STRATEGIES FOR RECRUITMENT AND RETENTION OF SECONDARY TEACHERS IN CENTRAL REGION RURAL SCHOOLS

Prepared by

Andrea Beesley
Kim Atwill
Pamela Blair
Zoe Barley

Mid-continent Research for Education and Learning
4601 DTC Blvd., Suite 500
Denver, CO 80237
Phone: 303-337-0990
Fax: 303-337-3005
www.mcrel.org

April 2008

This project was conducted for the Institute of Education Sciences (IES) under Contract ED-06-CO-0023 by Regional Education Laboratory Central administered by Mid-continent Research for Education and Learning. The content of the publication does not necessarily reflect the views or policies of IES or the U.S. Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement of the U.S. Government.

TABLE OF CONTENTS

SUMMARY

Recruiting and retaining teachers is a nationwide issue for schools in all locales. For rural schools, however, lower salaries, small school sizes, and geographic isolation can make it even more difficult to recruit and retain a qualified teaching staff. This study sought to quantify and characterize differences in recruiting teachers between rural and non-rural high schools in the Central Region, as well as identify differences in teacher recruiting and retention between rural secondary schools that were "successful" and "unsuccessful," as evidenced from their responses to 12 survey items found in the 2003-2004 Schools and Staffing Survey (SASS) data. Responses to the SASS items addressing recruiting and retention strategies largely did not differentiate between successful and unsuccessful high schools, however. To augment these findings with descriptions of the experiences of successful rural high schools, researchers also interviewed seven principals identified as successful by their state agencies. The interviewed principals identified other strategies for recruiting and retaining secondary teachers, such as a focus on recruiting rural residents.

The No Child Left Behind Act's (NCLB) *highly qualified* teacher provision requires that teachers hold a bachelor's degree, full state certification or licensure, and demonstrate a thorough understanding of every subject they teach. In small rural schools, however, it is common for a single teacher to be responsible for a broad discipline and therefore required to teach multiple subjects, regardless of certification (e.g., a science teacher may teach physics, chemistry, and biology but may only be certified in one of these subjects). What this means in terms of NCLB's increased qualification requirements, then, is that the multi-subject teaching positions common to small rural schools demand more teacher training than typical single-subject positions, effectively creating disincentives to teach in small rural schools. This, in turn, may make recruitment and retention more challenging for rural schools and districts throughout the nation (Reeves, 2003)[1], and rural districts in the Central Region are no exception.

Although national data show that 19 percent of students attend rural schools, more than one fourth (26.6%) of the school population in the Central Region is educated in rural schools (Johnson & Strange, 2005).[2] Further, 50 to 75 percent of Central Region schools are located in rural locales. In fact, the percentage of public schools in rural areas for five of the seven states in the region is among the top eleven highest in the nation: South Dakota (1st, 78%), North Dakota (3rd, 72%), Nebraska (6th, 60%), Wyoming (9th, 53%), and Kansas (11th, 50%; Johnson & Strange, 2005).

For this study, REL Central analyzed data from the 2003-2004 Schools and Staffing Survey (SASS) and interviewed principals from high and combined (K-12, 6-12) schools that have been successful

[1] In this policy brief, Reeves synthesizes data from various national and statewide surveys (e.g., NCES, AASA, North Carolina Public Schools) to document the challenges facing rural educators under NCLB.

[2] Johnson and Strange reanalyzed data from the National Center for Educational Statistics and the U.S. Census Bureau. We used this source to obtain state level data for the Central Region states.

in recruiting and retaining teachers. The project included three phases: (1) a descriptive analysis of the SASS data on recruiting in different locales in the Central Region; (2) categorizing rural high schools as "successful" or "unsuccessful" in recruiting and retaining teachers and then comparing the groups on recruiting and retention strategies included in the SASS data; (3) follow-up telephone interviews with principals from seven schools who reported being successful in rural teacher recruitment and retention. This study, then, describes ways in which rural high schools in the Central Region have attempted to recruit and retain teachers.

In the Central Region, high schools in small towns and in rural communities had more difficulty filling positions than those in or near larger cities. Schools in *small towns* reported having difficulty recruiting teachers for all subjects except for music, and the two *rural* locales (rural inside and rural outside Core Based Statistical Area) together reported recruiting difficulties in all subjects except vocational/technical education and special education. Also, in the two *rural* locales, smaller schools had more recruiting difficulty than larger schools, with small isolated schools (fewer than 200 students) reporting the greatest recruiting difficulties. In contrast, for schools in *large* or *mid-size cities*, recruiting difficulties were found primarily in special education, while schools in *urban fringe* areas and *large towns* reported difficulties with English/language arts. In these locales, the percentage of schools who reported recruiting problems was still small, at 13.2 percent.

Utilizing the SASS database, districts in the Central Region with rural high schools were identified and divided into two groups: those that were *successful* versus *unsuccessful* in recruiting and retaining qualified teachers. Comparing the strategies used and benefits offered by the two groups revealed that the rural districts in this sample were seldom using any of the strategies expressed in the SASS (for example, signing bonuses, relocation assistance, finder's fees, subsidized housing, transportation, or meals). When they were, the only difference between the two groups was that the *unsuccessful* group was using one targeted incentive (signing bonuses) more than the *successful* group. Given these results, the interviews with the principals became a valuable source of detail and insight.

The seven interviewed principals reported successfully filling vacancies in subjects across all high school subject areas, despite not using many of the strategies that appeared in the SASS data. Although several reported using other SASS strategies, such as tuition reimbursement or generous health and retirement benefits, they also attributed their success largely to approaches that were not specifically addressed in the SASS School District Questionnaire.

The most common recruiting strategies reported by the principals who were successful in recruiting and retaining teachers were hiring graduates or other people from the general geographic area who would be comfortable in the rural environment. Several principals emphasized that teachers' longstanding community ties encouraged teacher retention as well. They also promoted to applicants the specific amenities of their rural schools and communities, such as small class sizes, few discipline problems, a relatively convenient location, or financial benefits. The five principals who considered their location to be isolated were nevertheless successful in recruiting because they believed that they had found people who were comfortable with living in an isolated rural setting.

Taken together, the data analysis and interview findings suggest that small towns and rural areas in the Central Region have in fact had relatively more difficulty in recruiting teachers than have larger communities, underscoring that rural principals and district administrators are in need of strategies for teacher recruitment and retention. The approaches reported by the successful principals interviewed for this study were generally in line with those found in previous research (*grow-your-own, targeted incentives,* and *federal funding opportunities*), yet rural principals' particular implementation of the strategies to support the approaches may not have been adequately captured in the SASS data. It may be therefore that the existing rural-specific challenges in teacher recruitment and retention are most successfully addressed with rural-specific solutions.

OVERVIEW

WHY THIS STUDY?

One of the underlying tenets of *No Child Left Behind Act* (NCLB; 2002) is that students learn more effectively and efficiently in classrooms taught by highly qualified teachers. This increased focus on teacher quality has emphasized the need for effective teacher recruitment and retention, both nationally and regionally. In successful *recruitment*, certified teachers accept teaching positions; in successful *retention*, teachers not only stay in the profession but remain at one location for an extended period of time. Teacher recruiting and retention seem to be related; analyses of the Schools and Staffing Survey[3] (SASS) have consistently shown a high correlation between difficulties with recruiting and with retention, meaning that schools reporting recruiting difficulties are nearly twice as likely to have above-average turnover rates as well (Ingersoll, 2001;[4] Luekens, Lyter, & Fox, 2004;[5] Strizek, Pittsonberger, Riordan, Lyter, & Orlofsky, 2006).[6]

RECRUITING AND RETAINING FACULTY PRESENTS UNIQUE CHALLENGES TO RURAL HIGH SCHOOLS

Although many schools have been struggling to meet the highly qualified teacher component of NCLB, the need to attract and retain highly qualified teachers presents unique challenges to rural

---

[3] The Schools and Staffing Surveys (SASS), including the Teacher Follow-up Surveys (TFS), are the largest and most comprehensive data sets available on the staffing, occupational, and organizational characteristics of schools. The Census Bureau collects the SASS and TFS data for NCES from random samples stratified by state sector and school level. The U.S. Census response rate has been relatively high: about 85% for teachers and 95% for administrators. The NCES SASS survey emphasizes teacher demand and shortage, teacher and administrator characteristics, school programs, and general conditions in schools. SASS also collects data on many other topics, including principals' and teachers' perceptions of school climate and problems in their schools; teacher compensation; district hiring practices and basic characteristics of the student population.

[4] In this study, Ingersoll reanalyzed the data from the 1990-1991 SASS as well as the 1991-1992 TFS. Smith & Ingersoll (2004) updated the earlier findings. This report was reviewed but no new differences were found relevant to the current study.

[5] Luekens et al. reanalyzed results from the 1999-2000 SASS and the 2000-2001 TFS data with a focus on mobility and attrition.

[6] The intent of this report is to present the 2003-2004 SASS data through 47 in-text tables and 47 appendix tables.

districts in particular (Elfers & Plecki, 2006).[7] Although national-level data revealed that rural schools had a lower teacher turnover rate (14.0%) than urban (15.2%) and suburban (15.6%) schools (Ingersoll, 2001; Luekens et al., 2004) and a lower percentage of teaching vacancies (66.6% compared to 71.9% for all public schools), when these vacancies do occur they impact the school more than they do in larger schools. Rural high schools average nearly half as many full-time teachers per school as compared to schools in larger, less isolated communities (27.6 teachers, as compared to 47.7 for urban fringe and 53.8 for large/mid-size city).[8] If a math teacher leaves, for example, there may be no math department until another teacher is hired.

Rural schools may experience many of the same challenges as urban schools, such as high concentrations of children in poverty, but often face additional obstacles to teacher recruitment and retention. These include lower salaries, small school population, and remote locations, which can serve to further hinder the recruitment and retention of highly qualified teachers (Boe, Bobbitt, Cook, Whitener, & Weber, 1997;[9] Ingersoll & Rossi, 1995).[10] In fact, in acknowledgement that the standard teacher-quality reforms enacted by NCLB were not easily achieved in rural schools, a 2004 amendment to NCLB gave rural teachers who are highly qualified in at least one subject area three additional years to become highly qualified in the other subjects they teach (U.S. Department of Education, 2004),[11]

Although teacher recruitment and retention have always been a challenge, NCLB's *highly qualified*[12] teacher mandate has increased qualification requirements so that multi-subject teaching positions common to small rural schools demand more teacher training than typical single-subject positions, effectively creating disincentives to teach in small rural schools. A theoretical argument has been made that this, in turn, has made recruitment and retention more challenging for rural schools and districts throughout the nation (Reeves, 2003).[13]

In small rural schools, it is common for a single teacher to be responsible for a broad discipline in its entirety and therefore required to teach multiple subjects, regardless of certification (e.g., a science teacher may teach physics, chemistry, and biology but may only be certified in one of these

---

[7] Elfers and Plecki used the Washington state personnel database (S-275) to compare teachers' placements at two time points: 2000-01 and 2004-05. These results were overlaid onto the NCES Common Core locale codes to focus on rural and small rural schools specifically.

[8] Information summarized from SASS 2003-04, $p < .00$ for both comparisons. Data accessible through http://nces.ed.gov/dasolv2/tables/showPrintTable.asp

[9] In this study, Boe et al. reanalyzed the data from the 1990-1991 Schools and Staffing Survey as well as the 1991-1992 Teacher Follow-up Survey collected by the U.S. Census Bureau for the National Center for Education Statistics. The response rate has been relatively high: about 85% for teachers and 95% for administrators.

[10] This analysis of the 1990-1991 Schools and Staffing Survey and 1991-1992 Teacher Follow-up Survey is a summary report from the National Center for Education Statistics and as such has had careful review.

[11] The year set for meeting this requirement was 2005-2006 (US Department of Education, 2002).

[12] "Highly qualified" means that teachers have a bachelor's degree, full state certification or licensure, and can demonstrate a thorough understanding of every subject they teach.

[13] In this policy brief, Reeves synthesizes data from various national and statewide surveys (e.g., NCES, AASA, North Carolina Public Schools) to document the challenges facing rural educators under NCLB.

subjects). Barrow & Burchett (2000)[14] surveyed Missouri science teachers and found that 49% had more than four course preparations, and that 29.9% were not certified in at least one of the courses they were teaching. Given the multiple subject areas often required of rural teachers, finding teacher candidates that are highly qualified in each subject to be taught is, and will continue to be, a challenge. As a case in point, a recent survey of all 331 Minnesota school districts found that, compared to non-rural teachers, nearly twice as many rural teachers were teaching out of their field of licensure or under a waiver (Lazarus, 2003).[15] Similarly, Ingersoll (2003) studied the teacher quality issue from the perspective of teachers that were teaching out-of-field—teachers assigned to teach subjects for which they were not certified. This study reported on a decade of work on out-of–field teaching utilizing four cycles of the SASS data.[16] Despite national and local reforms to reduce out-of-field teaching, Ingersoll found a slight increase in its occurrence. He pointed out that securing a qualified teaching staff was more difficult for rural districts with smaller faculties where teaching multiple subjects is common.

The difficulty of recruiting and retaining teachers is particularly acute for rural schools that are also small. At the national level, Ingersoll & Rossi (1995; see also Boe et al., 1997) found that school size was a significant factor in retention; in fact, schools with fewer than 300 students had higher turnover rates than those with 300 students or more. The most recent SASS survey results also substantiate the negative relationship between school size and teacher recruitment, as a higher percentage of small rural schools (less than 200 students) reported that filling teaching vacancies was either "very difficult" or they were "not able to fill," compared to the percentage reported by all public schools (Strizek et. al., 2006).[17]

THE CENTRAL REGION IS INTENSELY RURAL

The Central Region is home to a large percentage of the nation's rural students. Although national data shows that 19% of U.S. students attend rural schools, more than one fourth (26.6%) of the school population in the Central Region is educated in rural schools (Johnson & Strange, 2005).[18] Further, one-half to three-fourths of Central Region schools are located in rural locales. The percentage of public schools in rural areas for five of the seven states in the region is among the top eleven highest in the nation: South Dakota (1st, 78%), North Dakota (3rd, 72%), Nebraska (6th, 60%), Wyoming (9th, 53%), and Kansas (11th, 50%; Johnson & Strange, 2005).

---

[14] Surveyed 252 secondary science teachers with 58.3% return rate, (N = 147).

[15] Lazarus obtained data directly from the Minnesota Department of Children, Families and Learning. All schools, teachers, and students throughout the state were included.

[16] Ingersoll used data weighted to compensate for sampling differences to obtain unbiased estimates of population parameters.

[17] The 10 areas for which small schools find it difficult to recruit are: English language arts, social studies, computer science, mathematics, physical sciences, English for language learners, foreign languages, music or art, and vocational education.

[18] Johnson and Strange reanalyzed data from the National Center for Educational Statistics and the U.S. Census Bureau. We used this source to obtain state level data for the Central Region states.

The impact of school size on recruitment and retention is especially relevant to the Central Region, where both *rural* and *small* schools are common. In fact, the Central Region includes the two states with the highest percentage of public school students attending *small rural* schools: North Dakota (41.3%) and South Dakota (39.1%; Johnson & Strange, 2005).

Although the recruitment and retention challenges that affect the nation also affect the Central Region, there are no studies of teacher recruitment and retention targeted to the region's high percentage of rural settings to confirm whether the challenges identified in national trends exist at the regional or local level. National reports do not provide disaggregated teacher recruitment or retention rates at local levels, nor do they provide detailed information regarding successful strategies for recruiting and retaining rural teachers (e.g., Ingersoll, 2001; Luekens et al., 2004; Strizek et al., 2006).

In response, this study investigates recruitment and retention approaches among rural high schools in the Central Region. First, it provides an analysis of teacher recruitment and retention rates in the Central Region from 2003-2004 SASS data, disaggregated by locale (e.g., large/mid-size city, urban fringe/large town, small town, rural, and isolated rural), school size, and subject area. The study then identifies groups of rural high schools in the Central Region that, according to the SASS data, were either successful or unsuccessful in 2003-2004 in hiring teachers for vacant positions, and then compares the two groups on the recruiting strategies and benefits addressed in the SASS District Questionnaire (for survey items analyzed, see Appendix C). Finally, this study describes a sample of Central Region rural principals' perceptions about their success in teacher recruitment and retention.

This report is intended for rural high school principals and district administrators. This project was designed in response to requests from chief state school officers and rural district superintendents in the Central Region who have asked for guidance in recruiting and retaining secondary teachers for rural schools, as well as insight into how to satisfy the *highly qualified* requirements under NCLB. This project also addresses the critical issues and priority support needs expressed by Central Region principals and curriculum coordinators (The Gallup Organization, 2007).[19]

RESEARCH QUESTION

This project addresses the following question:

> What practices or strategies are used for recruitment and retention of secondary teachers among rural high schools in the Central Region with higher levels of recruitment and retention than their less successful counterparts?

[19] Under contract through REL Central, The Gallup Organization conducted phone interviews of 358 principals and curriculum coordinators from the Central regions. Of the rural administrators contacted, 49% rated "meeting the highly qualified teacher requirement" as a critical issue, and 47% rated this as a priority area for support.

STRATEGIES FOR RECRUITING AND RETAINING TEACHERS IN RURAL AREAS

Other researchers have previously investigated rural teacher recruitment and retention; the present study was conducted within the context of this prior work. However, there is limited empirical research on what strategies are best for recruiting and retaining teachers, especially research that is rural-specific (Allen, 2005;[20] Arnold, Newman, Gaddy & Dean, 2005;[21] Hammer, Hughes, McClure, Reeves, & Salgado, 2005[22]). Hare and Nathan (1999)[23] conducted one of the few empirical studies investigating issues of recruitment and retention that included data on the success of strategies utilized. They surveyed all 1,583 principals in Minnesota's public school system. Principals at small rural schools utilized three common strategies to fill high needs positions: alternative licensure, training paraprofessionals, and placement above entry on salary scale. This survey also included a question asking the principals to rate the success potential for several additional strategies. The principals of small rural schools agreed or strongly agreed to the potential benefits of scholarships and/or loan forgiveness for students willing to teach in high needs areas, funding for mentorship programs, and early recruitment programs.

More recently, the GAO (2004)[24] surveyed rural and non-rural superintendents about strategies used in recruiting and retaining highly qualified teachers. While there were few differences on the strategies that the superintendents identified as useful, their degree of use did vary significantly. Significantly fewer superintendents from small rural districts (28%) established partnerships with higher education institutions, as compared to those in larger rural districts (48%); further, fewer superintendents from small rural districts encouraged paraprofessionals to complete the coursework required to achieve certification (45% for small rural and 69% for large rural). Several of the small rural school superintendents remarked in follow-up interviews that the travel distances reduced the potential efficacy of these strategies.

Combining the results of Hare and Nathan (1999), the GAO (2004), and extant research reviews generates a focused list of promising strategies for recruiting and retaining highly qualified teachers

---

[20] Funded by the US Department of Education, Allen searched educational databases for research investigating teacher recruitment and retention. Articles were reviewed and included only if they met quality-of-research criteria.

[21] Arnold et al. searched ERIC and PsycINFO databases for research investigating K-12 rural education between 1991 and 2003. Articles were reviewed according to quality-of-research criteria. No experimental studies were located.

[22] Staff at Edvantia, Inc. and the National Association of State Boards of Education reviewed both rural and non-rural specific research pertaining to recruiting and retaining highly qualified teachers and included only those studies that satisfied highly quality criteria set by the research team.

[23] Although the response rate was not optimal (44.9% total, 48.7% small rural), the research is extremely limited on this topic and this study is therefore included with the caveat that the sample may not be representative. Hare & Heap (2001) conducted a survey of recruitment and retention strategies and perceived success among district superintendents in a seven-state region with a higher response rate (69%). Results were similar to those reported in Hare & Nathan, but are not included in this report because few results were disaggregated by locale.

[24] The GAO (2004) conducted a stratified survey of rural and non-rural school district administrators (*N* = 1215, response rate 85%).

with potential for success in the Central Region. These strategies are aggregated into the following approaches.

GROW-YOUR-OWN

This approach refers to training local people who are most likely to return to the area and fill a need. Some examples of this approach include: a) providing additional training to paraprofessionals;[25] b) retraining service-oriented people (e.g., military and Peace Corps[26]); and c) partnering with teacher preparation programs (Crews, 2002) and institutions of higher education to provide alternative access to coursework.[27] In 2000, Clewell, Darke, Davis-Googe, Forcier, and Manes created a summary report for the U.S. DOE Planning and Evaluation Service of various recruitment and retention strategies utilized in school districts throughout the U.S.[28] Results from the four programs with sufficient evaluative information reflect what other empirical research has consistently found: there is a strong positive correlation between location of current teaching position and location of hometown, high school or college (Boyd, Lankford, Loeb, & Wyckoff , 2005[29]; Boylan, et al., 1993[30]; Davis, 2002[31]; Monk, 2007[32]; Yeager, Marshall, & Madsen, 2003[33]).

---

[25] Dewitt Wallace-Reader's Digest Fund Pathways to Teaching Careers Program provides paraprofessionals, emergency certified and returning Peace Corps volunteers with support to complete the requirements of teaching certification in the hope that these individuals will work in rural schools and/or teach hard-to-staff subjects (Armstrong Atlantic State University, 1998). The project has successfully recruited above average numbers of minority participants into the education field. There is no data is as to location and/ or subject area. South Carolina Program for the Recruitment and Retention of Minority Teachers recruited and supported nontraditional students, such as paraprofessionals working in rural schools (Southeast Center for Teaching Quality, 2002). Of the 34 paraprofessionals who received forgivable loans between 1991 and 1996, 25 completed their teaching degrees and 21 began teaching. In 1997, 16 of the original 34 were teaching in rural areas, but none were teaching in critical subject areas.

[26] Troops to Teachers program encouraged and supported members of the armed services to pursue education careers, hoping to fill critical areas of geographic and subject area need. From 1994 through 1999, 3,355 former military personnel entered into work as teachers or aides. The program has been successful in recruiting a high percentage of males and minorities into teaching (90% and 29% respectively). Many of the program participants also teach in critical subject areas. There is no data as to location and/or retention.

[27] Sebastian, Calmes, and Mayhew (1997) surveyed in-service rural educators involved in an "integrated" (online mixed with face-to-face) instructional program through the University of Utah. Response rate is low (59%) but is one of the few examples of these kinds of programs.

[28] The Clewell, Darke, Davis-Googe, Forcier, & Manes (2000) report included citations for each of the evaluations that follow. Many of these are unpublished evaluations and, hence, are difficult to access.

[29] Boyd et al. calculated the distance from hometown or college to current teaching position for 88.1% of the new teachers hired in the all new teachers hired in New York State from 1999 through 2002, *N* = 40,000.

[30] Boylan et al. surveyed 1100 long-term stayers to determine their reasons for accepting and remaining in their rural teaching positions, with a return rate of 95%.

[31] Davis surveyed 147 certified teachers working in rural schools about their reasons for accepting and remaining in their position, with a return rate of 86% (*N* =126).

[32] Monk draws on the most recent (2003-2004) SASS data to evaluate the role of social and economic factors in recruiting and retaining quality teachers in rural areas.

These studies also reveal that those who enjoyed their rural lifestyle as children and young adults value the benefits smaller rural schools and communities offer: strong student-teacher relationships, fewer discipline problems, increased individual instruction, increased parental involvement, and lack of crime. In the current project, we address the grow-your-own approach through responses to SASS School District Questionnaire items 14b (student loan forgiveness) and 28e (tuition reimbursement), because they are resources that rural administrators can utilize to support a *grow- your-own* approach. The principal interviews are intended to capture further insight into rural districts' use strategies to address a *grow-your-own* approach.

TARGETED INCENTIVES

This approach includes overlapping strategies: salary increases (for support, see Ingersoll, 2001; for opposition, see Holloway, 2002) and scholarship programs,[34] as well as location-specific incentives (affordable housing, transportation, access to professional development). Critical to the understanding of targeted incentives, particularly increased salary, is that while research has consistently shown that salary increases prolong teachers' tenure in the field, adequate salary is necessary but not sufficient for teacher retention.[35] Evaluating the teacher incentives program utilized in two school districts, Heneman (1998) and Heneman and Milanowski (1999) found that while monetary incentives were valued by teachers, feeling empowered that they could make a difference in children's lives was a more powerful motivator. In the current project, responses to SASS School District Questionnaire items 14a, c-d (signing bonuses, relocation assistance, and finder's fee) and 28a-d, g, and h (medical, dental, and life insurance; retirement plan; and subsidized housing, meals, and transportation) as well as the principal interviews are intended to capture insight into rural districts' use of *targeted incentive* approaches.

MAXIMIZING FEDERAL FUNDING OPPORTUNITIES

This approach supports the two previously mentioned approaches by using additional funding available to rural schools to address the provisions of NCLB. For example, some small rural schools reported using Title I funds to pay for teacher professional development (GAO, 2004).

---

[33] Yeager et al. contacted 91.0% of the 1996-2001 graduates from the teaching program at a rural Nebraska college (*N* = 282).

[34] For example, Mississippi, Georgia, and South Dakota are combating teacher shortages through incentives. See http://www.mde.k12.ms.us/mtc/teach.htm, http://www.education.armstrong.edu/pathways/Home.htm, and http://www.state.sd.us/dakotacorps/default.html for ideas.

[35] Harvard economists Murnane and Olsen (1989; 1990; Murnane, 1991) devised an economic model for predicting teachers' tenure. The results of these studies concluded that an increase of up to $3400 (using 1987 dollars) could lengthen teachers' median stay by up to four years. However, their results also found that the effects of higher salaries vary by teaching position (physics and chemistry teachers leave sooner due to higher paid non-teaching occupational opportunities) and by year (the possible result of educational funding changes).

Title II funds[36] have been used to increase the number of highly qualified teachers in rural districts as well. In addition, some rural schools have used Title VIII[37] funds to cover tuition costs for paraprofessionals seeking teacher certification. One more recently approved source of supplemental funding for rural schools was implemented in 2004, the Rural Education Achievement Program (REAP).[38] The rural administrators surveyed by the GAO reported using REAP funds to help teachers and paraprofessionals meet the highly qualified teacher provision of NCLB, and also to recruit highly qualified teachers (an additional source of incentive funds discussed above). The final federal program was created in conjunction with the Telecommunications Act of 1996, the E-Rate program.[39] Rural districts reported using E-Rate funds to support the creation of distance learning opportunities for teachers and students—teachers to meet the requirements of the *highly qualified* teacher component of NCLB and students to be provided advanced high school coursework options. In the current project, responses to SASS School District Questionnaire items 14b (student loan forgiveness) and 28e (tuition reimbursement) as well as the principal interviews are intended to capture insight into rural districts' use of approaches that maximize *federal funding opportunities*.

In addition to these three approaches, researchers have also recently studied comprehensive and on-going teacher induction programs (Harris, Holdman, Clark, & Harris, 2005;[40] Smith & Ingersoll, 2004)[41] and their relationship to teacher retention. Typical induction programs pair a new teacher with an experienced mentor, and include extended planning time, mentor coaching, and social activities to establish and enhance new employees' connectedness. The studies of induction programs conducted in non-rural schools have uniformly reported induction as successful in retaining new teachers when the mentor teaches the same subject and is consistent (Smith & Ingersoll, 2004). A recent study evaluating the success of an induction program introduced to both rural and non-rural schools reported similar results, even though more of the rural teachers moved to a different district after the first year (Harris, Holdman, Clark, & Harris, 2005). The researchers hypothesized that this increase was a result of teacher-mentor mismatch—rural first-year teachers were more likely to be mentored by teachers from different subject areas or

---

[36] Title II, Part A, of the Elementary and Secondary Education Act, Teacher and Principal Training and Recruiting Funds, provides funds to implement strategies for improving teacher quality and increasing the number of highly qualified teachers. In 2004, $3 billion was appropriated under this program.

[37] Title VIII of the Elementary and Secondary Education Act, as know as the Impact Aid program, provides funds to districts with high percentages of American Indian students and students from military bases or low-income housing developments. These funds can be used for a variety of purposes including, staff salaries, textbooks, after-school programs. In 2004, $1.2 billion was appropriated under this program.

[38] REAP (including the two rural-specific programs, *Small Rural School Grants* and *Rural and Low-Income School Grant*) allows rural school districts to use funds awarded under a variety of existing federal programs, such as Title V *Safe and Drug-free Schools*, for activities typically funded under other federal programs, such as Title I *Improving the Academic Achievement of the Disadvantaged*. This allows small rural schools to effectively 'pool' their federal resources.

[39] The E-Rate program provides substantial discounts on telecommunications services, which has helped schools to obtain Internet access.

[40] Researchers followed 104 new teachers employed in North Dakota and involved with the Project Launch induction program.

[41] In this study, Smith and Ingersoll reanalyzed the data from the 1999-2000 SASS Survey.

grade levels. Results from the 2003-2004 SASS reveal that compared to non-rural teachers, a smaller percentage of rural teachers reported involvement in an induction program during their first year of teaching (National Center for Educational Statistics, 2008). The value of induction programs to support new teachers' transitions into the ethos of the rural education system and community has yet to be documented. In the current project, the principal interviews are intended to capture insight into rural districts' use of *teacher induction* approaches.

METHODS

This study is descriptive in nature. Through the analysis of SASS data, supplemented with seven interviews of principals from schools who have been successful in recruiting and retaining teachers, the study describes ways in which rural high schools in the Central Region have attempted to recruit and retain teachers. The project included the following phases: (1) a descriptive analysis of the SASS data on recruiting in different locales in the Central Region; (2) categorizing rural high schools into two groups based on their success or lack of success in recruiting and retaining teachers and then comparing the groups on indicators of recruiting strategies and benefits included in the SASS data; (3) follow-up telephone interviews with principals from seven schools who reported being successful in rural teacher recruitment and retention. More detailed information about the methods and data analysis appears in Appendix B.

BOX 1

Locale Codes Used in this Study

1. Large City
2. Mid-size City
3. Urban Fringe of a Large City
4. Urban Fringe of a Mid-size City -
5. Large Town
6. Small Town
7. Rural, outside CBSA (Core-Based Statistical Area, an area containing a substantial population core, together with adjacent communities having a high degree of economic and social integration with that core)
8. Rural, inside CBSA

PHASE ONE

Defining the needs. To clarify the issues related to recruiting and retaining teachers in the Central Region, a descriptive analysis was conducted using the 2003-2004 SASS School Questionnaire data on ease of filling teaching vacancies (Item 38b). The comparisons were between means calculated for all public high or combined (K-12, 6-12) schools in the Central Region and these same Central Region high schools disaggregated by locale and by school size. This data has not been presented elsewhere at the regional or national level.

Aligning the SASS items. As presented in the review of existing research, strategies for recruiting and retaining teachers can be categorized into three approaches. While not developed for this purpose, some SASS items do reflect the strategies that form the underpinnings of these approaches. Responses to SASS School District Questionnaire items 14a, c-d (signing bonuses, relocation assistance, and finder's fee) and 28a-d, g, and h (medical, dental, and life insurance; retirement plan; and subsidized housing, meals, and transportation) reflect strategies that administrators utilize to support a *targeted incentive* approach. Responses to SASS School District Questionnaire items 14b (student loan forgiveness) and 28e (tuition reimbursement) can be categorized as

strategies administrators utilize to support either a *grow- your-own* and/or *maximize federal funding opportunities* approach.[42] For the current study, these items were placed in both categories for analytical purposes.

PHASE TWO

Defining successful and unsuccessful districts. In order to form the groups of high schools that had either been successful or unsuccessful with teacher recruiting and retention, we first obtained the restricted data set of the 2003-2004 Schools and Staffing Survey. From the complete data set, teachers in rural (locale codes 7 and 8) high and combined schools in Central Region states were selected from the Teacher Questionnaire, and their survey data was matched to their schools in the School Questionnaire. Schools that had reported teacher vacancies that year were identified. Those that were not able to fill the vacancy or reported that they had managed the vacancy by means other than hiring a teacher were placed in the unsuccessful group. All others were coded successful because they had been able to hire teachers to fill their vacancies.

To ensure that schools in both groups were employing highly qualified teachers, a variable from the Teacher Questionnaire was created for each teacher describing whether or not they held a certification for the subject(s) they were teaching (presumably *highly qualified).* Schools were then ranked within their groups according to their proportion of teachers certified in-area. The schools in the bottom quartile in both the successful and unsuccessful groups were eliminated from the study. By including only those schools in both groups that had some portion of qualified teachers, the comparison could focus primarily on teacher recruitment and retention of fully qualified teachers.[43]

Next, a variable was created to capture teacher retention for each school, based on the number of years the participating teachers had reported teaching there. The goal of the current study was to investigate the differences in a combination of recruiting and retention strategies in use between successful and unsuccessful schools. Previous research has consistently shown a high positive correlation between difficulties with recruiting and with retention (Ingersoll, 2001; Luekens et al., 2004; Strizek et al., 2006). Therefore, the current study sought to create two disparate groups: one with schools *successful* in both recruiting and retaining teachers, and one with schools *unsuccessful* in both recruiting and retaining teachers. In order to maximize the contrasts that could be found in the planned group comparisons, median splits were conducted such that the lower-retention schools were excluded from the successful recruiting group, and higher-retention schools were dropped from the unsuccessful recruiting group. This left schools ranking in the top 50 percent on retention in the successful group, and schools ranking in the bottom 50 percent on retention in the unsuccessful group. Therefore, the final two groups were: 1) successful recruitment AND

[42] For example, administrators commonly utilize federal REAP dollars to fund teacher certification coursework for aides satisfied with the school district.

[43] The 2003-2004 SASS Questionnaires were not specifically designed to capture data on *highly qualified* teachers as defined by NCLB. The methodology described herein was employed to allow the current study to capture data on recruiting and retaining fully certified teachers.

successful retention (275 teachers from 51 schools) and 2) unsuccessful recruitment AND unsuccessful retention (157 teachers from 29 schools).

Comparing successful and unsuccessful districts. The successful and unsuccessful school districts were compared on the SASS items that aligned with the three approaches to recruiting and retaining qualified teachers (see Appendix C for the full list of comparison items from the SASS). Chi-square tests of association were utilized to determine whether the two groups differed in using recruiting and retention strategies addressed in the SASS School District Questionnaire.

BOX 2
Districts from SASS data represented in analysis

	Successful districts	Unsuccessful districts
Colorado	4	1
Rural, outside CBSA	4	1
Rural, inside CBSA	0	0
Kansas	6	2
Rural, outside CBSA	4	2
Rural, inside CBSA	2	0
Missouri	2	2
Rural, outside CBSA	2	2
Rural, inside CBSA	0	0
Nebraska	10	4
Rural, outside CBSA	10	4
Rural, inside CBSA	0	0
North Dakota	9	5
Rural, outside CBSA	9	5
Rural, inside CBSA	0	0
South Dakota	12	4
Rural, outside CBSA	9	2
Rural, inside CBSA	3	2
Wyoming	4	5
Rural, outside CBSA	4	4
Rural, inside CBSA	0	1
Total	47	23
Rural, outside CBSA	42	20
Rural, inside CBSA	5	3

PHASE THREE

Interviews with rural high school principals were then conducted to obtain descriptive information from schools that have been successful at recruiting and retaining teachers. To identify high schools that have recently been successful in recruiting and retaining highly qualified teachers, the REL Central state liaisons were asked to identify the sources at the state education agencies that would be the most familiar with rural teacher recruitment and retention in high schools in their state. These state-level administrators were contacted via e-mail and/or phone and were asked to nominate five rural high schools each would consider as successful in recruiting and retaining teachers. These lists were obtained in six of the seven states, and researchers contacted the principals on the list in random order (i.e., the first name on the list was not always called first). As soon as one principal from a state completed the phone interview, principals from the next state were contacted. In the seventh state, online database information from the state education agency was used to identify a list of seven rural high schools with high teacher retention. Once this list was compiled, the principals of the schools were contacted by telephone in the same way as in the other states. The seven interviews were conducted in November and December, 2007.

The principals were asked the same questions in each interview regarding 1) their use of the strategies and benefits addressed in the SASS questionnaires (see Appendix C for SASS questions analyzed for this study), 2) their own recruiting strategies, 3) their beliefs about factors affecting secondary teacher retention in their district, and 4) their perceptions of reasons for success (see Appendix D for interview protocol). Based on information in the review of literature, the

principals were also asked whether their school offered a new teacher induction program and whether they considered themselves to be in an isolated location.

FINDINGS

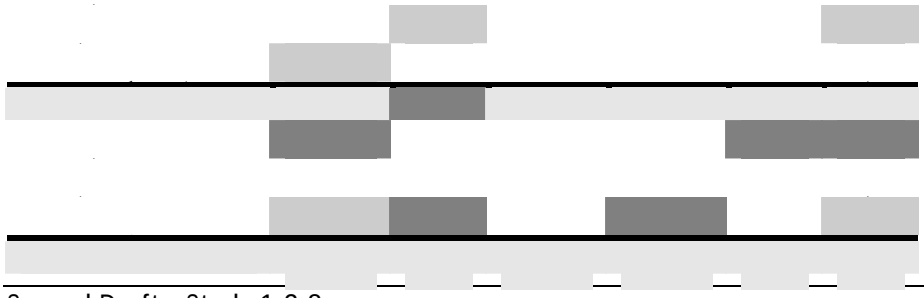
The findings are presented for the phases described in the methods section. They begin with a descriptive analysis of SASS data on recruiting in different locales in the Central Region, then describe the results of dividing the schools into successful and unsuccessful groups and comparing them on strategies and benefits, and then present the outcomes of the follow-up principal interviews.

PHASE ONE

The comparisons between all high schools in the Central Region and the disaggregated locales (see Box 3) demonstrate that in the Central Region, high schools in small towns and in rural communities had more difficulty filling positions than those in or near larger cities. Table 1 (see Appendix A) further shows that for the schools in large or mid-size cities, recruiting difficulties were found primarily in special education, while schools in urban fringe areas and large towns reported difficulties with English/language arts, although the percentage reporting recruiting problems was still small at 13.2%. However, schools in small towns reported having trouble with all subjects except for music, and the two rural locales together reported recruiting difficulties in all subjects except vocational/technical education and special education. Also, in the two rural locales, smaller schools had more recruiting difficulty than larger schools, with small isolated schools (fewer than 200 students, outside CBSA) reporting the greatest recruiting difficulties.

Box 3. Percent difference in reported difficulty filling vacancies in various fields disaggregated by locale and enrollment compared to mean for all Central Region high (and combined) schools.

School locale and enrollment	English/ language arts	Math	Physical sciences	Biology or life sciences	Social studies	Other
All public high	**11.4**	**32.6**	**37.8**	**23.9**	**6.1**	**33.1**



Note. Dark gray shaded values represent percent differences that were + 1 standard deviation above the Central Region mean (more difficult); light gray shaded values represent percent differences that were – 1 standard deviation below the Central Region mean (less difficult). * Percent differences not presented due to small sample size for this cell.

PHASE TWO

After the schools in the SASS data set were divided into groups of successful recruitment and retention versus unsuccessful recruitment and retention, an ANOVA was conducted on teacher retention to see if the median split had accomplished the goal of maximizing differences between the two groups. There was a significant difference in teacher retention, such that teachers in the successful group had a mean of 17.89 years at their schools, whereas teachers in the unsuccessful group had an average of 10.34 years at their schools, $F(1,430) = 65.85$, $p < .001$.

Chi-square tests of association were conducted on School District Questionnaire items 14a-d and on items 28a-h. There was a different pattern of response between successful and unsuccessful schools on Item 14a, signing bonuses. Contrary to expectation, significantly more unsuccessful locations reported giving signing bonuses, $X^2(1) = 9.85$, $p < .01$ (see Table 2, Appendix A). Responses were not significantly different for Items 14b (loan forgiveness) or 14c (relocation assistance), $X^2(1) = 0.00$, $p = .70$ and $X^2(1) = 0.12$, $p = .60$, respectively. For Item 14d (finder's fee), all respondents from both groups answered "no" to the item, so no chi-square result was produced (see Tables 3-5 in Appendix A for comparisons between the expected and actual counts). Responses to School District Questionnaire Items 28a-28h were not significantly different between the groups for any of the items, indicating that benefits offered were not related to schools' success in recruiting and retaining teachers as measured by these surveys (Tables 6-13 in Appendix A show that the expected and actual counts are nearly identical). Of the three approaches (grow-your-own, targeted incentives, and using federal funding opportunities) to recruiting and retaining highly qualified teachers synthesized from existing research,[44] results from the SASS items that conceptually aligned with the three approaches revealed that the rural school districts in this sample were seldom using any of these approaches. When they were, the only difference between the two groups was that the unsuccessful group was using one targeted incentive (signing bonuses) more than the successful group. Given these results, the interviews with the principals became a valuable source of detail and insight.

PHASE THREE

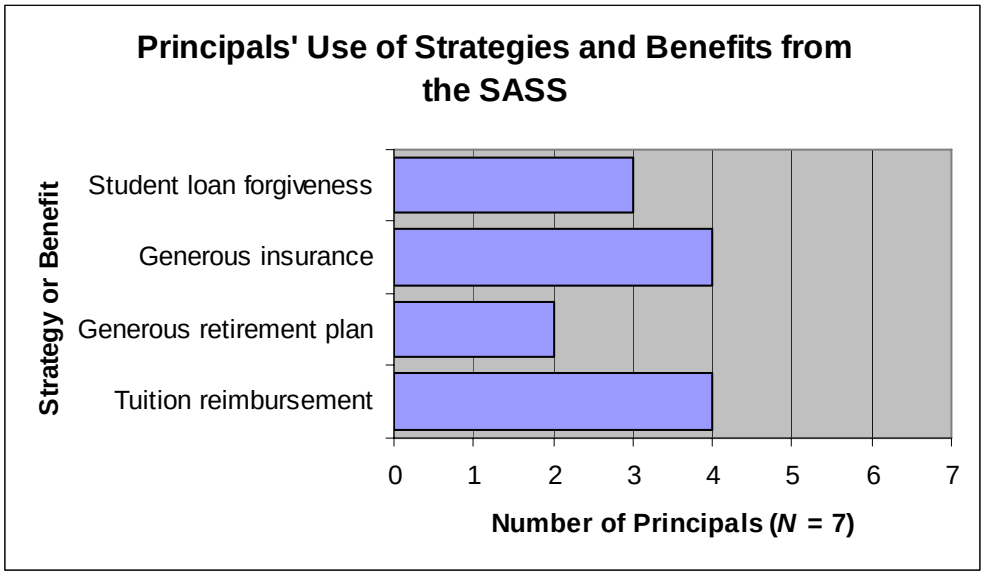
The number of high school teachers (some also taught middle school grades) at the seven schools whose principals were interviewed ranged from 10 to 33, with a mean of 23.3 ($SD = 7.8$). The

[44] Other research may exist that delineate alternate approaches not captured in these three synthesized approaches.

number of vacancies reported for the 2007-2008 school year ranged from zero to six. Two principals with one or no vacancies for 07-08 reported the number of vacancies over the past three years, which were three and four. The vacancies occurred in numerous subject areas: mathematics, computer technology, language arts/English, science, music/band, art, agriculture, counseling, social studies, and business. The principals reported a variety of causes for the vacancies; the most common were retirement (n = 4) and leaving for another position in the same school or district (n = 4). In this sample of schools successful in recruiting, all of the vacancies were filled, although three principals reported that mathematics and science vacancies were the most difficult to fill. Three of the seven schools had one teacher, a new hire for that year, who was not yet highly qualified in the subject they taught: music, art, and business.

Principals report limited use of common approaches. The research team asked the principals to report on whether they had used any of the recruiting strategies or benefits addressed in Items 14 and 28 of the SASS School District Questionnaire (see Appendix C). For insurance and retirement benefits, the principals were asked whether theirs were more generous than those of other schools.

Box 4



None of the principals reported utilizing six of the twelve strategies captured in the SASS surveys: 1) signing bonuses, 2) relocation assistance, 3) a finder's fee for new teacher referrals, or subsidies for 4) housing, 5) meals, or 6) transportation. The results for the remaining strategies and benefits appear in Box 4. With reference to the *grow-your-own* and *use of federal funding* approaches, all but one principal mentioned that teachers had access through federal funding to training at no cost to become highly qualified; four schools also offered tuition reimbursement for courses beyond those strictly necessary to become highly qualified. The three principals who mentioned student loan forgiveness said that it was offered through a Department of Education program because their school qualified as high-poverty. With reference to the *targeted incentives* approach, the four

principals reporting generous insurance benefits and three principals reporting generous retirement benefits said that their districts covered more of the costs of these benefits than did other districts in their state. Although few of the principals mentioned using half of the recruiting strategies addressed in the SASS School District Questionnaire, some principals were aware that other schools did use those techniques out of necessity. One principal said, "In my last school, they had signing bonuses and they paid for your tuition, up to $45 a credit hour....We don't have to do that here because we aren't that desperate yet."

Principals report unique strategies. Although several of the schools did use the strategies and offer the benefits addressed in the SASS School District Questionnaire, none of the principals perceived that their success in teacher recruiting and retention was related to any of these aforementioned strategies. In response to this, principals were then asked to describe their recruiting and retention strategies, and explain the other factors that they perceived were helpful to their success. Two over-riding themes appeared in the principals' open responses: targeting teachers from rural areas and promoting the school and community assets.

Recruiting teachers from rural areas. In response to open-ended questions, the principals described hiring practices focusing on developing and hiring teachers who are from rural areas, as they would be more likely to accept the job and then stay at the school. Specifically, six out of seven principals reported recruiting teachers who were from their surrounding community or a similar rural area, and thus would be comfortable in the rural school setting. Three of those six principals also mentioned hiring their own graduates, although only one said that he specifically recruited former students in cases where positions were hard to fill. One advertised locally for teacher candidates with the needed subject-area degree but no teaching certificate. He then hired the most promising applicants and used NCLB funding to offset the tuition expenses of attending a nearby university to complete coursework to obtain the necessary credential.

Recruiting by promoting school and community assets. All seven of the principals, responding to open-ended questions, mentioned telling recruits about the positive characteristics inherent to their school, district, and state that made their schools attractive places to teach. Some examples were emphasizing to recruits that their teachers experience less stress than teachers in larger districts due to small class sizes and fewer meetings, and that their schools had very few discipline problems because parents were supportive and believed their children should be well-behaved. Other examples involved financial benefits: one school had a trust available to make grants to teachers to do educational innovations, as well as a trust to help students pay for college, while another school was in a district that was among the highest-paying in the state. Five of the principals mentioned that they promoted local assets such as a pleasant community, or a location near a desirable part of the state or near a university. One principal reported promoting school assets to recruits by having teachers and students participate in on-site interviews, in order to show the positive school atmosphere to interested applicants. These school and community assets were thought to attract new teachers to the school as well as encourage them to stay.

Induction programs for new teachers. The team also asked about new teacher induction, as it has been linked to teacher retention. When asked, six of the seven principals said that their school or district offered new teacher induction, although not all of them said that they perceived new

teacher induction as specifically helping with retention. Most said that their induction program includes a formal mentor relationship with an experienced teacher; new teachers also receive an additional stipend at the beginning and middle of the first year. Some mentioned more informal peer teacher supervision, such as asking nearby teachers to watch over new teachers. The principals monitored new teachers by walking past classrooms to verify that the children were learning and that the teachers were managing the classroom, and also by talking to students about their learning. One principal mentioned that when he learns of a teacher having difficulties, he recommends that the teacher observe classrooms in other schools to increase instructional expertise.

Overcoming isolation. Community isolation has been previously linked to recruitment difficulty, so the team asked whether the principals considered their location isolated. Five of the seven principals answered yes, with one asking "Do you consider the edge of the Earth isolated, or what?" Three said that they were at least an hour from a town where there was shopping, and two were also far from the district office and the nearest other school in the district—from 25 to 48 miles away. Two were at least 40 miles from the nearest large highway. One principal said that the area was so sparsely populated that "Unless you're a duck or a goose, you're probably isolated." The areas around the schools tended to be either open farmland or ranchland or have a few businesses, such as a sandwich shop and gas station. Although isolated location has been linked to difficulties with teacher recruitment and retention (Strizek et al., 2006), these five principals found success, they believed, because their teachers were either from the area or enjoyed the isolated setting.

LIMITATIONS

One limitation of the study is that the 2003-2004 SASS includes only one year of data, so the "successful" versus "unsuccessful" designations established in this study may not accurately characterize the schools' performance over time. Also, schools reporting no vacancies for this year were not included in the analysis, which may have suppressed some "successful" schools whose turnover (and thus need for recruiting) was low due to high teacher retention. Electing to combine the factors (recruitment and retention) that defined the successful and unsuccessful districts in the sample prevented investigation of these factors individually. In addition, the SASS Questionnaires included very limited information about teacher retention, so the retention variable was created from the longevity information of the teachers in each school, even though fewer than six teachers, on average, were surveyed in each school.

The strategies the researchers identified from the SASS analysis and the principal interviews, while perhaps contributing to success in recruitment and retention, cannot be said to *cause* school or district successes in recruitment and retention. The principals' descriptions of their recruiting and retention strategies are their perceptions regarding a relationship with success and are therefore not based on evidence of a causal relationship.

CONCLUSIONS

According to the data generated by the 2003-2004 SASS Questionnaires, small towns and rural areas in the Central Region did in fact have relatively more difficulty in recruiting teachers than did larger communities. Therefore, rural principals and district administrators are in need of strategies for teacher recruitment and retention. However, when the successful and unsuccessful school districts were compared on the strategies and benefits included in the SASS, the results showed very little difference between the two groups. The only difference was with signing bonuses, which were reported as being offered significantly more often in the unsuccessful group than the successful group. Within the limitations of this one-year look, therefore, neither signing bonuses nor any of the other strategies and benefits examined in this large national data set would seem to lead to successful recruiting.

The responses of the seven interviewed principals were congruent with the outcome of the group comparisons in that they also did not report relying on many of the strategies and benefits addressed in the SASS. All of the principals denied using six of the strategies/benefits (signing bonuses, relocation assistance, finder's fees, or subsidized housing, transportation, or meals). However, there was some alignment between many of the approaches they did use and the three approaches investigated in previous research. Their *grow-your-own* approach involved hiring graduates or other people from the general area who would be comfortable in the rural environment; they focused more on turning rural residents into teachers, rather than turning teachers into rural residents. Their use of *federal funding opportunities* was related to *grow-your-own* in that they used federal money to enable new and current teachers to become highly qualified. These principals also utilized *targeted incentives* such as higher pay or grant opportunities. Beyond the three approaches synthesized from previous research, the principals of rural school also made a strategic point of promoting to applicants the assets of their particular school or community, such as small class sizes, few discipline problems, a desirable (if often isolated) location,

While overall the approaches for recruiting and retention were in line with those found in previous research, rural principals' unique implementation of the strategies to support the approaches may not have been adequately captured in the SASS data, as they were perceived by the interviewed principals to be minimally responsible for success. It may be that the existing rural-specific challenges in teacher recruitment and retention are most successfully addressed with rural-specific solutions.

REFERENCES

Allen, M. B. (2005). *Eight questions on teacher recruitment and retention: What does the research say?* (Evaluative report). Denver, Colorado: Education Commission of the States (ECS).

Armstrong Atlantic State University. (1998). DeWitt Wallace-Reader's Digest Pathways to Teaching Careers Program. Retrieved 8/17/2007, from http://www.education.armstrong.edu/pathways/Home.htm

Arnold, M. L., Newman, J. H., Gaddy, B. B., & Dean, C. B. (2005). A look at the condition of rural education research: Setting a direction for future research. *Journal of Research in Rural Education, 20*(6).

Barrow, L. H., & Burchett, B. M. (2000). Needs of Missouri rural secondary science teachers. *Rural Educator, 22*(2), 14-19.

Boe, E. E., Bobbitt, S. A., Cook, L. H., Whitener, S. D., & Weber, A. L. (1997). Why didst thou go? Predictors of retention, transfer, and attrition of special and general education teachers from a national perspective. *The Journal of Special Education, 30*(4), 390-411.

Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2005). The draw of home: How teachers' preferences for proximity disadvantage urban schools. *Journal of Policy Analysis and Management, 24*(1), 113-132.

Boylan, C., Sinclair, R., Smith, A., Squires, D., Edwards, J., Jacob, A., et al. (1993). *Retaining teachers in rural schools: Satisfaction, commitment, and lifestyles.* New South Wales, Australia.

Clewell, B. C., Darke, K., Davis-Googe, T., Forcier, L., & Manes, S. (2000). *Literature review on teacher recruitment programs*. Washington, DC: The Urban Institute.

Crews, J. (2002). Recruiting teachers to rural communities. *School Administrator, 59*(5).

Davis, M. S. (2002). Teacher retention and small rural school districts in Montana. *Rural Educator, 24*(2), 45-52.

Elfers, A. M., & Plecki, M. L. (2006). *Examining teacher retention and mobility in small and rural districts in Washington state*. Seattle: University of Washington College of Education.

The Gallup Organization. *Narrative Report of the 2007 Principal and Curriculum Coordinator Study*. (2007). Omaha, Nebraska: Author.

Government Accountability Office. (2004). *No Child Left Behind Act: Additional assistance and research on effective strategies would help small rural districts*. Washington, DC: Author.

Hammer, P. C., Hughes, G., McClure, C., Reeves, C., & Salgado, D. (2005). *Rural teacher recruitment and retention practices: A review of the research literature, national survey of rural superintendents, and case studies of programs in Virginia*. Charleston, WV: Edvantia.

Hare, D., & Heap, J. L. (2001). *Effective teacher recruitment and retention strategies in the Midwest: Who is making use of them?* (Educational Policy). Naperville, Illinois: North Central Regional Educational Laboratory.

Hare, D., & Nathan, J. (1999). *The need is now: Dealing with Minnesota's teacher shortages*. Minneapolis, MN: University of Minnesota, Center for School Change.

Harris, M. M., Holdman, L., Clark, R., & Harris, T. R. (2005). Rural teachers in Project Launch. *The Rural Educator, 26*(2), 23-32.

Heneman, R. G. I. (1998). Assessment and the motivational reactions of teachers to a school-based performance award program. *Journal of Personnel Evaluation in Education, 12*(1), 143-159.

Heneman, R. G. I., & Milanowski, A. T. (1999). Teachers attitudes about teacher bonuses under school-based performance award programs. *Journal of Personnel Evaluation in Education, 12*(4), 327-341.

Holloway, D. L. (2002). Using research to ensure quality teaching in rural schools. *Journal of Research in Rural Education, 17*(3), 138-153.

Ingersoll, R. M. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal, 38*(3), 499-534.

Ingersoll, R. M. (2003). *Out-of-field Teaching and the Limits of Teacher Policy*. Seattle: Center for the Study of Teaching and Policy.

Ingersoll, R. M., & Rossi, R. (1995). *Which types of schools have the highest teacher turnover?* Washington, DC: National Center for Education Statistics, U.S. Department of Education.

Johnson, J., & Strange, M. (2005). *Why rural matters 2005. The facts about rural education in the 50 states*. Arlington, VA: Rural School and Community Trust.

Lazarus, S. S. (2003, April 14-15). *Preparing rural educators to teach students in an era of standards-based reform and accountability.* Paper presented at the "Promoting the Economic and Social Vitality of Rural America: The Role of Education." A national research workshop, New Orleans, LA.

Luekens, M. T., Lyter, D. M., & Fox, E. E. (2004). *Teacher Attrition and Mobility: Results from the Teacher Follow-up Survey, 2000-01* (No. NCES 2004-301). Washington, DC: U.S. Government Printing Office.

Monk, D. H. (2007). Recruiting and retaining high-quality teachers in rural areas. *The Future of Children, 17*(1), 155-174.

Murnane, R. J. (1991). Interpreting the evidence on "Does Money Matter?" *Harvard Journal on Legislation, 28*, 457-464.

Murnane, R. J., & Olsen, R. J. (1989). The effect of salaries and opportunity costs on duration in teaching: Evidence from Michigan. *The Review of Economics and Statistics, 71*(2), 347-352.

Murnane, R. J., & Olsen, R. J. (1990). The effects of salaries and opportunity costs on length of stay in teaching: Evidence from North Carolina. *The Journal of Human Resources, 25*(1), 106-124.

National Center for Educational Statistics. (2008). Data Analysis System Online Application. Retrieved 2/5/2008, from http://nces.ed.gov/dasolv2/tables/showPrintTable.asp

No Child Left Behind Act of 2001, (2002).

Reeves, C. (2003). Implementing the No Child Left Behind act: Implications for rural schools and districts. Retrieved February 19, 2003

Sebastian, J. P., Calmes, L. J., & Mayhew, J. C., Jr. (1997). *Distance learners talk back: Rural special educators evaluate their teacher preparation program.* Retrieved July 12, 2007, from http://www.eric.ed.gov/ERICDocs/data/ericdocs2/content_storage_01/0000000b/80/25/c2/05.pdf

Southeast Center for Teaching Quality. (2002). *Recruiting teachers for hard-to-staff schools: Solutions for the southeast and the nation*. Chapel Hill: Author.

Smith, T. M., & Ingersoll, R. M. (2004). What are the effects of induction and mentoring on beginning teacher turnover? *American Educational Research Journal, 41*(3), 681-714.

Strizek, G. A., Pittsonberger, J. L., Riordan, K. E., Lyter, D. M., & Orlofsky, G. F. (2006). *Characteristics of Schools, Districts, Teachers, Principals, and School Libraries in the United States: 2003-04 Schools and Staffing Survey* (No. NCES 2006-313 Revised). Washington, DC: U.S. Government Printing Office.

U.S. Department of Education. (2004). *New No Child Left Behind flexibility: Highly qualified teachers*. Retrieved 9/1/2005 from http://www.ed.gov/nclb/methods/teachers/hqt/flexibility.pdf.

Yeager, N., Marshall, P., & Madsen, K. (2003, 03-00). Rural students becoming rural teachers: How long do they stay? Retrieved July 12, 2007, from http://www.eric.ed.gov/ERICDocs/data/ericdocs2/content_storage_01/0000000b/80/28/0e/6f.pdf

APPENDIX A: TABLES

Table 1. Of Central Region high or combined (K-12, 6-12) schools that had teaching vacancies in various fields for the current school year, percentage that found it very difficult or were not able to fill vacancies in these fields, by locale and student enrollment: 2003-2004

School locale and enrollment	English/ language arts	Mathematics	Physical sciences	Biology or life sciences	Social studies	Computer science	Foreign languages	Music or art	English as a second language	Vocational or technical education	Special education
All Central Region public schools	**11.4%**	**32.6%**	**37.8%**	**23.9%**	**6.1%**	**26.5%**	**40.6%**	**26.4%**	**45.0%**	**29.8%**	**36.0%**
	21 / 184	59 / 181	45 / 119	32 / 134	9 / 147	18 / 68	43 / 106	38 / 144	18 / 40	34 / 114	63 / 175
Large city/	5.8%	25.5%	33.3%	17.5%	2.8%	26.3%	37.8%	6.7%	28.6%	19.2%	45.7%
mid-size city	3 / 52	13 / 51	12 / 36	7 / 40	1 / 36	5 / 19	14 / 37	2 / 30	4 / 14	5 / 26	21 / 46
1000 +	7.3%	26.8%	28.6%	15.6%	0.0%	25.0%	38.2%	7.7%	30.8%	19.0%	47.2%
	3 / 41	11 / 41	8 / 28	5 / 32	0 / 29	4 / 16	13 / 34	2 / 26	4 / 13	4 / 21	17 / 36
750-999	0.0%	40.0%	75.0%	20.0%	0.0%	33.3%	33.3%	*	*	*	40.0%
	0 / 5	2 / 5	3 / 4	1 / 5	0 / 4	1 / 3	1 / 3	0 / 2	0 / 1	1 / 2	2 / 5
500-749	0.0%	*	N/A	*	*	N/A	N/A	N/A	N/A	*	*
	0 / 3	0 / 1		1 / 1	0 / 1					0 / 2	0 / 1
200-499	*	*	0.0%	*	*	N/A	N/A	*	N/A	N/A	*

	0 / 1	0 / 2	0 / 3	0 / 2	0 / 1			0 / 1			0 / 2
Less than 200	* 0 / 2	* 0 / 2	* 1 / 1	N/A	* 1 / 1	N/A	N/A	* 0 / 1	N/A	* 0 / 1	* 2 / 2
Urban fringe/ large town	13.2% 5 / 38	17.9% 7 / 39	17.6% 3 / 17	4.5% 1 / 22	0.0% 0 / 31	11.1% 1 / 9	30.0% 6 / 20	25.0% 5 / 20	33.3% 3 / 9	27.8% 5 / 18	22.9% 8 / 35
1000 +	12.0% 3 / 25	22.7% 5 / 22	20.0% 2 / 10	7.1% 1 / 14	0.0% 0 / 21	14.3% 1 / 7	25.0% 4 / 16	33.3% 4 / 12	42.9% 3 / 7	30.8% 4 / 13	30.4% 7 / 23
750-999	0.0% 0 / 6	0.0% 0 / 6	33.3% 1 / 3	0.0% 0 / 3	0.0% 0 / 3	* 0 / 1	* 2 / 2	* 0 / 2	* 0 / 1	* 0 / 1	0.0% 0 / 4
500-749	25.0% 1 / 4	28.6% 2 / 7	0.0% 0 / 3	0.0% 0 / 4	0.0% 0 / 4	* 0 / 1	* 0 / 1	16.7% 1 / 6	N/A	33.3% 1 / 3	25.0% 1 / 4
200-499	* 0 / 1	* 0 / 2	* 0 / 1	* 0 / 1	* 0 / 1	N/A	* 0 / 1	N/A	* 0 / 1	* 0 / 1	* 0 / 1
Less than 200	* 1 / 2	* 0 / 2	N/A	N/A	* 0 / 2	N/A	N/A	N/A	N/A	N/A	0.0% 0 / 3

School locale and enrollment	English/ language arts	Mathematics	Physical sciences	Biology or life sciences	Social studies	Computer science	Foreign languages	Music or art	English as a second language	Vocational or technical education	Special education
Rural, inside CBSA	5.3% 1 / 19	21.1% 4 / 19	45.5% 5 / 11	15.4% 2 / 13	7.7% 1 / 13	10.0% 1 / 10	71.4% 5 / 7	27.8% 5 / 18	100% 3 / 3	27.3% 3 / 11	29.4% 5 / 17
1000 +	25.0% 1 / 4	* 1 / 2	* 2 / 2	* 1 / 1	* 0 / 1	* 0 / 1	* 1 / 1	66.7% 2 / 3	* 1 / 1	N/A	* 1 / 2
750-999	0.0% 0 / 4	20.0% 1 / 5	33.3% 1 / 3	* 0 / 2	* 0 / 1	25.0% 1 / 4	* 2 / 2	0.0% 0 / 3	* 1 / 1	* 1 / 2	33.3% 2 / 6
500-749	* 0 / 2	0.0% 0 / 3	* 0 / 1	* 0 / 2	0.0% 0 / 3	* 0 / 1	* 1 / 1	* 0 / 2	N/A	* 0 / 1	* 0 / 2
200-499	0.0% 0 / 7	28.6% 2 / 7	40.0% 2 / 5	14.3% 1 / 7	12.5% 1 / 8	0.0% 0 / 4	33.3% 1 / 3	28.6% 2 / 7	* 1 / 1	0.0% 0 / 4	33.3% 2 / 6
Less than 200	* 0 / 2	* 0 / 2	N/A	* 0 / 1	N/A	N/A	N/A	33.3% 1 / 3	N/A	50.0% 2 / 4	* 0 / 1
Small town	15.0%	53.6%	53.3%	38.9%	9.5%	37.5%	50.0%	18.8%	80.0%	47.6%	47.8%

	3 / 20	15 / 28	8 / 15	7 / 18	2 / 21	3 / 8	6 / 12	3 / 16	4 / 5	10 / 21	11 / 23
1000 +	20.0% 1 / 5	40.0% 2 / 5	75.0% 3 / 4	60.0% 3 / 5	25.0% 1 / 4	* 1 / 2	* 1 / 2	0.0% 0 / 3	* 1 / 2	66.7% 2 / 3	42.9% 3 / 7
750-999	25.0% 2 / 8	80.0% 8 / 10	40.0% 2 / 5	28.6% 2 / 7	16.7% 1 / 6	* 2 / 2	80.0% 4 / 5	42.9% 3 / 7	* 2 / 2	80.0% 4 / 5	85.7% 6 / 7
500-749	* 0 / 2	33.3% 2 / 6	50.0% 2 / 4	* 0 / 2	0.0% 0 / 4	* 0 / 2	N/A	* 0 / 1	* 1 / 1	* 0 / 1	66.7% 2 / 3
200-499	0.0% 0 / 5	40.0% 2 / 5	* 1 / 2	50.0% 2 / 4	0.0% 0 / 7	* 0 / 2	25.0% 1 / 4	0.0% 0 / 5	N/A	33.3% 4 / 12	0.0% 0 / 5
Less than 200	N/A	* 1 / 2	N/A	N/A	N/A	N/A	* 0 / 1	N/A	N/A	N/A	* 0 / 1

School locale and enrollment	English/ language arts	Mathematics	Physical sciences	Biology or life sciences	Social studies	Computer science	Foreign languages	Music or art	English as a second language	Vocational or technical education	Special education
Rural, outside CBSA	16.4% 9 / 55	45.5% 20 / 44	42.5% 17 / 40	36.6% 15 / 41	10.9% 5 / 46	36.4% 8 / 22	40.0% 12 / 30	38.3% 23 / 60	44.4% 4 / 9	28.9% 11 / 38	33.3% 18 / 54

1000 +	*	N/A	*	*	N/A	N/A	N/A	N/A	*	N/A	*
	0 / 1		1 / 1	1 / 1					0 / 1		1 / 1
750-999	*	*	N/A	N/A	*	N/A	N/A	N/A	*	*	*
	1 / 1	0 / 1			0 / 1				0 / 1	0 / 1	0 / 1
500-749	20.0%	42.9%	100%	75.0%	20.0%	N/A	*	25.0%	*	0.0%	33.3%
	2 / 10	3 / 7	3 / 3	3 / 4	1 / 5		1 / 2	1 / 4	1 / 1	0 / 3	3 / 9
200-499	8.7%	38.1%	26.7%	27.8%	5.3%	44.4%	35.7%	44.4%	75.0%	30.0%	30.8%
	2 / 23	8 / 21	4 / 15	5 / 18	1 / 19	4 / 9	5 / 14	12 / 27	3 / 4	6 / 20	8 / 26
Less than 200	20.0%	60.0%	42.9%	33.3%	14.3%	30.8%	42.9%	34.5%	*	35.7%	35.3%
	4 / 20	9 / 15	9 / 21	6 / 18	3 / 21	4 / 13	6 / 14	10 / 29	0 / 2	5 / 14	6 / 17

Note. Dark gray shaded areas represent cells with a percentage reporting difficulty filling positions that is higher than the mean for the Central Region. * Percentages not presented due to small sample size for this cell.

Table 2. Relationship between success of schools and teacher signing bonus

			Q14A: Teacher signing bonus		
			yes	no	Total
Group	Unsuccessful	Count	6	17	23
		Expected Count	2.3	20.7	23.0
	Successful	Count	1	46	47
		Expected Count	4.7	42.3	47.0
Total		Count	7	63	70
χ^2 (1, N=70) = 9.85, $p < .01$		Expected Count	7.0	63.0	70.0

Table 3. Relationship between success of schools and student loan forgiveness

			Q14B: Student loan forgiveness		
			yes	no	Total
Group	Unsuccessful	Count	1	22	23
		Expected Count	1.0	22.0	23.0
	Successful	Count	2	45	47
		Expected Count	2.0	45.0	47.0
Total		Count	3	67	70
χ^2 (1, N=70) = 0.00, $p = .70$		Expected Count	3.0	67.0	70.0

Table 4. Relationship between success of schools and relocation assistance

			14C: Relocation assistance		
			yes	no	Total
Group	Unsuccessful	Count	1	22	23
		Expected Count	1.3	21.7	23.0
	Successful	Count	3	44	47
		Expected Count	2.7	44.3	47.0
Total		Count	4	66	70
χ^2 (1, N=70) = 0.12, p = .60		Expected Count	4.0	66.0	70.0

Table 5. Relationship between success of schools and teacher finder's fee

			14D: Finder's fee		
			yes	no	Total
Group	Unsuccessful	Count	0	23	23
		Expected Count	0.0	23.0	23.0
	Successful	Count	0	47	47
		Expected Count	0.0	47.0	47.0
Total		Count	0	70	70
χ^2 (1, N=70) = no value		Expected Count	0.0	70.0	70.0

Table 6. Relationship between success of schools and medical insurance offered

			28A: Medical insurance		
			yes	no	Total
Group	Unsuccessful	Count	23	0	23
		Expected Count	22.3	0.7	23.0
	Successful	Count	45	2	47
		Expected Count	45.7	1.3	47.0
Total		Count	68	2	70
χ^2 (1, N=70) = 1.01, p = .45		Expected Count	68.0	2.0	70.0

Table 7. Relationship between success of schools and dental insurance offered

			28B: Dental insurance		
			yes	no	Total
Group	Unsuccessful	Count	14	9	23
		Expected Count	13.8	9.2	23.0
	Successful	Count	28	19	47
		Expected Count	28.2	18.8	47.0
Total		Count	42	28	70
χ^2 (1, N=70) = 0.01, p = .56		Expected Count	42.0	28.0	70.0

Table 8. Relationship between success of schools and life insurance offered

			28C: Life insurance		
			yes	no	Total
Group	Unsuccessful	Count	16	7	23
		Expected Count	16.8	6.2	23.0
	Successful	Count	35	12	47
		Expected Count	34.2	12.8	47.0
Total		Count	51	19	70
χ^2 (1, N=70) = 0.19, p = .44		Expected Count	51.0	19.0	70.0

Table 9. Relationship between success of schools and retirement plan offered

			28D: Retirement plan		
			yes	no	Total
Group	Unsuccessful	Count	23	0	23
		Expected Count	22.0	1.0	23.0
	Successful	Count	44	3	47
		Expected Count	45.0	2.0	47.0
Total		Count	67	3	70
χ^2 (1, N=70) = 1.53, p = .30		Expected Count	67.0	3.0	70.0

Table 10. Relationship between success of schools and tuition reimbursement offered

			28E: Tuition reimbursement		
			yes	no	Total
Group	Unsuccessful	Count	11	12	23
		Expected Count	8.9	14.1	23.0
	Successful	Count	16	31	47
		Expected Count	18.1	28.9	47.0
Total		Count	27	43	70
χ^2 (1, N=70) = 1.24, p = .20		Expected Count	27.0	43.0	70.0

Table 11. Relationship between success of schools and housing/rent assistance offered

			28F: Housing/rent assistance		
			yes	no	Total
Group	Unsuccessful	Count	1	22	23
		Expected Count	0.7	22.3	23.0
	Successful	Count	1	46	47
		Expected Count	1.3	45.7	47.0
Total		Count	2	68	70
χ^2 (1, N=70) = 0.27, p = .55		Expected Count	2.0	68.0	70.0

Table 12. Relationship between success of schools and subsidized meals offered

			28G: Subsidized meals		
			yes	no	Total
Group	Unsuccessful	Count	2	21	23
		Expected Count	2.3	20.7	23.0
	Successful	Count	5	42	47
		Expected Count	4.7	42.3	47.0
Total		Count	7	63	70
χ^2 (1, N=70) = 0.07, p = .58		Expected Count	7.0	63.0	70.0

Table 13. Relationship between success of schools and subsidized transportation offered

			28H: Subsidized transportation		
			yes	no	Total
Group	Unsuccessful	Count	2	21	23
		Expected Count	1.3	21.7	23.0
	Successful	Count	2	45	47
		Expected Count	2.7	44.3	47.0
Total		Count	4	66	70
χ^2 (1, N=70) = 0.57, p = .40		Expected Count	4.0	66.0	70.0

APPENDIX B: METHODOLOGY AND DATA ANALYSIS

This study is descriptive in nature. Through the analysis of extant SASS data of 88,113 public schools, supplemented with seven interviews of principals from schools who have been successful in recruiting and retaining teachers, the study describes ways in which rural high schools in the Central Region have attempted to recruit and retain highly qualified teachers. The project included three phases: (1) a descriptive analysis of the SASS data on recruiting in different locales in the Central Region; (2) categorizing rural high schools as "successful" or "unsuccessful" in recruiting and retaining teachers and then comparing the groups on recruiting and retention strategies included in the SASS data; (3) follow-up telephone interviews with principals from seven schools who reported being successful in rural teacher recruitment and retention.

PHASE ONE

Defining the needs. Descriptives were tabulated for School Questionnaire Item 38b (*How easy or difficult was it to fill the vacancies in each of the following fields?)*, the ease of filling teaching vacancies, among all high and combined schools in the Central Region to document the extent of recruiting difficulties in the Central Region. The comparisons were between means calculated for all public high and combined (K-12. 6-12) schools in the Central Region and the means for these same Central Region high schools disaggregated by locale and by school size, and expressed by academic subject.

Aligning the SASS items. As presented in the review of existing research, strategies for recruiting and retaining teachers can be categorized into three approaches. While not developed for this purpose, some SASS items do reflect the strategies that form the underpinnings of these approaches. Responses to SASS School District Questionnaire items 14a, c-d (signing bonuses, relocation assistance, and finder's fee) and 28a-d, g, and h (medical, dental, and life insurance; retirement plan; and subsidized housing, meals, and transportation) reflect strategies that administrators utilize to support a *targeted incentive* approach. Responses to SASS School District Questionnaire items 14b (student loan forgiveness) and 28e (tuition reimbursement) can be categorized as strategies administrators utilize to support either a *grow- your-own* and/or *maximize federal funding opportunities* approach.[45] For the current study, these items were placed in both categories for analytical purposes.

PHASE TWO

In Phase Two, researchers identified and divided school districts into two groups: those that had been "successful" and "unsuccessful" in teacher recruitment and retention. These two groups were then compared on the strategies and benefits addressed in the SASS.

[45] For example, administrators commonly utilize federal REAP dollars to fund teacher certification coursework for aides satisfied with the school district.

Procedure to isolate relevant data for use. In order to form the groups of schools that had either been successful or unsuccessful with teacher recruiting and retention, the researchers first obtained the restricted data set of the Schools and Staffing Survey (SASS 2003-2004) Teacher Questionnaire and School Questionnaire. These data sets were reduced to include only those teachers and schools relevant to the study—rural high schools employing mostly highly qualified teachers in the Central Region.

The complete SASS 2003-2004 Teacher Questionnaire data set contained 43,244 teachers, with an average sample of 5.41 teachers per school. Of the more than 40,000 teachers, 5,793 taught in the seven-state Central Region. From this group, teachers in locale codes 7 (rural, outside CBSA) and 8 (rural, inside CBSA) were identified resulting in 2,177 rural teachers. This teacher data was then merged with a subset of 284 rural (locale codes 7 and 8) Central Region high schools and "combined" schools (schools serving multiple grade ranges) from the SASS 2003-2004 School Questionnaire data. All teachers for whom there was no school match were removed (723 teachers),[46] leaving 1,454 teachers from 280 schools.

The researchers further selected schools that had reported teacher vacancies that year. Of the remaining 1,454 teachers, 1,118 from 210 schools worked in a school that answered "yes" to School Questionnaire Item 38a: *Were there teaching vacancies in this school, that is, teaching positions for which teachers were recruited and interviewed?* Those schools that *could not fill the vacancy* (School Questionnaire Item 38b) were designated as "unsuccessful." Only 53 teachers representing 9 schools were placed in the "unsuccessful" category at this point, leaving 1,065 teachers from 201 schools in the "successful group." Researchers next examined responses to School Questionnaire Item 39, a list of methods of covering the vacancies.[47] Those schools that dealt with vacancies by means other than hiring a highly qualified teacher (responses to 39b-h) were added to the set of "unsuccessful" schools. After this step, 717 teachers from 134 schools remained in the "successful" category, while 401 teachers from 76 schools were placed into the "unsuccessful" category.

To focus only on recruiting and retaining highly qualified teachers, the next step was to create a variable for each teacher describing whether or not they held a certification for the subject(s) they were teaching (i.e., could be considered highly qualified). Since no survey items specifically asked "Are you certified to teach in your content area?" responses to Teacher Questionnaire Item 17 (subject matter of teaching assignment) and Teacher Questionnaire Item 30b (content area certification) were paired and a new variable created to determine whether the teachers' certifications areas matched with their assignments. Of the 1,033[48] teachers holding a *regular,*

[46] Some teachers had no school match because the researchers matched only high and "combined" schools, but the original list of teachers included elementary teachers also. This matching step was necessary, as selection criteria required both teacher-level and school-level variables.

[47] The following response options were provided: *a. Hired a fully qualified teacher; b. Hired a less-than-fully qualified teacher; c. Used long-term or short-term substitutes; d. Cancelled planned course offerings, e. Expanded some class sizes, f. Added sections to other teachers' normal teaching load, g. Assigned a teacher of another subject or grade level to teach those classes and h. Assigned an administrator or counselor to teach those courses.*

[48] 664 teachers in successful schools and 369 teachers in unsuccessful schools.

standard or advanced professional certificate, 416 teachers in the successful schools (58%) and 231 teachers in unsuccessful schools (58%) held certifications for their teaching assignments. To preserve the study intent of focusing only on those schools with high proportions of highly qualified teachers, schools ranking in the bottom quartile[49] according to the proportion of their participating teachers who were teaching in-area were eliminated from the sample. This left 554 teachers from 101 schools remaining in the successful group and 298 teachers from 57 schools remaining in the unsuccessful group.

The final procedure in determining schools that were successful in recruiting and retaining highly qualified teachers was to create a variable to capture teacher retention for each school. Using responses to Teacher Questionnaire Item 7, researchers calculated the number of years teachers had taught at their schools. The average number of years all teachers had taught at each school determined each school's retention value. Previous research has consistently shown a high positive correlation between difficulties with recruiting and with retention (Ingersoll, 2001; Luekens et al., 2004; Strizek et al., 2006), so the current study sought to create two disparate groups: one with schools *successful* in both recruiting and retaining teachers, and one with schools *unsuccessful* in both recruiting and retaining teachers. In order to maximize the potential differences between "successful" and "unsuccessful" groups, retention values were used to rank schools. A median split was conducted such that the lower-retention schools were dropped from the successful recruiting group, and higher-retention schools were dropped from the unsuccessful recruiting group.[50] This final step created the sample--275 teachers from 51 schools in the "successful group" (successful in both recruitment and retention) and 157 teachers from 29 schools in the "unsuccessful group" (unsuccessful in both recruitment and retention). To confirm that the median split successfully created two disparate groups, an ANOVA was conducted to determine the difference in teacher retention between the successful and unsuccessful groups after dropping the bottom quartile from each group.

Data analysis. To determine whether the "successful" and "unsuccessful" schools utilized different strategies for recruitment and retention, researchers focused on 12 SASS items reflecting potential strategies that aligned with the three approaches to recruiting and retaining qualified teachers. School District Questionnaire Items 14a-d provided data as to whether or not the district used four recruiting strategies: 1) signing bonuses, 2) student loan forgiveness, 3) relocation assistance, or 4) finder's fees for new teacher referrals. School District Questionnaire Items 28a-h provided data as to whether or not the district offered teachers eight benefits as recruitment and retention strategies: medical insurance, dental insurance, life insurance, retirement plan, tuition reimbursement, housing/rent assistance, subsidized meals, and subsidized transportation.

[49] For the successful schools, the bottom quartile cut-off score was 40%. For the unsuccessful schools, the cut-off was 43%.

[50] Teachers in the successful group whose schools demonstrated an average teacher length of employment less than the total group median (14.17 years) were eliminated. Teachers in the unsuccessful group whose schools had a retention average above the total group median (13.22 years) were eliminated.

Chi-square tests of association were conducted on School District Questionnaire items 14a-d to determine whether there were different patterns of responses regarding recruiting strategies in "successful" versus "unsuccessful" schools and districts. Chi-square analyses were also run on Items 28a-h to determine whether there were different patterns of responses regarding benefits offered by districts between teachers from "successful" versus "unsuccessful" schools.

PHASE THREE

Interviews with one rural high school principal in each Central Region state were then conducted to obtain descriptive information from schools that have been successful at recruiting and retaining teachers.

Participants. To identify rural high schools that have recently been successful in recruiting and retaining highly qualified teachers, the researchers asked REL Central state liaisons for one resource at each state education agency that would be the most familiar with rural teacher recruitment and retention in high schools in their state. These seven state-level administrators were contacted via e-mail and/or phone and each was asked to nominate five rural high schools considered to be successful in recruiting and retaining highly qualified teachers. These lists were obtained in six of the seven states, and researchers contacted the principals on the list in random order. If the first principal was not available at the time of the call, the next was immediately called, and so on until one principal completed the phone interview. As soon as one principal from a state completed the phone interview, principals from the next state were contacted. In the seventh state (where no nominations were received), online database information from the state education agency was used to identify a list of seven rural high schools with high teacher retention. Once this list was compiled, the principals of the schools were contacted by telephone in the same way as in the other states.

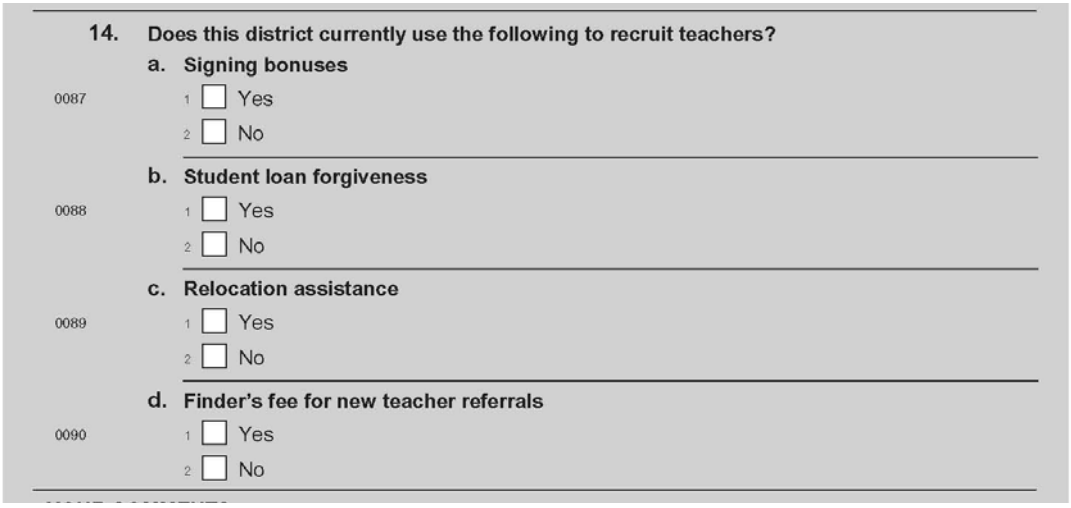
Procedure. The seven interviews were conducted via phone during November and December, 2007. Each interview was digitally recorded, and field notes capturing the principals' statements were entered onto a form based on the interview protocol. For yes/no items such as the SASS strategies and benefits, the answer was recorded along with any elaborating comments. Several exact quotes were also transcribed for each interview.

Instruments. The principals were asked the same questions in each interview regarding: (1) their use of the strategies and benefits addressed in the SASS School District Questionnaire, (2) their own recruiting strategies, their beliefs about factors affecting secondary teacher retention in their district, and (3) their perceptions of reasons for success (see Appendix D for interview protocol). Based on information in the review of literature, the principals were also asked whether their school offered a new teacher induction program and whether they considered themselves to be in an isolated location.

Data analysis. The analysis of the qualitative data was handled by a researcher who had not compiled the literature review nor analyzed the SASS data, in order to minimize possible bias from the results of those efforts. The descriptive information collected in the interviews, such as the number of teachers per school and the number of vacancies for the current school year, was

entered into a spreadsheet; means and standard deviations were calculated as appropriate. The principals' responses to the questions reflecting the 12 SASS strategies and benefits were also tabulated in the spreadsheet, and a bar chart was constructed including those items to which at least one principal said yes. The principals' responses to open-ended questions about success with recruitment and retention were examined, and four categories emerged: recruitment strategies, retention strategies, school and district factors, and community factors. The principals' responses to the open-ended question about isolation made up another category. Individual statements from each principal interview were pasted into a new document and organized under the five category headings. All of the statements fell into at least one of the categories. Once the statements were categorized, the researcher looked for commonalities among the statements placed in each category. For example, one principal said he was able to recruit his own former students, another said that students come back to teach there since "it's home," and a third said that two of five new hires were former students. Therefore, then three principals were considered to recruit, in part, by attracting back their own former students. The information in each category was summarized in this way by emphasizing topics mentioned by more than one principal as follows: one paragraph that described the grow-your-own recruiting strategies; one paragraph including both the school/district and community factors; one paragraph describing the use of teacher induction, and a paragraph about perceptions of isolation.

APPENDIX C: SASS SCHOOL DISTRICT QUESTIONNAIRE ITEMS 14 AND 28 AND SCHOOL QUESTIONNAIRE ITEM 38B



14. Does this district currently use the following to recruit teachers?

a. Signing bonuses

0087 1 ☐ Yes
2 ☐ No

b. Student loan forgiveness

0088 1 ☐ Yes
2 ☐ No

c. Relocation assistance

0089 1 ☐ Yes
2 ☐ No

d. Finder's fee for new teacher referrals

0090 1 ☐ Yes
2 ☐ No

28. **Does this district offer the following to teachers?**

a. **General medical insurance**

0124 1 ☐ Yes
2 ☐ No

b. **Dental insurance**

0125 1 ☐ Yes
2 ☐ No

c. **Group life insurance**

0126 1 ☐ Yes
2 ☐ No

d. **Retirement plan**

0127 1 ☐ Yes
2 ☐ No

e. **Tuition reimbursement**

0128 1 ☐ Yes
2 ☐ No

f. **Housing, housing subsidies, or rent assistance**

0129 1 ☐ Yes
2 ☐ No

g. **Subsidized meals**

0130 1 ☐ Yes
2 ☐ No

h. **Subsidized transportation**

0131 1 ☐ Yes
2 ☐ No

38a. For THIS school year (2003–04), were there teaching vacancies in this school, that is, teaching positions for which teachers were recruited and interviewed?

0566
1 ☐ Yes
2 ☐ No → *GO TO item 40 on page 21.*

b. How easy or difficult was it to fill the vacancies in each of the following fields?

		Mark (X) ONE box on each line.					
		No positions in this school	No vacancy in this field	Easy	Somewhat difficult	Very difficult	Could not fill the vacancy
(1) General elementary	0567	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
(2) Special education	0568	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
(3) English/Language arts	0569	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
(4) Social studies	0570	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
(5) Computer science	0571	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
(6) Mathematics	0572	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
(7) Biology or life sciences	0573	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
(8) Physical sciences	0574	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
(9) English as a Second Language (ESL), English for Speakers of Other Languages (ESOL), or bilingual education	0575	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
(10) Foreign languages	0576	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
(11) Music or art	0577	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
(12) Vocational or technical education	0578	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐

APPENDIX D: INTERVIEW PROTOCOL

PROTOCOL FOR TELEPHONE CONTACT OF "SUCCESSFUL" SCHOOLS

1. Greeting and purpose: (Call to school or district person knowledgeable about recruitment and retention.)

   My name is ____. I am a researcher from McREL, which houses REL Central, the Regional Educational Laboratory that serves (*state's name*). We are studying rural high schools to learn what strategies have worked in recruiting and retaining qualified teachers. I have an initial question I'd like to ask that will only take a minute or two of your time. Your high school has been identified by _____ (the _____ for the state of _____) as one that has been successful in recruiting and retaining qualified teachers. Would you agree?

   [If the person continues to place the school in the successful group, continue; if not, thank them and end the call.] Since you do feel your school is successful, would you be willing to take **15 more minutes** to answer some questions about retaining and recruiting teachers and the strategies you have used that have worked? Your school will not be identified by name in our report, but your responses may help other rural high schools struggling to recruit and retain qualified teachers.

   [If the person agrees, continue; if not, thank them and end the call.]

2. First, some background.

   a. How many certified teachers worked at your high school last year? How many of these teachers are NOT highly qualified in ALL of the subjects that they teach? [**If any are teaching outside of their HQ area:** Can you tell me what courses are being taught outside of this teacher's highly qualified subject area?]

   b. How many vacancies did you need to fill for this 2007-2008 school year? [**If none or few, increase the range to 'during the past three years'.**] What subject areas did these vacancies involve?

   c. What caused those vacancies? [**If needed**, some prompts include: retirement, long-term substitute left, teacher moved to new district, quit teaching, teacher wasn't certified in the subject area, new position, lost funding for the position,…]

   d. Of the ___ vacancies you had, how many were you able to fill? [**If they didn't fill them all:** For which subject areas were you unable to find a teacher?] Are there subject areas that you regularly have difficulty filling?

   e. Of the ___ new teachers hired, how many are teaching **only** courses for which they would be considered *highly qualified*?

3. To better understand your recruiting and retention strategies, I would like to name a set of 14 strategies that schools have used in recruiting and retaining high school teachers. About each one, I would like to know whether you have used this strategy and whether it was successful. OK?

    - (The first one is…) Signing bonuses
    - Student loan forgiveness
    - Relocation assistance
    - Finder's fee for new teacher referrals
    - Generous insurance benefits (probe: health, dental, life)
    - Retirement plan
    - Tuition reimbursement (probe: training to be certified in shortage area)
    - Housing subsidies, or rent assistance
    - Subsidized meals
    - Subsidized transportation
    - Resources for professional development
    - Pay incentives in certain subject areas
    - New teacher induction program

4. I am now going to repeat the ___ strategies that you used, and I would like you to: (a) describe the strategy as you used it; and (b) tell me why you believe it succeeded (or not).

5. Are there other strategies you have used that you believe have contributed to your success?

6. Is there anything else I should know about your school that makes it successful in recruiting and retaining qualified teachers?

7. Last question, if you were going to describe your school's location, would you consider your school to be in an isolated location? What do you think makes your location 'isolated'? [**If prompts are needed**: distance to next town, geography (mountains), climate (severe weather impacts travel)…]

Thank you for your time.