

RESEARCH SUMMARY JUNE 2016

High School Graduation Rates through Two Decades of District Change

The Influence of Policies, Data Records, and
Demographic Shifts



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Research Summary

High school graduation rates in the Chicago Public Schools (CPS) have shown remarkable improvements over the past 16 years. Students used to be about as likely to drop out as they were to graduate; now they are three times as likely to graduate as to drop out.

Moreover, recent large improvements in the percentage of students on-track to graduate at the end of their ninth-grade year suggest that graduation rates will continue to improve for several years to come. High school graduation is a strong indicator of a host of important life outcomes, including post-secondary and employment outcomes, health, incarceration, and life expectancy.¹ Thus, these trends potentially suggest a much brighter outlook for thousands of students enrolled in Chicago's schools today, compared to students in prior years.

Changes of this magnitude prompt questions about why graduation rates have improved. There are concerns that graduation rates have been increasing because of lowered expectations for students' academic performance, or because of changes in data collection, data coding errors, or differences in how the rate is calculated. There also have been changes in the characteristics of students attending CPS high schools and improvements in elementary school achievement; these factors could affect graduation rates, regardless of any changes in how high schools operate. Yet, the district has also

experienced changes in its high schools—many new high schools have opened, and there have been a number of changes in high school practices and policies aimed at promoting student achievement and educational attainment. To what extent are the improvements in the high school graduation rates attributable to these various factors? This report addresses this question, assessing the degree to which different factors could potentially be responsible for the changes over time in graduation rates.

Key Findings

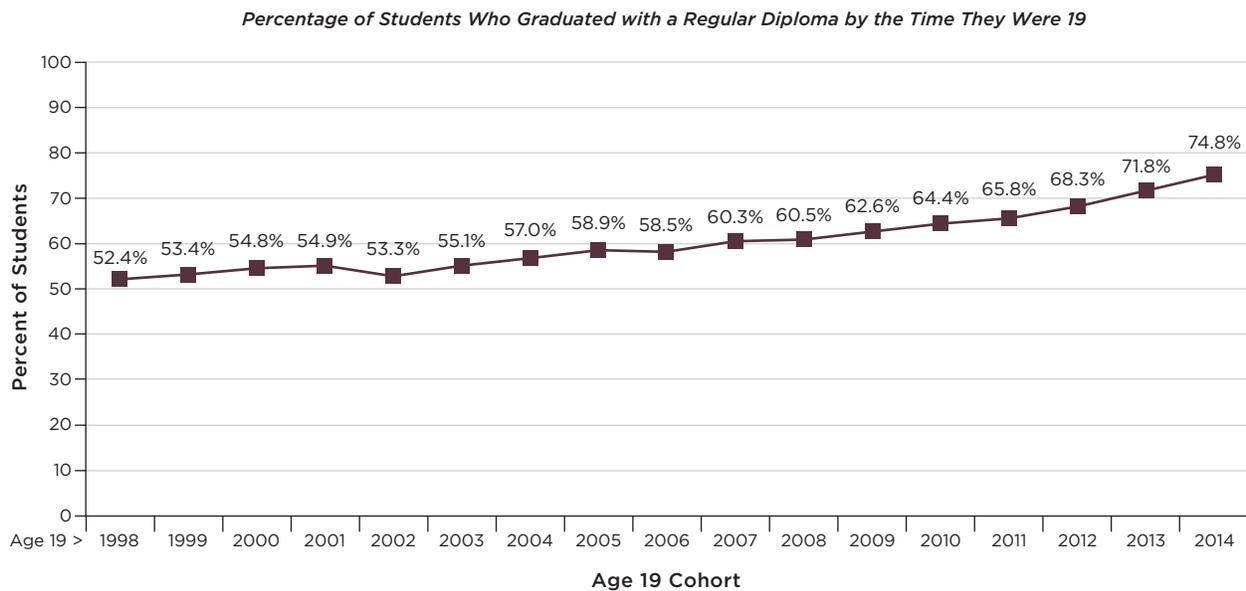
Graduation rates have increased by 22 percentage points over the last 16 years, from 52.4 percent among students who turned 19 in 1998, to 74.8 percent in 2014.² The most rapid rise in graduation rates has occurred over the last six years (see **Figure 1**). Freshman on-track rates have also risen considerably, from 48 percent among students who were 19 years old in 1998 to 81 percent for students who will turn 19 in 2017.³ The improvements in freshman on-track rates in recent years suggest the high school graduation rates will continue to improve.

¹ Belfield & Levin (2007); Cutler & Lleras-Muney (2006); Sum & McLaughlin (2009); U.S. Department of Labor (2013a, 2013b); Day & Newburger (2002); Heckman & LaFontaine (2007); Muennig (2005).

² This report calculates graduation rates based on students' age, rather than the year they started high school, due to cohort fluctuations that result from changes in the elementary school

grade promotion standards. See the full report for a description of how and why students were organized into age cohorts. Students who turned 14 years old in 2013 or later may not yet have entered high school in time to be included in this study. Therefore, this study only includes students who turned 14 by September 2012.

FIGURE 1
Graduation Rates over Time by Age Cohort



Note: Cohorts include all students who attended ninth grade in CPS. This report calculates graduation rates based on students' age rather than the year they started high school to address cohort fluctuations that result from changes in the elementary school grade promotion standards. These rates may be an overestimate of the true graduation rate because of uncertainty about whether students who were coded as transferring out of CPS really did transfer. We estimate that, due to this issue, the true 2014 graduation rate is most likely around 73 percent but may be as low as 71 percent. Data are not available to calculate a lower bound for most of the prior years.

Graduation rates have improved for students of all racial, ethnic, and economic backgrounds, but racial and ethnic gaps in graduation rates increased.

Graduation rates are higher than they were in the past for students of many different backgrounds, including race and ethnicity, neighborhood poverty, gender, and disability status. In addition, gaps in graduation rates by gender, neighborhood poverty, and learning disability status have all declined. However, racial and ethnic gaps increased over time, with graduation rates for African American students falling further behind the rates for white and Latino students, until the most recent years. While there have been some considerable changes in the backgrounds of students enrolling in CPS high schools—including fewer students living in high-poverty neighborhoods, more students from affluent neighborhoods, and more Latino students—these changes only explain a very small proportion of the improvements in graduation rates.

The largest improvements in graduation rates have occurred at non-selective enrollment, non-charter high schools.

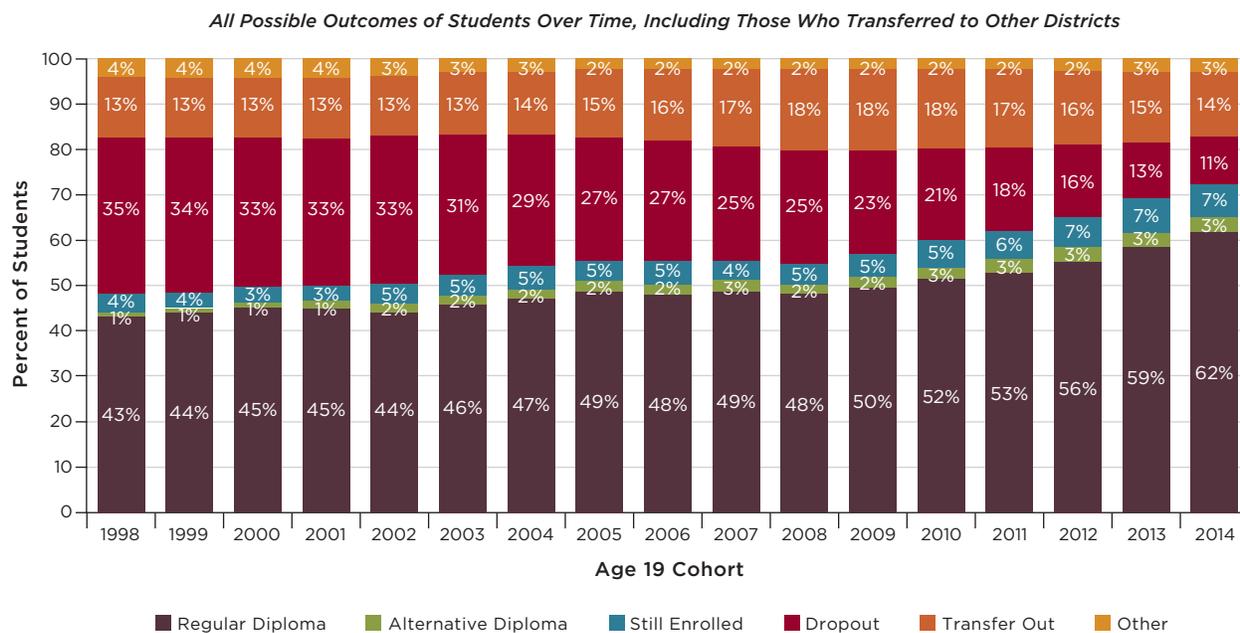
Some of the improvements in graduation rates could be due to changes in the types of high schools students attend; a growing proportion of students have enrolled in charter schools and selective enrollment high schools over time. Most of the changes that could be accounted for by new schools could also be accounted for by changes in the backgrounds and entering skills of students who enroll in these schools; it is hard to disentangle whether it was the school practices that made a difference or the types of students the new schools attracted. Charter schools had higher graduation rates than other non-selective enrollment schools for many years. However, graduation rates at non-charter schools are now close to those at charter schools. Most of the increase in district graduation rates has come from improvements at non-charter, non-selective enrollment

3 Students who are on-track at the end of freshman year have earned enough credits to be promoted to tenth grade and have failed no more than one semester of a core course. On-track status is determined in the year the student first entered ninth

grade. For most students, this is when they are 14 years old. We use the years when students were 19 years old to be consistent with the graduation rates—the cohorts are the same.

FIGURE 2

A Greater Proportion of Students Are Earning Diplomas, Even if All Transfer Students Are Counted as Non-Graduates



Note: The proportion of students who earn a regular diploma is not the same as the graduation rate because students who transfer out of the district or experience another outcome (i.e., institutionalization, incarceration, or death) are removed from the denominator of the graduation rate statistic. Percentages do not always sum to 100 due to rounding error.

high schools, which include neighborhood schools, career and military academies, and schools with selective programs.

Not only are more students graduating, but graduates have higher achievement levels and more rigorous coursework than in past years. From 2003 to 2014, graduates’ ACT scores rose from an average score of 16.7 to an average score of 18.6 while the number of students who made it to the end of eleventh grade and took the ACT increased considerably. The proportion of students scoring 3 or better on an AP exam has steadily increased, even as the number of students taking AP courses has increased fourfold since 2000. Students are also attending school at higher rates; over the past six years, high school attendance rates have risen from 78 to 89 percent. Thus, not only are more students graduating, but graduates, on average, also have stronger academic qualifications than in the past, suggesting that the increase in graduation rates are not due to lowered expectations for student performance.

Data coding issues could have contributed to some of the increase in graduation rates, but the potential influence of data issues is small. There has been concern that the district-generated graduation rates, and trends in graduation rates, have been affected by improperly coding dropouts as transfer students, or counting alternative school and GED recipients as graduates. There is evidence to warrant both of these concerns. At the same time, even the most conservatively-estimated rates, where all transfer students and students at alternative schools are counted as non-graduates, show large improvements in the percentage of students earning a diploma, especially in the last six years (see Figure 2). Data coding issues could account for some of the improvements in graduation rates between 2005 and 2008, but not in subsequent years. This does not mean that data records are completely accurate in recent years—just that they are not worse than they were in the past, and could not account for the improvements in graduation rates in the most recent years. (See the appendix of the full report for more details on data coding issues.)

Changes in students' background characteristics (race, gender, old-for-grade, and neighborhood poverty) and incoming achievement account for all of the graduation rate improvements prior to 2006. Entering test scores improved for a number of years, particularly in math, and this change in entering achievement explains most of the improvements in graduation rates up to the 2006 cohort. For subsequent cohorts (those turning 19 in 2007 or later), incoming achievement levels stopped improving and even declined considerably. Thus, students' incoming achievement levels do not explain the improvements in graduation rates since 2006.

While incoming test scores were flat or declining for the most recent cohorts of students to turn 19, subsequent cohorts of students entering CPS high schools have shown increasingly higher levels of prior achievement. These cohorts of students have not yet turned 19, but for each of the past four years, entering ninth graders have had higher incoming achievement (eighth-grade test scores and course grades) than students in the preceding year. These changes in students' incoming achievement could account for about half of the increase in on-track rates in the last four years.

Improvements in students' performance while in high school—compared to students who started high school with similar achievement in the past—account for most of the improvements in graduation rates. Students now take more classes and earn more credits during their ninth-grade year than in the past, and high school course pass rates have improved. Increases in the number of credits earned in ninth grade, the proportion of students who are on-track in ninth grade, and the proportion of classes passed in ninth grade explain all of the improvements in graduation rates beyond those accounted for by changes in students' backgrounds and incoming skills. In recent years, high school attendance during ninth grade

has improved considerably, which explains most of the increase in on-track rates beyond that which is accounted for by changes in students' incoming skills. Furthermore, students who get off track for graduation in ninth grade are more likely to eventually get back on-track and graduate than in prior years. The improvements in ninth-grade course performance seem to account for the improvements in graduation rates in recent years. Thus, students are performing better in their high school classes than students entering CPS high schools with similar skills and backgrounds in the past. High schools in Chicago seem to be doing a better job supporting students through to graduation, and this accounts for most of the improvements in graduation rates.

Overall, the high school environment has changed considerably in the last 20 years. There are many more high schools in the district, and many of the new high schools have strong graduation rates. At the same time, high schools that have been in existence since the beginning period of this study are showing much higher graduation rates than in the past, and this is not simply a result of serving better-prepared incoming students. Schools are increasingly using early warning indicators to monitor students' performance and prevent students from failing classes, partnering with nonprofit groups to provide mentoring and support to at-risk students, and providing opportunities for students to recover the credits from classes that they have failed.

Sometimes improvements in graduation rates are dismissed as being a low-level goal, and people question the value of increasing the number of students with a diploma when many graduates do not have sufficiently high achievement to succeed in college. However, high school graduation is the strongest predictor of almost any outcome that we care about as a society. Thousands of additional students earning diplomas every year, suggesting considerably better life outcomes for Chicago's youth.

Past Consortium Research on Select CPS Policies Influencing Graduation Rates Over the Past 16 Years

CPS Has Enacted Many Different Policies Over Two Decades, With Mixed Consequences.

Improvements are a result of the total influence of many different policies—with different factors influencing graduation rates in different years:

- **Improvements in math achievement in the elementary schools** in the 1990s were associated with higher graduation rates in the high schools through the early 2000s.^A
- **Grade promotion standards** that were initially enacted in 1995/1996 for grades 3, 6, and 8 had a number of consequences for high schools in later years. By delaying the entry of low-achieving students into high school, the achievement levels of incoming ninth-graders increased. However, the policy also led more students to begin high school old-for-grade. Higher entering achievement levels were associated with higher graduation rates, but students who entered high school at older ages were less likely to graduate.^B Thus, there were contradictory effects of the policy.
- **New graduation requirements and high school curriculum standards** were enacted in 1997. Students started taking more classes in high school, which helped them earn credits toward graduation.^C Prior to the policy, many students took too few classes in ninth grade to graduate in four years, even if they passed all of them. But around the same time that students started taking more classes, they also were required to take more challenging (college-preparatory) classes. Course failure rates increased and as a result, graduation rates did not improve as much as they should have.^D Thus, this policy also had contradictory influences in graduation rates.
- **Decisions to open new selective schools and charter schools** were associated with slightly higher graduation rates in some years. This may be due in part to these schools attracting new students to the public schools, as well as higher graduation rates at these schools than at others. Enrollment at charter high schools has increased dramatically in recent years, but the gap in graduation rates between charter and neighborhood schools has diminished, so that changes in school enrollment account for little of the overall improvements in graduation rates.
- **The district started providing real-time early warning data reports and credit recovery reports to high schools** in 2008, and the biggest changes in graduation and on-track rates occurred in the years after schools started getting these data. Improvements in graduation rates in the most recent years are largely explained by improvements in course pass rates in the ninth grade. In fact, graduation rates and high school test scores improved even during a period of declining and stagnant incoming achievement levels among ninth-grade students.

A For more information on changes in students' achievement levels over time, including their eighth-grade test scores, see Luppescu, Allensworth, Moore, de la Torre, Murphy, & Jagesic (2011).

B For more information on the effects of these policies on students' movement through school and students' likelihood of graduating, see Allensworth (2005); Roderick, Nagaoka, & Allensworth (2005); Allensworth & Miller (2002).

C For more information on the 1997 high school redesign initiative and subsequent changes in students' coursework see Lee (2002).

D For more information on changes in students' graduation rates associated with the change in graduation requirements, see Montgomery & Allensworth (2010).



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