

Research Article

Addressing Teacher Shortages in Rural America: What Factors Encourage Teachers to Consider Teaching in Rural Settings?

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Teacher shortages in rural areas has become a public crisis. This shortage of key personnel requires stakeholders (higher education, state departments, local school districts) to examine factors that help teacher education students choose to apply to rural settings. The current study examines new teacher candidates' background, preparation for teaching, and perceptions of protective factors on their decisions to work in rural areas. Data from teacher education students in their residencies from 14 institutions were analyzed. Results suggest that student background, including race, level of education, parent education, and high school location are important. White students, those pursuing undergraduate degrees, those from rural high schools, and students who feel more confident in teaching 21st-century critical thinking skills (e.g., using a variety of perspectives, engaging in self-assessment, teaching critical thinking) are also more likely to consider teaching in rural areas. Results are discussed as they relate to recruitment in rural areas.

Geographic isolation, inadequate professional development, lower base salaries, as well as difficulty managing the workload requirements are just a few reasons that new teachers fail to apply for careers in school districts located in rural settings (Jimerson, 2003; Martin & Mulvihill, 2016; Monk, 2007; Provasnik et al., 2007; Reeves, 2003, Tran & Smith, 2019; Viadero, 2018). Recruitment is complicated by the fact that there has been a substantial loss of existing teacher workforce due to retirement, low salaries, lack of public appreciation and respect, and dissatisfaction with teaching conditions (Jimerson, 2003; Martin & Mulvihill, 2016; Tran & Smith, 2019). These conditions may be some of the factors that are leading to reports of teacher shortages across the nation. Recently, Viadero (2018) reported that in an analysis of federal education data from 2016-2018, statewide teacher shortages were reported in all 50 states. This is particularly problematic in rural settings where some of these factors may be amplified due to the nature of living and working in a rural environment. Despite struggles to define "rural", most definitions include a measure of the density of the population as well as the distance from populous centers. When distance from population centers increase, unique factors that may lead to recruitment problems may emerge. Martin and Mulvihill (2016), posit that it is difficult to recruit in rural areas due to geographic isolation as well as inadequate housing. These may be important factors to consider when trying to recruit new teachers to rural settings. Consequently, policymakers are left to help navigate how school districts and stakeholders can find ways to recruit new teachers and manage shortages in rural areas via evidence-based strategies.

This study examines the variables related to a teacher's decision to enter teaching in rural settings. Specifically, the authors evaluated the relation between perception of protective factors (i.e., supervisory support, peer support, and kinship support) and choosing to enter teaching in rural settings. Results of this study may provide critical evidence-based data for decision-makers in order to support the creation of work climates that increase teacher recruitment in rural settings.

Factors Related to New Teacher Recruitment

An evaluation of factors that lead to teacher recruitment is necessary if strategies are to be grounded in science. New teachers have many factors to consider when choosing the location and subject to teach. Some new teachers are drawn to rural settings by providing grant opportunities, loan forgiveness programs, and offering incentive programs, such as housing, sign-on bonus, as well as tuition waivers (Berry, et al., 2010). These programs offer incentives for new teachers to come and teach in areas of critical need.

Because of the little research on recruitment programs, researchers also look to factors related to new teachers' experiences when entering the profession. New teachers frequently leave school districts due to poor leadership, inadequate professional development opportunities (i.e., how to teach 21st-century skills, behavior management), and poor working conditions (Prather-Jones, 2011; Keiser, 2011). These leadership, professional development, and working conditions may be important for school districts to consider when recruiting new teachers to the profession. Related to

professional training, Lawrason (2008) indicated that teachers who lacked training in classroom management, time management, and training in handling parental relationships struggled to transition into their first year of teaching. Further, evidence shows that rural teachers with less professional development opportunities felt less supported and confident and were more compelled to leave rural schools (Berry et al., 2011). As such, these factors may be important to consider when trying to recruit new teachers to school districts in rural settings.

In further support, Goldring, et al. (2014) noted that workplace conditions and the expected workload might also contribute to new teachers applying to rural or urban settings. Researchers found that when they interviewed teachers who had recently left teaching positions, they often found that their new positions had more reasonable expectations in the amount of work that would be expected of them during the working day (Goldring, et al., 2014). The amount of work that is expected of a new teacher might be important to consider when encouraging new teachers to apply to rural settings. This is especially true in rural areas where teachers must take on multiple roles (Dixon, 2012)

In addition, school district leaders may consider the impact of their discipline structures and administrative support when examining why a teacher might choose to work in a particular school district. It is important to note that teacher perception of poor administrative leadership has been shown to decrease new teacher retention due to lack of consistent discipline structure applied to students (Hipp, 1997; McCoach & Colber, 2010). In addition, a lack of support, including strained relationships between teachers and administrators, (Tschannen-Moran & Woolfolk Hoy, 2001), as well as perceived levels of administrative support in decision-making (Hepburn & Brown, 2001; Huysman, 2008) may be important factors to consider when recruiting new teachers to rural areas.

Factors that Lead to New Teachers Applying to Rural Settings

While much research has identified risk factors related to new teachers leaving the profession, few researchers have evaluated factors that encourage a teacher to apply to teach in rural settings. Rutter and colleagues evaluated mechanisms of resilience, which they call protective variables (Garnezy, 1974; Luthar, 2006; Rutter, 1979; Rutter, 1987) to evaluate factors that lead to persistence in a task or challenge despite several risk factors. Witt (2006) further evaluated protective factors for new teachers in rural classrooms to demonstrate three types of protective

factors: supervisory support, peer support, and kinship support.

Supervisory support is support within the school environment that leads to teaching competency (e.g., leadership, positive work environment, adequate professional development). This skill is related to preparation for teaching 21st century skills, classroom management skills, as well as professional development. Teachers were likely to teach in rural settings when they felt valued by administrators (Stackhouse, 2011) and had principals that supported them in decision-making (Huysman, 2008). Further, Hirsch, et al. (2007) noted that new teachers who experienced real-life, hands-on classroom experiences fared better than those who experienced less support related to 21st-century skills.

Peer support is the support that colleagues provide in the school settings. As one builds social support systems with peers, one develops ways in which to mitigate the social stress felt in the teaching setting. This co-teacher collaboration may lead to higher teacher self-efficacy (Collie, et al., 2012; Guo, et al., 2012) and more positive professional climate (Hoy & Woolfolk, 1993), which may lead to the likelihood to teach in rural settings.

Finally, kinship support is the support provided by family systems. These factors help to combat both physical and psychological isolation that may be experienced by novice teachers. Montgomery (2010) underscored these sentiments and found that teachers more active in their communities were more likely to teach in rural settings. Husyman (2008) found that there are three unique types of rural teachers: homegrown, homegrown by time, and transplanted. Homegrown teachers grew up in the rural area that they are practicing (i.e., Teachers who were from a rural high school setting), homegrown by time teachers have attended college in the rural area in which they are teaching, and transplanted teachers only came to a rural school after graduating from college. According to the Husyman (2008) study, 89% of teachers who left rural schools were categorized as being transplanted. Conversely, homegrown teachers were noted to be most likely to teach in their rural school setting (Husyman, 2008).

Factors Unique to Rural Settings

Teachers who tend to work in rural districts are also faced with factors that are unique to rural settings. Teachers in rural settings often have to spend significant time in preparation due to the generalist role that they must take on to be able to serve the small number of students that they teach (Dixon, 2012). For example, a teacher in an urban setting might be able to specialize in a particular

subject and teach that subject throughout the day. A teacher in a rural setting may have to teach many subjects across domains with inadequate preparation time, which may lead to significant workload demands.

Researchers also note that significant isolation and lack of social support systems in rural settings may contribute to lack of recruitment into teaching (McNabb, 2011; Montgomery, 2010). Significant geographic isolation is unique to rural settings. This distance from other populations can create a feeling of geographic isolation that can be a risk factor for newly vetted teachers attempting to create a life in a rural environment. Relatedly, social isolation can also be a contributing factor to teacher recruitment. As a new teacher, it can be difficult to build social networks in places without large populations of young people. This isolation can contribute to lack of support and can lead to a teacher applying to a more urbanized setting.

To further understand the unique factors that impact the ability to recruit in rural areas, Jimerson (2003) wrote a policy brief that addressed the challenges of staffing rural classrooms. In reviewing national salary data, it was noted that teachers in rural areas struggle with not being compensated as well as other rural professionals, being paid far less than other teachers in more populated states, and have lower salaries than suburban and urban counterparts in the same state. To further expand the impact of salaries on recruiting teachers in rural areas, Tran and Smith (2019) examined financial factors that lead college students to apply to rural settings. They noted that base salaries, retirement benefits, as well as respect for the teaching profession were key factors that encouraged applicants to apply to difficult to hire rural locations.

Race, ethnicity, and parent education may also uniquely contribute to the desire to teach in rural settings. In a 2010 report, Berry, et al. reported that African American teachers and teachers of other races were less likely to become teachers. In the same report, it was also noted that African American teachers were more likely to choose more lucrative careers over teaching, even when they met the criteria for teaching certification (Berry, et al., 2010). Upon review, no scholarly articles evaluated the impact of parent education on the choice to teach in a rural setting.

The teacher shortage in rural areas is critical. It is essential to identify the factors that contribute to new teachers entering rural teaching as well as factors that contribute to the avoidance of rural teaching. Teacher education programs and state departments of education can work to encourage students toward rural teaching and make rural environments more

supportive of their teachers. One area where schools of education can make strides is in their residency programs where students experience, first-hand, the demands, challenges, and rewards of teaching.

As evidence of the need for rural teachers, the Mankato Free Press called the teacher shortage in rural areas a “crisis” (Goodrich, 2016). Also, The Duluth News Tribune in 2017 called it a “struggle” to get rural teachers (McMullen). Finally, The U.S. Department of Education (2016) published a listing of teacher shortage areas which highlighted many rural areas that are not able to recruit or retain highly qualified professional workforces. This shortage highlights the need for more inquiry to examine factors that contribute to effective recruitment strategies for new teachers.

Purpose of the Study

With the landscape of education and high-quality instruction under review, researchers and decision-makers are left to navigate factors that increase a teacher’s motivation to teach in rural settings. This research aims to use existing survey data from teachers who are new in the field to address factors that encourage teachers to consider teaching in rural settings. The project used the NexT Common Metrics Survey (2016a-c, 2017a-c) to analyze factors related to the recruitment of new teachers in rural settings. The main goal of this study was to identify unique protective and risk factors that help teachers decide to teach in rural settings. The authors hypothesize that having systematic support in combination with administrative support may impact a teacher’s willingness to teach in rural settings.

Research Questions

1. What are the unique factors that encourage new teachers to consider teaching in rural settings?
2. What are the unique factors that may deter new teachers to consider teaching in rural settings?
3. Which factors contribute to whether or not students applied to teach in rural areas and if they eventually took positions in rural areas?

General Method

Participants

The population for this study was teacher candidates during their first year of student teaching residency and into their transition to teaching in independent settings. These teacher candidates were

located across South Dakota, Minnesota, and North Dakota. All participating teacher candidates were enrolled in institutions of higher education who were participants in the Bush Foundation Network for Excellence in Teaching ($n = 14$ institutions). The teachers were matched in field placements based on the institution of higher learning's teacher placement process. The sample sizes of each study are as follows: Study One ($n = 4773$), Study Two ($n = 3342$), and Study Three ($n = 1832$). The students engaged in a full year teacher residency program in which they worked with a co-teacher (previously called a mentor teacher) in classrooms.

Measures

Network for Excellence in Teaching Survey.

The consortium of researchers developed a set of reliable and valid survey instruments, Common Metrics, to evaluate the entry into student teaching (Network for Excellence in Teaching, 2016a, 2017a), exit from student teaching (Network for Excellence in Teaching, 2016b, 2017b), and transition to teaching (Network for Excellence in Teaching, 2016c, 2017c). The entry survey examined the demographics of teacher candidates and explored why they decided on the career of education. The exit survey examined how teacher candidates felt about their preparation to teach. The transition to teaching survey examined how prepared and effective teachers felt for their first year of teaching. It also asked questions about where the students applied to teach and where they intend to teach in the following year (Bush Foundation, 2015).

These surveys have been rigorously validated by the survey team (consisting of members from the partner institutions). Data from the Exit and Transition to Teaching Surveys (sections B and C) were subjected to principal components analysis (PCA) to identify factor structure. Half the data, randomly selected, was used in the PCA to identify factors that explain most of the variance in responses, and the other half was used to confirm the structure with confirmatory factor analysis. These factors were then used in the following analyses.

Procedures

Teacher education students were surveyed at three points. The entry survey occurred at the end of their first semester of residency. The exit survey was administered after the second, and final, semester of residency. The transition to teach survey was taken at the beginning of the fall semester following graduation. Two cohorts, across two years, of students from 14 different universities in the upper

Midwest were surveyed. Surveys at each time point measured different variables, allowing for multiple models to evaluate different variables.

At entry and exit, the researchers sought variables that would predict students' intent to teach in rural areas. At the transition to teach survey, the researchers modeled prediction of where students applied for teaching positions (rural or urban). The survey questions varied across time, and identifiers were not maintained to allow the research team to track individual students across time. Thus, three models were run: one for each time point.

Data Analysis

The first two studies identified the factors that contribute to students' intent to apply to teach in rural areas or that might deter them (protective and risk factors). The third study examined which factors contribute to whether students applied to teach in rural areas and if they took positions in rural areas.

Study One: Entry Survey

Entry Method

Participants. Participants in the entry survey were 4773 students finishing their first semester of residency. Of those responding, 1625 (63.5%) were female and most were undergraduate students ($N = 3449$, 73.32%). Most students stemmed from urban high schools ($N = 3186$, 70.05%), the majority were willing to teach in a rural area ($N = 2924$, 62.2%). Additional demographics are provided in Table 1. Due to missing data, 2148 participants were included in the final model.

Measures.

Sex. Sex was a binary question and only measured in the first year of the survey.

Level. Student level was measured as undergraduate or graduate.

Race/Ethnicity. Students were asked to select all that apply. If students selected White (not Hispanic) and another option, they were coded as the other option. Because there were low numbers of respondents, Native Hawaiian or Pacific Islander was classified with American Indian.

Parent education. Students indicated the highest level their parents/guardians completed. Eight options ranged from no formal schooling to graduate degree.

Table 1
Additional Demographics for Entry Survey

	N	%
Education		
No formal schooling ^a	40	0.84
Elementary school education ^a	36	0.75
Some high school ^a	64	1.34
High school graduate or GED	521	10.89
Some college	714	14.92
Two-year or technical degree	735	15.36
Four-year degree	1484	31.01
Some graduate school	140	2.93
Graduate degree	1051	21.96
Race/Ethnicity		
American Indian/ Pacific Islander	18	0.39
Asian	146	3.19
Black	149	3.25
Hispanic	112	2.45
White	3935	85.92
Other ^b	21	0.46
Multiple	199	4.34

Note. ^aThese three categories were combined due to small sample sizes compared to other categories.

^bDue to low sample size, this category was excluded from analyses.

High school location. High school location was coded as rural or not based on the multiple-choice question. Students were given the option of American Indian Reservation school, specific large cities in the region, suburban areas, rural areas, city, or other city in the three represented states or the U.S., or outside the U.S. If they selected any rural area option or American Indian Reservation, they were coded as rural. All others were coded not rural.

Specialist vs. generalist. Whether students planned to be a generalist or specialist was coded from responses to questioning the areas in which respondents intend to teach. They were allowed to select all that applied. If they selected early childhood education or elementary education, then they were coded as generalists. If they selected special education, K12, or secondary education, exclusively, then they were coded as specialists ($N = 2652$, 56.2%). If students selected more than one option, they were coded as generalists.

Where teach. Students were asked where they would consider teaching, used as the dependent variable. They were given the same options as for the high school location. They were coded as rural or not in the same way.

Results and Discussion

Of the 2148 respondents with complete data, 1357 (63.18%) intended to teach in a rural area. We used logistic regression to test the model predicting if students intended to teach in a rural area (urban = 0, rural = 1) from sex, level, race, parent education, high school location, and generalist/specialist. The model, as a whole, significantly predicted whether or not students intended to teach in a rural area, $\chi^2(15) = 359.19, p < .001; -2LL = 2826.84$. Analysis of effects is in Table 2.

Level, race, high school location, and specialist vs. generalist statistically significantly predicted students' consideration of teaching in a rural area. Specifically, undergraduate students were almost twice as likely as graduate students to consider a rural area teaching placement. Students of color were less likely (except for American Indian or Pacific Island students) to consider rural areas, but the odds ratio for Black students was the only one that was statistically significant. Students from rural high schools were five and a half times more likely to consider rural job sites than those from urban areas. Finally, students who specialized were about one and a fourth times as likely to consider rural than generalists.

Table 2

Results of Logistic Regression: Tests of Individual Predictors in Entry Survey

	df	Wald χ^2	<i>p</i>
Sex	1	0.16	0.69
Level	1	34.54	<0.001
Race	5	23.14	<0.001
Parent Education	6	10.53	0.10
High School Location	1	165.45	<0.001
Specialist vs. Generalist	1	6.57	0.01

	Frequency		OR	95% CI	<i>p</i>
	Rural	Not rural			
Sex (female = reference)	518	836			
Male	273	521	1.04	[0.85, 1.28]	0.69
Level (grad = reference)	284	260			
Undergraduate	507	1097	1.93***	[1.55, 2.41]	<0.001
Race (Caucasian = reference)	662	1249			
American Indian Pacific Islander	3	7	1.00	[0.21, 4.63]	0.43
Asian	28	13	0.33	[0.16, 0.68]	0.09
Black	37	11	0.24	[0.12, 0.50]	0.01
Hispanic	27	23	0.54	[0.29, 1.02]	0.77
Multiple	34	54	0.96	[0.60, 1.54]	0.06
Parent Education (HS degree/GED = reference)	76	160			
HS degree or GED not earned	29	20	0.84	[0.39, 1.79]	0.79
Some college	107	217	0.82	[0.55, 1.21]	0.41
2-year or technical degree	87	237	1.19	[0.80, 1.77]	0.05
4-year degree	275	400	0.74	[0.52, 1.04]	0.05
Some graduate	22	41	1.02	[0.54, 1.93]	0.65
Graduate degree	195	282	0.85	[0.59, 1.21]	0.52
HS location (Urban = reference)	711	788			
Rural	80	569	5.49	[4.24, 7.12]	<0.001
Specialist vs Generalist (generalist = reference)	378	565			
Specialist	413	792	1.29	[1.06, 1.57]	0.01

Note. Frequencies are provided for the reference category, followed by a willingness to teach in a rural area.

Study Two: Exit Survey

Exit Method

Participants. Participants in the exit survey were 3342 students finishing their residency. Of those responding, 2440 (73.69) were female. Unlike the entry survey, a minority of students at exit considered teaching in a rural area ($N = 1146$, 34.3%). Additional demographics are provided in Table 3. Due to missing data, 2297 participants were tested in the final model.

Measures.

Sex. Sex was a binary question and only measured in the first year of the survey.

Race/Ethnicity. Students were asked to select all that apply. Because there were low numbers of respondents, Native Hawaiian or Pacific Islander was classified with American Indian.

Specialist vs. Generalist. Whether students planned to be a generalist (1) or specialist (0) was coded in the same manner as in the Entry Survey. Most students were generalists ($N = 1527$, 64.5%) rather than specialists ($N = 879$, 36.5%).

The following scales were all measured on a 4-point scale (4 = agree, 3 = tend to agree, 2 = tend to disagree, and 1 = disagree) responding to prompts about the extent to which they agreed or disagreed that their teacher preparation program gave them necessary skills. A list of skills then followed.

Table 3
Additional Demographics for Exit Survey

Race	N	%
American Indian or Pacific Islander	40	1.23
Asian	113	3.48
Black	101	3.11
Hispanic	89	2.74
White	2851	87.83
Other	52	1.60

Twenty-first century teaching. Twenty-first century teaching skills was measured by nine items (coefficient alpha = .93) addressing the degree to which students felt their teacher preparation program gave them these basic skills: engaging students from multiple perspectives, engaging students in self-assessment strategies, helping students develop critical thinking processes and to solve complex problems, building global awareness, and understanding interdisciplinary themes. One example was “Design activities where students engage with subject matter from a variety of perspectives.”

Classroom management. Classroom management included six items (alpha = .91) addressing the degree to which students felt their teacher preparation program gave them basic skills. Items addressed such areas as communicating clear expectations for student behavior, developing and maintaining a classroom environment that promotes engagement, responding appropriately to student behavior, creating a learning environment that respects differences, and effectively organizing the physical environment. One example was, “Clearly communicate expectations for appropriate student behavior.”

Parent relationships. One item addressed gaining basic skills in collaborating with parents and guardians to support student learning.

Social support. Ability to effectively work with colleagues for social support was measured with two items (alpha = .87), including collaborating with teaching colleagues to improve student performance and using colleague feedback to support development as a teacher.

Professional development. Two items (alpha = .84) addressed students’ preparation to contribute to their own professional development by seeking out learning opportunities and accessing professional literature.

The following three scales addressed the working relationship with the students’ cooperating teachers, also measured on a 4-point scale from agree

to disagree. Students responded to the prompt, “My cooperating teacher/co-teacher...” followed by statements regarding their most recent student teaching placement.

Co-classroom management. This item measured the extent to which the student felt helped with classroom management.

Co-parent relationships. This item addressed the extent to which the student felt the co-teacher included them in parent-teacher conferences and other professional experiences.

Supervisory and social support. Nine items (alpha = .93) addressed helping the student develop as a reflective practitioner by providing time for classroom observation and planning, providing constructive feedback, and helping to reflect on student data to inform instruction. For example, one item addressed how well the student felt the co-teacher “provided adequate opportunities for me to observe the classroom.”

Because we developed the seven scales from existing items, we further examined the fit of the model with a confirmatory factor analysis (CFA), where each scale was a latent variable and each item was a manifest variable predicted by that scale. The CFA only tested the measurement model, or the extent to which the model fit the data as predicted and the items loaded on the predicted seven scales. The measurement model of the seven scales and was found to be sufficient, CFI = .93, NNFI = .92, GFI = .89. All factor loadings were statistically significant, $p < .001$. These results support use of the scales as developed.

Where teach. Students were asked where they would consider teaching, used as the dependent variable. They were given the same options as for high school location (see entry survey). They were coded as rural or not in the same way.

Results and Discussion

Of the responses, 2297 provided full data and were used in analyses. Most (67%, $N = 1529$) preferred to teach in a non-rural area, while about one-third would consider teaching in a rural area (33%, $N = 768$). Using logistic regression, we predicted whether or not students would consider teaching in a rural area from sex, race/ethnicity, preparation to teach (specialist/generalist, twenty-first century teaching, classroom management, parent relationships, social support), and support from the

co-teacher (co-classroom management, co-parent relationships, supervisory and social support). Tests of individual predictors are in Table 4.

The full model, as a whole, statistically significantly predicted where they would teach, $\chi^2(15) = 44.72, p < .001$; $-2LL = 2927.37$. Of the individual predictors, only race and twenty-first century teaching skills significantly predicted teaching in a rural area, where increased perceived skill related to a greater likelihood of rural teaching.

Table 4
Results of Logistic Regression: Tests of Individual Predictors for Exit Survey

Effect	Mean (SD)		DF	Wald	
	Not Rural	Rural		χ^2	p
Sex			1	1.13	0.29
Race			5	22.31	<.001
Specialist vs. Generalist			1	1.39	0.24
21st Century Teaching	3.31 (.59)	3.41 (.57)	1	9.52	0.002
Class Management	3.51 (.55)	3.57 (.56)	1	0.67	0.41
Parent Relationships	3.23 (.79)	3.30 (.81)	1	0.08	0.78
Social Support	3.53 (.60)	3.59 (.57)	1	0.03	0.86
Professional Development	3.39 (.64)	3.46 (.61)	1	0.08	0.78
Co-class Management	3.76 (.61)	3.78 (.58)	1	0.91	0.34
Co-parent Relationship	3.84 (.48)	3.84 (.48)	1	0.47	0.49
Supervisory Support	3.75 (.47)	3.75 (.49)	1	0.84	0.36

	Frequency		OR	95% CI	p
	Not rural	Rural			
Sex (female = reference)	1232	600			
Male	297	168	1.13	[0.90, 1.41]	0.29
Race (Caucasian = reference)	1309	701			
American Indian Pacific Islander	15	11	1.33	[0.61, 2.93]	0.051
Asian	67	17	0.45	[0.26, 0.78]	0.12
Black	62	15	0.42	[0.24, 0.75]	0.07
Hispanic	51	14	0.48	[0.26, 0.88]	0.21
Other	25	10	0.80	[0.38, 1.68]	0.62
Specialist vs Generalist (generalist = reference)	987	475			
Specialist	542	293	1.12	[0.93, 0.14]	0.24
21st Century Teaching			1.47	[1.15, 1.88]	0.002
Class Management			0.89	[0.68, 1.17]	0.41
Parent Relationships			0.98	[0.83, 1.15]	0.78
Social Support			1.02	[0.80, 1.30]	0.86
Professional Development			1.03	[0.83, 1.28]	0.78
Co-class Management			1.12	[0.89, 1.42]	0.34
Co-parent Relationship			0.92	[0.72, 1.17]	0.49
Supervisory Support			0.86	[0.61, 1.20]	0.36

Note. Descriptive statistics are provided for continuous variables broken down by whether or not the participants were willing to teach in a rural area; frequencies are provided for categorical variables for the reference category followed by other categories.

Those who identified as American Indian or Pacific Islander were also more likely than Caucasian students to endorse rural teaching, which was marginally significant ($p = .051$).

Study Three: Transition to Teach Survey

Transition to Teach Method

Participants. Participants in the transition to teach survey were 1832 participants in the first year following graduation. Unfortunately, demographic questions were not included in this survey. Of these, 91% ($N = 1663$) sought employment as a teacher; 87.6% ($N = 1601$) did not seek any other employment besides teaching. Reasons for seeking other employment included: no or limited teaching positions available in their field, ensuring earnings until a teaching position is obtained, family or personal reasons, more future prospects, better location (12.4% of those seeking other employment, $N = 27$), better salary and/or benefits, job security, and better salary. The most common reason given was a preferred work environment outside of teaching (29.4%, $N = 64$). On average, respondents submitted 1.98 teaching job applications ($SD = 1.30$) and received 1.68 offers ($SD = 1.07$). Table 5 highlights the current employment situations of respondents.

Measures. Twenty-first century teaching, classroom management, parent relationships, social support, and professional development were measured in the same way as they were for the exit interview. They measure the extent to which the respondent felt prepared for each of these activities. Coefficient alphas ranged from .85 to .92.

Respondents were asked about their current school climate. These items were included because the anticipated climate could potentially predict where students apply. Applicants may be acutely aware of how they are treated in an interview and assign attributes to the working climate based on the initial experiences afforded to them in the school building. This may impact their decision to teach in a rural setting. Indeed, of those who applied to non-teaching positions, 30% said it was for a preferred work environment. Items in each scale were measured on a 4-point scale from 1 (disagree) to 4 (agree).

Rural teaching. We used two measures of teaching in rural areas: where they applied and where they actually taught. The same options were listed for application to teaching positions as for high school location (see entry survey). They were coded as rural or not in the same way. The second measure, where students took teaching positions, was by zip code of the school. The degree of “ruralness” was calculated by use of the “Zip Code Generator” provided of the “Zip Code Generator” provided by the Great Data

Table 5
Current employment situation

	<i>N</i>	<i>%</i>
Employed full-time in an educational setting	1466	80.55
Employed part-time in an educational setting	177	9.73
Employed full-time in a field other than education	79	4.34
Employed part-time in a field other than education	29	1.59
Unemployed and seeking employment	46	2.53
Unemployed and not seeking employment	26	1.23
Type of position		
Full-time or part-time teacher	1421	86.49
Short-term substitute	51	3.1
Long-term substitute	87	5.3
Paraprofessional	26	1.58
Other	58	3.53
Grade level^a		
Early Childhood	89	6.94
Elementary	674	51.81
Middle or Junior High	421	32.56
High School	426	33.15

Note. ^aRespondents could check all that apply, so percentages sum to more than 100%.

Table 6
Odds Ratios Predicting Applying to and Teaching in a Rural Area

Effect	Mean (SD)		DF	Wald χ^2	OR	95% CI	<i>p</i>
	Not Rural	Rural					
21st Century Teaching	3.27 (.59)	3.22 (.61)	1	1.26	0.85	[0.63, 1.13]	0.26 <.01
Class Management	3.40 (.61)	3.42 (.55)	1	10.93	1.69	[1.24, 2.31]	.001
Parent Relationships	3.22 (.85)	3.08 (.87)	1	2.74	0.84	[0.68, 1.03]	0.10
Social Support	3.52 (.65)	3.41 (.74)	1	2.83	0.800	[0.62, 1.04]	0.09
Professional Development	3.37 (.70)	3.28 (.76)	1	0.61	0.92	[0.76, 1.13]	0.43

Effect	Mean (SD)		DF	Wald χ^2	OR	95% CI	<i>p</i>
	Not Rural	Rural					
21st Century Teaching	3.28 (.59)	3.26 (.60)	1	2.00	0.79	[0.57, 1.10]	0.16
Class Management	3.40 (.59)	3.46 (.56)	1	8.78	1.69	[1.19, 2.38]	0.003
Parent Relationships	3.20 (.86)	3.16 (.82)	1	0.02	0.98	[0.78, 1.24]	0.89
Social Support	3.52 (.65)	3.48 (.70)	1	1.02	0.86	[0.65, 1.15]	0.31
Professional Development	3.37 (.69)	3.30 (.76)	1	1.84	0.86	[0.69, 1.07]	0.17

Note. Descriptive statistics are provided for continuous variables broken down by whether or not they applied to or are teaching in a rural area.

system (Great Data, 2019). The generator considers rural, suburban, and urban populations by population density, distance from the nearest city, as well as the size of the nearest city and outputs rural, urban, or suburban based on zip code. The two measures address new teachers' intent as well as their actual workplace.

Results and Discussion

Applied to a rural area. We predicted whether or not respondents applied to teach in a rural area from their preparation to teach. Of the 1832 respondents, 1144 were used in analyses due to missing data. Most did not apply to rural areas, ($N=708$, 62%). Overall, preparation for twenty-first century teaching, classroom management, parent relationships, social support, and professional development, significantly predicted applying to a rural area, $\chi^2(5) = 20.30$, $p = .001$, $-2LL = 1520.63$. Analyses of individual predictors are in Table 6.

Teach in Rural Area. To examine students teaching in a rural area, only respondents who were currently teaching and included data on zip code were included in analyses ($N = 1023$). Of those, 32% ($N = 325$) were teaching in a rural area. The full model significantly predicted where they taught, $\chi^2(5) = 11.23$, $p = .047$, $-2LL = 1278.99$. See Table 6 for odds ratios.

In both cases, only feeling prepared in classroom management predicted whether or not respondents would apply to and teach in a rural area. The better

prepared they felt, the more likely they were to venture into rural teaching.

Discussion

The researchers sought to examine factors that lead to new teachers to apply to teach in rural settings. It was interesting that after their first semester of residency, 62% of students were open to teaching in rural areas, yet, by the end of their second semester when actually applying for teaching positions that number had declined to 34.3% and 38%, respectively. Students had either narrowed down their focus or were otherwise deterred from considering rural teaching positions. At each time period, we were able to test different variables predicting who was willing to teach in rural areas.

When predicting students' consideration of teaching in rural areas, grade level, race, high school location, and specialist vs. generalist were among the personal characteristics that statistically significantly predicted whether or not they would teach in rural areas. Specifically, undergraduate students were almost twice as likely as graduate students to consider rural settings. Surprisingly, those students who were specialized were about one and a fourth times as likely to consider rural than generalists. This specialization preference is a unique finding of this study. The authors hypothesize that perhaps specialists in this sample may be more likely to find their unique job in a rural setting and may not meet as much competition for those jobs as in urban settings, or they can work in a setting that allows them to work in their specialization, among other areas. Of those

factors that decreased the likelihood of teaching in rural settings, students of color (except for American Indian or Pacific Island students) were less likely to consider teaching in rural areas. This finding echoes similar conclusions found in the 2010 report authored by Berry, et al.

Some of our results support the notion of homegrown teachers (Husyan, 2008). This notion suggests that when communities “grow their own” professions, then the professionals are more likely to remain in that setting. Students from rural high schools were five and a half times more likely to consider teaching in rural areas than those from urban areas. Students who identified as American Indian were also more likely to consider rural teaching.

When examining preparation for teaching (at the end of their residency), the students’ twenty-first century teaching skills (i.e., teaching self-regulation and critical thinking across a broad platform) and classroom management significantly predicted teaching in rural areas. Students who perceived themselves to have higher teaching skills had a higher likelihood to apply to teach in rural settings. Those who felt better prepared for classroom management were also more likely to consider teaching in rural areas. Perhaps, better preparation for the job made them feel more comfortable addressing the challenges unique to rural areas. This preparation supports findings by Lawrason (2008), which found that teachers who had less preparation in classroom management, and handling parental relationships struggled to transition into their first year of teaching.

As school districts look for ways to recruit into rural teaching positions, stakeholders should consider students’ backgrounds, but also their preparation for teaching. Of particular importance are coming from a rural area, as well as preparation for twenty-first century teaching and classroom management. These appear to uniquely contribute to the decision to apply to teach in a rural setting.

Recommendations for Practice

Findings from this research contribute distinctively to the literature by confirming that there are unique factors that contribute to willingness and commitment to teach in rural settings as well as give light to specific areas on which to focus recruitment efforts. More specifically, recruitment efforts can be made in rural areas to find those who are from rural communities to recruit them into teaching. This is supported by Barley (2009) who proposed creating teaching programs that specialize in preparing teachers for teaching in the rural context by highlighting expectations of rural life. Further, communities of higher education may increase

opportunities to engage in professional development surrounding classroom management (including instruction and opportunities to practice and receive feedback) as well as how to engage with stakeholders as new teachers effectively. This is supported by the work of Harrison & Tran (2020) who indicate that the problem of recruitment may be best addressed through intentional stakeholder engagement with both schools and higher education. This may help contribute to the recruitment of new teachers in rural settings. In addition, programs could generate pipelines from rural high schools to education programs to build a teaching workforce in rural areas. These programs should pay special attention to preparing students for the challenges of rural teaching as well as for classroom management and teaching self-regulated learning and critical thinking.

Limitations

This study made use of a self-report survey. As with all perception data, this is the perception of students about their training and preparation, rather than objective data about observable skills. Finally, this study made use of participants from 14 universities in the Midwest, and their experiences may not reflect the experiences of other students in other locations. However, it is also a strength to draw from data across multiple institutions and states.

Recommendations for Further Study

Further studies may broaden the sample size to examine factors that help teachers persist in teaching in rural settings. Additionally, the sample size could be broadened to include teachers who have taught for many years in rural settings to examine what helps teachers persist over long periods of time in rural locations. More objective measures could examine proficiency in classroom management as well as teaching competence to determine what aspects of competency may uniquely contribute to persistence in rural settings. Tracking students across time would allow for examination of which students change their minds about teaching in rural areas and why.

Conclusion

School districts and policymakers across the nation see the critical need to respond to systematic teacher shortages in rural settings. This study demonstrates that helping communities recruit professionals from within the community to provide educational instruction for their youth might be a critical way to aid in the recruitment of much-needed teaching staff. Also, university communities may invest in instruction, opportunities for guided

practices, as well as systematic feedback in the areas of classroom management and building home-school partnerships to aid in developing competency for new teachers in rural settings, which might be a way to encourage them to stay in a rural setting. Overall, this

approach engages both local and university communities to find ways to partner and encourage those teachers who are teaching in critical rural areas to stay and educate some of our most vulnerable youth.

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