



MICHIGAN'S LEAKY TEACHER PIPELINE: EXAMINING TRENDS IN TEACHER DEMAND AND SUPPLY

This paper accompanies a longer paper, *Michigan's Leaky Teacher Pipeline: Examining Trends in Teacher Demand and Supply*. That paper is available at <https://crcmich.org/michigans-leaky-teacher-pipeline-examining-trends-in-teacher-demand-and-supply/>.

In A Nutshell

1. With fewer K-12 students, some decline in Michigan's teacher ranks is normal and inevitable. But it's not that simple. Need is evident in urban regions and growing in some areas – English as a Second Language, special education, science, technology, engineering and math (STEM).
2. Enrollment in teacher-prep programs in Michigan colleges and universities has been falling for some time, by 66 percent over a recent seven-year period. This is compounded because the number of program completers and the number individuals who obtain state certification in specific subject areas are down as well.
3. Understanding and addressing the real and potential shortages is hampered by the lack of clear data about the teaching workforce. Michigan has not prioritized studying this labor market and the shortage issue, so analysis is somewhat stymied by a shortage of available, timely and relevant information.

As public K-12 teachers and students across Michigan returned to school in the fall of 2018, they were greeted by a barrage of headlines warning of current or impending teacher shortages:

"Michigan school districts battle widespread teacher shortages"

"Across Michigan, school districts large and small struggle to put teachers in classrooms"

"Southwest Michigan schools face the teacher shortage"

The shortage drumbeat seems fairly consistent. While some school districts have endured longstanding challenges staffing classrooms, many others only recently began reporting regular and predictable difficulty finding qualified teachers to fit their schools' needs. A growing number of districts indicate that their staffing problems extend beyond the fall and last well into the school year. These reports are accompanied by claims of expanding class sizes, increased use of permanent, or at least long-term substitutes, and greater numbers of teachers working outside their endorsement areas. Most situations

paint a picture of smaller, localized concerns, but there is some consistency across districts in the general scope and nature of the problems faced. Commonly, schools find it difficult to staff specific classrooms, such as math, science, and special education, and districts with large concentrations of high-need students face shortages of qualified teachers. Is this evidence of a statewide shortage?

The simple fact is that anecdotal and media reporting is not sufficient to establish that a statewide crisis exists. To do so requires a broader examination of the teacher pipeline, something that has not garnered as much attention or analysis by stakeholders, either at the local or state level.

This report uses publicly-reported state and federal data, along with relevant research, to look at trends and patterns along the teacher pipeline in Michigan, from the early phase of teacher preparation through hiring and professional development. It examines relevant aspects of both teacher supply and demand to inform stakeholders concerned about adequately staffing all public schools with qualified instructors.

The research does not show that Michigan is currently facing a statewide teacher shortage, but it does document some troubling trends along the teacher pipeline that are likely contributors to the challenges local schools face filling certain classroom vacancies.

Importance of Teachers and the Pipeline

Years of research have shown that quality teaching is an integral and productive input to student success, in school and beyond. It is also abundantly clear that success cannot be achieved if sufficient qualified teachers are not available to meet the learning demands of students. The need for teachers is universal, transcending geography, shifts in economic conditions, and political climates. This is why teacher shortages can be real, and costly, impediments to student success. Ignoring current and pending shortages runs the risk of jeopardizing the most productive ingredient in a child's education – the teacher.

Think of the teacher pipeline as linear, consisting of key phases: preparation, certification, recruitment and assignment, development, and retention. In many discussions of shortages, the issue is framed solely as an insufficient production of new teachers. While this is an important element, production is just one factor among many affecting the teacher labor market. Economists who study teacher labor markets look at all the factors involved, generally differentiating between those affecting the supply of teachers as well as the demand for teachers. Framing the discussion in terms of supply and demand broadens it beyond just supply-side factors.

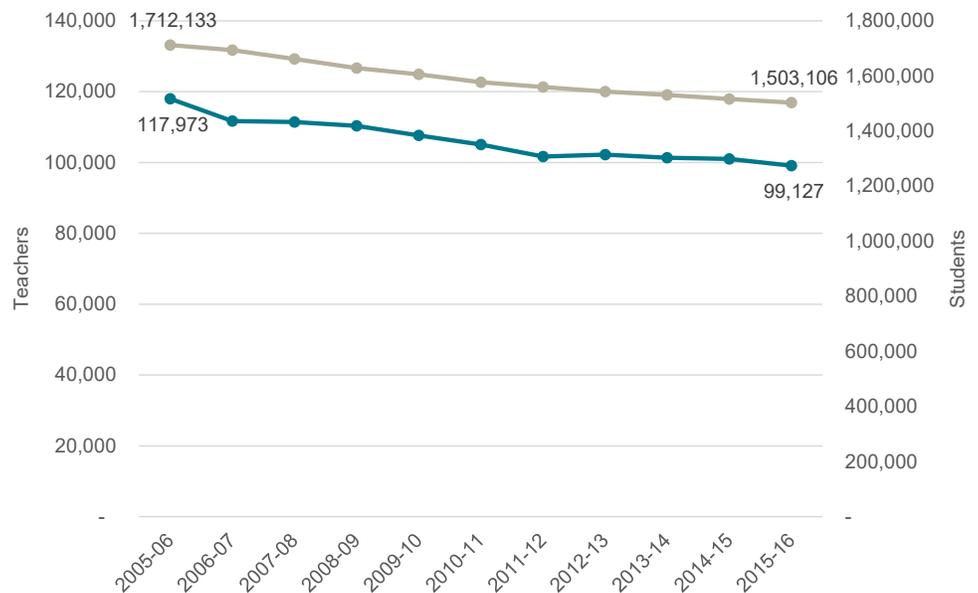
Trends in Demand

Based on current trends in student enrollment, shifts in student–teacher ratios, high teacher turnover and attrition rates, as well as state funding levels for K-12 schools, teacher demand is subject to a push-and-pull. Some factors are boosting demand while others are suppressing it.

Student Enrollment and the Teaching Workforce The number of K-12 students in Michigan has declined steadily over the past 10 years; **statewide public school enrollment fell** from just over 1.7 million students in fall 2005 to a bit more than 1.5 million in fall 2015, roughly a 12 percent decline. This can be largely attributed to the state's population loss during this period. Accompanying the enrollment decline, the **state's teaching force shrank 16 percent** over this period, from almost 118,000 to just over 99,100 teachers (**Chart A**). There are fewer teachers, but there are also fewer students enrolled in public schools.

Chart A

Michigan Public School Teachers and Student Enrollment, 2005-06 to 2015-16



Source: Center for Educational Performance and Information, Michigan Department of Education

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Enrollment projections from the National Center for Education Statistics show the **number of Michigan students will continue to slip to just over 1.4 million** by the fall of 2027, an 8.2 percent drop from fall 2015. Absent other forces, this decline would be expected to suppress teacher demand going forward.

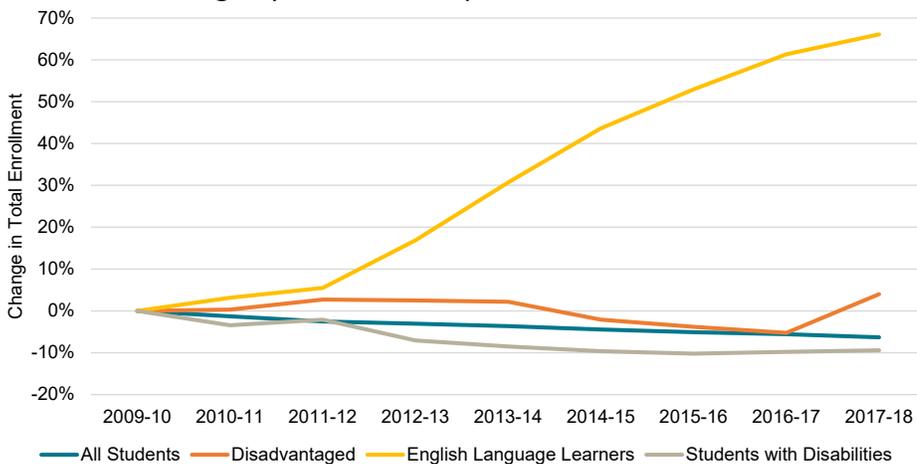
Concurrently, **the number of students identified as economically disadvantaged and the number of non-English speaking students has increased (Chart B)**. Generally speaking, these student

Turnover and Attrition A Michigan Department of Education study found that average teacher turnover among the state's public schools was 19.8 percent between 2012-13 and 2013-14 – **significantly higher than the national average of 15.7 percent**. Further, there is little indication of any reduction in turnover in the near future; Michigan's overall rate hardly fell in 2016-17 (19.3 percent) (**Chart C**). Michigan's higher-than-average teacher turnover rate is not reflected in the statewide demand for teachers (one district's loss is another's gain), but it boosts teacher demand for the individual districts that the teachers are transferring from.

On average, about 16 percent of public teaching positions must be filled each year because of job changes or career exits. Teachers move on for any number of reasons, including retirements, district staffing decisions, personal and professional reasons. The percentage of leavers has remained fairly stable at around eight percent in recent years. It's movers who are chiefly responsible for the growing workforce instability; the share of the workforce that moved from one school to another increased from

Chart B

Enrollment Change by Student Group since 2009-10



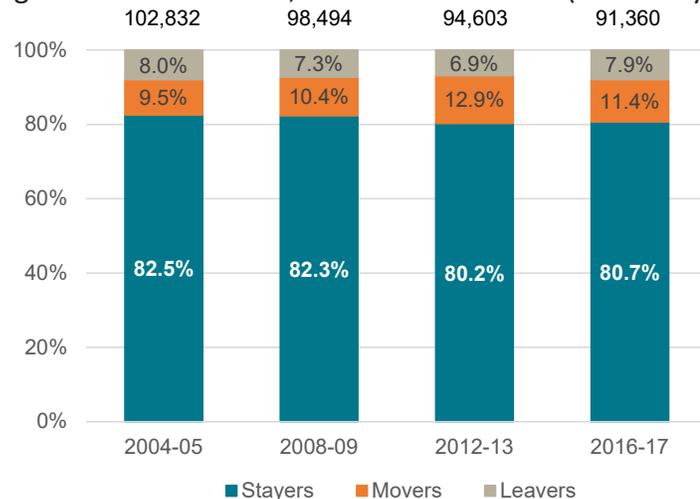
Source: Center for Educational Performance and Information, Michigan Department of Education

populations require additional instructional supports and resources and demand for specially trained teachers to serve these students has risen, a trend likely to continue.

Student-Teacher Ratios Michigan school teachers are responsible for about two more students per classroom than the national-average, a ratio that **has been higher than the U.S. average** for some time. The pre-Great Recession ratio of 17.52 students per teacher in 2008-09 increased steadily to 18.25 in 2015-16 with the tightening of budgets and hiring pauses caused by the economic downturn. A public push to return to the pre-recession ratio would add 3,500 teachers to the workforce.

Chart C

Michigan Teacher Turnover, 2004-05 to 2016-17 (selected years)



Note: This chart is presented in table form in the body of the paper. Source: Reproduced from 2017 Michigan Department of Education report, *Teacher Turnover in Michigan*

9.5 percent in 2004-05 to 11.4 percent in 2016-17, more than 50 percent greater than the national figure (8.1 percent).

Another state report highlighted the considerable variation in turnover rates across districts by locale (urban, suburban, rural) and by school governance structure (traditional compared to charter public). It showed that **urban districts had the highest teacher turnover** (24.3 percent), followed by rural (16.1 percent) and suburban (15.4 percent). Also, charter schools had higher turnover than traditional public schools, regardless of the setting. The largest spread in turnover rates was in urban districts; traditional public schools averaged 20.1 percent turnover compared to 37.3 percent in charter schools.

Research into Michigan teacher turnover rates shows that the state-level **reforms implemented in 2010 through 2012 are not to blame for the overall increase** in rates observed in the early part of the decade. However, there is evidence that these policies were associated with **higher teacher exit rates in hard-to-staff schools** (i.e., schools with high concentrations of low-income students, poor academic performance, and high dropout rates).

Trends in Supply

The supply component of the state's teacher labor market may be considered in a number of ways. Researchers suggest that one way is to simply think about the total number of teachers needed to staff classrooms in a given year; for Michigan, this is about 100,000, a number that has been steadily falling for many years. A more refined examination of supply focuses on the pool of teachers that will be available to fill vacancies over the course of a year. This includes either new entrants or re-entrants to the workforce.

Overall, the data show a shrinking supply of new teachers to replace those who leave the profession or change schools. While state

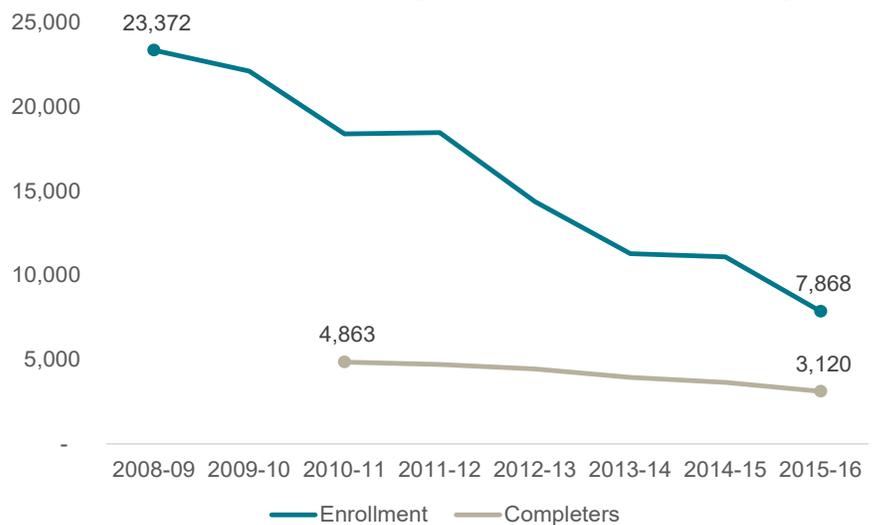
and federal information confirm that new teacher production is way down, another supply source (i.e., still-credentialed former teachers living in state) remains largely untapped. Although little is known about the nearly 100,000 individuals who comprise this potential supply source, it certainly could take up some of the slack from fewer new entrants to the profession. Specific research findings include the following:

New Teacher Production Between 2008-09 and 2015-16, **enrollment at teacher prep programs is down 66 percent**. This follows a broader trend in Michigan postsecondary education enrollment (8.1 percent decline), but to a much greater extent. Michigan is not alone; a national survey highlights that the number of high school students interested in an education major dropped to its lowest level on record in 2015. Enrollment in teacher preparation is down nationally as well – 30 percent between 2008-09 and 2013-14.

Looking at the number of students who complete their formal teacher training provides a clearer view of future supply further along the pipeline. Given the enrollment picture, it is not surprising that the number of program completers also is down 30 percent from 2010-11 to 2015-16. Just over **3,100 individuals completed** the requirements for their teacher prep program in 2015-16 (**Chart D**).

Chart D

Enrollment and Completion at Michigan Teacher Preparation Programs



Source: U.S. Department of Education, Title II Higher Education Act Report Card

Alternative Certification Programs Since 2010, Michigan has opened up another teacher supply line by authorizing alternative teacher certification pathways. While growing in number from one program in 2010 to eight today, these institutions have not produced a large number of working teachers. **Only 231 educators (out of nearly 100,000 teachers) had obtained an interim certificate in 2017-18 from an alternative certification program.**

New Teachers by Subject Area Michigan programs continue to produce more elementary teachers than any other subject area, but it is not clear how much these programs can do, or are willing to do, to address mismatches between supply and demand for specific teachers.

Teacher Certification Once freshly minted, graduates of teacher prep programs may pursue state certification, a requirement before they can enter the classroom. The number of initial teaching certificates peaked in 2003-04 (9,664 certificates) and has since **declined 62 percent to 3,696 certificates in 2015-16.**

Subject Area Endorsement Certified teachers are required to obtain endorsements to teach specific subjects. Overall endorsement activity is down 44 percent from 2011-12 to 2015-16, something you

would expect given trends in program completions and state certifications. This data also provides insight into **supply lines for shortage areas identified by the state (Table A).**

The state’s new-teacher supply has shrunk considerably in recent years and there is nothing to suggest that current trends will reverse course soon. Given this trend and the need for schools across the state to fill vacancies arising from multiple factors, another supply source may need to take up the slack. As stated above, former, still-credentialed teachers would seem to be a natural partial solution, although we know little about who they are. Further state and local attention should be directed to this population.

A Statewide Shortage

As a state, Michigan continues to grapple with many public education issues (e.g., lagging student achievement, achievement gaps, funding, etc.). Public policies to address teacher shortages, whether originating on the demand or supply side of the equation, will require precise data. As a state, Michigan has not invested much time or financial resources to study the problem. The state does not produce a comprehensive updated study of teacher supply and demand.

Table A

Program Graduates by Identified Shortage Area Subjects, 2011-12 and 2015-16

| Shortage Area Subjects | 2011-12 | | 2015-16 | | Change |
|----------------------------|---------------|-------|--------------|-------|--------------|
| | Teachers | Share | Teachers | Share | |
| STEM* | 1,988 | 16% | 1,212 | 16% | (39%) |
| Special Education | 672 | 5% | 413 | 5% | (39%) |
| Early Childhood | 421 | 3% | 336 | 4% | (20%) |
| English as Second Language | 119 | 1% | 130 | 2% | 10% |
| Total all Subjects | 12,674 | | 7,706 | | (39%) |

* Generally, STEM includes the various science, technology, engineering, and math subject areas individually reported on the Title II report, but aggregated here.

Source: U.S. Department of Education, Title II Higher Education Act Report Card

The lack of public reporting and data surrounding teacher supply and demand makes it difficult to assess shortages. Clear-cut data is hard to come by. This report presents various components of teacher supply and demand that indicate a shortage, but nothing definitive to claim that one exists.

Shortages by Field States are required to identify federally-designated teacher shortage areas. Michigan’s report, compiled using information supplied by local districts, suggests a **growing number of them over the last five years (Table B)**. Outside of a statewide picture, this information is of marginal value as it provides no detail about the type of schools affected and, more importantly, where they are located (urban, rural, suburban districts).

Table B
Federally-Designated Teacher Shortage Areas, 2014-15 to 2018-19

| Subject Matter | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|--------------------------------|---------|---------|---------|---------|---------|
| Career and Technical Education | X | X | X | X | X |
| Special Education | X | X | X | X | X |
| English as a Second Language | X | X | X | X | X |
| World Languages | X | X | X | X | X |
| Mathematics | | | X | X | X |
| Arts and Music | | | | X | X |
| Health and Physical Fitness | | | | X | X |
| Language Arts | | | | X | X |
| Social Studies | | | | | X |
| Science | | | | | X |
| Psychology | | | | | X |
| Core Subjects | | | | | X |

Source: U.S. Department of Education

Policy Considerations

A number of entities are invested in and directly influence the health of Michigan’s teacher pipeline. Each has its own mission, constituencies, and interests. While each is linked in some way to the pipeline, given the nature of organizations generally it is not unreasonable to believe that many operate in silos. Addressing workforce imbalances will require partnerships between many of these entities.

Better and Timely Information As a state, Michigan has not prioritized studying teacher labor markets and the shortage issue. This is evidenced by the lack of available, timely and relevant information related to the various components of the educator labor force and the factors influencing them. A good first step would be to create a task force or workgroup charged with examining shortages and providing potential solutions to various education stakeholders. This will require taking stock of current and requisite data needs within the state, among the intermediate school districts, and for individual school districts; settling on analytical methods; and reporting findings.

Getting Potential Teachers into the Pipeline Data presented in this report show that fewer high school students are entering college with the intention of entering the field. Leakage through the pipeline of getting them from entrance into a career is considerable.

Michigan has some of the highest student-loan debt in the country. For the class of 2017, Michigan ranks 11th nationally, with each graduate holding an average of \$31,289 in debt when leaving college. Some 58 percent of graduates owe money on student loans.

The state could augment the federal loan forgiveness programs for individuals seeking a teaching career.

To qualify for the federal programs, borrowers must commit to work for five consecutive years in a high-needs school and make regular subsidized loan payments. For the typical teacher, up to \$5,000 in student loan debt can be forgiven after completing the service requirement. Those teaching math, science, or special education can have up to \$17,500 forgiven.

Another debt-related intervention could be to develop a student debt assistance program to encourage

people to stay in the profession. Debt assistance differs from loan forgiveness basically in the timing of the benefit; loan forgiveness occurs after a set period of service while debt assistance is provided in the form of an annual benefit while the individual continues with regular loan payments. Assistance programs can be structured to provide an increasing benefit after each full year in the classroom, with a maximum cap based either on total assistance or years participating. Annual bumps in the benefit may serve as an added incentive to keep teachers in the classroom.

In addition to loan forgiveness, a targeted scholarship modeled after the nationally recognized Kalamazoo Promise could incentivize students to enroll in and complete the requirements for teacher preparation. A statewide promise program could be developed or individual teacher preparation programs created to train teachers for high-demand classrooms or to teach in high-need schools. If paired with a “grow your own” strategy described below, students from high-need communities across Michigan could be rewarded for academic success and returning to their communities to give back.

Tackling Michigan’s High Turnover Rate: Focus on Retention Michigan’s teacher turnover rate is high and a significant cause of staffing problems. It is particularly problematic in the state’s charter schools, urban schools, and those with high concentrations of poverty.

Michigan does not have a statewide teacher salary schedule like many states, which means pay and compensation structures are determined locally. Generally, retention is better when salary and benefits are competitive with other occupations requiring the same educational background, training, and experience. In addition to ensuring starting salaries are competitive, differential pay systems can be employed. These take into account the job prospects and earning potential that certain teachers have outside the school setting, such as those trained in specific high-demand content areas (e.g., science, technology, special education). Implementing differential pay, especially for entry-level positions, may require schools to break from the traditional model based entirely on experience and education. Differential pay is an especially important strategy

when retention is a challenge in hard-to-staff subjects or school settings.

As was discussed earlier, retention of teachers in the first couple of years is an issue across the state, but some districts are especially plagued by high attrition rates. One strategy the state can pursue is to invest more in teacher preparation, support and development strategies that target retaining teachers in high-need settings and shortage areas. High-quality teacher residency programs are a promising approach employed across the country, requiring schools to partner with preparation programs to provide aspiring teachers the chance to learn in the same environment where they will eventually work.

Another promising model of teacher preparation involves recruiting individuals into the profession from a school’s immediate community, such as current students or employees. The “grow your own” approach requires schools to work with teacher prep programs – traditional and alternative – to ensure schools’ unique staffing needs are met. The majority of teachers who grew up in urban or rural settings go on to work in these communities.

Like any organization, local schools have their own culture, practices, policies, and characteristics that can be influential in a teacher’s decision to remain in the classroom. Unlike changes to salary schedules or recruitment and preparation, a school’s organizational conditions are less costly to modify and directly under the control of local schools. It has been demonstrated that schools with “positive” organizational conditions – teachers provided with more school-wide decision-making authority and classroom autonomy – have lower turnover rates, especially among minority teachers.

Action is needed to ensure a robust, well-prepared teacher workforce now and into the future. Michigan could invest in rapidly building the supply of qualified teachers in the fields and locations where they are most needed, while creating incentives for experienced, effective teachers to re-enter and remain in the classroom. Additionally, it is abundantly important to this endeavor that Michigan invest in data, information, and analysis to diagnose workforce problems and guide the appropriate interventions.

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