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December 15, 2015

The Honorable Lawrence J. Hogan
Office of the Governor
100 State Circle
Annapolis, MD 21401

Dear Governor Hogan,

The College and Career Readiness Act of 2013 requires the Maryland Longitudinal Data System Center to report to the Governor and the Maryland General Assembly the number of students who are dually enrolled and information about the courses in which they are enrolled.

The 2015 dual enrollment report is the first report written by the Center's Research Branch using cross sector data from the MLDS. I am pleased to provide you with this report, and hope that you find it useful and informative.

I am happy to address any questions you may have and look forward to future reporting on this topic, which, as noted in the report, will continue to be more comprehensive.

Sincerely,

Ross Goldstein
Executive Director

Enclosure

cc: President Thomas Miller
Speaker Michael Busch
Adam Dubitsky, Office of the Governor
MLDS Governing Board
Sarah Albert, DLS



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Dual Enrollment in Maryland: A Report to the General Assembly and Governor Lawrence J. Hogan

December 2015

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Maryland Longitudinal Data System Center

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Note: This report was prepared by the Research Branch of the Maryland Longitudinal Data System Center with assistance and feedback from the MLDS team for the Maryland General Assembly and Governor Lawrence J. Hogan.

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Executive Summary

A total of 5,453 Maryland 12th grade students were dually enrolled with overlapping enrollment dates in high school and a Maryland postsecondary institution in academic year 2013-2014. Overall, the total number of dually enrolled students in Maryland has increased 2% between the 2012-2013 and 2013-2014 academic years. This trend varies across school districts. The great majority of dually enrolled students were 12th grade students, but the percentages of dually enrolled students who were in 9th-11th grades have increased between the 2011-2012 and 2013-2014 academic years. The proportion of dually enrolled students that were female has remained stable across academic years (59%), with female students over-represented in dual enrollment participation in comparison to the proportion of female students in the 12th grade population (50%). Students eligible for free and reduced price meals (FARMs) are under-represented in dual enrollment participation. Racial minority students and Hispanic students are also under-represented in participation in dual enrollment, whereas White students are over-represented. Most dually enrolled students attended Maryland community colleges. A greater proportion of dually enrolled students (79%) enrolled in postsecondary education within one academic year when compared to the proportion of students in the population of Maryland 12th grade students (54%). However, this finding should be interpreted cautiously. A greater proportion of dually enrolled students are White, not Hispanic, Female, and not eligible for free and reduced price meals (FARMs), and students with those characteristics generally enroll in postsecondary education at higher rates than other students. Such educational attainment gaps are generally seen as the result of those groups of students not having equal access to effective educational programming or services.

In addition to examining overlapping enrollment dates in high schools and postsecondary institutions to identify dually enrolled students, data from MHEC were used to identify students whom Maryland postsecondary institutions identified to be dually enrolled. This method is included in the report because it is the method used in prior MLDS reports on dual enrollment, and it is the only method for which 2014-2015 data on dual enrollment are currently available. The number of dually enrolled high school students (from both public and private schools) identified by Maryland postsecondary institutions has substantially increased from 5,716 students in the 2013-2014 academic year to 6,724 students in the 2014-2015 academic year, using this method of identifying students.

This report is the first dual enrollment report that used merged cross agency data to identify dually enrolled students in Maryland. The benefit of cross agency data is that it provides a high level of confidence that the students identified are actually concurrently enrolled in both a high school and a postsecondary institution. As more years of data become available within the MLDS, additional trends can be reported. Future research on dual enrollment will examine the academic achievement of students who are dually enrolled compared to students who are not dually enrolled and will examine additional postsecondary educational outcomes, including retention, degree attainment, and time to degree.

Introduction

This report, on students dually enrolled in high school and postsecondary institutions in Maryland, is submitted to the Governor and the General Assembly annually by the Maryland Longitudinal Data System Center (MLDSC) to provide analyses and inform policy and programming across Maryland, as established in Maryland law as part of the College and Career Readiness and College Completion Act (CCR-CCA) of 2013. This is the third report submitted in fulfillment of this requirement, with previous reports submitted in December 2013 and 2014 (Enriquez, 2013; 2014). The reporting requirements for this annual report are found in the Annotated Code of Maryland (Education Article §24-703.1) and include two main requirements: (1) total counts of students dually enrolled in both a high school and postsecondary institution statewide and by district, and (2) the number of courses and names of courses in which students are dually enrolled.¹

Dual enrollment generally refers to the variety of ways in which students enroll in college courses while still in high school. High school students may either access college courses in conjunction with the local high school or enroll of their own volition. Dual enrollment programs may be located on the college or high school campuses, and may be taught by college faculty or specially credentialed high school faculty. In Maryland, dual enrollment is defined broadly as:

A student who is dually enrolled in:

- (i) a secondary school in the State; and
- (ii) an institution of higher education in the State

(Education Article §18-14A-01, Annotated Code of Maryland).

The primary aim of this report is to detail what is known about dual enrollment in Maryland using data from the Maryland Longitudinal Data System (MLDS). Relevant data in the MLDS are from the Maryland State Department of Education (MSDE), the Maryland Higher Education Commission (MHEC), and the National Student Clearinghouse (NSC).² For this report, data are primarily used from the 2011-2012, 2012-2013, and 2013-2014 academic years. In addition, an update, consistent with prior reporting, on students identified in MHEC enrollment data as dually enrolled is provided for the 2014-2015 academic year. This is provided because this is the only source of data able to identify dually enrolled students for the 2014-2015 academic year that was available at the time of publication of this report.

First, to provide context, this report begins by presenting a brief overview of research that has been conducted in other states examining the educational outcomes of dually enrolled students. Second, a detailed description of the method used to identify

¹ College level course taking data are not currently available from MHEC and the high school course taking data from MSDE in the MLDS was determined not to be sufficiently reliable to meet MLDS data quality standards for reporting at this time.

² The NSC is a non-profit, non-governmental organization that offers a national collection of enrollment and degree records from nearly 227 million students. NSC data used for identification of dually enrolled students is limited to 12th grade students.

dually enrolled students in the MLDS is included. Third, data from the MLDS are used to detail the number of students dually enrolled in Maryland, the demographic characteristics of students and postsecondary institutions attended, and the college enrollment outcomes of dually enrolled students in comparison to the outcomes of the overall population of Maryland 12th grade students. Fourth, an update on the MHEC dual enrollment flag is provided for the 2014-2015 academic year. Finally, the future directions of research on dual enrollment using the MLDS are described and conclusions are summarized.

Research on Dual Enrollment

Dual enrollment programs have existed for decades and were traditionally targeted toward high achieving students. In the last 30 years, dual enrollment has increasingly been the focus of policy and programming aimed at improving the successful transition from high school to college for students who are traditionally under-represented in postsecondary education settings (e.g. low-income and minority students), with the goals of increasing retention and degree completion. Dual enrollment is also seen as a strategy to save money for students, families, and taxpayers because it eases the transition to postsecondary schools, enabling students to be more successful in postsecondary education. In addition, dual enrollment has the potential to advance education policy and programming by: (1) advancing academic rigor for secondary students, (2) improving college readiness, and (3) increasing collaboration across secondary and postsecondary educators and institutions.

One example of an early dual enrollment program is Tech Prep, a consortium of businesses, secondary, and postsecondary institutions in New York that received federal funding in 1990 to develop a dual enrollment program (Bailey, Hughes, & Karp, 2002). Services began in the junior year and extended through the first 2 years of college. By 1995, 8.4% of students to which Tech Prep was available in New York were participating. Tech Prep has expanded to multiple states, and multiple research studies examining Tech Prep have shown positive impacts on educational outcomes. For example, in New York, students participating in Tech Prep were found to have higher attendance and have better grades than non-participating students (Bailey et al., 2002). Participation in Tech Prep in Texas has been associated with increased attendance and reduced dropout in secondary grades (Brown, 2000). Participation in Tech Prep has also been associated with increased community college enrollment post-high school, but may also be related to lower four-year college enrollment post-high school (Cellini, 2005). Implementing the Tech Prep program has been associated with strengthened collaborations between educators across levels and increased engagement of employers with schools (Hershey, Silverberg, Owens, & Hulsey, 1998).

Participation in dual enrollment has been associated with a variety of positive secondary and postsecondary educational outcomes using data from varying geographic locations and varying populations of students. In a large study of dually enrolled students in Florida and New York, dual enrollment was positively predictive of earning a high school diploma, enrolling in college after high school, enrolling in a four-

year institution, and pursuing a bachelor's degree (Karp, Calcagno, Hughes, Jeong, & Bailey, 2007). For students who enrolled in college, dual enrollment was associated with full-time enrollment (Karp et al., 2007). Further, the dually enrolled students were more likely to persist past the first semester, had higher grade point averages, and had earned more college credits after three years (Karp et al., 2007).

There is some research evidence available to suggest that dual enrollment programs may have more positive benefits for some subgroups of students. For example, in Florida and New York, participation in dual enrollment had larger effects on male students and students from low-income families when compared to female students and students from higher-income families (Karp et al., 2007). Additionally, An (2013) reported that the impact of dual enrollment was larger for students from low-income backgrounds when compared to their more affluent peers even after accounting for selection factors including student demographic characteristics and prior academic achievement. The author asserted that wide availability of dual enrollment would likely have modest effects on postsecondary achievement gaps (An, 2013). Few research studies have examined the differential benefits of participation in dual enrollment by race or ethnicity. However, Hughes and colleagues (2012) described a California study that included two racially and linguistically diverse cohorts of high school students who participated in dual enrollment programs across 21 high schools and 10 colleges (60% non-White; 40% English not the primary language). Students who participated in the dual enrollment program were more likely than their peers to earn a high school diploma, attend and persist in college, and earn more college credits (Hughes et al., 2012). In addition they were less likely to need remedial education courses in their transition to college. This provides some preliminary evidence of the positive impacts of dual enrollment participation that are specific to ethnic and linguistic minority students.

In addition to differential impacts by demographic characteristics, dual enrollment participation may have more positive benefits for lower-performing students when compared to higher achieving students. For example, Karp and colleagues (2007) reported that students with the lowest high school grade point averages benefited more strongly from dual enrollment when compared to the students with the highest grade point averages. Further, dual enrollment also had a larger impact on low achieving students' enrollment in postsecondary education after high school and first year postsecondary grade point average when compared to high achieving students (Karp et al., 2007).

In a recent study, path analysis was used to examine the pathways through which dual enrollment may positively impact educational outcomes by examining the mediational role of early college outcomes in the relationship between dual enrollment participation and later college outcomes (Wang, Chan, Phelps, & Washbon, 2015). Dual enrollment was associated with multiple desirable outcomes including a higher likelihood of college enrollment in the summer and/or fall after high school completion, enrollment in a higher numbers of credits, and stronger academic performance as evidenced by grades earned. Finally, those indicators of early college success fully

accounted for the relationship between dual enrollment participation and college completion and retention (Wang et al., 2015).

In sum, research indicates that students who participate in dual enrollment programs have better secondary and postsecondary educational outcomes, including increased attendance and reduced dropout in secondary grades (Brown, 2000) and increased likelihood of enrolling in college after high school, enrolling in a four-year institution, and pursuing a bachelor's degree (Karp et al., 2007). Evidence suggests that some subgroups of students may benefit more from participation in dual enrollment programs. For example, low-income students (An, 2013), racial and ethnic minority students (Hughes et al., 2012), and low achieving students (Karp et al., 2007) may gain the most benefit from participation in dual enrollment programs. However, dual enrollment programs have traditionally served high achieving students, and ethnic minority and low-income students are still under-represented in dual enrollment participation (Karp et al., 2007). Recent policy and programming efforts have focused on increasing dual enrollment participation of average achieving, minority, and lower income students.

Defining Dual Enrollment

For this report, we have used all currently available data within the MLDS to identify public high school students who were enrolled in:

- (i) a secondary school in the State; and
- (ii) an institution of higher education in the State
(Education Article §18-14A-01, Annotated Code of Maryland).

Two distinct methods were used to identify dually enrolled students:

- A. **Overlap in Enrollment Dates.** This method uses data from MSDE, MHEC, and NSC to identify students with overlapping enrollment dates in a Maryland public high school and a Maryland postsecondary institution. A student was considered to have overlapping enrollment dates if their enrollment in a postsecondary institution lasted for at least 30 days and the postsecondary enrollment had any overlap with their enrollment dates in a Maryland public high school. This method includes Fall and Spring semester enrollments. This method provides a high level of confidence that the students identified are actually enrolled in both a high school and a postsecondary institution. However, this method may under report the number of dually enrolled students in instances where data cannot be matched across agencies. This method of identification represents the first time that Maryland dually enrolled students were identified using cross agency data.
- B. **MHEC Dual Enrollment Flag.** This method uses data from MHEC to identify students whom Maryland postsecondary institutions indicated were dually enrolled. This method was included in the report because it was the method

used in prior MLDSC reports on dual enrollment, and it was the only method for which 2014-2015 data on dual enrollment was available at the time of submitting this report. This method relies on the college or university properly identifying and recording the student's dual enrollment status. Further, the MHEC data are limited to Fall enrollments and do not include Spring semester enrollments. This method included enrollments in Maryland postsecondary education institutions (does not include out-of-state enrollments), but may include Maryland private high school students and high school students residing out-of-state.

The first 7 tables presented in this report were prepared using the overlap in enrollment dates method to identify dually enrolled students. The final table (Table 8) was prepared using the MHEC dual enrollment flag method to identify dually enrolled students.

Dual Enrollment in Maryland

A total of 5,453 12th grade students were dually enrolled with overlapping enrollment dates in a Maryland public high school and a Maryland postsecondary institution in academic year 2013-2014 (see Table 1). That represents 9% of all public high school seniors across the state, ranging from a low of 3% in the lowest participating school district to a high of 28% in the highest participating school district. In the prior academic year (2012-2013), a total of 4,732 students were dually enrolled with overlapping enrollment dates in high school and a postsecondary institution (see Table 2). That represents 7% of all high school seniors across the state, ranging from 2% in the lowest participating school district to a high of 24% in the highest participating school district. In the 2011-2012 academic year, a total of 4,585 students were dually enrolled with overlapping enrollment dates in high school and a postsecondary institution (see Table 3). That represents 7% of all high school seniors across the state, ranging from 2% in the lowest participating school district to a high of 20% in the highest participating school district. **Overall, the proportion of dually enrolled students in Maryland has increased from the 2012-2013 to the 2013-2014 academic year, with an increase of 2% of all high school seniors from 7% to 9%. This trend varies across school districts, as can be seen by comparing Tables 1 and 2.**

Table 1. Number and Percentage of Dually Enrolled* 12th Grade Students in Academic Year 2013-2014 by School District

	Total 12 th Grade Students	Dually Enrolled	
		Students N	%
Maryland	62,732	5,453	(9)
Allegany	660	87	(13)
Anne Arundel	5,348	724	(14)
Baltimore	7,716	672	(9)
Baltimore City	5,177	146	(3)
Calvert	1,372	203	(15)
Caroline	362	58	(16)
Carroll	2,236	240	(11)
Cecil	1,146	164	(14)
Charles	2,161	93	(4)
Dorchester	308	30	(10)
Frederick	3,187	520	(16)
Garrett	322	46	(14)
Harford	2,907	447	(15)
Howard	4,170	256	(6)
Kent	150	23	(15)
Montgomery	11,297	527	(5)
Prince George's	8,655	238	(3)
Queen Anne's	631	89	(14)
Somerset	179	14	(8)
St. Mary's	1,274	160	(13)
Talbot	343	65	(19)
Washington	1,664	467	(28)
Wicomico	970	104	(11)
Worcester	497	80	(16)

Notes. *Identified using overlapping enrollment dates in public high schools and postsecondary education. Data are used from MSDE, MHEC, and NSC. Out-of-state postsecondary education enrollments are excluded.

Table 2. Number and Percentage of Dually Enrolled* 12th Grade Students in Academic Year 2012-2013 by School District

	Total 12 th Grade Students	Dually Enrolled	
		Students N	%
Maryland	63,636	4,732	(7)
Allegany	686	115	(17)
Anne Arundel	5,412	534	(10)
Baltimore	7,880	551	(7)
Baltimore City	5,521	125	(2)
Calvert	1,409	208	(15)
Caroline	375	50	(13)
Carroll	2,276	157	(7)
Cecil	1,157	212	(18)
Charles	2,218	129	(6)
Dorchester	308	24	(8)
Frederick	3,265	404	(12)
Garrett	315	14	(4)
Harford	2,961	438	(15)
Howard	4,372	241	(6)
Kent	168	10	(6)
Montgomery	11,193	401	(4)
Prince George's	8,596	231	(3)
Queen Anne's	564	77	(14)
Somerset	188	12	(6)
St. Mary's	1,226	210	(17)
Talbot	358	85	(24)
Washington	1,690	332	(20)
Wicomico	969	114	(12)
Worcester	529	58	(11)

Notes. *Identified using overlapping enrollment dates in high school and postsecondary education. Data are used from MSDE, MHEC, and NSC. Out-of-state postsecondary education enrollments are excluded.

Table 3. Number and Percentage of Dually Enrolled* 12th Grade Students in Academic Year 2011-2012 by School District

	Total 12 th Grade Students	Dually Enrolled	
		Students N	%
Maryland	64,824	4,585	(7)
Allegany	697	95	(14)
Anne Arundel	5,381	512	(10)
Baltimore	7,807	625	(8)
Baltimore City	5,752	124	(2)
Calvert	1,416	177	(13)
Caroline	397	45	(11)
Carroll	2,438	152	(6)
Cecil	1,213	238	(20)
Charles	2,338	124	(5)
Dorchester	346	20	(6)
Frederick	3,218	353	(11)
Garrett	334	36	(11)
Harford	2,982	326	(11)
Howard	4,151	170	(4)
Kent	181	22	(12)
Montgomery	11,133	401	(4)
Prince George's	9,189	261	(3)
Queen Anne's	631	88	(14)
Somerset	197	13	(7)
St. Mary's	1,339	265	(20)
Talbot	367	62	(17)
Washington	1,637	282	(17)
Wicomico	1,097	140	(13)
Worcester	583	54	(9)

Notes. *Identified using overlapping enrollment dates in high school and postsecondary education. Data are used from MSDE, MHEC, and NSC. Out-of-state postsecondary education enrollments are excluded.

Table 4 displays the number and percentage of dually enrolled students with overlapping high school (at any grade) and postsecondary education enrollment dates in academic years 2011-2012, 2012-2013, and 2013-2014. This table includes students who were enrolled in out-of-state postsecondary institutions identified by data from the NSC. **The great majority of dually enrolled students were 12th grade students. The percentages of dually enrolled students who were in 9th-11th grades have increased between the 2011-2012 and the 2013-2014 academic years.** The percentage of dually enrolled students who were in 12th grade has decreased between the 2011-2012 (93%) and the 2013-14 (89%) academic years due to increased participation among students in ninth, tenth, and eleventh grades. However, the absolute number of 12th grade students dually enrolled has increased from the 2011-2012 ($N = 4,825$) to the 2013-2014 ($N = 5,742$) academic year.

Table 5 displays the demographic characteristics of dually enrolled 12th grade students with overlapping high school and postsecondary education enrollment dates in comparison to the 12th grade population of the state in academic years 2011-2012, 2012-2013, and 2013-2014. This table includes students who were enrolled in out-of-state postsecondary institutions identified by data from the NSC. **The proportion of dually enrolled students that were female has remained stable across academic years (59%), with female students over-represented in dual enrollment participation in comparison to the proportion of female students in the population (50%).**

Students eligible for free and reduced price meals (FARMS) are under-represented in dual enrollment participation. In the MLDS data, FARMS is the only currently available indicator that can be used to approximate socio-economic status. The proportion of dually enrolled students eligible for FARMS ranges from 15-19% in the years examined, whereas the total proportion of students in the state eligible for FARMS ranges from 32-33%. **The proportion of dually enrolled students eligible for FARMS has increased between the 2011-2012 and 2013-2014 academic years. Racial minority students and Hispanic students are under-represented in dual enrollment, whereas White students are over-represented.** In the 2013-2014 academic year, sixty-nine percent of dually enrolled students were White, whereas White students made up 49% of the statewide population of 12th grade students. Demographic characteristics by district are available in the Appendix.

Table 4. Number and Percentage of Dually Enrolled* Students by Grade Level Across Academic Years

Academic Year	Total	9 th		10 th		11 th		12 th	
		N	(%)	N	(%)	N	(%)	N	(%)
2011-2012	5,174	32	(1)	68	(1)	249	(5)	4,825	(93)
2012-2013	5,521	59	(1)	150	(3)	291	(5)	5,021	(91)
2013-2014	6,480	110	(2)	163	(3)	465	(7)	5,742	(89)

Notes. *Identified using overlapping enrollment dates in high school and postsecondary education. Data are used from MSDE, MHEC, and NSC. NSC provides data on out-of-state postsecondary education enrollments for 12th grade students. Out-of-state enrollments are included here. Percentages may not add to 100 due to rounding.

Table 5. Demographic Characteristics of Dually Enrolled* 12th Grade Students in Comparison to the Student Population Across Academic Years

	2011-2012		2012-2013		2013-2014	
	Dually Enrolled	Total 12 th	Dually Enrolled	Total 12 th	Dually Enrolled	Total 12 th
Total N	4,825	64,824	5,021	63,636	5,742	62,732
Female (%)	59	50	59	50	59	50
FARMs (%)	15	32	16	33	19	33
Race						
White (%)	70	48	70	49	69	49
Black (%)	20	38	19	36	20	36
Other (%)	10	14	11	15	11	15
Ethnicity						
Hispanic (%)	4	9	5	9	5	10

Notes. *Identified using overlapping enrollment dates in high school and postsecondary education. Data are used from MSDE, MHEC, and NSC. NSC provides data on out-of-state postsecondary education enrollments for 12th grade students. Out-of-state enrollments are included here. FARMs = Free and Reduced Price Meals. Percentages may not add to 100 due to rounding. Demographic characteristics by district are provided in the Appendix.

Table 6 displays the number and percentage of dually enrolled 12th grade students with overlapping enrollment dates in high school and postsecondary education by the type of postsecondary institution attended: community college, four-year public, state-aided independent school (private), and out-of-state institution. This table displays data from the 2013-2014 academic year. **The majority of dually enrolled 12th grade students (86%) attended a Maryland community college.**

Table 6. Number and Percentage of Dually Enrolled* 12th Grade Students Attending Community College, Four-Year Public, State-Aided Independent Schools, and Out-of-State Institutions in Academic Year 2013-2014

Total	Community College		Four-Year Public		State-Aided Independent School (Private)		Out-of-State	
	N	(%)	N	(%)	N	(%)	N	(%)
5,742	4,935	(86)	424	(7)	94	(2)	289	(5)

Notes. *Identified using overlapping enrollment dates in high school and postsecondary education. Data are from MSDE, MHEC, and NSC. NSC provides data on out-of-state postsecondary education enrollments for 12th grade students.

Table 7 displays the number and percentage of dually enrolled students with overlapping enrollment dates in high school and postsecondary education in academic year 2012-2013 who enrolled in a postsecondary institution within 1 year after exiting a Maryland public high school. This number and percentage can be compared to the number and percentage enrolled in a postsecondary institution after 1 year in the total population of 12th grade students. This table includes students who were enrolled in out-of-state postsecondary institutions identified by data from the NSC. **A greater proportion of dually enrolled students (79%) enrolled in postsecondary education within one academic year when compared to the proportion of students in the population of Maryland 12th grade students (54%). However, this finding should be interpreted cautiously, as a greater proportion of dually enrolled students are White, not Hispanic, Female, and not eligible for free and reduced price meals (see Table 5).** Students with those demographic characteristics generally enroll in postsecondary education at higher rates than other students. Such persistent educational attainment gaps are generally seen as the result of historical, institutional, and societal patterns of those groups of students not having equal access to effective educational programming or services. The proportion of dually enrolled students moving to postsecondary education within one year ranges from 56% in the district with the lowest proportion of dually enrolled students moving to postsecondary education to 100% in the district with the highest proportion of dually enrolled students moving to postsecondary education.

Table 7. Number and Percentage of Dually Enrolled* 12th Grade Students Enrolled in Postsecondary Education after One Year in Comparison to the Total Population of 12th Grade Students

	All 12 th Graders (2012-2013)			Dually Enrolled 12 th Graders (2012-2013)		
	Total	Enrolled in PS One Year Later		Total	Enrolled in PS One Year Later	
		N	%		N	%
Maryland	63,636	34,671	(54)	5,021	3,970	(79)
Allegany	686	349	(51)	118	102	(86)
Anne Arundel	5,412	3,213	(59)	558	475	(85)
Baltimore	7,880	4,430	(56)	582	451	(77)
Baltimore City	5,521	1,975	(36)	144	105	(73)
Calvert	1,409	811	(58)	213	174	(82)
Caroline	375	173	(46)	52	47	(90)
Carroll	2,276	1,160	(51)	166	114	(69)
Cecil	1,157	524	(45)	218	168	(77)
Charles	2,218	1,269	(57)	146	125	(86)
Dorchester	308	131	(43)	25	19	(76)
Frederick	3,265	1,180	(36)	419	234	(56)
Garrett	315	178	(57)	14	14	(100)
Harford	2,961	1,843	(62)	445	337	(76)
Howard	4,372	3,223	(74)	265	240	(91)
Kent	168	78	(46)	11	8	(73)
Montgomery	11,193	7,022	(63)	462	379	(82)
Prince George's	8,596	4,280	(50)	270	235	(87)
Queen Anne's	564	308	(55)	81	57	(70)
Somerset	188	70	(37)	13	11	(85)
St. Mary's	1,226	653	(53)	215	171	(80)
Talbot	358	197	(55)	86	70	(81)
Washington	1,690	834	(49)	338	279	(83)
Wicomico	969	484	(50)	118	102	(86)
Worcester	529	286	(54)	62	53	(85)

Notes. *Identified using overlapping enrollment dates in high school and postsecondary education. Data are used from MSDE, MHEC, and NSC. NSC provides data on out-of-state postsecondary education enrollments for 12th grade students. **Values less than 5 have been masked. PS = postsecondary education.

Table 8 displays the number of dually enrolled students—identified using the MHEC dual enrollment flag—and a description of the number of college credit hours attempted across academic years. The MHEC data include only Fall enrollments in Maryland postsecondary institutions. Dually enrolled students in these data may be Maryland private high school students or high school students residing out-of-state. **The number of dually enrolled students identified by Maryland postsecondary institutions has increased from 5,716 students in the 2013-2014 academic year to 6,724 students in the 2014-2015 academic year.** The total number of dually enrolled students in the 2013-2014 academic year identified by both the MHEC flag and by overlapping enrollment dates in a Maryland public high school and a Maryland institution of higher education was 3,377. The mean number of credit hours attempted has remained fairly stable across years, and indicates that, on average, dually enrolled students took the equivalent of 1.5 three-credit postsecondary courses within an academic year.

Table 8. Number of Dually Enrolled Students Identified Using the MHEC Flag and the Number of Credit Hours Attempted by Students Across Academic Years

<i>Academic Year</i>	<i>Students N</i>	<i>Credit Hours Attempted</i>			
		<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
2011-2012	5,070	4.59	2.56	1	22
2012-2013	5,543	4.40	2.41	1	18
2013-2014	5,716	4.76	2.83	1	26
2014-2015	6,724	4.84	2.92	1	19

Notes. The MHEC data include Fall enrollments in Maryland postsecondary institutions. Dually enrolled students may be Maryland private high school students and high school students residing out-of-state. All high school grade levels are included. *SD* = standard deviation.

Future MLDSC Research on Dual Enrollment

In the 2016 dual enrollment report, the MLDSC will be able to examine the college courses taken by students who were dually enrolled in the 2014-2015 academic year. This will be possible because MHEC will have implemented a new data collection that will include student course taking information. In addition, we will examine the high school correlates of dual enrollment, including the attendance and academic achievement of dually enrolled students in comparison to the overall population of Maryland high school students. Such analyses will also offer an opportunity to examine patterns of participation in dual enrollment for average- and low-achieving students across the State. Finally, we will be able to use dual enrollment participation to predict high school education outcomes, including likelihood of graduation, and postsecondary education outcomes, including postsecondary enrollment and degree attainment after controlling for a number of important demographic characteristics likely to impact outcomes, including gender, eligibility for free and reduced price meals, race, ethnicity, and academic achievement.

Conclusion

This report is the first dual enrollment report that uses matched and merged cross agency data to identify dually enrolled students in Maryland. The use of cross agency data is beneficial because it provides a high level of confidence that the students identified are actually enrolled in both a high school and a postsecondary institution. As more years of data become available within the MLDS, additional trends can be examined, analyzed, and reported. For example, the number of dually enrolled students enrolling in postsecondary education within one year after high school can be examined over time to determine whether a greater proportion of students are enrolling over time. Finally, as the number of years of data in the MLDS increases, long-term outcomes can be examined, such as the impact of dual enrollment on time-to-degree, degrees attained, post-graduate degrees pursued and attained, and workforce outcomes.

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Appendix

Table A.1. Demographic Characteristics of Dually Enrolled* 12th Grade Students in Academic Year 2013-2014 by School District

		Female		FARMs		Race						Hispanic	
		N	%	N	%	Black	White	Other	Black	White	Other	N	%
						N	N	N	%	%	%		
Maryland	5,742	3,395	(59)	1,065	(19)	1,147	3,964	631	(20)	(69)	(11)	288	(5)
Allegany	88	52	(59)	18	(20)	**	84	**	**	(95)	**	**	**
Anne Arundel	750	416	(55)	66	(9)	78	617	55	(10)	(82)	(7)	34	(5)
Baltimore	710	431	(61)	206	(29)	235	403	72	(33)	(57)	(10)	21	(3)
Baltimore City	158	85	(54)	102	(65)	145	**	**	(92)	**	**	**	**
Calvert	208	138	(66)	17	(8)	21	170	17	(10)	(82)	(8)	7	(5)
Caroline	58	46	(79)	25	(43)	**	47	**	**	(81)	**	**	**
Carroll	250	150	(60)	17	(7)	**	234	**	**	(94)	**	**	**
Cecil	168	115	(68)	23	(14)	10	148	10	(6)	(88)	(6)	**	**
Charles	105	69	(66)	13	(12)	42	51	12	(40)	(49)	(11)	**	**
Dorchester	30	22	(73)	14	(47)	**	18	**	**	(60)	**	**	**
Frederick	534	298	(56)	26	(9)	29	445	60	(5)	(83)	(11)	28	(5)
Garrett	48	30	(63)	8	(17)	**	44	**	**	(92)	**	0	(0)
Harford	455	265	(58)	75	(16)	62	365	28	(14)	(80)	(6)	14	(3)
Howard	274	149	(54)	35	(13)	61	139	74	(22)	(51)	(27)	19	(7)
Kent	24	13	(54)	7	(29)	**	22	**	**	(92)	**	0	(0)
Montgomery	587	324	(55)	105	(18)	112	294	181	(19)	(50)	(31)	90	(15)
Prince George's	307	148	(48)	114	(37)	241	26	40	(79)	(8)	(13)	22	(7)
Queen Anne's	91	59	(65)	19	(21)	**	82	**	**	(90)	**	**	**
Somerset	14	10	(71)	8	(57)	**	9	**	**	(64)	**	**	**
St. Mary's	160	105	(66)	7	(4)	7	144	9	(4)	(90)	(6)	**	**
Talbot	65	46	(71)	8	(12)	**	56	**	**	(86)	**	**	**
Washington	471	300	(64)	117	(25)	37	407	27	(8)	(86)	(6)	16	**
Wicomico	105	67	(64)	18	(17)	12	83	10	(11)	(79)	(10)	**	**
Worcester	82	57	(70)	17	(21)	**	71	**	**	(87)	**	**	**

Notes. *Identified using overlapping enrollment dates in high school and postsecondary education. Data are used from MSDE, MHEC, and NSC. NSC provides data on out-of-state postsecondary education enrollments for 12th grade students. Out-of-state enrollments are included here. FARMs = Free and Reduced Price Meals. Percentages may not add to 100 due to rounding. **Values less than 5 have been masked. In some instances values greater than 5 were masked in order to prevent the ability to reverse engineer values.

Table A.2. Demographic Characteristics of Total Population of 12th Grade Students in Academic Year 2013-2014 by School District

	Total	Female		FARMs		Race						Hispanic	
		N	%	N	%	Black N	White N	Other N	Black %	White %	Other %	N	%
Maryland	62,732	31,424	(50)	20,900	(33)	22,447	30,837	9,448	(36)	(49)	(15)	6,484	(10)
Allegany	660	307	(47)	291	(44)	30	609	21	(5)	(92)	(3)	10	(2)
Anne Arundel	5,348	2,695	(50)	1,134	(21)	1,128	3,745	475	(21)	(70)	(9)	415	(8)
Baltimore	7,716	3,932	(51)	2,956	(38)	3,120	3,890	706	(40)	(50)	(9)	378	(5)
Baltimore City	5,177	2,707	(52)	3,777	(73)	4,566	478	133	(88)	(9)	(3)	159	(3)
Calvert	1,372	653	(48)	219	(16)	230	1,047	95	(17)	(76)	(7)	48	(3)
Caroline	362	167	(46)	175	(48)	62	283	17	(17)	(78)	(5)	24	(7)
Carroll	2,236	1,166	(52)	315	(14)	70	2,087	79	(3)	(93)	(4)	72	(3)
Cecil	1,146	567	(49)	384	(34)	107	979	60	(9)	(85)	(5)	49	(4)
Charles	2,161	1,073	(50)	524	(24)	1,178	801	182	(55)	(37)	(8)	98	(5)
Dorchester	308	156	(51)	153	(50)	101	193	14	(33)	(63)	(5)	12	(4)
Frederick	3,187	1,516	(48)	571	(18)	334	2,395	458	(10)	(75)	(14)	317	(10)
Garrett	322	164	(51)	118	(37)	**	309	**	**	(96)	**	8	(2)
Harford	2,907	1,508	(52)	655	(23)	505	2,171	231	(17)	(75)	(8)	140	(5)
Howard	4,170	2,018	(48)	651	(16)	892	2,240	1,038	(21)	(54)	(25)	319	(8)
Kent	150	59	(39)	59	(39)	**	114	**	**	(76)	**	7	(5)
Montgomery	11,297	5,556	(49)	2,912	(26)	2,555	4,647	4,095	(23)	(41)	(36)	2,670	(24)
Prince George's	8,655	4,415	(51)	4,108	(47)	6,461	797	1,397	(75)	(9)	(16)	1,485	(17)
Queen Anne's	631	294	(47)	132	(21)	50	559	22	(8)	(89)	(3)	25	(4)
Somerset	179	87	(49)	110	(61)	71	89	19	(40)	(50)	(11)	9	(5)
St. Mary's	1,274	664	(52)	290	(23)	245	934	95	(19)	(73)	(7)	50	(4)
Talbot	343	173	(50)	108	(31)	70	238	35	(20)	(69)	(10)	25	(7)
Washington	1,664	834	(50)	648	(39)	209	1,343	112	(13)	(81)	(7)	96	(6)
Wicomico	970	477	(49)	430	(44)	339	516	115	(35)	(53)	(12)	47	(5)
Worcester	497	236	(47)	180	(36)	91	373	33	(18)	(75)	(7)	21	(4)

Notes. Data are used from MSDE. FARMs = Free and Reduced Price Meals. Percentages may not add to 100 due to rounding.

**Values/percentages less than 5 have been masked. In some instances values greater than 5 were masked in order to prevent the ability to reverse engineering values.