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Trends in Michigan Teacher Certification

Initial Certificates Issued 1996-
2016



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Trends in Michigan Teacher Certification

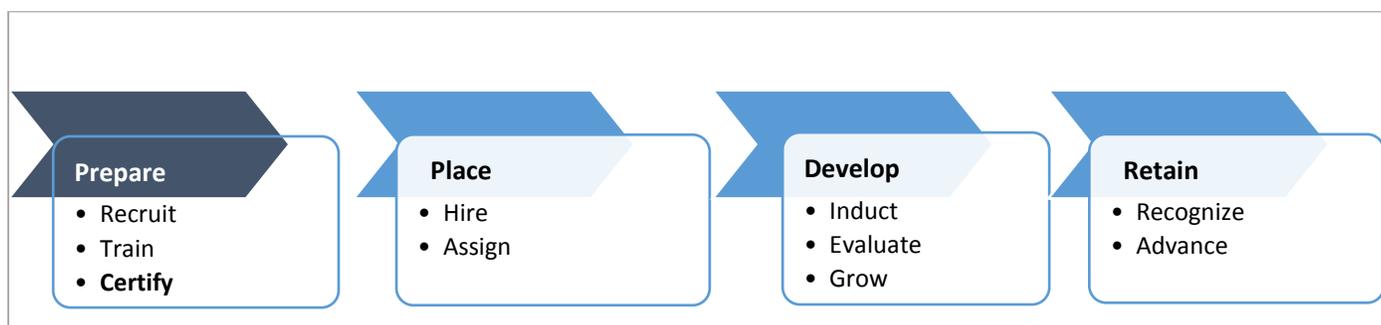
Introduction

The purpose of this brief is to report on trends in the issuance of initial teaching certificates in Michigan.

A healthy and vibrant educator workforce is a key component in high-functioning education systems. The state of Michigan has identified an effective education workforce as one of its four key focus areas in [Michigan's Top 10 in 10 Strategic Plan](#).

Key to this work is leveraging the rich data sources available through the MDE and the Center for Educational Performance and Information (CEPI) by creating long-term and short-term analyses pertinent to workforce issues. This work is intended to support internal and external stakeholders in making informed decisions regarding educator preparation, credentialing, hiring, professional development, and retention.

The teacher pipeline may be conceptualized in many ways. Illustrated below is a representation of Michigan's teacher pipeline, useful to understanding the analysis in this brief.



Teacher supply, or the total number of teachers potentially available to fill vacant teaching positions at a given time, is comprised of several subsets of teachers: those who have held teaching positions before, left the workforce, and may re-enter; those who are moving from previously held teaching positions, whether within the state or from out-of-state; and those who are newly certified and ready to find their first teaching position. This white paper contains information on certification (a point within the preparation phase of the pipeline), and will specifically focus on the certificates required to *enter* the teaching profession (initial certificates), over a five-year period (2011-2012 through 2015-2016). The number of initial certificates is important because it represents the third subset of teacher supply, namely the number of newly qualified individuals (new entrants) available to enter the workforce. This paper focuses on trends in initial certification to explore one significant measure of teacher supply in Michigan.

Key Terms and Data Considerations

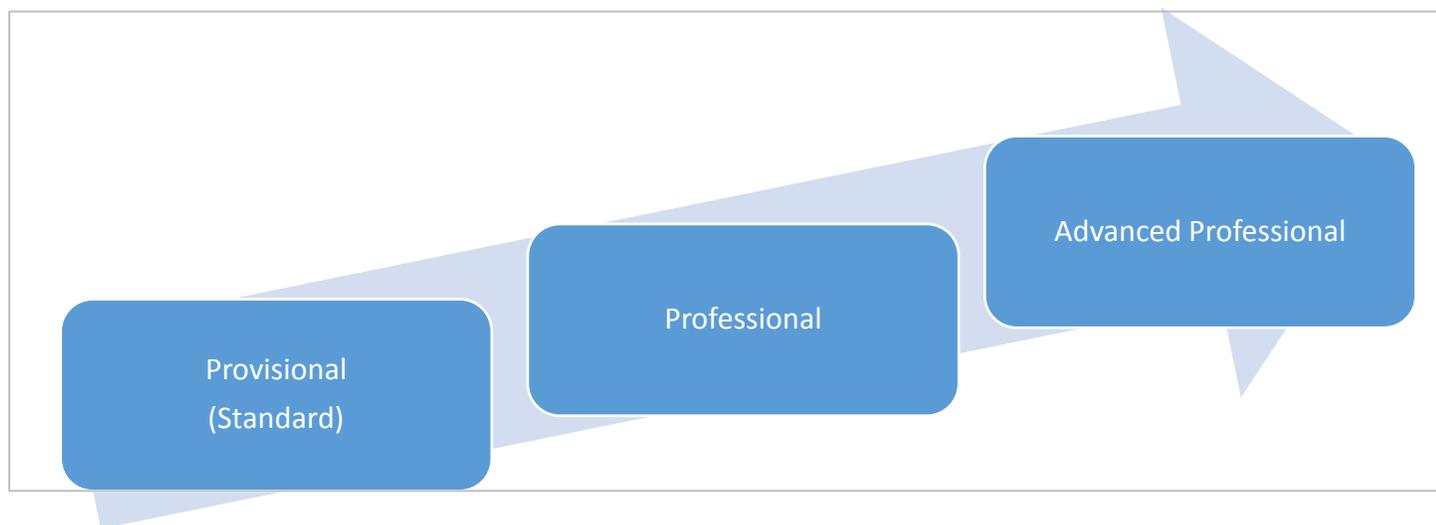
The data source used for this brief is the Michigan Online Educator Certification System (MOECS), the system through which educators apply for certificates and endorsements, as well as renewals to certificates over the life

of their careers in Michigan¹. MOECS contains demographic, endorsement, criminal background and professional learning information for all educators certified in Michigan, as well as any endorsements linked to their certificates².

The initial certificates are provisional, interim, and interim occupational.³ Progression to higher level certificates in all cases is based on professional learning and teacher evaluations.

- Provisional (Standard) teaching certificates are issued to candidates who complete traditional teacher preparation programs. A candidate must successfully complete the teacher preparation program and pass a test of basic skills to receive a provisional (standard) teaching certificate.
- Interim teaching certificates are specifically for candidates who enter teaching through an alternative route. After three years, candidates may progress to provisional (standard) certificates.
- Interim occupational certificates are the initial certificates for Career and Technical Education (CTE) teachers.

Traditional Route Progression

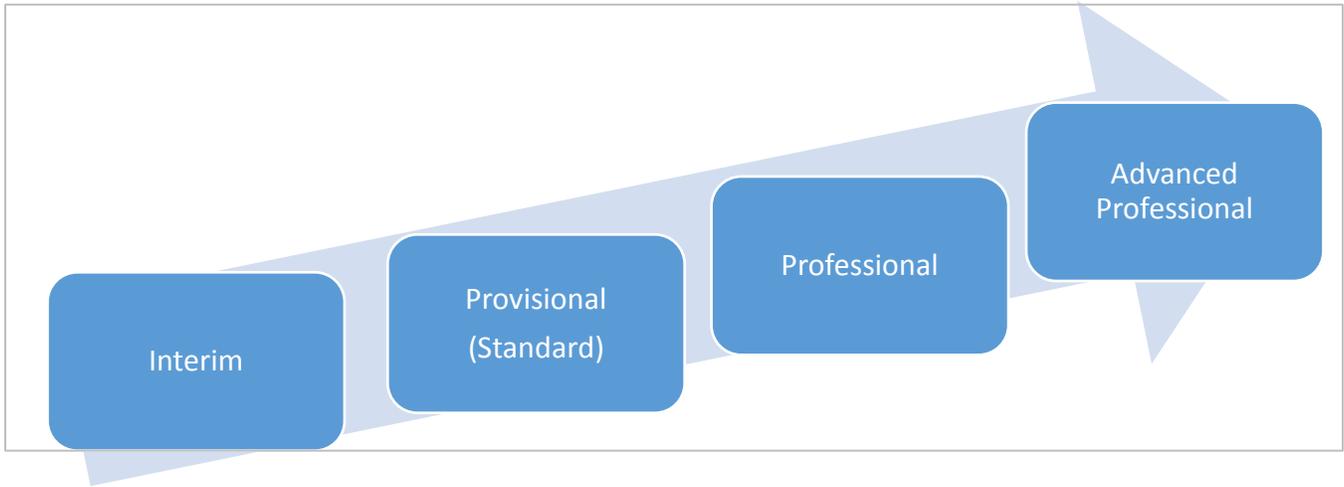


¹ For this report, the data source, MOECS Replicated was accessed through SAS Enterprise Guide rather than the semi-public online portal.

² The certificate is issued at the elementary or secondary level. For all secondary certificates and some elementary certificates, depending on what the candidate wishes to teach, a candidate receives one or more endorsements on the certificate. For instance, a candidate might receive a secondary certificate with an endorsement to teach mathematics. It is through the endorsement information that we investigate trends in supply by subject area.

³ Additional information on certification pathways and requirements are available through the MDE Office of Professional Preparation Services website: <http://www.michigan.gov/mde/0,4615,7-140-5683---,00.html>

Alternative Route Progression



Results and Analysis

General trend data were compiled for the 1996-1997 through 2015-2016 school years, and deeper analysis focuses on the five-year period 2011-2012 through 2015-2016⁴.

Long-Term Trend

Table 1 and Figure 1. Initial certificates issued 1996-1997 through 2015-2016 show the change in number of initial certificates issued from 1996-1997 through 2015-2016. The graph is labeled by the end years (spring of each school year). Looking at this longer trend allows one to observe the peak in certificates, which occurred in 2004.

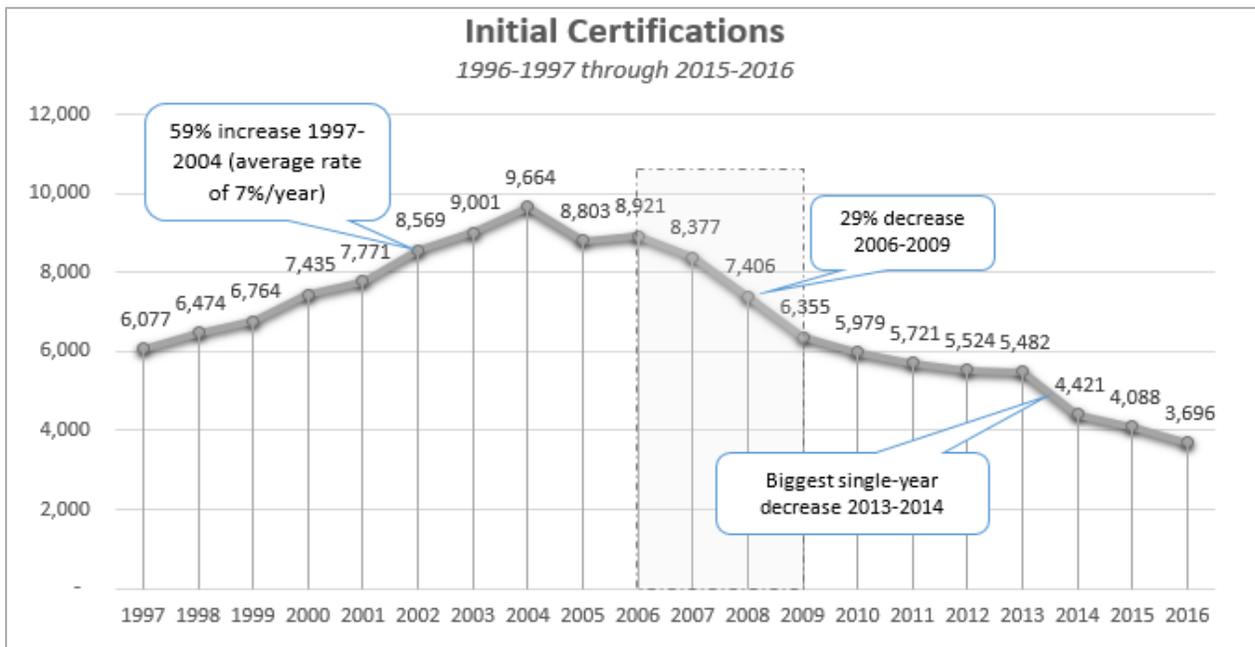
Table 1. Number of initial certificates with issue dates 1996-1997 through 2015-2016

School Year	# Initial Certificates	% Change Initial Certificates
1996-1997	6,077	-
1997-1998	6,474	7%
1998-1999	6,764	4%
1999-2000	7,435	10%
2000-2001	7,771	5%
2001-2002	8,569	10%
2002-2003	9,001	5%
2003-2004	9,664	7%
2004-2005	8,803	-9%
2005-2006	8,921	1%
2006-2007	8,377	-6%

⁴ The period used is September 1 through August 31 each year, queried on "Issue Date". These dates were selected to ensure that the report periods were consistent with Title II annual reports.

School Year	# Initial Certificates	% Change Initial Certificates
2007-2008	7,406	-12%
2008-2009	6,355	-14%
2009-2010	5,979	-6%
2010-2011	5,721	-4%
2011-2012	5,524	-3%
2012-2013	5,482	-1%
2013-2014	4,421	-19%
2014-2015	4,088	-8%
2015-2016	3,696	-10%

Figure 1. Initial certificates issued 1996-1997 through 2015-2016



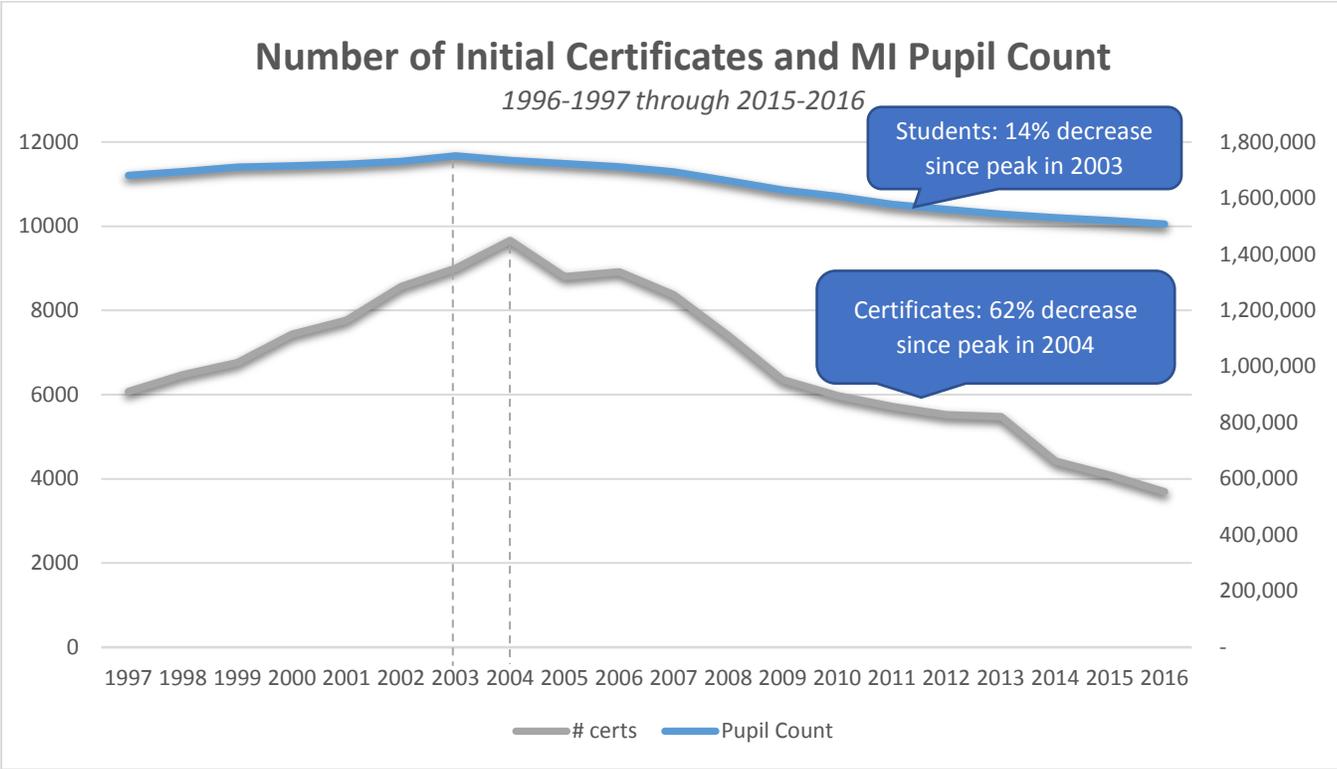
Between 1997 and 2004, the number of initial certificates increased from 6,077 to the 20-year peak of 9,664 (59%), representing an average rate of 7% per year. Between 2006 and 2009, the number of initial certificates issued decreased from 8,921 to 6,355 (29%), an average of 9.7% per year. The decrease abated between 2009 and 2013, then declined at a steeper rate again between 2012-2013 and 2015-2016 (from 5,482 to 3,696). The largest decrease (19%) over the entire 20-year period occurred between 2012-2013 and 2013-2014 (19% in a single year).

To provide further context, Figure 2. Initial certificates and Michigan pupil count 1996-1997 through 2015-2016 shows the change in number of initial certificates issued from 1996-1997 through 2015-2016 on the same graph as the change in number of pupils in Michigan⁵. The graph has two separate axes (numeric scales appear

⁵ Source: "Number of Public School Districts in Michigan" retrieved 6/13/17 from https://www.michigan.gov/documents/numbsch_26940_7.pdf. Note in source regarding data: "Information for school

on both the left and the right). This allows for a comparison of the shapes of the two sets of data. From the graph, we can see that the general trajectory of pupils and certificates is similar, but pupil count in Michigan peaked the year before initial certificates, in 2003, and decreased by 14% between that year and 2016. The number of initial certificates decreased 62% since its peak one year earlier, a substantially higher rate than the decrease in pupils.

Figure 2. Initial certificates and Michigan pupil count 1996-1997 through 2015-2016



Five-year trend

The remainder of the brief focuses on the five-year period 2011-2012 through 2015-2016. The key variable of interest remains the number of initial certificates; the number of students and the number of assigned teachers, or teachers employed by Michigan public school districts, are also presented to provide greater insight into the overall dynamics within schools in that timeframe. The number of pupils is one way of conceptualizing demand for teachers; generally, if the number of students increases or decreases, we would expect the number of assigned teachers to change, and ultimately to impact production of new teachers.

years 1977-1991 was obtained from the publication Condition of Michigan Education. Information for school years 1992 forward was obtained from the State School Aid and School Finance data files. These are the Public School Districts that receive State School Aid payments in any given year. Bulletin 1011 has not been published for Fiscal Year 2015 or 2016. Pupil count information is drawn from the Michigan Student Data System (MSDS)."

Table 2 shows the number of total initial teaching certificates as well as the breakdown by initial certificate type: interim occupational, interim and provisional. As evident in the table, the provisional teaching certificate, which corresponds with traditional teaching preparation programs, is by far the most issued initial certificate.

Table 2. Number of initial certificates by type (five years)

School Year	Interim Occupational Certificate	Interim Teaching Certificate	Provisional Teaching Certificate	Total
2011-2012	97	112	5,315	5,524
2012-2013	111	264	5,107	5,482
2013-2014	72	108	4,241	4,421
2014-2015	53	73	3,962	4,088
2015-2016	55	46	3,595	3,696
% Change	-43%	-59%	-32%	-33%

The number of initial certificates issued decreased from 5,524 in 2011-2012 to 3,696 in 2015-2016, a decrease of 33%. Nationwide, between 2009 and 2014, enrollment in teacher preparation programs dropped by 35% (Sutcher et al. 2016). Although enrollment in teacher preparation programs and certificates issued are two different measures and reflect different time periods within the teacher pipeline, they are related, so the Michigan trend seems roughly comparable. Unsurprisingly given the proportion of certificates that are provisional, the percentage decrease in that category mirrors the statewide decrease. The number of certificates issued in both other categories is low.

Figure 3 and Figure 4 show the change in total initial teaching certificates, compared with the change in number of assigned teachers and Michigan pupil count⁶.

⁶ Teacher headcount comes from MiSchoolData staffing headcount data export. Student data comes from the source referenced above: "Number of Public School Districts in Michigan" retrieved 6/13/17 from https://www.michigan.gov/documents/numbsch_26940_7.pdf.

Figure 3. Initial certificates and number of teachers (five years)

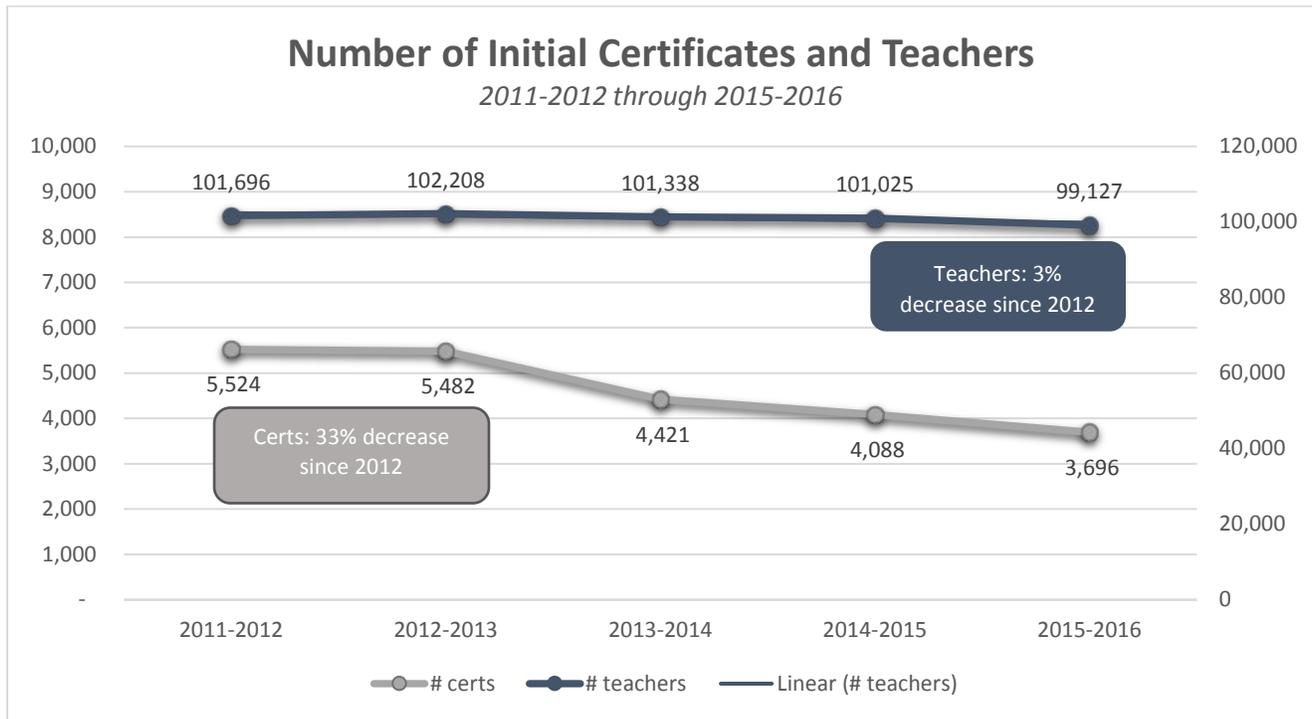
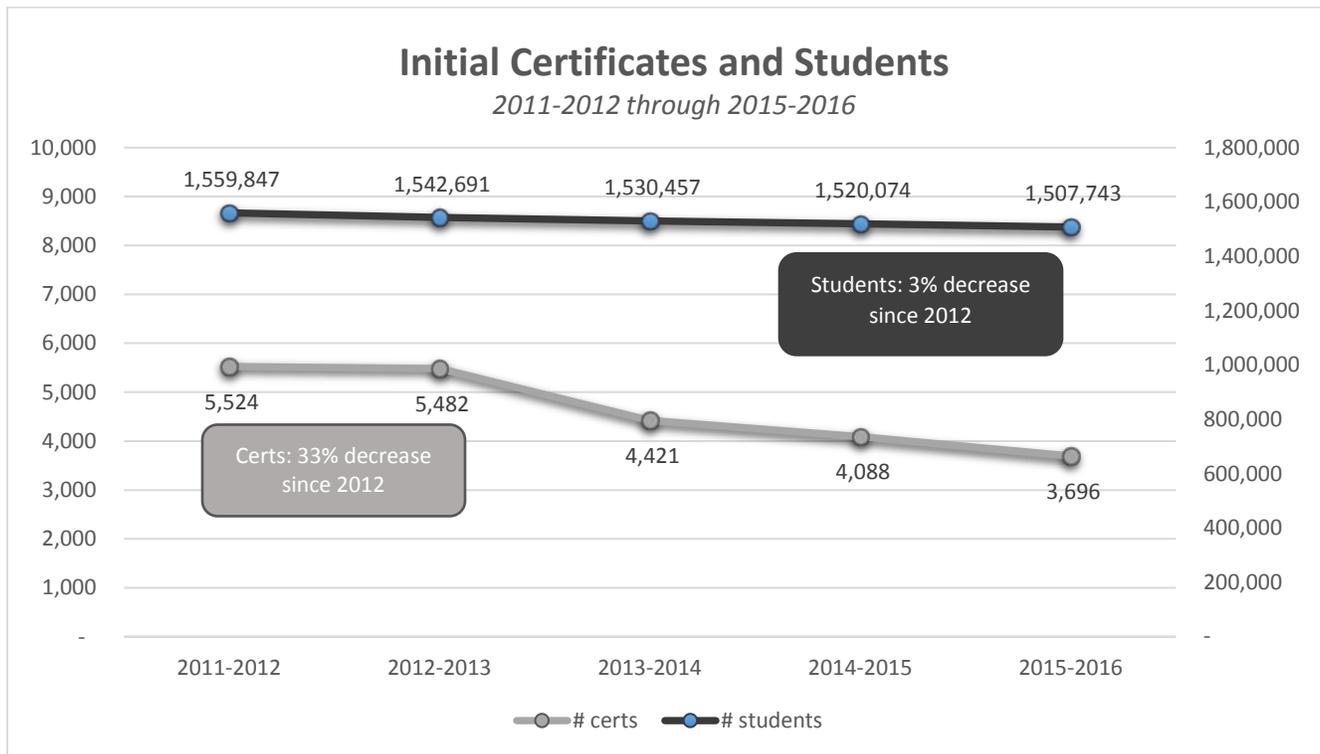


Figure 4. Initial certificates and Michigan pupil count (five years)



Both the overall number of assigned teachers and the total number of pupils decreased by approximately 3% between 2011-2012 and 2015-2016; the ratio of total students to total employed teachers has remained stable (approximately 15:1). The disparity between the rate of decreases in the student and teacher populations on one hand and the rate of decrease in initial certificates on the other suggests that different dynamics may be driving the trend in initial certificates.

New Certificates and New Teachers⁷

To investigate the relationship between the new entrants into the workforce and the demand for teachers as estimated by new hires who are completely new to the profession in a given year, Table 3 and Table 5 show the supply of newly certified teachers compared with the number of new, assigned teachers in the following school year⁸. Two extra school years are included to confirm that the trend continues into the most recent school year and to illustrate the greater annual variability in new entrants.

It is important to note that newly-certified teachers make up only one part of the pool for new teachers at any given school each year; new hires also include teachers certified in other states and teachers certified in prior years.

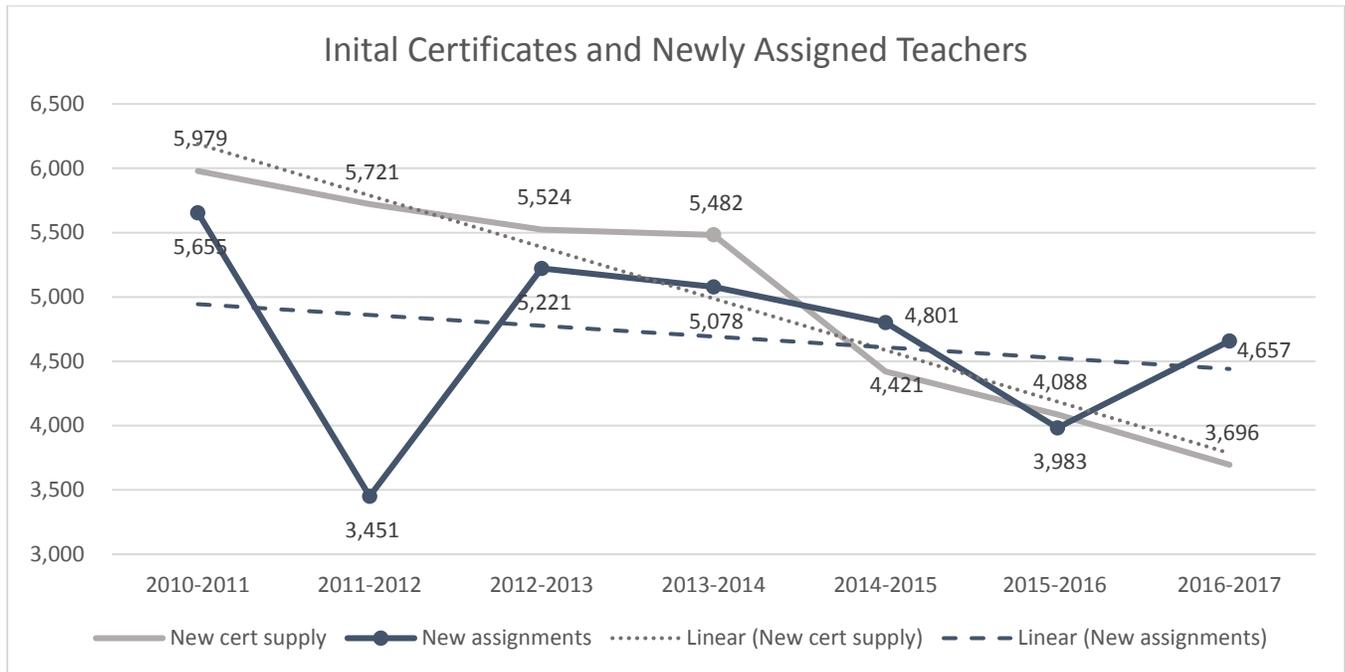
Table 3. Supply of initial certificates matched with number of newly assigned teachers, 2010-2011 through 2016-2017.

School Year	New Certificate Supply	New Teachers	Difference
2010-2011	5,979	5,655	N/A
2011-2012	5,721	3,451	1,562
2012-2013	5,524	5,221	1,576
2013-2014	5,482	5,078	1,753
2014-2015	4,421	4,801	906
2015-2016	4,088	3,983	766
2016-2017	3,696	4,657	584
% Change	-38%	-18%	N/A

⁷ The data in Table 3 and Figure 5 have been modified from first publication of this report due to a change in the calculation of “new teachers, not previously assigned” in the mobility dataset.

⁸ New, assigned teachers are teachers who are new to their schools in a given school year and have never previously appeared in the Registry of Educational Personnel (REP). Source: Teacher mobility data set, compiled using CEPI Registry of Educational Personnel (REP) data accessed via SAS EG. New teacher assignments based on Fall collections.

Figure 5. Supply of initial certificates matched with number of newly assigned teachers, 2001-2011 through 2016-2017.



The graph shows that from 2010-11 through 2013-14, the number of initial certificates issued exceeded the number of new teachers that entered schools in the fall, indicating an overall (i.e. not accounting for subject-level, program-level, or local differences) surplus that has been noted in past policy discussions. In 2005, Michigan’s State Board of Education enacted a moratorium on new teacher preparation programs “with the intent to reduce a perceived over-supply of teachers in the State”.⁹ The gap between teacher supply and demand has narrowed over the past several years, and the number of new teachers was larger than the number of initial certificates issued during the 2014-15 and 2016-17 school years.

Program Area

Most teacher candidates receive certificates in either elementary or secondary education.¹⁰ Table 4 shows the number of newly issued initial certificates in each of these program areas from 2012 through 2016 (end years), the percentage change over the period, and the percentage of total certificates that year. For all five years the numbers of initial elementary certificates issued have exceeded secondary certificates by 6 to 9%. Over the

⁹ Excerpt from MDE memo extending moratorium until October 13, 2018: “The original moratorium was enacted with the intent to reduce a perceived over-supply of teachers in the State. Although EPIs report lower enrollment in programs, only 42% of teachers recommended for certification in 2012-13 were reported as employed in Michigan in 2014. Although the moratorium does not yet appear to have addressed the over-supply issue, the data continue to indicate that there isn’t a need for new EPIs in Michigan. Further, maintaining a small number of approved EPIs allows the Michigan Department of Education to provide intensive technical assistance that will lead to high quality programs.” Source: http://www.michigan.gov/documents/mde/Item_D_Extension_of_Moratorium_501333_7.pdf

¹⁰ Certificates with “Occupational” as the program type are only applicable to grades 9-12.

years, initial elementary certificates have decreased by 28%, while initial secondary certificates have decreased by 37% and occupational by 43%.

Table 4. Initial certificates by program type (five years)

School Year	Total Teachers	Total Initial Certificates	Elementary Initial Certificates	% of Total	Secondary Initial Certificates	% of Total	Occupational Initial Certificates	% of Total
2011-2012	101,696	5,524	2,947	53%	2,480	45%	97	2%
2012-2013	102,208	5,482	2,952	54%	2,419	44%	111	2%
2013-2014	101,338	4,421	2,376	54%	1,973	45%	72	2%
2014-2015	101,025	4,088	2,149	53%	1,886	46%	53	1%
2015-2016	99,127	3,696	2,096	57%	1,545	42%	55	1%
% Change	-3%	-33%	-28%	-	-37%	-	-43%	-

Endorsements Five-Year Trend

The final section focuses on the endorsements candidates received on their certificates. These provide an indicator of the number of teachers available to teach specific subjects. All secondary certificates must be paired with an endorsement. Elementary certificates can be paired with a subject area endorsement or can stand alone. In the analysis below, elementary does not appear since it is not technically an endorsement. The elementary numbers in Table 4 (above) can be roughly compared with the endorsements categories below.

Certificates (certified individuals) often have more than one endorsement, so the total number of endorsements is greater than the total number of certificates discussed above.

Table 5 shows the number of endorsements and broad subject categories generally found in research literature to be shortage areas¹¹: Bilingual/English as a Second Language (ESL), Career and Technical Education (CTE), Special Education, Early Childhood and Science, Technology, Engineering and Mathematics (STEM) subjects¹². A full listing of the endorsements (and

codes) within each category is located at the end of the paper.

¹¹ e.g. Sutchter et al (2016), Berry, B. & Shields, P. (2017) Solving the teacher shortage. *Phi Delta Kappan* Vol 98, Issue 8, pp.8 - 18; U.S. Department of Education Office of Postsecondary education (2015). Teacher shortage areas nationwide listings 1990-1991 through 2015-16. Washington, DC.

¹² The STEM endorsements include Math, Integrated Science, Biology, Chemistry, Physics, Earth/Space Science, and Physical Science.

Table 5. Typical shortage areas - Number of endorsements on initial certificates by subject area

Year (2012-2016)	All Endorsements on Initial Certificates ¹³	STEM	Special Education	Early Childhood ¹⁴	Bilingual and ESL	CTE
2011-2012	8,027	1,885	833	514	162	193
2012-2013	7,703	1,795	775	508	153	189
2013-2014	6,005	1,501	650	355	131	133
2014-2015	5,342	1,311	593	292	159	93
2015-2016	4,480 ¹⁵	1,152	556	265	141	88
% Change	-44%	-39%	-33%	-48%	-12%	-54%

Overall, the number of endorsements has decreased by 44% over the five years. That the percentage decrease in endorsements exceeds the percentage decrease in certificates could be due to a variety of factors (e.g., people received fewer endorsements per certificate or the decrease in secondary certificates relative to elementary certificates mentioned in the previous section disproportionately decreased the overall number of endorsements since while all secondary certificates must be paired with an endorsement, elementary certificates can be paired with a subject area endorsement or can stand alone. The percentage decrease in endorsements is described here as a basis for comparing the relative change within each subject area. The numbers of endorsements in all categories have decreased. Early childhood and CTE have each decreased at a higher rate than the overall decrease.

In Table 6, the STEM endorsements are further broken out within specific subjects by number and by percentage of all STEM endorsements. The columns are arranged from the endorsement with the greatest representation (mathematics) to the least (physical science). The relative numbers of endorsements in the sciences are impacted by the number of courses a candidate can teach with a given endorsement. For example, a teacher with a biology or chemistry endorsement can only teach biology or chemistry, respectively. The Integrated Science/Science endorsement allows a candidate to teach any science, therefore allowing a candidate to be much more marketable.

¹³ The tables presented in this section account for nearly all endorsements, but do not add up to the total because one category is not represented in full. There is a set of endorsements called “Grade Level” endorsements, of which only the two Early Childhood endorsements are presented.

¹⁴ Note that individuals can be employed in early childhood without an endorsement, so these numbers do not reflect total supply in this area.

¹⁵ Certificates (certified individuals) often have more than one endorsement, so the total number of endorsements is greater than the total number of certificates.

Table 6. STEM subjects breakout-number of endorsements on initial certificates

School Year	Math	Integrated Science/ Science ¹⁶	Biology	Chemistry	Physics	Earth/Space Science	Physical Science
2011-2012	985	452	201	127	79	36	2
2012-2013	970	421	201	98	54	44	1
2013-2014	756	409	151	104	41	33	6
2014-2015	682	324	152	77	33	36	3
2015-2016	622	296	111	46	37	28	5
% Change	-37%	-34%	-45%	-64%	-54%	-22%	150%

Broken down in this way, some additional patterns emerge. While overall STEM endorsements have decreased by 39% over the five-year period, biology, chemistry and physics endorsements have all decreased by 45% or more.

Mathematics and integrated science are roughly on par with the overall decrease in STEM endorsements. Earth/space science has decreased by a smaller percentage and physical science has actually increased, but each of those subject areas represents a very small number of individuals/endorsements.

Finally, the numbers of endorsements in areas not typically found to present shortages nationally are presented in Table 7, also arranged in decreasing order by number. Of these, language arts and social studies were most popular. In 2011-2012, 21% of all endorsements were in language arts, roughly comparable with *all* STEM endorsements.

Table 7. Not typical Shortage Areas– Number of endorsements on initial certificates by subject area.

Year	All Endorsements	Language Arts	Social Studies	Health & PE	Arts	World Language	Business	Tech. Ed.	Misc.
2011-2012	8,007	1,694	1,553	399	344	277	37	4	8
2012-2013	7,686	1,707	1,419	394	344	304	18	2	4
2013-2014	5,988	1,355	1,001	314	291	194	19	3	4
2014-2015	5,323	1,206	840	263	321	204	12	4	2
2015-2016	4,461	925	667	196	275	163	9	4	0
% Change	-44%	-45%	-57%	-51%	-20%	-42%	-76%	0%	-100%

¹⁶ The “science” endorsement was phased out in 2003-2004: “The DX endorsement was transitioned into the Integrated Science (DI) endorsement after the 2003-2004 school year. Both endorsements can be assigned interchangeably.” Source: Retrieved from http://www.michigan.gov/documents/mde/courses_taught_by_endorsement_523203_7.pdf June 2017

Language arts and world languages have decreased at similar rates to overall endorsements. Social studies, health/physical education (PE) and business decreased by significantly more while endorsements in the arts decreased by significantly less (though representing a small percentage of overall endorsements each year).

Summary of Results

To summarize the most salient points of the analysis:

- The number of new certificates issued has declined by 33% since 2012 and by 62% since the peak in 2004. This decline mirrors nationwide decline in certifications and enrollment in teacher preparation programs (Sutcher et. al., 2016).
- The decline in number of new certificates issued/teachers entering the profession is far steeper than the decline in Michigan's student or teacher populations. The decline in certificates to teach at the secondary level has been sharper than the decline in certificates to teach elementary.
- While Michigan has traditionally produced more new teachers annually than the number of new teachers employed each year, the last three years of data indicate a convergence of these numbers. In two of the last three years, in fact, the number of new assignments has exceeded the number of new certificates issued.
- The number of provisional certificates, issued to candidates entering teaching through traditional educator preparation programs, greatly exceeds the number of initial certificates issued to candidates from alternate or CTE routes.
- Endorsements for hard-to-staff content areas, including bilingual education, career and technical education, early childhood, special education, and STEM, have declined significantly over the last five years, possibly further limiting supply in areas often defined as shortage areas.

Implications and Next Steps

It is clear from this analysis that that the decrease in initial certificates has outpaced the decrease in the student population and total number of teachers over the past five years. The number of certificates has not been tightly coupled to pupil population or teacher population in the past but has recently converged with the number of new teachers employed each year.

While this paper discusses data trends, it does not attempt to offer conclusive answers to the question: Why are fewer people entering the teaching profession. Certainly, there have been multiple factors at work, discussed briefly below, but the degree of influence and correlation of each to the decrease in new teacher certifications is beyond the scope of this analysis.

The timeline analyzed in this paper corresponds with the implementation of policy interventions in the wake of the Great Recession. In late 2009 and early 2010, a number of new education policies were signed into law as part of a sweeping package of legislation intended to make Michigan competitive for millions of dollars in the federal Race to the Top competition. These new policies, including the educator evaluation law, the school reform law, and changes to teacher tenure and retirement benefits – came with enormous impact on the teaching profession. At the same time, due to statewide and national economic strain, many districts froze

teacher pay and cut teacher benefits. In a short amount of time, teachers experienced significant new threats to their job security (via evaluation, school reform models requiring staff turnover, and loss of tenure protections) paired with a decline in compensation and benefits. While these policy interventions did not result in a mass exodus of current teachers from the profession across the board, they may have had greater impacts on teachers in high-need subjects and schools (Cowen, 2017). It also seems likely that they may have discouraged new candidates from considering or entering the field.

The decline of initial certificates and convergence with the number of new teachers hired each year might represent some degree of market correction. As evidenced above, historically, there have been more new certificates issued than new teachers hired in Michigan public schools each year; there may have been enough new teachers unable to find teaching positions in Michigan that market forces culled the supply.

Additional state-level policy changes that have occurred within the timeframe analyzed in this paper, including changes to teacher certification tests, may also have had some degree of impact. Ultimately, the trends described in this paper merit close investigation to gauge their impact on schools and districts in Michigan currently, and to anticipate impacts in the future.

Future work of the Office of Educator Talent and research partners informed by the analyses in this paper will include:

- Additional certification data analysis
 - Longer-term research activities will add greater clarity to the reasons for declining certificates as well as to examine how this might play into future teacher shortage or surplus. In the short-term, research will include similar analyses for subject area endorsements versus assignments, grade/program level analysis and exploration as to how these dynamics play out in different locales (e.g. urban, rural) districts, schools and sizes and types of schools (e.g. charter, traditional). One of the earliest next steps will also parse out the data included in this report by gender and racial/ethnic demographics of teacher candidates.
- Identifying accurate measures of teacher workforce demand
- Comparing the decline in teaching certificates with trends in other professions
- Qualitative research and analysis to better understand the phenomenon of the decline in people entering the educator professions.

References

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Sutcher, L., Darling-Hammond, L., and Carver-Thomas, D. (2016). *A Coming Crisis in Teaching? Teacher Supply, Demand, and Shortages in the U.S.* Palo Alto, CA: Learning Policy Institute.