools in small communities do, not by script but by habit, not as a matter of induced reform, but as a matter of making your way in the world.

The Curse of Community and Democracy

Cecily, mamma, whose views on education are remarkably strict, has brought me up to be extremely short-sighted; it is part of her system; so do you mind my looking at you through my glasses?

—Gwendolen, in The Importance of Being Earnest

When you are in the packaged reform business, your prescription must be strictly followed, like Lady Bracknell’s views on education. That means schools must be manageable from without, and not from within. Small schools are anathema to this kind of external reform because these schools are manageable from within and are deeply rooted in their communities—which, based on experience, distrust itinerant rainmakers and music men who want to help out.

Small schools work because people participate in them. But it is more than participation that makes these schools so enriching. Not only is participation required and rewarded, but people served by these schools feel they own them, and for the most part they do.

That is above all else what makes these schools such targets for consolidation. They are cursed by reformers and consolidators precisely because they embrace the engagement of the sweaty unwashed in their own education, threatening to remove the cloak of privilege from the aristocracy. Nothing frightens the reformer more than the idea that people, afforded the chance to do better, might get the job done. The reformers simply do not believe that poor people in small communities are able to run good schools.

Lady Bracknell, for her part, would be horrified at the thought.

THE IMPORTANCE OF BEING EMILY

The scene was a small rural elementary school on its last day. Next year the kids would be bused to a larger school where they would have more, do more, and hopefully achieve more—but certainly cost less.

To ease the children’s anxieties the teachers gathered them for a farewell in the small lunchroom/library/assembly room. They hoped to get some closure by asking each child to say what she or he would miss about their school. The kids were having some fun with it: one would miss the clock on the wall that always read 10:27; another the drinking fountain that squirted people in the face; and another the merry-go-round that barely went round.

Then they came to one little girl with a slightly furrowed brow who was not having fun with it. So they gently prompted her to tell what she would miss about their old school.

She said, “I will miss being the only Emily.”

Well, there it was: the truth. In the lean and muscular words of a child—seven small words—Emily had summed up the findings of scores of scholarly research papers: kids do better in schools that are their size. In speaking the truth she had spoken the sorrows of every child in that school.

Emily almost certainly did not know why her school was being closed. But she was probably pretty sure it
was not for her sake. It was for some adult reason. Adults sometimes do things that make no sense.

Emily likely did just fine in her new school. She adjusted. She probably put on a little protective edge. Kids are tough. The move may have cost her only a month or two of educational gain. Not much of a price to pay for reform.

Reformers loathe the small schools Emily craves because those schools are humble and effective. They are not readily bent to reformers’ ambitions. There are too many of them to tame. They are too wedded to the communities they serve. They are too idiosyncratic, too unique, too precious to those they serve.

So reformers will continue to push for the elixir of consolidation. Doing so, they embrace another apt and better known observation of Oscar Wilde: “Nowadays, people know the price of everything and the value of nothing” (Wilde 1891). In schools where adults are preoccupied with the importance of being earnestly in pursuit of achievement through standardized curricula and assessments, punitive accountability systems, and monolithic superschools, there is no room left to understand the importance of being the only Emily.

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NOTES

1. I have posed several iterations of these lessons in various PowerPoint presentations I made for the benefit of rural organizations while serving as policy director for the Rural School and Community Trust.


REFERENCES


Eyre, Eric, and Scott Finn. 2002. Closing costs. Charleston (WV) Gazette. (This is a series of investigative reports on the social, economic, and education cost of closing schools in West Virginia. The series won the 2002 Education Writers Award for best series for a newspaper with circulation under 100,000 and the Fred M. Hechinger Grand Prize for Education Reporting.)


Maxwell, Lesli A. 2013. Study: Cities face growing stock of shuttered schools. Education Week, February 20, 12.


Raywid, Mary Anne. 1999. Current Literature on Small Schools. ERIC Digest. ERIC Clearinghouse on Rural Education and Small Schools Charleston, WV. ERIC Identifier ED425049.


TIEBOUT IN THE COUNTRY
The Inevitable Politics of Rural School Consolidation

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ABSTRACT—This essay explains why school consolidation issues are especially difficult in rural America. Consolidation is most appropriate when adjacent districts have similar preferences for taxation and spending on schools. In that case, economies of scale can be reaped without interfering much with resident preferences on taxes and school quality. In urban areas residents signal these preferences by moving into (or out of) school districts that match their preferences, a process known as Tiebout sorting. As a result, school consolidation decisions can be based on good information about resident preferences. The basic claim of this essay is that Tiebout sorting works much less well in rural areas for a variety of reasons. This means that consolidation decisions are based on thinner information; consequently, school consolidation is more contentious and political in rural America.

The essay then argues that, given this situation, a legislature interested in exploring rural school consolidation would do well to consider using legal and political processes that would enhance the ability of residents to express and record their preferences. Newer forms of political engagement that call on modern technology are available to do this and they may be effective in this context given the size and level of interest of the groups involved.

Key Words: rural schools, consolidation, Tiebout model, taxes, school quality, preferences

INTRODUCTION

School consolidations are efforts to find the “right” size for a school district. These are always difficult decisions. Schools are one of the most important goods provided by local government because they are highly visible, quite expensive, and greatly valued. And the size decision has the potential to affect virtually every aspect of a school and, in so doing, affect the kind of education children receive and the cost of providing it. But the decision extends far beyond the walls of the schoolhouse. In addition to defining who can attend schools and who must pay for them, a school district’s boundaries also define, and indeed create, a community.

This essay explains why school consolidation issues are especially difficult in rural America. Consolidation is most appropriate when adjacent districts have similar preferences for taxation and spending on schools. In that case, economies of scale can be reaped without interfering much with resident preferences on taxes and school quality. In urban areas residents signal these preferences by moving into (or out of) school districts that match their preferences, a process known as Tiebout sorting. As a result, school consolidation decisions can be based on good information about resident preferences. The basic claim of this essay is that Tiebout sorting works much less well in rural areas for a variety of reasons. This means that consolidation decisions are based on thinner information; consequently, school consolidation is more contentious and political in rural America.

Drawing on this framework, the essay then explores ways in which the process of making rural school consolidation decisions could be improved. The general idea is that structures that provide incentives for residents to reveal their preferences are better than top-down directives. School consolidation decisions in rural America will always be contentious and political, but there are legal and political structures than might make them less so.

This essay begins with a description of the basic Tiebout model and how it operates to expose resident preferences about taxes and school quality. A consideration of how the model applies to school consolidation decisions follows. The first-order prediction of the model is that consolidation is more likely to occur as districts become more similar to each other. At the extreme, consolidation
would permit districts with exactly the same preferences to reap economies of scale without interfering at all with those preferences. In rural areas, however, the Tiebout model is less likely to provide reliable information about resident preferences; rural residents move less often and, even when they do move, they are less likely to rely heavily on school quality in making their decisions. Finally, given the limits of Tiebout in the country, the essay proceeds to discuss ways in which rural school consolidation efforts could be structured to make up for this limitation. The primary suggestion is that legislatures interested in rural school consolidation should establish mechanisms to encourage or require better information disclosure, perhaps by calling on new forms of political engagement that use modern technology.

**SCHOOLS AND THE TIEBOUT MODEL**

In the early 1950s Charles Tiebout was a student in a graduate seminar on public finance offered by Richard Musgrave at Michigan. Musgrave, already one of the lions in the field, described for the class one of public finance’s central problems: determining preferences for public goods. The general idea was that residents could not be excluded from enjoying the public goods offered by a locality, which meant that discovering preferences through pricing was unavailable and that residents had incentives to be strategically evasive if asked directly about their preferences. Based on this, Musgrave’s position in the seminar (and in his publications) was that politics was the only mechanism available for determining the appropriate level of public goods (Musgrave 1939). As the story goes, Tiebout responded by proposing a nonpolitical alternative in an offhand, maybe even joking manner. His suggestion was that preferences would be revealed if localities offered different packages of public goods and residents revealed their preferences by moving to the locality that best met their preferences. Based on this, some years later Tiebout presented the idea formally in his short, canonical piece, *A Pure Theory of Local Expenditures* (Tiebout 1956).

What I will call the Tiebout model—residents voting with their feet for their preferred package of local public goods—has been a dominant lens through which to view issues relating to urban and suburban schools. And it has been an extremely powerful and useful lens. But the central thesis of this essay is that the lens is not very good for evaluating rural school consolidation. Instead we are closer to the original Musgrave hypothesis: that preference revelation is a serious problem and politics, for better or worse, is the primary solution. Despite this it is possible to address the preference revelation problem by structuring the politics of rural school consolidation in certain ways. This essay will argue that rural school consolidation, while always controversial, could be somewhat more efficient and less stressful if more attention were paid to political structure.

First, let us consider the Tiebout model in its normal application as a way to discover resident preferences for school quality. The Tiebout story is that people have a choice of several localities in which to live, and an important consideration in making that choice is how good the schools are perceived to be. It is not uncommon for people seeking housing to try to identify good schools first and then to search for houses in that area. Information about schools is one set of data regularly provided by realtors (Waldeck and Glynn 2013). Moreover, when people are deciding where to live, if the schools in District A are better than the schools in bordering District B, then they will be willing to pay more for houses in District A. This will capitalize the extra value of the better schools into the price of houses in District A and the lesser value of the schools in District B into the value of those houses. It is not uncommon for similar houses sitting on boundaries such as those between District A and B to have 10% to 20% differences in price (Fischel 2009, 3). Tiebout sorting, then, is a mechanism by which people reveal their preferences for school quality. By moving into District A and paying the higher price, they are indicating that they are willing and able to pay the necessary premium for that better school.3

This, then, is the Tiebout model as normally applied. Communities offer a certain quality of school and people who value schools will sort into those communities. In urban America the basic assumptions of the model are true enough: urban areas provide a variety of communities from which to choose; all are within a reasonable commuting distance; home buyers tend to be aware of differences between schools in various districts; the population is relatively mobile; zoning provides a mechanism for communities to limit free riders; and so on (Fischel 2001, 58–71). The literature supporting the model is voluminous and highly sophisticated. This is not the place to provide a full-blown review (for a good recent review, see Nguyen-Hoang and Yinger 2011). Suffice it to say here that the Tiebout model is not perfect (What model is?), but it does a pretty good job of describing reality—or, as one clever commentator put it, the model does a good job of describing both reality and one of its oldest sayings about
What is important: location, location, location (Fischel 2001, 71). Maybe the saying should have been “Location, location, schools.”

The Tiebout model is primarily about decisions to live in one district or another, and the consequences of those decisions for housing prices and school quality. One of Tiebout’s original (but implicit) assumptions was that district boundaries were set endogenously, which would then permit people to choose between districts based on the packages of public goods and taxes offered. But this is an essay about school district consolidation; it is about how the boundary lines are set and reset, not about how people decide to move across them after they are set. Less work has been done on this issue and, as far as I know, no work has been done considering rural school districts specifically (Brasington 2003a, 2003b; Saiger 2010).

TIEBOUT AND SCHOOL CONSOLIDATION

Let us begin with a simple model of school consolidation. There are two neighboring school districts. Each provides a certain level of schools at a particular price to their respective populations. The two districts can remain separate or consolidate to form a single district. Consolidation requires a positive vote from both districts.

The Tiebout model helps us to think about what kinds of factors might predict consolidation. The first-order prediction is that consolidation is more likely as the two districts become more similar. In the extreme, if the two districts were identical in their size, school quality, taxes, and so on (which would imply identical preferences by the populations), then economies of scale would favor consolidation. This implies that current trends toward more uniformity across a variety of dimensions (such as curriculum requirements and funding formulas) point toward more consolidations (Common Core n.d.; Nebraska Department of Education 2013; National Access Network 2013).

Another way in which districts may become more similar would be through changing demographics. The Tiebout model recognizes that each district will comprise people with differing preferences. This means that some subset of residents will always be dissatisfied. Indeed, the main moving part in the model—its main insight—is that dissatisfied residents will move from their district to another that better meets their preferences. This is the way in which residents reveal their preferences for a community’s proffered package of school quality and taxes. But as those residents move the median voter in the district may shift up or down. Obviously this could mean that the district moves further away from neighboring districts in its preferred package of schools and taxes, but it could mean that it becomes closer to a neighboring district. Again, if it becomes close enough, economies of scale would support consolidation.

Tiebout recognized that moving between districts was costly and that this would affect the extent to which his model would reveal preferences (Tiebout 1956, 422). At the extreme, if it was always too expensive for residents to move from one district to another, then no preferences for schools and taxes would be revealed under the model. Tiebout cautioned against blowing this out of proportion because, as he rightly pointed out, every market has transaction costs. But he recognized that as this cost goes up, the less effective his model will be at revealing preferences (Tiebout 1956, 422).

The first-order prediction depends on economies of scale. But as school districts become larger in geographic size or more distant from one another, diseconomies of those types of scale may outweigh other economies of scale that might be created by consolidation. Thus a school district in Kimball County in western Nebraska may have residents with exactly the same preferences as a school district in Douglas County in eastern Nebraska, but the geographic distance between the two would undoubtedly overwhelm any other economies of scale that might be achieved through consolidation. This may also be the case with contiguous districts that are very large in geographic size.

Finally, school consolidation entails an issue beyond school quality that may function differently and more powerfully in rural areas. In addition to providing schooling, schools create communities. Rural districts may resist consolidation not so much because they fear that school quality will decline, but rather because they fear that their sense of community will deteriorate. This tends to be an especially powerful consideration in rural areas. In urban areas, if District A and B combine in the M metropolitan area, the M community is unchanged. The A and B communities will change but both still have their identities as members of the M community and both expect to survive in the new A/B District, even if in a somewhat different form. Things are often different in rural areas, where the school district and metropolitan areas are the same and the stakes are higher:

When death comes to a small town, the school is usually the last thing to go. A place can lose its bank, its tavern, its grocery store, its shoe shop. But when the school closes, you might as well put a fork in it. (Egan 2003)
I do not mean to imply here that the community aspects of a school are not valued in urban areas; in fact, there is good evidence from Tiebout sorting that that type of value is attached to urban schools (see note 11). But the community aspects of schools are likely to be even more salient in rural areas where the number and variety of community attachments are fewer, thus increasing the relative value of school as community.

All of these factors indicate that the Tiebout process for revealing preferences will work less well in rural areas. First, the main moving part in the model is less likely to move in rural areas. In suburban America a resident can often signal her preference for a particular school quality by living on one side of the street or the other. In rural America the distances are much greater; hence the cost of registering the preference is higher, so the model works less well.10 Second, even when rural residents move they are less likely to be signaling their preference for school quality. In urban areas, again, the decision to live on one side of the street or the other may be primarily driven by perceived school quality; other factors, such as commuting time and access to shopping, are equal on either side of the street. In rural areas the converse is true. The locational decision is more likely to be driven by nonschool factors such as the location of the family farm, land prices, or the availability of work for migrant laborers. Moving to signal school quality is rare and difficult. Third, in rural areas, even if two adjacent districts are identical in their preferences for the school/tax tradeoff, the economies of scale that might be reaped by consolidation may be outweighed by the diseconomies of scale created by geographic distance. Finally, in urban areas, Tiebout sorting can also function to provide a measure of the extent to which a district's residents value the community aspects of a school.11 But because of the other problems with the model in rural areas, that valuation signal is unavailable in the country even though the value placed on community is likely to be considerably higher in rural areas.12

Since all of these factors conspire against a well-functioning Tiebout model in rural areas, we simply cannot know much about resident preferences for school quality based on Tiebout sorting. This returns us to the Musgrave hypothesis—there is no quasi-market based way to determine rural resident preferences for school quality. Instead it is inherently a political process. This interferes with the consolidation process because it makes it more difficult to evaluate whether adjacent districts have similar preferences about school quality or the strength of each district's preference for the community-building aspects of their schools.13

TIEBOUT IN THE COUNTRY: THE LEGAL STRUCTURE OF RURAL SCHOOL CONSOLIDATION

As the preceding discussion indicates, determining preferences is a major problem in rural America. In particular, the Tiebout model, which does a decent enough job of revealing preferences in urban America, just does not work very well in the country. Given this, the principal goals in structuring rural consolidation efforts should be to encourage or require information disclosure and then to establish mechanisms to permit that information to be acted upon in a timely and reasonable way.

In general terms, there are only two ways to structure rural school consolidation efforts. First, the state (or some other higher authority, such as a court) can simply mandate consolidation. This approach has been used in Nebraska and Arkansas, among other places.14 Second, the state can create incentives to encourage rural school districts to consolidate voluntarily. This is another strategy that has been used in Nebraska (Blauwkamp et al. 2011, 5–6), as well as other places (see Rural School and Community Trust 2006; Remsen 2010).

MANDATED CONSOLIDATION

The first option—mandated consolidation—is an especially problematic structure in rural America. The reasons the structure is especially problematic in the country can be illustrated by comparing the problems there to two situations in which mandated consolidation might occur in urban America.

One situation in which mandated consolidation might occur in urban America is when Tiebout sorting works too well—that is, when it results in sorting on criteria that society has deemed to be improper or questionable. For example, boundaries may be drawn and maintained in ways that maintain racial or socioeconomic separation (Saiger 2010; Brasington 2003a).15 In these situations, if the racial or socioeconomic separation is found to be illegal, courts may order consolidation even if neither of the districts consents.16

In this situation Tiebout sorting may provide a good window into the value people place on the particular district boundaries and part of that valuation, by assumption, is based on preferences for racial or socioeconomic separation. Houses on opposite sides of the boundary might be priced quite differently. If consolidation is ordered, people on the high-value side of the boundary are likely to suffer capital losses as well as other disappointments.
There are two reasons that this type of mandated consolidation in urban America is distinguishable from and less problematic than mandated consolidation in rural America. First, in this type of urban consolidation the reason consolidation is required does not have to do with valuation at all. Instead society has determined that certain preferences, such as those based on race, are improper and should be disregarded. This situation (where the valuations are known but disregarded for important reasons) is quite different than a normal rural consolidation situation where the consolidation cannot be justified for reasons independent of school quality and tax valuations. In the urban consolidation situation mandated consolidation is required for a good, known, and identified reason (such as addressing racial segregation) independent of any evaluation of legitimate (nonracial) resident preferences. Moreover, even if the legitimate resident preferences were to be credited in this circumstance, they would be difficult to assess with Tiebout sorting or otherwise because they are so conflated with the illegitimate preferences. In the case of rural consolidation, in contrast, there are no disregarded preferences and, thus, no independent justifications for mandated school consolidation. The mandated consolidation will be justified based on valuations of school quality and taxes (broadly construed) or not at all.

Mandated urban consolidation in these circumstances is also less problematic than mandated rural consolidation because it is easier to escape the consequences. For better or worse, if residents subject to the mandated urban consolidation do not like the new school district, other options are available. For example, other districts may be available in the metropolitan area, or there may be private schools, or there may be a sufficient critical mass of parents to begin a charter school (Kruse 2007). None of these options for avoiding the effects of an unpopular decision are likely to be available with rural school consolidation.

Annexation is another situation in which consolidation might be required in urban America. By annexation I mean a situation in which there are two neighboring school districts, but one is much larger than the other. The classic case would be a growing city that has rapidly growing suburbs at its fringes. The city and a particular suburban district can remain separate or consolidate to form a single district. But in the annexation situation, consolidation requires a positive vote only from the larger district.

The first-order condition discussed above indicates that if the two districts have the same preferences for school quality and taxes, then both would prefer consolidation because of economies of scale. The available social scientific evidence suggests, however, that the size difference alone would result in the larger district being more inclined to consolidate and the smaller one being less inclined (Brasington 2003b; Ellingsen 1998). The question, then, is why an annexation system would permit the larger school district to absorb the smaller without the latter's consent and, indeed, even though the latter might be inclined not to consent.

Theoretically the question asks what effect the relative size of districts might have on the consolidation decision. There are at least two possible justifications for limiting the ability of the smaller district to block consolidation. First, the benefits of education may spill over positively into neighboring communities. Especially in an urban area, residents beyond the district's boundaries may enjoy benefits from good education through greater workforce productivity, a better-educated regional and statewide electorate, and a stronger regional community (Wyckoff 1984; Brasington 2003b). Since larger districts produce more of this externalized public good, smaller communities may attempt to free ride on it and, hence, resist consolidation. Thus, permitting the larger district to force consolidation is a way of addressing this free rider problem.

Second, the residents of the smaller district may be more concerned about dilution of their political power and status than they are about the school quality/tax tradeoff. In one sense this is a legitimate concern; their political power to influence educational policy in the future likely will be reduced once they are absorbed into a larger district. But in another sense it is an illegitimate, or at least an indeterminate, consideration. Viewed from the perspective of the entire metropolitan area, crediting this consideration would permit the minority in the small district to veto the will of the majority in the broader district. Placing the authority to make the consolidation decision with the larger district limits this veto option and is more likely to align with normal majoritarian principles (Briffault 1990, 356–82).

By reciting these justifications for annexation, I do not mean to imply that they are always persuasive. There certainly are countervailing factors. For example, the larger district may annex to exploit an adjacent small district with high property values and a low school-age population. And entrusting the larger district with the annexation decision permits it, and not the smaller district, to define the contours of the community created by the school district. But there are generally legal limits on the authority to annex that deal with the former problem and there is simply no good answer to the question of who should be entitled to define a community (Reynolds 1992).
But for our purposes the interesting part of this message is that, again, annexation is a situation in which Tiebout sorting may provide us with information about preferences in the two districts, but we choose to ignore it. That is, in our prototypical situation of an urban district absorbing an outlying suburb, it may well be that the smaller and larger districts have quite different preferences on school quality and taxes and that those differences are reflected well in property values. It may be that a house on the small district side of the current boundary is worth considerably more than a house on the large district side because of differences in school quality. If so, annexation may well result in a capital loss, and yet that is permitted, in part for the reasons discussed above. Thus, as with consolidations required for racial or socioeconomic reasons, annexations are situations in which valuation information may well be known, but it is ignored (or in this case, overridden) by other factors. This, again, is quite different from the situation with rural school consolidation, where there are no justifications for the consolidation decision independent of valuation and efficiency.

In sum, mandated consolidation seems particularly problematic in rural America. Mandated consolidation may make sense in some situations in urban America because the consolidations depend primarily on factors other than valuation, such as racial or socioeconomic equity. In contrast, in rural America, the primary concern driving consolidation is valuation and efficiency. As a result, valuation information is central. Mandated consolidation is especially problematic, then, because it does nothing to try to force preference revelation even though the decision is largely based on an assessment of those preferences; instead it requires consolidation in the absence of that information. It would be preferable to devise legal structures that provide a better informational base for making rural consolidation decisions.

VOLUNTARY CONSOLIDATION

The second way to structure rural school consolidation efforts is to create incentives to encourage rural school districts to consolidate voluntarily. The dividing line between this category and mandatory consolidation can be indistinct. Rural schools can sometimes be heard to complain that the incentives are so powerful that consolidation is the only possible option (Rural School and Community Trust 2006). It can be very difficult to determine when the incentives become that powerful, but when they do, regardless of the labels placed on the scheme, they flip from this category into the mandatory consolidation category. However, there are also examples of very soft incentives. For example, under a recent Vermont statute, the only incentive was that “school districts must discuss merger with . . . contiguous districts, vote on whether to pursue a comprehensive analysis of merger, and report the results . . . to the commissioner of education and voters” (Remsen 2010). Despite these difficulties, in concept this category is clear enough—the voluntary consolidation category contemplates a legal structure that encourages consolidation, but does not require it.

To consider this situation, let us begin with a model of school consolidation that, although still bare bones, is slightly more complex than the one considered above. Assume again that there are two neighboring school districts, each currently providing a certain level of schools at a particular price to their respective populations. The state then acts to provide a certain set of incentives to consolidate. As before the two districts can remain separate or consolidate to form a single district. Since this is voluntary consolidation, the two districts would retain the authority to make this decision. We will also assume that we are operating in a Musgravian rather than a Tieboutian world—that is, all information about preferences on issues such as school quality and tax levels must occur through political voice rather than through the kinds of movements between school districts described by Tiebout.

This model conceptualizes the voluntary consolidation process as a repeated two-stage game. First the state acts to announce the consolidation incentives. This would normally be done by the legislature which, as described below, would have to choose among many possibilities. Once the incentives have been set by the legislature, school districts would decide whether to consolidate or not based on that set of incentives. At this second stage of the process, it could be that many school districts decide to consolidate or that few or none do. This two-stage process could be repeated: in a subsequent legislative session, the legislature may act again to establish a new set of incentives, which would restart the process. In a Tieboutian world, this repeated two-stage process may work acceptably because Tiebout sorting provides a great deal of information to both the state and school districts about the preferences of residents on schools and taxes. The problem in a Musgravian world is that those preferences are not known and, by itself, this process does little to create the kinds of information that are necessary to make good decisions.

Consider first the decision of the state in setting the consolidation incentives. Again the problem in a Musgravian world is that the state has to set these incentives
without much information. This problem is heightened because the incentives can be set in a wide variety of ways. For example, states might establish incentives through reduced funding for certain categories of districts, through financial bonuses for districts that consolidate, by increasing curricular requirements that are difficult for smaller districts to meet, by increasing teacher credential requirements, by establishing certain student transportation rules or funding schemes, by imposing limits on distance learning, by imposing certain capital requirements, and so on (Rural School and Community Trust 2006). At the first stage in this two-step process the state will set all of these parameters explicitly or implicitly. There are literally thousands of possible configurations of consolidation incentives. But the state can choose only one set of incentives out of all those possibilities.

The second stage, then, will be for each set of rural school districts to evaluate the one set of incentives proffered by the state and then to choose whether to consolidate. It could be that no school districts decide to consolidate or that many do. But the information provided by the second stage will be limited: given this particular set of consolidation incentives (out of the thousands theoretically available), we know that X school districts will agree to consolidate and that Y school districts will choose not to consolidate. Since this is a repeated two-stage game, the state will then be able to rely on this limited set of information to recalibrate its consolidation incentives for the second round. And the process starts again.

• Given the limits of Tiebout sorting in the country, efforts to encourage voluntary school consolidation should be structured differently than this with the goal of encouraging more and better information disclosure, followed by a process which permits consolidation decisions to be made based on that improved information.

Let us think first about the second stage of the process. Each school district is provided with a set of incentives and is then given an opportunity to decide to consolidate or not. Consider possible ways in which a fuller information base could be developed. First, following the Vermont statute, rather than merely being offered a set of incentives, school districts could be required affirmatively to consider consolidation (Remsen 2010). This would mean that a more complete and representative set of districts would provide reactions to the incentives, even if the ultimate signal remains merely a yes or no to consolidation. Without forced consideration one would not know if a nonconsolidating district simply failed to think much about the issue or whether it had thought about it seriously and rejected it. Forced consideration would address that informational limitation. In addition, requiring each district to talk to at least one other district about consolidation would produce more, better, and more representative cross-district information.

Second, school districts could be required to engage in a process that would provide even more information about the reasons for their consolidation decision. Since we are talking about rural school consolidation, the populations involved would be relatively small and the interest and motivation to participate would probably be quite high. This would mean that techniques could be employed that would extend beyond the district leadership (such as the superintendent and school board) to gather information at a more grassroots level. Many possibilities are available. Traditional general-invitation town halls are one possibility, but more modern and innovative techniques may be even better at discovering true preferences. For example, deliberative polling is a structured process to discover and shape public opinion that would likely work well in small, rural communities. Similarly, more statistically based “idea pageants” are a way of exploring the types of trade-offs preferred by a population (Marinovic et al. 2011). There are many other possibilities and variations (Hanson 2007; Hahn and Tetlock 2005, 2006). In the abstract, it is difficult to know which particular preference-revealing strategies might work best for rural school consolidation. But the general point here is that techniques are available that could be used to uncover much more information about a district’s preferences than a mere up or down vote on consolidation by the school board.

The advantages of requiring targeted local school districts to engage in a preference-revealing process like this flow in several different directions. First, the process would help the school district population itself discover and explore its own preferences. A well-designed process would provide more information about the decision to be made and structure and encourage a productive discussion. In the absence of a process like this, opinions are likely to be formed on a thinner information base and with fewer discussions across various community divisions (such as religious or ethnic divisions). Second, and similarly, the school board may find that the views it has formed through informal contacts and the normal political process are confirmed through a more informed and broader deliberative process. Or it may discover that some of those views should be revised. In either event, it could be more confident that its decision, whatever it is, is more data-based and closer to the popular will. Third, the accumulation of the information from these processes could be gathered to help inform the state when it considers its
options for the next round. As indicated above, the state’s consolidation offer can be configured in multiple ways. The kinds of information gathered through these processes can assist in the configuration for the next round. I will discuss this further below. Finally, there is good evidence that deliberative processes like these increase trust and confidence in governmental decision-making (Tomkins et al., 2010). Thus, even if every consolidation decision turns out to be exactly the same with or without deliberative processes like these (which would, of course, be impossible to know), the process itself may produce important benefits. These benefits may be especially important in an era when trust and confidence in government is at historically low levels. This may be especially important when the issue at hand is rural school consolidation. This is an issue that is especially likely to undermine mutual trust and confidence in government. In particular, rural school districts may be especially distrustful of both the state and its initial offer and of other, neighboring school districts. In this context some level of distrust like this is inevitable. But, again, a well-designed deliberative process should help to minimize the distrust and skepticism.

Let us turn our attention back to the first stage of the two-stage process: development of the consolidation offer from the state. Again this is a repeated two-stage game, so we are thinking about the first stage after at least one second stage has already occurred. The information from a preference-revealing process at the second stage can be used productively to inform the next first-stage offer. For example, the state might discover that carrots such as financial incentives to consolidate were viewed much more favorable than sticks such as state aid reductions for schools that did not consolidate (Dari-Mattiacci and de Geest, 2010). Or it might find that school districts might be more willing to replace cutbacks to transportation subsidies to ensure shorter bus rides than they are to replace reductions in state support for other kinds of district expenses. Or it may find the opposite on both these dimensions. In any event the new information can help inform the next consolidation offer made by the state.

There are at least two ways in which the first-stage process can be organized to facilitate better use of the new, richer information gathered at the second stage. Both involve administrative processes. First, if the second-stage processes work, there will be a great deal of new data and much of it will be difficult to interpret. The information could be put to better use at the first stage if someone is assigned the task of organizing and analyzing it. The legislature itself, given the demands on its time and resources, is poorly positioned to do a good job of this itself. Thus the information would be better used if the task of using the new information to develop a new legislative offer were assigned to an agency. Because rural school districts are likely to have some level of distrust of such an agency, it is important to structure the agency and its processes in ways that will build rather than undermine trust. For example, structuring the agency to be multi-member and representative would probably be preferable to having a department with a single head. Similarly, this may be the type of situation in which nonstandard administrative processes, such as negotiated rulemaking processes, could be used to help build trust (see, e.g., the 2012 Negotiated Rulemaking Act [5 USC §§ 561 et seq.]).

Second, there is little reason to think that each rural school district will weigh each component in the legislature’s consolidation offer in the same way. Some may be more interested in capital construction issues, others in transportation issues, others in teacher credentialing, and so on. Thus, any consolidation offer that is uniform and informed by the legislature’s best estimate of the marginal preferences of the marginal district is destined to be inferior to offers that could be more finely calibrated to individual districts. This points to agencies again. If one of the goals is maximizing preferences across a number of diverse school districts, then one could get closer to that goal if an agency were provided ranges on a variety of the relevant parameters (such as transportation subsidies, capital investment rules, or teacher credential rules) and given the flexibility to adjust each parameter to match district preferences more closely. This would, of course, be a difficult process, but avoiding difficulty is not possible with rural school consolidation. The issue would be whether this type of administrative matching process would be more or less difficult and effective than a one-size-fits-all consolidation offer. To ensure sufficient trust on the part of rural school districts to permit such a system to work, a properly structured agency and thoughtful administrative processes would be crucially important.

In sum, the basic problem with voluntary rural school consolidation is that we are living in a Musgravian world in which it is difficult to discover true preferences. There are no perfect solutions to this problem. But it may be possible to develop legal and political structures for dealing with rural school consolidation that do a better job of preference revelation.

**CONCLUSION**

Rural school consolidation efforts are especially fraught in part because information about resident preferences
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NOTES

1. I use the word "political" here in a technical sense. Although the word has acquired a pejorative tone in recent years, I do not use it in that way at all. Instead, following Hirschman's classic formulation, I use the term to mean that rural consolidation issues are more likely to be sorted out through political "voice" rather than through Tieboutian "exit" (Hirschman 1970).

2. One of the leading researchers on American schools has said that the Tiebout process is "the most powerful force in American schooling" (Hoxby 2000, 1209).

3. Because this is an essay about school consolidation, I will often simplify the decision set for residents as one involving school quality and taxes. Obviously the set is much broader and more complicated than that.

4. Tiebout recognized district formation as a problem. He noted that unless a "sociological variable" were included in his model, the model could be perfectly solved if there were a separate municipality for each person, which would be absurd (or, as he put it, "trite") (Tiebout 1956, 421). But, despite this, he did not attempt to incorporate these "sociological" variables into his model.

5. Some obvious complicating factors have been stripped from this model to keep it simple. For example, consolidation contemplates a wholesale integration of the two districts. Instead of that, the two districts could engage in a more fine-tuned collaboration by contracting to share only certain functions. This would complicate the model by moving from an all-or-nothing choice set (consolidation or not) to a much broader choice set with many possible levels of consolidation. This is obviously a possibility; Nebraska's educational service units and the Learning Community of Douglas and Sarpy Counties are local examples of such, more fine-tuned collaborations (See Rural School and Community Trust 2013; Deloitte 2005). But those complications are for other articles; the goal in this short essay is to keep the model simple and manageable.

6. One study found that in the mid-1990s, consolidations in New York reduced costs per pupil by 28% for a 300-pupil district and by 9% for a 1,500-pupil district (Duncombe and Yinger 2005). See also Cogswell (2009, 66), who finds that the average per-pupil cost in a set of Nebraska small schools was 18.6% higher than the state average between 2003 and 2006. But see Dority and Thompson (2013), who did not find consistent evidence that consolidation lowered per pupil monetary costs, in either rural or non-rural districts in Nebraska.

7. In theory a district's preferences reflect those of the median voter (Bergstrom and Goodman 1973).

8. If consolidation is possible, the first-order condition would imply that preferences about school quality are similar.

9. This article in the New York Times used Superior, Nebraska, as its primary example. I do not mean to imply here that the community aspects of a school are not valued in urban areas; in fact there is good evidence from Tiebout sorting that that type of value is attached to urban schools. See note 11, below. But the community aspects of schools are likely to be more salient in rural areas where the number and variety of community attachments are fewer, thus increasing the relative value of school as community.

10. Some states and districts have implemented open enrollment policies that enhance the ability of residents to signal their preferences. These policies permit residents to choose any school within a district or even across districts (McClure-Hartman 2012). But these types of open-enrollment policies are not very effective at signaling preferences in rural areas. First, many rural districts have only one elementary school and one high school, so intra-district open enrollment is simply unavailable as a mechanism to signal preferences. Second, even where possible (for example, through inter-district open enrollment), the distances involved in rural areas raise the cost of making the choice, so the signal about school quality is much weaker.

11. For example, there is some evidence that home values in good urban school districts are "too high" relative to the value added by the schools. This overcapitalization could be explained by the extra value residents see in the types of communities that form around those good schools (Bayer et al. 2007; Rothstein 2006). Similarly, one explanation for why residents without children tend to support public schools is that they value the benefits they receive from the communities that are formed by those attracted into good school districts through Tiebout sorting (Fischel 2009). Alternatively, it could be that residents without children are just really interested in maintaining the value of their houses. (Hilber and Mayer 2009).
The notion that good schools can create good communities can help to explain observations like these that would be fairly puzzling otherwise.

12. All of the factors discussed in this paragraph depend on an admittedly rough distinction between rural and urban areas. But, of course, the distinction between the two is not sharp (Morrill et al. 1999). Consequently, Tiebout sorting may work reasonably well in some rural areas and not very well in some urban areas, depending on the particular circumstances.

13. Note that it is not only difficult for state officials to evaluate these types of preferences, but it is also difficult for the rural residents themselves to evaluate them. As a result, the necessarily political process for sorting them out creates pressure within rural school districts as well as between those districts and state officials.

14. In 2005 Nebraska required all Nebraska school districts to offer grades from kindergarten through high school. In effect, this required all Class 1 districts (those with only elementary schools) and Class 6 districts (those with only high schools) to consolidate with neighboring districts. The law was later overturned by referendum, but not before many districts were consolidated (Blauwkamp et al. 2011, 4–5). In 2004, Arkansas enacted a law which required 57 school districts with fewer than 350 students to merge with neighboring districts (Jimerson 2005).

15. The prototypical cases involving racial separation are the desegregation cases deriving from Brown v. Board of Education (347 US 483 [1954]). The prototypical cases involving socioeconomic separation are the school finance cases (Thro 1990).

16. As above, this description of the situation is simplified to facilitate discussion. The real world is much more nuanced. For example, inter-district remedies are permissible only if an inter-district violation is shown (Missouri v. Jenkins [515 US 70 (1995)]). The school finance cases are, by their nature, inter-district; the desegregation cases, on the other hand, are more commonly intra-district. For an inter-district desegregation case, see United States v. Yonkers Board of Education (624 F. Supp. 1276, aff’d, 837 F.2d 1182 [1985]). Similarly, in both desegregation and school finance cases, when they find violations, the courts are more likely to order a remedy other than full consolidation, such as the establishment of magnet schools or busing or transfer programs in desegregation cases, Liddell v. Board of Education of City of St. Louis (126 F.3d 1049 [1997]), or new state funding schemes in school finance cases. Despite this, consolidation is one of the possible remedies in these cases when inter-district violations are found.

17. Disregarding preferences is not an uncontroversial topic in itself. But it is one beyond the scope of this essay (Sunstein 1986; Elster 1983).

18. This is a limited definition of annexation designed to permit exploration of certain issues. The definition is a very abstract description of some annexation systems, but these systems vary greatly across the country and some require the consent of both districts. Compare, for example, Hamilton v. Country Board of Education of Johnson County (265 S.W.2d 873 [1954]) (discussing Arkansas law which required only the consent of the larger district) with Live Oak County Board of School Trustees v. Whissett Common School District (181 S.W.2d 846 [1944]) (discussing Texas law which required an election of all those to be included in the combined district) with Southern Pacific Co. v. Maricopa County (107 P.2d 212 [1940]) (discussing Arizona law which required consent of both districts). In general, the state has plenary authority to decide the procedures required for annexation (Schools and School Districts [Corpus Juris Secundum, § 18 (2012)])

19. It is worth noting that this process provides a bias against consolidating. School districts are generally permitted only a choice of consolidating or not consolidating. A deconsolidate option is generally not available.

20. Forced consideration, without dictating a particular result, has been used in other areas successfully (National Labor Relations Act [29 USC §§ 151–69, 1935, § 8[158](a) (5), 8[158] (b)(3) [imposing a duty to bargain on unions and employers]).

21. General invitation public hearings have been used commonly by school boards considering rural consolidation. Ironically the social scientific evidence is that such hearings tend to increase polarization rather than to lead to consensus. More innovative techniques have been found to be better for exploring preferences (Glaeser and Sunstein 2009; Schkade 2007).

22. This is a technique developed by Professor James S. Fishkin at Stanford University, and described on his website:

A random, representative sample is first polled on the targeted issues. After this baseline poll, members of the sample are invited to gather at a single place for a weekend in order to discuss the issues. Carefully balanced briefing materials are sent to the participants and are also made publicly available. The participants engage in dialogue with competing experts and political leaders based on questions they develop in small group discussions with trained moderators. Parts of the weekend events are broadcast on television, either live or in taped and edited form. After the deliberations, the sample is again asked the original questions. The resulting changes in opinion represent the conclusions the public would reach, if people had opportunity to become more informed and more engaged by the issues. (Fishkin 2013)

23. Researchers are beginning to explore which preference-revealing strategy might work best for what purposes (PytlíkZillig and Tomkins 2011). A great deal of expertise on these types of issues is locally available at the Public Policy Center at the University of Nebraska.

REFERENCES

Bayer, Patrick, Fernando Ferreira, and Robert McMillan. 2007. A unified framework for measuring preferences for


Cogswell, Curtis. 2009. Impacts of Nebraska legislative policies on selected small Nebraska school districts. PhD diss., Seton Hall University, South Orange, NJ.


Nebraska Department of Education. 2013. Academic Stan-


PLACE-BASED CIVIC EDUCATION AND THE RURAL LEADERSHIP CRISIS IN NEBRASKA

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ABSTRACT—The Great Plains is facing a pending leadership crisis as rural depopulation decreases the number of residents who are available to serve in civic and government positions. This problem is compounded by the loss of youth populations in rural areas. In this essay, we offer a cross-disciplinary analysis of avenues for addressing the rural leadership crisis. We bring together work from rural demography, education policy, and civic studies to argue that civic education in rural areas needs to be reformed specifically to train and retain rural youth for leadership positions. We use Nebraska as a case study as it has suffered from rural decline, especially from youth depopulation; it has adopted new civic education standards as of December 2012; and Nebraska school districts have local control over the implementation of curricula. We review two competing trends in civic education, global civics and place-based education, and reflect on the impact each of these has on preparing students for leadership. We conclude that place-based education has the most potential for preparing students for leadership positions and should be used in rural schools even if that requires schools to sacrifice global civics.

Key Words: civic education, place-based education, rural depopulation, rural leadership, education policy

INTRODUCTION

The rural areas of the Great Plains are on the verge of a leadership crisis. The rates of out-migration from rural counties, especially among the youth population, means those areas are left with fewer citizens to fill leadership roles in civic, government, and religious organizations. Consequently there is a need to prepare youth for roles as citizen leaders. However, national trends in civic education ignore or even undermine efforts to prepare rural students to become leaders in their own communities.

Although rural life holds a special place in the American tradition and imagination, school reformers and education scholars have for decades maintained a myopic focus on the challenges faced by urban and suburban schools. The emphasis on urban schools in education reform and scholarship is largely due to the entrenchment of liberal and multicultural traditions that have become the paradigm within political and educational thought. A significant consequence of the transition to liberalism and multiculturalism and the focus on urban school reform is that the value of rural life and schools has been challenged. Civic education has become focused on preparing students to be global citizens in a world that is progressive and internationally connected (Altinay 2011). In such an interconnected world, it is easy to see rural schools as antiquated and poorly equipped to prepare their students for global citizenship.

This essay brings together several areas of study to
suggest possible avenues for addressing this leadership crisis and preparing rural students for civic life. By pulling together the work of rural demographers, education policy makers, and scholars of civic education, we focus on the particular needs faced by rural communities and strategies for addressing rural leadership via secondary education. First, we argue that a genuine tension exists between cultivating traditional, rural values on the one hand and liberal, multicultural, global values on the other. Understanding how this tension is manifested in public schools is essential to developing sound strategies for rural school reform. Second, the virtues of rural life are essential for citizens of those communities. Therefore rural school reform efforts must consider place-based education as central to teaching civics, even if doing so is inconsistent with the liberal and multicultural goals of urban school reform movements. Promoting local, place-based civic education in rural schools is necessary to avoid the continued decimation of rural towns.

In order to see the dynamics and tensions between rural and urban civic education, we use Nebraska as a case study. Focusing on the education policies of one state allows for a more detailed analysis of the types of policy problems that arise in rural areas. Although each state within the Great Plains faces its own particular challenges regarding rural leadership, this analysis raises themes that are familiar to many rural communities in states across the Plains. Because civic education has historically been rooted in the social studies, we have chosen Nebraska as it has recently adopted new social studies standards. Moreover Nebraska has also experienced a high rate of out-migration among its rural youth population. Our analysis shows that the type of civic education that has recently been approved in Nebraska continues to pay too little attention to the particular challenges of providing differentiated civic education, but we point to strategies that could be profitably used to overcome those limitations.

THE PENDING LEADERSHIP CRISIS

That America’s rural areas have seen a decline in population in recent years is of little surprise. This depopulation trend has been especially felt in the Great Plains, with 72% of the rural counties having experienced decreases in population between 1970 and 2000 (Cantrell 2005; Walser and Anderlik 2004). In Nebraska, this loss has been acutely felt, especially among the youth population in rural counties. As Randolph Cantrell has detailed, among the most rural counties in the state, meaning those with a population center of 2,500 residents or less, the decline among residents 18 and under was 22%. In the most extreme case of Grant County, the youth population declined by 45.9%. This makes the median age of residents in Grant County 52.6, compared to the state median age of 37.3 (Cantrell 2010a, 1).

The declining youth population in rural counties points toward a looming leadership crisis. Although these counties are experiencing depopulation, the number of government and leadership positions within these counties have remained stable or have actually increased. As Cantrell has demonstrated, rural areas in Nebraska face a severely limited pool of potential leaders (2010b). Taking together the number of leadership positions in government offices and those in voluntary organizations (such as fire departments, rescue squads, church congregations, farm bureaus, and charitable organizations), and assuming only those over age 18 may hold these positions, the ratio of potential residents to leadership roles is 83:1 statewide. Not surprisingly, there are dramatic differences depending on the population size within a county. Metropolitan areas have a much larger pool to draw from, with a ratio of 103:1 while the most sparsely populated frontier counties (those with fewer than 6 residents per square mile) have only 40 residents per leadership role (Cantrell 2010b, 4). As more youth leave their rural counties the pool will only decrease. This means that many rural residents will have to assume multiple roles, likely resulting in leadership fatigue and a lack of innovative ideas.

Compounding the problems facing rural citizens is that they are also more likely to suffer from feelings of political inefficacy. In 2012 rural Nebraskans were surveyed about how much control they feel that they have over their own lives. Among residents in the smallest towns (population 500 or less) 32% agreed that most people are powerless to control their own lives, compared with 24% of residents in towns of 10,000 or more (Vogt et al. 2012, 22). Those from the smallest towns were also less optimistic about the prospects of improving their communities in the future. In the smallest towns 40% of residents reported that they believed their community would be either better off or much better off in 10 years, compared with 47% of residents in towns of 10,000 or more (Vogt et al. 2012, 21).

In order to help combat this feeling of powerlessness and to motivate and support citizens to assume leadership roles, education within rural areas needs to focus on training and empowering young citizens within those communities. It is necessary that the types of leadership programs that are developed do not simply teach abstract skills or values such as civic engagement or patriotism but actually focus on the needs of local communities.
Certainly some leadership skills will easily transfer from one community to another. To use civic engagement as an example, all students may benefit from learning about the importance of being an active member of the community. In order for students to translate those lessons into actual skills to benefit their communities, instruction on civic engagement needs to be grounded in methods of organization and rooted in the particular concerns faced by individual localities. Students in an urban Omaha classroom may profit most from learning about how to lead a culturally diverse mission to combat hunger among the homeless population. But a student in a rural town in the Nebraska Panhandle would likely benefit from a program that teaches students how to navigate state and federal programs concerning sustainable irrigation of crops. Teaching students abstract leadership skills without reference to a particular situation or context in which they would need to use those skills will likely do them no harm, but neither would it do them much good. To understand how localized education could be used, we review two current trends in civic education: global civics and place-based education.

**APPROACHES TO TEACHING TO CIVIC EDUCATION**

Before considering the specifics of either global citizenship or place-based education, it is important to point out that civic education in the United States carries significant historical baggage that provides a subtext to the current debate. Civic education has been used for many purposes, including social reform, cultural transmission and assimilation, segregation, and inclusion. Teaching a student how to be a good citizen also entails teaching them how to be good generally. Those behaviors, values, and skills are often culturally defined and highly contested. Devising a curriculum that addressed civic values became increasingly difficult as awareness of the country’s pluralism expanded across racial, ethnic, religious, political, economic, gender, and sexual lines. Although the global civic education and place-based education discussed here may approach civics from opposite ends of the geographic spectrum, they both seek to move the discussion beyond identifying common values toward developing strategies for engagement in a pluralistic environment.

Despite the conflict and controversy surrounding civic education, educators, policy makers, and reformers continue to develop new models of civic education. Among the current trends that attempt to move the discussion in a different direction are global civics (also called global citizenship) and place-based education. Although the proponents of global citizenship education certainly do not speak with one voice in terms of ideology, pedagogy, or curriculum, they generally emphasize human rights, deliberation, tolerance, equality, and social justice and rely on communication technology as a primary pedagogical tool to help students learn about and connect with people and cultures from around the globe (Osler and Vincent 2002; Rubin and Giarelli 2007; Camicia and Zhu 2012; Marino and Hayes 2012). Proponents argue that the goal is not to establish a unifying set of values that define good global citizenship. Instead students learn how to engage people of different cultures and beliefs through mutual respect and discourse. Ideally the skills learned through a global civic education would translate to the experiences of students in their daily lives as they are faced with conflict and engage with people from diverse backgrounds. At the same time civic education is designed to foster a broader dialogue that would build cultural bridges and promote a peaceful process through which to address global conflicts (Reich 2012, 464).

As is true of all reforms and approaches to education, global civics is not without its critics and opponents. Few would argue with the ultimate goals of promoting peace, equality, and tolerance in solving geopolitical problems. On the edge of the spectrum are conspiratorial fears that global civic education is ultimately designed to promote a unified global state (Rapoport 2010). Other critiques are more concerned with the implications of global civics on national identity and citizenship. This argument follows that global civic education leaves little room for students to learn about the institutions, processes, and values of citizenship in the United States (Rapoport 2010, 180; Torres 2002, 372). With regard to actual pedagogy there are concerns as to whether or not enough teachers would have the global perspective necessary to teach effectively a global civic curriculum (Merryfield and Kasai 2004, 354; Rapoport 2010, 182). Our critique of global civic education is based neither on philosophy nor on pedagogy. Global citizenship education has a place in public schools and can offer value to curricula and the educational betterment of students. Rarely in education, however, are reforms or practices applicable in every community and every learning environment. For instance, the dependence on technology makes integrating a global citizenship curriculum particularly difficult in a rural school district, where technological infrastructure and resources are often scarce. Aside from the infrastructural challenges, the depopulation problems facing rural areas that we have discussed are such that a civic curriculum
that focuses on local civic engagement offers a valuable opportunity to develop knowledge and skills that could overlap with global civic education, but also help to foster civic engagement and leadership at the local level.

The other major trend in civic education is the place-based education movement. In contrast to global civic education, place-based education incorporates translatable skills like deliberation, engagement, and organization into a curriculum that looks at the unique characteristics, virtues, and challenges of the community in which a school is located (Smith 2002, 31). As in our consideration of global citizenship education, we do not argue that place-based education is a silver bullet solution to civic education in all learning environments. With the challenges facing rural school districts, and the drain of young people from rural to urban areas, a place-based civic education would provide for a curriculum that could overcome obstacles stemming from limited technological resources. The approach could also provide students with a foundation of skills to reform their communities from within rather than feeling the need to flee to greener pastures.

The place-based education movement has evolved over the last century and has been used in various forms. In the early 20th century, Arthur Dunn, an early leader in social studies education, developed a community civics course—intended for freshmen—that focused on identifying and engaging with local community problems. Dunn published a number of textbooks for the course, including an edition targeted specifically at rural areas that enjoyed positive reviews and wide distribution in the second decade of the 20th century. Several competing texts based on Dunn’s model appeared at the same time, but as schools evolved in response to the national and international pressures of the coming decades, the existence of community civics in the high school curriculum eroded until it was virtually nonexistent by the 1950s (Evans 2004, 29).

In 1966 Elliot Wiggins, an English teacher at a small private school in northern Georgia, engaged his students in a writing activity that focused on the local Appalachian oral and historical tradition. The consequence of this exercise was the publication of the Foxfire magazine. To some extent the Foxfire project could be considered the foundation of the modern place-based education movement. Environmental groups adopted and adapted Wiggins’s localized and experiential curriculum—with its attachment to rural areas in the Appalachian mountains—in developing their own curricula (Resor 2010, 187). It has only been in the last decade, however, that significant efforts to return place-based education to the public schools has appeared in scholarship or school reform efforts.

Given the localized nature of place-based learning and the organic nature with which it has evolved, providing a precise definition of what place-based learning is—and, equally importantly, what it is not—proves to be a nebulous task. General recurring themes in place-based education include an examination of the social, economic, political, natural, and cultural artifacts of a community; an emphasis on interdisciplinary, hands-on, and experiential learning modalities; the development of deliberative and critical thinking skills; and the promotion of engagement, awareness, and problem solving at the local level. Central to the philosophical foundation of place-based learning is ensuring that the identity associated with place emerges from the experiences of the students, rather than being imposed by the teacher (McInerney et al. 2010, 4). Examples might include reading literature by local authors or about the community and using that to explore a social dynamic or natural phenomenon that shapes the community. For the purposes of rural leadership, the objectives could range from class or individual projects that research local policies to efforts to undertake a project that actually reforms or transforms the community.

In the eyes of proponents the greatest virtue of place-based education is also its greatest obstacle. In an era of standardization and assessment, identifying objectives that are easily tested is difficult. Therefore teachers might be reluctant to spend time on projects and activities that would not directly improve test scores. The obvious rebuttal brings into question whether the purpose of education is securing higher test scores or educating the whole child (Jennings et al. 2005, 46). A place-based curriculum also requires a significant effort on the part of teachers to research avenues of local engagement and to coordinate an interdisciplinary curriculum. And given the historical precedence of localism perpetuating discrimination and isolationism, a locally centered civic curriculum might raise questions about its ability to prevent the potential negative consequences of localism. To the extent that place-based education can be implemented, states need to provide the ability for local school districts to have a role in designing and assessing their own curricula. However, giving the state a role in supporting and approving place-based projects may help alleviate some of the problems associated with local curricula.

The tension between place-based and global civic education is not invariably irreconcilable. There have been efforts dating back to at least the Progressive Era to write textbooks and establish curricula that allow students to connect the rights and responsibilities of citizens from the local to the global context (Dunn 1907). Furthermore, the debate over the geographic structure of civic educa-
tion has served to drive the evolution of the social studies curriculum since the Progressive Era (Evans 2004). These efforts at civic education were often mired in localism, regionalism, racial prejudice, and xenophobia. The inability to exorcise these historical ghosts from the civics curriculum is at least partly to blame for the fall of citizenship education from a cardinal principle of public schooling in the early 20th century to at best a secondary purpose in the social studies curriculum.

Beyond the historical dynamics increasing the tension between place-based and global civics curricula, there are significant theoretical implications that cannot be overlooked in terms of the type of citizenship that each embraces. A central construct of citizenship is the idea of membership. Civic education is designed to instruct students as to the rights, laws, values, and norms of the members of a society. Through civic education students essentially are taught to recognize good members from bad—and, equally importantly, members from nonmembers. Through place-based education students explore the unique natural, cultural, political, and historical characteristics of their community in order to better understand the identity and responsibilities of membership in their community. With regard to global citizenship membership is essentially existential. Everyone is a citizen, and students learn to value commonality and deliberation across cultures.

What is at tension between a local versus a global civics curriculum is identity. In global civics identity is muted in favor of multicultural awareness, discourse, and conflict resolution. In place-based civics identity is highlighted to promote community engagement, environmental awareness, and cultural appreciation. These two approaches to teaching citizenship may not be entirely irreconcilable; however, it seems quite difficult from a pedagogical standpoint to get all actors involved in the educational process to grasp a model of civics that both highlights identity and minimizes it. Consequently civic education in most states has been watered down to a bland national idea that focuses on the institutions of government and such mechanics of citizenship as individual rights, voting, obeying the law, and patriotism.

For students in rural schools the message of global civics is that rights and responsibilities are defined universally rather than locally. This perspective contributes to the idea that opportunities for success and the ability to contribute to the world lie elsewhere, not necessarily in one’s own rural community. However, by employing a place-based curriculum, students can be taught that their identity is rooted in their own community and that they have the power and responsibility to shape that community. Again this is not to say that place-based education should always exclude a global perspective; however, given the limited time and resources for social studies, if rural schools want to train and retain leaders for their communities, place-based education is a more promising resource.

**CIVIC EDUCATION IN NEBRASKA**

Nebraska is a state where place-based education may be profitably and more easily implemented because the state provides an unusual amount of latitude for local school districts to design their own curricula and assessments. Following the passage of No Child Left Behind, many states opted to standardize tests across their districts. By contrast, Nebraska allowed each school district to design its own method for identifying learning objectives and also measuring and reporting learning outcomes. Nebraska’s School-based, Teacher-led Assessment and Reporting System (STARS) is one of the only teacher-directed assessment programs in the country. Districts that develop their own local standards submit them to the state Department of Education to demonstrate that they are equal or more rigorous than the state guidelines (Roschewski 2004, 10). Beginning in 2008 the legislature began to transition control of assessment of reading and math from the local to the state level, but social studies remains under the control of local school districts (Roschewski 2008, 6).

Nebraska regularly revisits its state guidelines, and a new set of statewide social studies standards were approved by the State Board of Education in December 2012. The standards cover civics, economics, geography, and history. The process of developing the new curriculum was not without controversy. The most contentious standards, which garnered a record response during the period for public comment, involved whether to teach climate change as a fact or theory, and also whether to teach that the United States is an exceptional nation (Reist 2012). School districts across the state have one year to adopt the new standards or submit local standards for approval.

The new social studies standards are intended to provide a basis for teaching students about the rights and responsibilities associated with citizenship. Although citizenship is often referred to within the standards as being multilayered—including local, state, national, and international levels—the main emphasis is placed on citizenship at the national level rooted in knowledge of American history and founding documents. The stated purpose of the standards is
to teach our children to become young patriots who have an intellectual understanding of the genius of our country’s founding principles and who feel an emotional connection to our nation. Achieving this purpose requires teaching Nebraska students to become responsible citizens who are prepared to preserve, protect and defend freedom and democracy in our nation and in the world. (NSBE 2012, i)

Civic education begins in kindergarten and continues through high school. At the lowest levels, the civic education standards focus on teaching young students to identify their role in their immediate society—including their family, neighborhood, and community. These standards emphasize objectives such as recognizing the purpose of “rules and the role of authority figures” (NSBE 2012, 1); modeling citizenship skills including “respect, courtesy, honesty, and voting” (NSBE 2012, 3); and identifying patriotic symbols, songs, and holidays. Beginning in fourth grade, students focus on their role as citizens of Nebraska. This includes learning about the institutions of state government, laws and rules, and rights and responsibilities such as “voting and public service projects” (NSBE 2012, 4).

From fifth grade through high school the standards move from local and state citizenship to the national and international levels. These standards require students to learn about various forms of governments, the development of written laws, and the structure of the American constitutional system. In terms of global civics, the standards emphasize teaching students about international and supranational organizations such as the United Nations, NATO, and the European Union, and an evaluation of American foreign policy issues (NSBE 2012, 4). In the upper grades, civic participation continues to be emphasized, with a focus on having students “describe ways individuals participate in the political process (e.g., registering and voting, contacting government officials, campaign involvement)” and evaluate the effectiveness of those methods (NSBE 2012, 4). Students are also expected to participate in their communities directly by being able to “demonstrate civic engagement (e.g., service learning projects, volunteerism)” (NSBE 2012, 6).

There is much that is encouraging about the civic standards for Nebraska: they provide solid guidelines for teaching students about history, rights, and responsibilities, and promote direct participation. However, there also remains cause for concern. Social studies is not subject to a statewide test to assess student learning. As Nebraska Board of Education president Jim Scheer noted in an interview with the Lincoln Journal Star following the adoption of the new standards, “Without an assessment, it may get lost in the educational process. . . . It may get, perhaps, minimized” (Reist 2012). Following the educational adage “if it is not tested it is not taught,” the social studies may indeed continue to receive less emphasis as compared to tested subjects. This is something of a double-edged sword, as it may reduce the time spent on the subject in total; but because it is not assessed by a statewide test, control of material also remains squarely with local districts. This provides leeway for school districts to design a curriculum that fits their local needs.

**RURAL SCHOOLS AND PLACE-BASED EDUCATION**

Nebraska is the model of a rural state. Of its 531 incorporated communities, only 18 have populations over 10,000 (Cantrell 2005, 6). Consequently, Nebraska is home to a large number of small schools that serve rural populations. Of the 285 secondary schools (grades 7–12) and high schools in Nebraska (grades 9–12) for which enrollment totals are available for the 2012–13 school year, 170 schools (60%) have enrollments of 200 or fewer for the entire school (NDE 2012). In terms of academic outcomes, rural schools are a boon for the state. In their study of small schools in Nebraska, Funk and Bailey found that the smallest schools—those with fewer than 100 high school students—average a 97% graduation rate, compared to the statewide average of 85%; moreover, students from the smallest school districts were 25% more likely than their counterparts in large schools to enroll in Nebraska colleges (1999, 1).

Although it is clear that small schools in Nebraska are known for high academic achievement, recent educational policy changes may make that more difficult to maintain. What many within the education community find frustrating is that despite the emphasis on local control within Nebraska, the overall education climate, both statewide and nationally, is geared toward easily testable learning objectives. This is especially problematic for rural schools. In an evaluation of the STARS system in 2003 conducted on behalf of the Nebraska Department of Education, Gallagher found rural schools often experienced the greatest pressure to move away from place-based forms of learning. The study highlighted the potentially dire consequences for rural schools in this policy environment:

In many schools, as we note throughout this report, effective and meaningful projects and programs
are being cut in favor of more easily tested material. Much place-based education, for instance, is being cut in small communities because it does not “fit into” an ESU-designed CRT [Education Service Unit Criterion-Referenced Test]. . . . at stake here is nothing less than the survival of some small communities. The state’s unique system was built in part to preserve the unique circumstances of Nebraska’s small schools. However, educators in these schools are having a difficult time protecting what is unique in their curriculum and instruction as they seek to comply with the demands of STARS. (Gallagher 2003, 56)

The movement from place-based education to easily tested standards is troubling precisely because it exacerbates the trends associated with youth out-migration, rural depopulation, and the rural leadership crisis. Students who are educated in a system of nationalized, globalized, and standardized curricula are taught that academic and professional performance is measured by standards external to their own community experiences. As place-based education advocate and University of Nebraska–Lincoln professor Robert Brooke writes, mainstream education teaches rural students that success is achieved outside of their own hometowns: “As predominately practiced, education points elsewhere: to history happening in other parts of the world, to migration as the means of personal advancement in the corporate industrial complex, to an ineffective form of citizenship” (2012, 163).

Citizenship without reference to a place can be an abstract and difficult concept for students of any age to understand. The rights, responsibilities, and skills associated with being a good citizen must be contextualized in order for students to be able to make meaning from their experiences. What the national standardization movement has caused, in part, is gravitation toward national and global learning objectives that have little relation to the specific contexts in which students experience learning. As reading, math, and science have become rigorously standardized and tested, social studies—and civics classes in particular—have become the classes in which students learn how to become citizens. The problem is not that the new Nebraska social studies curriculum prohibits place-based education, it is that in a system that is increasingly focused on assessment it is easier and less expensive for rural schools to use generic, prepackaged standards and tests rather than spend precious and scarce resources on developing and maintaining place-based curricula.

NEW DIRECTIONS FOR EDUCATING RURAL LEADERS

Place-based education offers avenues to engage students directly in their communities, to provide training and experience in leadership positions from an early age, and also to empower students with the knowledge that they are capable of influencing their own communities. A shift in citizenship education would be one step in addressing the rural leadership crisis. State and national level policy changes are also needed to assist rural areas in addressing their economic and environmental concerns; but a change in the way civics is taught is a proactive measure local school districts could implement on their own without the need for federal policy oversight. We do not wish to suggest that this is a panacea, nor that it would be without challenges. First, we recognize that just as is the case with global civic education, place-based education may not be applicable to all learning environments. Second, reforms need to be made to the current assessment-driven model, and although there is general agreement on this point there is little consensus as to how these reforms should be structured. Pursuing a place-based curriculum, particularly in rural areas, offers an alternative for communities and schools to explore more holistic models of learning to provide a balance between meeting the individual needs of students with broader societal and community interests. Although a place-based curriculum may require research and time on the part of teachers, the interdisciplinary nature of place-based learning allows teachers from several subjects to work together.

Finally, place-based education requires a critical approach to learning based on inquiry and experience. As students are learning about their community and environment, they also are constantly questioning them. This in turn would limit the likelihood that students would simply accept the circumstances of the world that they perceive as perpetual and unchangeable. Nebraska provides an ideal laboratory in which to experiment with various applications of place-based learning because it consists of largely rural communities, suffers from the exodus of youth that we have addressed, and also because the state is less rigid in terms of the curricular objectives that it expects local districts to adhere to.

Despite this potential, the challenges facing Nebraska’s rural school districts are representative of those facing rural school districts across the country. The allure of life in the city has enticed young people in the United States to abandon their small towns for dreams of a better life since at least the middle of the 19th century. This
flow of people from rural to urban environments only accelerated as the industrial revolution exploded and civic reforms made cities cleaner, safer, and more habitable. Because of the general improvement in the quality of life available in urban areas and the economic and political capital enjoyed by industries located in larger cities, some observers argue it is not worth the time or resources to preserve small towns or small schools (Pasley 1986; Popper and Popper 1987). However, those small towns contain some of our country’s most precious natural resources, are the location of our farms and food sources, and are home to citizens who have a right to keep their communities. It is important for members of those towns to train new leaders to keep those places thriving, but more broadly to train students to be the stewards of those natural resources. The maintenance of rural towns is linked to the prosperity of urban centers, and to abandon those rural communities to a slow death by out-migration profits neither rural nor urban dwellers.

In this vein, handcuffing school districts to rigid state standards that are designed, in part, to satisfy federal mandates sends a subtle but powerful message to students in small communities that their towns are simply the places in which they learn. In other words the lessons of life and the ideas and events that are worth learning have happened elsewhere and are relayed to small towns through education and media. Nebraska’s emphasis on teaching students “to become young patriots . . . who are prepared to preserve, protect and defend freedom and democracy in our nation and in the world” (NSBE 2012, i) emphasizes that the ideals and duties of citizenship are defined at the national and international levels, not by local communities. Place-based learning offers an important and necessary counterpoint to give students the opportunity to become meaningfully engaged in their own communities and to explore opportunities for shaping the policies and places where they live. When students feel empowered and connected to their own communities they are less likely to feel as though their only opportunities exist outside their hometowns. If the purpose of civic education is to teach students to be responsible citizens, we need to begin by teaching students how to be citizens of their communities—with all the rights and responsibilities that entails.

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REFERENCES


Nebraska State Board of Education (NSBE). 2012. So-
Place-Based Civic Education • Christie L. Maloyed and J. Kelton Williams 135

CONSIDERING NATIVE AMERICAN STUDENTS IN RURAL SCHOOL CONSOLIDATION

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ABSTRACT—When discussing school consolidation it is important to consider the educational effects on Native American students. Many Native American students live in homes of poverty, deal with difficult home lives, and struggle academically. While there are many areas of concern in discussing consolidation, loss of a low student–teacher ratio, loss of connection with the school community, and loss of autonomy or control of schools are of particular importance. Consolidation efforts may bring some positive education opportunity for Native students which may include offering a diversified and expanded curriculum, specialization for staffing, and specialized resources for students. Discussing the potential effects of school consolidation on Native students can help maintain a positive learning environment for increasing student learning and educational potential.

Key Words: Native American, Native student, school consolidation, community, at-risk student

INTRODUCTION

As more rural schools are considering consolidation, discussions on maintaining small rural districts are important to preserving educational opportunities for Native American students. Rural academic school districts can provide a positive learning environment for Native American students. Rural educational settings can provide the framework for struggling Native American students to succeed in their education. Education is an important part in determining success and a creating a future for our youth. For many Native American students who live in poverty or have troubled home lives education is often the gateway out of poverty, hopelessness, and despair. As schools in rural areas are pushed to consider consolidation, it is important to consider the potential effects on Native American students in each community.

Considering background information can help determine why meeting the needs of all students, and in particular struggling Native students, in consolidation situations is important. The effects of school consolidation may be relevant to many students of differing ethnic backgrounds—but often Native American students experience challenging educational, home, and social issues at a high rate. Many Native American students face obstacles and challenges that affluent and non-Native students may not comprehend. Poverty and discrimination usually top the list of discussion items. Tom Rodgers writes, “Native Americans are among the poorest in the country and, according to the Economic Research Service at the U.S. Department of Agriculture, nearly 60 percent of all Native Americans who live outside the metropolitan areas inhibit persistently poor counties” (n.d.). Native students living in rural settings are likely to live in poorer school districts considering consolidation.

Combine poverty with a challenging home environment, alcoholism, and lack of parental guidance, and many Native students face a unique set of challenges. These challenges have created hurdles and obstacles Native American students struggle with daily. Daily struggles contribute to performing below the national average in a number of academic areas, most notably graduation rates. In Nebraska, according to the 2011–2012 State of the Schools Report, only 64.25% of Native students graduated from high school in 4 years (Nebraska Department of Public Education 2012a). The average for all students in Nebraska is 86.07% (Nebraska Department of Public Education 2012a). In 2011–12, Native American students collectively had the lowest student performance in reading and mathematics for Federal Accountability in elementary schools (Nebraska Department of Public Education 2012b). With graduation rates for Native Americans below the state average in Nebraska and Native elementary students performing below the academic setting, Native students are at a higher risk of not reaching their academic potential upon graduating—whether their goals be college, technical training, or entry into the workforce. Educators and school officials need to take special consideration in consolidation discussions to preserve a positive learning environment for the most at-risk students, which include struggling Native American students.
Small schools can provide struggling Native students with a positive learning environment. Lawrence and colleagues researched the importance of small schools and found small schools are safer, graduate higher percentages of students, have lower drop-out rates, send larger proportions of their graduates on to postsecondary education, have better attendance rates, provide students with a stronger sense of belonging, produce higher student grade point averages, and provide opportunities for participation in extracurricular activities (2002, 8–9). Small schools can give struggling Native students a unique opportunity to personalize their learning environment to obtain academic success.

Considering the risks associated with school consolidation can prevent hardships on Native American students within the districts. Rural school consolidation can have negative effects on at-risk students, including Native American students. Although there are many areas of concern, loss of a low student–teacher ratio, loss of connection with the school community, and loss of autonomy or control of schools are of particular importance.

When schools consider consolidation efforts, policymakers need to be mindful that the increase in student–teacher ratio that may result in a consolidated school can have an impact on Native students within the school. The smaller number of students in an unconsolidated school can provide unique opportunities for Native students to excel in academics, leadership and extracurricular activities, thus giving them a boost in confidence and experiences while in school. Native students are often characterized as shy and quiet students. Small class sizes with familiar peers can provide Native students with an environment in which they feel comfortable participating in the educational instruction and discussion, thus increasing educational understanding. This may very well be the extra push that Native students need to move toward academic success.

Discussions on school consolidation also tend to center around the loss of community for one locality or another. Constituents are fearful that a consolidation will have a major impact on each individual community. Oftentimes the small rural school is the lifeline of the community; without the school in the town there is a void. Like many community members, Native students in particular look to their school as a place of safety, security, and structure. Some Native students whose home lives are in a state of disarray oftentimes find themselves connecting with the school as the only normal or consistent area of their lives. These Native students look to the school for a safe environment and take solace in the fact that the school is secure. These Native students may look to the schools to provide some type of daily structure that is often lacking at home. Consolidation discussions pull at the very heartstrings of the connections Native students have with a school. Native students and families who are connected to a small rural school may have a hard time reconciling the loss of community identity that occurs in school consolidations. In consolidation situations issues such as transportation can become a barrier to daily school attendance, participation in extracurricular activities, representation on boards, or decision making for the school—many Native students live in households at or below the poverty level. It is important to consider that the consequences of consolidation can have secondary effects beyond the regular academic program that affect the connection between students and the school community. For children who look to the school for stability, structure, or safety, school consolidation can have a dramatic effect on their daily lives and their education. It is important that policy makers and educators who are navigating school consolidations recognize this situation, discuss the loss of community for all students within the school, and take proper steps to minimize its effects.

Finally, there is a sense of a loss of autonomy or power within the school system in consolidation discussions. Consolidation discussions can include questions of control between communities when making decisions for the school. Native families in small rural schools are often underrepresented in communities. When schools consolidate the percentage of Native constituents may be reduced and result in decreased representation within the new district. This situation could be troubling given the historic disenfranchisement and loss of autonomy experienced by Native Americans. In a smaller school setting, Native people may also feel their ideas and concerns are heard and respected, and they will be encouraged to participate—be it at the school board level, the parent group level or just in parent-teacher conferences. Making sure all members of the community have an opportunity to be heard and participate in decision making is critical to maintaining connections and preventing additional loss of autonomy for Native constituents during consolidations.

Although there are challenges that can have a damaging effect on Native students when consolidating schools, some actions can be taken to help minimize consolidation. Consolidation of school districts may be inevitable given the financial constraints of each district. Areas of educational opportunity for Native students in consolidation may include offering a diversified and expanded curriculum, specialization for staffing, and specialized resources for students.

When school districts are consolidated, diversifying and expanding curricular offerings can enrich Native student learning. School districts may be able to offer a wide array of different classes that many small rural schools cannot offer given their limitations on staff and resources. The expanded curriculum may allow for an incorporation of Native American–focused classes such as Native history, Native American languages, and Native American art. Classes like these can help Native students stay connected with Native culture and community through their education. In a recent study Native American students preparing for postsecondary education were ques-
tioned to determine indicators of postsecondary success (NCELA 2011). One factor indicated by Native students was connecting educational programs with their culture and community. Offering a large—and perhaps more specialized—selection of classes may present Native students the opportunity to connect educationally with their culture and community thus increasing the chances of postsecondary education and career readiness.

Native American students in consolidated schools may see a better specialization of staffing within consolidated schools. In consolidated schools with more employees there may be an opportunity for staff members to concentrate on particular areas of education. One example of the benefits of specialized staffing can be seen in New Mexico's Central Consolidated Schools (Central Consolidated School District n.d.). Central Consolidated Schools is a district that has a predominately Navajo Native American population. The district has a number of schools within it, including four high schools. The school district was able to specialize their staff to focus on incorporating Native culture in the curriculum. The district also was able to focus on attendance issues and getting kids to school. Many small schools would not have the staff or resources to dedicate this type of energy to the issue of low attendance. The incorporation of the Native curriculum and a strong attendance policy are two areas credited with increasing the school's graduation rate above the state average for New Mexico students (Central Consolidated School District n.d.). Although this school district focused on attendance and curriculum, other schools may find different areas in which specialization of staff can lead to academic success.

Finally, schools in consolidated districts may be able to offer specialized resources for students with special needs. Larger school districts may be able to employ staff members to help students with strategic counseling needs. For example, larger schools may be able to offer staff with a more focused concentration, such as a counselor who deals primarily with Native American students. Many Native students are in need of counseling services to deal with the internal struggles life creates. The suicide rate among American Indian and Alaskan Natives is far higher than that of any other ethnic group in the United States—and 70% higher than the rate among the general population of the United States (Dorgan 2010). In some communities on the Great Plains, the youth suicide has reached epidemic proportions (Dorgan 2010). Since Native American teen suicide rates are at such an alarming level, employing staff members who can concentrate on providing students guidance and services to learn coping mechanisms as well as overcoming the feelings of helplessness, hopelessness, and a hesitancy to dream for the future can be critical to that Native child’s academic success.

Practitioners and policy makers need to be proactive in thinking about the needs of Native American students and other at-risk students when making the serious decisions pertaining to school consolidation. Small schools offer unique settings in which many Native American students can thrive and excel academically. Since many Native students struggle academically, preventing educational barriers is a must to maintain academic success. Smaller schools can provide positive learning environments with more individualized attention to learning, thus increasing student learning and educational potential. When schools are consolidated the interests of many Native students could be dramatically affected and thus deserve consideration.

In closing, there is a Lakota phrase, *mitakuye oyasin*, which means “we are all connected” or “we are all related.” Our collective and individual action or inaction can have a significant impact on those around us and can help or hurt the entire community. Given the importance of meeting the needs of all students, it is imperative that tax payers, policy makers, and educators realize that in times of transition, such as school consolidation, high levels of support are needed for all students, especially at-risk students such as struggling young Native Americans.

**REFERENCES**


In the spring of 2002, while traveling in Nebraska making images for my “Lives of Tradition” photography project, I saw a small rural school. It occurred to me that there could be no more traditional lives than those of people attending a small rural school. This one, Round Hill School, is located about 15 miles south of Broken Bow, Nebraska.

I stopped to ask if I might visit and photograph. Mary Jane Graham, the teacher, welcomed me in to meet the students, learn about their school, and make photographs.

During the four years that followed, after researching the locations of other still active rural schools, and with the cooperation of state and county school authorities, I was able to contact teachers and gain permission to visit. I recorded nearly 40 of these rapidly disappearing schools.

Their remote, often bleak isolation provided an atmosphere for learning, undistracted by many of the issues affecting students in larger, more urban schools. Equally impressive to me is the unique relationship of students, ages 6 to 12, studying together. The younger students gain early exposure to subjects and activities soon to be accessed in more detail. The older students gain by being able to contribute to the teaching of the younger ones. Lasting impressions of this collective experience are represented in these images.
Sybrant

Pioneer
ECONOMIC ISSUES IN SCHOOL DISTRICT CONSOLIDATION IN NEBRASKA

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ABSTRACT—This research article examines how per-pupil spending on public primary and secondary education in Nebraska varies by school district size, and whether expenditures are expected to rise or fall after districts consolidate. We find a U-shaped relationship between per-pupil spending and the number of students per school district in Nebraska. We also find a similar relationship between property tax base and the number of students per school district. However, our analysis of per-pupil spending before and after consolidation fails to find consistent evidence that consolidation lowered per-pupil spending, in either rural or non-rural districts. The gains from consolidation become even more uncertain after considering the impact of consolidation on parent and student time costs, school quality, and community vitality.

Key Words: school district consolidation, education costs, government policy

INTRODUCTION

A standard business strategy to reduce costs and increase economic efficiency is to merge firms within the same industry or at different stages of production. A similar strategy has been adopted within primary and secondary public education in many states. For example, in the state of Nebraska the number of school districts has declined 66% over the past 20 years from more than 725 districts in 1992–93 to around 250 districts in 2011–12. It is argued that school district consolidation improves educational inputs, including facilities and labor (e.g., science and computer labs, science and math teachers), supplies and equipment via bulk purchases, and implementation of innovations in curriculum or management (Duncombe and Yinger 2007), at reduced costs. Faced with declining populations, rural school districts are increasingly confronted with consolidation decisions as their local education funds dwindle and more reliance on nonlocal sources of funding occurs. This research article examines how the spending on public primary and secondary education in Nebraska varies by school district size, and whether expenditures are expected to rise or fall after districts consolidate.

Studies examining school consolidation have focused on the effect of consolidation on costs, academic outcomes, and local community vitality. In a review study, Howley et al. (2011) find that although there is some evidence of increased fiscal efficiencies from consolidation, the overall benefit to the state is minimal. Moreover, consolidation has been found to be associated with reduced academic outcomes (such as lower graduation rates and lower achievement levels for impoverished students), and
for the communities with the closing schools, an erosion of the communities' social and economic base, further fueling rural population decline and even community abandonment. Despite this evidence, state governments or other nonlocal bodies continue to encourage or even mandate consolidation (Blauwkamp et al. 2011). As a result local communities increasingly will be unable to weigh the costs and benefits of consolidation while taking into account community preferences for school location, school and class size, and the costs of providing public schools. Rather, they will be subject to governing entities that are more likely to be fixated on the monetary cost savings from consolidation and that are less likely to be attuned to potential educational benefits or community savings from smaller, localized schools and school districts.

Overall our results do not consistently indicate that consolidation leads to lower per-pupil spending. Rural districts in our sample experienced lower expenditures only if multiple consolidations occurred over time and they began only with the second consolidation. For rural districts with only one consolidation per-pupil spending was higher in the post-consolidation time period compared to the pre-consolidation time period, and for non-rural districts per-pupil spending was no different in the post-versus pre-consolidation time period.

ECONOMIC ISSUES

This section considers three fundamental economic issues related to primary and secondary education: (1) the investment in education, (2) paying for education, and (3) social costs and benefits from district and school consolidation. The goal is to identify some fundamental economic arguments surrounding education spending and to use them to help consider some of the potential economic consequences of school district consolidation. Although we do not provide an exhaustive list of economic issues related to education spending, we do try to identify the most important issues that relate to school consolidation.

INVESTMENT IN EDUCATION

Primary and secondary education is an investment of money and time to build human capital. The private benefits of investing in education include higher earnings potential, more intellectually rewarding job opportunities, and fewer spells of unemployment. However, many benefits of education spill over to society and include larger contributions to the economy’s output, better citizenship (higher voting rates, more civic involvement), fewer crimes, and lower levels of substance abuse, among others. These spillover benefits of K–12 education provide motivation for public funding of primary and secondary education.

The time investment primarily comes from the students and parents, but also from volunteers in many settings, and involves time spent at school, at extracurricular activities, or at home studying on the part of students and fostering and aiding in studying on the part of parents. Parents and students also incur money and time costs to transport students back and forth between school and home. Transportation costs may be substantial, particularly for extremely densely or sparsely populated areas.

PAYING FOR EDUCATION

By tradition in the United States, primary and secondary education is supported by the public in the sense that parents have the option to send their children to publically provided schools. According to the U.S. Department of Education, 43.7% of education funds were provided by local governments, primarily through local property tax revenues, whereas 46.7% and 9.6% of funds were state and federal contributions, respectively. State and federal financial support of education may be warranted, given that as adults students may live anywhere in the state or nation. As a result, communities throughout the state or nation may gain from the spillover benefits of education to society, although many students will remain in their home communities.

The public provides funding for the monetary costs of education while students and their parents privately pay the time costs of schooling. This split of investment responsibilities may lead public officials to focus on the monetary costs of education relative to the time costs for students and parents. This may be especially true of state decision makers, given that local officials may be more attune to the tradeoffs between the time costs and monetary costs within their own communities.

Time costs also have important implications for local economic development. In particular, time costs can be substantially higher for parents who live in the rural countryside or in towns that do not have public schools. As a result, communities that are not served by public schools are at a substantial disadvantage at attracting and retaining families with children.

SOCIAL BENEFITS AND COSTS FROM DISTRICT AND SCHOOL CONSOLIDATION

These economic issues related to education inform our perspective of education policy, including decisions about school district consolidation. School district consolida-
tion has the potential to increase the returns to education if consolidation can both reduce cost and raise education quality, if any gains to quality outweigh any increase in cost, or if any reduction in costs outweighs the reduction in quality. But consolidation could reduce the returns to education if it fails to meet the above criteria.

District consolidation has the potential to reduce monetary costs by lowering the administrative costs for a district, as two administrations are merged into one. Even greater monetary costs savings are possible if school consolidation accompanies district consolidation—for example, if consolidated schools have higher pupil to teacher ratios. School consolidation, however, does not necessarily accompany school district consolidation.

An important issue that has not yet become commonplace when calculating cost savings from school consolidation is accounting for the additional time costs associated with the need to travel farther between home and school (Tao and Yuan 2005). Such costs should be included from the perspective of total social costs of education. The implication is that school consolidation that lowers the monetary costs of education may or may not lower the full social costs of education once travel time costs are included.

Moreover, when considering district school consolidation, an important question should be addressed: Is it necessary that residents of all school districts involved in a consolidation benefit from a higher return from education, or should it be the case that all districts together receive a higher return? The former criteria, if adopted, would set a higher threshold for conducting a successful consolidation.

Finally, as noted above, in the case of school consolidation, communities losing a school will face increased difficulty in retaining or attracting households with children, which will have substantial implications in terms of population loss and the long-term viability of these communities. This raises another important question: How much weight should this issue receive?

RELATED LITERATURE

Studies examining school consolidation focus on the effect of consolidation on costs, academic outcomes, and local community vitality. The discussion below reviews selected articles from these related strands of literature.

CONSOLIDATION AND COSTS

The research on economies of size in education is quite extensive and Fox (1981) and Andrews et al. (2002) provide in-depth reviews of the earlier literature. Overall evidence suggests that the quality and consistency of cost studies have improved and cost savings may exist by increasing district sizes from fewer than 500 students to 2,000–4,000 students, although diseconomies of size appear as enrollment reaches approximately 6,000 students (Andrews et al. 2002). A primary shortcoming of cost function studies is not accounting for the opportunity costs of increased travel time, which may be particularly important for rural districts. Tao and Yuan (2005) find that once commuting costs are accounted for, the average cost curve is reshaped from an L-shaped to a U-shaped curve, implying there is an optimal size rather than that districts should seek to be as large as possible.

Studies examining school district costs utilize a variety of methodologies, including cost functions and stochastic frontier models, and typically adjust for both differing student characteristics and education outcomes in each district (Duncombe and Yinger 2007; Jacques et al. 2000; Anderson and Kabir 2000; Ratcliffe et al. 1990). Moreover, they focus on the monetary costs of providing school services to the public sectors rather than time costs associated with education. Overall these studies find increasing economies of size as school district enrollment (or membership) rises, at least among smaller school districts. Jacques et al. (2000) examine school districts in Oklahoma during the 1994–95 period. They find economies of size exist in districts with an enrollment of up to 965 students but that standardized test scores dropped with further increases in enrollment.

Duncombe and Yinger (2007) examine cost savings from school consolidation utilizing data on rural New York school districts from 1985 to 1997. They differentiate between operating costs and additional capital costs associated with district consolidation and find significant operating cost savings per pupil from district consolidation. However, they also find significant increases in capital costs in consolidating districts partly due to the need to build new schools to serve the consolidated district and the state’s aid program which provides subsidies to support school construction. Average cost savings per pupil after consolidation declined with district size from 32% for consolidating two 300 student districts to 14% for consolidating two 1,500 student districts. Duncombe and Yinger (2007) focus on monetary costs of school services and not the time costs; they find economies of size over a larger range of schools.

Anderson and Kabir (2000) utilize a stochastic frontier function rather than a cost function approach and adjust for measures of teacher quality. Overall they find that dif-
ferences in teacher quality can explain much of the school inefficiency measured across the stochastic frontier, and teacher quality is correlated with district enrollment.

Ratcliffe et al. (1990) examine Nebraska school districts’ fiscal condition or the ability to provide educational services of average quality at an average tax burden on its residents. They find that school districts vary in their revenue-raising capacities, in their expenditure needs, and thus in the difference between expenditures needed and revenue raised (that is, need-capacity gap). However, they also find that on average the largest and smallest districts are in better fiscal condition than districts with enrollments between 100 and 1,000 students. That is, they argue that the medium-sized districts do not have the high per-student income that the smallest districts have, nor can medium-sized districts take full advantage of economies of size. As a result medium-sized districts tend to have both relatively low ability to generate revenue and relatively high expenditure needs.

CONSOLIDATION AND ACADEMIC OUTCOMES

After reviewing production function studies since 1980, Andrews et al. (2002) conclude that the strongest studies have not focused on size as a key determinant, and overall the results are mixed at the district level but are more consistent at the school level. Among the school-level studies, they find the literature suggests that decreasing returns to size may appear for high schools above 1,000 students and elementary schools above 600 students. The primary shortcoming of the existing production function studies is the use of cross-sectional specifications that do not account for unobserved heterogeneity among schools or districts. Failing to control for the unobserved characteristics of the schools or districts that may be correlated with both student performance and size will result in biased estimates.

Kuziemko (2006) isolates the effect of school size on student performance by using school-level data for Indiana from 1989 to 1998 and employing first-differences and two-stage least squares estimation. Both methods indicate a negative effect of school size on student achievement. The two-stage least squares estimates suggest that doubling enrollment leads to a 4.1 percentage point decrease in math scores and a 0.4 percentage point decrease in attendance three years later. Moreover, in an exploratory cost-benefit analysis, Kuziemko (2006) concludes that reducing the size of schools may be a cost-effective strategy to increase student achievement.

Leach et al. (2010) address endogeneity and selection issues by exploiting an education policy change in the province of Ontario. In 1998 the newly elected government ordered widespread consolidation within the province of Ontario’s public school system, reducing 62 districts into 25 districts. The consolidation was accompanied by a move to full provincial funding of school districts, causing a redistribution of funds from rich districts to poor districts. Overall the results indicate a general improvement in student performance. However, when the effect of consolidation is allowed to differ by the wealth of the district, the results indicate that students in previously high wealth school districts perform worse after the policy change compared to students in previously low wealth school districts.

CONSOLIDATION AND NON-MONETARY COSTS

Blauwkamp et al. (2011) look beyond monetary costs to examine other benefits that schools provide to communities, in particular the role that schools play in building and maintaining communities. A related strand of studies considers additional issues related to school consolidation. Surveying school superintendents in eight states involved in school consolidations, Alsbury and Shaw (2005) examine the consequences of consolidation for students, communities, and school personnel. Benefits included more course offerings, greater availability of specialized student services, and larger facilities. In terms of the community that lost a school, the costs included lost prestige, population decline, and concerns about lost control of students’ education.

DATA AND EMPIRICAL STRATEGY

Data

School district–level information on district size and expenditures was obtained from the Nebraska Department of Education. District size is measured by average daily membership. Average daily membership is larger than average daily attendance because it includes all students in the district regardless of whether they attend school every day. An average is necessary because the number of students can vary over the year as students move into or out of the district; transfer between public schools, private schools, or homeschooling; or drop out of school. Moreover, schools are likely to plan most variable costs (such as class sizes) based on membership rather than day to day attendance rates. Per-pupil expenditures are measured as expenditures per average daily member. These data were
collected for the 2010–11 school year as well as for the historical time period 1992–93 to 2004–5.

For the 2010–11 school year we also obtained district-level information on student outcomes, input prices, and environmental factors. Our student outcome measures include average ACT scores and high school cohort graduation rates. The input price is captured using the average salary of all teachers in a district. Environmental factors represent those factors that are outside of the control of district officials and include the percent of the school district population that receives free or reduced lunch, the percent of the school district population that is enrolled in special education classes, and the percent of school district population that are secondary students. For the time period 1992–93 to 2004–5, we obtained cumulative district dissolutions information and identified a sample of consolidated and nonconsolidated school districts (see Empirical Strategy subsection for details).

**EMPIRICAL STRATEGY**

Our goal is to examine how the monetary cost of public primary and secondary education in Nebraska varies by school district size, and whether these costs are expected to rise or fall after districts consolidate. We employ two strategies. The first strategy is to examine the relationship between per-pupil spending and district size (average daily membership) using the sample of 251 public school districts operating in Nebraska during the 2010–11 school year. This estimation controls for student outcomes (cohort graduation rate and ACT scores), input prices (average teacher salary), and environmental factors (percent of district population receiving free or reduced lunch, percent of the district population enrolled in special education classes, and percent of district population who are secondary students). These control variables may influence costs if lower income students, special education students, and high school students are more expensive to educate than higher income students, non-special education students, and elementary students. Furthermore, education costs are expected to be higher for schools that are achieving higher student outcomes.

The primary variable of interest is average daily membership and we include a quadratic term to determine if cost per pupil reaches a minimum. The implication of identifying a minimum cost district size is that for districts that are smaller than the minimum cost district size, district growth (perhaps through consolidation) leads to monetary cost savings. Although this analysis allows us to identify any empirical regularities between district size and per-pupil cost, it does not specifically test how consolidation may influence per-pupil monetary costs. Moreover, depending on how large the minimum cost district size is, it may not be feasible for small rural districts to achieve even with mass consolidation.

Our second and preferred strategy directly examines the impact of school district consolidation on per-pupil spending in Nebraska using a sample of 381 consolidated and nonconsolidated districts from 1992–93 to 2004–5. This historic period is examined because in June 2005 the Nebraska Legislature enacted Legislative Bill 126, which eliminated all elementary only (Class 1) and high school only (Class 6) districts by requiring them to merge into K–12 districts by the 2006–7 academic year. From 2005–6 to 2006–7 alone the number of school districts declined 45%, and since 2006–7 fewer than 8 additional school districts have closed. Conversely, over the 13 years from 1992–93 to 2004–5, the number of school districts declined 33%. Although over this historic time period there was incentive to consolidate through the structure of school financing, we focus on school district consolidations prior to 2005–6 because they primarily reflect consolidation by choice rather than mandated consolidation and would be the most likely to be instructive about the monetary cost savings from future school consolidations in Nebraska.

Nonconsolidated districts are defined as school districts that never closed or consolidated from 1992–93 to 2004–5. Consolidated districts are defined as school districts that consolidated at some point over the 9-year study period from 1994 to 2002 and remained opened through the 2004-5 academic year. A district may have been dropped from the sample for the following reasons. First, we required that a consolidated district have 2 years of data before and after the study period; if a district consolidated or closed during 1992–93 to 1993–94 or 2003–4 to 2004–5, the district was dropped from the sample. Second, the majority of the consolidations involved one or more existing districts receiving one or more closing districts. However, about 5% of the consolidations consisted of a new district opening upon consolidation. Because there are no pre-consolidation data on these new districts, they were dropped from the sample. Finally, we required that positive per-pupil spending be reported in each year from 1992–93 to 2004–5. This requirement resulted in 5 consolidated districts and 11 nonconsolidated districts being dropped from the sample. The final sample sizes are 134 consolidated districts and 247 nonconsolidated districts; each district has 13 years of data. Figure 1 illustrates the study design.
To examine the effect of consolidation on per-pupil spending, we exploit the variation in timing of consolidations over the study period. That is, many of the consolidated districts underwent multiple consolidations: of the 134 unique consolidated districts, 51 districts (or 38%) underwent a second round of consolidation; and of the 51 twice-consolidated districts, 21 districts (or 41%) underwent a third round of consolidation. Given our methodology we expect the initial consolidation to increase per-pupil spending as consolidation represents a spending shock at the receiving districts. However, we expect additional rounds of consolidation to decrease per-pupil spending as the receiving districts have experience with the logistics of consolidating—thus taking advantage of economies of scale. This estimation controls for district size, consolidated districts, districts located in negative growth counties, time-constant district-specific unobservable effects, and year-specific unobservable effects.

Finally, the data examine school district consolidation. Such district consolidation may or may not include the consolidation of individual schools. Results, therefore, reflect the potential administrative costs savings from school district consolidation and also reflect some school consolidation activity. However, the results are not a pure test of the potential monetary savings from consolidation of individual schools.

RESULTS

Relationship between Per-Pupil Spending and District Size

Table 1 presents the estimated relationship between per-pupil spending and district size (average daily membership). Column 1 shows the binary relationship and Figure 2 plots the relationship between per-pupil spending and the natural log of membership for the sample of 251 school districts operating during the 2010–11 school year. That is, the red dots show the combination of per-pupil spending and the natural log of membership for each school district. The inclusion of the natural log of membership squared allows us to test for a nonlinear relationship between per-pupil spending and the natural log of membership. Such a nonlinear relationship is identified if the coefficient on the squared term is statistically significant. The estimated relationship indicates the relationship is nonlinear; there is a negative and statistically significant estimated coefficient on the natural log of membership and a positive and statistically significant estimated coefficient on the squared term. That is, on average, as average daily membership initially rises, per-pupil spending declines until a minimum cost district size is reached. Then districts with an average daily membership beyond this minimum cost district size experience higher per-pupil spending. These results are incorporated into Figure 2 via the blue dots. In the natural log of average daily membership the estimated minimum cost membership level is 8.54, which is equivalent to an average daily membership of approximately 5,100 students in a school district.

Of course there are many other factors that influence per-pupil spending and those factors are not controlled for in the simple binary relationship shown in Table 1, column 1 or in Figure 2. Column 2 of Table 1 presents results that account for factors other than average daily membership. These factors include student outcomes, input prices, and environmental factors outside the control of district officials. The results indicate the student outcome variables,
TABLE 1. MEMBERSHIP SPENDING WITHOUT AND WITH CONTROL VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>OLS estimation</th>
<th>Total cost per average daily member</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total cost per average daily member</td>
</tr>
<tr>
<td></td>
<td>[1]</td>
<td>[2]</td>
</tr>
<tr>
<td>Intercept</td>
<td>53,115</td>
<td>46,364</td>
</tr>
<tr>
<td>Log of average daily membership</td>
<td>-10,481</td>
<td>-9141</td>
</tr>
<tr>
<td>Log of average daily membership squared</td>
<td>614</td>
<td>508</td>
</tr>
<tr>
<td>Average ACT</td>
<td>-84</td>
<td>(95)</td>
</tr>
<tr>
<td>Cohort graduation rate</td>
<td>0.15</td>
<td>0.04</td>
</tr>
<tr>
<td>Average teacher salary (dollars)</td>
<td>-29</td>
<td>(17)</td>
</tr>
<tr>
<td>Percent free or reduced lunch</td>
<td>6,358</td>
<td>(2,756)</td>
</tr>
<tr>
<td>Percent special education</td>
<td>-1,841</td>
<td>(2,278)</td>
</tr>
<tr>
<td>Percent secondary students</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adjusted $R^2$: 0.531, 0.718
Minimum cost enrollment: 5109, 8059
n: 251, 251

Note: Variable values were missing for some control variables in some counties. This issue primarily pertained to the average ACT variable, and to lesser extent, the graduation rate. In 2010–11 fiscal year data, there were 39 observations with missing values for the district average ACT score, 16 observations with missing values for the district graduation rate, 4 for average teacher salary in the district, 4 for percent of students in special education, 2 for percent of students who received free and reduced lunch, and 1 for share of secondary students. In the regression analysis, observations with a missing value for a variable were assigned a value of 0. Further, there was an indicator variable associated with each control variable. When the value for an observation was missing for that variable, the indicator variable was given a value of 1; otherwise the indicator variable received a value of 0. This technique is equivalent to substituting the mean value for a control variable in cases where an observation is missing in the data.

*denotes significance at the 10% level, **denotes significance at the 5% level, ***denotes significance at the 1% level.

Figure 2. Per-pupil spending and the natural log of membership, 2010–11.
average ACT score, and cohort graduation rate are negatively associated with per-pupil spending; however, the estimated coefficient on average ACT score is not statistically significant and the estimated coefficient on cohort graduation rate is only weakly statistically significant at the 10% level. Although education costs are expected to be higher for schools that are achieving higher student outcomes, a possible interpretation for our result is that a higher cohort graduation rate implies more students are completing their high school degree in 4 years—thus not requiring additional funds to be spent on them beyond 12 years. The estimated coefficient on average teacher salary is statistically significant and indicates that, on average, a $1,000 increase in average teacher salaries increases per-pupil spending by $150. Of the environmental variables only the percent of students enrolled in special education classes is statistically significant. The estimated coefficient indicates that, on average, a one-percentage-point increase in the number of students enrolled in special education classes increases per-pupil spending by $6,358.

The average daily membership results in column 2 are qualitatively similar to those presented in column 1—that is, the estimated coefficient on the natural log of enrollment is negative and statistically significant while the estimated coefficient on its square is positive and statistically significant. These results imply that per-pupil spending falls initially, reaches a minimum cost point, and then begins to rise slowly. There is, however, a difference in the magnitude of the estimated coefficients on the natural log of enrollment and its square when the control variables are accounted for. Specifically the magnitude of the estimated coefficients rises after the control variables are included; thus, the minimum cost average daily membership rises from approximately 5,100 without the control variables to approximately 8,000 with the control variables.

These results suggest economies of size persist throughout much of the enrollment range in our sample, as the average daily enrollment for all Nebraska school districts in 2010–11 is 1,130, and only 2% have an average daily enrollment of 8,000 students or more. But although this analysis is informative in terms of providing an estimate of the so-called ideal district size and implies implementing policy that encourages consolidation, it does not specifically test how consolidation may influence per-pupil monetary costs. Moreover, the ideal district size is infeasible for small rural districts to achieve even with mass consolidation. Next we present results of the impact of consolidation from our longitudinal analysis that includes a control group while examining pre-versus post-consolidation costs.

THE ROLE OF PROPERTY VALUES

In Figures 3 and 4 we supplement our findings on the cross-sectional relationship between natural log of membership and spending per pupil with an analysis of the cross-sectional relationship between assessed property values and the natural log of membership. Assessed property value data are provided for both 2011 and 2006, respectively. Results are also presented for 2006 to examine the relationship before the recent steep run-up in agricultural land values. The tax base in both figures reflect assessed values and therefore reflect that Nebraska assesses agricultural property at a lower rate (75% of market value) than other types of property (90%).

The relationship between property tax base per member student and district membership is similar to the per-pupil spending and district size relationship presented in Figure 2. In particular, property tax base per average daily member falls sharply with the natural log of membership. The correlation coefficient between the natural log of average daily membership and property tax base per member has a negative value in both 2006 (-0.52) and 2011 (-0.56). Note that this pattern is evident in 2006 as well as 2011. In other words, the pattern predates the recent sharp run-up in agricultural land prices and is a more permanent feature of Nebraska’s school tax base. The findings in Figures 3 and 4 raise an intriguing possibility. Higher spending per student in low-membership school districts in our cross-sectional analysis may in part reflect the presence of a larger tax base to support education spending. The pattern in Figure 2 may reflect a desire by high-resource districts to spend more on education as much as it reflects technical economies of size that drive down average costs as school district membership rises.

To the extent that higher spending per pupil in low membership districts reflects economies of size, the results also raise the possibility that at least some low-membership school districts may have sufficient tax bases to help offset higher costs. In other words, while school districts may exhibit economies of size, some low-membership districts may serve largely agricultural districts, which would tend to have high levels of potentially taxable property per student. The key question is whether this agricultural property will be taxed at the same rate as other types of property. As noted above agricultural property is taxed at a somewhat lower rate in Nebraska; and given the political power of agricultural interests, there may be even larger discrepancies in other states between tax rates on agricultural and other property, and the gap may grow in Nebraska in the future. Another
Figure 3. Property tax per student and the natural log of membership, 2011.

Figure 4. Property tax per student and the natural log of membership, 2006.
TABLE 2. PRE- VERSUS POST-CONSOLIDATION COMPARISONS OF REAL PER-PUPIL SPENDING

<table>
<thead>
<tr>
<th></th>
<th>Pre-consolidation</th>
<th></th>
<th>Post-consolidation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed districts</td>
<td>9,660</td>
<td></td>
<td>11,730</td>
<td></td>
</tr>
<tr>
<td>Consolidated district</td>
<td>7,815***</td>
<td></td>
<td>12,500</td>
<td></td>
</tr>
<tr>
<td>Nonconsolidated district</td>
<td>8,698* †††</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: All figures have been adjusted for inflation to 2012 dollars. Asterisks (*) denote a statistically significant difference in the per-pupil cost between consolidated districts and closed districts or nonconsolidated districts and closed districts (*p-value < 0.10, *** p-value < 0.01). Daggers (††) denote a statistically significant difference in the per-pupil cost between consolidated districts and nonconsolidated districts (††† p-value < 0.01).

important point is that many low-enrollment districts primarily serve small towns, with limited territory in the surrounding agricultural districts. These low-enrollment districts would not have high levels of assessed property per student.

IMPACT OF CONSOLIDATION ON PER-PUPIL SPENDING

Table 2 shows real per-pupil spending in 1992–93, before our sample of consolidated districts consolidated, and in 2004–5, after our sample of consolidated districts consolidated. Specifically, the table compares per-pupil cost for consolidated districts with nonconsolidated districts in the two time periods. In 1992–93, per-pupil cost in consolidated districts (prior to consolidation) was $883 lower than per-pupil cost in nonconsolidated districts; however, in 2004–5 (after consolidation), per-pupil spending was higher for both types of districts and no longer significantly different. Note that the 1992–93 per-pupil cost in closed districts (prior to closing during consolidation) were significantly higher than per-pupil cost in both consolidated and nonconsolidated districts. This comparison suggests that even before consolidation took place, there was something unique about consolidated districts such that they had significantly lower per-pupil spending than districts that would eventually close and districts that would never consolidate during the study period.

Of course the simple differences in average per-pupil cost before and after consolidation do not tell us the impact of consolidation. There are many other variables that influence per-pupil spending in each district, and changes in those variables also are reflected in the simple differences shown in Table 2. Table 3 presents the results of a regression model that estimates the association of multiple rounds of consolidation on per-pupil spending in rural districts while controlling for district size, district location, district-specific fixed effects, and year fixed effects. For the sake of comparison, column 1 presents the results for the impact of the first consolidation only on per-pupil spending in rural districts. First the estimated coefficients on the control variables are consistent with expectations as well as with our previous findings. That is, findings from our 2010–11 cross-sectional analysis indicate that districts with higher average daily membership have lower per-pupil spending (at least up to 8,000 students). We capture this relationship in Table 3 with the binary Class 3 variable. The estimated coefficient indicates that per-pupil spending are 3.8% lower in Class 3 rural districts, which have higher student populations compared to Class 2 districts or Class 1 and 6 districts that maintain elementary and high school grades only; however, the estimate is not statistically significant. Consistent with the simple differences in average per-pupil cost before and after consolidation presented in Table 2, the estimated coefficient on the binary consolidated district variable indicates that, on average, per-pupil spending is 16.6% lower across all years in consolidated rural districts compared to nonconsolidated rural districts. That is, independent of the impact of consolidation, consolidated districts in our sample have significantly lower per-pupil spending compared to the control group of nonconsolidated districts. Finally, per-pupil spending is 7.4% higher in rural districts located in negative-growth counties compared to rural districts located in positive-growth counties, which is consistent with expectations.

For the purposes of this study, the most important coefficient is the estimated impact of consolidation, captured with the First consolidation variable, on per-pupil spending. According to the point estimate and using nonconsolidated districts as a control group, per-pupil spending is 2.7% higher post-consolidation compared to pre-consolidation. The estimate is marginally statistically significant (p-value is 0.1040), and is consistent with the
TABLE 3. IMPACT OF CONSOLIDATION ON PER-PUPIL SPENDING IN RURAL DISTRICTS

<table>
<thead>
<tr>
<th>Variable</th>
<th>GLS estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[1]</td>
</tr>
<tr>
<td>Consolidation variables</td>
<td></td>
</tr>
<tr>
<td>First consolidation (0-1)</td>
<td>0.027 (0.017)</td>
</tr>
<tr>
<td>Second consolidation (0-1)</td>
<td>-0.051 (0.015)</td>
</tr>
<tr>
<td>Third consolidation (0-1)</td>
<td>0.027 (0.021)</td>
</tr>
<tr>
<td>Other regressors</td>
<td></td>
</tr>
<tr>
<td>Class 3 district (0-1)</td>
<td>-0.038 (0.025)</td>
</tr>
<tr>
<td>Consolidated district (0-1)</td>
<td>-0.172 (0.025)</td>
</tr>
<tr>
<td>District located in negative-growth county (0-1)</td>
<td>0.074 (0.033)</td>
</tr>
<tr>
<td>Year fixed effects</td>
<td>Yes</td>
</tr>
<tr>
<td>District fixed effects</td>
<td>Yes</td>
</tr>
<tr>
<td>n*T</td>
<td>3,016</td>
</tr>
</tbody>
</table>

Note: GLS covariance allows for first-order autocorrelation and error correlation across school districts. The dependent variable is the natural log of real per-pupil spending. First consolidation equals 1 in year t and thereafter if district consolidated for the first time in year t. Second consolidation equals 1 in year t and thereafter if district consolidated a second time in year t. Third consolidation equals 1 in year t and thereafter if district consolidated a third time in year t. *denotes significance at the 10% level, **denotes significance at the 5% level, ***denotes significance at the 1% level.

TABLE 4. IMPACT OF CONSOLIDATION ON PER-PUPIL SPENDING IN NON-RURAL DISTRICTS

<table>
<thead>
<tr>
<th>Variable</th>
<th>GLS estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[1]</td>
</tr>
<tr>
<td>Consolidation variables</td>
<td></td>
</tr>
<tr>
<td>First consolidation (0-1)</td>
<td>-0.009 (0.018)</td>
</tr>
<tr>
<td>Second consolidation (0-1)</td>
<td>-0.003 (0.016)</td>
</tr>
<tr>
<td>Third consolidation (0-1)</td>
<td>0.021 (0.02)</td>
</tr>
<tr>
<td>Other regressors</td>
<td></td>
</tr>
<tr>
<td>Class 3 district (0-1)</td>
<td>-0.072 (0.038)</td>
</tr>
<tr>
<td>Class 5 district (0-1)</td>
<td>-0.108 (0.015)</td>
</tr>
<tr>
<td>Consolidated district (0-1)</td>
<td>-0.055 (0.031)</td>
</tr>
<tr>
<td>District located in negative-growth county (0-1)</td>
<td>0.015 (0.051)</td>
</tr>
<tr>
<td>Year fixed effects</td>
<td>Yes</td>
</tr>
<tr>
<td>District fixed effects</td>
<td>Yes</td>
</tr>
<tr>
<td>n*T</td>
<td>1,937</td>
</tr>
</tbody>
</table>

Note: GLS covariance allows for first-order autocorrelation and error correlation across school districts. The dependent variable is the natural log of real per-pupil spending. First consolidation equals 1 in year t and thereafter if district consolidated for the first time in year t. Second consolidation equals 1 in year t and thereafter if district consolidated a second time in year t. Third consolidation equals 1 in year t and thereafter if district consolidated a third time in year t. *denotes significance at the 10% level, **denotes significance at the 5% level, ***denotes significance at the 1% level.

The notion that there is a spending shock at the receiving districts when consolidation occurs.

To investigate this further, column 2 of Table 3 estimates the impacts of the second and third rounds of consolidation in addition to the first round. As expected the impacts of the first and subsequent rounds of consolidation differ. On average the first consolidation among rural districts increases per-pupil spending by 3.3%, reflecting a spending shock or adjustment cost. However, the second round of consolidation reduces per-pupil spending by 5.1%, suggesting the adjustment cost fades over time. Perhaps this is due to the receiving districts’ gaining experience with the logistics of consolidating, which allows them to take advantage of economies of size. Although the estimated impact of the third round of consolidation is positive, it is not statistically different than zero. Overall,
given the average per-pupil cost among rural districts in the sample, the majority of consolidated districts in our sample experienced an average increase of about $340 per pupil post-consolidation. For 38% of the consolidated districts who underwent a second round of consolidation, per-pupil spending eventually decreased by about $530, on average, post–second consolidation.

Table 4 presents analogous results to Table 3 for the non-rural districts. Overall the impact of consolidation for non-rural districts differs from rural districts. That is, none of the rounds of consolidation are statistically significantly different than zero, suggesting that post-consolidated per-pupil spending is no different than pre-consolidated per-pupil spending. However, the estimated coefficients on the control variables are consistent with those found for rural districts. Non-rural districts with higher student populations (e.g., Class 3 and Class 5) have lower per-pupil spending, on average. Also, independent of the impact of consolidation, consolidated districts in our non-rural district sample have statistically significantly lower per-pupil spending compared to the control group of non-rural, nonconsolidated districts.

In summary, the regression results control for more factors that may affect per-pupil spending over time than a simple comparison of pre- and post-consolidation costs and therefore more accurately capture the cost savings from consolidation. Overall the results do not consistently indicate that consolidation leads to lower monetary costs per pupil. Rural districts in our sample experienced lower expenditures only if multiple consolidations occurred over time and began only with the second consolidation. For rural districts with only one consolidation per-pupil spending was higher in the post-consolidation time period compared to the pre-consolidation time period, and for non-rural districts per-pupil spending was no different in the post- versus pre-consolidation time period.

**CONCLUSION**

This article examines the relationship between school district size, as measured by student membership, and educational spending in the state of Nebraska, a geography that provides a good representation of the tradeoff between district size and spending for the Great Plains region. The study utilizes a rich database of district spending and membership that has been maintained by the Nebraska Department of Education for the past two decades. These data allow for both a cross-sectional and a time-series, cross-sectional analysis of membership and per-pupil spending. The latter analysis allows for a comparison of pre- and post-consolidation per-pupil spending.

As is true for most studies of school district spending, we lack information on the time investment in education by students and parents in studying and in transportation to and from school. We also acknowledge that differences between the property tax base of school districts, state aid, and state regulation of local taxation also influence the per-pupil spending patterns of school districts.

With these caveats, our analysis found a U-shaped relationship between the average monetary spending per enrolled student and the number of students per school district. In our fully specified cross-sectional model, average spending per enrolled student reaches a minimum in districts with 8,000 enrolled students. Although this empirical relationship may occur for a variety of reasons, the results suggest there is potential monetary cost savings from school district consolidation in most Nebraska school districts, given the average enrollment for all Nebraska school districts in 2010–11 is 1,130 students and only 2% have an enrollment of 8,000 students or more. However, our time-series analysis of per-pupil spending before and after consolidation failed to find consistent evidence that consolidation lowered per-pupil spending in either rural or non-rural districts. This result suggests that savings from school district consolidation, if any, may be small despite the observed U-shaped pattern between school district membership and per-pupil spending.

**ACKNOWLEDGMENTS**

We acknowledge support for this research from the Center for Great Plains Studies.

**NOTES**

1. In education, consolidation refers to combining school districts and closing schools and sending students to other receiving schools (Howley et al. 2011).

2. Howley et al. argue the benefits of fiscal efficiencies are small because they involve only the smallest districts, which enroll very few students (Howley et al. 2011).

3. A vast literature exists on the relationship between school inputs and student performance through the use of education production functions (see Hanushek [1986]; Hedges et al. [1994]; and Verstegen and King [1998] for in-depth reviews of this strand of literature). Although class size is a common school input used in education production functions, few studies include school or district size (Andrews et al. 2002), which is the focus of this study.
4. Nebraska school districts are defined by class to designate the specific grade levels and population associated with the territory of the school district. Classes are defined as follows: Class 1—elementary only; Class 2—elementary and high school with area population of 1,000 or less; Class 3—elementary and high school with area population between 1,001–99,999; Class 4—elementary and high school in Lincoln only; Class 5—elementary and high school in Omaha only; and Class 6—high school only.

5. Additional rounds of consolidations occurred for the three-time-consolidated districts; however, the sample is too small to obtain reliable results.

6. Although not shown, we find significant cost differences among districts located in rural versus non-rural counties, thus we run separate regressions for each. Specifically we find the per-pupil cost difference between districts in rural versus non-rural counties increased nearly fourfold from the pre-consolidation ($577) to post-consolidation ($2,248) time period. A rural county is defined as a county that is not part of a metropolitan or micropolitan statistical area based on current U.S. Census Bureau definitions.

7. We also tested the null joint hypothesis that the coefficients on the first, second, and third consolidation variables are zero. Overall, the F-test rejects the null hypothesis that the set of all consolidation variables has no effect at the one percent level.

8. Forty-six percent of non-rural districts are classified as Class 1 districts and 3% each are classified as Class 2 and Class 6 districts. Lincoln Public Schools is classified as the only Class 4 district. It was dropped from the sample because it received a district during the two years before the study period and thus did not satisfy the study design specifications.

9. It should be noted that our longitudinal analysis does not account for school quality. If consolidation influences school quality, there may be effects on the time to graduate and the dropout rate. These are important factors. According to Bureau of Labor Statistics data, individuals with less than a high school diploma are 1.6 and 3.2 times more likely to be unemployed than high school graduates and college graduates, respectively.

REFERENCES


DEMOGRAPHIC FOUNDATION OF RURAL EDUCATION IN THE GREAT PLAINS
The Impact of Urbanization

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Abstract—Demographic factors have been transforming the Great Plains for decades. Although the region increased in population from 1950 to 2007, closer analysis reveals that much of that growth took place in the Core Based Statistical Areas. These population trends reflect the broader impact of urbanization. This article provides a contextual perspective of critical demographic factors influencing the structure of educational systems in rural communities in the Great Plains region, helping administrators and decision makers understand the impact of demographic forces on the delivery of rural education.

Key Words: rural demographics, rural schools, urbanization in Great Plains, rural community development

INTRODUCTION

A range of demographic factors have been transforming the rural fabric of the Great Plains region of the United States for decades. Changes and shifts in population naturally constitute one of the major factors. Although the Great Plains region increased in population from 1950 to 2007, closer analysis reveals that much of that growth took place in the Core Based Statistical Areas (CBSAs)—which include Metropolitan Statistical Areas (MSAs), adjacent counties economically and socially linked to a core urban place of at least 50,000 people; and smaller Micropolitan Statistical Areas, those urban areas with core populations between 10,000 and 50,000. These population trends reflect the broader impact of urbanization on the relatively lightly populated Great Plains, most notably the ongoing movement of rural residents to CBSAs within the Plains, especially metropolitan areas. The process of urbanization creates higher population densities in cities and urban places, and lower population densities in rural areas in the Great Plains.

Clearly the mechanization and increased efficiency of production agriculture methods contributed to the urbanization of the region by reducing the number of farms in the Great Plains states by 37.1% between 1950 and 2012 (USDA 2013). In addition nearly three-quarters of the counties in the Great Plains lie outside CBSAs (Wilson 2009, 9), and the rural population declined by 4.3% between 1950 and 2010. The percentage of the rural population compared to...
the total population provides a stark statistic on urbanization. In 1950, 45.9% of the population in the Great Plains states was rural, but this fell to 20.0% in 2010 (see Table 1). In other words, the depopulation of the rural Great Plains stems from losing people “who live on the land rather than a loss in total numbers” (Hudson 2011, 6).

Urbanization and the resultant significant rural population losses affect the framework of a number of political, social, and economic institutions in the rural Great Plains—as would be expected. Scholars evaluating the impact of the urbanization of this region arrived at a range of conclusions. Some researchers show hopeful optimism (Lavin et al. 2011; Parton et al. 2007; Redlin et al. 2010) or mixed confidence (White 2008), revealing the tenacity of the communities and the people; others expressed pessimism about the future of the rural Great Plains (Adamchak et al. 1999; Popper and Popper 2009).

This article provides a contextual perspective of critical demographic factors influencing the structure of educational systems in rural communities in the Great Plains region. We ask this: What are the population shifts and demographic factors that have an effect on—and will continue to influence—the foundation, operation, and governance of rural schools in the Great Plains? This is an important policy question. Despite the effects of urbanization, rural areas in the Great Plains will continue to educate children, and communities will need to provide resources to schools. This research, in part, will help administrators and decision makers understand the impact of demographic forces on the delivery of rural education, and hopefully assist them in addressing critical and fundamental policy issues. To provide additional insight on the impact of these demographic changes on rural education, we also examine some key statistics on Nebraska, a representative Great Plains state. Finally we offer perspectives on the influence of demographics on rural education and rural development policy in the Great Plains region.

### TABLE 1. CHANGES IN THE NUMBER OF SCHOOL DISTRICTS, RURAL POPULATION, AND NUMBER OF FARMS IN THE GREAT PLAINS STATES FROM THE 1950S TO THE PRESENT

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Percent change</th>
<th>Year</th>
<th>Number</th>
<th>Percent change</th>
<th>Percent rural</th>
<th>Year</th>
<th>Number</th>
<th>Percent change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952</td>
<td>23,496</td>
<td>-23.0%</td>
<td>1950</td>
<td>9,155,642</td>
<td>45.9%</td>
<td></td>
<td>1950</td>
<td>961,119</td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>5,049</td>
<td>-78.5%</td>
<td>1970</td>
<td>7,583,594</td>
<td>-17.2%</td>
<td>29.4%</td>
<td>1969</td>
<td>620,388</td>
<td>-35.5%</td>
</tr>
<tr>
<td>1992</td>
<td>4,148</td>
<td>-17.8%</td>
<td>1990</td>
<td>8,933,589</td>
<td>17.8%</td>
<td>26.0%</td>
<td>1992</td>
<td>501,930</td>
<td>-19.1%</td>
</tr>
<tr>
<td>2012</td>
<td>3,194</td>
<td>-23.0%</td>
<td>2010</td>
<td>8,759,595</td>
<td>-1.9%</td>
<td>20.0%</td>
<td>2012</td>
<td>604,500</td>
<td>20.4%</td>
</tr>
</tbody>
</table>

Sources: USDA 2013; U.S. Census Bureau–CoG 2012.

### THE RURAL GREAT PLAINS AREA

Located in the center of the North American continent, the Great Plains region consists of all or portions of 10 U.S. states (North Dakota, South Dakota, Nebraska, Kansas, Montana, Wyoming, Colorado, Oklahoma, New Mexico, and Texas), and parts of three Canadian provinces (Manitoba, Saskatchewan, and Alberta). This large and loosely defined geographic region stretches from Canada to the Mexican border. Although most researchers consider the front range of the Rocky Mountains as its western boundary, the eastern boundary is less defined and a source of considerable debate (Lavin et al. 2011; Rossum and Lavin 2000; Webb 1931). The Center for Great Plains Studies (CGPS) and the *Atlas of the Great Plains* (Lavin et al. 2011), for example, include all of the Dakotas, Nebraska, and Kansas in their definition of the U.S. portion of the Great Plains (Center for Great Plains Studies, University of Nebraska n.d.). The U.S. Census Bureau defines the region more narrowly, including the same 10 states but with an eastern border beginning farther west, and with smaller segments of Texas and Oklahoma. The county-based Census Bureau definition (Wilson 2009) focuses on similarities in topography and physiographic history, whereas the CGPS takes a political geography approach.

However described, the Great Plains region constitutes a major space in American geography, containing approximately 18% of the land area of the Lower 48 states, according to the Census Bureau definition, and in 2007 contained about 3% of the U.S. population (Wilson 2009, I). In other words, residents sparsely populate the region, as compared to the rest of the United States. The population density in 2007 for the area inside the Great Plains was 9.0 persons per square mile compared to 119.9 persons per square mile for the area outside the Great Plains (Wilson 2009, 14).

If we employ either the CGPS or the U.S. Census
definition, we can characterize vast geographic portions of the Great Plains region generally as nonmetropolitan or arguably rural in nature and structure. Although many of the residents of the Great Plains can be classified as urban—in other words, living in places with populations over 2,500—they tend to reside in small communities when contrasted to the overall United States. The region, then, consists of large areas of open space.

According to the census, a smaller percentage of the population in the Great Plains in 2007 dwelled in Metropolitan Statistical Areas (MSAs) than the national average: 68% versus 83% (Wilson 2009, 9). In addition, even when we rely on the CGPS definition, with a larger geographic area, we find few large MSAs in the Great Plains. Of the 50 largest MSAs in the United States, only Oklahoma City (43rd-largest MSA), with a population of 1.28 million, exists completely within the Great Plains region. Portions of the Dallas–Fort Worth–Arlington, Texas (4th); Denver-Aurora-Bloomfield, Colorado (21st); San Antonio–New Braunfels, Texas (24th) and Kansas City, Missouri and Kansas (29th) MSAs are located at the edges of the region. However, the Census Bureau definition of the Great Plains includes only parts of the Denver-Aurora-Bloomfield, Colorado, MSA on the western border and the San Antonio–New Braunfels, Texas, MSA on the eastern side.

The Great Plains, then, has a split personality when it comes to space and population. Most of the population lives in urban areas, yet much of the land can be described as rural in character.

**METHODOLOGY**

We examined data collected by the U.S. Census Bureau that measure the rural population demographics of the 10 states in the United States that constitute the Great Plains region as broadly defined by the Center for Great Plains Studies and the U.S. Census Bureau. Although only the states of North Dakota, South Dakota, Nebraska, and Kansas are completely within the Great Plains—according to the CGPS—with portions of Oklahoma, Montana, Texas, Wyoming, Colorado, and New Mexico, we obtained and analyzed demographic data from the U.S. Census Bureau on rural areas in the entirety of all 10 states.

The lack of a clear, widely accepted definition of the term “rural,” however, presented a dilemma. Researchers have taken a number of approaches to defining this complex and elusive term. Clearly rural comprises more than agriculture and open areas with limited urban development; there are other dimensions. Brown and Deavers (1987), for example, focus on socioeconomic differences with urban areas, Flora and Flora (2004) insert physical isolation, Sears and Reid (1995) add small communities, Walzer (1991) incorporates population density, and Wilkinson (1991) includes territory and the arrangement of people.

We employed the metropolitan/nonmetropolitan differentiation among counties in the analysis of the rural Great Plains states, utilizing January 1, 2011, definitions. Since the Census Bureau employs a county-based system for classifying metropolitan areas (MSAs), the researchers define as rural those counties that are not part of an MSA, an approach used by others that rely on census data (Johnson 2006). MSAs include a core area with a population of at least 50,000 and adjacent counties economically linked. This definition of rural, then, includes micropolitan areas—or those counties with a population in their core urban area between 10,000 and 50,000.

Nebraska serves as a case study of a typical state within the Great Plains. Located in the center of the area, and generally midrange in terms of population among states in the region, Nebraska can be considered representative of demographic trends and factors affecting the Great Plains states. We examine the nature of population loss in Nebraska’s nonmetropolitan areas and trends in school consolidation.

One challenge we faced was to select specific U.S. census population data that relate to the foundation of rural education. A study by the National Center for Educational Statistics that examined the status of education in rural America provides guidance in the identification of population statistics. That study concluded, “Rural public school systems differ from those in other locales in terms of the population they serve” (Provasnik et al. 2007, 7). According to the study, rural students tended to be white, a smaller proportion were at or near poverty, and a smaller percentage possessed limited English proficiency. Research, however, has begun to emerge that question some of these generalizations, such as ethnicity (Barcus and Simmons 2013).

We examined those statistics examined by the National Center for Educational Statistics and joined the discussion questioning the continuing accuracy of broad descriptions of rural schools in the Great Plains, especially in the face of changing population dynamics. The next section examines those changes, focusing on specific components of the population and other relevant demographics.
EDUCATED DEMOGRAPHICS OF THE GREAT PLAINS: THE DYNAMICS

The process of urbanization, in particular the movement of people from nonmetropolitan to metropolitan areas, especially influences the structure of education systems and schools in rural communities. Obvious outcomes from urbanization include a decrease in the size of the school-age population, declining educational resources within rural communities, and fewer schools and educational opportunities for rural residents. Other more subtle, yet important, results of population shifts in rural regions contain the end products of out-migration of workforce-age residents because of the lack of employment opportunities: an older population base with fixed retirement incomes, less direct connections to school-age children, and fewer resources to support local schools.

The following identifies selected demographic changes and examines their impact on the delivery of educational services to rural children in the Great Plains.

School Consolidation and Mergers

Population losses in rural counties in the Great Plains in the past few decades transformed the administration and delivery of educational services in a number of ways, such as hastening and accelerating mergers of school districts. Although many factors contributed to school consolidation, demographic shifts can be identified as a critical influence. The Census of Governments in 1952 showed nearly 23,500 school districts in the 10-state region; in 2012 there were only about 3,200 districts. School consolidation occurred in waves, as Figure 1 (U.S. Census Bureau–CoG 2012) demonstrates. In 1972 there were 5,049 school districts in the Great Plains states, a decrease of 79% from 1952, and from 1972 to 2012 a 37% decrease. According to the National Center for Education Statistics the 3,200 school districts in the Great Plains states are predominantly (74.5%) rural (Provasnik et al. 2007, 7). Since these districts typically have fewer students, they account for only 40.2% of the students in these states.

Rural school consolidation often created operational efficiencies and increased educational opportunities and resources for many larger districts, but negative externalities or collateral damage to rural communities also resulted “by rupturing the connection between the school and its place in the local community” (Blauwkamp et al. 2011, 2–3). Schools serve as social and economic anchors to rural communities, providing a sense of shared identity.
to local residents, and their loss through consolidation can be especially painful. Various forms of social capital link schools and their buildings to rural communities and their vitality. This school-community connection is critical because “residents need a place to permit social interaction. . . . This is why community buildings, recreational center and other public buildings (e.g. schools) are so critical to the development of communities” (Green and Haines 2012, 151). Demographic factors continue to influence rural schools and the communities where they are located.

Table 2 describes some of the key population statistics distinguishing metropolitan and nonmetropolitan (defined as rural in this study) areas of the Great Plains (where available) from the United States that likely affect rural education. These demographics include rural population share and loss, minority population, dependency population, poverty measures, and educational levels.

Rural Population Share and Loss

The rural population of the Great Plains constitutes a higher relative proportion of the total population as compared to the United States in general. According to the 2010 census, nonmetropolitan or rural population of the Great Plains states totaled more than 9.2 million persons, representing 21.4% of the population of these 10 states. In contrast, the nonmetropolitan population of the United States accounted for just 16.4% of the total population.

Counties in the Great Plains states lose population at a rate greater than the national average. Counties serve as the foundation for tracking changes in Core Based Statistical Areas (metropolitan and micropolitan). The 2010 census revealed that 47.6% of the counties in Great Plains states lost population between 2000 and 2010. Moreover, 16.2% of the counties in the Great Plains lost 10% or more of their population. For all of the United States, 34.9% of the counties lost population, and 6.9% of the counties saw population losses of 10% or more. Although all of the population losses at the county level are not necessarily rural or nonmetropolitan at the U.S. level, that is generally the case for the Great Plains states. For a majority of the counties in the Great Plains region “the census year of maximum population occurred before 1950 and in some cases, before 1900” (Wilson 2009, 9).

Minority Population Growth

Despite the fact that nearly half of the Great Plains counties lost population between 2000 and 2010, overall the 10 states in the region recorded a 16.2% increase in numbers of people. As Table 2 reveals, much of this growth can likely be attributed to a rapid increase in the minority population. The minority population of the Great Plains states grew by 36.9%, while the white, non-Hispanic population was up by only 4.1%. This relative expansion in the minority population was particularly noticeable in the school-age and younger population. Between 2000 and 2010 the population under 18 years was up 11.3% in the Plains states, but the number of white, non-Hispanic children fell 7.6% while the number of minority children grew by 33.1%. As a percentage minority children now represent a majority—or 55.6%—of all children under the age of 18 in the Great Plains, higher than the U.S. percentage of 46.5%.

The growth in the minority population in the Great Plains, of course, has significant implications for the operation of both metropolitan and nonmetropolitan schools systems. In Nebraska, for instance, from 2000 to 2010 the minority population grew faster in the nonmetro areas than the metro areas (54.1% versus 49.3%). The white, non-Hispanic population decreased by 6.8% in nonmetro areas during the same time period (U.S. Census Bureau 2002, 2013). Hispanics account for the vast majority of the nonmetro minority population growth in Nebraska.

The Elderly and Dependency Population Growth

Another phenomenon in the Great Plains population dynamics that it shares with the United States is the increase in the elderly. Older populations have less direct connections to school-age children, and often live on fixed incomes. Table 2 shows that as a percent of the total population, the Great Plains mirrors U.S. rates. However, the growth of the elderly population in the Great Plains nearly doubles the size of the growth rate for children under the age of 18 (20.8% versus 11.3%).

Combining the percentage of the population 65 years or older and the population under 18 years allows for the calculation of a dependency ratio. This ratio includes those typically not in the labor force (the dependent part) and those typically in the labor force (the productive part). In 2010 the dependency ratio for the Great Plains states was 60.2—meaning that there were 60.2 persons under 18 years or 65 or older for every 100 persons between the ages of 18 and 64 years. The Great Plains dependency ratio exceeds the national ratio of 58.9. These ratios will likely grow as the older population increases in this region of the United States.

Although the 2010 census showed a median age in the
TABLE 2. SELECTED POPULATION CHARACTERISTICS OF THE METROPOLITAN AND NONMETROPOLITAN UNITED STATES AND GREAT PLAINS STATES

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>306,603,772</td>
<td>256,333,443</td>
<td>50,270,329</td>
<td>43,147,981</td>
<td>33,933,072</td>
<td>9,214,909</td>
</tr>
<tr>
<td>Percent</td>
<td>100.0</td>
<td>83.6</td>
<td>16.4</td>
<td>100.0</td>
<td>78.6</td>
<td>21.4</td>
</tr>
</tbody>
</table>

Counties (2000 and 2010 census)

| Number | 3,137 |
| Percent with loss | 34.9 |
| Percent with loss of 10% or more | 6.9 |

Minority population (2000 and 2010 census)

| Percent change in total population | 9.7 |
| Percent change in white, non-Hispanic population | 1.2 |
| Percent change in minority population | 28.8 |
| Minority population as a percent of total population (2010) | 36.3 |

Population under 18 Years (2000 and 2010 census)

| Percent change in total population under 18 | 2.6 |
| Under 18 as a percent of total population (2010) | 24.0 |
| Percent change in minority population under 18 | 21.9 |
| Minority population as a percent of total population under 18 (2010) | 46.5 |

Population 65 years or older (2000 and 2010 census)

| Percent change in total population 65 or older | 15.1 |
| 65 or older as a percent of total population (2010) | 13.0 |
| Dependency ratio (2010 census) | 58.9 |

Median age (2010 census)

<table>
<thead>
<tr>
<th>2010 census</th>
<th>2010 census</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age</td>
<td>37.2</td>
</tr>
<tr>
<td>Median age</td>
<td>36.6</td>
</tr>
<tr>
<td>Median age</td>
<td>40.3</td>
</tr>
<tr>
<td>Median age</td>
<td>36.5</td>
</tr>
<tr>
<td>Median age</td>
<td>35.1</td>
</tr>
<tr>
<td>Median age</td>
<td>39.1</td>
</tr>
</tbody>
</table>

Poverty (2007–11 ACS)

| Poverty rate for all persons | 14.3 |
| Poverty rate for children under 18 years | 20.0 |

Education (2007–11 ACS)

| High school graduate or higher | 85.4 |
| Bachelor's degree or higher   | 28.2 |

Great Plains states averaging 36.5 years, slightly less than the U.S. average of 37.2 years, Table 2 shows nonmetropolitan areas older than the metropolitan areas. Nonmetro areas recorded a median age of 39.1 years compared to metro areas with an average median age of 35.1 years. In addition an average of 15.6% of the nonmetro population in the region was 65 years or older, while in the metro areas the 65 or older population averaged 11.7% of the total population—a little less than, but comparable to, the national averages in 2010. However, it should be noted that the Great Plains from 2000 to 2010 experienced a higher percentage increase in the total population 65 and older than the nation as a whole (20.8% versus 15.1%).

**Poverty Measures**

Regardless of how it is measured, poverty in the Great Plains is less than that for the United States as a whole. During the 2007 to 2011 time period, the poverty rate for all persons was 14.3% at the national level and 14.0% for the Great Plains states. However, it is important to note that in both instances the poverty rate in nonmetropolitan areas exceeded that in metropolitan areas. Poverty in the nonmetropolitan Great Plains was 15.2% compared to 13.2% for metropolitan areas. A similar pattern existed for children less than 18 years. The child poverty rate in the Great Plains was 18.9% and compared favorably to the national rate of 20.0%. Within the Great Plains states, however, the child poverty rate was higher for nonmetropolitan counties (20.9%) than for metropolitan counties (17.4%). Child poverty rates affect the effectiveness of the education process.

**Educational Levels**

Another aspect of nonmetropolitan regions that lags metropolitan regions in both the Great Plains states and the nation is education. Nonmetropolitan areas register lower average levels of education. In the 2007 to 2011 time period 88.2% of the Great Plains population aged 25 years or older had at least a high school diploma. This breaks down into 89.4% for metropolitan areas and 86.1 percent for nonmetropolitan areas. The United States trails the Great Plains in the percentage of high school graduates; 85.4% of the U.S. population were high school graduates, with a metro rate of 85.9% and a nonmetro rate of 83.0%.

The percentage of the population in the Great Plains with bachelor’s degrees or higher (27.3%) generally reflected U.S. rates (28.2%). As in the United States as a whole, metro rates in the Great Plains states exceeded nonmetro rates. Table 2 shows that 21.6% of the population aged 25 years or older in nonmetropolitan areas had a bachelor’s degree or higher compared with 30.5% in metropolitan areas.

However, it needs to be noted that the percent of the population in the nonmetro area in the Great Plains with a bachelor’s degree or higher exceeds that of the nonmetro United States (21.6% versus 17.7%). That is an important difference in the rural Great Plains. Research shows that the education level of parents will affect their expectations of the educational achievement of their children (Provasnik et al. 2007, 7). In other words, parents with a college degree will probably want their children to attain the same level of education. There is likelihood, then, that their children will get college degrees and seek employment, thus affecting population movement. The lack of high-quality employment opportunities in rural areas will influence their move to metropolitan areas, affecting the population of the nonmetro Great Plains.

**NEBRASKA: A CASE STUDY OF THE GREAT PLAINS**

The population of the 10 states within the boundaries of the Great Plains, as defined by the U.S. Census Bureau, grew by 102.3% from 1950 to 2007 (Wilson 2009, 5). The growth was not evenly distributed. Colorado within the Great Plains grew by 227.3% during that time, much of it likely due to the growth of the Denver-Aurora-Bloomfield, Colorado, MSA. During the same time period Nebraska lost 7.2% of its Great Plains population—more than any other state in the region. Although Nebraska increased its overall population by 33.9%, its population in the Great Plains portion decreased by almost 46,000. Nebraska’s growth, then, occurred primarily in the metropolitan areas that lie outside the Great Plains.

In all of Nebraska’s nonmetropolitan population—not just the rural Great Plains counties mentioned above—there was a loss of nearly 76,600 persons between 1950 and 2010 (a 9.2% decline). This compares with an increase of more than 577,000 persons (116.9%) in the state’s metropolitan counties. There are two interrelated components of population change that must be considered when looking at population change: net migration and the difference between births and deaths. During this period the population decline in nonmetropolitan Nebraska was due to out-migration, particularly of young adults. Even though births exceeded deaths, this increase was insufficient to offset the loss from out-migration.

As a result of out-migration, not only were there fewer
people, but the loss of young adults also had implications on the number of children. When a young adult leaves an area, that area loses not only the person but also the potential for additional children. Figure 2 illustrates this impact. Between 1946 and 1958 there were about 250,000 children born in nonmetro Nebraska. Without adjusting for mortality and migration, this implies that there potentially would have been 250,000 children of school age (5 to 17 years) in 1963. During the next 20 years (1959 to 1978) births plummeted (likely as a result of out-migration of young adults in the 1950s and 1960s), and there was a steady decline in the number of potential school-age children. In 1983, based on births alone, the number of potential school-age children in nonmetropolitan Nebraska fell to 150,000, a drop of nearly 100,000 children. Although births picked up in the 1980s as a result of the large number of baby boomers having children, the number of births began to decline in the 1990s, and nonmetropolitan Nebraska faces the prospects of a continued decline in the number of school-age children. By 2010 the number of potential school-age children had fallen to slightly above 125,000, and it is likely to stay there for the next few years. This number is half of what it had been at its peak in 1963.

In contrast, the number of school-age children (based on births) in metropolitan Nebraska has continued to grow. In 1963 there were approximately 80,000 more potential school-age children in nonmetro Nebraska than in metro Nebraska. By 2016 the situation will have reversed, and there are likely to be about 80,000 more potential school-age children in metro Nebraska than in nonmetro Nebraska.

In addition to factors discussed earlier, this declining number of births and children in nonmetropolitan Nebraska has had a direct impact on the number of school districts in the state. In 1952 Nebraska reported 6,392 school districts, the most in the Great Plains states, accounting for more than one-fourth of all the Great Plains school districts. As in the rest of the region, by 1972 the number of school districts in Nebraska reported a substantial decline, but Nebraska still retained the largest number of districts and accounted for about one-fourth of all of the Great Plains school districts. In contrast to dis-

Figure 2. Potential school-aged population (5–17 years) based on 13-year periods of births to residents of metro and nonmetro Nebraska counties. School-aged population is based on births alone, migration factors are excluded. Source: Nebraska Department of Health and Human Services, 2013.

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<td>Wyoming</td>
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Source: U.S. Census Bureau–CoG 2012.

...tricts in the Plains states, however, for the next 40 years Nebraska's school districts continued to consolidate, and by 2012 Nebraska no longer was among the leaders in the number of school districts in the Great Plains; it accounted for slightly more than 8% of the school districts.

FINDINGS

We examined population demographics influencing the foundation, operation, and governance of educational systems in rural communities in the Great Plains region, including Nebraska as a case study. We asked what population shifts and demographic factors have had an effect on, and will continue to influence the foundation, operation, and governance of rural schools in the Great Plains. The answers and findings are not encouraging.

Although the downward spiral of the rural population in the 21st century does not mirror the drop from 1950 to 1970 (see Table 1), depopulation of the Great Plains lingers, affecting both the schools and the communities in which they are located. As student populations continue to diminish rural schools will persist in their search for operational efficiencies—including mergers and consolidations. However, much of the efficiencies from school consolidations likely have already been gained. The data show that fewer school consolidations are being made in the Great Plains.

A surge in the rural population in the Great Plains recorded from 1970 to 1990 reversed earlier losses, but deficits returned in 2010, albeit at a lower rate. Counties in this region exceed the national average in terms of population loss (see Table 2). The urbanization of the Great Plains continues to move people from rural communities and areas to larger cities. In the near term the population base of the rural Great Plains has yet to be established. Losses will continue.

The aging of the rural population of the Great Plains will affect the future governance structure of public schools. Although the percentage of residents remaining in the nonmetro Great Plains aged 65 years or older reflects national averages, the growth rate of that age group surpasses that of the United States, according to Census Bureau information. The Nebraska case study confirms this trend. Seniors in rural communities may hold priorities pertaining to the support of public schools that differ from younger age groups. In addition, aging populations require a range of public services that compete with limited resources in rural communities.

Generalizations about the nature of rural students appear to be changing. One of the goals of this study was to examine general descriptions of school districts in the Great Plains in terms of changing population demographics. The study by National Center for Educational Statistics (Provasnik et al. 2007) stated that students in rural schools differed from urban schools; they tended to be white, a smaller proportion were at or near poverty, and fewer possessed limited English proficiency. Results from this study of the Great Plains challenge two of those generalizations. First, an examination of census data showed that the poverty rates for nonmetro school-age children exceed those of their counterparts in metro areas. Second, as Table 2 revealed, in the nonmetro Great Plains the growth and percentage of the minority population under the age of 18 exceeded that of the United States, effectively decreasing the percentage of white populations in rural schools. As Nebraska research shows, the growth in the
minority population in rural areas came from Hispanics, likely increasing the percentage of students with limited English proficiency.

**CONCLUSION AND RECOMMENDATIONS**

This article shows a number of challenges to the governance of rural schools in the Great Plains resulting from changes in population demographics and the impacts of urbanization in particular. These difficulties also affect the vitality of rural communities. The hurdles for communities and schools include, but are not limited to, decreasing number of student age populations, competition for limited public resources, shortage of funds through traditional mechanisms, recruiting teachers and other professionals to stagnant communities, loss of local control of consolidated schools, meeting special education needs (for example, students with disabilities and students of English as second language), and the decline in community vitality as schools disappear as civic anchors. These challenges to the governance of rural schools in the Great Plains affect the overall economic health of communities as well.

To address the depopulation of its rural areas and meet the challenges of developing small communities, like many states in the Great Plains, the state of Nebraska adopted a range of policies and implemented a variety of programs to tackle rural development issues. For example, the state targets a significant portion of its Community Development Block Grant (CDBG) funds toward maintaining and improving the vitality of rural areas and small communities (Blair et al. 2008). CDBG funds support a variety of community infrastructure projects and job-creating economic development activities. Many of these projects support the creation and maintenance of civic anchors, such as community and senior centers. Schools often serve as foundations for community activities.

From a policy perspective, however, the link between rural education and community development appears, in general, to be less established in rural development policies. For example, research demonstrates that rural schools play an important role in economic development, and school consolidation must include consideration for its impact on regional development (Bryant 1989). Although CDBG does not directly fund school facilities, there are numerous examples of joint city-school collaboration projects, such as libraries and recreational facilities. The connection between schools, economic development, and job opportunities needs to be strengthened in rural development policy. Schools are part of the fabric and social capital of rural communities in the Great Plains.

This research has shown how demographic factors have transformed the governance of rural communities in the Great Plains, and will likely continue to do so. Although a number of significant obstacles face rural communities' ability to remain economically and socially viable, states in the Great Plains need to formulate rural development policies that incorporate not only businesses and government but also schools in their strategies.

**REFERENCES**


Johnson, K. 2006. *Demographic Trends in Rural and Small Town America*. Casey Institute, University of New Hampshire, Durham, NH.


Students and teachers in front of sod schoolhouse, Custer County, Nebraska. 1891. Solomon Butcher photograph, Nebraska State Historical Society. Reprinted by permission.
SEGREGATION, INEQUALITY, DEMOGRAPHIC CHANGE,
AND SCHOOL CONSOLIDATION
A Micropolitan Case

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ABSTRACT—We describe a rural/micropolitan example of the intertwining of school consolidation and demographic change with exacerbated segregation and inequality. To do this we consider Dawson County, Nebraska, which hosts the state’s most Latino/a school district (Lexington) and which saw its number of schools decline from 37 to 19 during this century’s first decade, and the number of local school districts lessened from 18 to 5. In particular, we call attention to the irony that consolidation was pursued with an explicit call for more equality in schooling in Dawson County (Swidler 2013) and yet population concentrations and variation in expenditures seemed to have moved away from rather than toward that goal. This article also highlights the application of Geographic Information Systems (GIS) technology to the review and presentation of educational research.

Key Words: school consolidation, segregation, school equity, GIS, Latino/as, Dawson County (NE), Lexington (NE)

INTRODUCTION

Although the rural one-room schoolhouse that followed the expansion of Euro-American settlement is as iconic as the covered wagon and the sod house, for nearly a century, under varying logics, the United States has been in the process of ridding itself of rural, community-led schools. Since 1930 the number of closed schools and dissolved districts number well into the hundred thousands (Berry and West 2010). This nationwide consolidation effort has been advocated for in terms of democracy (Conant 1967), equity (Swidler 2013), efficiency (Conant 1967), specialization, and savings (Cubberley 1922). But often these justifications for school consolidation are undercut by what has actually been achieved in their pursuit. In our examination of one Nebraska county that was explicitly invoked as part of a circa 2005 equity-oriented argument for large-scale statewide school consolidation, our question is whether consolidation pursued in the name of racial and financial equity in fact moved in the direction of those goals.

In some places, some states have saved money through consolidation. However, this effect is not uniform, and it appears that many districts spend more per pupil after consolidation, as the example we will share illustrates. Concurrently a more troubling problem has emerged as a result of state efforts to reduce costs via consolidation: savings or no, consolidation may come at the expense of equal educational opportunities for students of color. Thus, the central question for this article is this: Where rural communities have been affected by large demographic shifts, often caused by the opening of a meatpacking plant (Stull 1995; Wortham et al. 2002), have they been doubly affected by efforts to reduce the cost of educating children right at a time when these districts need more resources, not less?

Kilkenny (2010) points out that research that pertains to rural areas can have a great deal of importance for public policy because the federal government spends $40 billion annually in rural counties, of which $14 billion is spent on nonfarm rural development programs. Add in the cost of education (primarily federal Title I monies directed at districts enrolling low-income students) and the figure grows even larger. A good deal of money is being spent trying to keep declining towns in rural areas from dying off by building roads and providing adequate water and waste management systems, housing, communications,
energy, and so on. Meanwhile we are closing schools that may function as important community centers (Dewey 1902) and forcing families to school their children in other communities, if not relocate all together. Forty billion dollars spent annually means that rural policies affect more than just rural residents, yet according to Kilkenny the challenges faced by rural communities receive only a small amount of attention from refereed journals.

The purpose of this article is to contribute a rural/micropolitan example of school consolidation and exacerbated inequality to the existing literature in an effort to illuminate rural education and community issues and to assist in the search for practicable solutions. To do this the article examines school segregation and inequality in Dawson County, Nebraska, as an intertwined consequence of demographic changes caused by the location of a meatpacking plant in Lexington, Nebraska (2010 population, 10,230), the Dawson County seat; and school consolidation efforts promoted at the state level and pursued, ironically, with an explicit call for more racial equality in schooling in Dawson County (Swidler 2013).

Patterns of segregation can emerge irrespective of school consolidation, but in Dawson County, the statewide school consolidation effort seems to have limited school choices and exacerbated segregation primarily in the Lexington micropolitan area, the only micropolitan community in the county and one of three urban clusters. (The U.S. Census defines micropolitan areas as places with 10,000-49,999 people; whereas urban clusters have a minimum population of 2,500 and a maximum of 49,999.) Lexington and Dawson County emerged as settings for possible school segregation because of the demographic change and school consolidation efforts promoted at the state level and pursued, ironically, with an explicit call for more racial equality in schooling in Dawson County (Swidler 2013).

Patterns of segregation can emerge irrespective of school consolidation, but in Dawson County, the statewide school consolidation effort seems to have limited school choices and exacerbated segregation primarily in the Lexington micropolitan area, the only micropolitan community in the county and one of three urban clusters. (The U.S. Census defines micropolitan areas as places with 10,000-49,999 people; whereas urban clusters have a minimum population of 2,500 and a maximum of 49,999.) Lexington and Dawson County emerged as settings for possible school segregation because of the demography-transforming power of a new meatpacking plant, which opened in 1988. The demographic change precipitated by the plant opening occurring concurrent with consolidation drew fairly stark racial and ethnic boundaries in Dawson County. In the face of school closures more established (overwhelmingly white) Dawson County residents had to choose between sending their children to school in the new Latino/a diaspora (Hamann and Harklau 2010; Wortham et al. 2002) or sending them to school in one of the remaining primarily white towns outside of Lexington. It appears that most non-Hispanic white residents in Dawson County’s closed school districts chose the latter. In making such a choice they not only kept their children from one of Nebraska’s first majority-Latino/a school districts, but—more defensibly—they also sent their children to districts that spent more on schooling (per capita) than the Lexington district did.

Separately scholars have long devoted substantive attention to school consolidation (Andrews et al. 2002; Barker and Gump 1964; Streifel et al. 1991; Walberg and Fowler 1987) and to meatpacking (Azzam and Anderson 1996; Broadway 1990, 2007; Gouveia and Stull 1997; Paul 2001; Stull et al. 1992). However, few have looked at combination of the economic and geographic processes compelling meatpacking companies to (re)locate to rural counties and the ostensibly unrelated pattern of states and school districts to consolidating schools. By focusing on demographic change and school consolidation together, this article offers a new lens for understanding school consolidation, segregation, and inequality in the so-called flyover country of the United States (Hamann and Reeves 2012).

In 2000 Lexington Public Schools spent $7587 per student (in 2010 adjusted dollars), while the remaining four largest Dawson County districts spent $8778 (also in 2010 dollars). Lexington’s expenditures were the equivalent of 86.4% of the remaining non—single school district averages. By 2010 Lexington’s expenditures per student had grown to $8893, but the district had lost ground comparatively. In 2010 the remaining four districts averaged $11,143 of spending per student, so Lexington’s spending matched only 79.8% of the average of the rest. Worse, in 2000 Lexington enrolled 49.3% of all Dawson County students (2461 of 4996); by 2010 Lexington had 54.6% of the county’s total enrollment (2915 of 5334). So as spending discrepancies got worse they also affected more students, both in sum and proportionally.

**BACKGROUND**

A brief discussion of the underlying theoretical characteristics of cities may be helpful in understanding some of the specific ways in which the location of a meatpacking plant in Lexington might precipitate segregation and the emergence or exacerbation of inequality in a place like Dawson County. This is true directly because there are a few ways that Lexington is like a city (it has the largest concentration of employment in a wide radius), but also because if we consider how cities change we concurrently get a view of the converse, of how smaller places are shaped by the changes in cities. Two such underlying characteristics are the environment of a city and the economic support structures of a city.

**Environment**

In 1945 Harris and Ullman pointed out the paradox of cities. They argued that the existence of cities, especially
ones with growing populations, reveals the superiority of urban techniques in exploiting the environment. Cities attract people and entice them to stay because they provide opportunities to live relatively easily and comfortably. Paradoxically a city’s success in providing such opportunities often attracts large numbers of in-migrants, and a city’s success often comes at the expense of some of its current inhabitants. For example, newcomers reacting to economic opportunities may strain a city’s infrastructure, which may in turn limit access to opportunities; and markets may favor one industry (or firm) over others, causing some firms to boom and others to bust, thus creating income inequality for a city’s residents. As a consequence a city is often both a site of success and a problematic environment for its inhabitants. Hackenberg (1995), in his attention to industry’s externalization of indirect costs, has successfully attached this win-loss dynamic for established residents to rural new Latino/a diaspora communities.

In Lexington, as expected, there are people living in relative ease and comfort as well as those struggling in much poorer conditions. But the implications of this paradox for Lexington (and cities in general) are not limited to income inequality. For example, without concerted effort, equality of schooling outcomes may be difficult or impossible to achieve because lower incomes have been associated with lower educational attainment (Battin-Pearson et al. 2000; Jimerson et al. 2000; Rumberger 1995). (As an important caveat, noting an association between poverty and low school achievement describes a macro-association; it does not obscure that there are compelling individual examples of transcending poverty for school success and, more importantly, schools with high poverty enrollments and high achievement [Edmonds 1979; Kearney et al. 2012; Lucas et al. 1990; Reeves 2004].) In brief, then, the environment of the city itself (even the micropolitan city) affects the equality of schooling outcomes.

**Economic Structure**

Cities both attract and repel industries. This paradox is useful in understanding why a meatpacking firm formerly doing business in Chicago, Omaha, or Kansas City might suddenly find Denison, Iowa, Lexington, Nebraska, or Garden City, Kansas, a more attractive site for enterprise. Utilizing a portion of Vernon’s (1966) product life cycle theory, Kaplan et al. (2008) suggested a three-phase model to help us understand the location and relocation of urban manufacturing to nonmetropolitan areas. From this perspective the cycle of a particular firm begins in a large urban center with an initial phase, during which new products and methods of production are being developed and improved upon. In this phase urban economies provide lower costs due to established infrastructure, access to a skilled workforce, necessary consumer and service support, and large transportation networks. Broadway (2007) pointed out that during the 19th century, live-stock were shipped long distances, primarily by rail, to stockyards in places such as Omaha and Chicago, where they were slaughtered by relatively skilled workers in multiple-story factories and prepared for shipment to the East in nearby packinghouses. Initially, this system was enormously successful and by the end of the 19th century, several meatpacking firms had entered the second phase of the product cycle, the growth phase.

Azzam and Anderson (1996) argued that by 1920, despite enormous profitability, an oligopoly in meatpacking had emerged consisting of “the Big Five”—Armour, Cudahy, Morris, Swift, and Wilson. This is consistent with the product cycle model which suggests that when an industry is highly profitable and experiences rapid growth in general, often there will be a handful of firms that emerge as sole-competitors which severely limit competition. Meatpacking long has been and remains a highly consolidated industry that still attracts policy attention from Washington, DC. (Consider the current immigration policy debate’s invocation of jobs “Americans don’t want.”) This second phase is also characterized by a decrease in the reliance on urban infrastructure and labor. So firms may seek to take advantage of the space and lower land values in nonurban areas in order to build larger facilities and increase production. For meatpacking, the movement away from urban areas was preceded by a need for advances in refrigeration technology and an improvement in highways and roads in nonurban areas (Azzam and Anderson 1996). Both of these technological advances came to be, and by 1960 the “IBP revolution” (Broadway 2007, 562) was transforming meatpacking from an urban to a nonmetropolitan endeavor.

The third phase enumerated by Kaplan et al. (2008) is the mature phase, wherein after a period of large growth and profitability a firm plateaus to normal profits and reduced growth. Capital is highly important in this phase, and lowering the cost of production is paramount to maintaining profits. According to Broadway (2007), in 1960 a series of innovations revolutionized meatpacking. These innovations included locating plants in cattle-producing regions rather than in cities at the end of a rail line, such as Omaha or Chicago; eliminating stockyard middlemen by purchasing cattle directly from producers; and restructur-
ing facilities into a single-story disassembly-line format, which “deskilled” labor and allowed firms to justify the reduction of wages.

In Dawson County, by the time meatpacking came to Lexington the town had already experienced more than a decade of growth (1970 population, 5654; 1980 population, 7040) as a result of a Sperry–New Holland (SNH) combine manufacturing plant opening in 1970 and the statewide completion of Interstate 80 (with its five Dawson County exits) in 1974. So Lexington already had the requisite infrastructure in place when combine building ended in 1986 and meatpacking began in 1988. Thus, since 1970 Lexington has been a manufacturing town, and as goes the market, so goes the town. This is clear in the census-captured population decline from 7040 in 1980 to 6601 by 1990, after SNH left town and with the packing plant’s relevance not yet felt. But 10 years later Lexington’s population had increased 34% and most of the newcomers were young Latino/as. The point is that Lexington’s vitality relies on basic manufacturing labor and, since 1988, increasingly on Latino/a laborers.

To quantify just how dependent Lexington is on manufacturing, Table 1 utilizes the location quotient (LQ) method (Hartshorn et al. 1992) to compare the manufacturing employment structure of Lexington to that of the United States. The LQ uses the portions of employment in a given sector for a local/regional area and compares that to a reference region (usually the United States as a whole). The LQ value is a ratio—percentage employed locally in a given sector/the reference region’s percent employment in the same sector—thus, when the local area’s employment resembles that of the reference region, the LQ-value should be close to one. In this case the LQ-value is five times more than would be expected if Lexington’s basic employment was similar to that of the United States as a whole. Reliance on manufacturing in Lexington is clear. Furthermore, since Lexington is home to roughly half of Dawson County’s population, as manufacturing goes, so Lexington goes, and so goes Dawson County.

**DEMOGRAPHIC CHANGE:**
**IMPORTING A LABOR FORCE**

According to the 1980 census Dawson County had a population of 22,304 (97% white). Of that population only 0.7% was foreign born. By 1990 with the impact of the packing plant just beginning to be felt but overshadowed by the loss of the combine facility, Dawson’s population had decreased 10.6% to 19,940 and was still mainly white (96%). So while the Dawson County’s racial/ethnic population structure had not changed much, white out-migration was already underway. By 2000 the Dawson County population had increased by 22% to 24,365, but it was now only 75% white. This population total remained stable through the 2010 census, but was increasingly foreign born (18.8%). Indeed the foreign-born population in Dawson County had increased 303% since 1990. In essence much of the labor force (and, thus, a large portion of the overall population) was imported to accommodate the demands of the meatpacking industry’s movement to a rural county. Dawson County is just one case of many in the Great Plains wherein white out-migration was mitigated by the introduction of private firms reliant on immigrant labor to rural areas (Broadway and Stull 2006; Broadway 2007; Kilkenny 2010).

Although “foreign-born” is hardly a synonym for “undocumented,” it follows that practically all of the undocumented population is foreign born. More importantly for our purposes, it also follows that less of the foreign-born population are fully naturalized citizens—nationally about 80% of those who arrived before 1980 are, but overall only 43% are, with citizenship less likely the more recent the arrival (Grieco et al. 2012). There are historic tie-ins between small schools, place, and democracy (Swidler 2000; Theobald 1997); and just as Dawson County was facing pressure for consolidation a growing portion of adults lacked suffrage, with a sub-portion of those even less engaged and anxious to “stay in the shadows” (Chavez 1997).

To contextualize this demographic transformation further, in 1990 the state of Nebraska had a Latino/a presence of a little over 36,000 people (2.3%)—1.8% of whom lived in Dawson. By 2000 the statewide Latino/a presence had risen to 94,425 (5.5%)—6.5% of whom lived in Dawson. That same year Dawson County was home to just 1.4% of Nebraska’s total population. Although Dawson’s proportion of Nebraska’s Latino/as nosed down again (to 4.6%) by 2010, this is misleading. Dawson’s net Latino/a population grew from 663 in 1990 to 6,178 in 2000 and to 7,746 in 2010. It was just that in the first decade of the 21st century the rest of Nebraska was also becoming more Latino/a, partially in response to the same dynamics that brought Latino/as to Lexington.

As in other meatpacking towns (such as Hyrum, Utah, Cactus, Texas, Grand Island, Nebraska, Greeley, Colorado, Worthington, Minnesota, Marshalltown, Iowa, and Postville, Iowa [Hamann and Reeves 2012]), Latino/a newcomer populations began arriving in Dawson County shortly after a new plant opened its doors. In the 20-year period between 1990 and 2010 Dawson’s Latino/a population increased by 1068% and almost all of the county’s
newcomers ended up in Lexington. As a result, Lexington became Nebraska’s most Latino/a school district (76.8%) and home to one of two dual-language education programs in the state. Meatpacking not only transforms a micropolitan community, it also transforms its schools.

**A GEOGRAPHIC FRAMEWORK FOR INEQUALITY**

Where a person is born makes a difference with regard to what socioeconomic opportunities they are likely to navigate. Spiegelberg (1961) suggested that the phrase “accident of birth,” most closely associated with John Stuart Mill, can be thought of as the sum of those natural and social factors and circumstances that tend either to limit or advantage a person based upon where and to whom they are born. Per this framework where a person is born and to what family influences her life, including where she will go to school. Where a child’s parents move and when can likewise affect what a child receives educationally and to what consequence. Because not all schools and school districts produce equal educational outcomes, where one attends school matters (Borman and Dowling 2010; Brown v. Board of Education [347 US 483 (1954)]; Kozol 1991). For example, some schools are highly successful in sending students to college, others are “dropout factories” (Orfield 2009) in which 60% or fewer complete high school. Also relevant to our case, some schools close in the face of consolidation while others absorb newly dislocated learners.

Where to attend school is not a decision that most children are responsible for making. Even in cases in which school choice complicates this idea, where one’s schooling occurs is still tied to where one lives. So where a child goes to school is also an accident of birth. School-related factors such as the quality of curricula, access to resources and technology, student/teacher ratio, and funding can vary slightly or greatly across administrative boundaries, within districts themselves, and among cities, states, and nations. In Nebraska the average per-pupil expenditure across all districts was $10,472 for the 2010–11 academic year, and for Dawson County it was $10,693 on average. But in the Sumner-Eddyville-Miller (SEM) school district in northeast Dawson County (85% white) the expenditure per pupil was $14,371, in Gothenburg (93% white) it was $9,753, and for Lexington (15% white) it was $8,893. Four-year graduation rates that year were 85% for Sumner-Eddyville-Miller (SEM), 94% for Gothenburg, and 80% for Lexington (Nebraska Department of Education 2012).

Maps 1 and 2 depict school-funding patterns in Nebraska School Districts in 2000 versus 2010. Three important points emerge. First, the majority of the districts with the lowest expenditures per pupil tend to exist in the most populated areas of the state (that is, along the I-80 corridor: Omaha, Lincoln, Grand Island, Hastings, Kearney, Lexington, and North Platte). Second, consolidation appears to have had mixed results in terms of savings. Many districts were spending less per pupil in 2010 than they would have had they not consolidated. This makes sense per the logic of economies of scale (Andrews et al. 2002) for school consolidation: centralizing facilities and bureaucracy to reduce costs should result in a reduction of costs for larger districts. But there were some districts that were spending more post-consolidation than they were previously. For example, McPherson and Keya Paha Counties both traded a mix of several relatively inexpensive smaller districts for one larger, more expensive one. Third, the major meatpacking counties in Nebraska (Colfax, Dawson, Dodge, Hall, Lincoln, and Madison) all supported among the lowest per-pupil expenditures.

This last point is problematic vis-à-vis an economies of scale logic for consolidation based on raw numbers. Worse, the low funding is contrary to the extra needs of the students and families in the districts that experience dramatic demographic shifts. In 2000, counting the 13 districts that were later closed by consolidation, an average of $11,814 (2010 dollars) was spent per Dawson County student. After reducing the number of Dawson County school districts from 18 to 5 between 2000 and 2010, $10,694 was the school district average of per-student spending in Dawson County. So in one view, $1,120

<table>
<thead>
<tr>
<th>2010</th>
<th>Lexington</th>
<th>United States</th>
<th>Location quotient</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Manufacturing</td>
<td>42.44</td>
<td>8.29</td>
<td>5.11</td>
</tr>
<tr>
<td>Total manufacturing</td>
<td>2052 (+/- 307)</td>
<td>11,528,000</td>
<td></td>
</tr>
<tr>
<td>Total employed</td>
<td>4835 (+/- 284)</td>
<td>139,070,000</td>
<td></td>
</tr>
</tbody>
</table>

Data compiled from Bureau of Labor Statistics and the American Community Survey.
was saved per pupil through consolidation—although this number is illusive, as the number of students for whom savings were realized was quite small since the closed schools and districts were quite small (numbering from just 4 to 43 students each in 2000). Moreover, the student body in Lexington changed dramatically in ways that recommended additional expenditures to accommodate students and families (there was a need for the district to pay for more after-school programs, bilingual services, expanding free and reduced lunch programs, and so on). So consolidation-related expenditure cuts exacerbated the inequality between districts in per-pupil expenditures. Just as Lexington needed more, it received comparatively less.

As Table 2 demonstrates, over the last 10 years Lexington has seen the largest increase in student enrollment and the smallest increase in per-pupil expenditures, all while trying to accommodate the needs of a student body that has gone from majority white and native English speaking to majority Latino/a with a more complex first language profile.

These facts help to further illustrate that some children may be more advantaged than others by simple virtue of their geographical situation. Furthermore, a growing number of researchers are finding that out-of-school factors contribute as much or more to success or failure as school-related ones. For example, Rothstein (2004) and Anyon (2005) have argued that community-based reforms such as raising the minimum wage, providing affordable and stable housing, expanding access to healthcare and transportation, and endeavoring to keep unemployment rates low are all factors that might positively affect the dropout rates in a given area. Thus, a child’s family and neighborhood, as well as the school that he or she attends, are all at play in determining the type of education he or she will receive. This means that research regarding equal access to educational opportunities is well served by attending to the geographical and economic processes that underlie educational inequalities.

**SEGREGATION AND SCHOOL CONSOLIDATION**

Concomitant with the arrival of high numbers of Latino/as in Dawson County was a statewide school consolidation effort that reduced the number of school districts there from 23 in 1990 to 18 in 2000 and 5 in 2010. The number of schools likewise decreased in that time from 37 to 17. This means that the emergence of the new Latino/a diaspora in Dawson County coincided with a nearly 50% decrease in the number of its schools. In Dawson three urban clusters exist (Gothenburg, Cozad, and Lexington), and between 1990 and 2010 all schools outside of these
TABLE 2. THE FIVE DAWSON COUNTY SCHOOL DISTRICTS, 2000–10

<table>
<thead>
<tr>
<th>Remaining school districts</th>
<th>Percent enrollment increase, 2000–10</th>
<th>Percent per-pupil expenditure, 2000-10</th>
<th>Discrepancy from average per-pupil increase (these districts), 2000–10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexington</td>
<td>15.8%</td>
<td>17%</td>
<td>-8%</td>
</tr>
<tr>
<td>Cozad</td>
<td>0.3%</td>
<td>-6%</td>
<td></td>
</tr>
<tr>
<td>Gothenburg</td>
<td>11.15%</td>
<td>23%</td>
<td>-2%</td>
</tr>
<tr>
<td>Overton</td>
<td>5.3%</td>
<td>25%</td>
<td>0%</td>
</tr>
<tr>
<td>Sumner-Eddyville-Miller</td>
<td>-1.9%</td>
<td>37%</td>
<td>+12%</td>
</tr>
</tbody>
</table>

Data compiled from the Nebraska Department of Education (all relevant figures in 2010 dollars).

urban clusters closed—with the exception of two schools in Sumner and two in Overton (visible in the far right, or east, of Maps 3 and 4). Essentially the closing of almost all rural schools in Dawson County required that the majority of children in the county attend school in one of the three comparatively urban clusters. Such concentration came with myriad consequences.

Maps 3 and 4 display the pattern of school consolidation in Dawson from 2000 to 2010 and the enrollment demographics of each open public school. Lexington absorbed almost all the growth in Latino enrollments, a change echoed in census data. For example, Johnson Lake, Nebraska, a lake community 7 miles southwest of Lexington, grew by 56% from 1990 to 2000, but remained 98% white. This indicates the potentiality that a portion of the white community from Lexington moved away from the city to the Johnson Lake area as more Latino/as arrived in Lexington, a point corroborated by some Johnson Lake residents’ public opposition to state school consolidation efforts in the mid-2000s (Swidler 2013).

To further illuminate the demographic changes captured in Maps 3 and 4, indices of dissimilarity were calculated for Dawson County by census block group. The dissimilarity index has become the standard indicator of racial and ethnic segregation between two groups within a given area (Frey and Myers 2005). The dissimilarity index can range from 0% to 100%, and it can be interpreted in this case as the percent of all the white residents or all of the Latino/a residents in Dawson who would need to move between blocks groups to achieve an equal dispersion. The formula used to calculate the dissimilarity index was

\[ D = \frac{1}{2} \sum_{i=1}^{n} \left| \frac{w_i}{W} - \frac{h_i}{H} \right| \]

where \( D \) = the dissimilarity index; \( w_i \) = number of whites in a given block group; \( h_i \) = number of Latino/as in a given block group; \( W \) = total number of whites in Dawson; \( H \) = total number of Latino/as in Dawson.

The data indicate that Dawson County had lower D-index values—that is, less residential segregation—for 1990 and 2000 than for 2010 (Fig. 1). Frey and Myers (2005) find that among all the major metropolitan areas in the United States, a D-index score of over 50% is relatively high. For Dawson County, which is rural and has a relatively small population, the correspondence to Frey and Myers’s finding is not exactly one to one. Nonetheless, it is obvious that by this measure of segregation Dawson County appears to be more segregated now than it was 20 years ago. Maps 5, 6, and 7 show the patterns of segregation and help to visualize the emergence of the Latino/a population in Lexington and Dawson County. The larger dots represent block groups that contribute the most to the segregation in Dawson County, and the darker tones indicate increases in percent Latino/a. In sum, as the Lexington population was changing dramatically from majority white to majority Latino/a, and as school consolidation was co-occurring, Dawson County was also becoming more racially segregated. In the midst of these already difficult changes, school funding in Lexington
Dawson County School Demographics: 2000

Explanations: The height of the bins represents the relative enrollment of the Dawson County schools. Race/ethnicity has been color-coded to demonstrate concentrations of certain kinds of students attending schools in specific urban/rural areas. These data in combination with other 2000 school map reveal that Lexington has increased its share of Latin@ and the white students have decreased in number.

Dawson County School Demographics: 2010

Explanations: The height of the bins represents the relative enrollment of the Dawson County schools. Race/ethnicity has been color-coded to demonstrate concentrations of certain kinds of students attending schools in specific urban/rural areas. These data in combination with other 2010 school map reveal that Lexington has increased its share of Latin@ and the white students have decreased in number.
Dawson County Demographics: 1990

An index of dissimilarity was calculated for Dawson county. Using the equation:

\[ \frac{1}{2} \sum_{i=1}^{n} \left( \frac{w_i}{W} + \frac{l_i}{L} \right) \]

The D-Index is as a measure of segregation and in this case D = 52.42 which means that 52% of white residents, or Latin@ residents would need to move to new neighborhoods for the distribution to be equal.

Where

- \( w_i \) = total white pop for the ith block group
- \( W \) = total white pop for Dawson County
- \( l_i \) = total Latin@ pop for the ith block group
- \( L \) = total Latin@ pop for Dawson county

Percent Latin@

0.00 - 2.46
2.47 - 5.44
5.45 - 18.86
18.87 - 50.00
50.01 - 73.75

Author: William R. England; Source: ESRI (Open Street Map), US Census and ACS
Dawson County Demographics: 2010

An index of dissimilarity was calculated for Dawson county using the equation:

\[ D = \frac{1}{2} \sum_{i=1}^{n} \left| \frac{w_i - L_i}{W} \right| \]

Where:
- \( w_i \) = total white pop for the \( i \)th block group
- \( W \) = total white pop for Dawson County
- \( L_i \) = total Latin@ pop for the \( i \)th block group
- \( L \) = total Latin@ pop for Dawson county

The D-index is as a measure of segregation and in this case, 

\( D = 62.37 \) which means that 62% of white residents, or Latin@ residents would need to move to new neighborhoods for the distribution to be equal.

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- \( W \) = total white pop for Dawson County
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Author: William England. Sources: ESRI (Open Street Map), US Census and ACS.
Public Schools was not keeping pace with the rest of the county or the state.

CONCLUSION

The state of Nebraska provides allowances for districts with students in poverty and with so-called limited English proficiency in the school funding formula. This feature of Nebraska school finance is presumably meant to benefit school districts with students who have diverse needs under a rationale of equity. But just as Lexington’s population of families and students with diverse educational needs was growing, their resources (relative to the rest of the county and the state) were not. As education policy expert Linda Darling-Hammond (2010) points out, in education, spending matters. Unfortunately many states are only required to supply a “minimally adequate” education. Worse, school districts with large numbers of minority and low-income students frequently enjoy even less funding and less resources in general in comparison to districts made up of mostly white, middle-class students. There are only a handful of states wherein lawsuits have not been filed challenging public school funding, and the bulk of the school finance lawsuits emanate from districts comprising minorities and poor students (Darling-Hammond 2010).

Through a lens of demographic change and school consolidation we can see these patterns of inequality emerge in Nebraska as well. That children in Lexington Public Schools were getting relatively less, right at a time when they needed more, undermines the rational of equity that supposedly guides the state’s financing policies. The obvious policy implication for Lexington (and communities like it) is for the state to ensure that the resources available to the district match the unique educational needs of the community. This may require reconsideration of the funding formula, perhaps by requiring the state to distinguish demographically transforming districts from more demographically stable ones, and to have separate funding mechanisms for each.

Dawson County clearly indexes a particular case. But the geographic and economic processes contributing to segregation and inequality in Dawson are also similar to many other places in the Great Plains where historically majority white counties are seeing (or have seen) recent Latino/a diasporas emerge. Although this analysis does not include Finney County, Kansas, Buena Vista County, Iowa, Nobles County, Minnesota, or the dozens of other flyover country meatpacking counties that have been transformed by growing Latino/a populations, this analysis could be meaningful to those places as well. In that sense our analysis of Dawson County is relevant to the Great Plains writ large because Dawson County shares with them the prospects and challenges that develop vis-à-vis large influxes of newcomers. Thus, the larger hope is that our analysis of Dawson County offers a compelling lens through which we can consider school segregation, consolidation, and inequality in the Great Plains. Visualizing segregation and unequal educational opportunity is not always easy. Moreover, rural districts might insist (and rightly so) that they are different from large urban places. Large urban problems (and their solutions) may seem similar to those faced by smaller settlements, when in fact these problems are quite distinct. Nevertheless, if it is our goal to challenge policies that segregate and stratify educational outcomes, it behooves us to examine all geographies (rural, urban, and suburban) where this occurs and to figure out ways to communicate such information. This can be complicated when other changes, such as the common phenomenon of school consolidation, co-occur and are rationalized as vehicles of efficiency or improvement, but actually end up compounding segregation and inequality and complicating the solutions to these problems. An important first step toward a solution is to allow readers to see the geo-spatial distribution of population changes over time, racial isolation, school expenditures, graduation rates, and more. These are proposed as key tools for making sense of common but complicated phenomena and arguing for different policies and outcomes.

REFERENCES


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REFERENCES


Berry, Christopher R., and Martin R. West. 2010. Growing


Stull, Donald D., ed. 1995. *Any Way You Cut It: Meat-Pro-
Segregation, Inequality, Demographic Change • William R. England and Edmund T. Hamann

cessing and Small-town America. University of Kansas Press, Lawrence.
Students and their teacher in front of a country schoolhouse southwest of Elm Creek, Nebraska. 1910. Solomon Butcher photograph, Nebraska State Historical Society. Reprinted by permission.
ENSURING MATHEMATICAL LEARNING IN RURAL SCHOOLS
Investing in Teacher Knowledge

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ABSTRACT—In this research article we share our vision of how to improve student mathematics success in rural districts. Good teaching matters. We have found two recurring features that can support teachers’ success in effectively teaching students mathematics: high-quality, longitudinal professional development and professional connections. We partner with rural districts and master teachers to offer local high-quality professional development for mathematics teachers to strengthen their mathematical knowledge for teaching. We have substantial evidence that participation in longitudinal, high-quality professional development significantly increases teachers’ mathematical knowledge for teaching, as well as improves their confidence in teaching. Bringing teachers together for professional development helps teachers develop professional connections. Such connections are necessary for teachers to have regular conversations about mathematics teaching and learning with peers. University-district partnerships can provide infrastructure to allow teachers to develop connections with each other, to collectively support each other, and to collaborate in teaching mathematics more effectively. Investing in professional development for rural teachers and supporting professional connections among teachers will help us achieve the common goal of increasing student success in mathematics.

Key Words: mathematics teachers, rural education, mathematical knowledge for teaching, professional development, teacher retention

INTRODUCTION

A worthy goal for any K–12 school district is to provide students with an educational environment in which all (or almost all) students graduate from high school and are ready for a career or college. How can school districts accomplish this goal? In particular, how do rural school districts accomplish this goal? More specific to the topic of this article, how do we ensure high quality mathematics learning in rural schools? And what role could university-based mathematicians and mathematics educators working in collaboration (Heaton and Lewis 2011) to support K–12 mathematics teaching and learning in Nebraska play in the process?

We have a simple thesis. Good teachers matter (Darling-Hammond 1997; Wenglinsky 2002). Although there are certainly many other aspects of schools and schooling
that are important, if our educational systems are to be successful at educating the youth of our state, the single most important variable is the quality of teaching in our schools. Good teaching is also quite difficult, and the challenges are exacerbated when teachers are physically isolated from peers.

Our focus, for the purpose of this article, is on the people who teach mathematics in rural schools within Nebraska. How do rural school districts staff their schools with outstanding mathematics teachers, both strong in their knowledge of the disciplines they teach and current with respect to the knowledge of teaching and students that enables them to transfer what they know into learning in their classrooms? This is an important question to ask at a time when there are major shortages in science, technology, engineering, and mathematics (STEM) teachers (Ingersoll and Perda 2010); a limited number of teachers willing to work long-term in rural areas (Storey 1993; Campbell and Yates 2011); and a need for high-quality teachers (Darling-Hammond 2006).

RECRUITING RURAL TEACHERS

A possible hypothesis for dealing with the need for high quality teachers is that rural districts must pay their teachers better to compete for the most outstanding graduates of the state’s teacher education programs. We will leave it to others to discuss whether rural districts have the capacity to pay higher salaries, but the evidence is strong that rural districts do not offer salaries that are competitive with urban and suburban districts, and “average salaries influence both recruitment and retention decisions” (Miller 2012, 20).

In examining the publicly available 2012–13 salary schedules for Nebraska (collected annually by the Nebraska State Education Association, http://www.nsea.org/compensation), most rural districts have salary schedules beginning at $28,000–30,000, with 4–6 horizontal steps (such as BA+18, BA+36, MA, and MA+18) and 11–18 vertical steps (years of experience); salaries top out around $48,000–55,000. For example, Elba has a starting salary of $28,280 and Elm Creek starts teachers at $30,925. In the larger communities salaries start at $34,000–38,900 (for example, Omaha starts teachers at $34,196, and Lincoln starts them at $38,849), have horizontal steps that go up to the PhD degree, and 20–30 vertical steps that top out around $68,000–76,800. However, as Monk (2007) argues, paying teachers more is not a complete answer. If teachers do not become accepted as rural community members or if they are not able to find satisfying social and recreational opportunities (Storey 1993), they will not remain in rural communities as teachers no matter how much money they are paid.

Nationwide over 60% of teachers work within 20 miles of where they attended school, compared to 42% of college graduates in general (Reininger 2012). Many others return to teach in the community where they grew up or in a community to which they are attracted for personal or family reasons. Teachers show a strong preference for teaching in a school similar to the K–12 schools they attended (Boyd et al. 2005). Thus, while it can be difficult for rural schools to attract teachers who grew up in urban or suburban communities, rural districts are likely to be successful in attracting and retaining local teachers or teachers who “experienced some level of education in the country” (Campbell and Yates 2011, 9).

 Indeed, rural districts might consider a plan to “grow their own” (Skinner et al. 2011) by encouraging community members to become teachers and then return to teach in their community. Additionally, Boyd et al. (2011) support the notion that rural schools are attractive to some teachers due to the autonomy they offer teachers. Hellsen et al. (2011) cite teachers’ need for community and connection as a main factor in keeping teachers in rural schools. These are two factors that can be affected by rural districts in ways that may “encourage capable teachers to remain and to strengthen their commitment to teaching in the rural community” (Storey 1993, 168).

INVESTING IN RURAL MATHEMATICS TEACHERS

Given what is known about workforce demographics, rural districts are likely to have more success if their own community members become teachers. Once teachers are hired, the district or principals should strive to ensure that they have opportunities to continue learning and to be part of a formal professional community of teachers supporting one another’s professional growth or that teachers participate in other sorts of collaboration (such as instructional planning at faculty meetings or comparison of teaching strategies among peers from different schools or across subject areas) (Howley et al. 2007). Thus, we believe the answer is to invest in the teachers who choose to live and teach in Nebraska’s rural communities. Rural districts should want teachers who want to teach in their communities and should find ways to invest in their professional development so that they develop into outstanding master teachers.

The need for professional development is especially important in the area of mathematics. “Mathematics
teaching is an extraordinarily complex activity involving interactions among teachers, students, and the mathematics to be learned in real classrooms” (National Math Advisory Panel [NMAP] 2008, ch. 6, xiii). According to The Mathematical Education of Teachers II, “satisfying the minimum requirements for initial certification to teach mathematics does not ensure that even outstanding future teachers have the knowledge of mathematics, of teaching, and of students that is possessed by successful experienced teachers. Like all professionals, teachers need opportunities for professional growth throughout their careers” (Conference Board of the Mathematical Sciences 2012, 18). Moreover, effective professional development that has a measurable impact on teachers’ mathematical knowledge for teaching needs to be sustained over time (e.g., Darling-Hammond 2006).

In multiple studies of student outcomes, the largest single variable is usually the teacher, surpassing even effects of students’ socioeconomic status (e.g., Wenglinsky 2002; NMAP 2008). Additionally there is certain mathematical knowledge that teachers need that other users of mathematics do not (such as figuring out student errors and misconceptions). Unfortunately too many practicing teachers lack sufficient mathematical knowledge for teaching to effectively build deep student understanding of mathematics (e.g., Ma 1999; Kilpatrick et al. 2001; Ball and Bass 2003; Ball et al. 2008). By mathematical knowledge for teaching we mean “the particular form of mathematical knowledge that is useful for, and usable in, the work that teachers do as they teach mathematics to their students” (Stylianides and Ball 2008, 308). Teachers with greater mathematical knowledge for teaching are better able to listen to student reasoning and to help students build conceptual understanding of mathematical concepts (e.g., Ball et al. 2008).

Teachers need strong mathematical knowledge for teaching in order to educate students effectively (e.g., Ball et al. 2005; Hill et al. 2005). Loeb et al.’s (2012) research supports teacher professional development as one of the keys to improving education outcomes: “Developing teachers’ skills through professional development may be both the most viable and most effective option for schools looking to improve the quality of their teaching force” (273). Therefore, to improve student outcomes in rural areas, it is important to invest in the professional education of rural mathematics teachers.

PROFESSIONAL DEVELOPMENT EFFORTS

At the University of Nebraska–Lincoln (UNL) we believe we have a shared responsibility to provide mathematics professional development opportunities statewide to strengthen teachers’ knowledge of mathematics for teaching and pedagogical knowledge, thereby enabling their success. We have a particular commitment to provide these opportunities to rural teachers. For over a decade UNL’s Center for Science, Mathematics and Computer Education (CSMCE) together with the Department of Teaching, Learning and Teacher Education and the Department of Mathematics has focused on improving K–12 mathematics education in Nebraska by working with mathematics teachers statewide. Since 2004 we have been part of teams that secured over $18,000,000 in National Science Foundation (NSF) grants to provide professional development opportunities for Nebraska teachers and to engage in research that informs Nebraska and the nation as to the benefits of high quality professional development for teachers. With the support of these grants, we have worked with approximately 275 rural Nebraska K–12 teachers. Apart from a small handful of rural teachers who stopped teaching due to family situations, only 2 of these 275 teachers have moved to urban schools, and during the same timeframe 2 urban teachers with whom we worked moved to rural settings. Thus, the retention of these rural teachers is extremely high.

We will focus our discussion on Math in the Middle, a master’s degree program for middle level teachers, Primarily Math, a K–3 mathematics specialist program, and efforts to sustain these opportunities after the end of the NSF grants. Full descriptions of all CSMCE programs and grant-funded activity can be found on our website (http://scimath.unl.edu/csmce). The map in Figure 1 shows the distribution of teachers who have participated in our professional development programs over the past decade.

The Math in the Middle Institute Partnership, a 2004–11 Math Science Partnership grant from the National Science Foundation, was an intense master’s degree program targeting middle-level Nebraska mathematics teachers. Math in the Middle had a special focus on working with teachers from rural districts; 89 of the first 125 teachers to earn master’s degrees from the program were from rural Nebraska districts.

Primarily Math is an 18-credit-hour graduate certificate initiative to strengthen mathematics education in the early grades and a major research project designed to inform the nation as to effective strategies to strengthen K–3 mathematics education. By the end of 2014 nearly 300 teachers will have completed the Primarily Math program.

The Nebraska Math and Science Summer Institutes
Math in the Middle, NebraskaMATH and NebraskaNOYCE
Teachers by Nebraska Educational Service Units
2010-2011 Teaching Positions for Math in the Middle, 2012-2013 for NebraskaMATH and NOYCE

Figure 1. Distribution of teacher participants in CSMCE programs, 2004-12.

(NMSSI) represent an effort to institutionalize the offering of courses developed by the grants. Courses developed by Math in the Middle are now regular offerings of the NMSSI; Primarily Math classes became part of the NMSSI schedule beginning in 2013 as that grant funding comes to an end. Many courses developed for high school teachers also are part of the NMSSI. To better serve rural teachers, each summer NMSSI courses are offered in coordination with Educational Service Units (ESUs) in over a dozen locations across the state.

In both Math in the Middle and Primarily Math, with approval from UNL’s Institutional Review Board, we have collected pre-, post- and follow-up survey data from teacher participants using the Survey of Teaching Practices, the Knowledge of Mathematics for Teaching assessment, and a Beliefs/Attitudes survey. In Primarily Math we also collected teacher data from multiple comparison groups—a control group and a group of teachers in buildings with a Primarily Math-trained mathematics coach. In all classrooms of Math in the Middle teachers, in a subset of Primarily Math teachers, and in Primarily Math comparison classrooms, we have administered a fall/spring student assessment; K-3 classrooms also administered a child competence beliefs survey. We also have collected district- and state-level student testing data, when available, each year since 2003. The research questions of both programs focused on questions related to the basic question Does the program “work”? To what extent are there measurable differences to teachers’ mathematical knowledge for teaching, beliefs, and attitudes after participating in a longitudinal professional development program? To what extent can we document an impact on students when their teachers participate in a longitudinal professional development program?

Our approach to offering summer courses is designed with teachers’ schedules in mind and with a special sensitivity to the demands on rural teachers who live a significant distance from Lincoln. For some classes 40 hours of instruction is concentrated in a single week; there are daily homework assignments and what we call an end-of-course assignment. A second approach is to pair two courses—one mathematics and one education—over a two-week period, each meeting for 40 hours during the two weeks. Our experience is that teachers appreciate our summer format because it allows for focused collaboration with colleagues while leaving most of the summer for other pursuits and minimizing time away from home. Additionally, as the NMSSI have expanded, we have of-
ferred more courses at more locations outside of Lincoln. This further minimizes housing and subsistence costs and time away from home for teachers who often must travel to a course’s location to pursue graduate education.

In our grant-funded academic year courses, to support rural teachers we have used a blended distance-education approach, in which teachers meet face to face on one or two Saturdays during the semester and complete the rest of the course online. To further reduce costs when grant funds are not available, we are now offering online courses without a face-to-face component. Since teachers are quite busy teaching (and coaching and sponsoring other extracurricular events) during the year, online courses are often the best fit for their schedules and are the only option for teachers who do not teach within reasonable commuting distance of our colleges and universities. When we offer online courses we utilize a wide variety of available technologies in order to build professional communities and to support teachers’ learning, from video conferencing (using Adobe Connect, Google hangout, or Skype) that enables group discussions to mathematical software such as GeoGebra and other online applets and virtual manipulatives to support mathematical exploration and representation.

In all of our courses we strive to maintain high expectations but also to provide teachers with as much support as they need to be successful. Courses, especially those with larger enrollments, are typically taught by teams of instructors, which often include university faculty, master teachers, and graduate students. Involving teachers on our instructional teams helps connect university faculty to the needs of teacher participants and provides a special form of professional development for the state’s very best teachers. As we expand the NMSSI and other course offerings, more master teachers are becoming lead instructors for NMSSI courses. By investing in the capacity of Nebraska teachers to lead high-quality professional development courses for their peers across Nebraska, we are helping grow a community of outstanding academic leaders among Nebraska’s K–12 mathematics teachers.

**IMPACT ON TEACHER KNOWLEDGE AND BELIEFS**

Teachers with deep mathematical knowledge for teaching are better prepared to educate students in ways that teach them to think mathematically. But teachers also need to be part of a professional community to thrive. Teachers in larger districts often have the benefit of peers in their building who teach the same course and with whom they can plan common lessons. Rural teachers may not have similar peers teaching the same courses in their buildings, but they can develop connections with such peers in other schools and districts. When outstanding teachers are linked to each other and to university faculty they become part of a professional community, even if they teach in a rural school with few other mathematics teachers. By supporting each other rural teachers can raise the quality of mathematics teaching and learning statewide. Technology today is such that teachers can utilize video-conferencing and document-sharing technologies to plan together online, and to have rich discussions about teaching and learning mathematics. By developing a statewide community of mathematics teachers, we seek to help teachers connect with peers.

Teacher mathematical knowledge for teaching does increase as a result of participation in our programs. With our grant-funded programs, we have had K–8 teachers take an elementary or middle-level version of an assessment of mathematical knowledge for teaching. In general, score increases of greater than one-quarter of a standard deviation are considered significant growth. In Math in the Middle teachers’ scores grew an average of half a standard deviation and these changes were maintained over time (Fig. 2). Because the test teachers took changed between the second and third cohorts, cohorts 1 and 2 are reported together, as are cohorts 3–5. Thus, for Math in the Middle we have strong evidence of the positive effects of the program on participants’ mathematical knowledge for teaching. In Math in the Middle we also administered an attitude survey to teachers, but because their attitudes were very positive as they began the program it was not possible to detect any changes over time.

We have similar strong results for K–3 teachers who participate in the Primarily Math program. When teachers enter the program their scores are comparable to those of K–3 teachers nationwide, but when they leave the program their scores are significantly higher (see Fig. 3). Note that the national sample is for K–6 teachers, but the Mathematical Knowledge for Teaching (MKT) creators report that K–3 teachers have lower scores than teachers of grades 4–6. Because our program is for K–3 teachers we expected the mean score for our teachers to be below the K–6 national average prior to beginning Primarily Math coursework. Afterward, however, their mean score is above the national average, representing a gain of more than half of a standard deviation. Indeed, while only 16% of all K–6 teachers nationwide score one standard deviation above the mean, 23% of the K–3 teachers who have completed Primarily Math score in that range.
Figure 2. Math in the Middle cohorts 1 and 2 (left) and 3–5 (right) participants’ mathematical knowledge for teaching by subscale (number and operations; patterns, functions and algebra; geometry).

Figure 3. Distribution of Primarily Math cohorts 1–3 and control group teachers’ mathematical knowledge for teaching, 2009–12.
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Figure 4. Primarily Math and control group teachers’ attitudes toward mathematics, 2009-12.

Figure 5. Primarily Math and control group teachers’ beliefs about teaching mathematics, 2009-12.
For Primarily Math we used a different instrument to measure attitudes and did see both increases in confidence and motivation and decreases in anxiety, whereas the control group teachers' attitudes remained statistically the same across time (see Fig. 4).

We also measured K–3 teachers’ tendencies toward child-centered versus teacher-centered instruction, and found statistically significant differences between Primarily Math teachers—whose beliefs became more child centered and less teacher centered—and control group teachers, whose beliefs remained static (Fig. 5).

**IMPACT OF PROFESSIONAL DEVELOPMENT ON STUDENT LEARNING**

Our ultimate goal in improving teacher knowledge and changing teacher beliefs is to see an improvement in student learning. Given the history of assessment in Nebraska, using available data and existing statistical methods, it usually is not possible to analyze student scores to detect an impact of teacher professional development on student scores. Under the original state assessment system—School-based, Teacher-led Assessment and Reporting System (STARS)—every district created its own test, so one cannot make direct comparisons across districts. With the advent of the Nebraska System of Accountability (NeSA), it is possible to compare scores at a school or district level, but these data exist only for 2011 and 2012, and are not collected in a way that links students to teachers. Thus, with available statewide data it is not possible to determine if students with teachers who have gone through our programs are achieving at higher levels than others.

However, in rare instances in small rural schools with small numbers of mathematics teachers, we can look locally for evidence of the impact of professional development. Although these situations may not generalize broadly, they do illustrate specific instances of the impact of exceptional teachers on student achievement. For instance, Gordon-Rushville Public Schools, a consolidated district in northwestern Nebraska, has one middle school and two high school mathematics teachers. The middle school teacher and one of the two high school teachers participated in Math in the Middle, but none of the elementary teachers have participated in any of our professional development programs. All of the 7th graders had the middle school teacher, and over 80% of the 8th graders

![Figure 6. Nebraska and Gordon-Rushville percentage of students proficient on the state test for mathematics by grade level (3–8, 11), spring 2012. Source: Nebraska Department of Public Education 2012.](image-url)
had the middle school teacher for both 7th and 8th grades; nearly 60% of the 11th graders had these two teachers for at least four years of mathematics instruction.

Gordon-Rushville Public Schools has 737 students, 54% of whom receive free or reduced-price lunches, and approximately one-quarter of whom are Native Americans. As a comparison, 43% of Nebraska students receive free or reduced-price lunches, and less than 1.5% of students are Native American. The statewide trend for NeSA-M scores steadily declines as students get older (see Fig. 6). Passing rates for Native American students are much lower than state averages and lower than scores for white students. Yet in Gordon-Rushville, at grades 7, 8, and 11 the NeSA-M scores are markedly higher than statewide scores (see Fig. 6 and Table 1). Additionally, across all grades tested, statewide data show only 36% of Native American students pass the NeSA-M, whereas 45% pass in Gordon-Rushville. Thus, Gordon-Rushville, as an outlier from state averages, points to the effectiveness of its middle and high school mathematics teachers, two out of three of whom have received substantial professional development to strengthen their mathematical knowledge for teaching. We note that these two teachers fit the typical rural teacher demographic in that one grew up in the community, and the other grew up in Wyoming but married a community member. We have begun to notice similar trends in the performances of students in other small districts with teachers with whom we have worked. Among those districts, Gordon-Rushville still clearly stands out as an exception (see Fig. 7).

We also examined Leigh Community Schools, a district where one Primarily Math teacher teaches third grade, and a Math in the Middle graduate teaches mathematics to the fourth, fifth, and sixth grades. Leigh Elementary’s third through fifth graders ranked third in the state of Nebraska in spring 2012 for the highest NeSA-M scores. All students who attended Leigh for the full school year, 2011–12, scored at the proficient level or above on the NeSA-M in spring 2012 (see Table 2). Thus, in Leigh, there seems to be a large positive impact on student mathematics achievement when students are taught for more than one year by teachers who have completed Math in the Middle or Primarily Math.

For both Math in the Middle and Primarily Math, we also collected student data. Since Math in the Middle occurred during Nebraska’s STARS era, we knew that we would not be able to use district test scores as a comparative indicator of student achievement. Thus, we created an alternative assessment that emphasized writing to explain mathematics for use with fifth through ninth grade students and administered it in classrooms of Math in the Middle teachers. The overall picture of student data showed that students struggled to express mathematical reasoning in writing. However, our assessment did not have sufficient reliability to make strong claims, as we were unable to equate the fall and spring forms of assessment satisfactorily.

In Primarily Math we administered the Test of Early Mathematics Ability, 3rd edition (TEMA-3) to a subset of students in a subset of Primarily Math classrooms (2009–13), as well as selected classrooms in schools with a mathematics coach (2010–13) and control group classrooms (2009–13). The TEMA-3 Math Ability Scores are based both on a student’s raw score and age at the time of testing, and scaled to have a mean of 100 and standard deviation of 15, based on a nationally representative normative group of children ages two through nine. Thus,
Figure 7. Percentage of secondary students scoring “Proficient” on NeSA-M 2011/12; schools are ordered left to right from lowest to highest percentage of students receiving free or reduced-price lunches (16%-56%). Source: Nebraska Department of Public Education 2012.

a child of average ability making average progress each year would have a Math Ability Score of 100 each time he or she were tested. Although we have tested over 5,000 students across a four-year span, we recognize that student scores are not independent of classroom (teacher) effects. When we look at teachers’ class scores across time, we see positive trends, but power analyses reveal that we would need to obtain similar results in a much larger number of classrooms to conclude that the data indicate statistically significant differences among groups. With the advent of the NeSA-M in 2010–11, teaching and learning mathematics became more a focus of teacher professional development and teacher conversations than in the past. Nevertheless, we have started to see trends from fall to spring that show that control group classrooms average gains of 7.5 points, classrooms in buildings with a math coach average 9-point gains, and Primarily Math classrooms average 11.2-point gains. Thus, while all groups have strong gains, Primarily Math classrooms have bigger gains (see Fig. 8).

CONCLUSIONS

Across our collective decades of work with mathematics teachers in Nebraska, particularly rural teachers, we have identified two recurring features that can support teachers’ success in effectively teaching students mathematics: high-quality professional development and professional connections. Our findings specific to mathematics education support what Barley and Beesley (2007) found in their case studies of successful rural K–12 schools across subject areas in Wyoming, Missouri, and Colorado. They also support what Howley et al. (2007) found when interviewing 20 principals from three rural regions of Ohio about reforming high school mathematics teaching and learning. A university is arguably well positioned to pro-
provide high-quality professional development that deepens teachers' mathematical knowledge for teaching if the institution makes it a priority to provide such opportunities. At UNL we have created and regularly offer dozens of courses designed to strengthen teachers' mathematical knowledge for teaching (see http://scimath.unl.edu/nmssi) and using delivery systems that are especially sensitive to the needs of rural teachers. We have evidence that we are able to successfully improve K–12 teachers' mathematical knowledge for teaching through such courses, and specifically through Primarily Math and Math in the Middle. Such knowledge is important, because without a deep knowledge of mathematics for teaching, teachers are unable to effectively teach students mathematics.

Professional connections also matter. In our grant-funded programs, we have deliberately built in structures to support the development of professional connections among mathematics teachers. Two electronic newsletters enable us to communicate with over 1,000 educators each month. For Primarily Math, we built in study groups to help make ways for rural teachers to connect around discussions focused on teaching and learning mathematics. Hellsten et al. (2011) say that rural teachers need help seeking out mentorship relationships and making connections within and outside of the community. When such connections are made, rural teachers are much more likely to stay in rural areas. Such connections also provide a conduit for continued professional growth in the area of mathematical knowledge for teaching by providing stimulating discussions about mathematics teaching and learning. UNL has put great efforts into helping teachers get connected across the state. Our findings expand understanding of the importance of “community connections” in rural school settings (Barley and Beesley 2007) from community as the locale in which the school is situated to a professional community of math teaching peers engaged in communication about mathematics teaching and learning within a single school, between schools and districts, as well as across the state.

Rural school districts have a vital role to play in professional connections. School districts need to collaborate in order to effectively mentor new teachers as well as to develop and sustain collaborations among teachers to improve mathematics teaching and learning over time. Often, when a rural district hires a new mathematics teacher, there is not another mathematics teacher in the building to serve as a mentor for the new teacher. Thus, the district needs to have partners in order to find an
experienced mathematics teacher in a different district who can mentor the new mathematics teacher and initiate conversations about mathematics teaching and learning. Even when teachers are not novices, the district should still seek to collaborate with other districts to provide experienced mathematics teachers with a professional community of colleagues. Educational Service Units can help serve as brokers in this arena, providing a structure for mathematics teachers to engage in mathematical conversations. ESUs also have a responsibility to ensure that rural teachers have opportunities for longitudinal professional development to increase their mathematical knowledge for teaching.

Thus, to ensure high quality mathematics instruction in their schools, rural districts should invest in high-quality teacher professional development for their mathematics teachers and support their teachers as members of a larger mathematical community of educators. Such measures can be very effective in even the smallest districts, with no need to consolidate smaller districts into larger entities to pursue this strategy. We do believe these measures are more effective when districts and ESUs work in partnership with mathematics and mathematics education faculty at UNL. Certainly we all share the common goal of high achievement for Nebraska students; investing in rural teachers and supporting connections among teachers will help us achieve this goal.

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REFERENCES


Conference Board of the Mathematical Sciences. 2012. The Mathematical Education of Teachers II. American Mathematical Society and Mathematical Association of America, Providence, RI, and Washington, DC.


STRATEGIES FOR STRENGTHENING
THE GREAT PLAINS ORAL HEALTH WORKFORCE

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ABSTRACT—The looming shortage of dentists in rural communities throughout the Great Plains is a well-documented concern. Access to care can be a problem, and the lack of dental care is generally most acute among those with low income, those with complex health issues, and minorities. Studies are finding that there are significant associations between poor oral health and the occurrence of systemic diseases or problems. Examples include cardiovascular disease, stroke, and preterm delivery of low-birth weight infants. The two primary diseases of the oral cavity—dental caries and periodontal disease—are not only treatable but also preventable with adequate care.

The University of Nebraska Medical Center (UNMC) College of Dentistry (COD) is committed to strengthening the rural dental workforce of the Great Plains by focusing upon rural recruitment strategies, service learning educational opportunities in rural communities, and strong support for dentists who practice in remote locations. Working closely with Nebraska and neighboring states, the UNMC College of Dentistry is striving to improve the oral health and economic vitality of small communities throughout the Great Plains region.

Key Words: dental, workforce, oral health, access to care, rural development

INTRODUCTION

Good oral health is important to overall health. Scientific advances in the understanding, diagnosis, and treatment of oral diseases have made good oral health an asset which should be available to anyone who wishes to have optimum health. Unfortunately, even in the United States, the level of oral health is very uneven among the population. The first Surgeon General’s Report devoted to oral health in the United States was published in 2000, and it documented that there are major disparities in the level of oral health among numerous subgroups of the U.S. population, and that access to dental care is a major problem for many. Among those with the poorest oral health and most difficulty with barriers to care are those of lower socioeconomic status, especially children, elderly, and the disabled; minorities; and people located in remote, sparsely populated geographic areas. The surgeon general’s report on oral health estimated that nearly 9% of the U.S. population (25 million people) reside in geographic areas lacking adequate dental care services (U.S. DHHS 2000; Sinkford and Reinhardt 2006).

The challenges related to improving access to dental care throughout rural America are well documented. There are many health policy issues that make uniform and consistent healthcare delivery difficult, and the problem of
rural access to dental care is gaining attention (Bazargan et al. 2010, 336; Chi et al. 2010; Harrison et al. 2007; Krause et al. 2005). In Nebraska, 43 of 93 counties have been designated by the Nebraska Office of Rural Health as shortage areas for general dentists, as shown in Figure 1 (DHHS-NORH 2012). In addition, areas within 5 other counties are considered partial shortage areas (part of a county). The guidelines for dental shortage area designation in Nebraska are established by the governor-appointed Rural Health Advisory Commission. The criteria for that designation include (1) the latest data on an area's number of dentists and population served; (2) inaccessibility of services in that area; (3) particular local health problems; (4) age or incapacity of local practitioners; and (5) demographic trends in that area (Nebraska Legislature 2008).

The pipeline for new dentists begins with dental school student admissions and subsequent class size which, in turn, are driven by the size and quality of the applicant pool as well as federal or state policies affecting financial support. In the 1960s there were serious national concerns about the prevalence of dental disease (decay and periodontal disease) in the U.S. population, and the federal government instituted programs to enlarge dental school programs. As a result of increased financial support, many dental schools enrolled more students over a 10-year period. The outcome was the greatest number of new dentists joining the workforce in the history of the United States. The largest number of graduates from U.S. dental schools occurred in 1983, when 5,756 dentists graduated. Soon thereafter the applicant pool plunged as the number of dentists had grown to exceed the perceived demand. Over the next 25 years the U.S. population grew by almost one-third, but the number of dental school graduates decreased, falling to 4,700 by 2007 (Collier 2009). In anticipation of the retirement of many dentists who graduated in the larger classes of the 1970s and early 1980s, new dental schools are now opening, and many other dental schools are increasing enrollment. The applicant pool is robust because dentistry is again perceived as a desirable career for which there continues to be a substantial demand.

The basic solutions to the problem of rural access to dental care require a vision that would, if attainable, provide access to quality oral healthcare for the U.S. population throughout the life cycle. That vision, as outlined by the Institute of Medicine (Institute of Medicine 2011)
would lead to an evidence-based oral health system that could (1) eliminate barriers that contribute to oral health disparities; (2) prioritize disease prevention and health promotion; (3) provide oral health services in a variety of settings; (4) rely on a diverse and expanded array of providers who are competent, compensated, and authorized to provide evidence-based care; (5) include collaborative and multidisciplinary teams working across the healthcare system; and (6) foster continuous improvement and innovation.

The importance of good oral health is multifaceted. The ability to speak, chew, and swallow are very dependent upon good oral health. The two primary dental diseases, dental caries (cavities) and periodontal (gum) disease, are caused by bacterial infections. Those diseases are preventable through good dietary habits, routine dental examinations and preventive strategies, and adequate home-care procedures. Dentistry is a leader among health science professions in demonstrating the value of strategies that prevent disease. In fact, community water fluoridation (the controlled addition of minute amounts of fluoride to public drinking water supplies, which strengthens the teeth of those who consume the fluoridated water) has been called one of the 10 great public health achievements of the 20th century by the U.S. Centers for Disease Control (CDC 1999).

Lack of good oral health can cause a multitude of problems. Acute dental pain in the form of a toothache can range from an annoyance to excruciating discomfort. Children in the United States miss more than 51 million hours of school per year because of dental problems (US DHHS 2000); and for those who are not so fortunate to have easy access to dental services, ongoing discomfort can make concentration and learning extremely difficult. Untreated dental caries and a resulting abscess led to a brain infection and subsequent death of a 12-year-old child in Maryland (Otto 2007). That child could have been saved with a relatively simple dental extraction costing less than $100, but unfortunately he did not receive that treatment because he lacked access to care. Others have emphasized that our society is absorbing huge costs for persons with dental pain who wind up in hospital emergency rooms simply because they believe they have nowhere else to go. The cost of treatment in emergency rooms is high, and the care may not resolve the cause of the problem—usually only administration of pain medication and perhaps an antibiotic (Catalanotto 2012). Dental visits to hospital emergency departments totaled $23 million in Georgia in 2007 and nearly $88 million in Florida in 2010 (Seu et al. 2012). That report also showed that dental-related emergency room visit rates were more than twice as frequent in rural areas as in large metropolitan areas.

Dental discomfort or loss of teeth without prosthetic replacement can also lead to poor chewing, bad nutrition, difficulty speaking, and esthetic embarrassment. In young and old alike, but especially in the young, an “ugly” smile with missing, misaligned, or darkened (by cavities) teeth can have a lasting impact on self-image and psychological development. Recent science has also shown that chronic infections of the tooth-supporting periodontal tissues of the mouth are associated with many serious systemic diseases. Although the scientific evidence of a cause-and-effect relationship is not conclusive, studies have indicated there is an association between periodontal disease and the body’s resulting inflammatory response to that disease with multiple systemic conditions such as diabetes, cardiovascular disease, osteoporosis, preterm low-birth weight babies, respiratory diseases, and rheumatoid arthritis (Otomo-Corgel et al. 2012).

Because of the growing awareness of the importance of oral health and the impact of good oral health upon good overall health, interprofessional education and service delivery models are being developed by dental, nursing, medical, pharmacy, public health, allied health, and other professional colleges. Healthcare delivery systems are constantly evolving, but many factors such as cost control, evidence-based practice, rising incidence of chronic diseases, and public policies related to personalized wellness plans (improving health literacy and promoting healthy lifestyles) are driving the U.S. systems of healthcare changes at a rapid rate. At the same time disparities in access to healthcare must be considered and addressed.

The economics of healthcare delivery are complex. By many measures, the U.S. healthcare model is expensive: The United States spends twice as much per capita on healthcare as other developed countries (Hellander 2011). Despite our expensive system, the overall health of U.S. citizens does not measure up to the rest of the world (Bezruchka 2012). When compared to 16 other high-income countries, amenable mortality (premature death from causes that should not occur in the presence of timely and effective healthcare) in the United States ranks highest, nearly twice the rate of amenable mortality in France (Nolte and McKee 2011). One major goal of the Patient Protection and Affordable Care Act, passed by Congress and signed by the president of the United States in 2010, is to begin to address the problems of relatively high cost of and uneven access to services.
Rural residents are well aware of the valuable care that health providers (physicians, dentists, nurses, and so on) bring to their communities. They may be less aware of the actual economic impact of the healthcare providers’ presence in the community, and how they contribute to the economic viability of smaller towns. Good rural health and healthcare is an asset to the workforce and an attraction for new businesses. It has been demonstrated that health problems lead to lower earnings among individuals, and that the loss of earning is difficult to overcome even if individuals have regained better health. (Chirikos and Nestel 1985). A study of the total economic effects of the health sector on local economies in Oklahoma measured employment, income, retail sales, and sales tax collection for nine counties and found that the health sector accounted for about 9% of direct and 14% of total employment (Doeksen et al. 2008). A typical critical-access hospital in a rural community has an annual retail sales impact of $2.5 million (Doeksen et al. 2012). The annual impact of one additional dentist on the economy has been estimated at about $1.3 million (House et al. 2004). Through the increased economic activity, employment and tax revenues, healthcare providers provide a significant boost to local rural economies.

Academic health centers are well aware of the role they must assume in cooperation with federal, state, and local agencies to improve the health of rural residents (Gazewood et al. 2006). The physical and economic health of the residents is essential to the long-term viability of communities. The purpose of this article is to describe the strategies used by the UNMC College of Dentistry to improve access to care for oral health services in the Great Plains. Those strategies include focused efforts in recruitment, educational experiences, and support of practitioners who choose to practice in remote locations.

**RURAL RECRUITMENT**

Recruitment of students from rural Nebraska and surrounding states with large rural populations is a high priority for the University of Nebraska, UNMC, and the UNMC College of Dentistry. There is evidence to support the concept that students who are raised in rural communities and become physicians are more likely to return to rural communities to practice than are students who grow up in urban communities (Daniels et al. 2007; Pepper et al. 2010), and similar evidence for dentists (McFarland et al. 2012). In fact, the dental study found that dental students from rural areas were nearly six times more likely to practice in rural communities than were students from urban (greater than 50,000 population) areas.

The UNMC Rural Health Opportunities Program (RHOP) is designed to address the special needs of rural Nebraska by encouraging rural residents to pursue a career in the healthcare fields. Students selected are guaranteed admission to the University of Nebraska Medical Center College of Dentistry, Medicine, Nursing, and Pharmacy as long as all stated requirements are met and the preprofessional studies at Chadron State College, Wayne State College, or Peru State College are completed. As of the fall of 2011, 623 students are currently enrolled or have graduated from UNMC through the RHOP. Of the 45 dentists who have graduated through the RHOP program, 67% are practicing in rural locations (56% in Nebraska and 11% in other states).

In 2003 the UNMC College of Dentistry—with the state dental associations of Nebraska, Kansas, South Dakota, and Wyoming—developed a consortium project called Target Access: Great Plains Oral Health, to develop coordinated rural recruitment programs for each of those states. The UNMC College of Dentistry received funding in 2004 through the U.S. Department of Health and Human Services/HRSA to support the project. All four dental associations were aware of and concerned about rural access to dental care, especially replacing the large number of dentists who entered the workforce in the 1970s and 1980s and are now nearing retirement. Kansas, South Dakota, and Wyoming do not have dental schools within their states. Target Access participants developed recruitment materials and strategies and enlisted the respective dental associations to assist in educating high school students about the opportunities of a dental career. Each state enjoyed success with the program, and today the rural dental workforce is remaining relatively strong in those states. Over the past 10 years, more than 50% of the UNMC College of Dentistry entering dental students have come from rural communities (graduated from high schools in communities with populations of 10,000 or fewer).

The number of women accepted nationally into dental school and entering the profession has risen dramatically over the past four decades. Currently about 46% of all U.S. dental students are female (ADA 2012, 36). A recent study showed that over a 20-year period female dental graduates who remained in Nebraska were more likely (59%) than male graduates (48.5%) to practice in a rural community (McFarland et al. 2010). The study also revealed that, of the nonresident dental students who chose to stay in Nebraska to practice following graduation, a
Figure 2. Preceptor locations, 2012–13.

Figure 3. Nebraska teledentistry sites.
higher percentage of those graduates chose rural practice sites (69%) than did Nebraska resident students (51%). The findings of this and other studies help the UNMC College of Dentistry and other dental schools better understand the value of focusing recruitment strategies in an attempt to address rural workforce needs and access to dental care in the Great Plains region.

EDUCATIONAL EXPERIENCES

Providing students with educational experiences in rural dental practice, either through the college’s curriculum or volunteer service-learning activities, is the second strategy employed to strengthen the rural dental workforce. Senior externships (practice experiences outside the college of dentistry for fourth year dental students) have been required since the 1970s, but in the past decade more emphasis has been placed on sending students to rural locations in Nebraska and throughout the Great Plains. The length of those experiences has also been gradually increased from two weeks to a current total of six weeks. Students and preceptors (volunteer dentists who host the students in their communities and practices) are encouraged to participate in as many community activities as possible during their time away from the college. Figure 2 shows the location of externship sites that have been served by dental students in the 2012–13 academic year. The COD has also developed a teledentistry system (two-way video transmission) to assist students and preceptors with consultations between those rural practices and faculty at the COD. One of those is located in a critical-access hospital in a designated dental shortage area. In addition to those sites currently equipped for teledentistry (Fig. 3), the COD is now working on a more portable system that will travel with externship students to any preceptor office with internet access. Many of these educational experiences have been made possible and enhanced by grant support through the U.S. Department of Health and Human Services Health Resources and Services Administration.

In 2003 the College of Dentistry opened a West Division Dental Hygiene Program in Gering, Nebraska, at a Federally Qualified Health Center clinic (Community Action Program of Western Nebraska). This program is an extension of the college’s dental hygiene program, a baccalaureate degree program headquartered at the COD in Lincoln. The West Division program was developed in an effort to provide a source of UNMC graduate hygienists for dental practices in western Nebraska. Four students per year have graduated from that program since 2005 (along with 20 per year at the COD in Lincoln), and the vast majority have been employed in rural practices in western Nebraska and surrounding states. As part of their clinical education, the dental hygiene students in Gering are active in providing oral health promotion, dental sealant programs, and nursing home care in a region of the state which had been previously underserved.

The COD began a program called Children’s Dental Day (CDD) in 2001, and has conducted these special clinics twice per year since that time. CDD provides at-risk children who have access-to-care difficulties with much-needed treatment. Many of the children are minorities and from economically disadvantaged families. On Children’s Dental Day, children are routinely transported to the COD from as far away as Lexington, Nebraska (166 miles one way) to receive free care. Beginning in 2004 the COD has conducted one of the two annual dental days in the Nebraska Panhandle, about 400 miles west of Lincoln, using portable dental equipment set up in community spaces in addition to the dental offices of COD alumni in four communities within that area (Fig. 4). Each year about 50 volunteer students, along with faculty and staff, make that long journey over three days: they are hosted by the local communities and alumni dentists in those communities. Since the inception of dental days, more than 900 students have provided a significant number of services (valued at more than $2.5 million in treatment) and gained unique experiences through the program. The Panhandle CDD has become a particularly popular event that has opened the eyes of many students to the vastness and beauty of rural Nebraska, as well as to the quality of life and professional opportunities in those regions.

The COD has developed strong relationships with numerous rural health districts in Nebraska, as well as affiliations with Federally Qualified Health Centers (FQHC). These centers serve as primary rural externship sites for senior dental students. In some cases the COD has assumed the responsibility of assisting the FQHC with hiring dentists and practice management. Those sites are well equipped for teledentistry consultations, either with students or the staff dentists.

Beginning in 2010 and annually since, volunteers from the COD have organized and participated in the Grand Island Extraction Clinic, through which a group of student and faculty volunteers travel to Grand Island, Nebraska, and provide approximately 200 extractions to about 70 patients (primarily U.S. military veterans who do not qualify for dental benefits through the U.S. Veterans Administration). This event occurs on a Saturday, in the office of a dental alumnus. So many students volunteer
for participation in this clinic that some students are deferred from participation for a year. The educational and professional experience receives rave reviews from the participants (including patients) and further reinforces the opportunities available for dentists to contribute their services to smaller communities.

One other opportunity for students to engage in professional service-learning while being exposed to life in rural Nebraska occurs through the Nebraska Mission of Mercy (NMOM) program. NMOM was first held in 2005 as an event of the Nebraska Dental Association and is now run by the American Mission of Mercy, which oversees these clinics in many states. Using portable dental delivery equipment and staffed entirely by volunteers, this annual two-day event is held in various locations in the state of Nebraska. Free dental care is provided for anyone who shows up and waits in the long lines. Often the site chosen (Fig. 4) is outside the two urban areas of Nebraska, Omaha and Lincoln. The COD students and faculty have been eager volunteers in the delivery of this free care, sometimes making up as many as half of the providers. Large numbers of students make the most of the opportunity to provide care; at the same time they are exposed to the friendly community life and the spirit of volunteerism in rural Nebraska.

**SUPPORT FOR RURAL DENTISTS**

Historically, studies have found that the major variables in attracting physicians and dentists to particular states in the United States are population and per capita income (Benham et al. 1968). These characteristics are major factors in any business location decision, and healthcare is not different. Within states, further study has found that those same factors are influential at a smaller (more local) level. In addition to population and per capita income, dental care price input (using median housing value as a proxy for dental office leasing costs) was also a significant primary factor in attracting dentists to practice locations in the state of Connecticut (Beazoglou et al. 1992). Another economic study linking the distribution of dentists with market forces confirmed that market forces in general have been effective in driving dentists toward areas according to the demand for care. To no one’s surprise, this study concluded that most counties with no dentists in the United States lack sufficient population, per capita income, or both (Wall and Brown 2007). The dentist’s potential income is a major factor in the decision of where to locate, due to the significant costs of education and training as well as future costs of operating the business of private practice throughout the dentist’s career (Nash 2011).
One of the key attractions for graduating dentists to move to underserved rural communities is the opportunity for loan repayment. Dental students throughout the United States graduate with significant professional debt. In 2011 the average educational debt among graduating dental students with debt (89% graduated with debt) was $203,374 (ADEA 2012, 20–21). For the UNMC COD graduates in 2012 that debt figure was a bit less ($154,093), but still significant (Walker 2012). Opportunities exist through both federal and state programs for students to receive loan repayment in return for serving in rural underserved areas. In 2012 43 of the 93 Nebraska counties (and parts of 5 other counties) were designated as underserved in general dentistry. Students may elect to serve in one of those counties and thereby be eligible for Nebraska’s state loan forgiveness program (Fig. 1).

Two UNMC COD programs that support rural dentists are the Dental Caravan and the Practice Opportunities Fair. The Dental Caravan program has now been active for 25 years, and is the only program of its type in the United States. Each year, in early May, two faculty from the COD travel more than 400 miles across the state to offer free continuing education (CE) lectures to dental alumni and their staff at four sites. Nebraska dentists are required to attend at least 30 hours of CE every two years in order to qualify for licensure to practice. Over the past 25 years, the Dental Caravan has traveled more than 25,000 miles across the state, providing 350 hours of education to more than 8,000 attendees. The Practice Opportunity Fair was initiated in 2002 to allow dentists, primarily from rural communities, to come to the COD and set up a display about their practice and community in order to meet and recruit students to join their practices. About 300 dentists, community recruiters, and office staff members have taken the opportunity to participate in this annual event.

Teledentistry grand rounds are another support mechanism intended to reduce the feeling of isolation in rural dental practices, which are often located far away from dental specialists. The grand rounds program invites rural practitioners to present patients with complex dental and medical needs to engage in real-time two-way multimedia discussions with specialists at the COD. The practitioners can present the patient, explain the situation, discuss medical complications, and transmit radiographs and intra-oral or extra-oral live video images to the faculty specialists and then engage in conversations about treatment options. Faculty routinely question the patients to gain further information during the session. The use of high-speed internet connections and high-resolution cam-

eras make this opportunity rich in educational as well as service value. Students and residents at the COD learn the process and can engage in the question-and-answer sessions by attending these presentations in a COD lecture hall, where the session is viewed on a large screen.

Preceptor training is another important support mechanism that strengthens the relationship between COD faculty, students, and rural (as well as urban) preceptors. At annual preceptor training conferences, preceptors are invited to the COD to participate in calibration exercises and continuing education, as well as discussions with faculty and students to enhance the externship experiences in their individual offices.

OUTCOMES

The outcomes of the strategic initiatives designed to strengthen the rural dental workforce in Nebraska have been encouraging. The number of dentists is less of a problem than the distribution. In fact, Nebraska has a dentist-to-population ratio that is slightly above the U.S. average. In 2008 there was one dentist (active private practitioner) for every 1,800 residents in Nebraska, while the overall figure for the United States was one dentist for every 1,814 people (ADA 2010). That source also reported 233 new active private practitioners (those who graduated from dental school within the past 10 years), or 24% of the Nebraska dental workforce. Nationally, the new active private practitioners made up 20% of the total workforce at that time.

The number and location of state designated general dentistry shortage areas in Nebraska (counties) in 2012 as shown in Figure 1 has remained virtually unchanged since 1998, but given the sparse and declining population in many rural areas during that time period the lack of change could be considered positive. Data from a UNMC College of Dentistry study comparing graduates from 1989–98 with those of 1999–2008 found a significant increase (64 versus 99, a 55% increase) in the number of graduates practicing in rural communities in the 1999–2008 period (McFarland et al. 2010).

CONCLUSIONS

The UNMC College of Dentistry has engaged in efforts to strengthen the oral health workforce in the Great Plains through a strategy of focused rural recruitment, providing rural educational opportunities to students both as part of their regular curriculum and extracurricular professional development, and support for dentists who choose to
practice in rural locations. Since the distribution of dental practice locations is driven primarily by population and per capita income of a geographic area, policymakers can strive only to create an environment that attracts dentists to areas that best serve the public good. Educational institutions such as the UNMC College of Dentistry can assist by developing programs similar to those described in this article. Although a primary goal of the College of Dentistry’s rural focus on education and service is to maintain and enhance the oral health of all Nebraskans and citizens of other Great Plains states, the economic and overall benefits of good health and local healthcare providers in rural communities can only enrich and enhance the quality of life throughout the Great Plains.

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REFERENCES


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