**Research Report**

# Characteristics of Rural Districts and Their Science and Mathematics Teacher Workforce

**Part of the Series: Science and Mathematics Teacher Retention in Rural Illinois**

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## Suggested Citation

Beilstein, S. O., Werner, S. M., Kim, H., & Barkley, A. (2026). *Characteristics of rural districts and their science and mathematics teacher workforce. Part of the series: Science and mathematics teacher retention in rural Illinois.* Chicago, IL: Illinois Workforce and Education Research Collaborative (IWERC), University of Illinois Urbana-Champaign. https://iwerc.education.illinois.edu/educator-workforce/#Rural-SMT

## Biographies

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## External Review

To ensure that this report's contents are rigorous, accurate, and useful to educators and policymakers with varying levels of background knowledge, IWERC solicits feedback from experts.

We thank the following reviewers of this report:

- John Glasgow, Association of Illinois Rural and Small Schools
- Erika Hunt, Illinois State University
- Mary Reynolds, Illinois Department of Innovation and Technology

## Acknowledgements

This report is part of a collaboration between IWERC and NORC at the University of Chicago. We thank our collaborators Jenny Seelig and Molly Gordon for their support, review, and feedback. We also thank the following project advisory committee members for their input:

- Dave Ardrey and John Glasgow, Association of Illinois Rural and Small Schools
- Lisa Hood, Illinois State University
- Erika Hunt, Illinois State University
- William Hunter, Illinois State University
- Mark Klaisner, Illinois Association of Regional Superintendents of Schools
- Robert Mann, Western Illinois University
- Taylor McCabe-Juhnke and Megan Cremeans, Rural Schools Collaborative
- Mary Reynolds, Illinois Department of Innovation and Technology

This report was made possible through the support and partnership of the Data Strategies and Analytics Department, especially Maureen Font and Logan Woods, at the Illinois State Board of Education, who provided access to the data and help with understanding data elements.

IWERC is supported by a group of foundations including The Brinson Foundation, CME Group Foundation, Crown Family Philanthropies, Joyce Foundation, Pritzker Traubert Foundation, Robert R. McCormick Foundation, Spencer Foundation, Square One Foundation, Steans Family Foundation, and two anonymous donors. We thank them for allowing IWERC to pursue important research questions of interest to the state of Illinois and its people.

This material is based upon work supported by the National Science Foundation under Award No. 2344942. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

# Table of Contents

# List of Equations



# List of Figures



# List of Tables

# Executive Summary

The teacher recruitment and retention issues confronted by rural districts in Illinois are complex, localized, and span the workforce pipeline. Lack of partnerships with teacher preparation programs, persistent teacher shortages, worries about workload and burnout, and high rates of turnover are among the challenges rural districts regularly manage (Bates et al., 2024; Beilstein & Bates, 2024; Illinois State Board of Education et al., 2024, 2025; Withee & Beilstein, 2023). Rural public school districts in Illinois provide an apt context for studying science and mathematics teacher (SMT) retention, as Illinois mirrors the United States in the racial diversity, age, household income, and rurality of its residents.

The Illinois Workforce and Education Research Collaborative (IWERC) and NORC at the University of Chicago have collaborated on a mixed-methods research project to examine the SMT workforce for grades 6-12 in rural Illinois with the goal of helping districts across the state and country better understand the factors and working conditions that encourage SMTs to stay in their schools. Funded by the National Science Foundation (NSF) Robert Noyce Teacher Scholarship Program, this project's focus is on SMT retention in high-need rural districts, which are rural districts that serve greater percentages of students from low-income families and that sustain lower rates of teacher recruitment or retention.

The current report presents a descriptive landscape of the state's rural and high-need rural districts as well as the characteristics of the SMT workforce and SMT retention in these districts. Although this analysis is longitudinal, examining data from the 2017-2018 school year (SY18) to the 2022-2023 school year (SY23), we attend to cross-sectional findings both to provide a snapshot of the SMT workforce in SY23 and to set the stage for the larger project.

## Key Findings

**Overall, SMTs are retained at a lower rate, by approximately 10 percentage points, when compared to teachers of all positions and subjects.** In SY23, the district average three-year retention rate for SMTs was 79% across all districts statewide, 78% in rural districts, and 76% in high-need rural districts. For teachers of all instructional positions and subjects, the district average three-year retention rate was 86% across all districts statewide, 86% in rural districts, and 85% in high-need rural districts. We note that SMT retention refers specifically to *retention of SMTs as SMTs* in a district, rather than retention of teachers overall.

**SMT retention rates, on average, are relatively similar for all districts statewide, rural districts, and high-need rural districts. Yet, there is substantial variation in SMT retention between district types.** Rural and high-need rural districts have larger variation in SMT retention rates, on average, relative to all districts statewide, which could be due to smaller staff sizes or other district or community factors.

**A higher percentage of SMTs in rural and high-need rural districts are assigned courses in additional subjects, compared to all districts statewide.** These subjects include English language and literature, social sciences and history, physical health and safety education, and human services. Connecting to prior research, SMTs in rural schools have been frequently found to teach multiple courses within or outside their main specialization, which can increase teacher workload burden (Marder et al., 2017; Patterson, 2003).

Results highlight the need to examine the factors that contribute to SMT retention, particularly in rural and high-need rural districts. Rural SMT vacancies sit at the interface of harder-to-staff subject areas within harder-to-staff rural districts. Indeed, findings indicate that rural and high-need rural districts have, on

average, higher vacancy rates for teachers of all instructional positions and subjects, compared to all districts statewide. But, despite the difficulties rural and high-need rural districts contend with in recruiting teachers overall, findings also suggest that these districts are retaining the SMTs they are able to hire at a similar rate to all districts statewide.

This report, the first in a series of four, is accompanied by the release of a survey report from NORC that explores the working conditions of SMTs in rural districts, primary reasons why SMTs stay, and associations between these reasons and SMT backgrounds and teaching circumstances. Forthcoming, a quantitative report will analyze which district and community factors are associated with SMT retention in high-need rural districts, and a qualitative case study report will examine the policies and practices that support SMT retention in high-need rural districts.

# Introduction

The reach of rural schools in the United States is wide. Across the country, one in every six students, or approximately 7.8 million students total, is enrolled in a rural school district (Showalter et al., 2025). Schools commonly function as multifaceted hubs of rural communities, connecting students, their families, and other residents to opportunities for civic engagement, culture, commerce, and, of course, learning (Bauch, 2001; Budge, 2006; Schafft, 2016). Despite their centrality in rural communities, however, these educational spaces can be overlooked in national policy and research on equitable schooling (Schafft, 2016; Sipple & Brent, 2009).

Rural public school districts in Illinois provide an apt context for studying science and mathematics teacher (SMT) retention. Research has shown that many rural districts in Illinois face complex and localized teacher recruitment and retention issues that span the workforce pipeline, including lack of partnerships with teacher preparation programs, persistent teacher shortages, worries about workload and burnout, and high rates of turnover (Bates et al., 2024; Beilstein & Bates, 2024; Illinois State Board of Education et al., 2024, 2025; Withee & Beilstein, 2023).

Additionally, Illinois is a microcosm of the United States in several ways. Illinois mirrors the country in its racial diversity—White (U.S. 56.3%, IL 57.1%), Hispanic or Latino (U.S. 20.0%, IL 19.4%), Black or African American (U.S. 11.7%, IL 12.9%)—and diffusion score, which calculates how diverse all other racial and ethnic groups are relative to the three largest groups (U.S. 12.0%, IL 10.6%; U.S. Census Bureau, 2025a). Illinois reflects the United States in its age of residents over 18 (U.S. 78.6%, IL 78.8%) and household median income (U.S. $81,604, IL $83,211; U.S. Census Bureau, 2025a, 2025b). And, in the context of rural populations, roughly 13.1% of Illinoisans live in rural areas compared to 21.2% of all residents in the United States (U.S. Census Bureau, 2022).[1]

The Illinois Workforce and Education Research Collaborative (IWERC) has partnered with NORC at the University of Chicago to research the SMT workforce in rural Illinois with the goal of helping districts across the state and country better understand the factors and working conditions that encourage SMTs to stay in their schools. Funded by the National Science Foundation (NSF) Robert Noyce Teacher Scholarship Program, this project's focus is on SMT retention for grades 6-12 in *high-need* rural districts, which are rural districts that serve greater percentages of students from low-income families and that experience lower rates of teacher recruitment or retention.

Applying an exploratory convergent mixed-methods research design (Creswell & Clark, 2017), this project has three main strands: A quantitative component that examines the organizational and community characteristics associated with rural SMT retention using secondary administrative data; a survey of rural SMTs that analyzes the working conditions of SMTs in rural districts, primary reasons why SMTs stay, and associations between these reasons and SMT backgrounds and teaching circumstances; and a qualitative component that assesses the school and district policies, strategies, and practices that contribute to rural SMT retention using case study data. The current report, a quantitative landscape

[1] During NSF proposal review, the panel suggested that we assess national generalizability for the study using the Generalizer software (thegeneralizer.org). This software aids researchers in defining an inference population from the study sample that shares the geographic, demographic, and administrative characteristics with a national population by drawing on several federal databases (Tipton & Miller, 2024). We included 496 middle and high schools within the high-need rural districts that were part of the proposal's initial analysis using data that is older than currently analyzed in this study. Selecting the appropriate school and district characteristics, the generalizability index averaged 0.838, indicating "high generalizability" between these Illinois schools and national school characteristics. Please note that the Generalizer software's capabilities were limited to 200 schools per analysis. Thus, we ran several analyses and averaged across their generalizability indices.

analysis, serves to set the stage for the project by providing a snapshot of the characteristics of rural and high-need rural districts and their SMT workforce.

# Background

The importance of high-quality teaching, including science and mathematics teaching, on student learning is well documented, and those effects are cumulative and enduring (Blazar & Kraft, 2017; Jackson, 2012, 2018; Nye et al., 2004; Rivkin et al., 2005). Retaining high-quality teachers, therefore, is essential for improving student outcomes. At a national level, approximately one in every seven public school teachers leave their positions annually, and of those teachers, half move to a different school while the other half leave the profession (Taie & Lewis, 2023).

Coupled with historical declines in completers of teacher preparation programs nationally, as well as in Illinois (Advance Illinois, 2023), teacher turnover—when teachers move schools or leave the profession—remains a pressing concern for researchers, educators, and policymakers. Teacher turnover, in particular, has significant implications for student learning and outcomes (Chetty et al., 2014) as well as for school resources, instructional quality, and staff culture (Barnes et al., 2007; Carver-Thomas & Darling-Hammond, 2017; Guin, 2004). Furthermore, turnover of SMTs can occur at a higher rate than other types of teachers, such as elementary teachers (Carver-Thomas & Darling-Hammond, 2019).

The prevalence of teacher turnover and vacancies, however, is not monolithic. Instead, schools, districts, and states unevenly experience these staffing challenges, especially by spatial context and subject area (Boyd et al., 2011; Bruno, 2025; Ingersoll & Tran, 2023; Learning Policy Institute, 2024; Taie & Lewis, 2023). Research indicates that turnover rates vary between schools serving different percentages of students eligible for free and reduced-price lunch (FRPL). Nguyen & Redding (2017) found similar rates of turnover between science, mathematics, engineering, and technology (STEM) teachers and non-STEM teachers in *low-FRPL schools*, defined as schools with less than 50% of students eligible for FRPL. However, in *high-FRPL schools*, or schools with 50% or more of students eligible for FRPL, turnover was more likely for STEM teachers than non-STEM teachers. Such turnover can be a major contributor to teacher vacancies, which are unfilled teaching positions, often referred to as teacher shortages.

With regard to spatial context, rural schools are marked by unique challenges in teacher retention and vacancies relative to suburban and urban schools. On teacher retention, a national study found that rural teachers more frequently cited job dissatisfaction—and specifically, dissatisfaction with school administration—as a reason for leaving their positions when compared to their suburban and urban counterparts (Ingersoll & Tran, 2023). Other national data show that teacher turnover varies across states with similar geographically rural areas, suggesting that factors beyond states' rurality may be associated with teachers' decisions to stay in their schools (Nguyen, 2020).

On teacher vacancies, schools have long had difficulty filling SMT positions (Ingersoll & Perda, 2010), and these vacancies vary greatly by locale (Ingersoll, 2011).[2] Rural schools across the country are most likely to report "serious difficulties" filling the subjects of science (19% of rural schools) and mathematics (16% of rural schools; Ingersoll & Tran, 2023). This trend is also observed in Illinois, where rural districts

[2] In addition to studying variability in SMT staffing by locale, Ingersoll (2011) noted that "the largest differences in math and science teacher hiring problems are not between regions or states, but between different schools, even within the same school district" (p. 41). Accordingly, we acknowledge the importance of examining SMT retention at the school level. However, for this project, we analyze SMT retention at the district level for several reasons, but primarily, due to the structure of the teacher-level data. The confidential administrative data we used did not link courses to schools, but rather to teachers. Although the employment data listed teachers' employing districts and schools, for SMTs who worked in multiple schools, we could not be certain which courses aligned to which schools.

struggle to fill open teaching positions in general (Bruno, 2025; Illinois State Board of Education et al., 2024, 2025) and SMT positions in middle and high school (Beilstein & Withee, 2022a, 2022b, 2023).

Rural SMT vacancies sit at the interface of harder-to-staff subject areas within harder-to-staff rural schools. Working conditions for SMTs in rural schools have distinct characteristics that distinguish them from urban schools. In smaller rural schools, it is often the case that a single SMT is responsible for teaching multiple courses within or outside of their main content area specialization, increasing teacher workload burden (Marder et al., 2017; Patterson, 2003). And when faced with subject-area shortages, schools are sometimes forced to fill these positions with unqualified or under-qualified candidates (Beilstein & Withee, 2023) or cancel courses altogether (Goodpaster et al., 2012). The major implication of such staffing challenges is inequitable student access to qualified educators, which can lead to poor learning conditions and decreased student achievement, especially for students from marginalized communities and low-income families (Cardichon et al., 2020; Podolsky et al., 2019; Sutcher et al., 2019).

Though the literature on SMT retention and rural teacher retention are separately robust, fewer studies explicitly investigate these two areas in tandem. In addition to addressing this gap in research, understanding rural SMT retention is vital for several reasons. First, efforts to target teacher retention can improve teacher workforce stability, which is positively associated with student achievement, particularly for schools with lower test scores (Hanushek et al., 2016; Ronfeldt et al., 2013). Next, schools with larger proportions of students from racially marginalized communities and low-income families struggle the most to recruit and retain high-quality SMTs, creating additional equity concerns (Boyd et al., 2010, 2011; Carver-Thomas & Darling-Hammond, 2019; Guarino et al., 2006; Ingersoll, 2001; Sutcher et al., 2016). And finally, rural SMTs can also play a meaningful role in introducing students to area science and mathematics career opportunities, drawing connections between their local, cultural, and environmental communities through place-based learning (Schafft, 2010).

This report is the first in a series of four to study rural SMT retention in Illinois. Here, we provide a descriptive landscape of the state's rural and high-need rural districts as well as the characteristics of the SMT workforce and SMT retention in these districts. In conjunction, NORC is releasing results from a survey, which explores rural SMT perceptions of their working conditions, the primary reasons SMTs are retained, and whether SMTs' reasons for staying in their positions are associated with their backgrounds or teaching circumstances.

Looking ahead, two additional reports are planned. As a follow-up to this landscape analysis, IWERC will examine the district- and community-level factors associated with SMT retention in high-need rural districts. Concurrently, NORC will share a case study report that explores on-the-ground realities in five high-need rural districts with outsized success in SMT retention, delving into policies, practices, and strategies that contribute to SMT retention.

# Research Questions

The following questions guided this report:

1. What are the characteristics of rural and high-need rural districts in Illinois?
2. Who are the SMTs in rural and high-need rural districts?
3. What are the retention rates for SMTs in rural and high-need rural districts?

# Methods

## Data Sources

We analyze teacher-level administrative data provided by the Illinois State Board of Education (ISBE) on every Illinois teacher of record between school years 2017-2018 (labeled as SY18) and 2022-2023 (labeled as SY23). The teacher-level data included demographic information (gender, race/ethnicity), employment information (employing district, position), course assignments (subject area taught), and licensure. These data, and subsequent analyses, are only as accurate as what districts provide to ISBE. These data are also the data of record to the state and represent the state's understanding of each district's data at the time of finalization for reporting purposes.

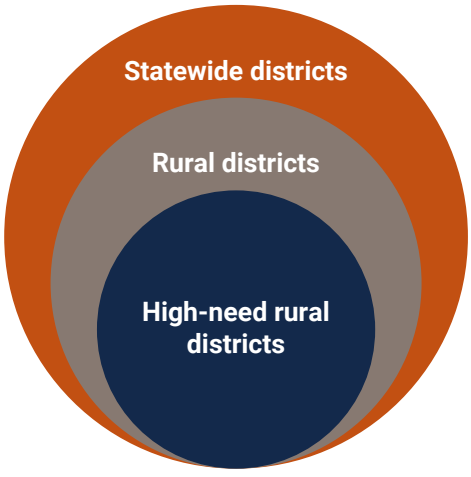
We supplement the teacher-level data with additional data from ISBE's Illinois Report Card (ISBE, n.d.a) and Unfilled Positions Data Collection (ISBE, n.d.b) as well as data from the National Center for Education Statistics (NCES, 2023, 2024) for district characteristic information and geographic data for maps.

The Supplemental Materials contain a glossary of key terms specific to this project (e.g., high-need rural districts, rural districts, SMTs) and from ISBE's Illinois Report Card.

## Identifying Rural and High-Need Rural Districts

The population for this project comprises all Illinois public school districts, which we classify into three categories—statewide, rural, and high-need rural districts—using publicly available data from ISBE and NCES for SY23. We note that the categories of rural and high-need rural districts are not mutually exclusive. Instead, *high-need rural districts are a subset of rural districts* (see Figure 1).

**Figure 1.** Categorization of Illinois public school districts into the following district types: statewide, rural, and high-need rural districts.




The following steps summarize our categorization process. First, at the highest level, the population consists of 865 ***districts statewide*** (labeled here as *statewide districts*; see ISBE, 2024a).[3] Next, to identify ***rural districts***, we referred to specifications from the NSF program solicitation (NSF 21-578 Robert Noyce Teacher Scholarship Program; see NSF, 2023) and the Rural and Low-Income School Program (U.S. Department of Education, n.d.). According to the Rural and Low-Income School Program, all schools within a rural district must have a NCES locale code of 32 (town distant), 33 (town remote), 41 (rural fringe), 42 (rural distant), or 43 (rural remote; see NCES, 2023).[4] Of the 865 districts in Illinois statewide for SY23, 426 districts

[3] To categorize districts and to identify rural and high-need rural districts, we use version 5.0 of ISBE's Illinois Report Card for SY23 (ISBE, 2024a). Version 5.0 contains 865 districts total, which differs from a later version (see, e.g., version 8.0), which contains 867 districts.

[4] If a district had one school that was not designated by the NCES locale codes specified in the Rural and Low-Income School Program (U.S. Department of Education, n.d.), which are 32 (town distant), 33 (town remote), 41 (rural fringe), 42 (rural distant), and 43 (rural remote), then that district was excluded from rural categorization.

met that rural definition.[5] Although there are highly specific federal and state rules around how districts and schools are classified as rural, we acknowledge that communities have their own views and definitions of what rural means to them. The accompanying survey report (see Gordon et al., 2026) and forthcoming qualitative component of this project explore such themes.

Lastly, to identify ***high-need rural districts***, we referred again to NSF program specifications (NSF, 2023), which outline a two-part definition based on student demographics and teacher recruitment or retention metrics. Please note that we define lower rates of teacher recruitment or retention as being below the rural district average on relevant metrics. Subsequently, 306 districts (or 35% of districts statewide) meet at least one of the additional high-need criteria. For further details on these categorizations, please see Supplemental Materials, Section A1.

In this study, **high-need rural districts** serve greater percentages of students from low-income families and experience lower rates of teacher recruitment or retention.

## Identifying the Science and Mathematics Teacher Workforce

To identify the SMT workforce in Illinois for grades 6-12, we use teacher-level data from ISBE. As with the previous section, we provide a high-level description of the decision rules that guided the identification of SMTs here. Further details can be found in Supplemental Materials, Section A2.

First, we referenced teachers' employment data, selecting teachers who held instructional positions (see Supplemental Materials, Section A2, Table SM2 for applicable position codes). We also limited our analyses to teachers whose full-time equivalent (FTE) in an instructional position was 0.85 FTE or above, which, in a preliminary analysis, accounted for approximately 96% of SMTs in high-need rural districts. Teachers with appointments less than 0.85 FTE were excluded.

In this study, a **science and mathematics teacher (SMT)** is defined as an educator with a full-time equivalent (FTE) in an instructor position of 0.85 or above who teaches at least one science or mathematics course in grades 6-12.

We also referred to teachers' course assignment data. To be considered a SMT, teachers needed to have taught at least one of the 249 science and mathematics courses for grades 6-12 listed in Supplemental Materials, Section A2, Table SM3. Career and Technical Education (CTE) science and mathematics courses were included in this list, though we do not disaggregate any of our findings by CTE or non-CTE science or mathematics courses.

We then created a metric that identified SMTs based on employment and course assignment data, regardless of teachers' licensure. When we merged employment and course assignment data for SMTs

[5] To classify rural and high-need rural districts, we use NCES locale codes from SY23 (NCES, 2023) aligning to available data (both publicly available and confidential) at the time we started this project. Please note that since then, ISBE has adopted new criteria for defining rural districts (Association of Illinois Rural and Small Schools, 2026).

with licensure data, SMTs held a variety of licenses (for license types, please see Supplemental Materials, Section A4), though nearly all SMTs had a Professional Educator License (PEL).[6]

**A Note on Agriculture**

Throughout this report series, we discuss science and mathematics as defined in ISBE's course catalog and by the NSF Robert Noyce Teacher Scholarship Program. This definition does not include agriculture as science. We acknowledge that agriculture is an important subject that many students, teachers, researchers, and other stakeholders would define as science, particularly when it comes to the central role agriculture can have in rural communities. We understand this omission is a limitation of our study, and as such, this project may lack a complete understanding of rural SMT working conditions and retention in Illinois.

## One- and Three-Year Retention Rates

To calculate SMT retention, we present two metrics: a one-year calculation and a three-year calculation. To generate the three-year retention rate for SMTs, we consulted ISBE's retention metric, which was one of the recruitment and retention metrics used to identify high-need rural districts (see Table 1). ISBE calculates retention as "the total number of full-time teachers staying in the same district in the past three years, divided by the total number of full-time teachers from the past three years" (ISBE 2024b, p. 25).

For this project, we broaden ISBE's definition of full-time as being 1.0 FTE to include SMTs with a .85 FTE and higher to be more inclusive of teachers (see Supplemental Materials, Section A2, for more information). We also add one stipulation: SMT retention refers specifically to *retention of SMTs as SMTs* in a district, rather than retention of teachers overall.[7]

A one-year retention rate allows us to account for variation across years. A three-year retention rate allows us to more readily compare the retention of all teachers (from publicly available ISBE data) to the retention of SMTs (from confidential teacher-level data).[8]

We use the equation below to calculate a ***three-year SMT retention rate***, with head count referring to the total number of SMTs employed by a district:

**Equation 1.** Three-year science and mathematics teacher (SMT) retention rate equation.

$$SY23\ three\text{-}year\ retention\ (\%) = (Head\ count\ of\ SMT\ stayers\ in\ SY23\ from\ SY22 + head\ count\ of\ SMT\ stayers\ in\ SY22\ from\ SY21 + head\ count\ of\ SMT\ stayers\ in\ SY21\ from\ SY20)/(Head\ count\ of\ SMTs\ in\ SY22 + head\ count\ of\ SMTs\ in\ SY21 + head\ count\ of\ SMTs\ in\ SY20) \times 100$$

[6] In this report we aggregate PEL and CTE licensures together into one category, referred to as PEL/CTE Endorsement, per ISBE recommendations for interpretability. Within this category, in SY23, approximately ≥ 99% of SMTs have PELs, and ≤1% have CTE Endorsements for all district types (statewide, rural, and high-need rural districts).
[7] Retention calculations include turnover from routine events such as retirement.
[8] Both one- and three-year retention rates have trade-offs. While a one-year retention rate can reveal year-to-year changes, it can also be more sensitive to yearly fluctuations in staffing changes, especially in districts with smaller staff sizes. A three-year retention rate, on the other hand, levels out year-to-year fluctuations, but can also obscure them.

We also calculate a ***one-year SMT retention rate*** using the following equation:

**Equation 2.** One-year science and mathematics teacher (SMT) retention rate equation.

$$SY23\ one\text{-}year\ retention\ (\%) = Head\ count\ of\ SMT\ stayers\ in\ SY23\ from\ SY22\ /\ Head\ count\ of\ SMTs\ in\ SY22 \times 100$$

In this study, **science and mathematics teacher (SMT) retention** is defined as retention of SMTs as SMTs in a district, rather than retention of teachers overall.

### Cross-Sectional Focus

The current descriptive landscape analysis is longitudinal, spanning SY18 to SY23. But because the descriptive trends observed were relatively stable over time, the focus of this report is to provide a snapshot of SY23. Accordingly, not all tables and figures are included in this report for brevity. More detailed descriptive tables, calculations, and findings from prior years are included in Supplemental Materials.

### Disclosure Proofing

In this report, we adhere to ISBE and statewide longitudinal data systems disclosure-proofing best practices and round all reported values to the nearest whole number for findings derived from confidential teacher-level data (Institute for Education Sciences & NCES, 2010).

# Results

We conduct a descriptive landscape analysis to understand the characteristics of rural and high-need rural districts and the SMTs who work in these districts. Because these data comprise the entire population of districts, the results observed are not subject to occurring by chance. Thus, we do not perform significance testing to compare differences across these categories.

## Part 1. What are the Characteristics of Rural and High-Need Rural Districts?

In Table 1, we provide descriptive findings for all districts statewide (N = 865), rural districts (n = 426), and high-need rural districts (n = 306). Because the NSF program solicitation defining high-need rural districts provided broad specifications as to what constitutes lower rates of teacher recruitment or retention (NSF, 2023), we use publicly available data to determine appropriate cutoffs for relevant metrics (e.g., teacher vacancy rates, teachers on short-term or provisional licenses, teacher retention). We include the population of districts in this analysis to obtain a holistic understanding of teacher recruitment and retention overall in Illinois. We also include student enrollment information for context.

Table 1 displays summary statistics for student enrollment and teacher recruitment and retention (a three-year rate) metrics—for teachers of all positions and subjects—by district type of statewide, rural, and high-need rural districts. Recruitment metrics include vacancy rates, the percentage of teachers on short-term or provisional licenses, and the percentage of out-of-field teachers.

**Table 1.** District averages for student enrollment and teacher recruitment and retention metrics—for teachers of all positions

| | Statewide districts (N = 865) | | | Rural districts (n = 426) | | | High-need rural districts (n = 306) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean | Standard deviation | Range | Mean | Standard deviation | Range | Mean | Standard deviation | Range |
| **Student enrollment** | 2,114 | 11,201 | [29, 319,769] | 642 | 624 | [29, 6,240] | 571 | 615 | [29, 6,240] |
| **Low-income students** | 45% | 22 | [1, 100] | 46% | 17 | [3, 100] | 48% | 16 | [7, 100] |
| **Teacher retention (3-year rate)** | 89% | 6 | [29, 100] | 88% | 6 | [53, 100] | 87% | 6 | [54, 100] |
| **Short-term/ provisional license** | 4% | 5 | [0, 60] | 5% | 6 | [0, 60] | 6% | 6 | [0, 60] |
| **Vacancy rate** | 3% | 5 | [0, 40] | 4% | 6 | [0, 40] | 5% | 6 | [0, 40] |
| **Out-of-field teachers** | 6% | 7 | [0, 60] | 9% | 9 | [0, 60] | 11% | 9 | [0, 60] |

Note: This table includes all districts for SY23 in order to determine cut-offs. The metric for out-of-field teachers is not specific to science and mathematics and instead pertains to teachers of all grades and content areas. The Supplemental Materials contain a glossary of key terms.

As shown in Table 1, high-need rural districts have, on average, more difficulty recruiting and retaining qualified teachers of all instructional positions and subjects, compared to rural and statewide districts. High-need rural districts have slightly lower retention rates and slightly higher vacancy rates of teachers in all positions and subjects by 1 to 2 percentage points; higher proportions of teachers of all positions and subjects who are on short-term or provisional licenses; and higher proportions of teachers of all positions and subjects who are considered out of field. Both the plurality of high-need rural districts and the specific staffing challenges they experience point to the need to examine SMT retention in these districts.

After identifying rural and high-need rural districts, we sought to understand how these districts varied in relation to each other and to districts across the state. Table 2 shows district averages for selected metrics from SY23 (ISBE, 2024a), inclusive of all grades served, related to student identifiers (e.g., race/ethnicity, income, English language learners, disability status, individualized education programs, or IEPs), student behavior and outcomes (e.g., attendance and high school graduation), teacher identifiers (e.g., gender and race/ethnicity), district working conditions, and state funding levels (e.g., Evidence-Based Funding, or EBF; please see the glossary in Supplemental Materials for all term definitions).

Please note that findings for Table 2, and for the entirety of Parts 2 and 3, are presented for 802 districts statewide, 390 rural districts, and 277 high-need rural districts. The number of districts in these sections are smaller because we are linking to confidential, longitudinal teacher-level data that was cleaned to exclude districts with missing SMT data (see Supplemental Materials, Report 1, Section 1).

**Table 2.** District averages for student, teacher, and district characteristics in SY23 (ISBE, 2024a) for statewide, rural, and high-need rural districts.

| | Statewide districts (N = 802) | Rural districts (n = 390) | High-need rural districts (n = 277) |
|---|---|---|---|
| **Student identifiers** | | | |
| American Indian and Alaska Native (AIAN) | ≤1% | ≤1% | ≤1% |
| Asian | 7% | 2% | 2% |
| Black/African American | 15% | 6% | 8% |
| Hispanic/Latino | 18% | 9% | 10% |
| Native Hawaiian and Pacific Islander (NHPI) | ≤1% | 2% | 2% |
| Two or more races | 5% | 4% | 5% |
| White | 70% | 87% | 87% |
| English learners | 13% | 7% | 8% |
| Homeless | 4% | 6% | 7% |
| Low-income | 45% | 46% | 48% |
| Students with disabilities | 18% | 18% | 18% |
| Students with individualized education programs (IEP) | 15% | 16% | 17% |
| **Student behavior and outcomes** | | | |
| Attendance rate | 93% | 93% | 93% |
| High school graduation rate (4-year) | 88% | 87% | 86% |
| **Teacher identifiers** | | | |
| Female | 78% | 79% | 78% |
| Male | 22% | 22% | 22% |
| AIAN | ≤1% | 1% | 1% |
| Asian | 2% | 2% | 3% |
| Black/African American | 8% | 4% | 5% |
| Hispanic/Latino | 5% | 3% | 3% |
| NHPI | ≤1% | 2% | 2% |
| Two or more races | 2% | 3% | 4% |
| White | 91% | 96% | 95% |
| Unknown | 5% | 6% | 7% |
| **Working conditions** | | | |
| Average teacher salary | $62,572 | $53,379 | $51,692 |
| Average teacher experience | 14 years | 14 years | 13 years |

| | Statewide districts (N = 802) | Rural districts (n = 390) | High-need rural districts (n = 277) |
|---|---|---|---|
| Novice teachers | 8% | 9% | 10% |
| Principal turnover (count of different principals at the same school in the last six years) | 2 | 2 | 2 |
| **Evidence-Based Funding (EBF) tier** | | | |
| Tier 1 | 39% | 39% | 39% |
| Tier 2 | 31% | 36% | 38% |
| Tier 3 | 8% | 9% | 8% |
| Tier 4 | 21% | 16% | 15% |
| **Average district student enrollment** | **2,214** | **678** | **602** |

Note: Districts included in this table, and subsequent tables, have complete data for all years included in our analysis. In addition, seven districts do not have EBF tier assignments. The Supplemental Materials contain a glossary of key terms.

In Table 2, similarities in district averages for student, teacher, and district characteristics abound.[9] Across district types, the following metrics are comparable: rates of four-year high school graduation and student attendance; proportions of students from low-income families (i.e., low-income students), students with disabilities, and students with IEPs; gender composition of the teacher workforce; proportion of novice teachers; average teacher experience; and rate of principal turnover.

At the same time, several salient differences surface. With regard to student identifiers, while the majority of students in rural and high-need rural districts identify as White, high-need rural districts have slightly higher average percentages of students who identify as Black/African American, compared to rural districts. In addition, high-need rural districts have a higher average percentage of students who experience homelessness compared to districts statewide, though rates are similar between rural and high-need rural districts.

With regard to teacher identifiers, the majority of the teacher workforce identify as White, though average representation is slightly higher in rural and high-need rural districts compared to statewide districts, by 5 percentage points and 4 percentage points respectively. Representation of teachers identifying in other racial/ethnic populations is similar across district types.

District working conditions also varied by district type. Teachers in high-need rural districts earn about $10,800 less on average per year compared to the statewide average and about $1,600 less on average per year compared to all rural districts. We note, however, that such salary differences may, in part, reflect regional variations in cost of living, with higher average salaries correlating with regions that have higher living expenses (see, e.g., Withee & Beilstein, 2022).

Rural and high-need rural districts were also less likely to be in EBF Tier 4, districts with more than adequate funding, compared to districts statewide.[10] Lastly, average district student enrollment is lower in rural (average of 678 students) and high-need rural districts (average of 602 students) relative to

[9] When relevant, we highlight differences between district types when those differences were separated by at least 5 percentage points, a 25% increase or decrease, or a 25% difference (see Supplemental Materials, Report 1, Section 2 for percentage change and percentage difference formulae).
[10] ISBE assesses districts' needs for state funding using the EBF formula. Tier 1 districts are furthest from funding adequacy: These districts need and receive the most state funding. Tier 4 districts have more than adequate funding: These districts need and receive the least state funding.

districts statewide (average of 2,214 students), though average district student enrollment between rural and high-need rural districts is similar.

## Part 2. Who are the Science and Mathematics Teachers in Rural and High-Need Rural Districts?

In SY23, there were approximately 133,160 teachers, of all instructional positions and subjects, employed in all districts statewide. Rural districts employed 21,350 teachers, and high-need rural districts employed 13,780 teachers (ISBE, 2024a). SMTs constituted 19% of the overall teacher workforce in that same year with approximately 25,500 SMTs employed across all districts, 4,200 in rural districts, and 2,800 in high-need rural districts. For context, from SY18 to SY23, the total head count of SMTs increased by 4% for all districts (see Supplemental Materials, Report 1, Section 3, Table SM6).

Table 3 shows representation of SMTs by gender, race/ethnicity, licensure, and subjects taught for districts statewide and for rural and high-need rural districts. Here, the percentages are calculated out of the total number of SMTs employed in each district type (e.g., of the roughly 25,500 SMTs statewide, 69% are women).

**Table 3.** Representation of science and mathematics teachers (SMTs) by subjects taught, gender, race/ethnicity, and licensure for all districts statewide, rural districts, and high-need rural districts in SY23.

| | Statewide districts (N = 802) | Rural districts (n = 390) | High-need rural districts (n = 277) |
|---|---|---|---|
| **Gender** | | | |
| Female | 69% | 73% | 74% |
| Male | 31% | 27% | 26% |
| **Race/ethnicity** | | | |
| AIAN | ≤1% | ≤1% | ≤1% |
| Asian | 3% | ≤1% | ≤1% |
| Black/African American | 6% | ≤1% | ≤1% |
| Hispanic/Latino | 5% | ≤1% | ≤1% |
| NHPI | ≤1% | ≤1% | ≤1% |
| Two or more races | ≤1% | ≤1% | ≤1% |
| White | 84% | 97% | 96% |
| Unknown | 1% | 2% | 2% |
| **Licensure** | | | |
| Professional Educator License (PEL) /Career and Technical Education (CTE) Endorsement | ≥99% | ≥99% | ≥99% |
| Provisional | ≤1% | ≤1% | ≤1% |
| Paraprofessional | ≤1% | ≤1% | ≤1% |

| | Statewide districts (N = 802) | Rural districts (n = 390) | High-need rural districts (n = 277) |
|---|---|---|---|
| **Subject area** | | | |
| **SMT only** | 54% | 45% | 42% |
| Mathematics only | 30% | 25% | 23% |
| Science only | 22% | 18% | 17% |
| Both science and mathematics | 2% | 2% | 2% |
| **SMT + other subjects** | 46% | 55% | 58% |
| Mathematics + other subjects | 20% | 25% | 26% |
| Science + other subjects | 13% | 14% | 15% |
| Both science and mathematics + other subjects | 13% | 15% | 16% |

Note: For the licensure types that were included in the provisional category, please see Supplemental Materials, Section A4.

From Table 3, we highlight several noteworthy findings. Regarding demographics, women make up the majority of SMTs across all district types, but representation of women SMTs is slightly higher in rural (73%) and high-need rural districts (74%), relative to all districts statewide (69%) in SY23. From SY18 to SY23, representation of men SMTs increases statewide (5% increase), but decreases in rural (6% decrease) and high-need rural districts (5% decrease; see Supplemental Materials, Table SM6).

In SY23, the majority of SMTs identify as White, and nearly all SMTs hold a PEL or CTE Endorsement (PEL/CTE). For description of the license types that constitute the provisional category, please see Supplemental Materials, Section A4.

With regard to subject area, a higher percentage of SMTs are mathematics teachers as opposed to science teachers, across district types, though additional variation exists. First, in SY23, the statewide percentage of SMTs teaching only science and/or mathematics courses (i.e., no additional assignments in other subjects) is 54%, which is higher than rural (45%) and high-need rural (42%) districts.

Longitudinally, from SY18 to SY23, the percentage of SMTs who teach only science and/or mathematics courses grows more for all districts statewide (10% increase), compared to rural districts (1% increase; see Supplemental Materials, Table SM6). In contrast, the percentage of SMTs who teach only science and/or mathematics courses drops for high-need rural districts (4% decrease). Furthermore, within this group, only 2% of SMTs teach both science and mathematics in SY23: This is true for all district types.[11] The remaining SMTs who either teach mathematics only or science only show higher representation among mathematics-only teachers, again for all district types.

Second, a higher percentage of SMTs with additional assignments in other subjects is found in high-need rural districts (58%) and rural districts (55%), compared to all districts statewide (46%) in SY23. From SY18 to SY23, percentages of SMTs with additional assignments in other subjects rose slightly in high-need rural districts (2% increase), while lowering slightly for all districts statewide (3% decrease) and staying the same for rural districts (0% change; see Supplemental Materials, Table SM6).

[11] While our analysis does not disaggregate courses by middle or high school due to the structure of our data, Gordon et al.'s (2026) survey of rural SMTs found that a higher proportion of SMTs teaching both science and mathematics worked in middle schools compared to high schools.

Within the group of SMTs with additional assignments in other subjects, a higher percentage of SMTs teach mathematics only in addition to other subjects, relative to teaching science only or science and mathematics in addition to other subjects in SY23. Most commonly, these SMTs are assigned to teach English language and literature, social sciences and history, miscellaneous (e.g., study hall, workplace experience), physical health and safety education, and human services (e.g., family and consumer sciences, workplace experience).

It is important to note a limitation of these data: Within the group of SMTs with additional assignments in other subjects, we do not ascertain which subject areas they were qualified to teach, as we do not include teaching endorsements in this analysis. So, it could be that we have teachers who were qualified to teach English language and literature, for example, but not science and mathematics. The opposite could also be true in that the teachers were qualified to teach science and mathematics, but not English language and literature. Or, it could be that working in a rural setting requires teachers to hold multiple endorsements, given the lower number of students and thus potentially lower number of sections of specific subject-area courses. This is a worthy area for future research.

## Part 3. What are the Retention Rates for Science and Mathematics Teachers in Rural and High-Need Rural Districts?

Table 4 shows district averages for one- and three-year SMT retention rates for all districts statewide and for rural and high-need rural districts. Before presenting results, we raise two important contextual points for consideration. First, we note that SMT retention refers specifically to *retention of SMTs as SMTs* in a district, rather than retention of teachers overall. For example, if a SMT were to *no longer* teach science or mathematics from one school year to the next but were to stay as a teacher in that same district, they would *not* be classified as being retained as a SMT in that district. They would, however, be classified as being retained as a teacher of all instructional positions and subjects in that district.

Next, because our study aims to contribute to research on equitable schooling in rural districts and schools, we intentionally draw comparisons for average district retention between rural and high-need rural districts with all districts statewide. We understand that readers may want comparisons with non-rural districts. As such, we also calculated one- and three-year SMT retention rates for non-rural districts. We found that non-rural district averages for SMT retention are similar to statewide averages (e.g., non-rural districts averaged 78% for one-year retention and 79% for three-year retention in SY23). Table 4 displays district averages for one- and three-year SMT retention rates for statewide, rural, and high-need rural districts in SY23.

**Table 4.** District averages for one- and three-year retention rates of science and mathematics teachers (SMTs) for statewide, rural, and high-need rural districts in SY23.

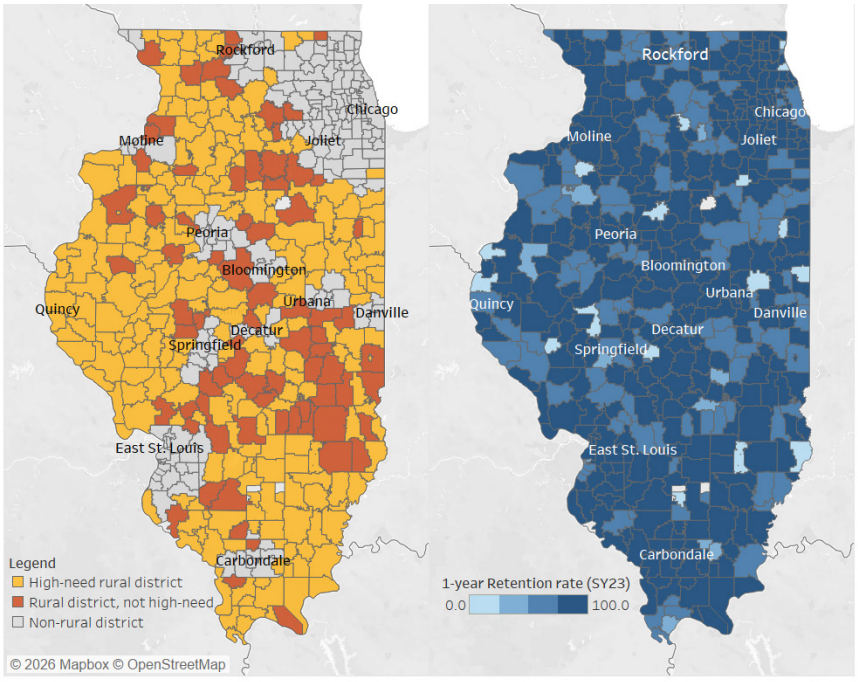
| | Statewide districts (N = 802) | | Rural districts (n = 390) | | High-need rural districts (n = 277) | |
|---|---|---|---|---|---|---|
| | 1-year | 3-year | 1-year | 3-year | 1-year | 3-year |
| **Overall** | 78% | 79% | 78% | 78% | 76% | 76% |
| **Range** | [0, 100] | [0, 100] | [0, 100] | [0, 100] | [0, 100] | [0, 100] |
| **Standard deviation** | 17.7 | 12.4 | 19.8 | 13.9 | 21.4 | 14.4 |

From Table 4, we conclude that district averages for one- and three-year SMT retention rates for all district types are relatively close, ranging from 76% to 79% in SY23. Additionally, one-year retention rates from SY19 to SY23 have remained stable with little variation (see Supplemental Materials, Table SM14). However, there is wide variation in the range of retention rates at the district level in SY23, with a minimum of 0% and a maximum of 100%. Furthermore, the variation observed between district types differ, with high-need rural districts and rural districts having more variation (i.e., larger standard deviations), on average, than all districts statewide.

Notably, across all district types, SMTs are retained, using the three-year calculation, at a lower rate by almost 10 percentage points, compared to teachers in general (see Table 1). To illustrate, the district average three-year retention rate for teachers of all instructional positions and subjects from the Illinois Report Card in SY23 is 86% for all districts statewide, 86% for rural districts, and 85% for high-need rural districts, when comparing to the same subset of districts for which no SMT workforce data are missing (ISBE, 2024a).

Figure 2 maps high-need rural and rural districts in the state as well as one-year SMT retention rates for each high school and unit school district.[12] Many of the districts in the state have high one-year retention rates, aligning to Table 4. Comparing maps side by side, many of the areas experiencing lower SMT retention rates are in the larger swaths of high-need rural districts, particularly in central Illinois.

**Figure 2.** Map of Illinois showing high-need rural, rural that are not high-need, and non-rural high school and unit districts (left) and one-year science and mathematics teacher (SMT) retention rates in those districts for SY23 (right).




Note: Gray districts on the retention map (right) are either districts with no retention data or are elementary school district boundaries not shown in this map. For one-year retention rates, exact ranges were as follows: 0-24.9%, 25.0-49.9%, 50.0-74.9%, 75.0-100%.

[12] For ease of interpretation, we visualize only high school and unit school district boundaries due to the overlapping nature of high school and elementary school district boundaries. See Supplemental Materials, Figure SM1, for similar maps with elementary school district boundaries.

We also calculate district averages for one-year SMT retention rates by gender, race/ethnicity, licensure, and subject area. SY23 results are found in Tables 5 and 6. District averages of three-year SMT retention rates can be found in Supplemental Materials, Table SM15. Similar to the analysis of SMT retention overall, when calculating SMT retention by gender, race/ethnicity, licensure, and subject area, we only account for whether districts retain SMTs in each specific subgroup (e.g., regarding subject-specific retention, we calculate whether mathematics-only SMTs are retained as mathematics-only SMTs).

Table 5 displays district averages of one-year SMT retention rates for variables—race/ethnicity, gender, and licensure—that we assume to be relatively time invariant, meaning that their values for most individuals stay the same from one year to the next. We do acknowledge that, for some individuals, changes in these variables could occur over time. For example, a SMT could move from having provisional license one year to PEL/CTE in the next; however, such circumstances would be rare. Future research could examine how progression in licensure relates to retention.

**Table 5.** District averages for one-year retention rates of science and mathematics teachers (SMTs) by gender, race/ethnicity, and licensure for statewide, rural, and high-need rural districts in SY23.

| | Statewide districts (N = 802) | Rural districts (n = 390) | High-need rural districts (n = 277) |
|---|---|---|---|
| **Gender** | | | |
| Female | 78% | 78% | 76% |
| Male | 79% | 79% | 78% |
| **Race/ethnicity** | | | |
| AIAN | 54% | -- | -- |
| Asian | 79% | 75% | 72% |
| Black/African American | 69% | 55% | 50% |
| Hispanic/Latino | 76% | 76% | 73% |
| NHPI | 75% | -- | -- |
| Two or more races | 69% | 82% | -- |
| White | 78% | 78% | 77% |
| Unknown | 63% | 54% | 53% |
| **Licensure** | | | |
| PEL/CTE | 78% | 78% | 76% |
| Provisional | 27% | 20% | 0% |
| Paraprofessional | 22% | 25% | 28% |

Note: The sample sizes for statewide, rural, and high-need rural districts differ for subgroups. Cells with dashes did not meet the criterion that districts have at least one SMT across the six years of data included in this study.

Here, we highlight several findings from Table 5. Regarding gender, women and men SMTs are retained at similar rates, on average. Additionally, average retention rates for women and men SMTs do not vary across district types. Regarding race/ethnicity, retention rates for districts statewide are lower, on average, for SMTs who identify as American Indian and Alaska Native (AIAN), Black/African American, two or more races, and unknown, when compared to SMTs who identify as Asian, Hispanic/Latino, Native Hawaiian and Pacific Islander (NHPI), and White. Additionally, average retention rates of SMTs who

identify as White do not vary across district types. Regarding licensure, average retention rates for SMTs with PEL/CTE credentials also do not vary across district types.

Comparisons across district type for many race/ethnicity and licensure categories are difficult due to small cell sizes. Table SM13 in Supplemental Materials displays counts of districts used in these calculations. For instance, rural and high-need rural districts retain Black/African American SMTs at a lower rate, on average, compared to statewide districts. However, we interpret this finding with caution for a few reasons: First, the number of rural and high-need rural districts that employ Black/African American SMTs is low. Second, the number of Black/African American SMTs on staff within those districts is also low. As a result, retention rates for these districts are more prone to variance. A similar rationale can be applied to differences in average retention rates across district types for SMTs with provisional and paraprofessional licenses.

Nevertheless, in rural and high-need rural districts, retention of Black/African American SMTs is disproportionately low, on average, when compared to SMTs of other racially marginalized groups (e.g., Asian and Hispanic/Latino SMTs), who are represented in these districts to a similar degree (<1%). Retention rates of Asian and Hispanic/Latino SMTs are much higher, on average, than Black/African American SMTs, by approximately 20 percentage points, and also closer to the retention rates of their White colleagues. In addition, retention of Black/African American SMTs in high-need rural districts is lower than rural districts, on average; yet high-need rural districts serve slightly higher percentages of Black/African American students compared to rural districts.

Table 6 displays district averages of one-year SMT retention rates for a variable, subject area, we assume to be more time-variant, meaning that values in the subject areas SMTs teach could more readily change from one year to the next. As an example, it could be that a SMT who does not teach additional subjects one year, could then add on a physical education course the subsequent year. In our analysis, again due to how we structured the data, this SMT would not be retained in a district as a science and/or mathematics-only teacher. For example, from SY22 to SY23, 11% of SMTs switched categories from being SMT only to SMT with other subjects, or vice versa, for all district types.

In both examples of calculating retention within the subcategories of licensure or subject area, we stress that these teachers would be counted as a retained SMT—in the broadest sense—for that district. However, they would not be counted as being retained in that specific subcategory.

**Table 6.** District averages for one-year subject-specific retention rates of science and mathematics teachers (SMTs) by courses taught for statewide, rural, and high-need rural districts in SY23.

| | Statewide districts (N = 802) | Rural districts (n = 390) | High-need rural districts (n = 277) |
|---|---|---|---|
| **Subject area** | | | |
| **SMT only** | 74% | 75% | 72% |
| Mathematics only | 74% | 74% | 70% |
| Science only | 76% | 76% | 71% |
| Both science and mathematics | 48% | 55% | 56% |
| **SMT + other subjects** | 64% | 66% | 66% |
| Mathematics + other subjects | 54% | 56% | 55% |
| Science + other subjects | 57% | 63% | 65% |

| | Statewide districts (N = 802) | Rural districts (n = 390) | High-need rural districts (n = 277) |
|---|---|---|---|
| Both science and mathematics + other subjects | 52% | 53% | 52% |

Despite these limitations, for one-year, subject-specific retention rates, SMTs with additional assignments in other subjects are retained at lower rates, on average, than SMTs who only taught science and/or mathematics, by 5 to 10 percentage points in SY23. Again, we emphasize that these SMTs are retained at lower rates in their specific subject assignments, rather than being a SMT overall.

This finding points to the need to conduct future research examining individual-level trajectories and retention not only in terms of changes in course assignments, and relatedly courseloads, but also in licensure (e.g., movement from paraprofessional or provisional to PEL/CTE). Future studies could also more closely look at differences in SMT retention by rurality (e.g., rural districts compared to town districts) and also by NCES locale subtype (i.e., comparing districts that are rural remote, rural fringe, rural distant, etc.).

# Conclusion

In this report, we present a descriptive landscape of the rural and high-need rural districts in Illinois and the characteristics of their SMT workforce. Our goal was to set the stage for a larger, mixed-methods project that aims to help districts better understand the factors and working conditions that encourage SMTs to stay in their schools. And although much research has investigated SMT retention as well as rural teacher retention, fewer studies examine their intersection. Key results from this study are as follows:

**Overall, SMTs are retained at a lower rate, by approximately 10 percentage points, when compared to teachers of all positions and subjects.** In SY23, the district average three-year retention rate for SMTs was 79% across all districts statewide, 78% in rural districts, and 76% in high-need rural districts. For teachers of all instructional positions and subjects, the district average three-year retention rate was 86% across all districts statewide, 86% in rural districts, and 85% in high-need rural districts. We note that SMT retention refers specifically to *retention of SMTs as SMTs* in a district, rather than retention of teachers overall.

This finding aligns with existing literature showing that, historically, SMTs have higher turnover (Carver-Thomas & Darling-Hammond, 2019) as well as higher numbers of unfilled positions compared to other subject areas (Beilstein & Withee, 2022a, 2022b, 2023).

**SMT retention rates, on average, are relatively similar for all districts statewide, rural districts, and high-need rural districts. Yet, there is substantial variation in SMT retention between district types.** Rural and high-need rural districts had larger variation in SMT retention rates, on average, relative to all districts statewide, which could be due to smaller staff sizes or other district or community factors.

**A higher percentage of SMTs in rural and high-need rural districts are assigned courses in additional subjects, compared to all districts statewide.** These subjects include English language and literature, social sciences and history, physical health and safety education, and human services. Connecting to prior research, SMTs in rural schools have been frequently found to teach multiple courses within or outside their main specialization, which can increase teacher workload burden (Marder et al., 2017; Patterson, 2003).

Results highlight the need to examine the factors that contribute to SMT retention, particularly in rural and high-need rural districts. Rural SMT vacancies sit at the interface of harder-to-staff subject areas within harder-to-staff rural districts. Indeed, findings indicate that rural and high-need rural districts have, on average, higher vacancy rates for teachers in general (i.e., of all instructional positions and subjects), compared to all districts statewide, consistent with previous national findings (Ingersoll & Tran, 2023). But, despite the difficulties rural and high-need rural districts contend with in recruiting teachers overall, as indicated by not just lower vacancy rates, but also higher percentages of teachers who are out of field and who have short-term or provisional licenses, findings also suggest that these districts are retaining the SMTs they are able to hire at a similar rate to all districts statewide.

In a forthcoming report, we will examine district and community factors associated with SMT retention in high-need rural districts.

To enrich this quantitative landscape, our project partners at NORC have released results from a survey of rural SMTs, exploring their perceptions of working conditions, their reasons for staying in their positions, and more (see https://www.norc.org/research/projects/retaining-rural-science-and-math-teachers.html).

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