

The Case of Rivuline School District (#WI-02)

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Introduction to the cases

The case presented here is drawn from a larger national study investigating the 5-year science teacher retention rates in four U.S. states (New Jersey, North Carolina, Pennsylvania, and Wisconsin).¹ This study has two distinct phases. In the first phase, researchers used publicly available staffing data from 2007-2018 to construct a 5-year retention map for six cohorts of novice science teachers in each state. This approach differs from sample-based retention studies because full data permitted our team to map the career trajectories of each individual science teacher for a more comprehensive picture of teacher retention, mobility, and attrition. For example, in sample-based studies, the departure of a teacher at the end of one year might simply be categorized as attrition. In viewing a 6-year trajectory, we were better able to identify teachers who left a position in a given year not simply as attrited, but possibly as having transferred to a different district (mobility) or taken a year off and then returned (such as for parental leave.)

After analyzing individual teachers' career trajectories, we calculated the 5-year retention rate of newly hired science teachers in each cohort for the years 2007-2012 for each school district. This analysis informed the second phase of the research, in which five districts per state were identified for a more detailed case study on the factors influencing science teacher retention. Districts were sorted initially for higher-than-average rates of retention, and we focused on those in the top 10% in the state. We then attempted to diversify our selection of districts by looking at factors such as school size, location within each state, type of community (urban, rural, suburban,) and relative wealth of the district. We also looked for districts that had hired (and retained) teachers of color and teachers whose teacher education programs had been funded by the National Science Foundation's Noyce Teacher Scholarship Program, which was created to meet the need for well-prepared STEM teachers in the United States.

The district described here was one of those selected in the state of Wisconsin, and a separate state teacher policy case study covering the time period of this study is available on the project website. The district name is presented as a pseudonym for purposes of confidentiality. The names and position titles are similarly obscured in this case, and also in the larger study, in order to preserve internal confidentiality as well.

For further information about the study, please visit: <http://www.montclair.edu/IMPREST>

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Situated on the western shore of Lake Michigan, the city of Rivuline comprises a significant part of the largest metropolitan area in Wisconsin, and as such possesses many of the characteristics, complications, and contradictions of modern U.S. cities. Throughout its history, the area has settled multiple waves of immigrants from Europe, most notably from Germany and Poland, and then later became a destination for those fleeing racial terror from the south (Wilkerson, 2010). Today, according to the U.S. Census, Rivuline has one of the most genuinely diverse urban populations outside of the nation's large coastal cities. Despite such demographic diversity, residential segregation in Rivuline through redlining was regularly practiced and enforced from the 1930s onward, leading to patterns of racial isolation that persist well into the present (Rothstein, 2017).

Rivuline has one of the largest and most diverse school districts in the state, with over 100 schools serving nearly 70,000 students, 85% of whom are categorized in state reporting documents as economically disadvantaged. While only about 10% of Rivuline students identify as White, nearly 75% of its teachers do. At the same time, the Rivuline School district employs more teachers of color—both in raw numbers and as a percentage of its workforce—than any other district in Wisconsin.

The wider region that includes Rivuline has historically been fertile ground for a range of experimentation in the delivery of education, such as magnet schools, charter schools, voucher programs, and home-schooling. Perhaps not unrelatedly, it has also been a center for teacher union activism, which has tapped into the area's significant history of progressivism and collective action during Wisconsin's recent political upheavals.

Like the other districts in this study, Rivuline was selected for its higher-than-average retention of science teachers in the state. At the time of selection, Rivuline School District had retained 41 of its novice science teachers, which equaled 67% of the total novice science teachers hired between 2007–2012. All but four of the novice science teachers hired during this period were identified as White. However in the same period, a total of 24 novice science teachers of color were hired in 10 different districts in the state and only seven of these teachers were retained. The four science teachers of color retained in Rivuline therefore constituted a majority in the state during this period.

Our data collection focused on a sample of teachers from three of the district schools at the secondary level where the novice science teacher retention rate was the highest. We interviewed seven individuals in the Rivuline School District, including five retained science teachers and two district administrators. The primary goal of the interviews was to better understand the factors that may have influenced teacher retention during the focus period of the study (2007-2018) and to also investigate current practices around the mentoring and induction of new science teachers.

Findings

As a result of this site visit and subsequent data analysis, we posit four factors that likely influenced the high science teacher retention rate observed in the Rivuline School District. These are: (1) the structural advantages of a large district, (2) the support from colleagues, (3) salary and benefits, and (4) personal satisfaction. We also review evidence that offers some explanation for the retention of teachers of color in the district. We close with a review of the role of the district's mentoring and induction policies on teacher retention in Rivuline.

Factor #1: The Structural Advantages of a Large District

Between 1940 and 1990, a school district consolidation movement across the United States proceeded with the assumption that larger school districts would be able to offer greater professional leadership, fiscal efficiency and curricular benefits to students as a consequence of their scale (Driscoll et al., 2003; Strang, 1987). While Rivuline's growth throughout the 20th century was largely population-driven, many of the arguments for large comprehensive school districts across the country looked to Rivuline as an existence proof of what was possible in a large district.

As one of the largest school districts in Wisconsin, the size of the Rivuline School District worked as a structural benefit for novice science teacher retention in several ways according to the district teachers and administrators interviewed for this study. These included: targeted science teacher support, the availability of resources, autonomy as a consequence of "benign neglect", within-district job mobility, and a strong and active teachers union. In this first section, we address each of these factors related to district size in turn.

Targeted Science Teacher Support. Rivuline teachers greatly valued the fact that there was a district-level office with a "small team whose whole job" is to provide support to science teachers. This meant that science teachers could quickly get the answers and resources they needed.

Staff at this office provide resources for science teachers such as an online repository of pacing guides and course curricula, professional development on the Next Generation Science Standards (NGSS), guidance on securing grants for and with science teachers, as well as offering personalized assistance with science pedagogy. According to a staff member, this level of individual assistance is "something my team has really been focused on. You've never done a lab? Okay we'll come in and do one with you."

Availability of Resources. Though being in a large district is hardly a guarantee of adequate resources for teaching, the Rivuline teachers and administrators felt that the current financial state of the district was sound, and that they were well-resourced in their science classrooms. "We actually have a lot of technology that my friends at other districts got a lot later than we did. Smartboards, Chromebooks, all the bells and whistles of being a teacher are pretty normal here."

Science teachers, particularly in advanced courses, often need specialized lab equipment and classroom space. As such, the availability of physical resources in Rivuline was an important

factor in helping teachers feel like they were well-equipped to do their jobs. One teacher described an observation during his job interview: “Wow, this is nice - there's a dishwasher here!” He ended up accepting the job in that school and has remained in the very same classroom for the past 20 years. “You get kind of attached to your equipment, you know, that probably other teachers don't have. Rivuline tends to have fairly nice, well-stocked science rooms.”

However, this feeling was not universal throughout the district. Another teacher from a smaller school told us “It is not an equitable district. Some schools get more than other schools.” She also said, “We have plenty of beakers, but when we run out of chemicals, we don't have a budget to buy more.” This idea of inequity was echoed by another teacher at a different school:

Your ability to do hands-on materials depends on the school you're in. I lucked out and had a principal who bought everything I asked her to because I demonstrated that I used it. [I also] had parents who were able to purchase a lot of classroom supplies.

It became clear to us that while teachers in some schools were well-resourced, others felt the need to spend their own money on supplies. “Baking soda and vinegar [for chemistry labs] cost me 10 bucks, so that doesn't bother me.” The district-level science curriculum office saw this unequal distribution of resources as a building-level issue, and they reported advocating for their teachers. “I've had to remind principals several times, your science teachers should not be spending their own money to buy these things. I gave you a list and told you to buy it. You need to buy it.” Access to resources was also provided through partnerships with local university programs. One teacher noted, “I've got fish tanks and I get zebrafish every year... lab equipment, whatever we really need.”

Autonomy as a Consequence of “Benign Neglect.” The teachers we interviewed felt they had autonomy in “what and how” to teach, not necessarily because they were trusted professionals, but because it was a large district. One teacher said:

It's such a big district that you know they have so many problems that they have to deal with. The things I do are small scale compared to that. As long as I don't make the news, I feel like I can do what I want, and the kids really appreciate that.

This sentiment was echoed in almost every interview. Another teacher said, “I would say it's the autonomy. You can really kind of get away with doing what you have to do, to teach what you think is right.”

To be clear, the teachers we spoke with viewed their own use of professional autonomy as a means to create and implement engaging learning experiences for their students. The science teachers we interviewed had a collective sense that teachers of other subjects, such as language arts and mathematics, faced more scrutiny and micro-management in their work because of the high stakes associated with student testing in those subjects, and that science teachers were able to reap the benefit of not being the district's central focus.

For many teachers we interviewed, this form of autonomy served as a way for them to more easily share their passion for science with their students. Each interviewee, including those at the science curriculum office, used their autonomy to experiment with novel or unconventional ideas to improve the science experiences of their students in ways that they described as pedagogically sound. They noted that it was common practice to simply try out ideas, a trait that Haberman associated with effective teachers in urban schools (Haberman et al., 2018). One experienced science teacher gave the following example:

They leave you on your own to do what you want to do, so when I wanted to build an aquaponics lab, I started talking to my principal. ... She's like 'Okay, I trust you what's the training going to be, what are the outcomes?' and she didn't need to know why I wanted my kids to raise tilapia... I didn't have to fight very hard. So if you want to try something new, sometimes it's nice to be that forgotten subject that nobody argues with.

One curious facet of this autonomy concerned the relative distance of daily classroom life from students' families and caregivers reported by one teacher. This teacher felt that he had more freedom to do what he wanted in the classroom than a teacher in the suburbs, because unlike in Rivuline, those districts have "administration and helicopter parents breathing down your neck."

Within-District Job Mobility. Perhaps the most interesting structural benefit of a large district that we found in Rivuline is that with so many high schools, teachers reported that transfer to another placement within the district was relatively easy. Four interviewees specifically mentioned having taught in at least two (and in some cases three) different schools within Rivuline School District.² This finding is consistent with the teacher mobility literature, which notes that transfers to another school within a district are more likely than transfers to another district (Dillon & Malick, 2020), and that this may be particularly true in large urban districts (Papay et al., 2017).

However, the interesting finding in Rivuline is that the possibility of shifting schools without leaving the district was itself cited as a reason for retention in the district. As a large district, there were a number of science-focused and academic magnet schools that administrators felt were attractive to science teachers:

To me the biggest problem in our district is that our most challenging schools have the least amount of qualified educators and if they don't leave the district, I mean teachers tend to after a couple years, move to the higher performing schools [within the district].

This notion was corroborated by another administrator, who said, "I know pretty much every high school science teacher in the district. And over time... the best science teachers.... all have, like, shifted over to our magnet schools and I understand why." One teacher said of the

² Interestingly, two of the retained teachers we spoke to who had remained in their same school since being hired by Rivuline had also done their student teaching in that same school.

magnet school he worked in, “We have very good kids... Our school stands out as just being that this is the place a lot of teachers would like to get to. It's always kind of been a destination school for our district.” Another teacher we interviewed discussed his struggles in his first years teaching in the district, which made him consider leaving teaching altogether. Colleagues who had previously left his school for another one in the district encouraged him to apply to their school, explaining how it was different. Once an opening came up, he applied and has been happily employed at that second Rivuline school ever since. Another teacher echoed this experience:

I started at a very difficult school [with] very low attendance... just a lot of issues, you know, behaviors and things like that. And then ... I was asked to come to a very good school which I'm still at. And I initially refused, because I felt like my work wasn't done yet, but they were persistent.

Such mobility raises the caveat that the retention factors we identified for Rivuline are tied to teacher mobility. Like the unequal distribution of district resources noted above, it may be the case that despite Rivuline’s overall high retention in the district for novice science teachers, as a large district, retention there is likely very school-dependent.

A Strong and Active Teachers Union. As a large employer in a place with a history of progressive labor activism, the teachers in Rivuline have historically had a teachers union with many active members. Amid the changes that arrived with passage of the Act 10 legislation in the state, the Rivuline teachers’ union remained engaged in ensuring that teachers’ rights were protected. A number of the teachers we interviewed made reference to the work by the union:

I would say, we do have a strong union as well, so it seems like, the other districts around sort of lost their representation [during the teacher protests around Act 10], we got past. A lot of suburban district unions sort of fizzled, whereas ours is very strong. So that helps out a lot I'd say.

One administrator noted the strategy employed by the union immediately after the passage of Act 10 had a direct effect on teacher retention:

Between when the law was passed and when it went into effect, [Rivuline] basically renewed the contract for...the max, for like three more years. So for those first three years after Act 10, [Rivuline] had one of the most competitive salaries and benefits and other things that the union might provide teachers ...I think we had a pretty good time retaining and acquiring teachers from the rest of state for those first couple of years. And then after that, the rest of the area started to catch up with us.

Factor #2: Support from Colleagues

The support of colleagues was consistently cited by the teachers and administrators we interviewed as a valuable contributor to retention. Teachers described their colleagues as unofficial mentors and sources of social and emotional support. One interviewee, referring to the teacher who had been her cooperating teacher during her teacher preparation program said, “She’s in the room next to me...I mean she’s still teaching now and everything.” She continued listing her sources of support, “The department chair, she was very helpful...for me a good relationship with her is definitely reason to stick around here.”

Another teacher reflected on her first semester teaching, during which she was not assigned a formal mentor. Later that year when she was assigned a mentor, she found that the help she was already receiving from the other science teachers around her continued to be her main source of support, saying, “That was definitely more impactful than anything that any mentors that the district provided.” Later, she was able to be a provider of informal support to when a new biology teacher started in her building:

She and I worked really closely together. We'd meet and plan because we both were teaching ninth grade biology, so we collaborate, we'd meet, plan out lessons, we plan out activities making sure we're staying on track and doing the same thing...anytime she'd have any questions she would come to me and ask. And then, just providing pointers because... if I've done an activity before, I know there are some issues that can come up.

Another teacher said, “Working with other teachers and getting ideas from them, I was able to use those too. So a lot of teaching strategies, I learned from other teachers.” She shared how she and her former cooperating teacher still support one another:

We [coop teacher] actually share a prep in the morning, so we meet then every once in a while. Sometimes after school it's a quick 10 minute conversation. And some mornings, she's like ‘hey can you just look over this assignment?’ and I'll look over it with her.

Virtually all interviewees mentioned valuing their relationships with other science teachers in the district. Though some teachers in smaller schools stated that they had positive relationships with teachers outside of their science department, camaraderie among science departments specifically was often referenced as an important factor in retention. One interviewee said:

Our science department in particular, I think, is amazing and very supportive and we collaborate together. We lend an ear when someone just needs to vent, we problem solve together, which I feel is so helpful. Really makes you feel welcome and like you are important. If I had to say the number one reason why I didn't move, it is because of the people I work with and the department. And then, the curriculum specialist for science

through [the district]. I feel like those are the biggest factors. Just having those relationships. With those people.

Others highlighted the importance of being able to go to their colleagues not just for help in the classroom, but for general support.

You know, people are there to talk to you, and...sometimes that's all you need is just someone to talk to, because you had a bad day. And most of the teachers I've worked with [in the district] are really good at doing that.

Another teacher said of their school's science department:

Usually during sixth period, we all meet in our department chair's room and if we have business to take care of, you do that, but sometimes it's just an hour of chitchat...and share things about your personal life and kind of unwind. An hour without students and without feeling the pressure of you know, getting work done and everything.

Despite Rivuline School District's large size, teachers were able to form positive connections with their colleagues that included and extended beyond classroom guidance and advice to genuine friendships and support systems. One teacher said, "My favorite part of my job is working with new teachers, besides teaching kids. I love working with new teachers and talking with them and helping them through things."

Factor #3: Salary and Benefits

According to one teacher, teachers occasionally leave the district only to return after a reconsideration of the tangible and intangible rewards of teaching in Rivuline. In this section, we address the former, and in the next we address the latter.

Teachers in Rivuline School District reported enjoying better pay and job benefits than those in other nearby districts. All of the teachers we interviewed pointed to this as a reason for retention. One teacher noted, "we do pay more than a lot of other districts, especially to start out," which was a sentiment echoed by most of the other interviewees.

However, a comprehensive salary analysis shows that in 2007-08, Rivuline salaries were somewhat lower than surrounding districts. Then in 2013-14, which represents the years in which Rivuline's contract was signed and followed in the wake of Act 10 (see above), starting salaries in the district were indeed a few thousand dollars higher than its neighbors. By the 2017-2018 school year, the base pay of Rivuline teachers was again lower than that of surrounding districts. For teachers with a Master's degree, Rivuline had both the lowest starting base pay, and one of the highest maximum salaries in the region.³

³ There may be a few reasons for Rivuline teachers' beliefs about the district's better pay. First, it may be the case that experienced teachers did in fact make a higher salary, as compared to novices, and we spoke with mostly experienced teachers in

Aside from salary, teachers reported that the district offers other financial support and incentives related to their continued development. One teacher explained:

The master's degree helped actually with my retention a lot, because we had a significant pay bump....If I wasn't financially supported in getting that master's degree, at the times that I thought about leaving the profession I may have actually left..

One teacher described a program resulting from the district's partnership with a local university in which science and math teachers across the district spent five years working on "micro-credentials":

We did these micro-credentials based on best practices of science teaching and math teaching and doing like a long term professional development...we worked with the professors there [to] try to continually improve our craft...we did four micro credentials a year... so that actually helped out a lot as well with retention because of...having connections to your colleagues across the district. A lot of times we get really isolated in the school, but then if you're meeting on a regular basis with all these other science and math teachers from across the district, you sort of get to see, or build, that...science teacher and math teacher perspective, community there...and we got significantly compensated for that as well. That was like \$10,000 a year extra so that helped.

Factor #4: Personal Satisfaction

Many of the teachers and administrators we interviewed shared more personal reasons for remaining within the district of Rivuline. For some, this was a feeling of helping students in need. One experienced teacher elaborated on this point:

I think, deep down it's because I want to teach the kids that deserve it. I mean, I could do this anywhere, but I feel like these kids are the kids that are really getting what they should get they know that they're getting top notch education and they end up going to college prepared, and I feel like they deserve that. They're not getting that in every classroom and every discipline area, but I feel like I send them off to college ready to go. I've got a ton of kids that end up being engineers and chemists and you know I feel good about that. I feel like I'm doing a better job here than most of the suburban students are getting.

While this particular finding may have had some sample bias, given that we were talking to teachers in the schools with the highest retention rate, the sense of self-efficacy and personal

our interviews. Or perhaps in Rivuline there were more opportunities for extra duty pay, such as for coaching, student clubs, summer curriculum work, or that such pay was higher. Either way it seems likely that the gains from the 2013 contract included a salary guide with fewer steps so that experienced teachers were paid a higher base salary than peers in surrounding districts. A brief glance at year 10 salaries in 2007 and 2017 provides evidence for this theory.

satisfaction that teachers conveyed was present in nearly every interview. One teacher said, “I feel like I'm good at it, you know it's what I know and I'm good at it and I know it's needed. I know this isn't the easiest teaching placement and I feel confident, so I feel like I should stay almost as you know, kind of a calling.” Another explicitly linked both her satisfaction and her professional growth to teaching in an urban school:

I think I got good at teaching here. I think it's a high needs area and it needs good teachers. I have a sense of pride teaching here, knowing that I'm teaching in high-needs school, an inner city school, something that a lot of people couldn't handle and couldn't do. So I am proud of that.

Retention of Teachers of Color

As noted above, Rivuline both hired and retained more novice science teachers of color than any other district in the state. For the purposes of this study, we have defined “teacher of color” as someone whose designation in the staffing data is either a race other than “White” or someone who was designated as Hispanic. While we recognize that this does not completely align with definitions used elsewhere in educational research, it was the categorical solution that appeared most suited to identify individuals in the state data categories who would be members of racial and ethnic groups that experience the sort of discrimination that has been shown to be a factor in teacher attrition (Griffin et al., 2022).

When we asked teachers and administrators how they might explain the high rate of retention of science teachers of color in Rivuline, there were two general categories of answers. The first simply referred to the overall demographic profile of both the region and the school district, and noted that there were just more people of color in their area of the state. Others noted that this retention was likely the result of years of targeted recruitment by the district, not only for teachers of color but administrators of color as well. Noting that the last three district superintendents had been black, one administrator suggested that the racial composition of administrators in the district was a factor:

So while I think we're still around 80% like white women teaching, if you look at the demographics of our administration, it does not look like our teacher demographics. I think we have over 60 or 70% of our administrators are people of color so I've always wondered does that have something to do with it?

Subsequent to the 2007-2018 time period examined by our study, interviewees reported that there have been new efforts to specifically recruit math and science teachers of color to Rivuline, and that these are extensions of existing programs to attract teachers of color generally.

Mentoring and Induction

New teachers in Rivuline participate in a general orientation prior to the start of the school year. This consists of introductions to district resources and classroom preparation, as well as attention to the requirements of human resource onboarding. Induction programs in the district operated on the level of the individual school. In one school, new teachers (both to the building and profession) met occasionally after school to share information and discuss issues as a group. Teachers were compensated for their time, but reported that the sessions could have been more useful.

Though there does exist an official mentoring program in Rivuline, its implementation was described to us as “disjointed” and very dependent on the building-level efforts to attend to mentoring. While teachers reportedly complied with the requirements of this program, it did not appear to serve as a primary source of support for novice teachers.

Assigned mentors were typically retired teachers from other subject areas, and we heard multiple reports of mentor assignments not occurring until well into the school year. Teachers reported that their mentors in these cases were helpful when it came to things like organizing and classroom management, but when it came to science pedagogy, their mentors were only able to offer limited science support, even as they provided other useful feedback on teaching:

[My mentor] was a district mentor, so she had me and maybe one other person in the building. And then she would go to different schools and sort of help out. She did not have a science background, but she [helped with], regular classroom management-type strategies and things like that. And, just [being] really supportive and encouraging.

One teacher who had been a novice science teacher during our study’s period of interest noted the more notable impact of the informal mentoring by others in the school’s science department:

I will just say one thing that's so impactful as far as like thinking back on me, is having other science teachers kind of mentor and collaborate. Because you can have that generic mentor be helpful in some part, but just having someone in the science department mentor and really kind of take you under their wing, it was so much more impactful for me and gave me more confidence in what I could do.

It is worth noting however, that the district did support and train those who would be the official mentors of novice teachers. One teacher who served as a district mentor described the professional development she participated in before being assigned a mentee teacher:

Right now it's virtual, but when I first did it, you went in, you met for half a day with all the other mentors [cooperating teachers] in the district and you learn strategies on working with the student teachers at the time. And that was very close knit group, you know, and you learned a lot of things and a lot of discussions.

Mentor teachers were compensated for taking on this role, and the rate was negotiated with the teachers union and part of the contract prior to the passage of Act 10.

As noted above, science teachers in Rivuline often relied on informal mentors in their departments and schools for guidance, though occasionally subject mentors were assigned within buildings:

The physics teacher at the time was officially assigned to me, which was easy because he had been my cooperating teacher a year before, so I'm pretty sure it was an official thing. He was technically called my mentor and I would go talk to him. Once in a while we would have official meetings and he would submit notes to someone showing that we were doing mentoring.

Occasionally, however, novice teachers fell through the cracks of the district's mentoring efforts. One teacher said, "I didn't have someone to help me with planning my classes and what to teach. The district didn't provide me a mentor, though I was supposed to get one my first full year of teaching. [It was] never addressed." Another teacher who had earned their certification through an alternate route program noted that the district did not provide mentors for teachers in her situation:

The main instructional mentoring, I got was from [local University], through my classes there. The crazy thing is that since I was a 'permit' teacher my first two years, I actually didn't get a district mentor until my third and fourth year.

Conclusion

During the period of our study (2007-2018), the Rivuline School District retained 67% of its novice science teachers, and all of its science teachers of color. The main factor we identified concerned the structural advantages conferred by Rivuline's size, which included targeted support for science teachers, the availability of resources, autonomy arising from not being under strict district scrutiny like other subjects, opportunities to transfer between schools within the district, and a strong and active teachers union. Other factors included support from colleagues, teachers' personal satisfaction with their jobs, and favorable salary, benefits, and professional opportunities to learn. The relatively high rate of retention of teachers of color in the district appears to have been linked not only to the demographics of the area, but to long-term sustained efforts to recruit both teachers and administrators of color.

The district's mentoring program was reported as varying in quality, and was experienced differently by novice teachers depending on school site and mentor assignment. Opportunities to be mentored informally by science teachers both within science departments and across the district appeared to have been most highly valued by the science teachers we interviewed.

References

- Dillon, E., & Malick, S. (2020). Teacher Turnover and Access to Effective Teachers in the School District of Philadelphia. REL 2020-037. *Educational Laboratory Mid-Atlantic*.
- Driscoll, D., Halcoussis, D., & Svorny, S. (2003). School district size and student performance. *Economics of education review*, 22(2), 193-201.
[https://doi.org/https://doi.org/10.1016/S0272-7757\(02\)00002-X](https://doi.org/https://doi.org/10.1016/S0272-7757(02)00002-X)
- Griffin, A. R., Davis Dixon, R., & , & Tackie, H. N. (2022). Perspectives of Black Teachers' Experiences in the Field and the Connection to Retention. In C. D. Gist & T. J. Bristol (Eds.), *Handbook of research on Teachers of Color and Indigenous Teachers* (pp. 909-922). American Educational Research Association.
- Haberman, M., Gillette, M., & Hill, D. A. (2018). *Star teachers of children in poverty* (2nd ed.). Routledge.
- Papay, J. P., Bacher-Hicks, A., Page, L. C., & Marinell, W. H. (2017). The Challenge of Teacher Retention in Urban Schools: Evidence of Variation From a Cross-Site Analysis [Article]. *Educational Researcher*, 46(8), 434-448. <https://doi.org/10.3102/0013189X17735812>
- Rothstein, R. (2017). *The color of law: A forgotten history of how our government segregated America* (First edition. ed.). Liveright Publishing Corporation.
- Strang, D. (1987). The administrative transformation of American education: School district consolidation, 1938-1980. *Administrative Science Quarterly*, 352-366.
- Wilkerson, I. (2010). *The warmth of other suns : the epic story of America's great migration* (1st ed.). Random House.