

Center for Public Education



**Educational Equity for Rural Students:**  
Out of the Pandemic, but Still Out of the Loop

A Five-Part Series

**Part 3: Thinking Broadly and Deeply  
about Rural Student Achievement and  
Teacher Pipelines**

AN **nsha** PUBLICATION

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## Why This Study

Nearly 1 in 5 U.S. students attend rural schools. Researchers report that at least half of public schools are rural in 12 states (i.e., Montana, South Dakota, Vermont, North Dakota, Maine, Alaska, Oklahoma, Nebraska, Wyoming, New Hampshire, Iowa and Mississippi) ([Showalter et al., 2019](#)). However, “Rural schools are largely left out of research and policy discussions, exacerbating poverty, inequity and isolation” ([Lavalley, 2018](#)).

Providing quality education to all rural students is a daunting task and needs the support of policy and research. In 2018, the Center for Public Education ([CPE](#)) of the National School Boards Association published a comprehensive report on the U.S. rural K-12 public education, titled “[Out of the Loop](#).” Today, the data and research presented in the report are about five years old, but the facts, together with the suggested policies and practices about rural education, are still valid and accurate. After a two-year pandemic, issues such as funding, teacher recruitment and retention, and serving disadvantaged students are becoming more serious in rural school districts.

Based on the 2018 report, the CPE conducted this follow-up, data-driven study to inform policymakers, school leaders, educators, and parents. Our main research goal was to examine [educational equity](#) for rural students. According to [the Educational Equity Project](#), educational equity means that each student should receive what they need to develop to their full academic and social potential, regardless of who they are and where they go to school. With this goal in mind, in this series of reports we examined relevant data about the education conditions of rural students, and tried to answer the following research questions:

- Why should rural students be actively included in the discussion about educational equity?
- What are some unique challenges of rural education?
- How can policies be more aligned with rural circumstances in terms of providing each student with equal access to all learning opportunities?
- What practices have rural school districts adopted to provide quality education to all students?

The study includes an executive summary and five sections. In this section/report, we focus on the student achievement gap and teacher shortages in rural areas. We first look at the diversity of rural students on the Nation’s Report Card and examine whether there is any regional, demographic, or geographical pattern of student academic performance in fourth and eighth grade reading and math. Based on our findings, we discuss five unique learning opportunities that rural students often miss and encourage education leaders to consider providing more policy and practice support in those fields.

- Executive Summary
- Growing Diversity of Rural Students
- An Urgent Need to Fix the Digital Divide
- **Thinking Broadly and Deeply about Rural Student Achievement and Teacher Pipelines**
- School Safety and Mental Health Matter for Rural Students
- Parent Support and Community Culture Are Assets of Rural Schools

## Thinking Broadly and Deeply about Rural Student Achievement and Teacher Pipelines

“Many challenges and barriers to success in rural education have been well documented in the research literature, but few studies identify how to improve achievement in rural settings, and very few specifically identify practices that close achievement gaps” ([Culbertson and Bilig, 2016](#)). One reason for this phenomenon is that each rural district has its own context and challenges. There are hardly one-size-fits-all solutions.

Since the 20th century, industrialization, mechanization of agriculture, advances in transportation and communications, and depletion of natural resources have been changing the economic and demographic characteristics of rural areas. Many rural school districts chose reorganization or consolidation based on the economies of scale principle that stems from the disciplines of economics and management science ([Tholkes and Sederberg, 1990](#)). While some researchers have warned that economies of scale arguments were often misused to support rural school district consolidation since 1960, some state legislatures still passed laws to regulate school financing formulas that drive consolidation ([Blauwkamp et al., 2011](#)).

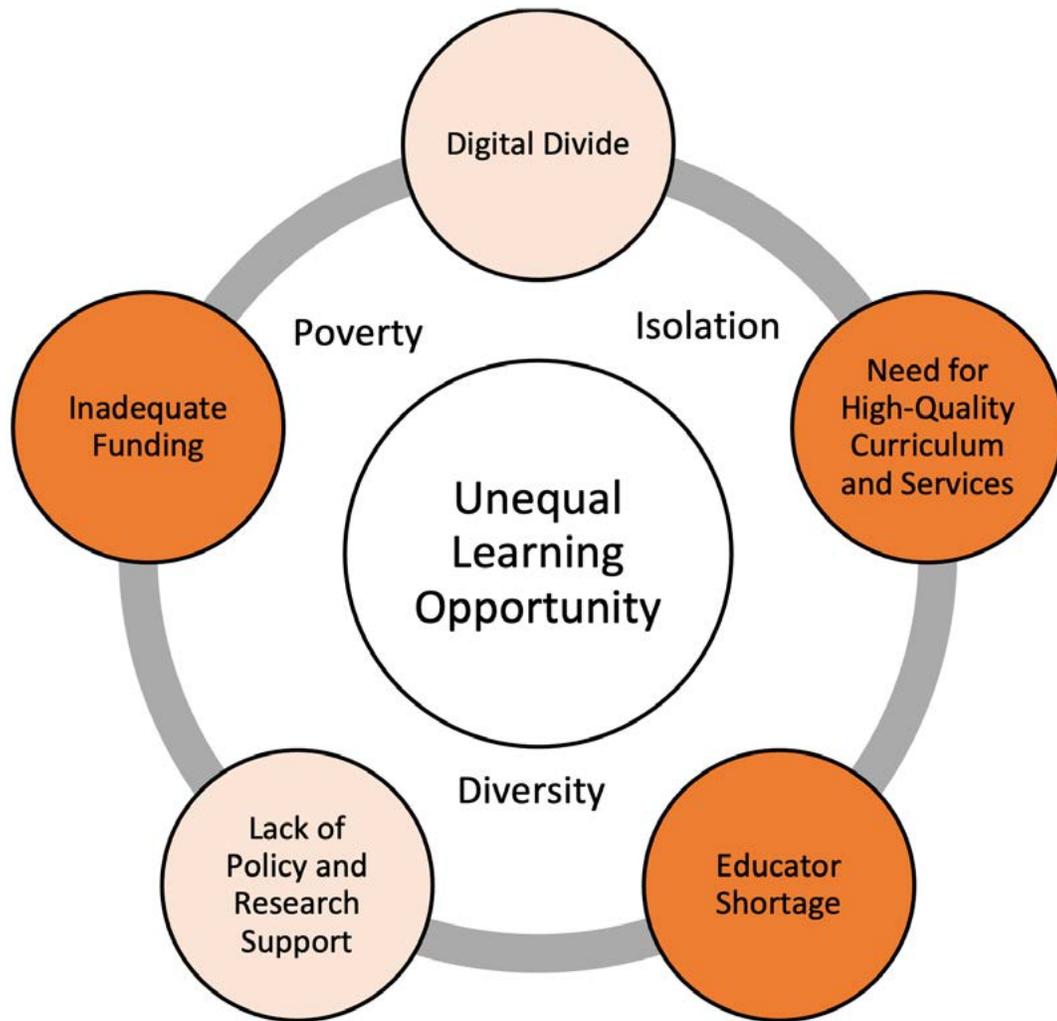
In 1968, the Missouri School District Reorganization Commission stated, “The major purpose of school district reorganization is to establish the framework which will provide a quality educational program and, as far as possible, an equal opportunity for every child in the state to receive an education geared to his ability, interests and need.” ([Hickey, 1969](#)). In 2020, the [Harvard Political Review](#) published an article titled “Rural School Consolidation is Not the Answer” ([Secondo, 2020](#)). The author pointed out that “because many states see consolidation as a way to effectively cut education spending, state governments try to encourage consolidation,” but often, “this support lacks long-term follow-through.”

While some communities look to reorganize their school districts with neighboring districts to advance their learning and teaching resources, many communities resist consolidation because they know it has the potential to hurt them more than it helps to balance the budget ([Sipple and Blakely, 2009](#)). Research even suggests that consolidation may pose an equity issue for rural students ([Lavalley, 2018](#)). Consolidation is one example that policymakers should avoid one-size-fits-all solutions to rural education and consider a repertoire of ways to handle problems.

In this section, we use data to show the diversity of rural student academic performance on the Nation’s Report Card. We further elaborate on the diversity of the rural student achievement gap from regional, geographical, and demographic perspectives. While many factors contribute to the achievement gap between advantaged and disadvantaged students, we focus on five lenses, including early childhood education, advanced courses, pathways to higher education opportunities, high-quality teachers, and funding sources. We also describe some district-level solutions to specific issues in certain rural contexts.

As [Mehta](#) remarks, “repertoires of ways to handle problems is always better than one-size-fits-all solutions” ([Hess, 2023](#)). We encourage readers to look at the data and information we present in this section and think broadly and deeply about rural student achievement and teacher pipelines.

## Unequal Learning Opportunities



The chart represents an overarching description of the unique challenges faced by rural education, which result in unequal learning opportunities. Poverty and isolation are obstacles for rural educators to provide the same learning opportunities as their peers in suburban or urban areas. Diversity, an example of which is the achievement gap between advantaged and disadvantaged students, adds another layer of educational inequity to rural education. In this section, we focus on three areas (highlighted in the chart) and discuss five learning opportunities that rural students have missed in general.

- 1) Missing Early Learning Opportunities.
- 2) Missing Key Courses on the STEM Pathway.
- 3) Missing Opportunities on the Way to Attaining a Higher Level of Education.
- 4) Missing Learning from Teachers with Specialties.
- 5) Missing (Lack of) Funds to Alleviate Teacher Shortages and Close the Achievement Gap.

## How to Define Rural

The term “rural” means different things to different people ([U.S. Census Bureau, 2017](#)). In general, rural areas are sparsely populated, far from urban centers, and have low housing density. In the U.S., “97 percent of the country’s land mass is rural, but only 19.3 percent of the population lives there” ([U.S. Census Bureau, 2017](#)).

Federal agencies define rural slightly differently. According to the Census Bureau, rural is defined as all population, housing, and territory not included within an Urbanized Area (i.e., areas with 50,000 or more people) or Urban Cluster (i.e., areas with at least 2,500 but fewer than 50,000 people). In the 2021 Edition of “Rural America at a Glance” ([Dobis et al., 2021](#)), researchers from the U.S. Department of Agriculture (USDA) use nonmetropolitan (nonmetro) counties to refer to rural areas, and the terms “rural” and “nonmetro” are used interchangeably in their report.

In our study, we present data from multiple sources. Like the USDA researchers, we use “rural” and “nonmetro” interchangeably. Since most data used in our report are from the National Center of Educational Statistics ([NCES](#)) of the U.S. Department of Education ([ED](#)), we mainly use the NCES’s definitions for rural areas.

The NCES rural locale assignments rely on the Census Bureau’s designation of non-urban territory as rural ([Gevert, 2019](#)). With more details about isolation levels, the NCES rural locale provides fringe, distant, and remote subtypes that differentiate rural locations based on the distance from and size of the nearest urban area. The following are definitions from the NCES:

- Rural – Fringe: Census-defined rural territory that is less than or equal to 5 miles from an Urbanized Area, as well as rural territory that is less than or equal to 2.5 miles from an Urban Cluster.
- Rural – Distant: Census-defined rural territory that is more than 5 miles but less than or equal to 25 miles from an Urbanized Area, as well as rural territory that is more than 2.5 miles but less than or equal to 10 miles from an Urban Cluster.
- Rural – Remote: Census-defined rural territory that is more than 25 miles from an Urbanized Area and also more than 10 miles from an Urban Cluster.

Additionally, we use some regional terms in our study, such as Rural Appalachia and Mississippi Delta, to describe some unique features of rural students and their learning environments. These terms are often fuzzy and contextual, pertaining to culture, community characteristics, and local economy. Some states can be included in more than one region. For instance, Alabama, Kentucky, Mississippi, and Tennessee are in both the Appalachian Region and the Delta Region. We report some data about these rural regions in the hope of helping education leaders to develop new perspectives and strategies to advocate for rural students and rural schools.



## Diversity of Rural Students on the Nation's Report Card

Diversity comes in diverse ways. Using national averages to measure reading and math performances of rural students on the National Assessment of Educational Progress (NAEP or the Nation's Report Card) often conceals the real picture of rural education. Instead of saying that in general, rural students performed better than their urban peers, we should analyze state-level data, see the regional patterns as we did in our first two reports ("Growing Diversity of Rural Students" and "An Urgent Need to Fix the Digital Divide"), and come to meaningful conclusions.

### The Achievement Gap Among Rural Students

"Proficient" is a level that represents solid academic performance for each grade assessed on NAEP ([NAEP, 2021](#)). Students reaching this level have demonstrated competency over challenging subject matter (e.g., reading, math, science), including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter.

While the pandemic has challenged rural schools when it comes to providing quality remote learning for every student due to the homework gap (the digital divide between students who have home broadband access and those who do not), rural students from several states outperformed the national average in 2022, considering the disruption caused by COVID-19. For instance, in 2022, approximately one-third of fourth graders performed [at or above Proficient](#) in reading and math, but more than half of fourth graders reached this level in rural Massachusetts (reading 57%, math 50%) and Connecticut (reading 52%, math 53%) (Table 3.1).

By contrast, in 15 states, more than two-thirds of fourth graders in rural areas failed to reach the NAEP Proficient level in 2022. Most of those states are in the South (Georgia, Virginia, Alabama, Kentucky, Arkansas, and Louisiana) and the West (Arizona, Alaska, Hawaii, Oregon, and Washington). In West Virginia and New Mexico, more than 80% of rural students did not reach the Proficient level in fourth-grade reading and math.

We found similar patterns of math and reading performance in eighth grade among rural students (Table 3.2). For eighth-grade reading, more than 40% of rural students performed at or above Proficient in Rhode Island (47%), Connecticut (41%), New York (41%), and Utah (40%) in 2022. However, less than 20% of rural students performed at or above Proficient in West Virginia (19%), Alabama (19%), Texas (18%), and New Mexico (15%).

In 2022, nearly all states saw a significant decline in eighth-grade math. More than one-third of rural students performed at or above Proficient in Connecticut (39%), Utah (39%), Ohio (36%), Wisconsin (36%), and Nebraska (35%). By contrast, less than 20% of rural students performed at or above Proficient in eight states – West Virginia (14%), Alabama (15%), Mississippi (17%), Arkansas (17%), Louisiana (18%), Oklahoma (19%), New Mexico (10%), and Hawaii (9%).

For decades, rural students from most states in the Northeast and the Midwest have performed above the national level in reading and math at both fourth and eighth grades; rural students from many states in the South and the West have instead fallen far behind. Data show that states with high racial/ethnic diversity and high poverty levels have more low-performing students in rural schools, compared with their peers in the Northeast and the Midwest. The achievement gap among rural students is clearly an issue of educational equity for this country.

Table 3.1. Percentage of Grade 4 Rural Students Who Performed at or above the NAEP Reading and Math Proficient Level, by State: 2007—2022

Region	Reading, Grade 4								Jurisdiction	Math, Grade 4							
	2007	2009	2011	2013	2015	2017	2019	2022		2007	2009	2011	2013	2015	2017	2019	2022
National public	33	33	35	35	36	35	33	32	National public	39	39	42	44	40	41	40	37
Northeast: New England	52	54	48	51	62	53	53	52	Connecticut	56	64	53	64	55	56	57	53
	31	34	31	36	34	34	33	27	Maine	38	44	45	47	40	38	41	30
	56	51	54	47	59	52	58	57	Massachusetts	63	60	65	66	60	63	59	50
	41	42	46	45	48	46	40	40	New Hampshire	49	56	60	59	52	50	46	39
	43	43	50	52	49	52	54	46	Rhode Island	51	55	59	62	53	47	57	45
41	41	41	42	45	43	37	34	Vermont*	49	51	49	52	43	42	39	34	
Northeast: Middle Atlantic	53	46	54	49	51	59	42	46	New Jersey	68	55	62	66	58	66	52	52
	43	37	34	34	36	39	37	26	New York	48	45	34	40	44	37	40	26
	44	39	42	44	40	40	46	33	Pennsylvania	48	50	51	50	47	50	58	40
Midwest: East North Central	33	35	35	41	44	43	41	37	Indiana	50	47	48	55	54	50	52	49
	41	38	36	33	40	36	36	29	Illinois	50	41	40	39	34	40	35	43
	35	36	38	35	28	35	34	30	Michigan	43	40	39	42	32	40	37	35
	36	36	35	43	37	39	41	37	Ohio	48	49	50	56	43	41	40	44
	35	33	38	37	40	38	35	38	Wisconsin	48	47	46	51	48	43	47	47
Midwest: West North Central	37	34	33	40	35	34	34	36	Iowa	44	45	45	49	45	47	44	43
	39	37	39	40	37	37	37	30	Kansas	53	51	52	49	47	44	49	39
	39	38	34	40	41	39	35	36	Minnesota	48	54	48	60	54	55	54	47
	30	37	33	37	41	34	32	31	Missouri	37	40	44	44	37	42	38	41
	38	34	39	39	40	38	41	37	Nebraska	43	40	45	52	50	54	56	48
	31	34	35	32	35	32	32	30	North Dakota	41	41	45	47	41	44	44	41
	30	32	30	29	31	32	33	31	South Dakota	38	42	37	41	37	40	42	39
South: South Atlantic	38	35	37	40	40	40	41	29	Delaware	40	35	41	44	42	45	48	35
	29	36	39	46	39	44	36	39	Florida	42	41	38	45	46	47	47	46
	39	30	33	37	30	31	29	27	Georgia	31	34	38	38	29	31	35	32
	41	47	51	57	44	44	36	40	Maryland	46	56	61	57	53	50	46	37
	28	31	32	33	37	36	33	32	North Carolina	43	42	43	43	42	40	39	36
	25	27	26	26	33	27	29	32	South Carolina	36	32	36	32	33	25	35	30
	33	38	40	45	31	41	34	24	Virginia	37	38	44	44	37	53	40	32
24	24	22	25	29	32	28	20	West Virginia	29	25	26	32	30	33	24	18	
South: East South Central	31	29	32	31	29	30	28	29	Alabama	25	23	24	26	25	31	25	26
	33	35	34	39	37	37	33	28	Kentucky	29	36	39	43	37	35	39	31
	19	25	25	25	30	28	34	34	Mississippi	22	24	28	31	32	34	43	37
	30	28	29	31	28	33	35	31	Tennessee	30	29	32	39	37	39	37	45
South: West South Central	30	30	32	31	32	31	31	33	Arkansas	37	39	38	39	31	33	31	28
	20	19	23	24	30	30	27	29	Louisiana	23	26	27	29	29	32	29	29
	27	29	28	32	34	33	30	25	Oklahoma	29	32	34	37	35	38	38	27
	33	29	33	31	33	32	28	32	Texas	37	39	49	49	43	48	41	39
West: Mountain	22	24	29	26	34	27	29	27	Arizona	27	24	36	38	34	29	30	29
	40	46	45	45	46	46	42	41	Colorado	49	48	54	57	55	49	48	39
	32	28	34	31	33	35	40	27	Idaho	39	40	41	40	35	41	45	37
	35	32	35	35	36	36	36	33	Montana	42	41	42	41	39	38	40	36
	20	18	21	22	21	25	24	20	New Mexico	21	26	28	31	29	26	29	16
	33	34	32	35	34	26	34	35	Nevada	39	40	45	40	43	31	36	35
	34	37	38	41	43	41	50	41	Utah	42	49	46	51	43	52	51	46
35	33	36	37	41	41	43	41	Wyoming	45	41	46	47	47	48	51	46	
West: Pacific	29	27	26	27	30	28	25	24	Alaska*	38	38	37	37	35	32	33	28
	27	24	37	28	35	20	19	‡	California	33	33	54	31	26	25	21	‡
	27	26	19	27	18	24	28	23	Hawaii	39	32	34	41	26	25	21	20
	28	28	27	29	32	34	30	29	Oregon	32	37	31	38	42	30	40	30
36	28	32	41	33	28	32	29	Washington	40	36	43	50	41	32	38	32	

Note: \*The statistics are of the whole state because the state does not have statistics for rural students.

‡ No estimated statistics due to small sample sizes. The color bar represents percentage points above the national average of rural students in public schools.

Source: [NDE Core Web \(nationsreportcard.gov\)](https://nationsreportcard.gov)

Table 3.2. Percentage of Grade 8 Rural Students Who Performed at or above the NAEP Reading and Math Proficient Level, by State: 2007—2022

Region	Reading, Grade 8								Jurisdiction	Math, Grade 8							
	2007	2009	2011	2013	2015	2017	2019	2022		2007	2009	2011	2013	2015	2017	2019	2022
National public	31	31	33	36	32	33	32	28	National public	32	33	35	36	31	32	33	25
Northeast: New England	50	54	56	56	49	53	49	41	Connecticut	40	53	51	50	48	37	47	39
	35	34	38	36	35	39	34	28	Maine	32	36	37	37	35	32	31	23
	46	54	49	52	42	56	‡	‡	Massachusetts	54	61	57	64	47	59	‡	‡
	41	44	46	47	45	47	40	37	New Hampshire	40	45	48	52	50	47	40	32
	34	33	39	47	52	52	50	47	Rhode Island	36	34	44	45	46	45	42	32
	42	41	44	45	44	45	40	34	Vermont*	41	43	46	47	42	39	38	27
	44	44	51	54	55	54	62	‡	New Jersey	47	49	47	54	53	51	63	‡
Northeast: Middle Atlantic	37	35	42	40	38	27	34	41	New York	35	40	38	29	34	33	34	32
	35	40	43	46	45	45	34	35	Pennsylvania	36	44	44	40	43	43	43	32
	37	34	34	39	37	41	40	32	Indiana	40	40	38	44	37	37	44	35
Midwest: East North Central	34	40	36	45	41	36	39	36	Illinois	34	35	37	42	38	38	30	25
	29	32	35	30	29	36	35	30	Michigan	29	36	33	30	28	29	31	29
	43	39	41	43	33	42	44	35	Ohio	42	35	43	45	36	45	41	36
	34	37	35	37	43	40	41	30	Wisconsin	37	41	40	39	45	38	40	36
Midwest: West North Central	39	36	36	37	37	36	34	31	Iowa	40	35	39	39	41	37	34	31
	42	36	40	41	38	38	32	26	Kansas	44	41	47	46	33	40	32	25
	33	34	40	40	37	34	29	25	Minnesota	43	46	48	45	47	46	41	24
	32	32	36	38	37	35	29	26	Missouri	31	30	32	35	28	29	31	25
	36	38	37	37	40	37	35	31	Nebraska	40	39	37	38	43	41	40	35
	35	33	33	34	30	29	32	25	North Dakota	39	42	40	40	38	41	35	29
	37	36	32	35	33	31	28	30	South Dakota	39	39	39	40	31	36	33	31
South: South Atlantic	37	36	41	36	38	37	34	27	Delaware	38	37	36	37	35	29	31	21
	41	41	51	46	43	43	47	39	Maryland	45	51	48	45	43	40	42	33
	33	29	31	34	28	39	35	25	Florida	29	35	30	34	29	24	36	24
	27	26	29	28	27	31	34	30	Georgia	25	26	28	29	24	31	31	24
	27	26	31	32	28	31	30	24	North Carolina	34	36	37	36	27	31	35	22
	24	24	25	29	24	27	25	23	South Carolina	32	29	31	32	24	22	26	21
	31	30	32	35	30	33	33	27	Virginia	33	33	34	36	31	34	34	25
	20	22	22	23	27	29	24	19	West Virginia	17	17	21	21	17	22	21	14
South: East South Central	26	32	39	38	39	33	33	28	Kentucky	26	27	31	29	25	27	29	20
	26	29	28	34	31	32	32	33	Tennessee	24	23	23	28	29	32	31	27
	21	23	25	25	23	23	21	19	Alabama	16	18	18	20	12	15	18	15
	18	19	21	23	20	24	27	24	Mississippi	13	14	18	24	20	22	24	17
South: West South Central	25	26	27	28	25	26	25	26	Arkansas	23	27	29	27	18	22	23	17
	22	20	26	25	25	24	29	30	Louisiana	18	19	27	20	19	18	23	18
	26	25	26	29	27	31	25	22	Oklahoma	19	22	23	25	18	24	24	19
	31	28	29	40	27	26	25	18	Texas	37	39	43	42	37	33	28	20
West: Mountain	42	38	44	48	45	45	40	37	Colorado	49	46	48	47	40	40	39	26
	39	38	42	41	42	37	37	30	Montana	35	44	43	39	41	38	36	29
	34	40	30	39	38	41	34	40	Utah	28	35	34	37	38	42	34	39
	30	31	30	38	34	35	36	32	Idaho	33	36	32	36	29	31	38	29
	32	34	35	35	39	38	37	31	Wyoming	34	34	38	37	35	39	34	33
	24	27	27	28	25	28	28	25	Arizona	22	27	32	30	33	30	31	20
	21	26	32	34	26	36	30	37	Nevada	28	31	28	33	16	23	21	26
15	21	19	20	17	22	20	15	New Mexico	14	22	22	22	15	18	21	10	
West: Pacific	27	27	31	31	31	26	23	26	Alaska*	32	33	35	33	32	29	29	23
	21	28	26	35	30	27	‡	‡	California	23	27	27	34	23	21	‡	‡
	19	22	26	25	24	23	21	20	Hawaii	19	21	31	29	26	20	22	9
	32	34	32	37	42	32	34	25	Oregon	29	35	32	29	35	25	27	20
	32	36	35	39	35	40	33	25	Washington	33	37	45	39	38	47	31	23

Note: \*The statistics are of the whole state because the state does not have statistics for rural students.

‡ No estimated statistics due to small sample sizes. The color bar represents percentage points above the national average of rural students in public schools.

Source: [NDE Core Web \(nationsreportcard.gov\)](https://nationsreportcard.gov)

## Condition of Rural Schools in States with “NAEP Advantage”

Many factors contribute to a state’s “NAEP advantage” (i.e., having more students at or above Proficient and ranking high on the Nation’s Report Card). Most states with more high-performing rural students are in the Northeast. We cannot help asking why certain states or regions have done better in rural education and what are some of the valuable practices and policies that these states have adopted.

In 2019, the Rural School and Community Trust, together with AASA, The School Superintendents Association, and other partners, published a report about the condition of rural schools in 2018-2019. In the report, researchers ([Showalter et al., 2019](#)) used multiple measures to examine the achievement gap among rural students, and found that the states with “NAEP advantage” often shared the following characteristics:

- Low levels of rural child poverty.
- Low rural student mobility (i.e., rural students have changed residence in the past 12 months).
- Low level of state aid relative to local revenue.
- High graduation rate.
- High participation rate in advanced courses.
- High salary for rural teachers.



While these characteristics may be insufficient to answer why rural students performed better in certain states, we can see an established pattern: An education system that can provide as many learning opportunities as possible to support students in making solid progress toward their postsecondary life. It should be noted that every state, including “NAEP advantage” states, has challenges when it comes to providing high-quality education for every student and meeting all student needs. The following are the profiles of some “NAEP advantage” states from the 2019 report (Showalter et al., 2019):

- In Connecticut, rural districts constitute only one-seventh of the state’s schools and serve just under 55,000 students. Rural household mobility is lower than in any other state, and only Massachusetts has a lower poverty rate among its rural school-aged children. Teacher salaries and instructional expenditures are high. Rural college readiness measures are consistently strong, with the highest AP (Advanced Placement) exam pass rate of any state in this country. NAEP performance among rural Connecticut students is among the nation’s highest. Like other states, Connecticut may face or will be facing challenges brought about by demographic and economic changes in rural areas, which suggests that rural districts may need more state support in funding and policies.
- In Massachusetts, rural communities are generally affluent, and the poverty rate among rural school-aged children is the lowest in the country. The state ranks among the top five in terms of educational outcomes, has a high graduation rate, and 1 in 4 rural high school juniors and seniors have received AP credits. However, in rural areas, high school students still face the additional challenge of lack of access to [dual enrollment](#) (i.e., enrollment in a class that offers both high school and college credit) and early college and career technical programs, which require student/family supplied transportation ([The General Court of the Commonwealth of Massachusetts, 2022](#)). Additionally, with an increasing number of school districts serving rural communities, the state’s rural student population is much larger than it has been in the past. In 2022, the state’s Special Commission on Rural School Districts identified funding challenges for rural schools in regions confronting a shifting economy, demographic changes, and insufficient state investment in infrastructure. To support rural schools, the state’s FY2023 General Appropriations Act (GAA) includes \$5.5 million for Rural School Aid, and the eligibility of rural school districts for this fund is “based on their student density (not more than 35 students per square mile) and their per capita income (less than \$54,355 per capita according to 2019 data from the Department of Revenue).”
- New Jersey has more than 86,000 students enrolled in rural school districts, although the percentage of the rural student population is smaller than that of many states in the country. Rural students in this state are generally well prepared for college and other postsecondary careers. New Jersey’s rural students perform well overall in the NAEP tests, especially compared with their non-rural peers, but the relative drop between grades 4 and 8 in both math and reading is concerning. Like many other states, New Jersey’s rural students are racially diverse, and nearly 1 in 5 rural students qualify for special education services. One in 11 rural students have changed residences within a year (2018-2019) — a substantial jump in mobility from the most recent report three years prior. As the local tax base is often responsible for the largest share of a school’s revenue, funding is considered highly inequitable.
- In Rhode Island, educational outcomes are mostly strong, and rural students outperform their non-rural counterparts in NAEP tests by a wider margin than in any other state. Rural students attend school mostly with students of the same racial/ethnic backgrounds in communities where the household average income is over four times the poverty line. Like in other states, high-quality education for all rural students is a challenge. [Borg and Madeleine](#) (2022) reported that English language learners (ELs) are the fastest-growing population in Rhode Island’s schools, but the state and the schools have not provided adequate support for this student population. Another area of concern is college readiness. Regarding rural school funding, Rhode Island is one of only six states that invest more than \$10,000 in the instruction of each pupil. However, while 3.5% of Rhode Island’s students are enrolled in a rural district, these districts receive only 2.3% of state funding. In general, state funding support is weak relative to local support.

## Condition of Rural Schools in States with “NAEP Disadvantage”

Most states with “NAEP disadvantage” (i.e., having more students below the NAEP Proficient level and ranking low on the Nation’s Report Card) have relatively low-income rural school communities and are concentrated in the Southwest and the Deep South, along with a handful in the Pacific Northwest and Appalachia. These states often share the following distressing features:

- High level of rural school-aged children in poverty.
- High rural student mobility.
- Large rural poverty gap (i.e., students from lower-income rural homes perform the worst relative to other rural students in their state).
- Low graduation rates and few rural students entering college with credits from AP or dual enrollment courses.
- Low average salaries for rural educators.
- Lack of funding.



Research suggests that schools in underserved communities – which are often racially and spatially isolated from opportunities – struggle to meet the needs of students from low-income neighborhoods ([Cashin, 2014](#); [Miller, 2012](#); [Reece and Gambhir, 2008](#)). In many cases, low-income neighborhoods are segregated from important opportunities such as access to adequate health care, safe neighborhoods, affordable housing, and sustainable employment. Rural schools with limited funding sources have more challenges to provide all students with quality teachers, advanced courses, and opportunities for rich educational experiences compared with schools in low-poverty neighborhoods with strong financial support. Additionally, rural students in persistent poverty have little to no access to out-of-school contexts that support their academic, socioemotional, and cognitive development ([Briggs, 2005](#); [Drier et al., 2014](#); [Milner, 2013](#); [Reece et al., 2010](#)).

While inadequate access to opportunity continues the cyclical process of poverty in most of the “NAEP disadvantage” states, each state has its own challenges in terms of closing the opportunity gap and meeting the needs of all rural students. The following are profiles of some of the states (Showalter et al., 2019):

- Alabama — Nearly half of Alabama’s schools are in rural areas, and 1 in 3 students attend school in a rural district. At least 1 in 5 of the state’s school-aged rural children live in poverty, and the rural school communities are among the poorest in the country. Rural schools and districts are among the nation’s largest, but instructional spending is lower than in all but five other states. NAEP performance is the third lowest in the U.S., but even more concerning is the relative lack of improvement in math and reading between grades 4 and 8. Nine out of 10 students from rural districts graduate from high school, but fewer have earned any college credit compared with their rural peers in most states.
- New Mexico — One in 7 New Mexico students attend school in a rural district, most of which enroll fewer students than the national median. Nearly 1 in 3 (65%) of New Mexico’s rural students are Hispanic, and most attend racially homogenous schools. Three in 10 rural New Mexico students live in poverty, and school communities are the poorest in the nation. Districts are heavily funded by the state, and transportation costs are consuming a much larger portion of the budget than in past years. NAEP scores are the lowest in the country, and nowhere is the poverty gap wider, but rural students in New Mexico are making substantial improvement in reading between the fourth and eighth grades. Dual enrollment is popular, but students are less likely to receive AP credits or take a major college entrance exam.
- Mississippi — With 1 in 2 schools classified as rural, and half of the state’s student population attending school in a rural district, Mississippi ranks as the seventh most rural state. Nearly 235,000 students attend school in rural Mississippi. These students attend schools that tend to serve high numbers of students from historically underserved racial/ethnic groups, and are in relatively poor communities. Instructional spending on rural students is almost \$2,000 less than the national average, and teacher pay is equally low. Educational outcomes are the second lowest in the U.S., and the college readiness measures require urgent attention, with low graduation rates and few rural students entering college with credits from AP or dual enrollment coursework.
- West Virginia — Half of the state’s schools are in rural districts, and West Virginia has seen an increase of over 4% in the absolute number of rural students in the past three years. Households in West Virginia’s rural districts make, on average, just over twice the poverty threshold. Only 1 in 12 rural students has changed residences in a year (2018-2019), but more than 1 in 6 qualify for specialized education services. West Virginia’s statewide consolidation efforts have resulted in large schools, large districts, and burdensome transportation costs for rural districts. Rural teacher salaries are \$4,000 below the national average. Not only are West Virginia’s rural students performing well below the national average on standardized math and reading tests, but also their performance from grade 4 to grade 8 has experienced a greater drop than that of their counterparts in other states. However, the graduation rate of rural students in West Virginia is above the national average.

## Issue #1: Missing Early Learning Opportunities

The achievement gap often starts early in a child’s education. Research suggests that children who grow up in poverty face disadvantages that hamper healthy development. A gap in early vocabulary development between children in poverty and their peers from affluent families can be detected as early as 18 months of age ([Colker, 2014](#)). Evidence shows that early numeracy activities and skills are significantly and positively associated with math achievement in fourth or fifth grade ([Balala et al., 2021](#); [Watts et al., 2018](#)).

### Obstacles to Access Early Education Programs

Poverty and geographic isolation are two main obstacles for rural children to access high-quality early education programs. In rural areas, two-thirds of poor children ages three to four attend Head Start ([Morrissey et al., 2022](#)). Parents of children (under age 6 and not yet in kindergarten) in rural areas were more likely to report that the “lack of open slots for new children” was their main difficulty in finding child care compared with parents of children in suburban areas (31% vs. 22%) ([NCES, 2022](#)).

When seeking early childhood programs, families in rural areas often face transportation challenges, long commuting distances, and high commuting costs ([Mac-Tavish and Salamon, 2003](#); [Ziliak, 2019](#)). The NCES data show that “location” was more commonly cited as the main reason for the difficulty in finding child care by parents of children in rural areas (13%) than by parents of children in suburban areas (6%) and cities (5%). Two in five children under age 6 and not yet in kindergarten (43%) were in parental care. With limited options and location issues, 10% of parents in rural areas used nonrelative home-based care for their children, as opposed to 8% in suburban areas and cities.



## Important Role of Public ECE Centers

An early care and education (ECE) center is defined as an organization providing ECE services to at least one child age 5 or under, not yet in kindergarten, at a single location ([U.S. Department of Health and Human Services, 2021](#)). Across the country, low-income families and rural communities depend on quality public early education programs when it comes to affordability and availability. Unfortunately, a lack of research on access to early education in rural areas makes it hard to determine whether there is a supply shortage of ECE in rural America.

Research suggests that rural parents have limited choices for early care programs, compared with urban and suburban parents ([Paschall et al., 2020](#)). Compared with non-rural areas, rural areas have less child care supply and fewer substitute options when local ECE programs change or close because of unsustainable business models ([Jessen-Howard et al., 2020](#)). Rural ECE centers have been mostly sponsored by a public school or received funding from Head Start or public pre-K, as opposed to ECE centers in urban and suburban areas. In many rural areas, public ECE centers help parents to arrange transportation or directly offer transportation services ([Paschall et al., 2020](#)).

Public-funded ECE programs play a vital role in rural and low-income communities as well as communities of color ([Kim and Wang, 2019](#); [Malik and Schochet, 2018](#)). To close the student achievement gap, some states have implemented strategies to target early childhood education. The following are some examples:

- [First Class Pre-K program in rural Alabama](#). First Class Pre-K is Alabama's public, voluntary pre-kindergarten program for four-year-old children. The state has used this program as a long-term strategy to target some of the poorest counties in the state, especially those in the [Black Belt](#), which has been struggling with school enrollment, unemployment, labor force participation, and population loss. [Limited data](#) show that an increasing number of children in the Black Belt are participating in this early education program. The [National Institute for Early Education Research](#) ranked Alabama's First Class Pre-K program as the top state-funded prekindergarten program in the U.S. for the 14th year in a row.
- [Family-focused initiatives eliminating costs for child care in New Mexico](#). Rural communities in New Mexico are the poorest in the nation. In 2022, the state started to expand free child care to 18,000 families. It pledged \$10 million to expand child care supply and provide a stipend program for early childhood workers seeking advanced degrees. Beginning May 1, 2022, all families enrolled in the state's Childcare Assistance Program no longer owe copays for child care services, making child care cost-free. Previously, only families at 200% federal poverty level (FPL) or below this FPL qualified for waived copayments.
- [Using COVID relief money to help families living in the child care desert in West Virginia](#). A child care desert is any census tract with more than 50 children under age 5 with either no child care providers or so few options that there are more than three times as many children as licensed child care slots ([Center for American Progress, 2018](#)). In West Virginia, 64% of people live in a child care desert. During the COVID-19 pandemic, about a quarter of early child care centers in the state closed, but several relief packages included funding to support working families, as well as help to support the child care industry. "One of the biggest things West Virginia did with its COVID relief money was it put it towards paying for child care for essential workers, no matter their income" ([Todd, 2021](#)). In general, rural communities in West Virginia depend on the state or federal government to provide funding to help open new centers in child care deserts or work with existing child care directors to expand their businesses in order to accept more children.

## Issue #2: Missing Key Courses in the STEM Pipeline

Rural students in kindergarten have slightly higher achievement in math and reading than their non-rural peers, but by third grade, this advantage fades, and non-rural students increasingly outperform rural students from grades 3 to 8 ([Johnson et al., 2022](#)). This finding comes from a study using data from [NWEA’s growth assessment](#) in reading and math from about 840,000 students in 8,798 public schools across the U.S., including 180,000 students attending 2,377 rural schools. The researchers found that rural schools farther from urbanized areas had higher summer learning loss and lower achievement than schools closer to urban centers. The study suggests that the waning of rural students’ early achievement advantage was more likely driven by a significantly larger learning loss for rural students during summers.

Compared with urban and suburban students, the shortfall in learning opportunities by rural students goes beyond seasonal loss. [Graham \(2009\)](#) found that 58% of students in urban schools and 41% of suburban and large-town schools could choose from as many as seven or more courses in advanced math; in contrast, only 10% of students attending rural schools had this kind of access. [Sparks \(2012\)](#) found that eighth-graders taking a virtual algebra course performed better in algebra testing and were nearly twice as likely to take rigorous math courses by 10th grade as students who only had access to general eighth grade math, but the digital divide has persistently hindered online learning for rural students.

### “A Leak in the STEM Pipeline: Take Algebra Early”

Algebra has often been referred to as a “gatekeeper” to higher learning—both in math and in other fields, and students who complete a math course beyond the level of algebra II are more than twice as likely to pursue and complete a postsecondary degree ([Gojak, 2013](#)). According to a [report](#) titled “A Leak in the STEM Pipeline: Taking Algebra Early” (ED, 2018), about 86% of students in suburban areas had access to Algebra I in eighth grade, but in rural areas, only 75% had access.

Having access to Algebra I does not necessarily mean taking the course in grade 8. Nationwide, only 24% of all eighth graders were enrolled in Algebra I ([ED, 2018](#)). Table 3.3 shows that in 2019, 24% of rural eighth graders were taking Algebra I, and in 2022, due to the disruption caused by the pandemic, the number dropped to 21%. At the same time, eighth graders taking Algebra I were much more likely to perform at or above proficient in math, compared to peers that did not take the course (55% vs. 25% in 2019; 47% vs. 19% in 2022).

Table 3.3. Percentage of Eighth Graders Taking or Not Taking Algebra I, and Percentage of Students at or Above the NAEP Math Proficient Level by Their Status of Taking Algebra I in Grade 8: 2019 and 2022

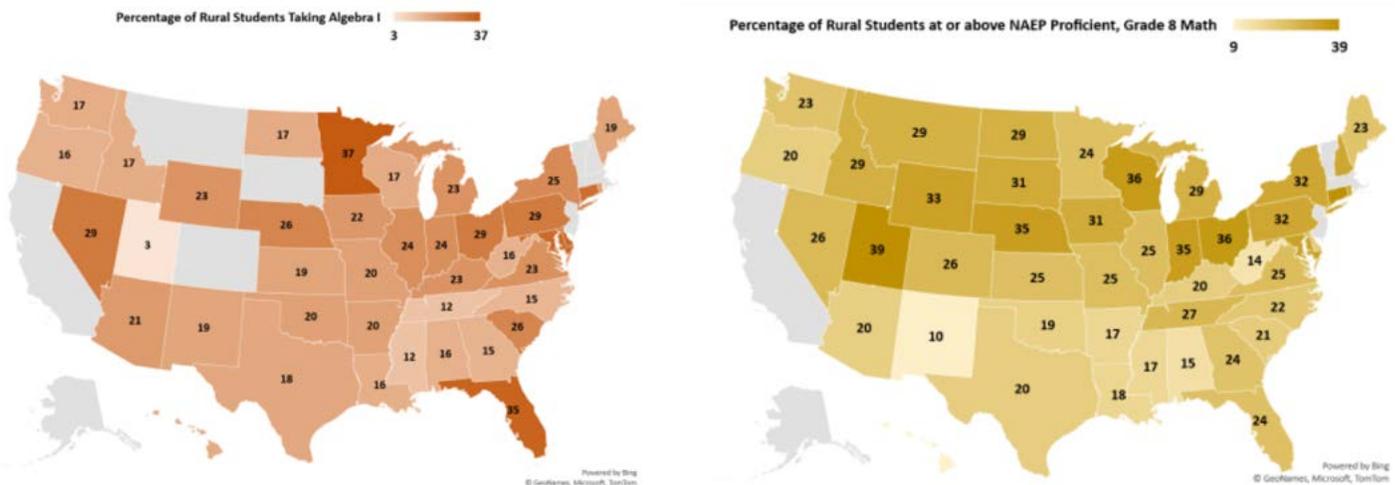
School Location, Four Categories	Rural		City		Suburb		Town	
	2019	2022	2019	2022	2019	2022	2019	2022
Year								
Percentage of Students Taking Algebra 1	24	21	26	25	25	24	22	19
Percentage of Students at or Above Proficient Among Students Taking Algebra 1	55	47	45	37	58	48	52	41
Percentage of Students at or Above Proficient Among Students Not Taking Algebra 1	25	19	22	17	31	24	21	15

Source: [NDE Core Web \(nationsreportcard.gov\)](#)

Many factors affect how many and which students enroll in Algebra I in eighth grade. For instance, some students have access to Algebra I in seventh grade, some may not be ready to take Algebra I in eighth grade, and others may not be interested in accelerated mathematics. Figure 3.1 shows that in the rural South and parts of rural Appalachia, states with a high percentage of Black students and poor students had less than 20% of rural students who took Algebra I in grade 8. And the percentage of rural students who performed at or above proficient in eighth grade math also was lower than that of their peers from many other states. Lack of access, lack of motivation, and ineligibility were all possible reasons why many rural students missed this critical course in the STEM pipeline.

State policies also play a critical role in promoting early algebra education among middle school students. Utah looks like an outlier in Figure 3.1. In 2022, only 3% of rural students in the state reported that they were taking Algebra I in eighth grade, but 39% of rural students performed at or above proficient in math. Back in 2010, the state started integrated courses; instead of taking a full year of algebra I, algebra II, and geometry, students would take classes that progressively integrated all those concepts (Schencker, 2010). [Utah Math Core Guides](#) has a clear description of the content students must learn about algebra from sixth-to-eighth grades.

Figure 3.1. Percentage of Rural Students Taking Algebra I and Percentage of Rural Students at or Above the NAEP Math (Grade 8) Proficient Level: 2022



Note: The grey color means “no data.” Source: [NDE Core Web \(nationsreportcard.gov\)](#)

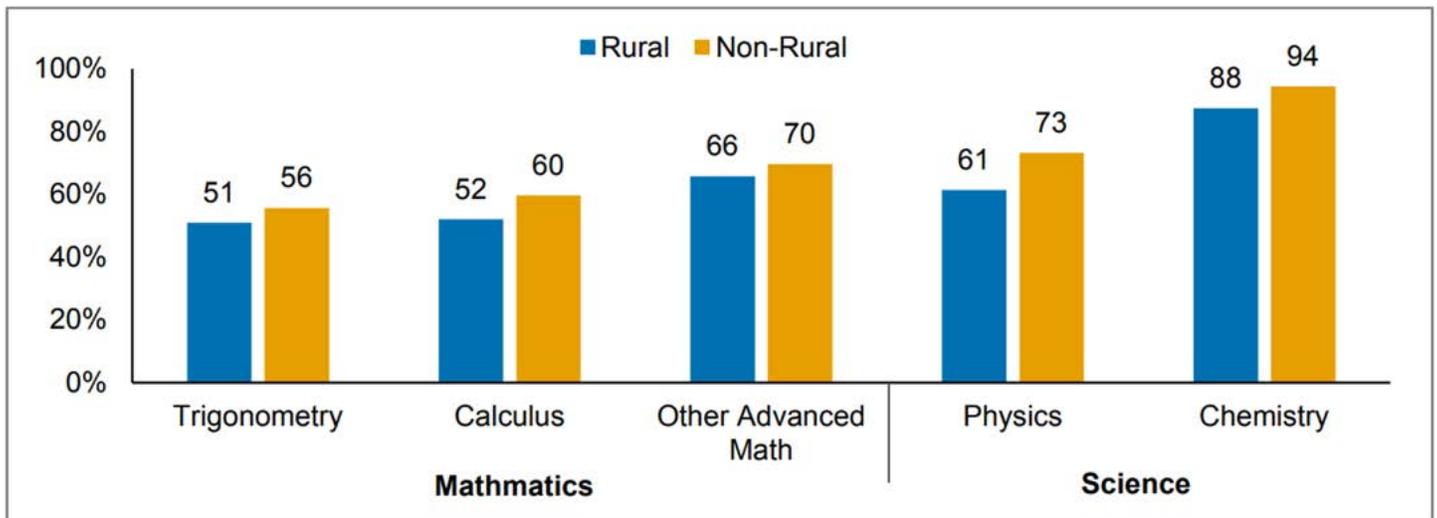
Additionally, compared with their non-rural peers, rural high school students tend to begin high school at a slightly lower level of math and end their math studies sooner, thus achieving an overall lower course-level in math (Anderson and Chang, 2011). Students who graduate from rural high schools often have had substantially less access to AP math courses (Gagnon and Mattingly, 2015). As a result, limited access to advanced math courses adversely impacts the number of qualified rural students in the science, technology, engineering, and mathematics (STEM) job pipeline (Graham, 2009).

## Earning Fewer Math/Science Credits

ACT-related reports have consistently shown that students who complete a minimum core curriculum that includes 4 years of English, 3 years of math (including rigorous courses in Algebra I, Geometry, and Algebra II), 3 years of science (including rigorous courses in Biology, Chemistry, and Physics), and 3 years of social studies earn higher ACT scores than those who do not ([ACT, 2020](#)). According to [Croft and Moore \(2019\)](#), among the students they surveyed, those in rural areas were less likely than non-rural students to complete or plan to complete the ACT-recommended core curriculum.

Trigonometry and Calculus are both important branches of math, as both play a major role in many scientific careers, from engineering to design, and even in business-related fields such as business and finance. As shown in Figure 3.2, only 52% of rural students reported having taken or planning to take calculus, as opposed to 60% of non-rural students. Similar patterns can be found for physics and chemistry, which are key courses needed for precollege STEM career aspirations and academic preparation.

Figure 3.2. Students Who Reported Having Taken or Planning to Take Advanced Math and Science Courses, by Geographic Area: 2018



Source: Croft and Moore (2019), [Rural Students: Technology, Coursework, and Extracurricular Activities](#)

A lack of access to advanced programs is a key reason for rural students to shift away from STEM fields ([Saw and Agger, 2021](#)). Data from the nationally representative High School Longitudinal Study of 2009 ([HSL:09](#)) suggest that schools attended by rural and small-town students offered limited access to advanced coursework and extracurricular programs in STEM and had lower STEM teaching capacity. To shift rural students back to STEM fields, researchers recommend that education policies focus on improving access to technology both at school and at home (i.e., closing the homework gap), increasing opportunities for rigorous course-taking, and expanding opportunities for personalized learning.

## Policy/Practice Discussion Box 1: Examples of Culture-based STEM Education for Native Students

### Fostering Culture-based STEM Education for Native Students

Many factors contribute to the achievement gap between Native and non-Native students. Some researchers think that “a potential contributing factor to this low proficiency may be that Native students feel alienated by the way in which math is often taught through a ‘western’ model, which may not fit the needs of or align with their lived experiences of how they learn in their culture, their family and/or community structures, or the physical world they inhabit” (Morris et al., 2022). Studies on the impact of culturally responsive pedagogy suggest that the disconnection between curriculum and relevant experiences or prior knowledge of students has been an obstacle to the academic learning of Native students (Carjuzaa, 2012).

Robertson (2019) interviewed some Native American parents whose children attended public schools with non-Native students. The parents felt that their children were emotionally stressed because they did not understand the material being taught in reading and math. One parent said, “I think we could make the curriculum more relatable to Native American students. There is not a whole lot of culture in general in our curriculum.”

#### Creating Culture-Based Elementary Math Modules for the Standing Rock Students

The Standing Rock Sioux Reservation is home to the sovereign nation of the Standing Rock Sioux Tribe Lakota and Dakota Nations. Many students who attend schools on the Standing Rock Sioux Reservation do not achieve proficiency in standardized math exams (Insights of North Dakota, 2022). Leaders and Elders of Standing Rock believe this ultimately limits the potential success of Native students in school and beyond.

Many teachers in the reservation schools are non-Native and only teach on the reservation for a short period of time. These teachers need time to understand the life experiences of their Lakota/Dakota students and build connections with them. In the fall of 2022, researchers with the Regional Education Laboratory (REL) Central Program began partnering with the Standing Rock Tribal Education Department (TED) and Sitting Bull College on the Reservation.

The REL Program is under the Education Science Reform Act (ESRA) of 2002, administered by the Institute of Education Sciences’ (IES) National Center for Education Evaluation and Regional Assistance (NCEE). To improve the math achievement of Native students, REL researchers are working with local educators to create high-quality, evidence- and culture-based elementary math modules grounded in research that build upon the strengths and are relevant to the lives of students and families, and support teachers in applying a [culture-based framework](#) in their math instruction.

## Identifying and Supporting Native Migratory Students

Many American Indian and Alaska Native (AI/AN) families still follow seasonal migration culture, which involves visiting traditional hunting, fishing, and harvesting sites at specific times of the year ([IES, 2021](#)). This traditional culture provides an opportunity for Native families to teach their children their traditions, skills, and ways of understanding and living in the world. However, students may miss school days and instructional time due to these activities.

Identifying Native migratory students is the first step for educators to support student learning. To compensate for the missed instructional time, educators may consider more project-based, personalized learning that can link to the experiences of migratory students. For instance, some educators consulted with Native community members and developed a lesson on the chemistry behind brain-tanning buffalo hides ([DeerInWater, 2019](#)). By connecting traditional practices with STEM learning in classes, students can expand their learning opportunities and engage in meaningful learning about their life and culture ([Minero, 2019](#)).

## Inspiring Students to Pursue STEM Through Teaching Lessons about Native Scientific Innovations

“Indigenous Peoples of the Americas have always been accomplished scientists and innovators in ways that value balance and unity with the environment,” according to the Smithsonian’s [National Museum of the American Indian](#) (NMAI). The Olmec Peoples of Mesoamerica created rubber. Indigenous Andeans developed complex and extensive road networks and suspension bridges that successfully distributed foods and resources across territories spanning six countries in modern South America. Traditional Native medicines have become a treasure of the world.

Researchers ([Jordan et al., 2019](#)) studied 20 Navajo engineers who were successful in their endeavors to pursue higher education and careers in engineering. According to the study, Navajo culture and its traditional teachings not only provide a foundation for life, specifically principles and knowledge for living, but also guide the ways in which engineering problems are approached. For instance, Navajo traditional teachings emphasize a holistic perspective. When solving problems, Navajo engineers apply their culture and philosophy to their works, designs, and many dimensions that may not be part of the technical aspects of an engineering problem.

The NMAI provides lesson plans to encourage all students to explore more about Native scientific innovations. For example,

- The [NMAI’s Living Maya Time website](#) provides lesson plans for grades 4–8 to learn about Maya culture and astronomy and do a related math activity.
- An NMAI [poster](#) offers an opportunity for students in grades 5–8 to learn [Q’eswachaka: A Living Legacy of Inka Engineering](#) and understand the physics and history of Inka bridge engineering.
- [The Inka Empire: What Innovations Can Provide Food and Water for Millions?](#) and [The Great Inka Road: How Can a Road System Be an Example of Innovation?](#) are two digital lessons from the Smithsonian for students in grades 5–8 to explore science and engineering in Native American life.
- [The American Indian Responses to Environmental Challenges website](#) from NMAI explains how different Native nations deal with environmental issues today. There are student projects and teacher resources for grades 6–9.

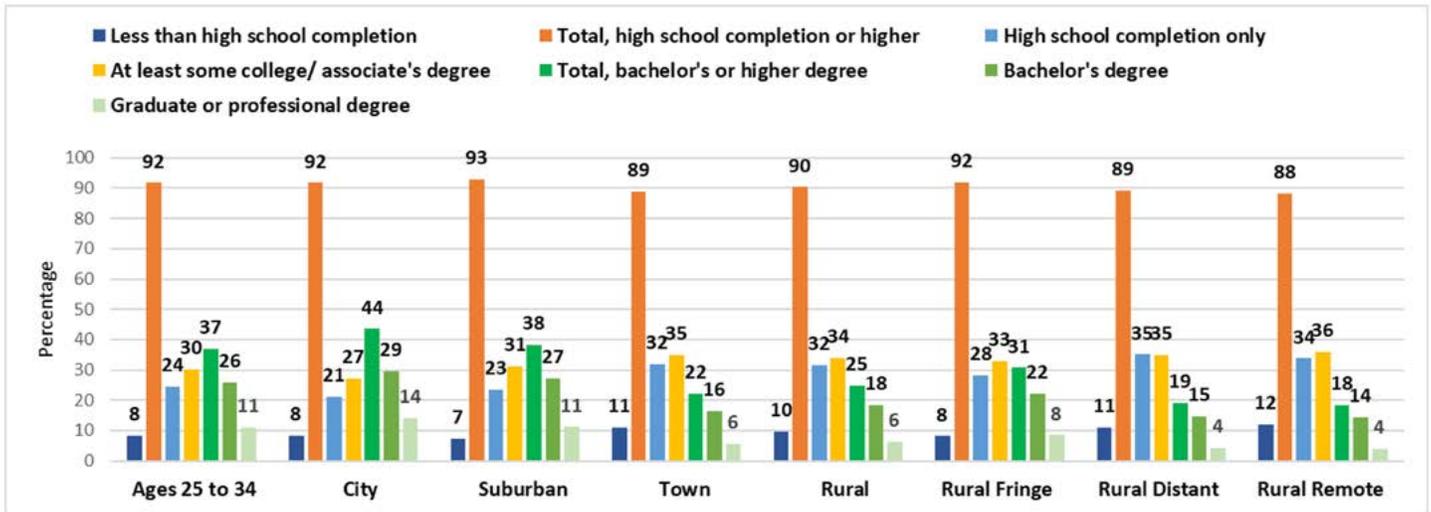
### Issue #3: Missing Opportunities on the Way to Attaining a Higher Level of Education

In rural high schools, students achieve graduation rates similar to those of their urban and suburban counterparts, but their college enrollment rates are much lower ([The Postsecondary National Policy Institute, 2022](#)). Research suggests that rural students face many hurdles to educational attainment outside of achievement, including financial burden, geographic isolation from higher education institutions, and few nearby jobs requiring a college degree ([Drescher and Torrance, 2022](#)). Although not every job requires a college degree, we should pay attention to the disturbing fact that rural counties with low levels of educational attainment have worse economic outcomes ([Nicosia, 2017](#)).

#### Fewer Adults with Higher Level Educational Attainment

In 2019, 37% of people 25 years old and over who lived in cities and suburbs held a bachelor’s degree or higher. In rural areas, only 25% reached this level of educational attainment ([NCES, 2022](#)). Among U.S. adults ages 25 to 34 living in cities, 44% had a bachelor’s degree or higher; in the suburbs, that number was 38%. However, in rural areas, only 25% held a bachelor’s degree or higher (Figure 3.3). The farther away from urban areas, the fewer adults have higher educational attainment.

Figure 3.3. Percentage Distribution of Adults Ages 25 to 34, by Locale and Highest Level of Educational Attainment: 2019



Source: U.S. Department of Commerce, Census Bureau, American Community Survey Education Tabulation (ACS-ED), 2019, Custom Tabulated Data File. [Table 104.25](#) was prepared in May 2021.

## Low Literacy/Numeracy in Rural Counties with High Poverty and Large Non-White Population

Low educational attainment is closely related to higher poverty and child poverty rates as well as higher unemployment rates ([USDA, 2017](#)). High rates of adults with low literacy and numeracy in a rural county often translate into a reality that students get limited academic help from their parents and caregivers, schools have a small talent pool to recruit teachers and professional educators locally, and local communities rely on their schools for many resources from learning to life.

The U.S. Program for the International Assessment of Adult Competencies ([PIAAC](#)) Skills Map provides model-based county statistics of literacy and numeracy proficiency for adults 16 to 74 years old for states and counties (Figure 3.4). Using the PIAAC [Skills Map](#), we find that, compared with the national level, more adults have low literacy and numeracy skills in counties in Mountainous Appalachia, with a high rate of poor students; the Mississippi Delta, with a high rate of Black students; and the Great Plains, with a high rate of Hispanic students and Native students.

We added other data sources to the PIAAC Skills Map to provide a big picture of rural school districts located in the regions clustered with more adults with low literacy and numeracy skills. We first identified some rural counties with high rates of adults with low literacy and low numeracy, and then investigated the education condition of rural school districts in those counties. In PIAAC, low literacy and numeracy refer to adults who have literacy and numeracy at or below Level 1, which are defined as follows —

- **Low literacy:** Adults at Level 1 literacy can read short texts, in print or online, and understand the meaning well enough to perform simple tasks such as filling out a short form, but drawing inferences or combining multiple sources of text may be too difficult. Adults who are below Level 1 may only be able to understand very basic vocabulary or find very specific information on a familiar topic. Some adults below Level 1 may struggle even to do this and may be functionally illiterate. Simply put, adults with low literacy can be considered at risk for difficulties using or comprehending print material.
- **Low numeracy:** Adults at Level 1 numeracy can understand how to add, subtract, multiply, and divide and can perform basic one-step mathematical operations with given values or common spatial representations (e.g., calculate how many bottles of soda are in a full box with two levels when only the top level can be seen). Adults who are below Level 1 may only be able to count, sort, and do basic arithmetic operations with simple whole numbers and may be functionally innumerate. Adults at this level can be considered at risk for difficulties with numeracy.

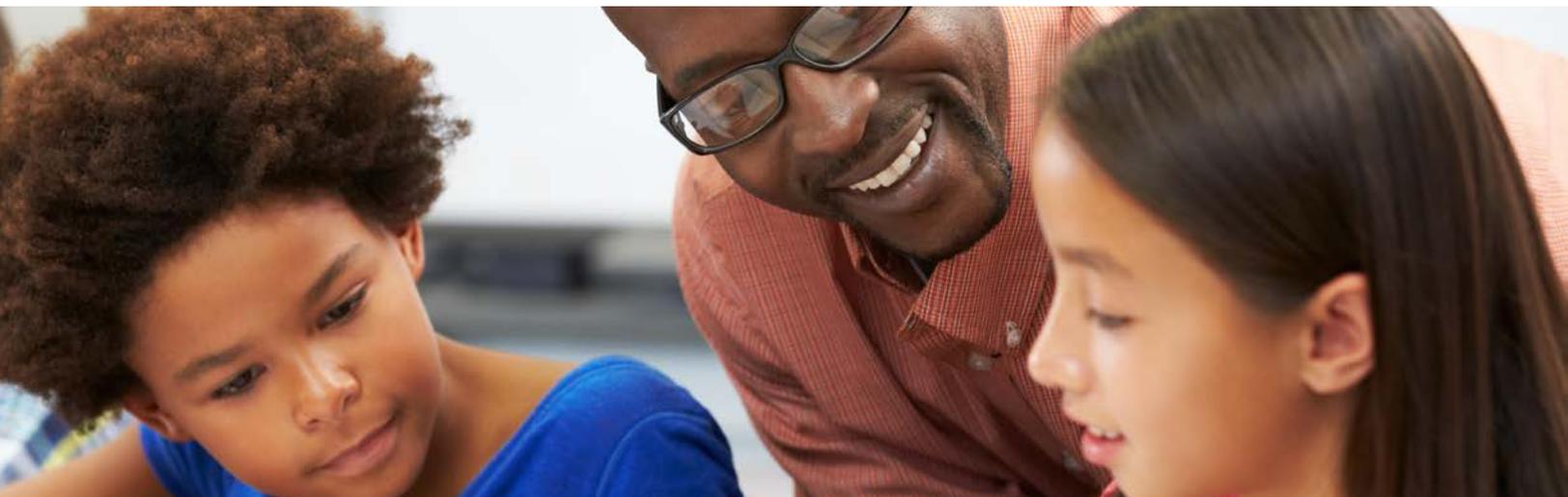
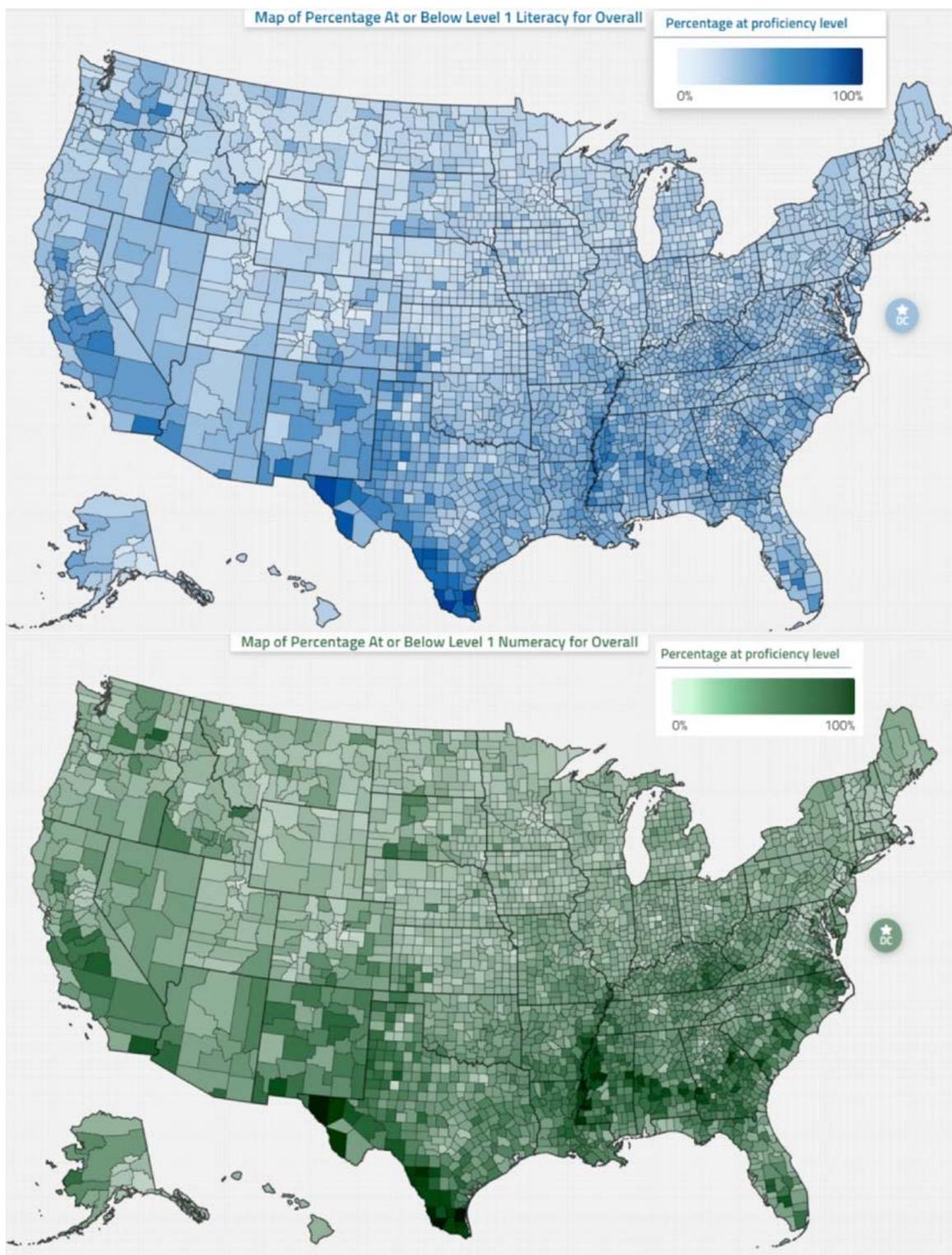


Figure 3.4. Percentage of U.S. Adults (16-74 Years Old) at or Below Level 1 Literacy/Numeracy, by Counties: 2022



Source: [PIAAC Skills Map \(ed.gov\)](https://ed.gov)

Visually, the trend of rural adult literacy/numeracy levels in Figure 3.4 has certain consistency with rural student performance on the Nation’s Report Card. States with “NAEP disadvantage” are likely to have more adults with low literacy and low numeracy in rural counties than states with “NAEP advantage.” In fact, in states with “NAEP advantage,” more adults are proficient at literacy and numeracy (i.e., at or above Level 3) compared with the national level (Table 3.4 (a)).

Table 3.4 (a). Percentage of Adults Whose Literacy/Numeracy Are at or Below Level 1, at or Above Level 3, by Selected States with “NAEP Advantage”

State	Percentage of Adults at or Below Level 1		Percentage of Adults at or Above Level 3	
	Literacy	Numeracy	Literacy	Numeracy
National	22%	32%	46%	36%
Connecticut	17%	26%	51%	41%
Massachusetts	17%	25%	54%	45%
New Hampshire	11%	19%	55%	45%
Utah	14%	22%	55%	44%
Wyoming	14%	23%	51%	40%
Colorado	17%	25%	54%	44%

Source: [PIAAC Skills Map \(ed.gov\)](#)

On the maps in Figure 3.4, the darker-colored counties — counties that have high rates of adults with low literacy/numeracy — are clustered in several regions. In the Appalachian Mountains and the Mississippi Delta, there are some rural school districts in the counties with high rates of low-literacy/numeracy adults where most students are White (67% to 99%) (Table 3.4.(b)). Poverty, the homework gap, and the low educational attainment of parents are frequent challenges to school leaders and educators when it comes to providing high-quality learning opportunities for all students. For example:

- In West Virginia, McDowell County has 42% low-literacy adults and 60% low-numeracy adults. In the McDowell County Schools, the educational attainment of 20% of parents is less than high school, and only 6% have four-year college degrees or above. In the district, half of the students live in families that depend on food stamps or the Supplemental Nutrition Assistance Program (SNAP), and 29% of students do not have broadband internet access at home. Similar situations can be found in Kentucky’s Clay County Public Schools and Missouri’s South Pemiscot County R-V School District.
- In Holmes County, Ohio, where half the population is Amish, 50% of adults have low numeracy skills; in the East Holmes Local School District, 65% of the parents have educational attainment lower than high school, and 58% of the student population live in homes without broadband internet.

Table 3.4 (b). Selected Counties in Rural Appalachian and the Mississippi Delta with Large White Communities and High Percentage of Adults Whose Literacy/Numeracy Are at or Below Level 1, and selected Measures of Education Condition for the Rural School Districts in those Counties

State	County	Low Literacy Adults (%)	Low Numeracy Adults (%)	School District	Black Students (%)	White Students (%)	Broadband <sup>1</sup> (%)	Poverty <sup>2</sup> (%)	Food Stamp <sup>3</sup> (%)	Parent Less Than High School <sup>4</sup> (%)	Parent College Degree <sup>5</sup> (%)
<b>National*</b>		<b>22</b>	<b>32</b>		<b>15</b>	<b>46</b>	<b>85</b>	<b>15</b>	<b>19</b>	<b>8</b>	<b>46</b>
AR	Phillips	40	60	Barton-Lexa SD	31	67	66	5	24	—	—
GA	Randolph	41	63	Randolph County SD	10	84	74	18	24	—	—
KY	Clay	44	60	Clay County Public Schools	5	91	72	42	57	27	13
MO	Pemiscot	37	54	South Pemiscot County R-V SD	13	80	76	48	56	11	9
OH	Holmes	37	50	East Holmes Local SD	0	99	42	4	2	65	8
OH	Holmes	37	50	West Holmes Local SD	0	97	72	16	9	13	17
PA	Forest	33	50	Forest Area SD	20	73	65	24	37	7	28
WY	McDowell	42	60	McDowell County Schools	8	89	71	39	50	20	6

Note: 1. Household with Broadband Internet; 2. Families with income below the poverty level; 3. Families with Food Stamp/ SNAP benefits; 4. Parent Educational Attainment Less than High School; 5. Parent with Bachelor's degree or Higher; 6. Female householder, no husband present. \*There are two data sources used for national-level statistics. — Data are not available. Source: [PIAAC Skills Map \(ed.gov\)](#); [ACS School District Profile 2016-20 \(ed.gov\)](#); [Search for Public School Districts \(ed.gov\)](#); [COE - Racial/Ethnic Enrollment in Public Schools \(ed.gov\)](#); [COE - Characteristics of Children's Families \(ed.gov\)](#)

In many rural counties in Appalachia and the Mississippi Delta with high rates of adults with low literacy/numeracy, most students in school districts are Black (48% to 88%), live in poverty, and have no broadband internet at home (21% to 52%) (Table 3.4 (c)). Compared with the national level, parents in these districts are more likely to have educational attainment below high school, and less likely to have four-year college degrees or higher. Another big challenge that these school districts are facing is that many students live in single-mother households (27% to 71%). A large body of literature shows that students from single-parent homes often perform poorer academically and complete fewer years of school compared with students from two-parent homes (Barajas, 2011).

Table 3.4 (c). Selected Counties in Rural Appalachian and the Mississippi Delta with Large Black Communities and High Percentage of Adults Whose Literacy/Numeracy Are at or Below Level 1, and selected Measures of Education Condition for the Rural School Districts in those Counties

State	County	Low Literacy Adults (%)	Low Numeracy Adults (%)	School District (SD)	Black Students (%)	White Students (%)	Broadband <sup>1</sup> (%)	Poverty <sup>2</sup> (%)	Food Stamp <sup>3</sup> (%)	Parent Less Than High School <sup>4</sup> (%)	Parent College Degree <sup>5</sup> (%)	Mom and Dad Family (%)	Single Mom <sup>6</sup> (%)
<b>National*</b>		<b>22</b>	<b>32</b>		<b>15</b>	<b>46</b>	<b>85</b>	<b>15</b>	<b>19</b>	<b>8</b>	<b>46</b>	<b>63</b>	<b>23</b>
AL	Greene	44	68	Greene County Schools	79	17	56	60	55	22	8	22	66
AL	Bullock	45	67	Bullock County Schools	69	21	61	38	36	15	3	38	50
AR	Phillips	40	60	Helena-West Helena SD	72	25	74	52	51	11	17	35	55
AR	Phillips	40	60	Marvell SD	57	40	64	49	69	—	—	14	64
AR	Lee	44	65	Lee County SD	56	41	66	49	48	15	5	40	45
GA	Hancock	48	72	Hancock County Schools	72	24	48	40	55	—	—	27	71
GA	Stewart	51	73	Stewart County SD	57	23	55	57	56	—	—	24	60
LA	East Carroll Parish	51	77	East Carroll Parish SD	71	27	47	61	58	35	17	32	63
MS	Claiborne	47	72	Claiborne County SD	88	11	69	53	60	11	26	30	49
MS	Holmes	47	75	Holmes County Consolidated SD	84	15	50	52	45	10	10	26	67
MS	Noxubee	48	70	Noxubee County SD	72	26	63	42	49	17	3	21	71
MS	Wilkinson	47	71	Wilkinson County SD	70	28	62	42	44	5	28	32	67
NC	Bertie	37	57	Bertie County Schools	61	34	61	42	43	7	16	41	45
NC	Halifax	37	56	Halifax County Schools	60	30	51	43	52	12	11	34	52
NC	Edgecombe	36	55	Edgecombe County Public Schools	49	44	68	27	35	10	22	38	39
NC	Anson	34	53	Anson County Schools	48	45	79	32	45	12	11	46	44
SC	Lee	38	59	Lee County SD	64	32	60	36	47	4	15	34	43
TN	Lauderdale	36	54	Lauderdale County SD	60	34	75	25	31	15	10	50	37

State	County	Low Literacy Adults (%)	Low Numeracy Adults (%)	School District (SD)	Black Students (%)	White Students (%)	Broadband <sup>1</sup> (%)	Poverty <sup>2</sup> (%)	Food Stamp <sup>3</sup> (%)	Parent Less Than High School <sup>4</sup> (%)	Parent College Degree <sup>5</sup> (%)	Mom and Dad Family (%)	Single Mom <sup>6</sup> (%)
National*		22	32		15	46	85	15	19	8	46	63	23
TN	Hardeman	35	54	Hardeman County Schools	54	42	70	22	33	11	12	55	27
TN	Haywood	34	52	Haywood County SD	51	44	67	17	32	11	15	50	40
VA	Greensville	39	59	Greensville County Public Schools	58	36	71	10	21	3	18	56	33
VA	Sussex	40	50	Sussex County Public Schools	56	39	70	10	26	4	24	50	29
VA	Brunswick	36	54	Brunswick County Public Schools	54	41	72	32	44	8	10	25	49

Note: 1. Household with Broadband Internet; 2. Families with income below the poverty level; 3. Families with Food Stamp/ SNAP benefits; 4. Parent Educational Attainment Less than High School; 5. Parent with Bachelor's degree or Higher; 6. Female householder, no husband present. \*There are two data sources used for national-level statistics. — Data are not available. Source: [PIAAC Skills Map \(ed.gov\)](#); [ACS School District Profile 2016-20 \(ed.gov\)](#); [Search for Public School Districts \(ed.gov\)](#); [COE - Racial/Ethnic Enrollment in Public Schools \(ed.gov\)](#); [COE - Characteristics of Children's Families \(ed.gov\)](#)

Table 3.4 (d) shows that in the Great Plains, rural counties with a high rate of adults with low literacy/numeracy skills often have a large AN/AI or Hispanic population. In these counties, many school districts face challenges brought about by poverty, the homework gap, and disadvantaged family backgrounds.

- In South Dakota, two school districts are in counties where approximately one-third of adults have low literacy skills, and half of adults have low numeracy skills. In these districts, about 90% of students are Native Americans. Only about half of the students live in households with broadband internet. The median household income is between one-third and one-half of the national average. About 60% of students live in single-parent households.
- In Texas, several counties close to the U.S.-Mexico border have the highest rates of adults with low literacy/numeracy skills. In school districts in these counties, most students are Hispanic (56% to 100%) and live in low-income families. While some of the districts are missing data on the [NCES's District Demographic Dashboard 2016–2020](#), meeting the needs of students to learn English language and recruiting high-quality teachers are often a challenge for district leaders and educators in this region.
- In Colorado, Kansas, and New Mexico, rural school districts in counties with high rates of adults who have low literacy/numeracy skills often have a large Hispanic student population. In those districts, many students live in poverty and lack broadband internet at home, and many parents have educational attainment lower than high school. As most of the districts are in agricultural counties, school leaders and educators must consider how to provide better services for [migrant students](#) whose parents are migratory workers in the agriculture, dairy, or fishing industries. For example, in Kansas, there are nearly 18% migrant students in the Dodge City Unified School District (USD), 14% in Garden City USD, 12% in the Liberal USD, and 7% in the Kismet-Plains USD.

Table 3.4 (d). Selected Counties in the Great Plains with Large Hispanic or AN/AI Communities and High Percentage of Adults Whose Literacy/Numeracy Are at or Below Level 1, and selected Measures of Education Condition for the Rural School Districts in those Counties

State	County	Low Literacy Adults (%)	Low Numeracy Adults (%)	School District (SD)	Hispanic Students (%)	AN/AI Students (%)	Broadband <sup>1</sup> (%)	Median Household Income (US\$)	Speak English Less Than Very Well (%)	Parent Less Than High School <sup>2</sup> (%)	Parent College Degree <sup>3</sup> (%)	Single Parent <sup>4</sup> (%)
	<b>National*</b>	<b>22</b>	<b>32</b>		<b>28</b>	<b>1</b>	<b>85</b>	<b>64,994</b>	<b>4</b>	<b>8</b>	<b>46</b>	<b>27</b>
SD	Oglala Lakota	34	52	Oglala Lakota County SD 65-1		91	53	31,423	1	23	10	58
SD	Todd	32	49	Todd County SD 66-1		86	42	24,102	0	17	12	62
CO	Alamosa	31	44	Alamosa SD	51		79	39,746	5	19	16	24
CO	Crowley	30	45	Crowley County SD RE-1-J	32		76	40,465	1	6	21	37
KS	Seward	45	55	Liberal USD 480	61		82	48,926	7	37	5	26
KS	Seward	45	55	Kismet-plains USD 483	60		83	55,680	4	51	12	17
KS	Ford	40	48	Dodge City USD 443	60		82	53,077	12	35	13	20
KS	Finney	39	47	Garden City USD 457	52		81	59,033	8	38	15	27
NM	Luna	50	63	Deming Public Schools	68		69	32,251	9	16	13	29
TX	Starr	69	83	Roma ISD	100		57	25,175	25	40	8	40
TX	Starr	69	83	San Isidro ISD	100		74	44,531	—	—	—	—
TX	Starr	69	83	Rio Grande City Consolidated ISD	98		63	35,354	19	34	13	40
TX	Presidio	59	71	Presidio ISD	94		56	17,284	—	—	—	—
TX	Hudspeth	65	81	Sierra Blanca ISD	83		73	—	—	—	—	—

State	County	Low Literacy Adults (%)	Low Numeracy Adults (%)	School District (SD)	Hispanic Students (%)	AN/Al Students (%)	Broadband <sup>1</sup> (%)	Median Household Income (US\$)	Speak English Less Than Very Well (%)	Parent Less Than High School <sup>2</sup> (%)	Parent College Degree <sup>3</sup> (%)	Single Parent <sup>4</sup> (%)
National*		22	32		28	1	85	64,994	4	8	46	27
TX	Culberson	55	70	Culberson County-Allamoore ISD	83		55	34,853	—	—	—	—
TX	Hudspeth	65	81	Fort Hancock ISD	76		52	28,333	—	—	—	—
TX	Hudspeth	65	81	Dell City ISD	56		69	34,083	—	—	—	—

Note: 1. Household with Broadband Internet; 2. Parent Educational Attainment Less than High School; 3. Parent with Bachelor's degree or Higher; 4. Female householder, no husband present, or male householder, no wife present. \*There are two data sources used for national-level statistics. — Data are not available. Source: [PIAAC Skills Map \(ed.gov\)](#); [ACS School District Profile 2016-20 \(ed.gov\)](#); [Search for Public School Districts \(ed.gov\)](#); [COE – Racial/Ethnic Enrollment in Public Schools \(ed.gov\)](#); [COE – Characteristics of Children's Families \(ed.gov\)](#)



## Policy/Practice Discussion Box 2: Fostering Literacy Skills of English Language Learners

### Literacy Supports in Kansas' Dodge City Public Schools (DCPS)

Dodge City, in Ford County, Kansas, has a population of [27,690](#). The town is located in a county that has only [31](#) people per square mile but more than 500 farms, the average size of which is [1,326](#) acres. The DCPS may not be qualified for the rigorous "rural" definition of the NCES, but according to common perceptions of rurality ([Arsen et al., 2022](#)), the district is rural. The [Kansas Report Card 2021-2022](#) shows that in the DCPS student population, more than 80% are Hispanic, more than 80% are economically disadvantaged, and 47% are English language learners (ELs).

#### District-Level Leadership

The district [vision](#) is to develop positive citizens through safe and individualized learning environments for all students, and to prepare every student to be college and career ready in math and literacy skills. The [Board of Education](#) has set the following five goals to provide world-class education for all students:

- **Academic Excellence**, which emphasizes increased student achievement, comprehensive educational programs, and supplemental programs & services.
- **Learning Environment**, which includes a safe and orderly school climate, alternative education programs & services, and facilities planning & development.
- **Staff Development**, which focuses on staff recruitment & retention, professional growth opportunities, and compensation & benefits.
- **Community Involvement**, which consists of parental involvement, effective communication, and business & community partnerships.
- **Accountability**, which refers to fiscal responsibility and accountability, resource allocation and management, and advocacy for public education.

The [District Strategic Action Plan](#) focuses on improving student achievement. To fulfill the promise to provide world class education for all students, the district has set as a primary academic goal increasing literacy proficiency. The objective is to use research-based instructional strategies to ensure that all students receive a strong foundational knowledge about literacy and develop reading skills in a culturally responsive manner.

## Support for Literacy Instruction in the Classroom

Research has consistently shown that (1) instruction can boost the word reading skills of ELs, (2) ELs benefit from the explicit teaching of phonological awareness and phonics, much as native English speakers do, and (3) increased exposure to English text has positive effects on the word reading of young ELs ([August et al., 2014](#)). The district places a strong emphasis on job-embedded professional learning for teachers through [instructional coaching](#). For example, instructional coaches often model culturally responsive instructional strategies during vocabulary lessons, and then, teachers, instructional coaches, and administrators reflect on the vocabulary lessons.

## Support for Literacy at Home

The school district promotes literacy at home. The following are some [tips](#) that the DCPS provides parents to help their young children develop literacy at home:

- **Keep Books Within Reach.** Make sure books are easy to reach and find, just like any other toy in the home.
- **Sing, Read, Repeat.** Parents should read their children's favorite stories and sing their favorite songs repeatedly. This will strengthen their language skills and provide positive feelings about reading.
- **Ask Questions.** Parents can ask their children questions about everything. Children have strong opinions and interesting ideas about their world. Parents should encourage them to talk about what they think.
- **Talk with Children.** Parents can ask their children to talk about their days at school. Encourage them to explain something they did or a game they played during recess.
- **Play with Puppets.** Play language games with puppets. Have the puppet say, "My name is Mark. I like words that rhyme with my name. Does park rhyme with Mark? Does ball rhyme with Mark?"
- **Say Silly Tongue Twisters.** Sing songs, read rhyming books, and say silly tongue twisters. Those help children become sensitive to the sounds in words.
- **I Read... You Read...** Take turns reading aloud at bedtime. Children enjoy this special time with their parents.
- **Take Control of the Television.** It is difficult for reading to compete with TV and video games. Parents can ask questions about what their children watch or games they play. Parents should always encourage reading as a free-time activity.

## Community Partnerships

Data from the Department of Justice shows that [75%](#) of state prison inmates have low literacy skills or did not graduate from high school. In general, workers with low literacy skills are more likely to earn less than those who are literate. Research suggests that compared with people whose educational attainment is above high school, people with fewer than [12 years](#) of education tend to live in poverty and have more health issues.

The DCPS leaders and educators understand the critical role of literacy, and thus, actively partner with their community to promote literacy development. DCPS has a three-year, \$3 million literacy project DCLiNK. The project was funded by the Literacy Network of Kansas and the federal Striving Readers' Comprehensive Literacy Initiative. Through DCLiNK, the district not only fosters literacy for disadvantage students such as ELs, students with disabilities, and students from poor families, but also helps to improve literacy at the state, regional, and local levels.

## Rural Schools Need More Support to Offer Dual Enrollment Programs

“Dual enrollment (DE) is one of many terms used to describe a program that allows high school students to take a college course and earn both high school and college credit” ([ED, 2022](#)). The governments of 48 states and the District of Columbia have DE policies; 50 states and the nation’s capital now offer 87 different DE programs, including 27 online ([ECS, 2022](#); [Sparks, 2022](#)). As a common practice in most U.S. high schools, DE programs are offered by about 88% of high schools, and about one-third of U.S. students (34%) take college courses in high school ([ED, 2022](#)).

Research suggests that dual enrollment programs effectively increase college access, enrollment, and degree attainment, particularly for rural students and students from low-income families ([Gagnon et al., 2021](#)). Small high schools in rural areas often struggle to offer Advanced Placement (AP) courses because of a lack of AP teachers and funding sources. Dual enrollment programs are often considered more efficient than AP courses for rural school districts, as schools can get support and resources through collaboration with local community colleges and universities. At the same time, the proliferation of DE in rural communities may help sustain two-year colleges in areas with smaller populations ([Dembicki, 2018](#)).

- In Alaska, dual enrollments increased by 85% between 2008 and 2017. The participation of Non-White and rural students in DE programs has increased significantly since 2008. Among Alaska’s high school graduates, 18% are Alaska Native, and 9% attend rural schools. By contrast, among high school graduates who participated in DE, 26% are Alaska Native, and 16% are from rural schools ([DeFeo and Tran, 2019](#)).
- In Nebraska, taking at least one dual enrollment course was positively associated with graduating from high school, going to college, choosing a 4-year college over a 2-year college, and reenrolling in college in the second year ([Lee et al., 2022](#)).
- In Texas, graduates from rural high schools were more likely to participate in DE programs than graduates from urban or suburban high schools. Since 2001, graduates from rural high schools, who represent 14% of all public high school graduates in Texas, had higher DE participation rates in each high school graduation cohort. In 2015, more than 40% of high school graduates participated in DE in the western part of the state, particularly in the mostly rural West Texas Region ([Miller et al., 2017](#)).

While a large body of literature supports expanding DE programs, researchers consistently report findings about unequal access in rural school districts or a lack of strategies to encourage disadvantaged students to participate in school-offered DE programs ([Rarig, 2019](#)). Researchers analyzed data from the High School Longitudinal Study of 2009 ([HSL:09](#)) and observed more than 24,000 ninth-graders from 944 high schools. The study found that on average, Black students were 37% less likely, and Hispanic were 25% less likely, to take DE courses than Whites ([Rivera et al., 2019](#)). In another study, researchers found that in Alaska, while the DE participation rates of Native students and rural students have increased substantially, White students earned (on average) almost a full course more than Alaska Native students, and urban students earned 2.97 credits more than remote rural students did ([DeFeo and Tran, 2019](#)).

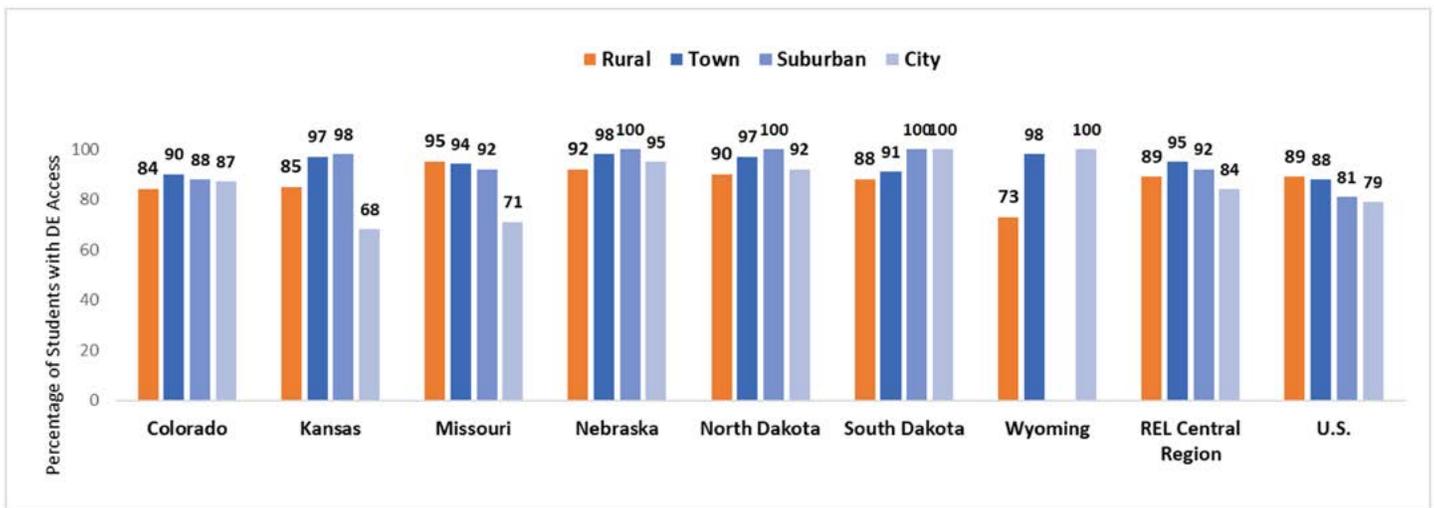
Geographical isolation and the digital divide have become obstacles for rural students to access DE programs. In a [Rand study](#) on DE programs in Texas, researchers interviewed officials of several community colleges that predominantly partnered with rural districts. They found that it was difficult to deliver courses face-to-face and/or on college campuses because of the distance that separated the community college from the high school. An interviewee explained, “We aim always to provide college courses face-to-face just for all its value and success, but given our service area [with] remote high schools that are just really far away, this becomes a challenge.”

Limited access to DE programs is a key equity issue for rural students. Many rural schools strive but struggle to offer DE programs because of a shortage of staff, insufficient funding, or a lack of sustainable partnerships. Researchers often use the following parameters to examine whether rural students have adequate access to dual enrollment:

- School-level DE access — A school that provides at least one dual enrollment course in a school year.
- Student-level DE access — Students attending a school that provides at least one dual enrollment course in a school year.

Ideally, every school should be able to offer DE courses based on student needs, and every student should be able to go to a school that provides at least one DE course in a school year. In a [study](#) (2019) conducted by the [Regional Educational Laboratory \(REL\) Central region](#), which is more rural than the national average, researchers found that in Nebraska and North Dakota, suburban students have 100% DE access, meaning that all the students can go to a high school that offers dual enrollment, but this is not the case for rural students (Figure 3.5). In Wyoming, almost all students in non-rural areas can attend schools with dual enrollment, but more than 1 in 4 rural students in grades 11 and 12 attended schools that do not offer DE programs.

Figure 3.5. Percentage of Students in Grades 11 and 12 with Dual Enrollment Access, by Student Locale: 2017-18

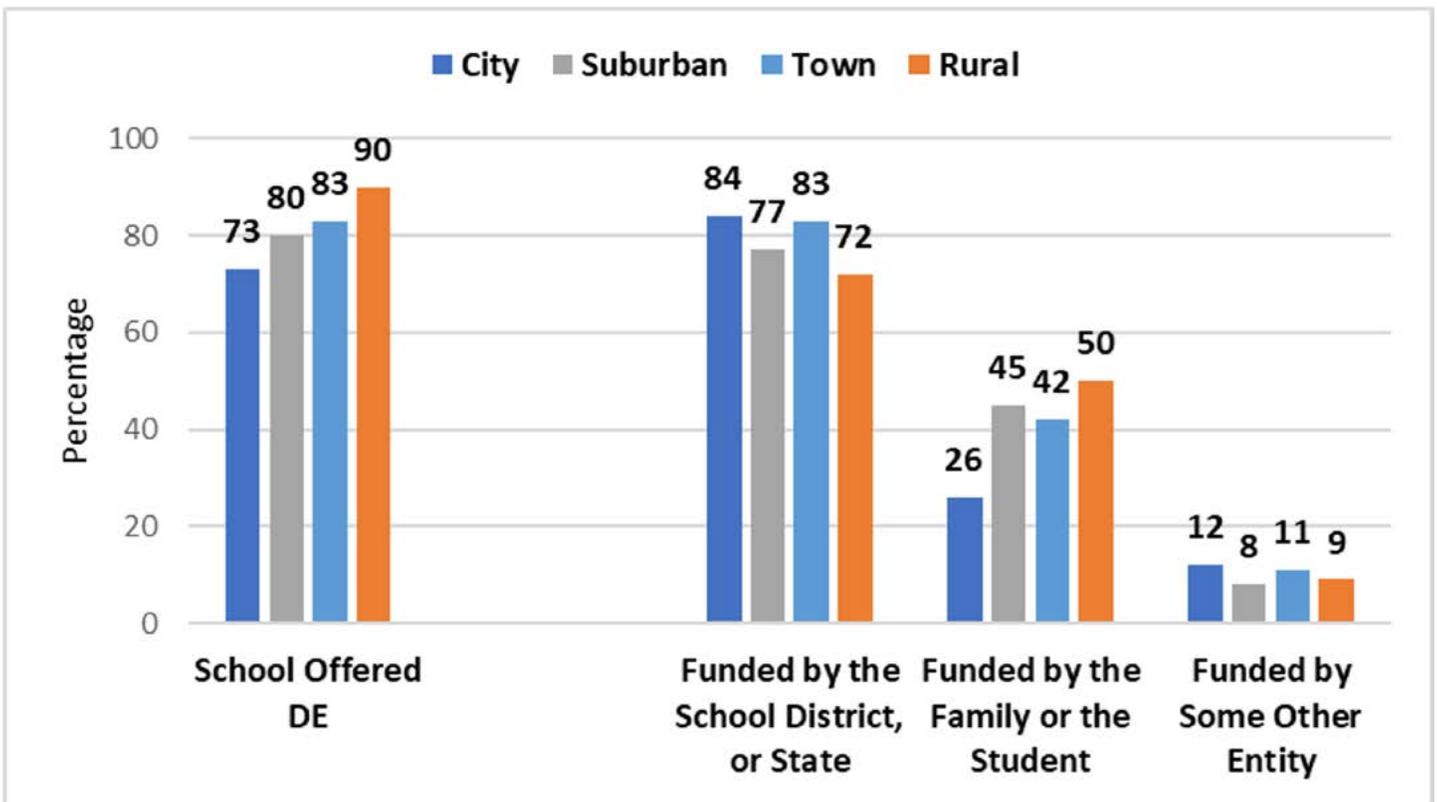


Note: There are no high schools in Wyoming with a suburban locale. Source: [Understanding Access to and Participation in Dual Enrollment by Locale and Income Level \(ed.gov\)](#)

The study suggests that dual enrollment is particularly important for rural students and students from low-income households. In general, data show that rural students often have higher DE participation rates than their suburban and city peers. As the study points out, “dual enrollment programs might provide a crucial opportunity for rural students, who generally have more limited opportunities for college and career preparation, to improve their college readiness.”

For policymakers, providing adequate funds for rural DE programs is a way to close the equity gap and meet the needs of rural students ([Lee and Owens, 2019](#); [Sparks, 2022](#)). Figure 3.6 shows that nationwide, 90% of rural schools with students in grades 9-12 offered DE programs, as opposed to 73% of city schools. However, only 72% of rural schools received funding from their districts or states for DE programs, compared with 84% of city schools. In rural schools, half of the DE programs were funded by families or students themselves.

Figure 3.6. Among Schools With Students Enrolled in Any of Grades 9-12, Percentage That Offered Dual Enrollment and How It Was Funded, by School Locale: 2017-18



Source: [Dual or Concurrent Enrollment in Public Schools in the United States](#)

Another issue that affects access to DE programs for rural students is a lack of policy alignment with some rural circumstances. In Ohio, researchers pointed out that although the ambitious statewide DE policy “College Credit Plus” supports expanding DE programs, it may challenge rural school districts that are frequently struggling with issues of funding and teacher recruitment ([Hornbeck and Malin, 2019](#)). In Georgia, nearly 1 in 4 high school students in rural counties participate in DE programs, but the concern is that the state may end the “[hold harmless](#)” funding principle by reducing district budgets for DE students ([Lee, 2019](#)).

Researchers recommend that state education agencies interested in expanding DE opportunities for rural students explore more strategies to expand DE access. For example, schools may offer DE courses online or at locations in addition to high school or college campuses. Schools may partner with local colleges and universities to focus on programs that can certify high school teachers to serve as postsecondary instructors. In school districts that offer DE programs but experience low participation rates of disadvantaged students, district leaders and educators may consider strategies to share detailed information about the benefits of dual enrollment with parents and encourage students to participate in DE programs as soon as they can.

While DE programs create opportunities for rural students to pursue higher education and transition smoothly from high school to college, dual enrollment is not the single credentialing pathway to work and career ([Manno, 2023](#)). A recent national [survey](#) shows that American parents want K-12 schools to ensure students have multiple choices or pathways to pursue opportunities linked to labor-market demands ([Populace, 2022](#)). Encouragingly, many rural school leaders have already focused on offering various options for students to personalize their programs, such as apprenticeships, internships, career and technical education, and on-the-job training. Yet, due to isolation and poverty, many rural schools do need more support and resources to expand high-quality DE and other pathway programs for all students.



## Policy/Practice Discussion Box 3: Examples of Education Solutions for the Rural South

### Creating Higher Education Pathways for Black Students in the Rural South

A [2021 Gallup survey](#) shows that 67% of Black families wish their high school graduates would attend a four-year college, compared with 51% of White and 56% of Hispanic parents with the same wish ([Gallagher, 2021](#)). “Despite national concern, patterns embedded in Black student achievement as related to geographical influences generally are ignored, especially in the South, where the majority of Black people in the United States reside” ([Morris and Monroe, 2009](#)). Research suggests that creating higher education pathways for rural African-American students is an overarching promising practice to close the educational opportunity gap ([Crumb and Chambers, 2022](#)).

Many rural African Americans are resilient and have college dreams instilled in them at early ages ([Flowers, 2020](#)). It is essential to provide disadvantaged rural students and their families with informational and nurturing supports through teachers, counselors, and other school personnel to help students make optimal decisions for their lives as early as possible. The following are some strategies and solutions that researchers recommend for school leaders and policymakers:

#### 1. Foster Gifted/Advanced Education Programs for Promising Students

Thousands of rural African American students lack access to advanced learner and gifted education programs (Ford, 2013). One reason is the shortage of resources for intentional student programming, professional development, and networking opportunities for those living and working in rural areas. The [Emerging Scholars program at Clemson University](#) provides a model of how to build university-rural community relationships.

Through the program, Clemson University partners with seven rural high schools within the state of South Carolina. The program specifically targets students who are in good academic standing but unsure about postsecondary pathways, looking at whether they will go to any institution and, if they do, which context is best suited for their success. Over the summer, students participate in a two-week residential program where they take academic content courses in Math, English, Public Speaking, College 101 (focused on study skills and familiarity with the institution), and a participatory action research course.

The summer programming is supplemented through an after-school program during the year, including SAT/ACT preparation, STEM engagement, and leadership development content. The program communicates directly with the student’s family, sharing with them community expectations and how to be most supportive of their children. When parents understand the experience and value that their children can get from college, they will inspire their children to pursue such a path. Through this kind of direct communication, many African American families, particularly those living in rural areas with persistent poverty, are informed and empowered.

## 2. Build School-University-Community Collaborations to Promote College Aspirations

**Host alumni days.** School personnel at all levels can host alumni days, wherein former successful students return and talk about their college attendance and experiences and discuss challenges and lessons learned with younger students, including innovative ways to finance college (Gafford, 2020).

**Invest in school trips to colleges/universities.** The issue of isolation and transportation access is an ongoing concern for rural African American students. Thus, school trips to varied types of higher education institutions (e.g., two- and four-year, minority serving, private, or public institutions) are essential to providing collegiate exposure for rural African American youth. School personnel should be intentional to target students who face the most obstacles and involve families in these endeavors to account for students with first-generation college attendance status and families who may not have adequate financial resources to take these trips independently.

**Provide students with virtual reality college tours or events.** Several creative options for early college exposure for rural students include virtual reality college tours, online college scavenger hunts, or digital pen pals with a college student or representatives to provide early college exposure and information about hybrid and online options for education. Such activities promote early positive collegiate experiences and help establish long-term relationships between rural African American students and various colleges/universities (Gafford, 2020).

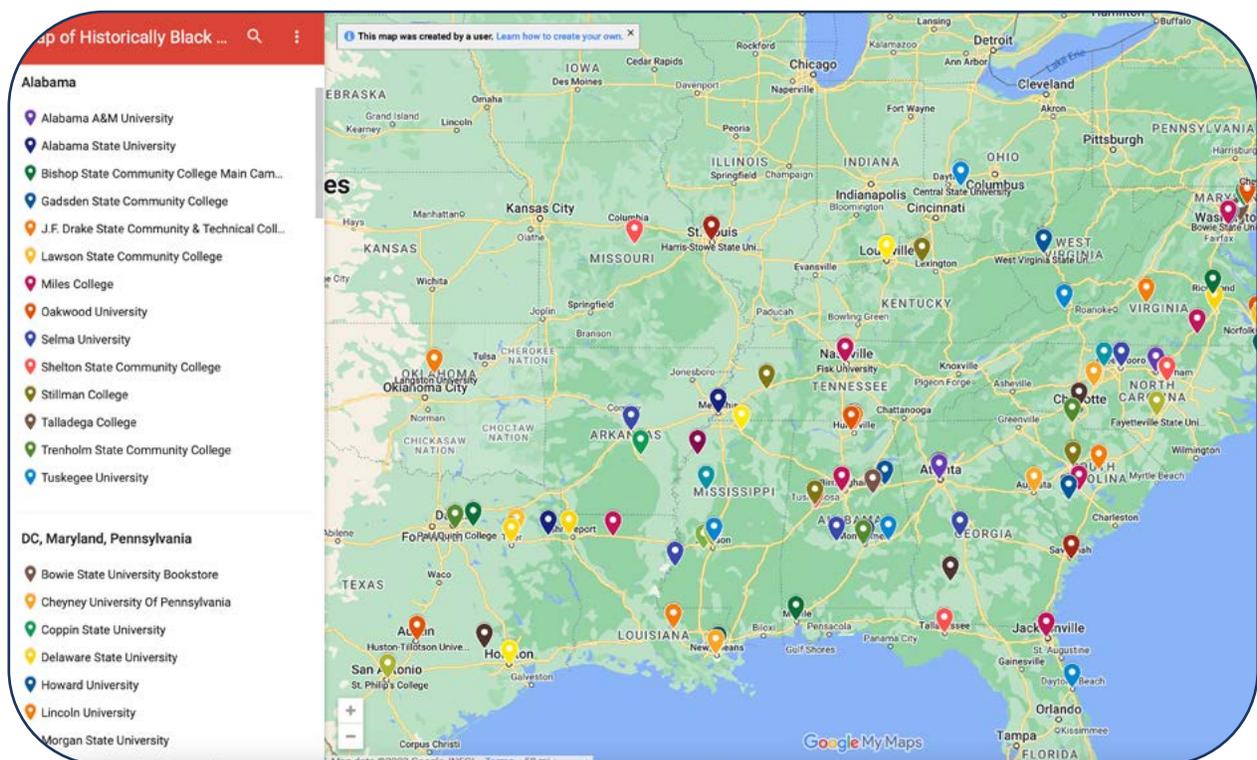
**Develop mentorship programs.** Mentorship programs with high-quality local sorority or fraternal organizations are also a key pathway to increase college knowledge for rural African American students (Cokley and Crumb, 2020; Gafford, 2020; Hines et al., 2020). Local student groups can galvanize the cultural, social, and economic capital already present in their communities. Such initiatives are vital for African American males to edify their academic efficacy, thereby changing the narrative of athletics as their primary pathway to college (Hines et al., 2020).

### 3. Support Historically Black Colleges and Universities (HBCUs)

The shrinkage of rural residents in the South leads to decreased property tax collections and results in underfunded rural school districts. Insufficient resources certainly hinder educator recruitment and retention. Limited broadband access contributes to minimal educational curricula expansion in rural schools. [Congressman Sanford Bishop](#) points out that providing increased capacity to HBCUs is a solution to improving opportunities for rural America and its African American populations.

The following map shows a unique role of HBCUs in the South. Orangeburg, a very rural community in South Carolina, is home to two HBCUs — [Claflin University](#) and [South Carolina State University](#). South Carolina State has an elementary school on campus that serves the community. Both universities can supply quality educators. Students from both HBCUs emphasize volunteering, from the boys and girls club to charity walks.

Additionally, HBCUs create job opportunities for local communities. Rural students who graduate from these universities often bring unique ideas to the workplace because of their experiences growing up in rural areas. In many cases, HBCUs have effectively bridged the learning opportunity gap for rural students.



Source: [Map of Historically Black Colleges and Universities \(HBCUs\) - Google My Maps](#)

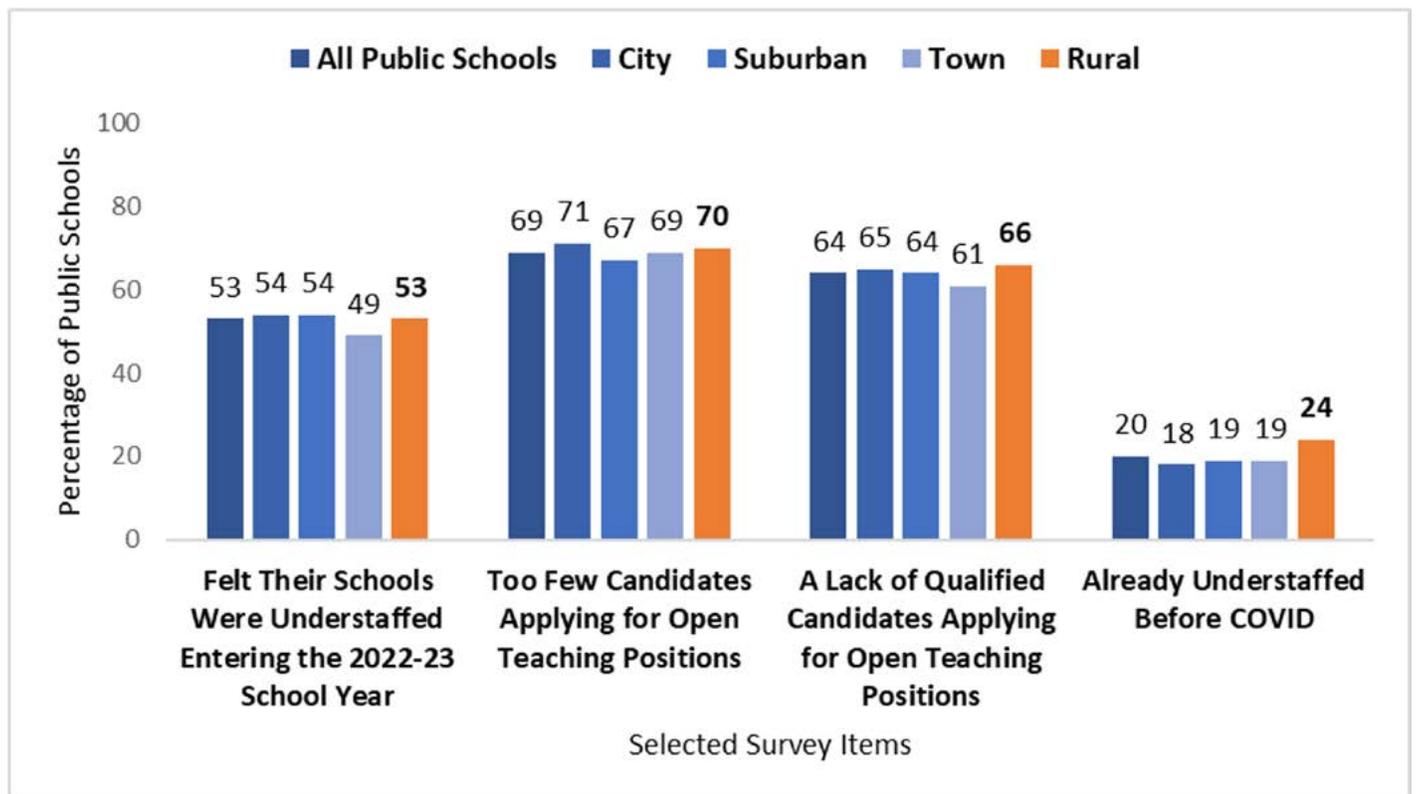
## Issue #4: Missing Learning From Teachers With Specialties

“Rural schools face the same issues as other schools across the country in reference to the recruitment and retention of quality teachers, but, there are a small number of researchers who have suggested that rural schools encounter different issues than those of larger schools and school districts” (Huysman, 2007). Research consistently shows that high teacher attrition in rural schools negatively impacts student achievement and academic growth, as students often miss learning opportunities from teachers with experiences and expertise (Gao, 2022; Morton, 2021). In many rural schools, recruiting educators is as difficult as retaining teachers.

### A Lack of Qualified Candidates Applying for Open Teaching Positions

Like non-rural schools, more than half (53%) of public schools in rural areas felt that they were understaffed when they started the 2022-23 school year (Figure 3.7). In 2022, the Institute of Education Sciences (IES) conducted a series of national surveys and collected nationally representative data about the impact of COVID-19 on public schools. The data show that more rural schools than non-rural schools reported that they were already understaffed prior to the start of the pandemic (24% vs. 20%). Two-thirds of rural schools reported that their main challenge in filling vacant teaching positions for the 2022-23 school year was a lack of qualified candidates applying for open teaching positions.

Figure 3.7. Percentage of Public Schools That Were Understaffed and Lack of Teacher Candidates, by School Locale: August 2022



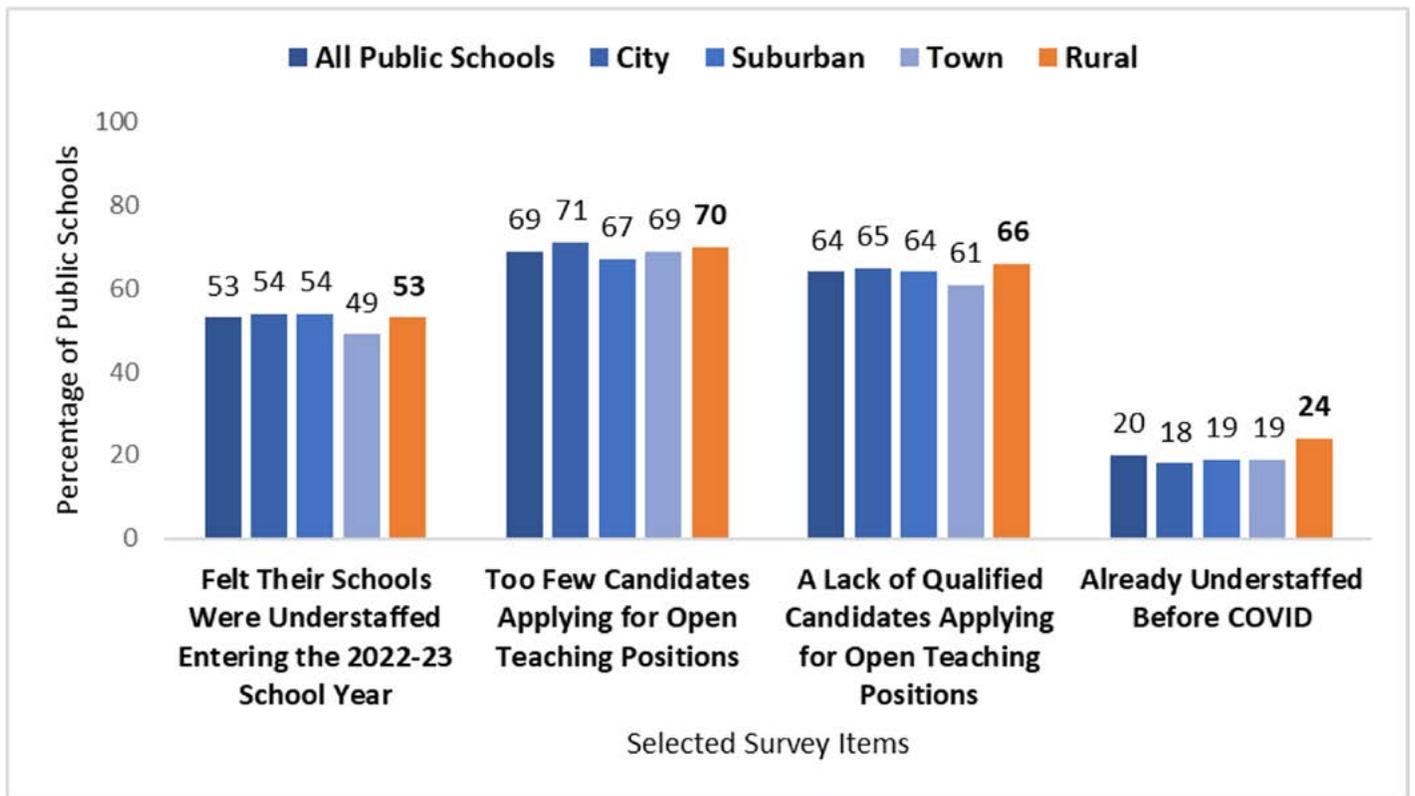
Source: [School Pulse Panel \(ed.gov\)](https://www.ed.gov/school-pulse-panel)

## Post-Pandemic Understaffed Areas in Rural Schools

In the 2022-23 school year, rural schools were facing similar challenges as non-rural schools in areas of recruiting teachers and specialists (Figure 3.8). For example,

- More than half of rural schools were short of special education teachers.
- More than 2 in 5 rural schools were short of elementary school teachers.
- About 2 in 5 rural schools lacked professional staff in mental health.
- At least 1 in 3 rural schools felt that they were understaffed in tutoring or academic interventions for the 2022-23 school year.

Figure 3.8. Percentage of Public Schools, by Areas Reported that Schools Are Understaffed: August 2022



Source: [School Pulse Panel \(ed.gov\)](#)

The COVID-19 pandemic not only exacerbated the teacher shortage, but it also complicated the management of school staff in general. Approximately 52% of school personnel are non-teaching employees, according to data from the [NCES](#). These non-teaching school staff are often described as the “hidden half” ([Cai, 2020](#)). Although their roles are non-instructional and behind the scenes, they provide essential services. Figure 3.8 also shows that compared with non-rural schools, rural schools were more likely to experience a shortage of staff in transportation (64% vs. 59%) and nutrition (39% vs. 37%).

## Increased Needs for Teachers in EL and Special Education in Rural Schools

Between 2015 and 2019, English language learners (ELLs or ELs) in rural schools increased by approximately 54,800 students, and students with disabilities increased by approximately 21,500 students (CPE, 2023). Nearly 45% of teachers in rural schools reported that they had at least one EL student in their class. Nearly 90% of teachers in rural schools said that they had at least one student with disabilities in their class (Table 3.5).

Table 3.5. Percentage Of Public School Teachers Who Teach English Language Learner (ELL) Students and Students with Disabilities, by Selected Qualifications or Coursework: 2017-18

	Teachers with at least one English Language Learner (ELL) student in their class			Teachers with at least one student with an Individualized Education Program (IEP) in their class		
	As a percent of all teachers	Among these teachers, percent who		As a percent of all teachers	Among these teachers, percent who	
		Have a major, minor, or certification in ESL	Took any courses on how to teach ELL students		Have a major, minor, or certification in special education	Took any courses on how to serve students with special needs
<b>U.S.</b>	64.0	10.0	44.8	88.7	23.0	70.9
<b>City</b>	74.2	12.9	47.4	87.8	24.8	69.4
<b>Suburban</b>	68.4	9.6	45.6	88.2	23.3	70.5
<b>Town</b>	58.4	7.2	41.8	90.2	21.0	73.1
<b>Rural</b>	<b>44.5</b>	<b>6.9</b>	<b>38.5</b>	<b>89.9</b>	<b>20.9</b>	<b>72.2</b>

Source: U.S. Department of Education, National Center for Education Statistics, Table 209.42 prepared in October 2020.

Additionally, Table 3.5 shows that fewer teachers in rural schools had professional training in teaching and supporting EL students or students with disabilities, compared with their colleagues working in non-rural schools. For instance, among rural teachers who had at least one EL student in their class, only 7% had a major, minor, or certification in teaching English as a Second Language (ESL), and only 39% had taken courses on how to teach ELs. Among rural teachers who had at least one student with disabilities, only 1 in 5 had a major, minor, or certification in special education.

## The Teacher Pipeline Still Needs Fixing

“Rural schools struggle to keep filling their leaky buckets, as do most schools serving challenging populations” (National Council on Teacher Quality, 2018). In 2016, NSBA’s Center for Public Education (CPE) published a report titled “Fixing the holes in the teacher pipeline: An overview of teacher shortages” (Barth et al., 2016). In the study, researchers point out that rural schools like urban and high-poverty schools “typically have a harder time attracting and keeping teachers,” and “vacancies are high for specialized subjects like math, science and special education, where burn out and job market competition is higher.”

It has been a historical challenge for rural schools to recruit teachers in Science, Technology, Engineering, and Math (STEM). Earlier data from the National Center for Education Statistics (NCES) show that compared with non-rural schools, rural schools had fewer staff with specialist or academic coaching assignments (55% vs. 66%), such as science specialists (9% vs. 12%) and math coaches (20% vs. 28%) (Table 3.6). Researchers have consistently documented the difficulties in recruitment and retention of STEM teachers in rural areas.

- In West Virginia, rural schools do not have enough teachers in math and science at the middle school and high school levels. “Nearly 20% of classes statewide are taught by individuals not fully endorsed either by content area or grade level” (McHenry-Sorber and Campbell, 2019).
- In New York, among the novice physics teachers who transferred to other schools, 1 in 3 left urban and rural schools to work in suburban schools (Palermo et al., 2021).
- In Alabama, some rural schools do not have any certified teachers in math or science (Tutor, 2023). In some counties with large Black communities (e.g., Perry and Marengo County), approximately 80% of math and science educators teach without full certification (O'Brien et al., 2022).
- In Kansas, which is often described as “a good case study of teacher attrition in a rural state,” researchers find that STEM teachers have low turnover in Kansas public schools. The shortage of STEM teachers in the state is likely to be caused by inadequate teacher preparation programs within the state (Nguyen, 2019). In other words, rural schools may have more recruitment issues than retention ones.
- In Idaho, the superintendent of the American Falls School District said, “Over the last ten years, our district has had a difficult time hiring teachers in the STEM areas.” Currently, the district leaders are actively working with Idaho State University faculty to combat the teacher shortage with a new project called IMPACTS, or Idaho Making Progress Against Critical Teacher Shortages (Crabtree, 2022).

Table 3.6. Number and Percentage of Public Schools that Had Staff With Specialist or Academic Coaching Assignments, and Percentage of the Schools With Staff With a Particular Specialist or Academic Coaching Assignment, by School Locale: 2015–16

Selected school characteristic	Number of schools that had staff with specialist or coaching assignments	Percent of all schools that had staff with specialist or coaching assignments	Among schools that had staff with specialist or coaching assignments, percent						
			Reading specialists	Math specialists	Science specialists	Reading coaches	Math coaches	Science coaches	instructional / not subject-specific coaches
All public schools	59,600	65.9	70.1	33.5	12.1	41.3	27.6	9.8	36.9
City	18,200	73.4	61.8	35.0	14.6	47.2	37.8	13.6	47.5
Suburban	20,700	71.1	72.9	33.7	12.6	40.7	25.8	9.9	33.9
Town	7,300	59.8	71.2	31.6	11.1	39.4	21.4	7.6	36.4
<b>Rural</b>	<b>13,400</b>	<b>55.0</b>	<b>76.6</b>	<b>32.0</b>	<b>8.5</b>	<b>35.3</b>	<b>19.8</b>	<b>5.7</b>	<b>27.2</b>

Source: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), “Public School Data File,” 2015–16.

Another issue frequently reported on the teacher pipeline is a lack of teacher demographic diversity or the disproportionality between the race/ethnicity of the student population and that of teachers. As shown in Table 3.7, in 2019, nearly one-third of rural students were non-White, while nearly 90% of teachers in rural schools were White. A growing body of research suggests that “teachers of color are linked to positive academic, social-emotional, and behavioral student outcomes and finds that these effects are driven, at least in part, by mindsets and practices aligned to what’s known as culturally responsive teaching” (Will, 2022). With a rapid change in student demographics, many school leaders, regardless of school locales, feel a need to recruit more teachers from diverse demographics.

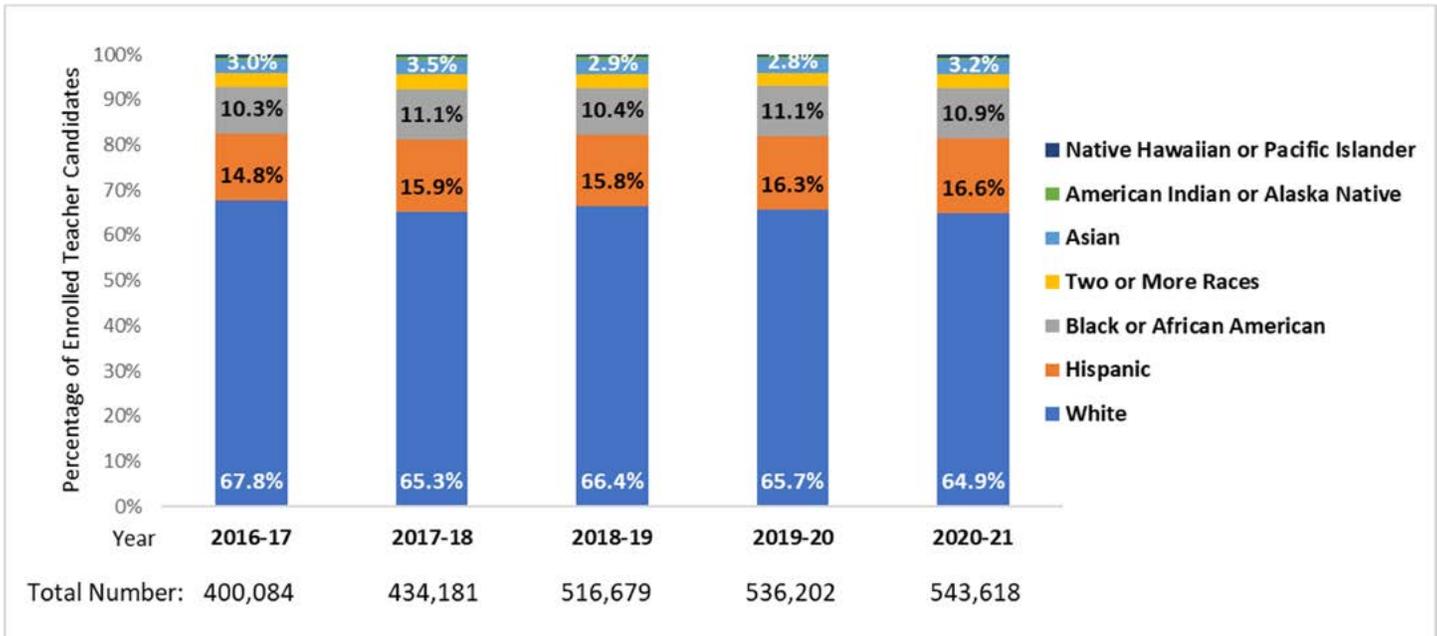
Table 3.7. Number and Percentage of Teachers in Public Elementary and Secondary Schools, by School Locale and Teacher Race/Ethnicity: 2017-18

Percentage of teachers								
	Number of teachers (in thousands)	Non-White	Black	Hispanic	Asian	Pacific Islander	American Indian/Alaska Native	Two or more races
<b>City</b>	1,032	31.5	11.8	14.0	3.1	0.2	0.3	2.1
<b>Suburban</b>	1,374	20.4	5.5	9.8	2.7	0.3	0.3	1.8
<b>Town</b>	413	13.2	3.7	5.8	0.9	0.3	0.9	1.7
<b>Rural</b>	<b>727</b>	<b>10.3</b>	<b>3.6</b>	<b>3.8</b>	<b>0.5</b>	<b>0.1</b>	<b>1.0</b>	<b>1.3</b>
Percentage of rural students (2019)								
Rural Students		<b>32.2</b>	<b>9.2</b>	<b>15.3</b>	<b>1.9</b>	<b>0.2</b>	<b>1.9</b>	<b>3.7</b>

Source: U.S. Department of Education, National Center for Education Statistics, [Table 209.23](#) prepared in October 2020.

The reality is that, historically, there have been fewer non-White teacher candidates in the teacher pipeline, although during the past decade, there has been a gradual shift in overall teacher program enrollment by race/ethnicity (ED, 2022). As shown in Figure 3.9, the percentage of White enrollees in teacher preparation programs dropped from 75% in 2010-11 to 65% in 2020-21, while the proportion of non-White enrollees increased steadily (Figure 3.9).

Figure 3.9. Percentage of Individuals Enrolled in Teacher Preparation Programs, by Race/Ethnicity: 2016-17 Through 2020-21



Source: [Title II - Welcome \(ed.gov\)](#)

It should be noted that regional demographic characteristics play a role in the diversity of teacher candidates. Table 3.8 shows that states with large Hispanic, Black, or Native American communities have more non-White candidates in teacher preparation programs. By contrast, in states where most people are White, the percentage of White teacher candidates is relatively higher than in states with more diverse populations. For example,

- In New Mexico, nearly 44% of individuals enrolled in teacher preparation programs are Hispanic. Other states that have comparatively more Hispanic teacher candidates are California (38%), Texas (33%), Nevada (26%), and Florida (22%).
- In Mississippi, more than 46% of teacher candidates are Black, followed by Georgia (26%) and Louisiana (25%).
- In Alaska, about 22% of candidates in teacher preparation programs are Native Americans or AI/AN, followed by South Dakota (14%) and Montana (9%).
- In West Virginia, 97% of the state population is White, and 94% of candidates enrolled in teacher preparation programs are White. Similar situations can be found in New Hampshire (White population vs. White teacher candidates: 92% vs. 93%), Maine (94% vs. 92%), and Vermont (93% vs. 91%).
- In some states, the percentage of White teacher candidates is lower than the percentage of the White population in the state. For instance, in Wyoming, 94% of the state population is White, but among the state's teacher candidates, 87% are White, 8% are Hispanic, and 5% are other racial minorities.

Researchers recommend the following strategies to attract more non-White candidates into the K-12 teaching profession.

- **Extend recruitment efforts.** “Black educators, coaches, and mentors not only serve as role models, but provide positive academic and social support due to their keen understanding of the cultural and societal challenges facing them” (Wallace et al., 2022). For instance, African American male educators only comprise about 2% of the current K-12 educator population (Hanford, 2017). To hire more Black male educators, schools may consider extending recruitment efforts beyond high school and college contexts to more informal venues such as churches and other neighborhood community centers (Valenzuela, 2017).
- **Embed role models in teacher induction programs.** “Induction programs are comprehensive initiations or introductions to a position that provide inexperienced teachers with the necessary models and tools for beginning their teaching careers, as well as specific guidance aimed at helping them meet performance standards” (Kaufmann, 2007). School districts may consider inviting accomplished teachers from diverse backgrounds to mentor novice teachers and exemplify how they take advantage of their cultural experiences to support their students academically and psychologically (Navarro et al., 2022; Paz, 2022; Wallace et al., 2022).
- **Build connections.** Researchers suggest that to recruit diverse teachers “... districts may wish to identify informal connectors— teachers of color, paraeducators, or other community members—who can use their broader networks [and recruiters who are part of these communities] to help the district develop relationships with communities of color,” and to use personal relationship building as a tool for recruitment. District leaders can build connections with potential teacher candidates through visiting college campus and contacting alumni (Comprehensive Center Network, 2022).



Table 3.8. Percentage of Individuals Enrolled in Teacher Preparation Programs, by State and Race/Ethnicity: 2020-21

State	White	State	Hispanic	State	Black	State	Native (AI/AN)
West Virginia	94.2%	New Mexico	43.6%	Mississippi	46.3%	Alaska	21.6%
New Hampshire	92.9%	California	38.5%	Georgia	26.1%	South Dakota	13.7%
Maine	91.8%	Texas	33.0%	Louisiana	24.7%	Montana	9.3%
Kentucky	91.5%	Nevada	25.9%	District of Columbia	23.3%	Oklahoma	6.7%
Vermont	90.9%	Florida	22.1%	North Carolina	21.8%	New Mexico	5.9%
North Dakota	90.3%	Colorado	19.6%	Maryland	20.7%	North Dakota	3.0%
Iowa	88.6%	Arizona	19.4%	Delaware	19.2%	Washington	1.3%
Utah	88.3%	Illinois	17.8%	South Carolina	18.8%	North Carolina	1.3%
Nebraska	88.1%	New York	17.2%	Arizona	18.5%	Arizona	1.0%
Ohio	87.6%	<b>National</b>	<b>16.6%</b>	Texas	17.0%	Oregon	1.0%
Missouri	87.1%	New Jersey	16.3%	Alabama	15.5%	Hawaii	1.0%
Wyoming	86.9%	Oregon	16.0%	Arkansas	12.8%	Kansas	0.9%
Idaho	85.4%	Washington	12.6%	Florida	11.8%	Arkansas	0.9%
Pennsylvania	84.9%	Connecticut	12.3%	Virginia	11.4%	Idaho	0.9%
Wisconsin	84.8%	Oklahoma	9.4%	Tennessee	11.1%	Colorado	0.9%
Minnesota	84.7%	Rhode Island	9.2%	<b>National</b>	<b>10.9%</b>	Wisconsin	0.8%
Indiana	84.6%	Massachusetts	8.7%	New York	10.1%	Louisiana	0.8%
Rhode Island	84.3%	Maryland	8.1%	Illinois	9.0%	<b>National</b>	<b>0.7%</b>
Kansas	82.4%	District of Columbia	7.8%	Connecticut	8.2%	Maine	0.7%
Michigan	82.3%	Kansas	7.8%	Michigan	8.1%	California	0.6%
Montana	82.2%	Wyoming	7.6%	Nevada	8.0%	Alabama	0.6%
Massachusetts	81.7%	Idaho	7.2%	New Jersey	6.6%	District of Columbia	0.5%
Tennessee	81.2%	Hawaii	7.2%	Missouri	6.4%	Minnesota	0.5%
South Dakota	81.1%	Georgia	6.5%	Pennsylvania	5.8%	Utah	0.5%
Alabama	79.7%	Iowa	5.8%	Indiana	5.6%	Nevada	0.5%
Arkansas	78.7%	Nebraska	5.8%	Massachusetts	4.6%	Missouri	0.5%
Virginia	73.8%	Virginia	5.6%	California	4.6%	Wyoming	0.4%
Connecticut	73.4%	Indiana	5.5%	Minnesota	4.4%	Virginia	0.4%
Washington	73.3%	Alaska	5.4%	Ohio	4.4%	Indiana	0.4%
South Carolina	73.3%	North Carolina	5.1%	Kentucky	4.2%	Ohio	0.4%
Oregon	71.4%	Wisconsin	5.1%	Wisconsin	4.2%	Vermont	0.3%
New Jersey	70.1%	Utah	4.6%	Colorado	3.9%	Nebraska	0.3%
Oklahoma	69.6%	Pennsylvania	4.6%	Kansas	3.2%	Illinois	0.3%
Colorado	68.9%	Michigan	4.5%	Oklahoma	3.2%	New York	0.3%
Louisiana	67.6%	Arkansas	4.1%	Hawaii	2.8%	Texas	0.3%
North Carolina	67.4%	Minnesota	4.0%	Washington	2.4%	Maryland	0.3%
Delaware	67.2%	Montana	3.8%	New Mexico	2.3%	Delaware	0.3%
Illinois	65.3%	Tennessee	3.5%	Oregon	2.2%	Mississippi	0.3%
<b>National</b>	<b>64.9%</b>	Louisiana	3.5%	Vermont	2.1%	West Virginia	0.3%
Georgia	62.2%	South Carolina	3.2%	Rhode Island	2.0%	Michigan	0.3%
Maryland	61.8%	Maine	3.2%	Iowa	1.9%	Rhode Island	0.2%
Florida	61.7%	Ohio	3.1%	West Virginia	1.9%	Tennessee	0.2%
New York	61.7%	Vermont	3.0%	Nebraska	1.4%	Georgia	0.2%
Alaska	60.0%	Delaware	2.9%	New Hampshire	1.4%	South Carolina	0.2%
Arizona	55.4%	New Hampshire	2.8%	Wyoming	0.8%	Iowa	0.2%
Nevada	51.8%	North Dakota	2.8%	North Dakota	0.8%	Kentucky	0.1%
Mississippi	50.4%	South Dakota	2.4%	South Dakota	0.7%	Pennsylvania	0.1%
Texas	45.8%	Missouri	2.3%	Maine	0.7%	New Jersey	0.1%
District of Columbia	45.6%	Alabama	1.9%	Alaska	0.6%	Florida	0.1%
New Mexico	45.1%	Kentucky	1.6%	Idaho	0.6%	New Hampshire	0.1%
California	42.3%	West Virginia	1.5%	Montana	0.4%	Connecticut	0.1%
Hawaii	26.4%	Mississippi	1.5%	Utah	0.3%	Massachusetts	0.1%

Source: Title II - Welcome (ed.gov)

## Practice/Policy Discussion Box 4: Various Strategies for Rural Teacher Recruitment and Retention

### How Some Rural Schools Approach the Teacher Shortage

Laurie Smith, a fourth-grade teacher at a one-building school (Sumner-Eddyville-Miller (SEM) Schools) in rural Nebraska, was honored as the 2021 National Rural Teacher of the Year ([Healy, 2021](#)). As a teacher for 26 years, Smith knows her community well. She grew up in Sumner and graduated from SEM, returning after teaching in other rural districts. As Smith said, a rural school is the hub of its community, and teachers play a significant role in planting education seeds in the minds of their students and nurturing the confidence of rural students in pursuing schooling regardless of where they are.

To attract and keep more teachers like Smith, rural school districts have adopted various strategies to meet their student learning needs. For instance,

- Grow your own teachers.
- Hire international educators.
- Recruit professionals who are eligible to travel and provide services in rural areas.
- Adopt four-day school weeks.
- Increase teacher salary.
- Offer affordable housing benefits.

#### Rural and Native Grow Your Own (GYO) Programs

Rural recruitment is often affected by a lack of teacher preparation in rural areas. Evidence shows that GYO programs can ease the situation of the teacher shortage in rural areas and help rural schools to recruit teachers. [Ulferts \(2016\)](#) studied 113 teachers from 24 small rural Illinois districts and found that a key to district-level recruitment efforts is to take advantage of GYO programs and employ teachers from surrounding communities and teachers who want to teach in rural settings.

In 2021, Montana's legislature passed [House Bill 403](#) with strong bipartisan support. The bill established Montana's Grow Your Own Teacher grant program and marked the state's first direct investment in a recruitment and retention model that supports GYO programs ([Sakariassen, 2021](#)). As initiatives, the grants were designed to usher high school juniors into the teaching field. Each grantee was required to partner with a public school district on the state's critical educator shortage list.

- Several rural school districts and districts serving Native students (e.g., Blackfeet Community College, Browning Public Schools) have seen efforts to help their teacher recruitment.
- Montana State University-Northern in Havre and Stone Child College in Box Elder have partnered with area high schools to offer DE or dual credit opportunities and mentorships to high school juniors specifically geared toward educator preparation.

In Oregon, one university created “satellite” programs to enhance recruitment of diverse teachers, including those from local Native American communities. The goal of this GYO program is to recruit rural and Native American teachers into the profession, filling vacancies that were too often hard to fill in the past (Adams and Farnsworth, 2020). The programs allow preservice teachers to stay in their local communities to earn course credit and spend an additional year to complete course requirements. The programs also provide preservice teachers time for work and family obligations while completing their education.

### **Eight Teachers from the Philippines in Garden City High School, Kansas**

Garden City, Kansas, “doesn’t fit the stereotype of a small, Midwestern city, ... but it is isolated and rural” (NPR, 2017). While hiring teachers from all over the world is not a novice practice for K-12 schools in America, it is impressive that Garden City High School (GCHS) hired eight teachers from the Philippines. The school [reported](#) that “In many instances, the Philippine faculty members teach in the high-level sciences and math departments, often difficult areas to fill the voids.”

So far, the school district has retained the Filipino teachers successfully.

- Juvy Mangulabnan, who teaches ESL Language Arts, Level II Writing, and Survival Skills classes, said that the district’s multicultural aspects are positive for overseas teachers.
- Ludmila Dabajo, who teaches General Biology (for freshmen) and STEM classes in the After School Program of Jennie Wilson Elementary School, said, “The school system here supports the teachers by buying equipment with self-contained labs, where in the Philippines, I would have to buy my own things.”
- Mark Shera Cruz teaches Physics and is one of the Filipino teachers who have the longest employment with GCHS since they arrived in America. “I’ve never switched employers since I came to the United States,” Cruz said. “This is a wonderful place to teach, and I’m grateful for all the opportunities that have been presented to me.”



## Traveling Educators

The term traveling educators can broadly refer to teachers and special service providers who travel around rural areas to work with different school districts in a region. Traveling educators may come from different fields and backgrounds, but most of them work with statewide or regional education agencies. One of their common characteristics is their dedication to the education of rural students.

In Alaska, the Southeast Regional Resource Center (SERCC) is a statewide education service agency and the state's largest provider of contracted services for special education. In 2019, SERCC deployed 25 itinerant specialists to provide services to more than 700 students with disabilities in 24 districts across the state ([SERCC, 2019](#)). SERCC's itinerant specialists — such as occupational therapists, speech therapists, physical therapists, and school psychologists — travel widely throughout Alaska's uniquely rural and remote areas ([Rasmussen and Tate, 2020](#)).

A recent [story](#) from the Hechinger Report — a national nonprofit newsroom that focuses on education — provides a new perspective about collaborations between rural schools and higher education institutes. Robert Mitchell, a professor at the University of Colorado-Colorado Springs, studies the issues that rural schools struggle with in hiring and training aspiring teachers. To understand the needs of rural schools, Mitchell decided to “show up with a box of doughnuts and try to make some friends” in rural schools, instead of “sitting in his office on a college campus, beaming in as a floating head on a video screen” ([Dobo, 2022](#)).

As Mitchell kept coming back to Colorado's Campo School District, the superintendent eventually asked him whether he would be interested in teaching. The school district has been short-staffed for years; the superintendent doubles as a special education teacher and a substitute. “That's how the students at Campo got a college professor as one of their teachers” ([Dobo, 2022](#)). Over five years, Mitchell has made the nearly four-hour drive from his home on the outskirts of Denver to the “sparsely populated corner of Colorado where the flat skyline bleeds into Oklahoma, New Mexico, and Kansas.” He traveled every week to teach students.

## A Four-Day School Week

In 1999, about 250 schools had four school days a week; in 2019, researchers estimated that four-day school weeks were used in more than 1,600 schools across 24 states ([Thompson et al., 2021](#)). Knight ([2/8/2023](#)) reported that one-fourth (141) of Missouri school districts — most are rural — have transitioned to a four-day school week, mainly because of the teacher shortage. In Texas, Faheid ([8/16/2022](#)) reported that in West Texas, the Olfen Independent School District (ISD) became the first school district in the state to switch to a four-day school week (in 2016), but for the 2022-2023 school year, 26 districts have implemented the change, hoping to attract and retain teachers.

Researchers found that the adoption of four-day school weeks was often financially motivated and has generally remained a small, rural district phenomenon ([Thompson et al., 2021](#)). Data show that the school schedules for four-day a week feature a day off once a week—often Friday—with increased time in school on each of the remaining four school days. On average, each school day is nearly an hour longer than the national average among five-day schools. Four-day school week schedules average only 148 school days per year, resulting in less time in school than the national average for five-day schools (180 days per year) despite the longer school days.

Policymakers, parents, educators, and school leaders have been and are still debating the pros and cons of the four-day school week. Some parents worry that leaving teenagers unsupervised for a whole day could lead them to engage in criminal activity. Others worry about students' education taking a hit, test scores dropping, and having to look for child care if the district takes the leap ([Olivares, 2023](#)).

- In Missouri, it was reported ([2/9/2023](#)) that the superintendent of the [Twin Rivers R-X](#) school district (rural — distant) said in a letter to parents that an amendment to Senate Bill 4 that has been introduced in the Missouri Senate would eliminate the four-day school week. Parents were encouraged to reach out to legislators and voice their feelings about the four-day week. The superintendent also stated that Missouri has always been a local control state, and the bill does not allow for local rural districts to govern themselves.
- In Texas, Wallace reported ([1/5/2023](#)) that [Academy ISD](#) (rural — fringe) in Little River-Academy was considering switching to a four-day school week by the upcoming school year. According to the superintendent, the district has been looking for ways to attract future educators and believes a shorter school week could be the key. "When it's hard for us to compete on the salary schedule, what we've decided is potentially, this turns into a really good recruiting and retention strategy," said the superintendent.
- In New Mexico, a 2018 [study](#) from the Legislative Education Study Committee shows that 38 local school districts reported at least some of their schools operate under a four-day schedule, along with 21 charter schools, an increase of 10 school districts and four charter schools since FY12. While school districts utilizing a four-day week were mostly rural in nature, 13 of the 21 charter schools in New Mexico using that calendar were in urban school districts. In 2018, approximately 4% of New Mexico students attended schools that had adopted a four-day week. However, on February 23, 2018, [local news](#) reported that "New Mexico puts brakes on four-day school schedules" because state education officials and legislators felt it was unclear whether student academics and working families would be helped by fewer, longer school days.

Evidence has shown disparate achievement impacts of the four-day school week within specific states. Researchers find "statistically significant negative effects on math achievement for four-day school week districts with low time in school, but no statistically significant effects for four-day school week districts with middle or high time in school" ([Thompson and Ward, 2022](#)). The suggestion is that if adopting a four-day school week, schools must maintain sufficient overall learning time for every student in school.



## Issue #5: Lack of Funds to Alleviate the Teacher Shortage and Close the Achievement Gap

Schools in sparsely populated and geographically isolated areas often pay higher input prices for education services because of the limited supply or the additional cost of transporting resources to the school (Kolbe et al., 2021; Sipple & Brent, 2015). “Most states provide some form of supplemental funding to small, rural, or geographically isolated school districts to offset the higher costs of operating schools in these contexts” (Kolbe et al., 2021). However, state policies that provide supplemental and categorical grants to rural schools have been criticized for not meeting the actual funding needs of educating students in rural schools.

### Rural Schools Need More Dollars for Both Instructional and Non-Instructional Items

In general, rural public schools spent approximately \$750 more on each student than the national level in the 2018-19 school year, although the expenditure per pupil of rural schools that are close to urban areas (fringe) was almost the same as the national average level (Table 3.9). Compared with non-rural schools, rural schools, regardless of the level of remoteness, often use more funds for student transportation, operation and maintenance, food services, and general administration.

Table 3.9. Geographically Adjusted Current Expenditure Per Pupil in Fall Enrollment in Rural Public Elementary and Secondary Schools, by Function: 2018-19

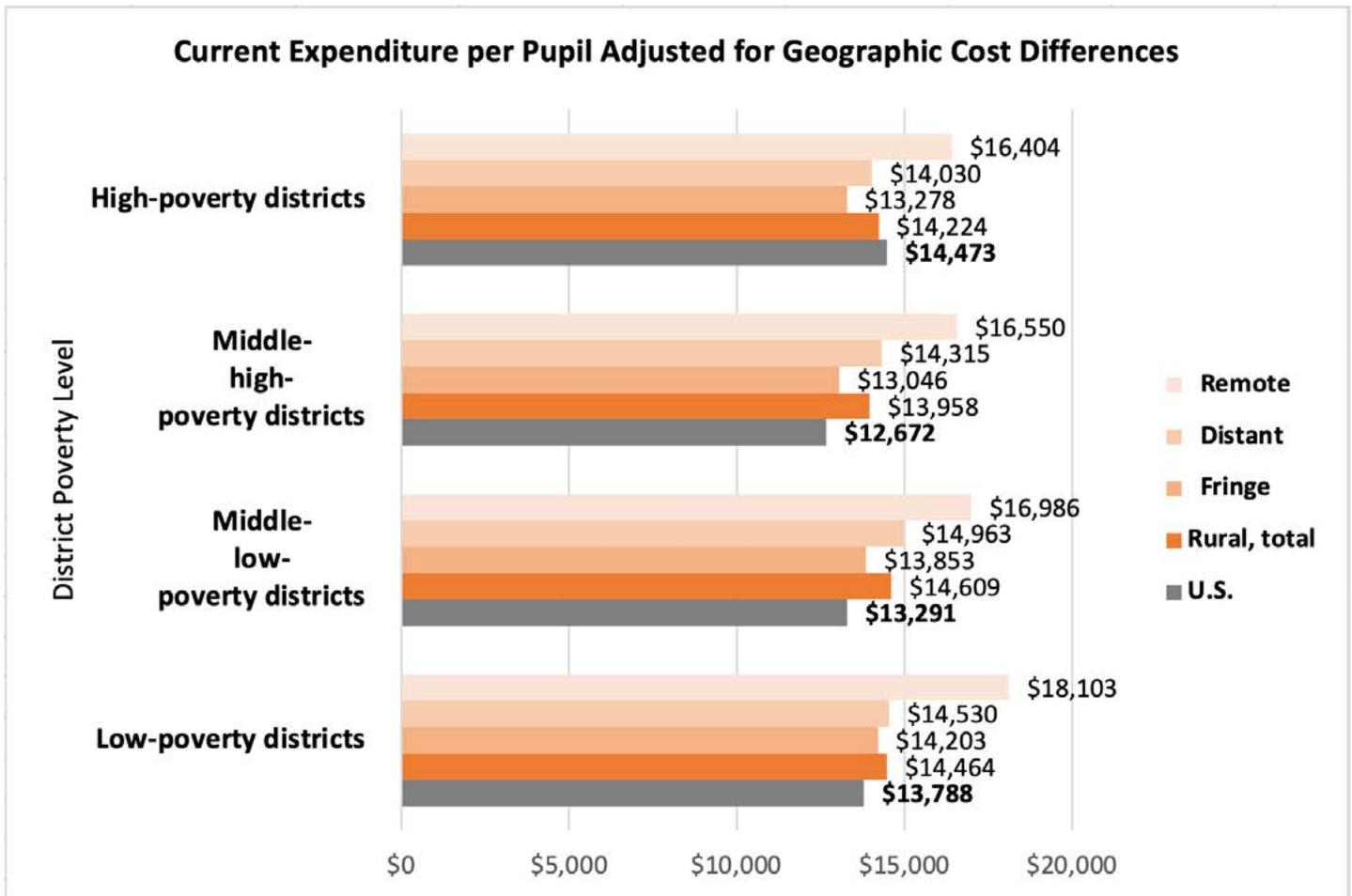
	Current Expenditures Per Pupil Adjusted for Geographic Cost Differences, by Function											
	Total	Instruction	Student Support	Instructional Staff Support	General Administration	School Administration	Operation and Maintenance	Student Transportation	Other Support Services	Food Services	Enterprise Operations	Other
U.S.	\$13,561	\$8,154	\$830	\$650	\$282	\$773	\$1,250	\$579	\$495	\$523	\$24	\$1
Rural, total	14,312	8,426	766	610	461	796	1,370	753	464	639	26	1
Fringe	13,635	8,125	803	605	338	760	1,266	695	443	574	24	1
Distant	14,456	8,486	715	582	536	806	1,389	800	450	672	18	2
Remote	16,713	9,500	753	703	767	919	1,750	859	586	815	58	2

Source: U.S. Department of Education, National Center for Education Statistics, [Table 236.85](#) prepared in October 2020.

### The More Remote, the Higher the Cost of Education Services

Figure 3.10 shows that among low-poverty rural school districts (i.e., 9.4% or less of 5- to 17-year-old residents living in families with incomes below the Census Bureau’s poverty threshold), public school spending per pupil in the rural-remote was nearly \$4,000 more than in the rural-fringe and nearly \$3,600 more than in the rural-distant. Similar patterns can be found among high-poverty (22.4% or more of 5- to 17-year-old residents living in families with incomes below the Census Bureau’s poverty threshold), middle-high-poverty (15.8% to 22.4%) and middle-low-poverty school districts (9.4% to 15.8%).

Figure 3.10. Geographically Adjusted Current Expenditure Per Pupil in Fall Enrollment in Rural Public Elementary and Secondary Schools, by District Poverty Level: 2018-19



Source: U.S. Department of Education, National Center for Education Statistics, [Table 236.85](#) prepared in October 2020.

### The Higher the Poverty Level, the Less Funding the School District is Likely to Have

In rural-remote areas, school spending per pupil in high-poverty school districts, on average, was nearly \$2,000 less than that in low-poverty school districts (Figure 3.10). As a result of inadequate funding, students who attend schools in rural communities, particularly in high-poverty districts, have limited access to educational opportunities compared with their peers who attend non-rural schools (Kolbe et al., 2021). Research suggests that many rural districts, which already face challenges in recruiting and retaining highly skilled teachers, are at an even greater disadvantage if they are not able to offer competitive pay ([Public School Forum of North Carolina, 2020](#)).

The following are two specific examples reported by researchers:

- Pennsylvania — “In Allegheny County, on the western side of the state, the suburban Wilkinsburg school district outside of Pittsburgh spent over \$27,000 per student in the 2017–2018 school year, while the more rural South Allegheny school district spent just over \$15,000, roughly 45% less” ([Allegretto et al., 2022](#)).
- North Carolina — “In 2017-2018, Wake County Schools offered its teachers an average salary supplement of \$8,649. Just 40 miles north, in Vance County, a lower-wealth, rural district that taxes itself at a higher rate than Wake County in an effort to adequately fund its schools, teachers received an average supplement of \$2,618 in the same year. District leaders in Vance County, like those in small, low-wealth districts across the state, have noted that they often lose their best teachers to districts that offer higher supplements, including Wake County and even Virginia, as teachers are willing to drive farther to earn significantly higher wages. Although these counties do obtain funding from the state for instructional staff, it is not enough to meet growing needs. Along with the population, the economy of North Carolina is changing - meaning that costs associated with hiring and retaining professionals has increased and state funding has not kept up with these increasing costs” ([Public School Forum of North Carolina, 2020](#)).

## State-Level Funding Differences and the Student Achievement Gap

At the beginning of this report, we showed the diversity of rural student academic performance among states. To end this section, we would like to circle back to state-level differences in K-12 school funding. Most states with “NAEP advantage” have had higher public school spending per pupil since the 1969-1970 school year, compared with states with “NAEP disadvantage” (Table 3.10). Most states with “NAEP advantage” paid higher salaries for rural teachers and spent more on instruction for rural students, compared with states with “NAEP disadvantage” (Table 3.11).

- In 2022, nationwide, approximately one-third of fourth graders performed [at or above Proficient](#) in reading and math, but more than half of fourth graders reached this level in rural Massachusetts and Connecticut (Table 3.1). In both states, expenditure per pupil was around \$22,000, as opposed to roughly \$15,000 at the national level (Table 3.10). For rural K-12 education in both states, the average salary of rural teachers was approximately \$15,000 higher than the national level, and the rural instructional expenditures per pupil were about \$5,000 more than the national level (Table 3.11).
- In West Virginia and New Mexico, more than 80% of rural students did not reach the Proficient level in fourth-grade reading and math. The expenditures per pupil of both states have historically been below the national level. New Mexico was among the states that spent much less on each student (under \$11,000) than the national average (Table 3.10). In both states, the average salary of rural teachers was below the national level; in West Virginia, the average salary of rural teachers was \$4,000 less than the national average (Table 3.11).

Regional diversity is manifested consistently in student performance and funding characteristics (Tables 3.1, 3.2, 3.10, 3.11). For decades, rural students from most states in the Northeast and the Midwest have performed above the national level in reading and math at both fourth and eighth grades, and many states in the regions have received more dollars to fund rural schools. By contrast, rural students from many states in the South and the West — often with high racial/ethnic diversity and high poverty levels — have instead fallen far behind academically, and many states in the regions pay rural teachers less and spend less on curriculum and instruction than the national average.

In 2019, there were 12 states where at least half of the state’s student population attended rural schools. In Maine, Vermont, and Mississippi, rural school districts received, on average, at least 50% of their funding from the state government. In contrast, rural school districts received less from the state in Nebraska (19%) and Wyoming (24%), but both states had relatively higher instructional expenditures per pupil than some states that received much more funds from the state.

Table 3.10. Expenditure Per Pupil (in Constant 2020-21 Dollars) in Average Daily Attendance in Public Elementary and Secondary Schools, by State: Selected Years, 1969-70 Through 2018-19

Region	State	Constant 2020-21 Dollars														
		1969-70	1979-80	1989-90	1999-2000	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
	U.S.	\$5,684	\$7,701	\$10,320	\$11,493	\$13,777	\$13,874	\$13,609	\$13,139	\$13,091	\$13,237	\$13,592	\$13,936	\$14,202	\$14,370	\$14,716
Northeast: New England	Connecticut	6,627	8,204	16,242	15,734	19,418	19,588	20,153	20,205	20,314	21,312	21,938	22,507	22,481	22,234	22,821
	Maine	4,824	6,181	11,135	12,819	16,621	17,107	17,146	16,190	16,319	16,717	17,610	17,737	17,463	17,664	18,099
	Massachusetts	5,984	9,556	12,926	14,573	18,694	17,766	18,251	18,048	18,325	18,643	19,247	19,908	20,446	20,584	21,091
	New Hampshire	5,037	6,494	10,992	11,009	15,829	16,299	16,620	16,438	16,451	16,814	17,100	17,598	17,742	18,005	18,174
	Rhode Island	6,208	8,817	13,197	14,994	19,874	19,722	19,456	19,078	18,412	18,705	19,070	19,141	19,444	19,361	19,721
	Vermont	5,623	6,769	12,905	13,678	19,704	20,138	19,831	20,323	20,897	21,315	22,007	22,305	22,275	22,940	23,929
Northeast: Middle Atlantic	New Jersey	7,079	10,818	16,868	16,947	21,412	21,927	21,013	21,043	21,634	21,595	21,454	22,149	22,486	22,774	23,385
	New York	9,243	11,736	16,707	17,031	23,749	24,241	24,420	24,147	24,082	24,693	25,319	26,150	26,548	27,045	27,770
	Pennsylvania	6,142	8,592	12,907	13,027	15,924	16,608	16,749	16,158	16,355	16,563	17,128	17,668	18,249	18,523	18,781
Mid West: East North Central	Indiana	5,071	6,381	9,546	11,895	12,193	12,336	11,812	11,819	11,416	11,287	11,343	11,451	11,357	11,410	11,458
	Illinois	6,335	8,768	10,606	12,566	15,310	15,885	15,688	15,564	15,706	16,443	17,203	17,570	18,796	18,764	18,918
	Michigan	6,297	8,950	11,495	13,812	14,089	14,159	13,759	13,254	13,075	13,079	13,396	13,522	13,500	13,675	13,835
	Ohio	5,085	7,032	10,455	12,150	14,594	14,942	14,859	14,190	13,973	13,940	13,659	13,791	14,119	14,215	14,568
	Wisconsin	6,149	8,396	11,448	12,900	14,433	14,806	14,897	13,587	13,385	13,398	13,594	13,597	13,953	13,960	14,055
Mid West: West North Central	Iowa	5,881	7,886	9,228	10,764	12,850	12,777	12,575	12,429	12,415	12,721	13,007	13,083	13,194	13,358	13,410
	Kansas	5,371	7,366	9,847	10,822	14,080	13,184	12,735	12,388	12,272	12,521	12,348	11,944	12,102	12,730	12,774
	Minnesota	6,295	8,090	10,301	11,657	14,223	13,800	13,531	13,211	13,370	13,597	14,128	14,544	14,636	14,672	14,806
	Missouri	4,936	6,563	9,341	10,514	12,678	12,710	12,316	11,991	12,006	12,055	12,319	12,406	12,501	12,686	12,785
	Nebraska	5,130	7,288	10,034	11,440	14,045	14,473	14,669	14,008	14,075	14,002	14,260	15,131	15,249	15,300	14,802
	South Dakota	4,804	6,509	8,682	9,448	12,398	13,327	13,517	13,464	13,752	14,505	15,068	15,464	15,663	15,281	15,369
South: South Atlantic	Delaware	6,270	9,698	12,018	13,692	15,634	15,697	15,745	16,481	16,071	15,907	16,184	16,732	17,160	17,279	17,242
	Maryland	6,397	8,806	13,006	12,860	17,913	18,136	17,706	17,052	17,073	16,922	17,126	17,094	17,332	17,448	17,593
	Florida	5,101	6,403	10,357	9,922	11,587	11,369	11,181	10,205	10,152	10,291	10,335	10,312	10,379	10,682	10,582
	Georgia	4,096	5,509	8,859	10,731	12,477	11,966	11,399	10,976	10,734	10,672	10,906	11,248	11,628	11,940	12,089
	North Carolina	4,266	5,946	8,891	10,112	11,238	10,843	10,644	10,209	10,284	10,021	10,280	10,323	10,528	10,609	11,002
	South Carolina	4,267	5,939	8,459	10,174	12,267	12,004	11,587	11,359	11,602	11,656	11,863	12,049	12,268	12,677	12,673
	Virginia	4,931	6,678	9,682	10,090	14,338	13,820	13,239	13,166	13,363	13,122	13,131	13,277	13,593	13,558	13,718
	West Virginia	4,667	6,509	9,037	11,871	13,634	15,029	14,884	13,855	13,269	13,215	13,802	13,583	13,717	13,384	13,843
South: East South Central	Kentucky	3,798	5,766	7,762	10,546	12,325	12,598	12,461	12,374	11,681	11,477	11,851	12,051	12,138	13,336	13,283
	Tennessee	3,943	5,544	7,593	9,073	10,636	10,696	10,886	10,679	10,658	10,562	10,618	10,733	10,960	11,096	11,310
	Alabama	3,789	5,464	6,895	8,951	11,505	11,600	11,065	10,323	10,790	10,688	10,774	10,901	11,019	11,002	11,269
	Mississippi	3,489	5,640	6,411	8,325	10,554	10,526	10,041	9,972	9,879	9,996	10,151	10,359	10,267	10,266	10,464
South: West South Central	Arkansas	3,954	5,337	7,223	8,748	11,831	12,429	12,297	12,022	11,207	11,896	11,960	11,969	11,894	11,905	11,906
	Louisiana	4,514	6,074	8,090	9,724	13,987	13,953	13,688	13,127	12,646	12,784	13,006	13,004	13,068	13,102	13,001
	Oklahoma	4,211	6,530	7,270	8,969	10,325	10,334	9,719	9,576	9,611	9,548	9,599	9,525	9,184	9,300	10,211
	Texas	4,348	6,494	8,602	10,526	11,352	11,569	11,210	10,248	10,182	10,385	10,884	11,118	11,131	11,068	11,097
West: Mountains	Colorado	5,140	8,206	9,783	10,417	11,782	11,835	11,556	10,888	10,888	11,114	11,507	11,727	11,870	11,989	12,951
	Montana	5,446	8,394	9,816	10,865	13,339	13,918	13,805	13,055	13,072	13,260	13,341	13,671	13,543	13,515	13,578
	Utah	4,362	5,616	5,728	7,294	8,681	8,349	8,154	7,849	7,988	8,015	8,200	8,459	8,558	8,819	9,093
	Idaho	4,202	5,624	6,378	8,793	9,277	9,083	8,516	8,143	8,272	8,080	8,237	8,440	8,701	8,865	9,067
	Wyoming	5,963	8,565	11,559	12,348	19,195	20,076	20,385	19,923	19,490	19,224	19,396	19,655	19,466	18,810	18,618
	Arizona	5,016	6,680	8,400	8,516	10,705	10,631	10,290	9,510	9,541	9,271	9,368	9,467	9,616	9,606	10,026
	Nevada	5,360	7,078	8,533	9,556	10,867	10,769	10,754	10,034	9,697	9,782	9,939	10,197	10,433	10,098	9,988
New Mexico	4,925	6,894	7,284	9,070	11,925	11,796	11,136	10,487	10,499	10,691	10,997	10,993	10,821	10,611	10,954	
West: Pacific	Alaska	7,820	16,025	17,473	15,028	20,622	21,065	21,843	22,126	22,729	22,684	24,640	21,251	21,201	20,679	20,872
	California	6,041	7,687	9,100	9,949	11,571	11,753	11,356	11,110	11,017	11,305	12,146	13,184	13,805	14,066	15,157
	Hawaii	5,855	7,870	9,219	11,021	16,423	15,646	15,001	14,727	14,314	14,805	15,398	16,265	16,619	17,221	17,943
	Oregon	6,442	9,125	11,345	12,636	13,084	12,719	12,494	12,010	11,795	12,027	12,626	13,094	13,360	13,857	14,219
Washington	6,376	8,705	9,745	10,747	12,777	12,435	12,382	12,041	12,003	12,542	12,951	13,841	14,206	15,072	16,448	

Note: The green bar represents the proportion above the national average in that year. Red identifies the 12 states where more than half of the state's student population is rural. Source: U.S. Department of Education, National Center for Education Statistics, [Table 236.70](#) prepared in September 2021.

Table 3.11. Selected Measures of How States Fund Rural District: 2019

Region	State	Rural Schools (%)	State Education Funds to Rural Districts (%)	Rural Adjusted Salary Expenditures Per Instructional FTE*	Rural Instructional Expenditures Per Pupil	Ratio of Instructional to Transportation Expenditures
	U.S.	29	17	\$ 69,797	\$ 6,367	10.81
Northeast: New England	Connecticut	14	9	\$ 86,223	\$ 11,962	10.79
	Maine	68	53	\$ 73,259	\$ 7,869	9.57
	Massachusetts	12	8	\$ 84,541	\$ 9,530	10.67
	New Hampshire	50	37	\$ 77,835	\$ 9,290	11.23
	Rhode Island	9	2	\$ 87,476	\$ 10,227	9.55
	Vermont	72	51	\$ 76,418	\$ 7,449	15.54
Northeast: Middle Atlantic	New Jersey	9	6	\$ 76,870	\$ 10,779	10.90
	New York	17	22	\$ 100,957	\$ 13,226	8.82
	Pennsylvania	26	21	\$ 80,508	\$ 8,391	8.26
Midwest: East North Central	Indiana	37	25	\$ 68,491	\$ 5,321	7.91
	Illinois	21	9	\$ 62,388	\$ 6,468	8.34
	Michigan	29	18	\$ 74,476	\$ 6,136	12.59
	Ohio	30	23	no data	\$ 5,895	9.22
	Wisconsin	36	18	no data	\$ 6,730	10.74
		Iowa	50	31	\$ 72,493	\$ 6,487
Midwest: West North Central	Kansas	46	24	\$ 54,454	\$ 6,792	12.88
	Minnesota	33	18	\$ 75,494	\$ 6,803	9.68
	Missouri	43	24	\$ 58,160	\$ 5,680	10.36
	Nebraska	52	19	no data	\$ 8,818	17.61
	North Dakota	69	40	\$ 59,624	\$ 7,492	7.55
	South Dakota	74	43	\$ 60,318	\$ 5,427	11.10
South: South Atlantic	Delaware	17	16	\$ 78,666	\$ 7,520	10.91
	Maryland	16	7	\$ 75,221	\$ 7,972	9.96
	Florida	13	6	\$ 58,028	\$ 4,903	10.74
	Georgia	33	30	\$ 71,038	\$ 5,681	12.17
	North Carolina	42	39	\$ 66,716	\$ 5,432	14.94
	South Carolina	40	17	\$ 65,701	\$ 5,529	12.23
	Virginia	31	24	\$ 66,656	\$ 6,220	9.11
	West Virginia	50	38	\$ 65,795	\$ 6,561	6.48
South: East South Central	Kentucky	42	37	\$ 75,044	\$ 5,404	8.59
	Tennessee	35	35	\$ 62,020	\$ 5,165	14.69
	Alabama	46	37	\$ 69,684	\$ 5,089	9.39
	Mississippi	50	50	\$ 58,486	\$ 4,900	10.95
South: West South Central	Arkansas	46	32	\$ 55,599	\$ 5,499	12.43
	Louisiana	33	16	\$ 65,698	\$ 6,327	7.94
	Oklahoma	52	31	\$ 56,591	\$ 4,737	16.18
	Texas	26	15	\$ 64,399	\$ 5,386	19.28
West: Mountains	Colorado	24	7	\$ 60,610	\$ 5,722	11.76
	Montana	74	38	no data	\$ 7,264	10.17
	Utah	19	5	no data	\$ 5,387	11.49
	Idaho	41	25	\$ 63,293	\$ 4,118	10.18
	Wyoming	51	24	\$ 85,117	\$ 10,632	10.44
	Arizona	18	6	\$ 61,890	\$ 4,917	8.01
	Nevada	18	3	\$ 81,412	\$ 6,955	7.95
	New Mexico	37	16	\$ 69,385	\$ 6,326	6.17
West: Pacific	Alaska	59	34	\$ 102,746	\$ 14,380	25.89
	California	12	3	\$ 80,212	\$ 5,464	14.05
	Hawaii	15	no data	no data	no data	no data
	Oregon	26	10	\$ 74,516	\$ 5,770	8.26
	Washington	22	8	\$ 73,627	\$ 6,410	10.59

Note: \*FTE is Full Time Equivalent. The color bar represents the amount of each measure above the national average. States in red letters are the states in which at least half of the K-12 student population is rural. Source: Showalter, Hartman, Johnson, & Klein (2019)

Extravagant spending on K-12 schools does not necessarily mean high student achievement, but for rural students, adequate funding means equitable learning opportunities. Historically, state governments “have attempted to even out funding disparities between districts by providing more money to those with low property value and, most often, poorer students” ([Burnette, 2019](#)). One issue is that many one-size-fits-all policies have ignored certain diverse rural circumstances.

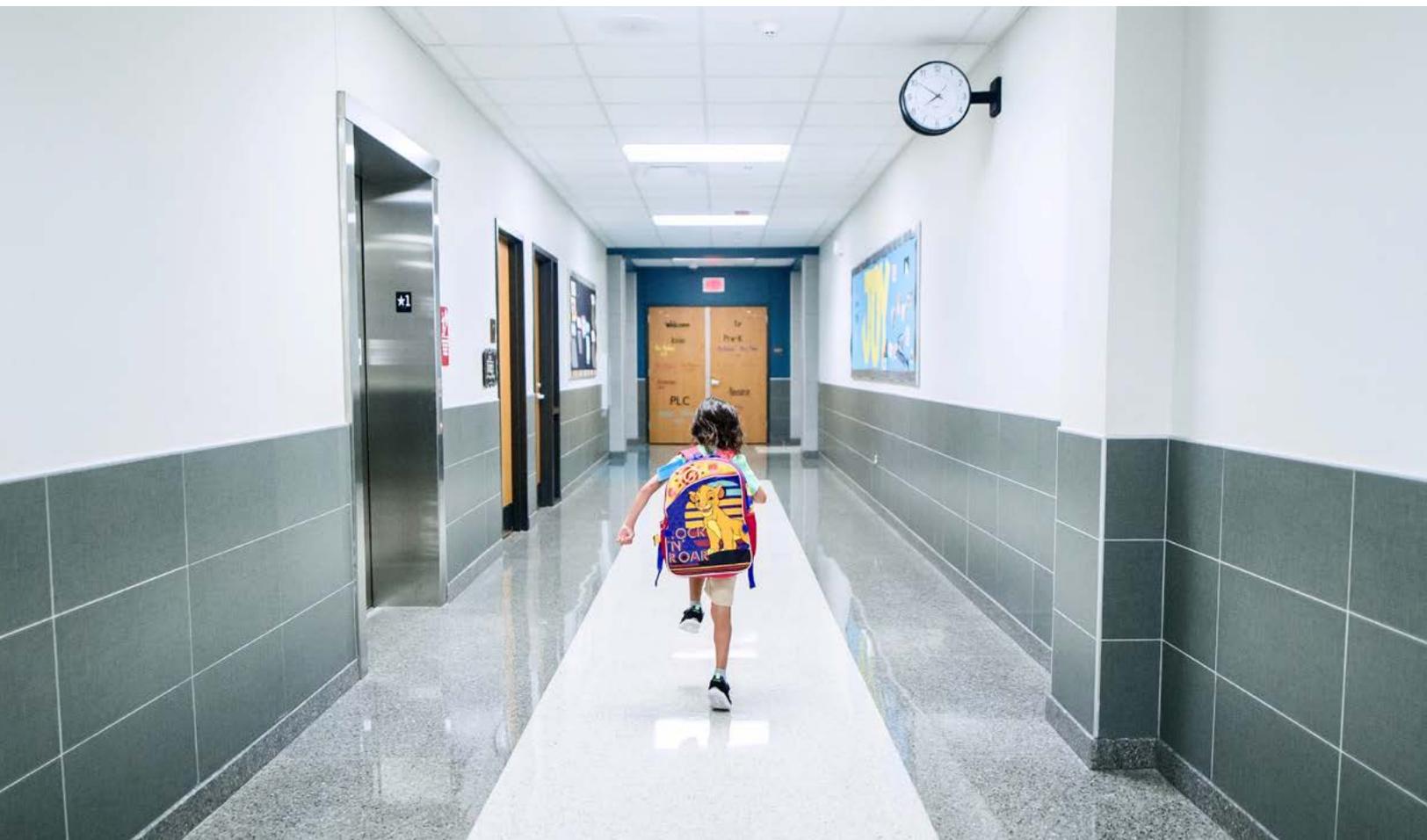
- In Nebraska, the state adopted the Tax Equity and Educational Opportunities Act (TEEOA) in 1989. The goal of this bill was to have the state take on a larger responsibility for funding public schools and alleviate disparities in property tax burdens and education funding between districts. [Barnard \(2022\)](#) states that “in the last 30 years, this funding formula has become outdated and increasingly failed to reduce property tax burdens on school district residents, especially those in rural areas.”
- In Wyoming, a superintendent, when interviewed by [PBS](#) in 2019, said, “Wyoming spends between \$15,000 to \$18,000 per student per year in K-12 education. Among the top in the nation and maybe unique to Wyoming is our funding model that recaptures money from our wealthy districts and redistributes those to school districts that we call entitlement districts.” In 2021, the Hechinger Report, a national nonprofit newsroom that reports on education topics, published an [article](#) titled “One of the fairest school funding models in the nation might be about to fail: Mineral wealth has kept Wyoming schools flush for decades, but unless legislators in this red state vote to raise state taxes, schools and small towns here could be in trouble” (Palmer, 2021).
- [Brenner \(2022\)](#) uses Mississippi as an example to elaborate how school funding policies are one of the biggest barriers to rural school success. “The bulk of funding for public schools comes from local property taxes. Rural populations, economies, and the presence of public lands (such as national forests) often yield lower property values, which in turn leads to funding inequities for rural schools. In Mississippi, as in most states, millage rates are capped. Even if the local community wanted to, districts cannot raise the property tax rate beyond a certain level to increase school funding, placing rural districts at an even greater disadvantage. Inequitable funding can lead to lower teacher salaries and teacher shortages, limited school offerings, and under-resourced classrooms.”



## Key Findings

1. Many factors contribute to a state’s “NAEP advantage” (i.e., having more students at or above Proficient and ranking high on the Nation’s Report Card). Most states with more high-performing rural students are in the Northeast. Most states with “NAEP disadvantage” (i.e., with more students below the NAEP Proficient level and ranking low on the Nation’s Report Card) have relatively low-income rural school communities and are concentrated in the Southwest and the Deep South, along with a handful in the Pacific Northwest and Appalachia. Data show that states with high racial/ethnic diversity and high poverty levels have more low-performing students in rural schools, compared with their peers in the Northeast and the Midwest.
2. Issue #1: Missing Early Learning Opportunities. The achievement gap often starts during early childhood education. Parents of children (under 6 years old and not yet in kindergarten) in rural areas were more likely to report that the “lack of open slots for new children” was their main difficulty in finding child care compared with parents of children in suburban areas (31% vs. 22%). In rural areas, 2 in 3 poor children (3 to 4 years old) attend Head Start. Rural early education centers (ECE) are sponsored mostly by a public school or receive funding from Head Start or public pre-K. In many rural areas, public ECE centers help parents to arrange transportation or directly offer transportation services. Simply put, rural parents depend on high-quality public early education.
3. Issue #2: Missing Key Courses on the STEM Pathway. In the rural South and parts of rural Appalachia, states with a high percentage of Black students and poor students had less than 20% of rural students who took Algebra I in grade 8. The percentage of rural students who performed at or above proficient on eighth grade math was also lower than that of their peers from many other states. Data suggest that schools attended by rural and small-town students offered limited access to advanced coursework and extracurricular programs in STEM and had lower STEM teaching capacity. To shift rural students back to STEM fields, researchers recommend that education policies focus on improving access to technology both at school and at home (i.e., closing the homework gap), increasing opportunities for rigorous course-taking, and expanding opportunities for personalized learning.
4. Issue #3: Missing Opportunities on the Way to Attaining a Higher Level of Education. Among U.S. adults 25 to 34 living in cities, 44% had a bachelor’s degree or higher; in the suburbs, that number was 38%. However, in rural areas, only 25% held a bachelor’s degree or higher. The farther away from urban areas, the fewer adults have higher educational attainment. High rates of adults with low literacy and numeracy in a rural county often translate into students getting limited academic help from their parents and caregivers, schools with a small talent pool to recruit teachers and professional educators locally, and local communities relying on their schools for many resources from learning to life. States with “NAEP disadvantage” are likely to have more adults with low literacy and low numeracy in rural counties than states with “NAEP advantage.” In fact, in states with “NAEP advantage,” more adults are proficient at literacy and numeracy compared with the national level. In many rural counties in Appalachia and the Mississippi Delta with high rates of adults with low literacy/numeracy, most students in school districts are Black, live in poverty, and have no broadband internet at home. In the Great Plains, rural counties with a high rate of adults with low literacy/numeracy skills often have large AN/AI or Hispanic populations. In these counties, many school districts face challenges brought about by poverty, the homework gap, and disadvantaged family backgrounds.

5. **Issue #4: Missing Learning from Teachers with Specialties.** More than half (53%) of public schools in rural areas felt that they were understaffed when they started the 2022-23 school year. Two-thirds of rural schools reported that their main challenge in filling vacant teaching positions for the 2022-23 school year was a lack of qualified candidates applying for open teaching positions. More than half of rural schools were short of special education teachers. About 2 in 5 rural schools lacked professional staff in mental health. During the 2017-18 school year, nearly 45% of teachers in rural schools reported that they had at least one English language learner (EL) student in their class; among these rural teachers, only 7% had a major, minor, or certification in teaching English as a Second Language (ESL), and only 39% had taken courses on how to teach ELs. Earlier data show that compared with non-rural schools, rural schools had fewer staff with specialist or academic coaching assignments (55% vs. 66%), such as science specialists (9% vs. 12%) and math coaches (20% vs. 28%).
6. **Issue #5: Lack of Funds to Alleviate Teacher Shortages and Close the Achievement Gap.** In rural-remote areas, school spending per pupil in high-poverty school districts, on average, was nearly \$2,000 less than that in low-poverty school districts. Compared with non-rural schools, rural schools, regardless of the level of remoteness, often use more funds for student transportation, operation and maintenance, food services, and general administration. Among states with “NAEP advantage,” most have had expenditures per pupil above the national level since the 1969-1970 school year. Among states with “NAEP disadvantage,” many pay lower salaries for rural teachers and spend less on instruction for rural students, compared with states with “NAEP advantage.”



## Technical Notes

In this report, we used multiple data sources to conduct a comprehensive and thorough research review. Most of the data are selected from the recently published tables prepared by the National Center for Educational Statistics (NCES), federal reports published by the Census Bureau, the U.S. Department of Agriculture (USDA), and the Federal Communications Commission (FCC), as well as some academic research papers. We provide links to data sources for readers who are interested in the methodology of our data collection and estimation.

While data used in this study are from credible sources, our research has limitations. First, in the section “How to Define Rural,” we explain how federal agencies define rural. It should be noted that in some studies, rural may be combined with small towns. For example, in a study about rural Michigan (Arsen et al., 2022), researchers combine all districts that NCES classifies as “rural” or “town” as rural, while defining “nonrural” as NCES’s urban and suburban districts. They believe that their definition of “rural” is more reflective of the shared challenges experienced by the “rural” districts and, equally important, is consistent with the perceptions of people who live in rural places. When we cite such studies, we remind readers of the difference.

Second, in many parts of our study, we report both the count of students and the percentage of students by group. When comparing populations that have a large difference in size, reporting percentages or counts only can lead to ambiguous and even misleading interpretations. For example, 0.3% increase in students with disabilities represents more than 20,000 students; 0.8% increase in English language learners means more than half a million students. For students who attend rural schools with more than 75% of students eligible for free or reduced-price lunch, 8.2% of White students means approximately 546,000 students, while 37.6% of Black students represents nearly 339,000 students. Both percentages and discrete counts (figures) matter.

Thirdly, we use data from the National Assessment of Educational Progress (NAEP) or the Nation’s Report Card to compare student performance in different states, regions, and geographic locations. As Finn (2022) describes, NAEP is, and for decades has been, “America’s premier gauge of whether its children — all our children — are learning anything in school, whether they’re learning any more today than years ago, and whether the learning gaps among groups of children are narrowing or widening.” That said, NAEP should not be used as the basis for measuring the performance of a student, school, or school district for the purpose of creating rewards or imposing sanctions.

Lastly, while we use different algorithms when searching qualitative data and cite various examples in our study, it does not necessarily mean that we endorse the product, researcher, or organization cited. The views of cited research do not necessarily represent our views. Our purpose in this study is to provide a wide range of data and information for readers to examine and consider. We encourage our readers to exercise their own sound judgment when assessing and using the information we provide in this study.



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## About CPE

The National School Boards Association (NSBA) believes that accurate, objective information is essential to building support for public schools and creating effective programs to prepare all students for success. As NSBA's research branch, the Center for Public Education (CPE) provides objective and timely information about public education and its importance to the well-being of our nation. Launched in 2006, CPE emerged from discussions between NSBA and its member state school boards associations about how to inform the public about the successes and challenges of public education. To serve a wide range of audiences, including parents, teachers, and school leaders, CPE offers research, data, and analysis on current education issues and explores ways to improve student achievement and engage support for public schools.

## About NSBA

Founded in 1940, the National School Boards Association (NSBA) is a non-profit organization representing state associations of school boards and the Board of Education of the U.S. Virgin Islands. Through its member state associations that represent locally elected school board officials serving millions of public school students, NSBA advocates for equity and excellence in public education through school board leadership. We believe that public education is a civil right necessary to the dignity and freedom of the American people and that each child, regardless of their disability, ethnicity, socio-economic status, or citizenship, deserves equitable access to an education that maximizes their individual potential.

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