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By The Numbers

Phase One Analysis of the Teacher Workforce in South Dakota

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Thomas Gais, Jim Malatras
Alan Wagner, and Young Joo Park

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@rockefellerinst

Acknowledgments

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Executive Summary

The attention given to staffing schools with qualified teachers is understandable and critical exercise. In education, teachers are the heart of the matter, as studies of learning and life outcomes show. Concerns about teacher shortages, therefore, correspond to concerns about learning — and life — opportunities for children and young adults. This is as true in South Dakota as it is in New York, Mississippi, New Mexico, and every other state. In 2015, the South Dakota Department of Education prepared a report for the Governor's Blue Ribbon Task Force on Teachers and Students, which suggested that South Dakota had a surplus of teachers at the state level.[1] A 2016 report, *A Coming Crisis in Teaching? Teacher Supply, Demand, and Shortages in the U.S.* also showed survey data indicating that South Dakota was a stable and attractive place for teachers.

But when you look at the state in comparison to national trends, it differs in important ways; and when you look within the state, there are big and systematic variations in teacher turnover, vacancies, and measures of teacher quality. Our preliminary findings are:

- Like national trends, between the 2006-07 and 2015-16 school years, the number of K-12 students in South Dakota public schools increased by 8.9 percent, while the number of teachers increased by 4.7 percent — suggesting a growing need for teachers. But the demand differs greatly across grade levels, and the patterns are very different from what is happening at the national level.

- South Dakota has shown much stronger growth in young students, with increasing demand for elementary and middle school teachers. By contrast, South Dakota's high school population has declined or been static in recent years, while national growth has been slight but higher. National-level conclusions that greatest need for teachers is in high schools are not necessarily true for South Dakota, or perhaps for many other states.

- Turnover and vacancies differ enormously across specializations, and the shortages that arise from mapping relatively high requirements onto the available supply differ in several respects from national shortages. Special education is the biggest source of turnover in South Dakota. Unlike other states, however, math and science and English as a Second Language (ESL) are less of a problem in South Dakota.

- Within the state, the districts vary greatly in turnover and, to a lesser degree, vacancies. These district-level variations are associated with a number of district level differences — differences that are largely interrelated. Turnover is greater in districts with higher rates of child poverty, with high proportions of Native American students (particularly when proportions exceed 75 percent), with lower average teacher salaries and, most of all, with rural, small population districts.

- Other characteristics of the teacher workforce are also correlated with these differences across school districts, including percent of teachers with less than five years of experience; percent of teachers not certified; and percent of teachers without advanced degrees. The smallest school districts (population of less than 1,000) are more likely to have teachers without advanced degrees,

higher proportions of teachers that are not certified more likely to have teachers who have less than five years of experience.

- These workforce differences may be important for student outcomes, though the research on that issue is still ongoing.

- Although small rural districts differ, on average, in turnover rates and teacher characteristics, we are also finding large differences among these small districts, not just in the teacher workforce but also in certain student outcomes. This variation may be very useful in understanding how challenged districts overcome problems.

These preliminary findings are only a snapshot of the most recent patterns. But they underline the importance of seeing the teacher workforce in a more detailed, granular way. It is changing; the changes and challenges vary from state to state; and the differences within the state suggest that there's a need to target efforts to secure a more stable, better qualified teacher workforce. National trends are interesting, but they do not establish priorities that will do the most good. In the next phase of our study, we will examine teacher-level data for more detailed analysis.

Introduction

Access to a quality teacher could be one of the defining factors of whether a student excels or struggles. Teaching is one of our society's noblest professions. That is why it is critical to strengthen our teaching pipelines and elevate the profession. In order to meet this challenge, policymakers must understand the challenges that schools and teachers face across the country as well as the need and challenges schools face in recrutitng and retaining quality educators.

An emerging issue has centered on whether there is a coming national teacher shortage. Although spoken in national terms, education is a highly localized process in which teacher "supply" and "demand" often vary dramatically from community to community. In one community, there could be a significant shortage or any teachers and in the community right next door could have a surplus of educators to chose from — and these circumstances can change quickly over time.

Teaching is one of our society's noblest professions. That is why it is critical to strengthen our teaching pipelines and elevate the profession.
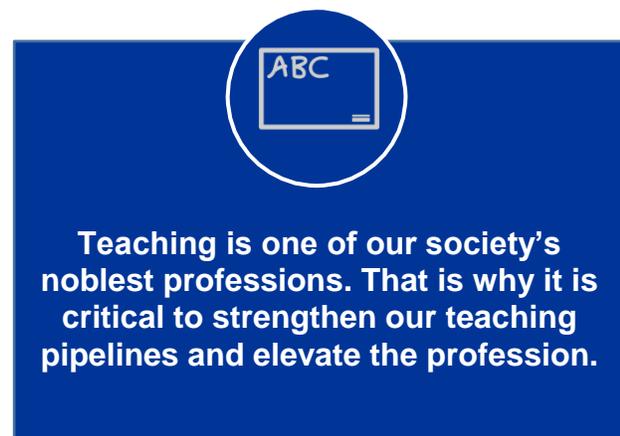
The Great Recession caused massive disruptions in our economy across all industries and sectors, and education was not spared. It could have been worse, if the federal government did not infuse billions of dollars into states to stave off massive layoffs to educators across the country. Yet, teachers did lose jobs, graduates of education programs found themselves jobless upon graduation, and others faced a weak and constrained job market.[2] However, with the economic rebound and a wave of

retirements (among other factors), there have been numerous studies suggesting the emergence of a large-scale teacher shortage nationally.[3]

However, demand for teachers varies over time, by state, locality, grade level, and specialization. Those holding teacher qualifications available to fill open positions also vary. Whether or not there is an overall national shortage of teachers says little about the difficulties (if any) faced by particular school districts and states in filling hiring needs. This underscores the need to have timely, granular data on the supply and demand for teachers.

If one is truly serious about addressing teacher supply and demand issues, analysis must be done at the local level. Therefore, working with the South Dakota Department of Education, we have begun collecting data to pinpoint where potential shortages and turnover of teachers are as a way to lay the foundation of targeted solutions in specific areas. Given the data collection process, we have broken the study into two phases:

■ *Phase one*: is a district-by-district analysis of teacher shortages and turnover in the South Dakota public school system. This is found in the pages below.

■ *Phase two*: will add teacher-level data to enable us to map a more finely grained analysis to better understand the attributes of teachers who flow into positions, move among schools, and exit from South Dakota's public schools.

Thereafter, working with our other partners, we will survey teachers to get a sense of the problems they face, which at times make them exit the profession, or leave certain school districts for others.

Before delving into the analysis, there is a need to help readers understand what we define as a teacher "shortage." Shortage, as used here, refers to an imbalance between the demand for the qualified teachers needed in schools and classrooms and the available supply of qualified teachers to fill such posts. It follows that an increase in the number of posts to be filled need not give rise to a shortage, if the number of qualified applicants is sufficiently large. Similarly, a decrease in the available supply of qualified teachers may not give rise to a shortage, if the number of posts to be filled is low. Imbalances may emerge by grade level, specialization, and location. Further, hiring needs may evolve owing to the demographics and dynamics in state and local economies that drive both the demand for teachers and the available supply.

If one is truly serious about addressing teacher supply and demand issues, analysis must be done at the local level.

In this initial analysis, our focus is on the indicators of potential shortages as conveyed in a recent, one-year snapshot. In this initial report, we also rely on an incomplete version of demand, one that focuses on replacement — turnover and vacancies — in current positions. A more complete version would encompass teacher demand stemming from changes in school enrollments and program changes, but we have not yet obtained the local-level data to measure these aspects of the labor market. We hope to address these in the final report. The final analysis will also integrate teacher demand and supply and examine the ever-changing dynamics of these
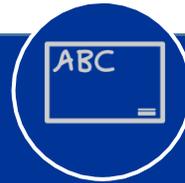
processes. This report lays out some of the challenges and opportunities districts face filling positions. It does not offer policy prescriptions but suggests some directions for consideration, based on our preliminary findings.

A Summary of the South Dakota Teacher Workforce

This brief report reveals these variations for one state, South Dakota, and indicates clearly the extraordinary variation in the teacher workforce even within a small, comparatively homogenous state. South Dakota has 149 school districts with 9,350 teachers and approximately 131,000 students. It has a large Native American population with several large tribal territories. The South Dakota public school system has three city school districts, and then primarly rural distrcits across the state.

The current national data show historic shortages in areas such as special education and math, and in certain geographic locations, like rural and inner city urban communities.[4] Notwithstanding longstanding difficulties in recruiting in many school districts, an understanding of the problem requires not only a state-by-state analysis but more micro-level district-by-district or even school-by-school investigations. As teacher labor markets are often "local," shortages in some regions co-occur with surpluses in others.

Working with our other partners, we will survey teachers to get a sense of the problems they face, which at times make them exit the profession, or leave certain school districts for others.
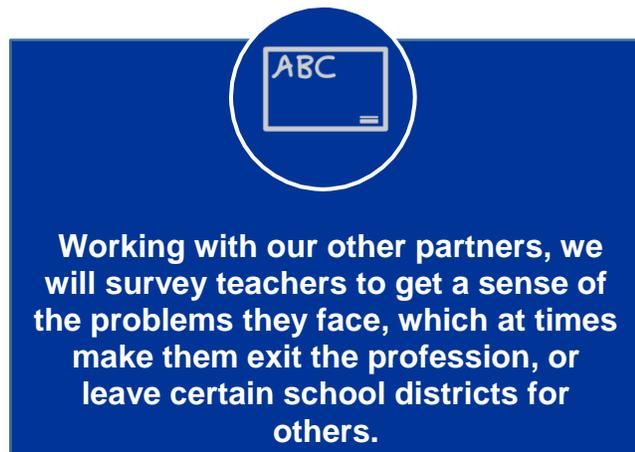
The South Dakota Department's report for the Governor's Blue Ribbon Task Force on Teachers undertook a careful descriptive analysis of a number of the kinds of changes that likely would influence the evolution in hiring needs alongside likely trends in the available supply. The analysis leads to projections that the supply of qualified teachers newly making themselves available to teach will more than match the hiring needs statewide.

The descriptive analyses presented in this report provide a preliminary, first look at teacher shortages at district-level in South Dakota. In this way, the analyses give attention to a further dimension of potential shortages, namely by locality. The intent is to provide a more finely grained, if limited, assessment of indicators of teacher shortage. The analyses rely on readily available information for public school districts, bringing together data on teacher characteristics, school characteristics, and student characteristics and performance. Such information is routinely assembled by the South Dakota Department of Education, and presented along with other data from separate data collections, on the Department's website.

The report relies on two indicators of potential shortage: teacher turnover and vacancies. Teacher turnover refers to teachers who vacate their posts (and so, other things equal, give rise to a hiring need in the current year). As noted, a good share of these teachers take up positions in other public school districts, and so are not lost to

the state as a whole. The district, however, has the hiring need. Vacancies refer to positions posted for hiring that are not filled at the beginning of the school year.

As Teacher Labor Markets Are Often Local, in South Dakota Shortages in Some Regions Co-Occur with Sufficient Supply in Others

Nationally, since 1970 the number of teachers has increased 51.9 percent, while the number of students has increased 9.5 percent.[5] On the whole, this trend has lowered student-teacher ratios across the country to around 16:1. But individual states can experience different dynamics, and in this report, we show developments and patterns in South Dakota. While we do not yet have data for this entire period for South Dakota, the state's last decade has shown very different changes. Student growth has exceeded growth in the teacher workforce. The number of K-12 students in South Dakota grew by 8.9 percent between the 2006-07 and 2015-16 school years, while the number of teachers increased only by 4.7 percent (see Appendix B).

Table 1. Number of Students and Teachers in Public Schools, 1970- 2015			
	1970	**2015**	**% Change**
Teachers	2,059,218	3,127,627	51.9%
Students	45,893,960	50,258,071	9.5%
Source: NCES.			

South Dakota diverges from the national trends in other ways. On the demand side, public student enrollments in the US have changed little in recent years. After enrollment growth between 1986 and 2007 of 26 percent, recent numbers have been flat, though estimates by the National Center for Education Statistics (NCES) show small yet steady growth in enrollments between 2016 and 2025. By contrast, South Dakota has seen sharp increases in its enrollments, and unlike the case at the national level, the recent growth has been particularly strong among younger children — in grades kindergarten to eighth grade.

Figure 1. Public School Students Enrolled in Grades K-8, US and South Dakota
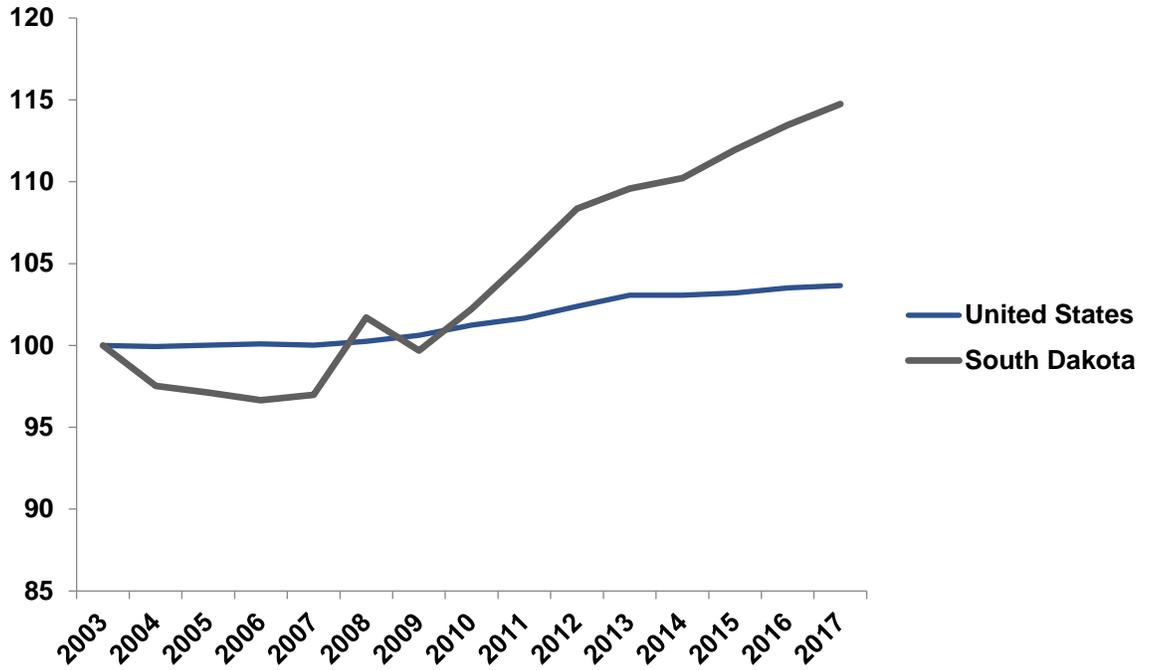
Source: National Center for Education Statistics.

Figure 2. Public School Students Enrolled in Grades 9-12, US and South Dakota

Source: National Center for Education Statistics.

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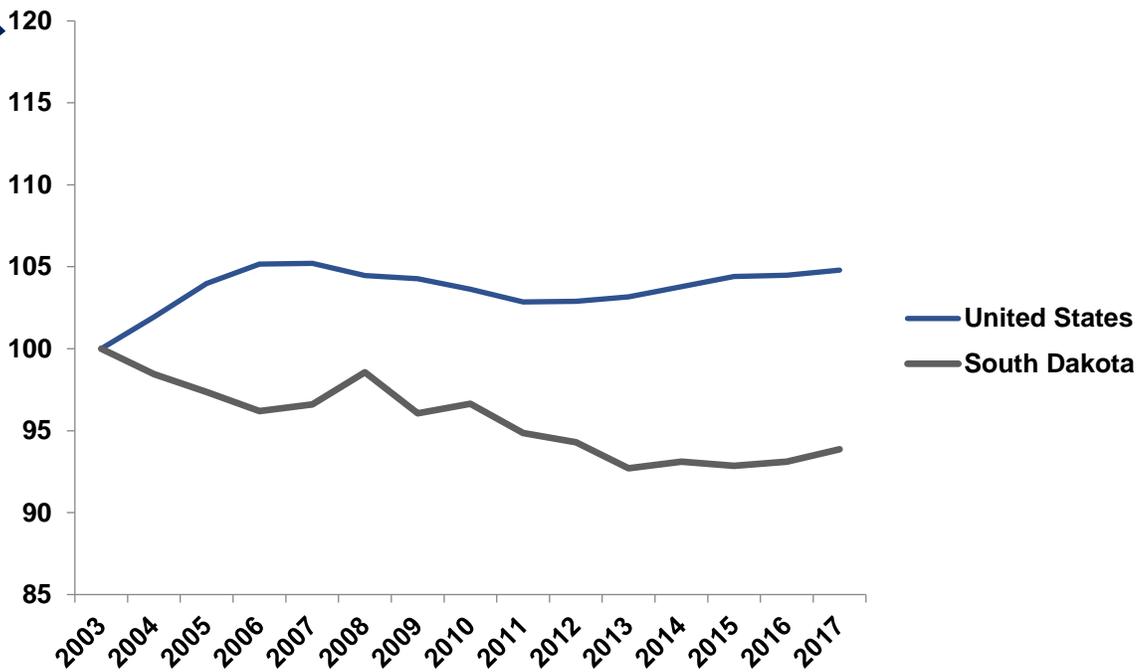
Patterns of Teacher Shortages and Turnover Vary Across Subject Areas, Differing Considerably at the National Level and South Dakota

Examining NCES data from 1990 shows there are annual national shortages in certain subject matter areas such as special education, science, and English as a second language. As Table 2 illustrates, virtually every state has districts with shortages in those areas. Few states, however, report shortages in the earlier grades — from Pre-Kindergarten through Grade 6.

Table 2. Number of States and DC with Multiple Years of Teacher Shortages, by Subject, Between 1990 and 2017	
Science	51
Special Education	51
Foreign Languages/Second Language	45
English as a Second Language	36
Arts	36
Economics and Business Education/Career Education	33
English/Reading and Literacy	31
Language Arts	31
Social Studies	28
Bilingual Education	22
Pre-K-Grade 6/Early Childhood	14
PE/Health	5
Source: National Center for Education Statistics.	

As one might expect, South Dakota has faced different workforce issues across teacher specializations and grade levels. While we do not have a survey of districts and schools within South Dakota that asked administrators about their perceptions of teacher shortages, the South Dakota Department of Education makes data available on teacher turnover and vacancies at the district level. To be sure, there are many reasons for teacher turnover and vacancies that do not indicate shortages, but both measures indicate hiring needs, and high levels of turnover may suggest a system-level shortage, either in the availability of, and competition for, teachers, or in the difficulty of hiring and retaining high-quality teachers. Although we will use additional measures of the teacher workforce in this initial analysis — including quality measures such as experience, certification, and graduate degrees — most of the analysis will focus on turnover as a measure of labor demand.

When we use these measures of teacher demand within South Dakota, we find a different profile of needs (Figure 3). Like the nation as a whole, special education generates considerable demand, as indicated both by the total
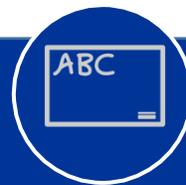
Special education generates considerable demand, as indicated both by the total number of turnovers and the number of vacancies in the fall after the school year.

number of turnovers and the number of vacancies in the fall after the start of the school year. However, unlike the situation at the national level, there is even greater demand in South Dakota for "self contained" positions, largely elementary school classroom positions where students receive their primary instruction from one instructor. Also in contrast to the national picture, science teachers are not among the high-demand positions, nor is there demand for ESL positions or foreign languages. Art teachers are also in low demand in South Dakota, although at the national level they seem to be in comparative shortage.

There are surely many reasons for these differences, and some are obvious. South Dakota does not have as many ESL students as many other states do, and the states' districts may offer curricula that emphasize different subject areas than elsewhere. We will look into these questions as we work toward a final report. But the basic point is a simple one: while it is interesting perhaps to discuss a *national* teacher shortage or *national* teacher needs by specialization and grade level, those national patterns may have little meaning for individual states. If one wants to understand teacher demand as well as supply patterns and dynamics, it is essential to do the work on a state-by-state basis.

Total Teacher Turnovers (FTEs)

Total Teacher Vacancies (FTEs)

Chronic Staffing Problems Persist in South Dakota Schools with Many Poor and Minority Students — and in Schools Located in Small, Rural Communities

Even more important than recognizing differences among states, school districts within states vary greatly in their demand for teachers. These district-level variations are associated with a number of district characteristics — differences that are often interrelated. In South Dakota, demand is greater in districts with higher rates of child poverty, with high proportions of Native American students, with lower average teacher salaries, and, most of all, with rural, small population districts.

In phase one, we focus our analysis of teacher demand on teacher turnover within an academic year (2015-16). Vacancies are of course an even stronger indicator of unmet demand and, as Figure 5 shows, they demonstrate a pattern across specializations that is similar to what we see for turnover. Vacancies, however, are uncommon in South Dakota, at least for this year, and their lack of variation makes it difficult to seen any patterns across districts, though they generally reinforce the variations we note below.

Demand is greater in districts with higher rates of child poverty, with high proportions of Native American students, with lower average teacher salaries, and, most of all, with rural, small population districts.
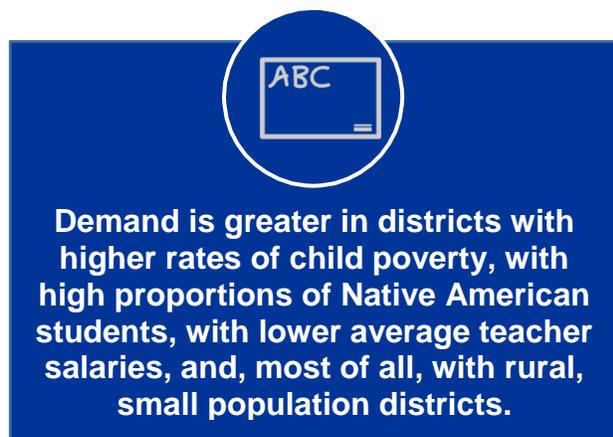
Also, while Figure 3 shows turnover (and vacancies) in total full time equivalents (FTEs) across districts, when we examine differences among districts, we standardize the turnovers with respect to each district's total teacher workforce. That is, we divide the number of turnovers (in FTEs) by the total number of FTEs in the district. Standardization helps us see the turnover issue from the perspective of districts of different sizes. In a small district, a couple of resignations and retirements may be a challenge, while in a large district they may be an easy and typical lift.

Turnovers do in fact vary across districts. Figure 4 shows this variation by indicating the number of districts that fall in different turnover rate intervals. About half of the districts experienced turnover rates lower than 0.10; in these districts, less than one out of ten positions (in FTEs) underwent turnover in the academic year. But some districts reported much higher numbers relative to their workforces.Indeed, seventeen districts had to replace over one-fifth of their teaching workforce in a single year.

Somewhat surprisingly, the differences in teacher turnovers are not substantial or consistent with respect to child poverty in the district. The top of Figure 5 shows the average (mean) turnover rates across districts in three categories: those with child poverty rates less than 10 percent, those with child poverty rates between 10 and 20 percent, and those whose poverty rates are greater than 20 percent. Although districts with child poverty rates greater than 20 percent are typically higher than the averages in districts with lower levels of poverty, the differences are not significantly different, and the districts with child poverty rates between 10 and 20 percent indicate slightly less turnover than districts with lower poverty levels.

We see greater and more consistent differences when we compare districts with different proportions of Native American students (also in Figure 5). Turnover averages only slightly more than one-tenth of an FTE in districts with less than 5 percent Native American students. In districts where more than half of their students are Native Americans, however, turnover averages about 50

The turnover rate is even higher among the small number of districts with over 75 percent Native American students — nearly one out of five full time teachers turned over.
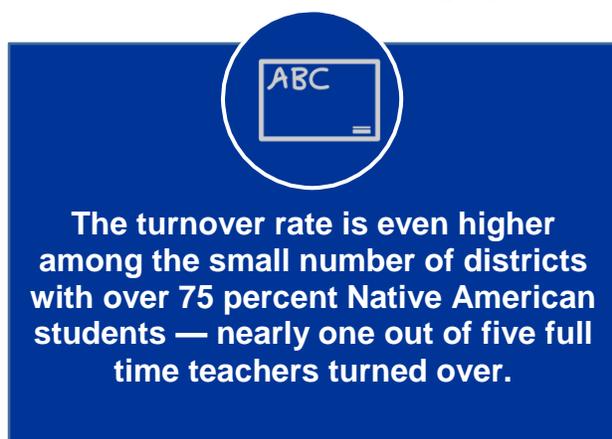
percent higher, where about one out of six full time teachers had to be replaced in a single year. We should note that the turnover rate is even higher among the small number of districts with over 75 percent Native American students — nearly one out of five FTEs turned over.

Figure 4. Distribution of Teacher Turnover in South Dakota, By Districts, 2015-16

Each bar represents the number of districts reporting teacher turnover rates within certain intervals. Rates are calculated as the number of turnovers in a district (in FTEs), divided by the total teacher FTEs in the district.

Source: South Dakota Department of Education.

Average Turnover Per District FTE by Percentage of Children in Poverty within District

Average Turnover Per District FTE by Percentage of Students Who Are Native American within District
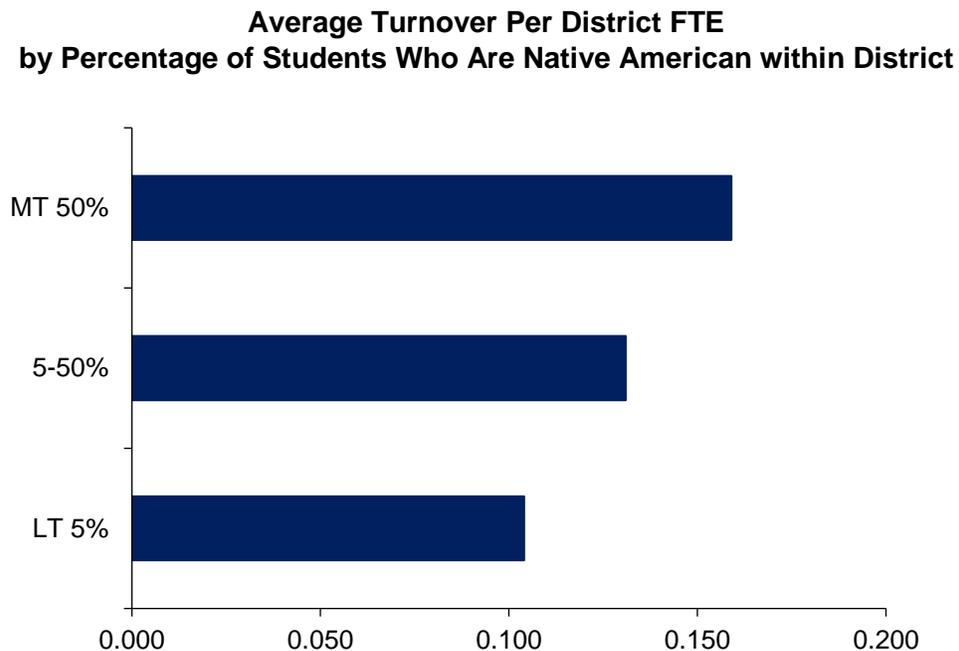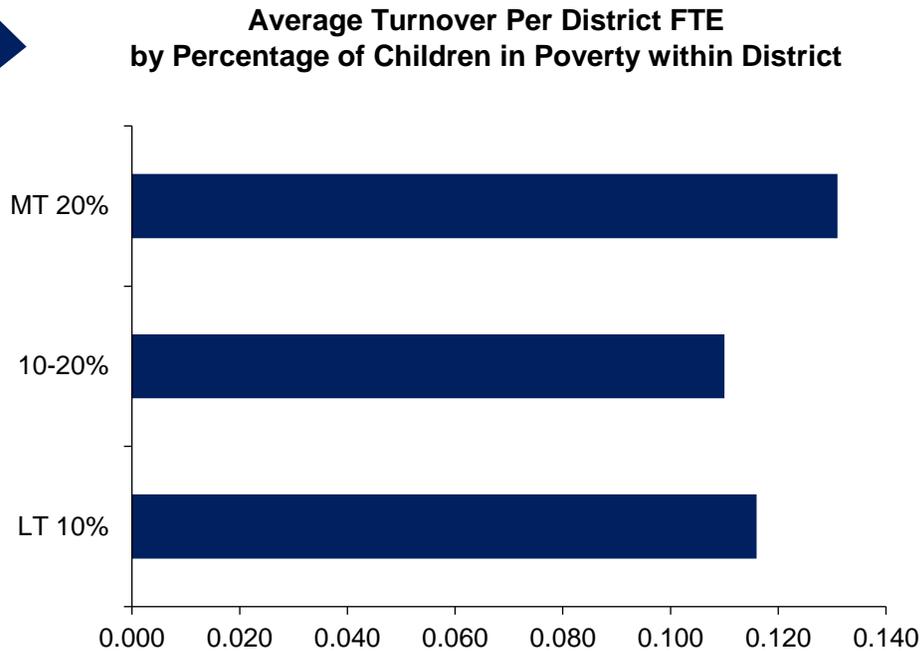
Figure 6 shows that turnover rates vary with other important characteristics of school districts. The top of Figure 6 shows the differences in turnover rates by average salaries of teachers within each district. The four categories of teacher salaries are quartiles, that is, the lowest 25 percent of district salaries, the next highest 25 percent (topping out at the median district salary in the state), and then the next two highest 25 percent of districts arranged by their average teacher salaries. Average district salaries don't vary greatly in South Dakota, nor are they high by national standards. The median salary is $38,716, and the 25th and 75th percentile salaries are $36,782 and $40,730, respectively.

Figure. 8 Average Salaries of Teachers Nationally Versus South Dakota

$57,379 United States	$38,914 South Dakota	$37,257 SD Schools w/Highest Turnover

Nonetheless, turnover rates are consistently associated with average district salaries. Districts in the top quartile of salaries saw, on average, turnover in about one out of eleven positions, while districts in the lowest quartile experienced turnover in nearly one out of seven FTEs. In the middle salary quartiles, turnover differences were in between these two rates.

All of these variations, however, are not nearly as striking as the differences between districts of different populations, as revealed in the graph on the bottom of Figure 6. South Dakota districts are generally quite small. The median district's total population is only about 1,900, and even the 90th percentile of districts in terms of size is just over 12,600. The approximate population of school-age children (5-17) is only 346 in the median district and 1,321 in the 90th percentile.

But size is significant even within this relatively narrow range. We divided the districts into three categories: those with total populations less than 1,000 (21 districts), those whose populations ranged between 1,000 and 10,000 (114 districts), and those with populations greater than 10,000 (16 districts). As Figure 6 shows, districts with different populations vary greatly in their turnover rates. Districts with the largest populations show a turnover rate of 0.07, or about one out of 14 FTEs requiring replacement every year. The smallest districts, however, saw turnover rates of 0.16, more than twice as high the largest category. In the smallest districts, about one out of six teachers (in FTEs) needed replacement in a single year.

Districts with the largest populations show a turnover rate of 1 out of 14 FTEs requiring replacement each year. The smallest districts saw turnover rates of more than twice as high.

Some of these differences are certainly to be expected, based on the math alone. In very small districts, a single departure creates a high rate. But that is not the only thing going on when we look at the variation *within* the population categories. The high turnout rates also occur in districts with significant workforces but in small districts, not just in the tiniest of districts. Nonetheless, we plan to look more closely at the data in phase two, when we can examine turnovers over many years. A few turnovers in a single year would be a challenge in small districts, but it would pale in significance to a persistent pattern of turnovers.

**Figure 6.
Measures
of Teacher
Turnover
in South
Dakota
Districts,
By District-
Level
Salary
Averages
and
Population,
2015-16**

**Average Turnover Per District FTE
by Average Salaries of Teachers within Each District**

Each bar
represents
the average
(mean)
across
school
districts of
their teacher
turnover
during the
school year,
divided by
the district's
total FTEs.
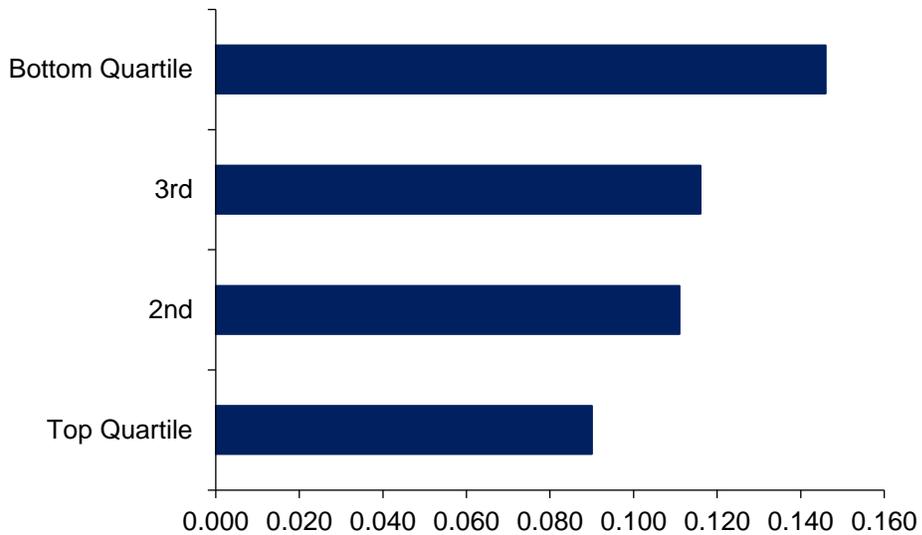
Average Turnover Per District FTE by District Population

Source:
South Dakota
Department
of Education.
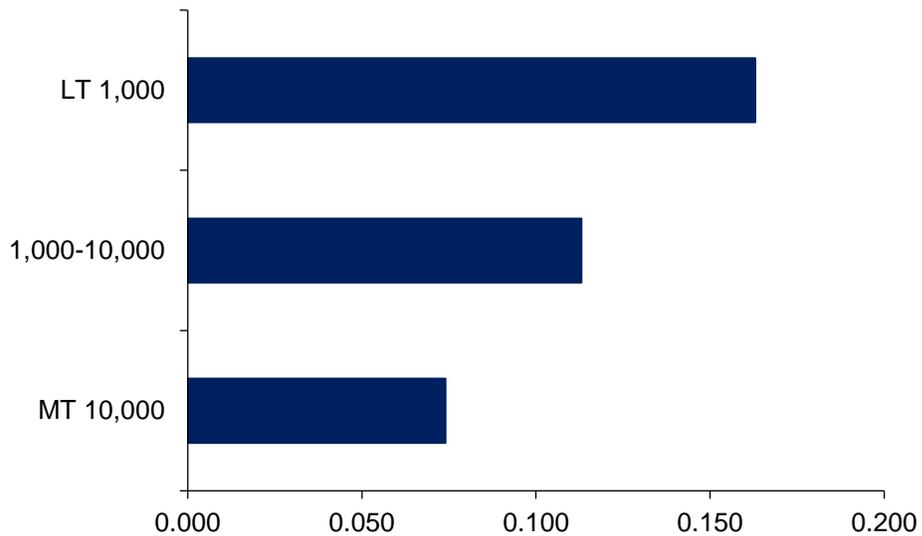
Also, other measures of teacher workforce challenges reinforce these findings with respect to the challenges faced by small, rural districts. Table 3 shows three indicators of the difficulties small districts face in staffing strong, highly qualified teachers. The smallest school districts — those with total populations less than 1,000 — are more likely to have teachers without advanced degrees. They also have higher proportions (albeit still small) of teachers that are not certified. Finally, they are more likely to have teachers who have less than five years of experience, a point at which many teachers begin to reach their peak performance, as measured by much of the research.

Table 3. Differences in Teacher Characteristics by District Population, 2015-16				
	Average (Mean) per District			
District Population	Percent of teachers without advanced degrees	Percent of teachers not certified	Percent of teachers with less than five years experience	Number of districts
More than 10,000	62.5	0.4	20.8	16
1,000 — 10,000	78.6	1.3	25.4	112
Less than 1,000	79.3	2.4	28.5	20
Source: South Dakota Department of Education.				

Great Variation Also Exists within Small, Rural Districts

Although the smallest districts face, on average, greater challenges in their teacher workforce than those in districts with larger populations, we should also note that there is still great variation among these rural districts. This variation offers an opportunity to understand how different districts — even those confronting considerable difficulties in managing teacher positions — handle those challenges. Thus, not only is it important to look at the teacher workforce dynamics at the state and district levels, it is also important to look at differences among certain types of districts and schools, especially those dealing with the most difficult situations.

We will examine these district-level variations in greater detail in the phase two, but for now, we can show the fact of variation. For example, Figure 7 shows the average turnover rates for districts of different population size. It is clear that the most variance is found among the smallest districts. (Note that each box plot shows the median value with the line in the middle of the box; the ends of each box show the middle 50

The smallest school districts (population of less than 1,000) are more likely to have teachers without advanced degrees, higher proportions of teachers that are not certified more likely to have teachers who have less than five years of experience.

percent of the distribution (ranging from the 25th percentile to the 75th percentile); while the lines (or "whiskers") reach out to the 10th and 90th percentiles.) The box plots show that while about a quarter of the small districts had turnover rates over 0.20 (or one out of five FTEs) in a year, another quarter of the small districts had turnover rates of less than 0.08 (or about one out of twelve FTEs). Clearly we cannot easily generalize about all small districts, and learning about the reasons for the differences may be enlightening.
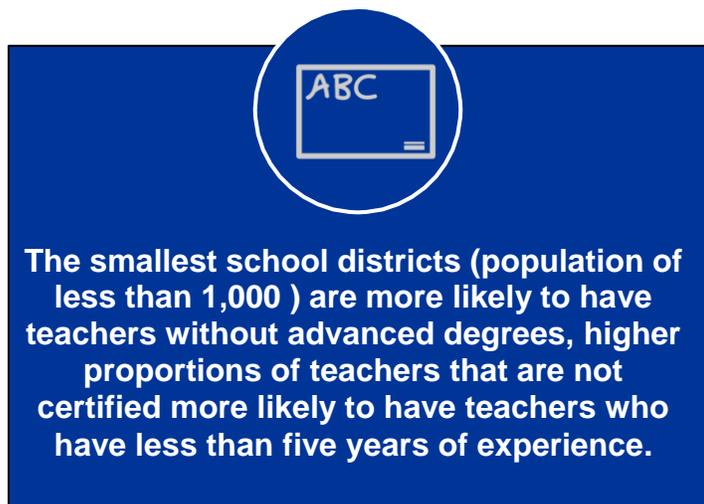
Although we cannot at this point make any causal connections, we do find some correlation between turnover rates and various student outcomes at the district level; we

will continue to explore that relationship as we work toward a final report. In the meantime, however, we can say that, just like the case with turnover rates, we also see in Figure 7 that the small districts show large differences on student outcomes. The figures in Figure 7B and 7C, for example, reveal the big differences among the largely rural districts in terms of their average math and reading proficiency scores, based on tests administered in South Dakota, as well as their graduation rates. The four-year graduation rates show even greater variation among the smallest districts.

In sum, as that rural districts see greater turnover rates, they also are more likely to have teachers with weaker formal qualifications; their student outcomes are, on average, somewhat below those of larger districts; and these districts also differ a great deal among themselves on all of these measures. These differences offer an opportunity to see how different districts and perhaps their schools are meeting the significant challenges they confront. That, we hope, is one of the tasks for our final report.

7A. Average Turnover Rates of Districts
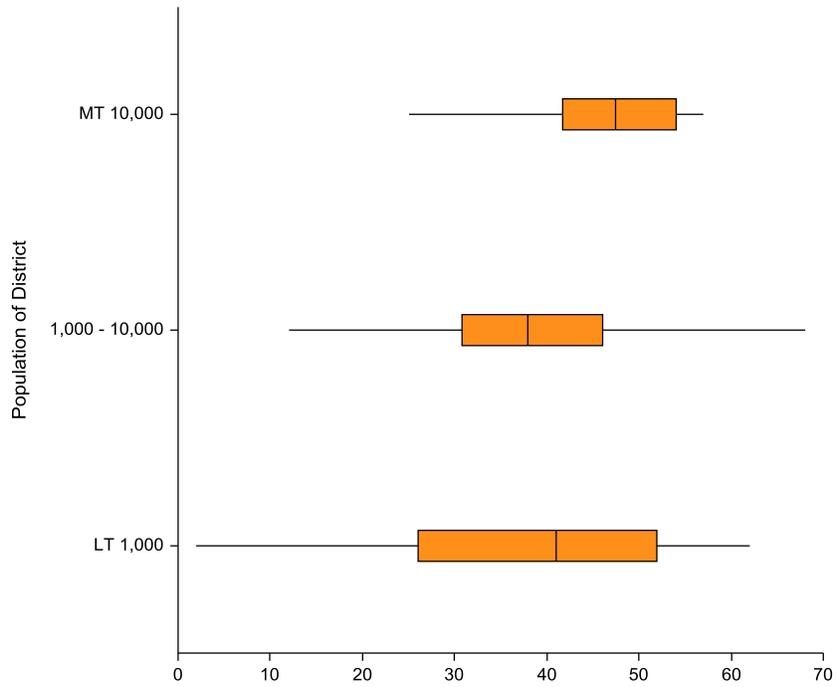
7B. Average Math Proficiency Scores of Districts

Figure 7.
Great
Variation
among
Small
Districts in
Turnover
Rates and
Student
Outcomes
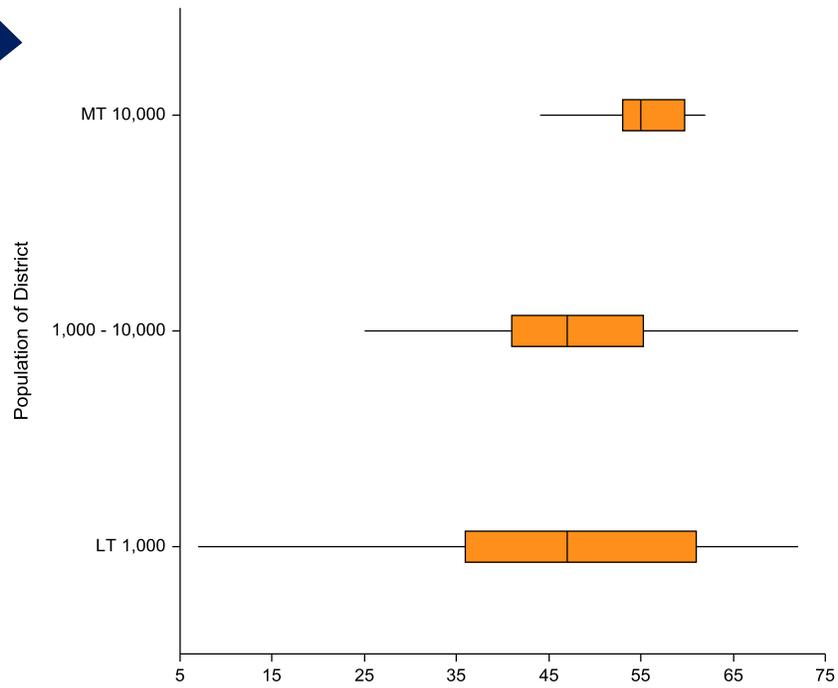
7C. Average Reading Proficiency Scores of Districts
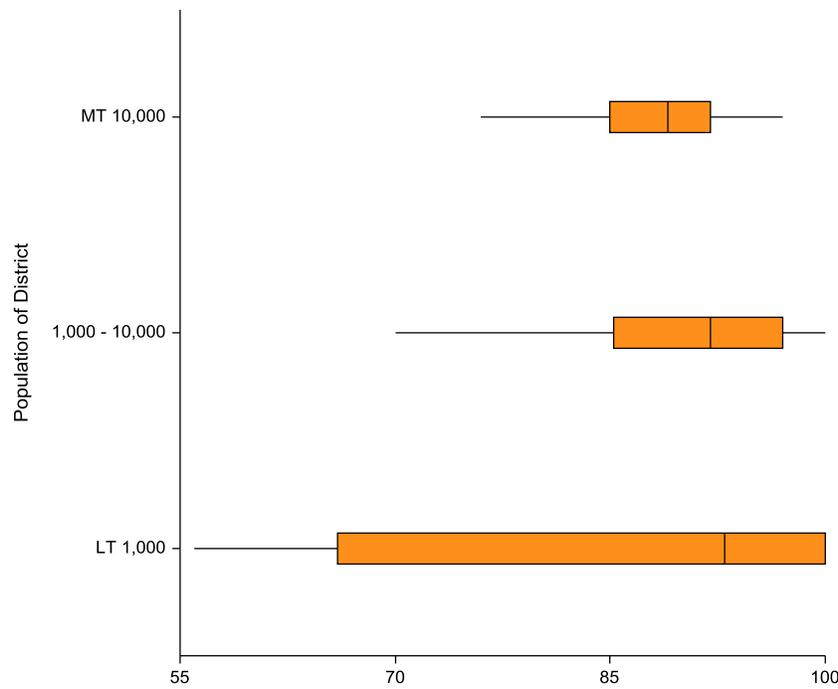
7D. Average Four-Year Graduation Rates by District

Conclusions

The report reveals differences in turnover and, and to a lesser extent, vacancies across public school districts in South Dakota. Although prior analyses, such as the 2015 Blue Ribbon Report, concludes that the state as a whole maintains a good balance between the demand and supply of teachers, then and in the near future, our initial analyses of turnover and vacancies suggests that there may be important variations at the local district level. That is, an overall statewide balance may coincide with shortages in some and perhaps many districts. More finely grained analyses also show differences in teacher attributes, including teachers with advanced degrees and years of experience, across districts. While the report does not draw a direct link from these two teacher attributes to student learning, differences in teacher qualities (along with many other factors) may well be associated with differences in learning. The report also points to potential shortages by specialization, which may differ markedly from the needs at the national level.

More than calling attention to potential shortages at the state — and importantly, the local — level, the estimates can help inform decisions on alternative strategies. Such information enables consideration of options tailored to the source of the immediate shortage.

In sum, the district-level analyses suggest the value of understanding the evolution of demand for, and supply of, teachers at the local level. Yet, the findings do not fully convey what more detailed analyses of teacher-level data could yield. In other words, teach-level data will help to better understand what may lie behind (and influence) the flows into positions, movements among schools, and exits from teaching in South Dakota's public schools. Such analyses comprise the next steps to enable detailed and disaggregated forecasts.

More than calling attention to potential shortages at the state — and importantly, the local — level, the estimates can help inform decisions on alternative strategies. It should be possible to use the analyses and forecasts to anticipate both increases or decreases in hiring needs (in the simple case, when a district's elementary school cohorts are relatively large or relatively small) and whether relatively low pools of qualified applicants for posts are likely to be short-term (owing to an uptick, for example, in enrollment in teacher preparation programs). Such information enables consideration of options tailored to the source of the immediate shortage.

Further, even long term options may lie in alternatives other than the preparation and placement of full-time teachers in schools. South Dakota's Department of Education has pursued such alternatives, for example, through Northern State University's (NSU) Center for Statewide e-Learning, which uses certified master teachers to deliver instruction via technology to schools lacking sufficient numbers of students in certain subjects and courses to mount a full class, or in subjects nearly impossible for some districts to field a pool of applicants qualified to teach. Similarly, NSU's Rural School Teaching Placement Project offers a flexible way to bring supervised preservice teacher
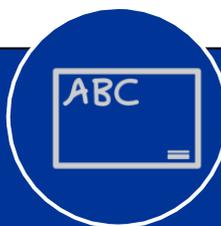
candidates to schools that may await the pool of newly certified teachers coming out in two or three years.

Further, there may be potential for collaboration among districts, including collaboration with nonpublic systems (including Bureau of Indian Education (BIE) schools, as envisaged for particular purposes under South Dakota's Indian Education Advisory Council) to bring qualified teachers to difficult-to-fill positions in two or more schools. These approaches support teachers and teaching in schools, by covering short term and persistent vacancies and constraints imposed by scale for some school districts and in some specializations.

The point is that more finely grained forecasts enable a better understanding of the particular shortage problems that need to be addressed, where they occur, and whom they affect, and so invites consideration of a more focused range of alternatives in addressing the shortages in ways that support teachers, teaching, and learning.
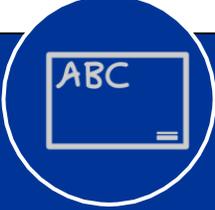
Even long term options may lie in alternatives other than the preparation and placement of full-time teachers in schools. South Dakota's Department of Education has pursued such alternatives, for example, through Northern State University's (NSU) Center for Statewide e-Learning.

About the Authors

Dr. Thomas L. Gais is director of the Rockefeller Institute of Government. His research has focused on education; American federalism; the dynamics of state spending on social programs and relationships to changing needs; the role of analysis and experimentation in the routine operations of government; the comparative effectiveness of faith-based social service organizations; performance measurement and management; nonprofit social service organizations and their relations with governments; campaign finance reforms and their effects; state constitutional reforms; and interest group formation, maintenance, and strategies.

Dr. Jim Malatras is the president of the Rockefeller Institute of Government. Prior to his appointment as president of the Institute, Dr. Malatras held several high-ranking positions in New York State government. Most recently, he served as director of state operations to Governor Andrew M. Cuomo, where he managed the day-to-day operation of New York State government's agencies, 180,000 plus workforce, and $155 billion budget, as well as served as the administration's point person on policy.

Dr. Alan P. Wagner is director of Education Studies at the Rockefeller Institute of Government Professor. An economist with broad interests in education policy in the US and abroad, Wagner's most recent work concerns higher education and workforce development.

Dr. Young Joo Park is a research analyst at the Rockefeller Institute. Young Joo recently received her Ph.D. in public administration and policy from the Rockefeller College of Public Affairs & Policy.

Contributions by

Dr. Nancy Zimpher is a senior fellow for education at the Rockefeller Insitute and chancellor emeritus of the State University System of New York. As co-founder of StriveTogether, Dr. Zimpher has been instrumental in creating a national network of innovative systemic partnerships that holistically address challenges across the education pipeline.

Ms. Stacey Hengsterman is the chief external affairs officer at the Rockefeller Insitute. Stacey was chief of staff at The State University of New York.

Research Assistance Provided by:

Ms. Urška Klančnik is a research scholar at the Rockefeller Institute of Government.

Appendix A

			% Eligible for Free/ Red Lunch					Enrollment data - Average Daily Attendance
Number	District	% Special Needs		StS ratio	Reading	Math	4 yr grad rate	HS completion	
49005	Sioux Falls	15	45	16	53	44	81	88	22,633.812
51004	Rapid City Area	14	47	15	44	40	74	80	12,981.176
6001	Aberdeen	13	34	16	54	41	90	89	4,149.679
14004	Watertown	13	34	16	59	50	88	88	3,672.528
49002	Brandon Valley	12	18	17	62	56	94	98	3,504.131
41002	Harrisburg	15	15	14	62	54	85	93	3,493.970
5001	Brookings	14	25	15	60	51	89	94	3,017.260
63003	Yankton	16	34	17	49	41	97	98	2,648.417
17002	Mitchell	14	33	15	58	54	92	94	2,619.604
51001	Douglas	15	29	15	44	40	87	91	2,521.156
46001	Meade	16	38	14	53	44	85	92	2,472.603
32002	Pierre	13	27	17	54	48	87	90	2,431.927
2002	Huron	15	57	17	33	25	76	83	2,278.481
40002	Spearfish	14	29	15	55	46	90	92	2,090.428
66001	Todd County	18		12	12	6	49	54	1,754.802
41005	Tea Area	13	18	16	49	29	95	96	1,485.342
65001	Shannon County	22		15	7	2	3	46	1,421.645
9001	Belle Fourche	15	44	14	40	32	89	86	1,285.547
49007	West Central	12	20	15	47	38	97	97	1,280.088
61008	Dakota Valley	11	16	16	56	51	92	93	1,208.444
13001	Vermillion	14	38	14	62	48	81	86	1,180.354
39002	Madison Central	14	26	15	57	47	92	94	1,093.502
41004	Lennox	15	18	18	42	32	95	100	1,073.520
49003	Dell Rapids	17	19	15	58	44	96	100	882.419
11004	Wagner Community	15		14	49	38	75	94	880.524
25004	Milbank	14	33	14	60	46	98	98	880.135
54002	Sisseton	18	64	12	27	23	83	91	874.178
41001	Canton	17	28	14	52	53	89	97	833.797
7001	Chamberlain	12	45	12	46	42	85	95	830.443
16001	Custer	15	34	13	39	32	86	96	826.284
49006	Tri-Valley	14	26	15	40	30	93	94	824.293

Number	District	% Special Needs	% Eligible for Free/ Red Lunch	StS ratio	Reading	Math	4 yr grad rate	HS completion	Enrollment data - Average Daily Attendance
	Performance and Other Data, by District								
23002	Hot Springs	15	39	14	49	46	91	96	793.469
28003	Hamlin	9	45	15	53	43	97	97	725.964
40001	Lead-Deadwood	12	48	10	41	31	52	72	721.873
61007	Elk Point-Jefferson	12	10	15	62	59	91	100	675.230
59002	Winner	11	47	14	49	30	91	85	658.642
39001	Chester Area	8	18	17	59	51	39	75	642.874
62006	Mobridge-Pollock	16	43	14	54	39	94	87	630.694
61002	Beresford	16	21	14	55	43	95	93	621.880
50003	Flandreau	12	43	12	44	26	80	94	612.402
5005	Sioux Valley	13	23	16	51	40	97	100	609.747
56004	Redfield	20	35	14	49	38	80	89	607.856
6006	Groton Area	10	17	14	72	54	100	98	589.948
33003	Parkston	13	31	13	55	47	94	97	562.729
4002	Bon Homme	15	33	11	56	44	86	87	532.478
19004	Deuel	12	33	14	50	45	91	100	510.232
18005	Webster Area	10	24	14	61	51	94	100	507.736
49004	Garretson	9	21	14	55	39	96	100	485.390
49001	Baltic	11	22	14	58	48	89	96	474.606
51002	Hill City	16	6	13	57	35	94	97	471.670
3001	Bennett County	13	67	11	32	25	72	70	451.361
11005	Platte-Geddes	12	32	11	55	54	92	100	447.464
29004	Miller	14	20	12	52	46	97	94	441.734
15002	McLaughlin	14		12	8	4	52	65	425.785
30001	Hanson	14	18	15	43	43	96	96	421.578
45004	Britton-Hecla	14	41	13	47	39	100	97	418.524
57001	Stanley County	15	37	11	55	35	85	100	406.813
42001	Lyman	10	57	10	41	39	93	100	396.375
47001	White River	17		9	26	15	54	58	392.238
12002	Clark	13	48	12	37	23	84	95	389.987
43007	McCook Central	16	30	12	48	38	90	93	375.822
60004	Parker	15	22	13	60	62	85	100	372.789
22006	Ipswich Public	15	34	12	62	52	87	100	371.513

Number	District	% Special Needs	% Eligible for Free/ Red Lunch	StS ratio	Reading	Math	4 yr grad rate	HS completion	Enrollment data - Average Daily Attendance
5006	Deubrook Area	11	30	12	55	52	96	96	363.576
2006	Wolsey-Wessington	14	34	13	41	25	94	94	362.923
60006	Viborg-Hurley	14	33	16	41	28	100	100	361.017
26004	Gregory	11	50	12	56	32	90	91	356.733
35002	Kadoka Area	14	47	10	41	27	100	91	350.287
48003	Howard	14	23	11	53	51	94	100	348.390
1001	Plankinton	16	40	16	43	38	87	93	348.002
64002	Dupree	15		12	25	20	70	100	341.567
11001	Andes Central	11		11	42	33	70	77	332.314
5003	Elkton	12	30	11	38	40	100	96	331.928
30003	Bridgewater-Emery	16	29	11	44	38	100	100	330.708
36002	Wessington Springs	13	41	13	39	26	75	100	329.670
24004	Faulkton Area	10	27	14	60	57	100	100	318.819
9002	Newell	18	57	11	30	27	86	100	316.467
61001	Alcester-Hudson	15	30	13	52	36	92	100	316.159
20003	Timber Lake	16	49	11	52	45	90	90	315.493
13003	Irene-Wakonda	17	43	12	41	30	88	100	314.251
7002	Kimball	11	46	13	59	53	90	100	312.144
20001	Eagle Butte	61		8	11	6	58	67	309.714
6005	Warner	10	17	14	68	63	100	100	295.910
33001	Freeman	24	26	12	46	29	100	96	295.800
38002	De Smet	11	20	12	57	49	93	100	292.251
63001	Gayville-Volin	14	42	14	41	23	81	88	287.057
27001	Haakon	8	29	14	46	34	96	96	282.322
38001	Arlington	6	27	14	63	63	96	100	279.156
33002	Menno	9	45	10	46	40	84	95	276.535
34002	Highmore-Harrold	15	27	11	50	38	95	90	268.460
28001	Castlewood	9	23	15	58	43	100	100	263.856
4003	Scotland	15	32	11	33	25	100	100	260.218
4001	Avon	12	35	12	63	58	100	100	258.385
28002	Estelline	15	33	13	39	36	92	100	256.306
50005	Colman-	18	33	13	44	38	84	88	254.247

		Performance and Other Data, by District						
Number	**District**	**% Special Needs**	**% Eligible for Free/ Red Lunch**	**StS ratio**	**Reading**	**Math**	**4 yr grad rate**	**HS completion**	**Enrollment data - Average Daily Attendance**
	Egan								
58003	Agar-Blunt-Onida	17	25	10	54	43	94	89	253.286
52004	Lemmon	13	33	13	47	40	91	91	249.516
53001	Gettysburg	14	26	13	58	46	100	100	248.838
51003	New Underwood	19	27	13	46	38	83	90	246.572
51005	Wall	8	28	11	65	53	88	94	242.018
56007	Northwestern Area	16	10	12	57	40	94	94	241.760
17001	Ethan	7	26	13	59	62	95	100	239.275
60001	Centerville	18	40	13	55	40	94	94	238.145
14001	Florence	16	38	13	44	33	86	100	235.145
59003	Colome Consolidated	11	53	10	42	36	85	100	233.613
26002	Burke	13	61	12	53	40	85	100	222.181
2003	Iroquois	16	56	11	25	12	93	93	220.345
14005	Waverly	11	28	12	39	31	91	91	219.153
12003	Willow Lake	11	27	9	46	30			217.825
17003	Mount Vernon	14	38	10	42	44	90	95	217.670
43002	Montrose	13	14	12	64	46	100	100	217.245
54004	Rosholt	10	32	10	47	42	100	100	211.089
54007	Wilmot	15	47	11	35	37	78	100	206.560
55004	Woonsocket	6	41	11	46	31	100	100	206.298
45005	Langford Area	15	44	11	42	38	92	92	203.601
43001	Canistota	12	27	10	58	40	100	100	200.486
56006	Hitchcock-Tulare	18	36	9	39	30	93	100	197.207
46002	Faith	10	40	12	54	48	100	100	196.860
60003	Marion	12	42	10	40	34	93	93	193.412
55005	Sanborn Central	7	41	9	47	48	100	100	186.983
31001	Harding County	13	27	8	40	26	100	100	183.298
44002	Leola	8	69	8	45	48			176.968
14002	Henry	11	41	12	28	25	81	87	175.805
62005	Selby Area	14	22	11	55	57			174.452
21001	Armour	6	21	10	55	52	100	100	170.571
37003	Jones County	10	46	9	62	59	93	92	170.065

			Performance and Other Data, by District						
Number	**District**	**% Special Needs**	**% Eligible for Free/ Red Lunch**	**StS ratio**	**Reading**	**Math**	**4 yr grad rate**	**HS completion**	**Enrollment data - Average Daily Attendance**
38003	Lake Preston	15	35	8	40	38	100	100	166.654
15003	Smee	27		9	16	8	56	68	166.076
56002	Doland	14	52	9	62	52	100	100	165.316
15001	McIntosh	14		10	61	38			164.167
33005	Tripp-Delmont	14	47	8	50	42	87	93	162.339
6002	Frederick Area	17	35	10	63	60	92	100	160.563
18003	Waubay	19	60	9	39	34	100	100	156.833
54006	Summit	11	58	10	38	26	93	93	152.913
21003	Corsica-Stickney	10	32	10	56	68	100	100	147.757
39005	Oldham-Ramona	19	51	8	44	35			144.450
39004	Rutland	14	40	7	31	25			142.927
52001	Bison	13	41	8	63	48	100	100	142.667
44001	Eureka	15	40	7	51	51			142.050
23001	Edgemont	21	35	9	48	38	100	100	141.840
22001	Bowdle	16	32	8	36	34			127.776
22005	Edmunds Central	13	24	9	45	28	80		119.378
1003	White Lake	11	46	9	58	56	91	100	118.246
10001	Herreid	13	26	9	60	45	100	100	116.248
26005	South Central	13	61	8	42	28	66		109.883
53002	Hoven	18	36	8	31	27			109.510
1002	Stickney		54	9	42	59			102.896
23003	Oelrichs	17		6	22	6		90	98.413
25001	Big Stone City		52	8	72	58			98.226
25003	Grant-Deuel	24	47	6	41	41	66		84.654
16002	Elk Mountain		0	4					5.617
65001	Oglala Lakota County								

Source: http://doe.sd.gov/ofm/documents/1415-AllP.pdf

Appendix B

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Students (K-12)	120,277	121,089	121,015	122,055	123,629	124,739
Total Classroom FTE (K-12)	8,934	8,958	9,003	9,101	9,159	8,941
	2012-13	2013-14	2014-15	2015-16	% Change	
Students (K-12)	126,759	128,294	129,772	130,936	8.86%	
Total Classroom FTE (K-12)	9,039	9,208	9,326	9,350	4.66%	

Source: South Dakota Department of Education, STATEWIDE LONGITUDINAL DATA: 10 YEAR HISTORY at http://doe.sd.gov/ofm/documents/16-SWLong.pdf.

Endnotes

1   *Trends in Educator Preparation and Employment: A Report for the Governor's Blue Ribbon Task Force on Teachers and Students* (Pierre: South Dakota Department of Education, September 2015), http://blueribbon.sd.gov/docs/9-9%20SEPT%202015%20Educator%20Analysis%20Report.pdf.

2   Winnie Hu, "Teachers Facing Weakest Market in Years," *New York Times,* May 19, 2010, http://www.nytimes.com/2010/05/20/nyregion/20teachers.html?_r=1&mcubz=0&pagewanted=all&.

3   Leib Sutcher, Linda Darling-Hammond, and Desiree Carver-Thomas, *A Coming Crisis in Teaching? Teacher Supply, Demand, and Shortages in the U.S.* (Palo Alto: Learning Policy Institute, September 2016), https://learningpolicyinstitute.org/product/coming-crisis-teaching.

4   Ibid.

5   Jim Malatras, Thomas Gais, and Alan Wagner, *A Background on Potential Teacher Shortages in the United States* (Albany: Rockefeller Institute of Government, July 2017), http://www.rockinst.org/pdf/education/2017-07-27-background_on_teacher_shortages.pdf.