

# Who Has Access to Dual Credit in Illinois?

## Examining High School Characteristics and Dual Credit Participation Rates

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POLICY RESEARCH

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## Introduction

Opportunities to take college-level courses in high school are increasing across the United States. Based on survey data from the National Center for Education Statistics (NCES), the proportion of U.S. high schools whose students participate in dual credit programs has increased from 71% in 2002-2003 (Waits, Setzer, & Lewis, 2005) to 82% in 2010-2011 (Thomas, Marken, Gray, & Lewis, 2013). These studies estimate that the number of students participating during this time period also increased from about 1.2 million high school students to 2.0 million high school students. In Illinois, data from the Illinois Community College Board show that student participation in dual credit increased from 11,809 students in 2001 to 75,989 students in 2008 (Andrews & Barnett, 2002; Illinois Community College Board, 2010).

Although the number of students participating in dual credit has increased nationally and in Illinois, the literature suggests that dual credit is more likely to be accessed by White, middle- and upper-income, and higher-achieving students compared to students who are historically underrepresented in higher education, such as students of color, low-income, and low-to-middle achieving students (Allen, 2010; An, 2009; Karp, Calcagno, Hughes, Jeong, & Bailey, 2007; Kim, 2008; Swanson, 2008; Taylor, 2013; Witt, Lichtenberger, Blankenberger, & Franklin, 2012).

One explanation for differential dual credit participation rates is that dual credit is not equally accessible to students based on the high schools students attend. That is, the opportunity to participate in dual credit may depend on one's high school. A recent study of dual credit state policies found that at least 47 states have statutes or board policies on dual credit (Borden, Taylor, Park, & Seiler, 2013), up from 40 states in 2005 (Karp, Bailey, Hughes, & Fermin, 2005). Both policy studies show that very few states require high schools or colleges to provide dual credit to high school students, suggesting that the decision to offer dual credit is a voluntary local decision. This means that students' opportunity to participate in dual credit may differ depending on their high schools' decision to engage in dual credit with a postsecondary institution.

The purpose of this study was to determine if some high schools are more or less likely to provide dual credit to better understand the relationship between high school characteristics and access to college-level courses in high school. In this study, we used a robust dataset to examine the characteristics of Illinois high schools that are high-providers or low-providers of dual credit based on the proportion of students participating in dual credit.<sup>1</sup> We drew from the population of Illinois high school students who took the ACT exam in the spring 2002 and anticipated graduating from an Illinois public high school in the spring 2003. For this population, dual credit participation was tracked between fall 2001 and spring 2003 and was aggregated to the high school level to determine the proportion of the class of 2003 that participated in dual credit in each high school.

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<sup>1</sup> The Illinois Community College Board distinguishes between "dual credit" and "dual enrollment." Dual credit are courses that are administratively facilitated between high schools and colleges, whereas dual enrollment courses are often the result of a student independently participating in a college course. In our analysis we were unable to make this distinction, but use the term "dual credit" for consistency purposes.

Despite the increase in the number of high school students taking college courses (Thomas et al., 2013; Waits, Setzer, & Lewis, 2005), the literature suggests that high school students may not have equal access to dual credit opportunities based on the characteristics of the high schools they attend. There is only a small body of literature that examines the relationship between high school characteristics and students' dual credit participation. The most comprehensive data are from a recent NCEES survey on dual credit and exam-based courses in U.S. public high schools (Thomas et al., 2013) that disaggregated the proportion of public high schools offering dual credit by high school characteristics such as school enrollment size, community type, region, and percent non-White. In that study the researchers established that on average, a larger proportion of the high schools with 500 or more students enrolled had dual credit courses (~86%) compared to high schools with less than 500 students enrolled (78%). Based on high school community type, Thomas et al. (2013) also found that a higher proportion of high schools in towns (90%) and rural communities (86%) have dual credit courses compared to high schools in cities (72%) and suburban areas (78%). There also seemed to be a very strong relationship between high schools' proportion of non-White students and dual credit courses available, where 91% of high schools with less than 50% of non-White students had dual credit courses but only 75% of high schools with 50% or more non-White students had dual credit courses (Thomas et al., 2013).

Pretlow and Wathington (2013) examined the relationship between high school characteristics and access to dual enrollment in Virginia. Using two cohorts of students (2004 and 2006) who participated in dual enrollment, they found evidence that access to dual enrollment varied depending on high schools' geographic location and the socioeconomic composition of the high school. High schools in cities and in the northern area of the state were less likely to offer dual enrollment, whereas high schools in towns, rural areas, and the central and southern parts of the state disproportionately offered access to dual enrollment. Pretlow and Wathington's results also indicated that high schools with larger proportions of underrepresented students (low-income and racial/ethnic minorities) were less likely to have provided dual credit opportunities relative to those high schools with smaller proportions of underrepresented students.

Results from these studies suggest that access to dual credit may be unequal depending on the high school students attend. The significance of this is paramount because the evidence on the impact of dual credit suggests that there are tangible benefits to dual credit participation. There is accumulating evidence that dual credit participation increases students' chances of enrolling in college, improves college persistence and academic achievement, and even contributes to longer-term outcomes like college completion (An, 2013; Bragg & Kim, 2008; Karp et al., 2007; Lichtenberger, Witt, Blankenberger, & Franklin, in press; Speroni, 2011; Taylor, 2013; Witt, Lichtenberger, Blankenberger, & Franklin, 2012).

## Method, Dataset, and Analysis

In this study, we examined how high school characteristics were associated with the proportion of high school students that participated in dual credit to better understand the relationship between high school characteristics and dual credit access. The primary research question in this study is:

What is the relationship between the proportion of high school students participating in dual credit and high school characteristics?

To answer this question, we drew from the Illinois public high school graduating class of 2003 file (N=115,677 students) and aggregated the dual credit participation information to the high school level (N=644 schools). The student-level data used to determine dual credit participation was obtained under data sharing agreements with ACT, the Illinois Board of Higher Education, and the National Student Clearinghouse (NSC). We then combined the aggregate data specific to the 644 high schools with publicly available information from the Illinois High School Report Card.<sup>2</sup>

### Student-Level Dual Credit Participation

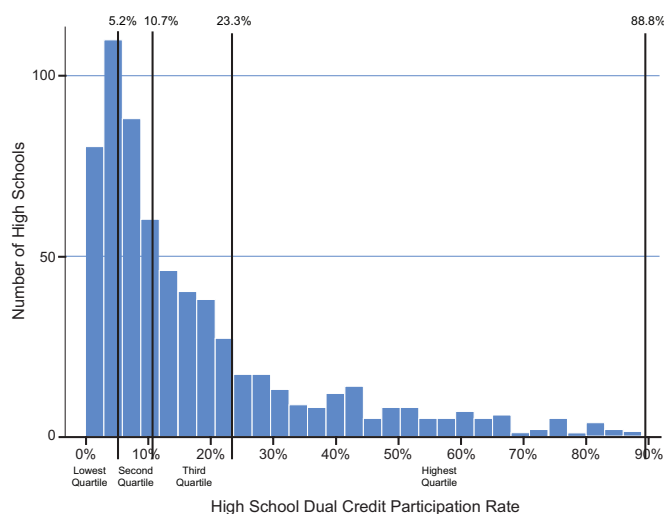
Prior to aggregation, we used enrollment records from the NSC to identify whether students were enrolled in a college between summer 2001 and spring 2003 and categorized students as dual credit participants and non-dual credit participants. We coded students as dual credit participants if they were enrolled in one or more semesters of dual credit at a community college or four-year institution.

In total, 13.4% of the 115,677 members of the Illinois high school graduating class of 2003 participated in dual credit at least one semester between summer 2001 and spring 2003.

### Aggregate Dual Credit Participation

After identifying dual credit students, we calculated the rate of dual credit participation for each of the 644 Illinois public high schools. That is, within each high school, we divided the number of students in the 2003 graduating class who participated in dual credit by the total number of students in the 2003 graduating class. This approximates, based on the 2003 graduating class only, the proportion of students who participated in dual credit in each high school. Figure 1 is a histogram of the distribution of high schools based on the dual credit participation rate (or dual enrollment, see footnote 1). Of the 644 high schools, the mean rate was 18% and the standard deviation was .18, suggesting an extremely high level of variation. This rate ranged from a low 0% to a high of 88%. Further, 621 of the 644 high schools (96%) included in the analysis had at least one student who participated in dual

**Figure 1**  
*Distribution of High School Dual Credit Participation Rates*



<sup>2</sup> A few of the high schools had missing data regarding some of the high school characteristics.

credit, as defined in this study. This is higher than the NCES survey that found 71% of high schools offered dual credit during a similar timeframe (Wait et al., 2005).

To categorize the high schools based on dual credit participation, we arranged high schools into equal quartiles by the proportion of the 2003 graduating class participating in dual credit. Table 1 displays the quartiles, the number of high schools in each quartile, and the range of dual credit participation rates within each quartile.

**Table 1**  
*Dual Credit Participation Quartiles*

Dual Credit Quartile	Rate Range	Number of Schools	Percent
Lowest Quartile	0% to 5.2%	162	25%
Second Quartile	5.3% to 10.7%	160	25%
Third Quartile	10.8% to 23.3%	161	25%
Highest Quartile	23.4% to 88.8%	161	25%

Our analysis is descriptive and uses these quartiles to examine the relationships between high school characteristics and high schools’ dual credit participation rates. We relied on data from the Illinois High School Report Card from 2003 and analyzed differences in dual credit participation according to the following three categories of high school characteristics: a) locale and geographic location; b) high school size and student demographic characteristics; and c) high school measures of students’ academic performance and attendance. Descriptive charts and summaries are reported in the following section.

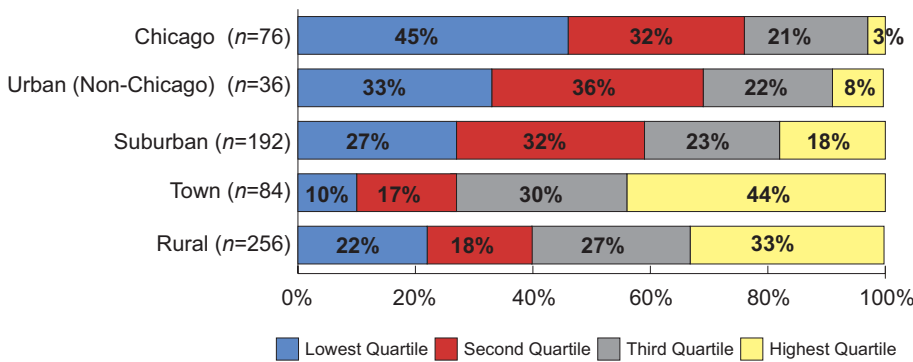


# Results

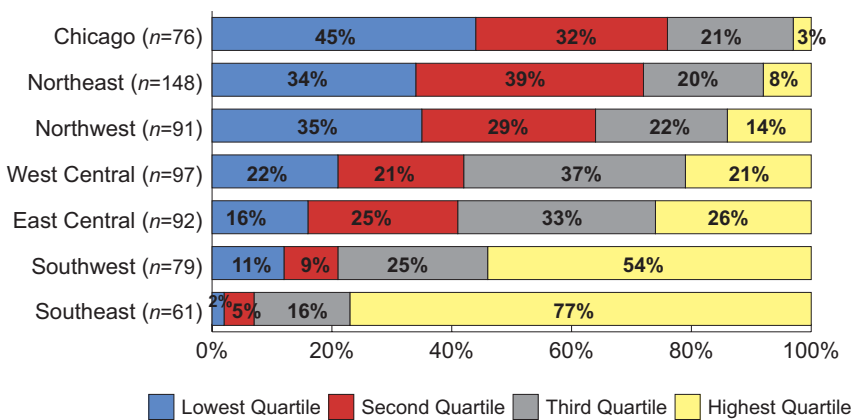
## High School Locale and Geographic Region

As displayed in Figures 2 and 3, access to dual credit varied considerably depending on high school location throughout Illinois. The information in Figure 2 suggests that high schools located in towns and rural areas have a larger proportion of students participating in dual credit relative to high schools in Chicago as well as schools in other urban settings, and suburban areas. This pattern is reinforced when examining the distribution by geographic region within the state in Figure 3. As evidenced by the quartile distributions, those high schools located in the West Central, East Central, Southwest, and Southeast regions have larger proportions of students participating in dual credit than high schools in the City of Chicago, the Northeast, and the Northwest portions of the state.

**Figure 2**  
High School Dual Credit Participation Quartile by Locale (n=644)



**Figure 3**  
High School Dual Credit Participation Quartile by Region (n=644)



## High School Size and Student Demographic Characteristics

Important patterns emerge when examining high school size and the demographic characteristics of high school students (see Figures 4 & 5). Figure 4 displays dual credit participation quartile by high school district size, where district size is defined as either small, medium, or large. The results indicated that a larger proportion of smaller districts and medium districts have high schools with larger proportions of dual credit students.

**Figure 4**  
 High School Dual Credit Participation Quartile by High School District Size (n=636)

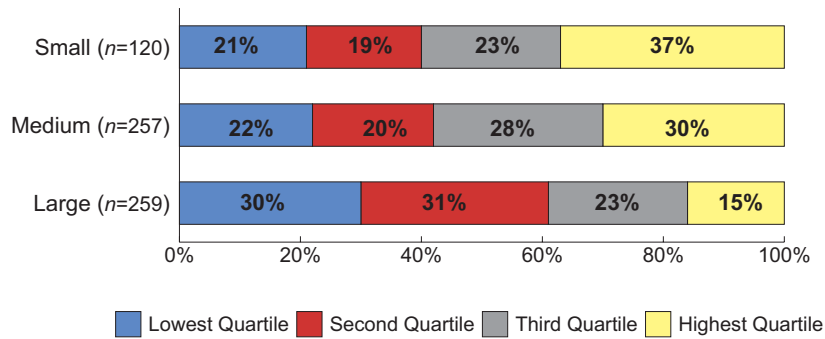
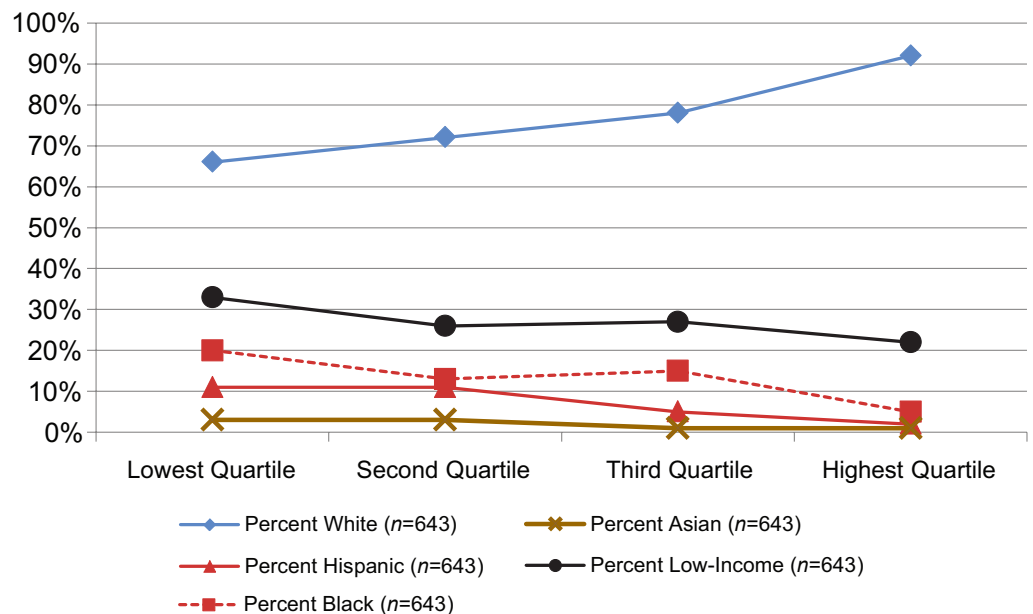


Figure 5 displays dual credit participation quartile by high school proportion of race/ethnicity and low-income students. The data here suggest there is a clear inverse relationship between the proportion of racial/ethnic minorities (Black, Hispanic, Asian) within a school and a high school's dual credit participation quartile. In other words, high schools in the lowest dual credit participation quartile have the highest proportion of racial/ethnic minorities and lowest proportion of White students, on average, and high schools in the highest quartile have the lowest proportion of racial/ethnic minorities and highest proportion

**Figure 5**  
 High School Dual Credit Participation Quartile by Race/Ethnicity Proportion, and Low-Income Proportion



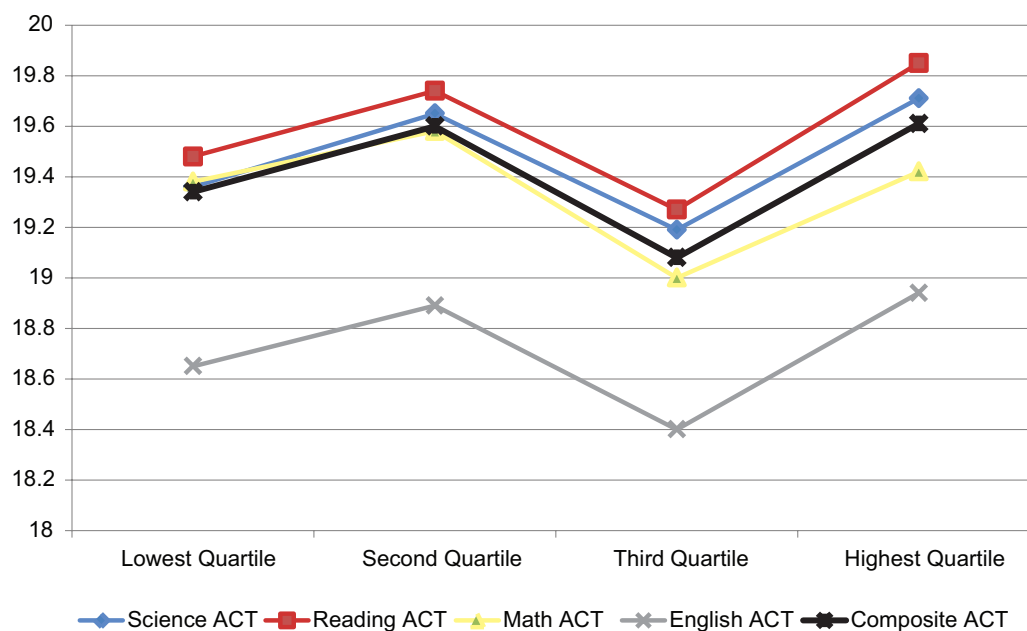
of White students, on average. The differences along racial/ethnic lines may be, in part, a reflection of the larger concentration of dual credit activity in the central and southern portions of Illinois relative to the northern parts of the state; the central and southern portions have smaller racial/ethnic minority populations than the north, particularly the Northeast region and Chicago.

We also found that high schools in the lowest dual credit participation quartile had higher proportions of low-income students relative to high schools in the highest dual credit participation quartile. These findings suggest inequities in access to dual credit for low-income students and students of color based on the high school they attend.

### High School Academic Performance, Attendance, and Graduation

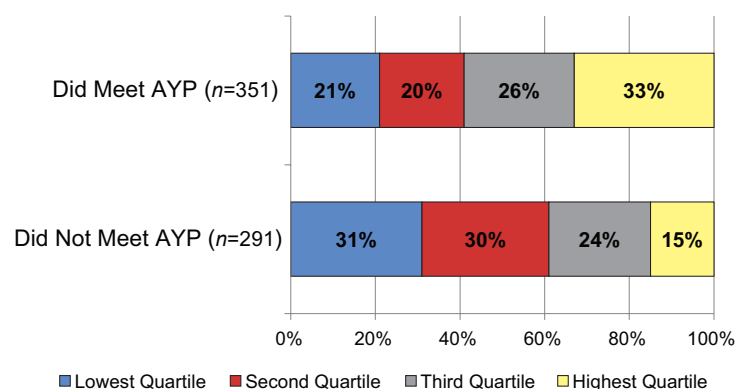
Next we examine dual credit participation quartile by high school's aggregate scores on the ACT and the individual subject tests: Math, English, Science, and Reading. As displayed in Figure 6, the mean high school ACT composite and mean ACT subject test scores were higher among the high schools in the highest quartile than high schools in the lowest quartile. Although there is a difference between the lowest and highest dual credit participation quartile averages, those schools in the third quartile have the lowest average ACT scores among all other quartiles.

**Figure 6**  
High School Dual Credit Participation Quartile by ACT Scores (n=634)



We also examined high schools' average academic performance based on Annual Yearly Progress (AYP) status (see Figure 7). The data show that 59% of high schools that met AYP were in the top two dual credit participation quartiles and 41% were in the bottom two quartiles. Alternatively, a larger proportion (61%) of high schools that did not meet AYP were in the bottom two quartiles and 38% of high schools were in the top two quartiles. These data suggest a positive relationship between high schools' average student performance, as determined by AYP performance, and students' access to dual credit. That is, students at schools that meet AYP also tend to be at schools with higher dual credit participation rates.

**Figure 7**  
*High School Dual Credit Participation Quartile by AYP*



Finally, we examined several measures that relate to attendance and student persistence in high school. Although the differences are small among dual credit participation quartiles, the data suggest there is a relationship between the proportion of dual credit students in a high school and high schools' persistence and attendance rates. For example as shown in Table 2, the average high school graduation and attendance rates are higher, albeit minimally, for schools in the upper quartile, relative to all other quartiles. Logically, high schools in the upper quartile also had the lowest chronic truant and dropout rates.

**Table 2**  
*High School Dual Credit Participation Quartile by Attendance, Graduation, Truant, and Dropout Rates*

Characteristic	Lowest Quartile (Mean)	Second Quartile (Mean)	Third Quartile (Mean)	Highest Quartile (Mean)
Attendance Rate (n=643)	92%	93%	92%	94%
Graduation Rate (n=640)	87%	87%	88%	91%
Chronic Truant Rate (n=643)	4.3%	3.2%	3.9%	2.8%
Drop Out Rate (n=643)	5.7%	4.3%	4.3%	3.4%

## Summary and Implications

This brief examined high schools' dual credit participation rates and the relationship between these rates and high school characteristics using data from the Illinois public high school class of 2003 aggregated to the high school level. Based on the proportion of high school students that participated in dual credit (approximated by the proportion of the high school class of 2003 only), we found that 96% of Illinois public high schools had students participating in dual credit. However, this rate varied from a low of 0% to a high of 88% and the average rate was 18%. We separated high schools into quartiles based on their dual credit participation rate, and our descriptive analysis revealed interesting relationships between these quartiles and high school characteristics. We found there are differences in students' access to dual credit based on the observed characteristics of the high school in which they enrolled. Relative to high schools that were in the lower dual credit quartiles, a larger proportion of high schools in the upper dual credit quartiles:

- were located in a town or rural area
- were geographically located in the central or southern parts of Illinois
- were associated with a small- or medium-sized public school district
- had a larger proportion of White students
- had a smaller proportion of low-income students
- met AYP
- had a slightly higher graduation rate and attendance rate
- had a slightly lower chronic truant rate and drop out rate

The results of the current study are consistent with the NCES study (Thomas et al., 2013) and Prelow and Wathington's (2013) study, but also offer a new contribution to the literature. Similar to previous literature, we found that high schools with a higher proportion of White students and high schools located in towns and rural areas enroll a higher proportion of their students in dual credit. The former finding suggests there is an equity gap and may explain other literature that shows White students are more likely to participate in dual credit than their non-White counterparts (Allen, 2010; An, 2009; Karp, Calcagno, Hughes, Jeong, & Bailey, 2007; Kim, 2008; Swanson, 2008; Taylor, 2013; Witt et al., 2012). That is, more White students may participate in dual credit because dual credit is more accessible in high schools with larger proportions of White students than non-White students.

Our results also show that access to dual credit is partially dependent on locale and geographic location. High schools in towns or rural areas, as well as high schools in the central and southern parts of the state, enrolled larger proportions of students in dual credit relative to high schools in urban areas and in the northern part of the state. Because Illinois' dual credit policy does not mandate high schools and colleges offer dual credit (Borden et al., 2013), these results suggest that students have differential access to dual credit based on where their high school is located within the state of Illinois. At the time of the study, there was virtually no dual credit activity among the Chicago Public Schools and City Colleges of Chicago system.

In addition to the results that are consistent with previous literature, we found a relationship between high schools' average graduation rate and truancy rate, and rate of dual credit participation. Although the differences between schools in each of the dual credit participation quartiles were minor, they suggest that high schools with the largest share of students participating in dual credit tend to be high schools that excel on other measures of academic performance and measures of student attendance and graduation.

Although these findings are descriptive and not causal, the results show that students have varying levels of access to dual credit and that access to dual credit is associated with high school characteristics. Although Illinois' dual credit policy allows high schools and colleges to voluntarily engage in dual credit programs, there are observed differences in high school characteristics between high schools based on the proportion of students participating in dual credit. Part of this difference may be explained by students independently seeking college courses (i.e., dual enrollment) in high school as opposed to more formalized dual credit arrangements. That is, high schools that have more affluent students and have more students with higher academic performance and lower attrition may also have more students participating in dual enrollment. Because we could not distinguish between dual credit and dual enrollment (as defined in Illinois) in our data, we cannot determine if this accounts for our results. Future research should examine multiple types of programs that provide opportunities for college credit in high school (dual credit, Advanced Placement, dual enrollment, International Baccalaureate) to determine if there are relationships between school characteristics and access to college-level learning.

Given the accumulating evidence that dual credit participation is associated with desirable outcomes, such as college enrollment, college persistence, and degree completion (An, 2013; Kim & Bragg, 2008; Karp et al., 2007; Lichtenberger et al., in press; Speroni, 2011; Taylor, 2013; Witt et al., 2012), including evidence from Illinois (Lichtenberger et al., in press; Taylor, 2013; Witt et al., 2012), inequitable access to dual credit based on where students attend high school means that students attending certain high schools will not have the opportunity to reap the potential benefits of dual credit participation. To the extent that dual credit does contribute to these desirable outcomes, the prospects of improving students' college readiness and college enrollment and success rates is a compelling incentive for high schools to offer dual credit to more students.

## Recommendations for Policy, Practice, and Future Research

We offer the following recommendations for policy and practice based on this research.

- Create incentives that encourage high schools and colleges to offer dual credit.** The option to provide dual credit is a voluntary endeavor for high schools and colleges in Illinois. Yet, at least 17 states require or encourage high schools to offer dual credit and 14 states require or encourage colleges to offer dual credit (Borden, Taylor, Park, & Seiler, 2013). If early access to postsecondary education matters for students' future postsecondary enrollment and success, we encourage the development of policy to address inequitable access to dual credit and examine ways to make dual credit equally accessible to students in all Illinois high schools.
- Support the expansion of dual credit in high schools with low participation rates.** Building or expanding dual credit programs in some localities will likely to consume human and fiscal resources. We recommend Illinois and other states identify high schools with low dual credit participation rates and target fiscal and/or human resources to promote the development and expansion of dual credit programs. This could be in the form of targeted seed funding, professional development, or technical assistance from the state or school districts with mature dual credit programs. Based on results from this research, high schools in the Chicago area, schools with lower average student performance, and schools with larger proportions of minority and low-income students would likely benefit from expansion and reduce inequitable access to dual credit.
- Raise awareness of dual credit options and benefits.** Low dual credit participation rates may reflect students', parents', and the communities' lack of knowledge of dual credit options. At least 15 state policies require or encourage high schools and colleges to market dual credit or ensure students know about dual credit options (Borden et al., 2013). We recommend policymakers create incentives to encourage high schools and colleges to market and promote dual credit opportunities and make clear the admission requirements so all students have an equal opportunity to participate.
- Invest in future research.** As dual credit has dramatically expanded nationwide and in Illinois in the past decade (Andrews & Barnett, 2002; Illinois Community College Board, 2010), we recommend future research replicate this analysis using more recent cohorts to determine if dual credit participation has expanded or reduced these inequities among high schools. The recent development of the Illinois State Longitudinal Education Database in Illinois that bridges K-12 and postsecondary data sources should help facilitate future research. Another recommendation for future research is to determine which high schools provide greater access to dual credit to underserved students and more importantly, how they go about doing it. This research could include examining local funding and tuition policies for dual credit coursework, in addition to other local policies such as, the credentialing requirements for high school faculty teaching dual credit courses and efforts to promote dual credit to underserved students.

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