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Access to Highly Effective Teachers in Low-Income Districts and Schools

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Research Brief: Access to Highly Effective Teachers in Low-Income Districts and Schools

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INTRODUCTION

Having an effective teacher is important for students' long-term outcomes. Students taught by a highly effective teacher are more likely to attend college, have higher earnings and retirement savings in adulthood, and are less likely to become teenage parents (Chetty et al., 2014). However, students do not have equal access to highly effective teachers. Schools in low-income communities face serious challenges both recruiting and retaining highly effective teachers. Additionally, certain student subgroups, such as disabled students and English Learners have less access to highly effective teachers.

Research has explored how policies such as increased salaries, incentive pay, and other benefits may help to recruit and retain highly effective teachers. While some of these interventions have the potential to help to retain teachers in the short term, it is unclear whether they can overcome teacher shortages facing districts that serve low-income communities.

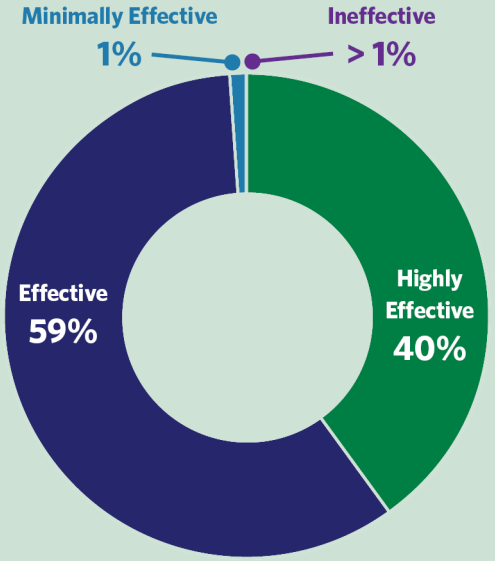
Student access to highly effective teachers in Michigan parallels these overall trends, with schools serving high numbers of students from low-income families having a smaller proportion teachers rated highly effective on their evaluations relative to higher-income schools. This is both the result of new, high-quality teachers not entering schools in low-income communities and of higher attrition among teachers in these schools. Below, we review how highly effective teachers can be defined, how highly effective teachers are sorted across districts, schools, and students, and discuss policies and programs that have aimed to make the distribution of highly effective teachers more equitable.

DEFINING HIGHLY EFFECTIVE TEACHERS

Definitions of highly effective teachers vary across research and policy contexts, but generally revolve around the idea that students learn more academic knowledge from highly effective teachers. One way of measuring teacher effectiveness is by estimating value-added measures. Value-added measures first examine student test scores from year to year to identify their learning trajectory. Next, they attribute students' deviation from their trajectory to the effectiveness of their teacher. For instance, if a teacher's students tended to have average scores in years past but then score meaningfully higher in one year, that teacher would have a higher value-added measure. In many cases, a teacher is considered effective if their value-added measure is within 1 standard deviation of the average, with approximately 68% of teachers falling into this range. Teachers are generally considered highly effective if they have a value added at or above 1 standard deviation above average, meaning that their value-added measure is higher than approximately 84% of other teachers.[1] Value-added measures are common in research on teacher quality and are used to formally evaluate teachers in some states, but many states use more holistic measures of teacher quality in their overall scores as well (Goe et al., 2008).[2]

In Michigan, districts are required to evaluate their teachers annually and assign them one of four performance ratings: highly effective, effective, minimally effective, or ineffective. These evaluation ratings have important implications for teacher retention, promotion, and tenure decisions (Michigan Revised School Code Section 451, 2019). Overall, districts have significant

TEACHER EFFECTIVENESS RATINGS STATEWIDE



Across Michigan, the educator evaluation system shows little variation in teacher quality. As of the 2021-2022 school year, 40% of teachers in Michigan were rated as highly effective, 59% as effective, 1% as minimally effective, and less than 1% as ineffective.

latitude over the design and implementation of their evaluation systems. One specific requirement is that "student growth and assessment data must account for 40% of the annual year-end educator evaluation" (Michigan Revised School Code Section 451, 2019).[3] However, districts can choose to meet this requirement using standardized assessments, locally developed assessments, or teacher developed assessments. Districts are also free to select the criteria used to make up the remaining 60% of their evaluation system along with the thresholds that distinguish the four performance ratings noted above. Across Michigan, the educator evaluation system shows little variation in teacher quality. As of the 2021-2022 school year, 40% of teachers in Michigan were rated as highly effective, 59% as effective, 1% as minimally effective, and less than 1% as ineffective (MI School Data, n.d.).

RESEARCH ON HIGHLY EFFECTIVE TEACHERS

Districts and Schools Serving Students from Low-Income Families Have Difficulty Attracting Teachers

Districts serving low-income communities represent the most difficult districts to staff. Two important factors related to where novice teachers often choose to work are school values and school climate (Milanowski et al., 2009). Because low-income schools tend to have high turnover and other contextual issues, new teachers are often less likely to enter schools in low-income communities. For veteran teachers who change schools, characteristics of the student body including poverty levels and student achievement represent important factors in their decisions (Hanushek et al., 2004), though there is evidence that student characteristics are not the deciding factors themselves but are rather seen by teachers as proxies for school working conditions (Horng, 2009). Salary is also an important component for both novice and veteran teachers, and low-income districts face the added challenge of competing with nearby districts that may have offered higher pay and better working conditions (Fortin & Fawcett, 2022; Horng, 2009).

One way school districts might address a shortage of teachers is by filling positions with less effective teachers (Murnane & Steele, 2007). This strategy necessarily reduces student access to highly effective teachers, but schools with severe teacher shortages may face a difficult choice between having less effective teachers on one hand and being understaffed on the other. Some districts in hard-to-staff rural school districts in New Mexico, Colorado, Oregon, Idaho, and South Dakota have moved to a four-day week due to staffing issues, as the conversations there shifted from how to attract highly effective teachers to how to attract "warm bodies," (Heyward, 2018; Fortin & Fawcett, 2022, p. 16). While this approach might increase disparities in access to highly effective teachers in the short run, focusing on teacher quality may be a luxury these districts cannot afford in the near term.

Highly Effective Teachers in Low-Income Schools and Districts Turn Over at Higher Rates

Teachers who work in low-income districts are more likely to turn over relative to teachers in districts that serve more advantaged students (Hanushek et al., 2004; Scafidi et al., 2007; Strunk et al., 2022). Importantly, exit rates are higher for both the most effective teachers as well as the least effective teachers (Feng & Sass, 2017). Further, more effective teachers tend to transfer to higher performing schools (Bates, 2020; Feng & Sass, 2017). In addition, teachers who attended more competitive colleges and those who scored higher on standardized tests are more likely to leave their schools than their less qualified peers (Lankford et al., 2002). This trend leads school districts to enter a "revolving door" of regular turnover in low-income school districts (. that results in the neediest students being taught by teachers who are the least equipped to help them succeed (Dillon, 2007; (Feng, 2010) Murnane & Steele, 2007). High turnover rates have also been observed in low-income urban and rural school districts, and rural districts serving high percentages of Black students had comparable rates of teacher turnover to urban school districts in 2019 (Williams et al., 2021).

HIGHLY EFFECTIVE TEACHERS FOR SPECIAL POPULATIONS

In addition to determining how highly effective teachers sort into low-income school districts, researchers have also investigated whether students in special populations have access to high quality teachers within their schools. Here, too, students with the greatest need have the least access to highly effective teachers. Below, we briefly review relevant research on access to high quality teachers for students with disabilities and English Learners.

Students With Disabilities

Special education is one area of education with persistent staffing shortages. Even as the number of new teachers has increased, the number of certified special education teachers has not kept pace with demand (Cowan et al., 2016). Recent research estimates that 23,000 special education positions across the U.S. are filled with teachers who lack a special education credential (Peyton et al., 2022). Low-income districts in particular report higher numbers of special education vacancies relative to more advantaged districts, and there have been several recent accusations that higher-income districts have "poached" special education teachers from lower-income districts (National Center for Education Statistics, 2022; Cahill, 2023; Wilbur, 2023). This evidence indicates a shortage of high-quality teachers to serve disabled students, and that disabled students in low-income schools may be especially disadvantaged.

English Learners

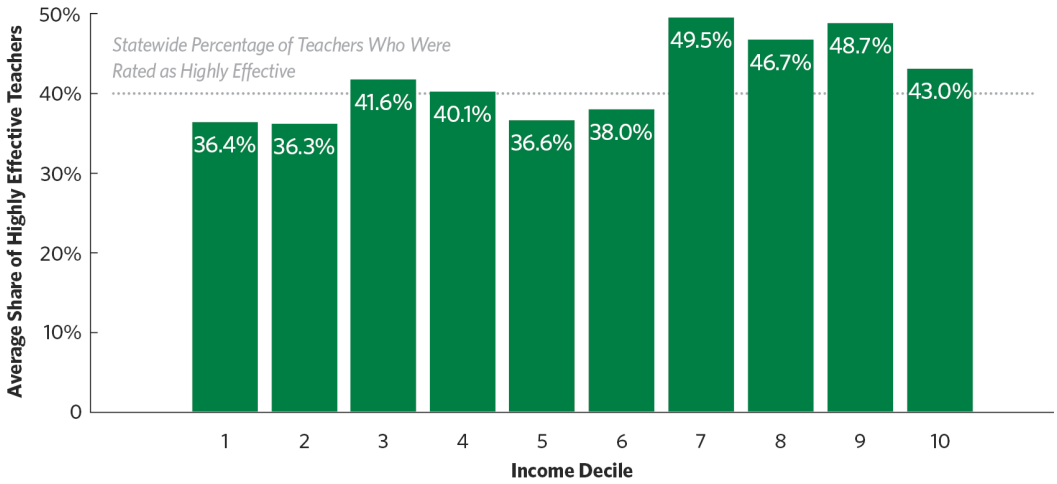
Like special education teachers, the U.S. is facing a growing shortage of educators prepared to serve English learners (ELs) (Sutcher et al., 2019). ELs represent one of the fastest growing groups among U.S. students, and they are disproportionately represented in low-income schools (Quintero & Hansen, 2021). Research from California and New York has found that districts that offered lower salaries were more likely to serve higher proportions of ELs, and these disparities for teacher pay were likely exacerbated by increased funding needs for students newly learning English (Podolsky et al., 2016). In addition, researchers have found that ELs are consistently paired with less effective teachers (Goldhaber et al., 2015).

HIGHLY EFFECTIVE TEACHERS IN MICHIGAN

In Michigan, while nearly all teachers are rated effective or highly effective, lower-income school districts have lower proportions of *highly* effective teachers relative to higher-income districts. This is illustrated in Figure 1. In this figure, school districts are organized by income decile, and the height of each bar represents the share of school district teachers identified as highly effective. Approximately 36% of teachers in 1st income decile districts are identified as highly effective, and this contrasts with 49% in 9th income decile districts. Moreover, in districts from the top four income deciles, more than 40% of their teachers (the statewide average) are rated as highly effective, while only one of the bottom 6 deciles has a similar share of highly effective teachers.

Research on teacher effectiveness in Michigan aligns with these statistics as well. In Michigan teacher preparation programs, higher quality candidates are less likely to enter Title I schools (Auletto & Sanderson-Edwards, 2019). This research indicates that additional required hours of student teaching is associated with a decreased likelihood of a teacher working in a rural Title I school, and teachers from programs with higher GPA cutoffs for acceptance have decreased likelihoods of being placed in urban Title I schools. Among the lowest-performing schools in Michigan, teachers are also more likely to be given a rating below "effective" (Keesler & Schneider, 2010; Goldhaber et al., 2015; Strunk et al., 2019). Taken together, these findings align with national research on teacher quality and indicate that students in low-income Michigan schools are less likely to have access to a highly effective teacher.

Figure 1: Average Share of Highly Effective Teachers in Michigan School Districts by Income Decile, 2021



Note: Income deciles represent median household income at the district level, ranked from lowest to highest, with each decile containing 10% of households. For example, the first decile is the 10% of school districts with the lowest median household income, the fifth and sixth deciles represent middle income districts, and the tenth decile is comprised of the wealthiest districts.

Source: Author collected from MISchoolData.org and American Community Survey (ACS) data. Teacher effectiveness shares represent the total number of highly effective teachers divided by the total count of teachers in each district during the 2021-2022 school year. ACS income estimates are drawn from 2017-2021 ACS survey.

Recent research has also found that staffing challenges are greatest in Michigan's poorest districts. Michigan's low-income districts have the highest levels of teacher attrition and frequently have the highest proportions of novice teachers (Hopkins et al., 2021). Michigan's Partnership districts, those which operate the state's lowest-performing schools, have especially pronounced challenges around teacher recruitment and retention. Teachers in these low-performing schools report staffing issues as among the most significant obstacles to school improvement. Leaders also note significant challenges and describe turning to solutions such as staffing their schools with long-term substitute teachers who do not hold a regular teacher credential, or even adopting highly structured curricula that are seen as more robust to teacher turnover (Burns et al., 2023; Strunk et al., 2019; Torres et al., 2023). These staffing challenges highlight the issue of access to highly effective teachers, especially for the students who need them the most.

In addition to a lack of highly effective teachers in low-income districts, teachers in districts that serve high proportions of low-income students tend to have lower starting salaries relative to nearby districts that serve more advantaged students. This is shown in Table 1, which displays starting salaries for traditional public school districts in the Grand Rapids area, Michigan's second largest urban area, ranked from the highest salary to the lowest. Out of the 6 lowest-paying districts in the region, 5

serve a student population that is at least 40% economically disadvantaged compared to only 2 of the 6 highest-paying districts. These lower salaries likely exacerbate hiring and retention challenges in districts that serve low-income communities.

Table 1. Starting Salaries in Grand Rapids Area Public School Districts, 2022-2023

School District	Starting Salary for Teachers with a BA	Percent Economically Disadvantaged Students
Godwin Heights Public Schools	$46,636	95.60%
Byron Center Public Schools	$45,971	22.30%
Grandville Public Schools	$43,648	35.30%
Caledonia Public Schools	$43,607	22.40%
East Grand Rapids Public Schools	$43,526	7.60%
Kelloggsville Public Schools	$43,448	86.00%
Forest Hills Public Schools	$43,047	14.60%
Comstock Park Public Schools	$41,885	69.80%
Northview Public Schools	$41,496	47.20%
Wyoming Public Schools	$41,489	84.90%
Kentwood Public Schools	$41,291*	71.80%
Grand Rapids Public Schools	$39,140	77.70%

** Indicates that the salary was extrapolated from the bargaining agreement in the case that a bargaining agreement was not available for a particular year.*

Source: Author collected from MI school district Collective Bargaining Agreements (CBAs) and MISchoolData.org. Starting salary reflects that for the lowest grade and step salary for teachers with a BA.

POLICY APPROACHES TO INCREASE ACCESS TO HIGHLY EFFECTIVE TEACHERS

A common policy response to increase disadvantaged students' access to highly effective teachers has been to offer financial incentives in the form of recruitment and retention bonuses to make working in hard to staff schools more financially attractive (e.g., Dillon, 2007). Studies across several contexts provide insight into the effectiveness of retention bonuses, generally finding positive effects, but regrettably there is little research on the efficacy of recruitment incentives.

In North Carolina from 2001-2004, secondary teachers in hard-to-staff subject areas (math, science, and special education) in low-performing and/or low-income schools were eligible for a bonus of $1,800 in each year they worked in that school (Clotfelter et al., 2008). The aim of this policy was to help leaders both recruit new teachers and retain current teachers in their schools. Importantly, the authors noted several implementation challenges associated with the program that may have reduced its

efficacy. However, despite these challenges, actually receiving a bonus decreased teacher turnover by roughly 17%.

Another retention program in Tennessee offered a one-time bonus of $5,000, equivalent to roughly 10% of base salary, to highly effective teachers in chronically low-performing schools (Springer et al., 2016). Teachers qualified for a bonus if they were in an eligible school in the spring of 2013 and worked in a chronically low-performing school for the entire 2013-2014 school year. An important feature of this program was that teachers received the bonus in the spring of 2013 and had to repay it if they left a qualifying school during the following school year. The authors did not find an overall effect of the bonuses on teacher retention, though here, too, implementation issues presented challenges to uptake of the program. However, bonuses did increase the retention of teachers in tested grades and subjects by approximately 20%. A later study also found that the bonus program, and the teacher retention it promoted, led to significant student achievement gains (Swain, 2019).

A program in 10 districts across 7 states that was implemented from 2009-2012 offered highly effective elementary and middle school teachers up to $20,000 to transfer into, and remain in, a low-performing school in their district for 2 years (Glazerman et al., 2013). Highly effective teachers who were already in low-performing schools in participating districts received up to $10,000 for remaining in their school over 2 years. Though take-up among highly effective teachers was relatively low, low-performing schools did fill most of their vacant teaching positions with highly effective teachers. Teacher retention increased during the 2 years they received a bonus and one year after the bonuses ended, teachers who received a bonus remained in their schools at the same rate as other teachers in the same schools. Bonuses were also associated with increases in student achievement, though only in elementary schools.

Lastly, a package of teacher compensation reforms in D. C. Public Schools that began with the 2009-2010 school year rewarded highly effective teachers with significant bonuses, with higher bonuses for teachers who worked in the district's high-poverty schools (Dee & Wyckoff, 2015). Across the district, highly effective teachers received $5000 plus an additional $5000 if they taught reading or math in grades 4-8 plus an additional $2500 if they taught in a high-needs subject. Highly effective teachers in high-poverty schools received bonuses that were twice as large. Teachers who remained highly effective for a second consecutive year received a permanent salary increase by moving up 3 steps and into the master's lane of the salary schedule. Teachers in high-poverty schools moving up 5 steps, which could be a total increase of more than $25,000 per year. Though the larger program did improve teacher quality, it did not lead to higher retention of highly effective teachers.

Highly effective teachers can have a significant impact on students' learning and long-term outcomes. This underscores the importance of both improving teacher quality and ensuring that students have equitable access to highly effective teachers. Yet, both across the U.S. and in Michigan, students in low-income communities and

students from specific subgroups, such as students with disabilities and English Learners, are less likely to be taught by a highly effective teacher. Factors driving these patterns include lower pay in schools that serve concentrated populations of disadvantaged students along with perceptions that these schools have more challenging working conditions. Research suggests that incentives can help to both bring highly effective teachers into hard-to-staff schools and retain them. However, for incentives to be successful it is important that they have a sizable pool of highly effective teachers to recruit from and that they be implemented well, with clear communication being especially important.

ENDNOTES

[1] For more information on value-added measures, see (Harris, 2011).
[2] Recognizing that teachers have multiple other roles in the classroom aside from increasing student test scores, this measure tends to be dominant in research and in state evaluation policies.
[3] This percentage has risen from 25% in 2015-2016.

REFERENCES

Auletto, A., & Sanderson Edwards, D. (2019). "Location, Location, Location": How Teacher Education Programs Position Graduates for Their First Teaching Jobs. *EPIC Working Paper*. https://epicedpolicy.org/location-location-location-how-teacher-education-programs-position-graduates-for-their-first-teaching-jobs/

Bates, M. (2020). Public and Private Employer Learning: Evidence from the Adoption of Teacher Value Added. Journal of Labor Economics, 38(2), 375-420. https://doi.org/10.1086/705881

Burns, J., Harbatkin, E., Strunk, K. O., Torres, C., Mcilwain, A., & Frost Waldron, S. (2023). The efficacy and implementation of Michigan's Partnership Model of school and district turnaround: Mixed-methods evidence from the first 2 years of reform implementation. *Educational Evaluation and Policy Analysis*, 1–33. https://doi.org/10.3102/01623737221141415

Cahill, M. (2023, February 1). Schools on the hunt for more special education teachers. *NBC Northeast Wisconsin*. https://www.nbc26.com/fonddulac/schools-on-the-hunt-for-more-special-education-teachers

Chetty, R., Friedman, J. N., & Rockoff, J. E. (2014). Measuring the impacts of teachers II: Teacher value-added and student outcomes in adulthood. *American Economic Review*, *104*(9), 2633–2679. https://doi.org/10.1257/aer.104.9.2633

Clotfelter, A., Glennie, E., Ladd, H., & Vigdor, J. (2008). Would higher salaries keep teachers in high-poverty schools? Evidence from a policy intervention in North Carolina. *Journal of Public Economics*, 92(5-6), 1352-1370. https://doi.org/10.1016/j.jpubeco.2007.07.003

Cowan, J., Goldhaber, D., Hayes, K., & Theobald, R. (2016). Missing Elements in the Discussion of Teacher Shortages. *Educational Researcher*, *45*(8), 460–462. https://doi.org/10.3102/0013189X16679145

Dee, T. S., & Wyckoff, J. (2015). Incentives, selection, and teacher performance: Evidence from IMPACT. *Journal of Policy Analysis and Management*, *34*(2), 267–297. https://doi.org/10.1002/pam.21818

Dillon, S. (2007, August 27). With Turnover High, Schools Fight for Teachers. *New York Times*. https://www.nytimes.com/2007/08/27/education/27teacher.html

Feng, L. (2010). Hire today, gone tomorrow: New teacher classroom assignments and teacher mobility. *Education Finance and Policy*, *5*(3), 278–316. https://doi.org/10.1162/EDFP_a_00002

Feng, L., & Sass, T. (2017). Teacher quality and teacher mobility. *Education Finance and Policy*, *12*(3), 396–418. https://doi.org/10.1162/EDFP_a_00214

Fortin, J., & Fawcett, E. (2022, August 29). How Bad Is the Teacher Shortage? Depends Where You Live. *New York Times*.

Goe, J., Bell, & Little, O. (2008). *Approaches to Evaluating Teacher Effectiveness: A Research Synthesis*. National Comprehensive Center for Teacher Quality.

Glazerman, S., Protik, A., Teh, B., Bruch, J., & Max, J. (2013). Transfer incentives for high-performing teachers: Final results from a multisite experiment. NCEE 2014-4004 *National Center for Education Evaluation and Regional Assistance.* https://files.eric.ed.gov/fulltext/ED544269.pdf

Goldhaber, D., Lavery, L., & Theobald, R. (2015). Uneven Playing Field? Assessing the Teacher Quality Gap Between Advantaged and Disadvantaged Students. *Educational Researcher*, *44*(5), 293–307. https://doi.org/10.3102/0013189X15592622

Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (2004). Why Public Schools Lose Teachers. *The Journal of Human Resources*, *39*(2), 326–354.

Harris, D. N. (2011). *Value-added measures in education: What every educator needs to know*. Harvard Education Press.

Heyward, G. (2018). *What Do We Actually Know about the Four-Day School Week*. Center on Reinventing Public Education. https://crpe.org/wp-content/uploads/crpe-what-do-we-know-about-four-day-week.pdf

Hopkins, B., Kilbride, T., & Strunk, K. O. (2021). *Trends in Michigan's K-12 Public School Teaching Workforce*. Education Policy Innovation Collaborative. https://epicedpolicy.org/trends-in-michigans-k-12-public-school-teaching-workforce/

Horng, E. L. (2009). Teacher tradeoffs: Disentangling teachers' preferences for working conditions and student demographics. *American Educational Research Journal*, *46*(3), 690–717. https://doi.org/10.3102/0002831208329599

Keesler, V., & Scheider, B. (2010). Estimating Cause: Teacher Turnover and School Effectiveness in Michigan. *2010 SREE Conference Abstract Template*. https://files.eric.ed.gov/fulltext/ED513944.pdf

Lankford, H., Loeb, S., & Wyckoff, J. (2002). Teacher Sorting and the Plight of Urban Schools: A Descriptive Analysis. *Educational Evaluation and Policy Analysis*, *24*(1), 37–62. https://doi.org/10.3102/01623737024001037

Michigan Revised School Code Act 451, § 380.1249 (2019), Add. 2009, Act 205, Imd. Eff. Jan. 4, 2010 ;-- Am. 2010, Act 336, Imd. Eff. Dec. 21, 2010 ;-- Am. 2011, Act 102, Imd. Eff. July 19, 2011 ;-- Am. 2014, Act 257, Imd. Eff. June 30, 2014 ;-- Am. 2015, Act 173, Imd. Eff. Nov. 5, 2015 ;-- Am. 2016, Act 170, Imd. Eff. June 14, 2016 ;-- Am. 2018, Act 235, Eff. Sept. 25, 2018 ;-- Am. 2019, Act 6, Imd. Eff. Apr. 30, 2019.

Milanowski, A., Longwell-Grice, H., Saffold, F., Jones, J., Schomisch, K., & Odden, A. (2009). Recruiting New Teachers to Urban School Districts: What Incentives Will Work? *International Journal of Education Policy and Leadership*, *4*(8), 1–13. https://doi.org/10.22230/ijepl.2009v4n8a132

MI School Data (n.d.). *Educator Effectiveness*. Center for Educational Performance and Information. Retrieved from https://www.mischooldata.org/educator-effectiveness

Murnane, R., & Steele, J. (2007). What Is the Problem? The Challenge of Providing Effective Teachers for All Children. *The Future of Children*, *17*(1), 15–43. https://doi.org/10.1353/foc.2007.0010

National Center for Education Statistics. (2022). *School Pulse Panel: October 2022 Data Collection* [dataset]. https://ies.ed.gov/schoolsurvey/spp/

Peyton, D. J., Acosta, K., Harvey, A., Pua, D. J., Fisher, T., & Crews, E. (2021). Special Education Teacher Shortage: Differences Between High and Low Shortage States. *Teacher Education and Special Education*, *44*(1), 5–23. https://doi.org/10.1177/0888406420906618

Podolsky, A., Kini, T., Bishop, J., & Darling-Hammond, L. (2016). *Solving the Teacher Shortage: How to Attract and Retain Excellent Educators*. The Learning Policy Institute. https://learningpolicyinstitute.org/product/solving-teacher-shortage

Quintero, D., & Hansen, M. (2021, January 14). *As we tackle school segregation, don't forget about English Learner students*. Brookings. https://www.brookings.edu/articles/as-we-tackle-school-segregation-dont-forget-about-english-learner-students/#:~:text=The%20sorting%20of%20EL%20students,students%20are%20struggling%20in%20schools.

Scafidi, B., Sjoquist, D. L., & Stinebrickner, T. R. (2007). Race, Poverty, and Teacher Mobility. *Economics of Education Review*, *26*, 145–159. https://doi.org/10.1016/j.econedurev.2005.08.006

Springer, M. G., Swain, W. M., & Rodriguez, L. A. (2016). Effective Teacher Retention Bonuses: Evidence From Tennessee. *Educational Evaluation and Policy Analysis*, 38(2), 199-221. https://doi.org/10.3102/0162373715609687

Strunk, K. O., Cowen, J. M., Torres, C., Burns, J., Waldron, S., & Auletto, A. (2019). *Partnership Turnaround: Year One Report*. Michigan State University. https://epicedpolicy.org/partnership-turnaround-year-one-report/

Strunk, K. O., Harbatkin, E., Mcilwain, A., Cullum, S., Torres, C., & Watson, C. (2022). *Partnership Turnaround Report: Year Four Report*. Michigan State University. https://epicedpolicy.org/partnership-turnaround-year-four-report/

Sutcher, L., Darling-Hammond, L., & Carver-Thomas, D. (2019). Understanding Teacher Shortages: An Analysis of Teacher Supply and Demand in the United States. *Education Policy Analysis Archives*, *27*(35), 1–40. https://doi.org/10.14507/epaa.27.3696

Swain, W., Rodriguez, L. A., Springer, & M. G. (2019). Selective retention bonuses for highly effective teachers in high poverty schools: Evidence from Tennessee. *Economics of Education Review*, 68, 148-160. https://doi.org/10.1016/j.econedurev.2018.12.008.

Torres, A. C., Frost Waldron, S., & Burns, J. (2023). Compliance, Chaos, or Coherence? How Superintendents, Districts, and Schools Craft Coherence From School Turnaround Policy. *Educational Evaluation and Policy Analysis*, 01623737231161363. https://doi.org/10.3102/01623737231161363

Wilbur, M. (2023, June 20). Putnam District Accuses Chappaqua Schools of "Poaching" Teachers. *The Examiner News*. https://www.theexaminernews.com/putnam-district-accuses-chappaqua-schools-of-poaching-teachers/#:~:text=Members%20of%20the%20Putnam%20Valley,losing%20its%20high%20school%20principal.

Williams, S., Swain, W., & Graham, J. (2021). Race, Climate, and Turnover: An Examination of the Teacher Labor Market in Rural Georgia. *AERA Open*, *7*(1), 1–23. https://doi.org/10.1177/2332858421995514