College Opportunities and Success: Baltimore City Graduates through the Class of 2014

Rachel E. Durham
Marc L. Stein
Faith Connolly

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Executive Summary

The total number of City Schools graduates who enrolled in college the next fall declined across the Classes of 2007-2014. The percentage of graduates enrolling in college also decreased by more than 7.0 percentage points, from 49.8% to 42.0%. At the same time, the total number of high school graduates increased, as cohort graduation rates among City Schools students increased by 8.2%. High school graduation rates may reduce college enrollment rates in the aggregate by simultaneously increasing the overall number eligible for college and changing the composition of a graduating class, as some of these added students may experience greater barriers to continuing their academic career.

The previously noted trend where more than half of Baltimore City graduates choose a 2-year rather than a 4-year college in the fall continued through the Class of 2013 (Durham & Olson, 2013), though this trend may be slowing, as 45.8% of the Class of 2014 enrolled in 4-year colleges, compared to 44.6% among the Class of 2013.

Where graduates choose to begin college also appears to have significant implications for future degree completion. Approximately 2.0 - 6.0% of graduates who first enrolled in a 2-year college completed a 4-year degree within six years, while about 10.0% completed either a 2-year or 4-year degree (or both). In contrast, approximately 43.0% of those who started at a 4-year college completed degrees within six years.

For the first time, we present comparisons of fall college enrollment by sending high school. The results represent the vast differences between schools in student characteristics, resources, and challenges, as we found stark variation in enrollment outcomes, both within and across high school types. As would be expected, entrance criteria schools have had the largest percentages of its graduating students enrolling in higher education in the fall after high school, though the share attending 4-year colleges has declined in recent years. This latter trend reflects the pattern for the district as a whole. Moreover, entrance criteria schools differ in terms of enrollment rates by as much as 25.0%. We also found that a number of Traditional high schools' graduates enroll in college the following fall at rates that are somewhat higher than for CTE high schools with entrance criteria.

Several cautions against straightforward interpretations of these results are warranted. First, the majority of City Schools graduates are eligible for free or reduced-price meals (FARMS), indicating that in addition to academic challenges, difficulties in financing college costs may confer an extra barrier to enrollment. Students eligible for FARMS are also more likely to be first-generation college goers lacking adults at home who from their own experience, can offer guidance in the college preparation and search process.

It is unclear whether the composition of recent graduating cohorts has necessarily changed in ways that are driving a slight decline in college enrollment. Increasing graduation rates may be due to improving supports for struggling students (i.e., those who potentially have additional barriers to enrolling in college), but further research is needed to explore how the district can leverage its recent success with increased graduation towards improving students' transitions to their chosen college and career paths. When we examined academic indicators of college

readiness among City Schools graduates, we found that for the Class of 2014 just 11.4% had achieved a final weighted GPA of 3.0 or higher. Further, only about two-thirds of City Schools graduates had taken the SAT with around 15.0% of them scoring over 500 on either the verbal or math subject tests. This suggests a greater focus on the academic rigor available to students is necessary to increase both college enrollment and degree completion.

Recommendations

In addition to thinking through ways to increase student engagement and academic rigor, research is needed regarding how students adjudicate the 2-year versus 4-year option, and what student and institutional characteristics relate to persistence in college. It would be enlightening and beneficial for BERC and City Schools (as well as other partners) to pursue additional qualitative research to address students' academic identify formation and students' college search process. In particular, more information is needed about students' career goals, how their dreams align with their educational plans, and how schools work with students in planning for adulthood. Further research is also needed about ways that school counselors, teachers, and other staff work with students and families to help identify colleges and fulfill application requirements.

Collecting information about whether their parents or guardians have experienced college, i.e., identifying first-generation college goers, is essential for prioritizing family engagement efforts towards increasing college enrollment. City Schools should also consider systematically collecting data on students' career and college aspirations prior to graduation. Without further research concerning the correspondence between students' goals, career aims and college choices, it is impossible to know whether the evident low rate of transfer from 2-year to 4-year colleges should be a high-priority area of focus.

Information from a greater range of partners concerning how students fare once enrolled is needed to examine patterns of persistence in college and its relationship to high school preparation and developmental course performance. Also, we (BERC and City Schools) currently have no information about postsecondary certificate completion. Occupation- or skill-relevant certificates, as well as the emerging phenomenon of micro-credentialing through badges, are important parts of the postsecondary landscape. Thus we suggest that City Schools partner with local area colleges and universities to share information. These data would allow City Schools to better understand and remedy any gaps in graduates' preparation for college, and the colleges could gain knowledge about how to support matriculating students, allowing stakeholders to coordinate efforts toward improving student success.

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Background

Baltimore City Public Schools (City Schools) has recently accomplished a remarkable feat -- in five years the four-year high school graduation rate has increased from 61% for the Class of 2010 to nearly 70% for the Class of 2014. Identifying a single, precise cause of this increase is unlikely and even a specific set of causes is difficult to pinpoint in a large urban school district. Yet one possible (and plausible) reason is that students have increasingly been able to leverage a combination of additional academic supports, credit recovery and alternative programming.

At the same time that it has focused on increasing on-time graduation from high school, the district is also focusing efforts on increasing the number of City Schools' graduates who continue their education by enrolling in college. As the district serves a predominantly low-income student population, most of its graduates are almost certainly first-generation college goers, though no data are available to determine the scale of this challenge. Nevertheless, part of increasing college going rates is supporting students who have few adults in their lives who themselves navigated the college-going process or work in careers requiring a college degree. This implies that schools must expand the social capital available to students and provide the type of supports that students from wealthier, more advantaged families often take for granted, including greater and early exposure to college life, career options, and knowledge about the requirements of particular careers.

Educational Attainment in Baltimore

According to 2009-2013 American Community Survey (ACS) data, 26.8% of Baltimore residents over age 25 have completed at least a 4-year degree (U.S. Census Bureau, ACS 2009-2013). However, educational credentials in Baltimore are not distributed equally across neighborhoods. For example, in some neighborhoods as little as 5.2% of the population has a Bachelor's degree; yet in other neighborhoods the figure is closer to 70.0% (Baltimore Neighborhood Indicators Alliance, 2015a).[1]

Equally troubling are figures on neighborhood levels of unemployment in Baltimore. For example, in some neighborhoods the percentage of residents aged 16-64 not in the workforce is as higher than 40.0%. Recent reports highlight that while there is a complex network of barriers and obstacles for many Baltimore residents in gaining meaningful employment, the core barriers are related to inadequate reading and math skills as well as low levels of educational attainment (Opportunity Collaborative, 2014). Together these statistics suggest that providing higher levels

[1] This section was updated on November 6, 2015 to correct the statement that 26.8% of Baltimore residents over age 25 had completed "some college", which cited erroneous Vital Statistics data (BNIA, 2015b).

of rigor in student learning and improving access to higher education must be priorities for the district.

Although the recent increase in the share of City Schools students earning a diploma is certainly encouraging, the economic viability of Baltimore will hinge on ensuring that its high school graduates are aware of, and prepared for, postsecondary educational opportunities that can provide pathways to increased productivity and well-being. College education is associated not only with lower likelihood of being unemployed, it substantially increases earnings, emotional well-being, physical health over the life course, civic participation, and the health of society at large (College Board, 2010a).

Barriers to College Access and Degree Completion

Enrolling and being successful in college requires students to be both academically ready and to have completed of a complex set of preparative actions that are supportive of enrollment and eventual success. First, students are at a disadvantage if schools do not clearly communicate to them that there are important differences between diploma requirements and university admission requirements. Admission to college requires students to meet additional rigorous academic entry requirements by completing challenging preparatory classes. In fact, successful college preparation begins well before high school: Students are at a disadvantage if they do not enter grade 9 on track to complete college admissions requirements such as Algebra 2, and multiple years of foreign language and lab science. Further, to be best-positioned, college applicants should ideally have completed high school graduation requirements by the end of 11th grade, so that their senior year can be spent taking Advanced Placement, college courses, or additional math and science courses.

The college-ready student must also have cultivated sophisticated cognitive (i.e., reading, writing, and math) and non-cognitive abilities (e.g., time and conflict management skills, tenacity, sociability) that will allow him or her to thrive in the challenging academic environment of college (Roderick, Nagaoka, & Coca, 2009). In addition students must complete many detailed tasks by specific deadlines, such as submitting transcripts, taking national standardized tests, soliciting recommendations, completing a Free Application for Federal Student Aid (FAFSA) form, and identifying sources of financial aid.

Successfully navigating this process requires support from knowledgeable adults – particularly teachers, counselors, and parents. Thus, research has shown that students without close relationships to knowledgeable adults, such as first generation college-goers, are at a serious disadvantage in making it to and through college relative to their peers who have college-educated parents. In Baltimore, therefore, preparing students to enter college must begin well before high school, as interests and aspirations for adult life begin forming early in childhood. In other words, even kindergarten students are not too young to begin exploring the possibilities for their futures.

This report and previous reports in this series have been created to paint a picture of college outcomes among recent Baltimore City graduates, and we acknowledge that many additional questions are raised by the findings. Below, we describe our methodology, the current status of graduates of Baltimore City Schools enrolling in college and completing degrees, and then provide a discussion of the results and recommendations for next steps.

Methodology

This study is based on data from multiple sources, including local sources such as the Baltimore City Schools Office of Achievement and Accountability, and national sources such as the National Student Clearinghouse (NSC) and the Integrated Postsecondary Education Data System (IPEDS) (See Table 1). Full details about the sources of data used in the current analyses may be found in Appendix A: Data Sources and Collection Methods.

Table 1
Data Sources Used in This Study

Unit of Analysis	Data Source(s)	Use
Student	National Student Clearinghouse (NSC)	Identifies college enrollment and degree completion. Represents 98% of students enrolled in U.S. public and private higher education institutions.
	Baltimore City Public Schools Office of Achievement and Accountability	Provides student graduation and high school performance records (e.g., transcripts, SAT scores)
School District	Maryland State Department of Education (MSDE)	Provides demographic, graduation rate, and academic performance data on Baltimore City Public Schools and neighboring counties.
Colleges & Universities	National Center for Education Statistics (NCES) and Integrated Postsecondary Education Data System (IPEDS)	Provides national data on educational attainment, high school completion, college enrollment, and degree completion.
	College Results Online. A service of The Education Trust.	Provides data on college freshmen profiles using IPEDS, supplemented with other Department of Education Databases, Barron's Profile of American Colleges, College Board, Peterson's Databases, and the National Association of State Student Grant and Aid Programs.

Research Questions

The research questions addressed by our analysis are:

College Enrollment

- How were recent City Schools graduates prepared for college as measured by readiness indicators such as attendance, wGPA, and SAT subject scores?
- How many City Schools graduates enroll in college the fall immediately after graduation?

- What types of postsecondary institutions do City Schools graduates attend?
- What types of postsecondary institutions do City Schools graduates attend, by graduating high school?
- In which postsecondary institutions do most City Schools graduates enroll?

Degree Completion

- How many City Schools graduates complete postsecondary degrees, and
- Does the probability of degree completion differ according to the timing of college entry?
- Does the probability of degree completion differ according to where graduates begin their postsecondary studies?
- How many City Schools graduates who first enroll in community colleges transfer to 4-year institutions and subsequently earn degrees?

Analysis

We analyzed all data using descriptive methods. No techniques were used to make statistical inferences about students (i.e., there are no generalizations from a sample to a larger population). In other words, our data represent the entire population of graduates from Baltimore City Public Schools: if we do not have an actual record of an event in a student's educational history, it is neither inferred nor reported.

Limitations

Using NSC data as a source for graduates' college enrollment presents a number of challenges. For details on these limitations and how we addressed them, we refer the reader to Appendix B: Appendix B: Data Processing and Methods of Analysis.

Degree completions occurring within six years were determined for the Classes of 2007 and 2008. However, as of the most recent update from the NSC, only 5 years and 9 months since high school graduation had elapsed for the Class of 2009. While we present degree completions for all three classes (2007-2009), we expect the percentage completing degrees for the Class of 2009 to increase as additional data become available.

Findings

This section will address the findings for each of the research questions outlined in the methodology section.

College Readiness

Enrolling in college requires completing a complex series of steps, and many of these begin before high school (i.e., identifying interest areas, developing an academic identity, being academically prepared for high school course passing, etc.). Yet when considering applicants, college admissions officers often focus most closely on the qualifications demonstrated by a student's high school record. Although these records offer little insight into an individual's lifelong potential, they provide an objective means of adjudicating who, among all applicants, are most likely to meet the academic demands of college.

Two of the most common metrics used to screen applicants are students' final weighted Grade Point Average (wGPA) and nationally normed assessment scores, such as the SAT or ACT. Colleges may also consider advanced course taking, as indicated by Advanced Placement (AP) and International Baccalaureate (IB) classes. In addition to these measures, we also consider chronic absence, defined as missing one-ninth or more of total days on roll, since prior research has suggested it is a risk factor for engagement and student persistence.

In Table 2, we present trends on these readiness indicators across four recent cohorts of graduates of City Schools. We found that approximately two-thirds of graduates were not chronically absent in their final year of high school, but this means that one-in-three graduates missed more than one-ninth of the days they were on roll (i.e., about a month of the school year). The average wGPA was below 2.0 for all four cohorts (with 60.0% or 8,200 graduates in Classes 2011-2014 having a wGPA below 2.0), though the share of graduates achieving over a 3.0 final wGPA has risen from 7.1% for the Class of 2011 to 11.4% among the Class of 2014. The percent of graduates who had taken an AP or IB course has been relatively stable over time, with approximately one-quarter attempting these courses during high school.

Concerning Preliminary SAT (PSAT) and SAT taking, the percent who took the PSAT increased between 2011 and 2014, from 80.9% to 87.2%; the percent having taken the SAT, however, has been lower and more stable, at around 69.0%. With regard to SAT scores, average verbal and math scores are significantly lower than the national mean of 500 and have been similar across cohorts. For the most recent class, the average verbal SAT score was 395, and the average math score was 386. Further, a relatively small share of graduates in any of these classes scored above the national mean, with approximately 13.7% scoring above 500 on the math section, and 14.9% above 500 on the verbal section (see Table 2).

Table 2
College Readiness Characteristics of City Schools Graduates, Classes of 2011 through 2014

Class of:	2011	2012	2013	2014
% Not Chronically Absent in 12th grade	63.5	67.9	70.1	67.4
Course Taking				
Mean wGPA	1.83	1.89	1.95	1.99
% wGPA ≥ 3.0	7.1	8.1	9.7	11.4
% wGPA ≥ 2.5	17.3	18.6	21.4	23.7
% Took AP/IB course(s)	24.5	24.7	26.4	24.4
Assessments				
% Took PSAT	80.9	84.4	87.7	87.2
% Took SAT	68.3	70.2	68.7	68.6
Math SAT Scores				
Mean Math SAT	387	381	385	386
% of takers, ≥ 500	12.8	12.7	14.4	14.7
% of takers, ≥ 400	42.1	38.9	40.8	41.0
Verbal SAT Scores				
Mean Verbal SAT	399	390	395	395
% of takers, ≥ 500	14.1	13.6	16.5	15.4
% of takers, ≥ 400	48.8	42.6	47.6	45.9
Number of Graduates	4,596	4,629	4,464	4,327

Fall College Enrollment

College enrollment rates must be considered along with increasing high school graduation rates. In general, increased graduation rates can be the result of many factors. Notably, the size of incoming 9th grade cohorts decreased by approximately 14.0% between the years that the Class of 2010 and the Class of 2014 began high school (Table 3). This reduction may have had a positive effect on the ability of educators to meet students' needs by boosting the distribution of scarce resources. At the same time, increased graduation rates may be the result of providing extra support to struggling students missing diploma requirements to help them graduate. In City Schools, these supports include offering alternative scheduling and programming for students who previously stopped out of school or were at risk of leaving, greater opportunities for credit recovery, and substitute pathways to academic validation outside of the traditional Maryland High School Assessment. Thus, students who might have otherwise left City Schools without graduating are now eligible for college, though such students may have an academic profile different from other college-bound graduates.

In other words, improving high school graduation rates may reduce college enrollment rates in the aggregate by simultaneously increasing the overall number eligible for college and changing the composition of a graduating class. This can be seen in Baltimore (see Table 3) where the total number of fall college enrollees declined between 2007 and 2014 while the total number of high school graduates has risen more dramatically over the same time period. For example, while

Baltimore City graduation rates increased 8.2 percentage points from 2010 to 2014, college enrollment rates decreased by 7.2 percentage points, from 49.8% to 42.0% (Table 3). Thus the relative share of college enrollees among high school graduates has fallen despite general stability in the total number of college enrollees. This has implications for interpreting the effects of dropout reduction programs. The good news – increased high school graduation rates – is accompanied by a new challenge– dipping overall college enrollment rates.

Table 3
Number and Percentage of Baltimore City Schools Graduates and Their Fall Enrollment in College for the Classes of 2010 through 2014

Class	High School Graduates			Fall College Enrollees	
	9th Grade Cohort (N)	Graduates (N)	% Graduated† (4-yr cohort)	N	%
2007	-	4,016	-	2,021	48.5
2008	-	4,011	-	2,002	49.2
2009	-	4,286	-	2,151	49.8
2010	6432	4,412	61.5	2,163	48.9
2011	6128	4,596	65.8	2,159	47.0
2012	6288	4,629	66.5	2,115	45.7
2013	5987	4,464	68.5	1,951	43.7
2014	5513	4,327	69.7	1,819	42.0

Sources: NSC data, received April 2015, 2013, 2012, 2010, 2009; 4-year cohort rate from MSDE.
†The graduation rate cannot be determined by dividing number of graduates by entering 9th graders, as the graduation rate also accounts for transfers into and out of the district during high school.
- Cohort graduation rates are not available for classes graduating before 2010.

To place these numbers in context nationally, about 68.0% of all high school graduates enroll in college the following fall (Bureau of Labor Statistics, 2015), while about half of low-income students generally do so (National Center for Education Statistics, 2015). On average in Baltimore, about 47% of recent graduating students have enrolled in college immediately after high school graduation.

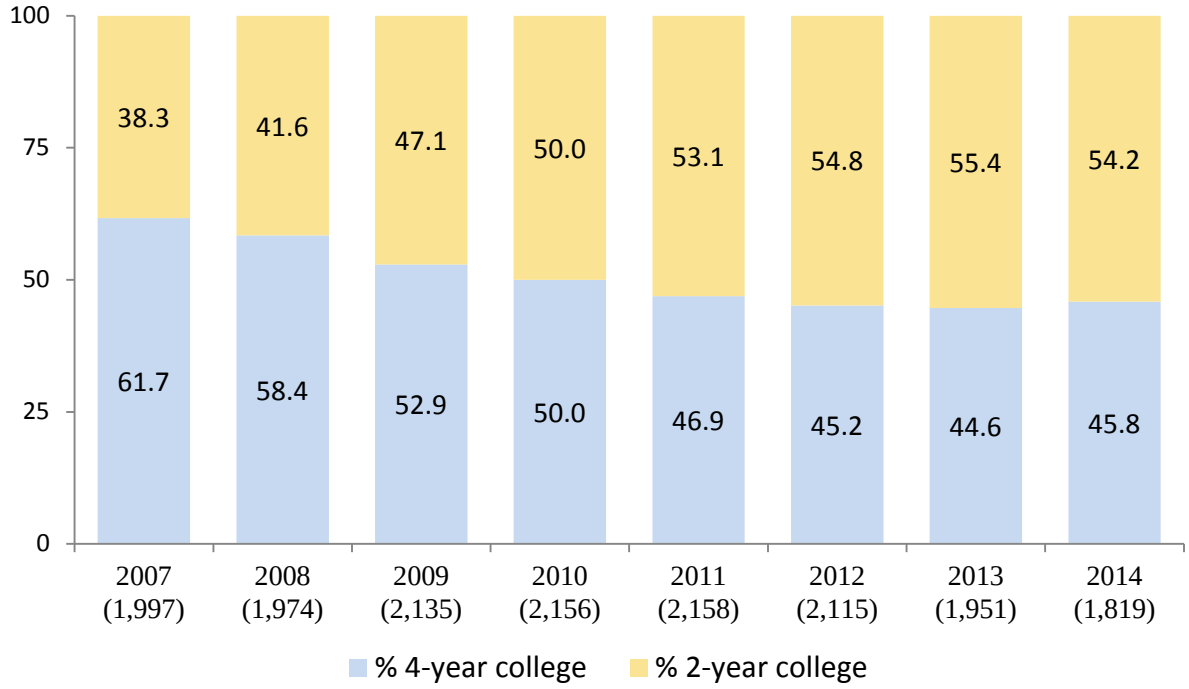
The reader is also cautioned that the most recent data received from NSC may produce artificially low enrollment numbers for the most recent classes, due to the nature of this data source – it is continually being updated to correct for possible reporting errors or delays. Thus, these percentages will likely increase slightly with time. (For more detail on enrollment by student and institution characteristics, see Appendix C: Fall College Enrollment for the Baltimore City Schools Graduating Classes of 2010 through 2014.)

College Types Attended

Prior to 2010, most City Schools graduates who enrolled in college the next fall enrolled in a 4-year college. Over time, as seen in Figure 1, more graduates have enrolled in two-year colleges.

What might explain this trend of an increasing share of college goers choosing 2-year institutions versus 4-year options? As noted previously, it is possible that the composition of graduating classes has changed over time and this may play a role in increased 2-year college enrollment, as students less likely to meet 4-year college admissions requirements become part of the college eligible population by completing high school. The timing of this change also corresponds with two other related factors: the economic recession of 2009 and tuition increases due to shrinking budgets and falling state appropriations for higher education (College Board, 2012). This latter factor has likely made 2-year colleges, where tuition is less costly, more appealing. These financial considerations are especially relevant considering the harsh economic climate of recent years; however, whether students are choosing 2-year colleges because of economic or other practical reasons remains unknown. Further research into how students are guided by schools toward their choice of college is needed.

Figure 1. Percentage of Graduates Enrolled in the Fall by Type of College, for the Classes of 2007 through 2014



College Readiness and Fall Enrollment

A corollary to the question of where graduates enroll is whether the type of college chosen corresponds to high school academic credentials. Specifically, since 2-year colleges have open-

door policies and 4-year colleges have admissions requirements, we examined recent graduates' fall college destination types by their wGPA and SAT profiles.

Table 4
Number and Percent of Fall College Enrollees at 2-year or 4-year Colleges, by Final Weighted GPA and Highest SAT score, Classes of 2011 through 2014 Combined (N=8,041)

Final wGPA	SAT (v+m)	N in Group	Fall College Type	N at College Type	% of Group at College Type
< 2.5	< 1000	4,832	2-year	3,544	73.3
			4-year	1,288	26.7
	> 1000	311	2-year	88	28.3
			4-year	223	71.7
2.5 – 3.0	< 1000	1,284	2-year	512	39.9
			4-year	772	60.1
	> 1000	305	2-year	28	9.2
			4-year	277	90.8
3.0 – 3.5	< 1000	534	2-year	153	28.7
			4-year	381	71.3
	> 1000	306	2-year	16	5.2
			4-year	290	94.8
3.5 +	< 1000	153	2-year	23	15.0
			4-year	130	85.0
	> 1000	316	2-year	5	1.6
			4-year	311	98.4

In Table 4, graduates were identified by whether they enrolled in a 2-year college (yellow bars) or a 4-year college (blue bars). They were further disaggregated by having scored over 1,000 on the verbal and math sections of the SAT, and wGPA categorized by less than 2.5, 2.5 to 3.0, 3.0 to 3.5, and over 3.5. We performed this exercise for the 8,041 graduates from 2011 to 2014 who enrolled in college the following fall.

The largest group of students had wGPAs of less than a 2.5 and SATs less than 1000. The second largest group consists of students with wGPAs between 2.5 and 3.0 and SATs less than a 1000, and the third largest were students with wGPAs between 3.0 and 3.5 and SATs less than 1000. About 300 students scored over 1000 on their SATs in each of the GPA categories.

We found that among students with the highest wGPA and SAT scores, the vast majority or 98.4% enrolled in a 4-year college. Conversely, graduates with a final wGPA below 2.5 and with SAT scores below 1000 primarily enrolled in 2-year colleges (73.3%) while 26.7% enrolled in 4-year colleges. With few exceptions, the majority of graduates with SAT scores below 1000

chose 2-year colleges. This may suggest that SAT scores are highly predictive of the type of college for which students aim, at least as compared to wGPA as we found that sizeable shares of graduates with a wGPA below 3.0 began their studies in 4-year colleges.

Enrollment by High School

There are several types of public high schools in Baltimore City, which have different instructional foci and potentially enroll and appeal to different types of students. These five types include high schools with entrance criteria, career and technical schools with some entrance criteria, traditional high schools, charter and transformation schools, and alternative schools. Yet even within these discrete categories, student body characteristics and instructional emphases vary a great deal. Thus, below we present college enrollment for each school according to school type, but we caution the reader against making strict comparisons between schools – even between those in the same category, as the populations they serve represent varying types of students, and the resources available at each high school are also very different.

Entrance Criteria

There are five Baltimore high schools in the entrance criteria category, which serve students from the entire city and generally feature a comprehensive curriculum. However, to be accepted to most of these schools, students must reach certain thresholds on the grade 7 state assessment (MSA) and have competitive middle school grade averages in English, math and science, all of which are summarized into a composite score for selection purposes. Baltimore School for the Arts has a somewhat different selection process, where students must audition or submit a portfolio for consideration.

Screening students for academic qualifications also means that the demographic characteristics of students at entrance criteria schools are different from the district population as a whole. For instance, while 77.0% of Baltimore high school students were eligible for free or reduced-price meals (FARMS) in 2013-14, the percentages of FARMS-eligible students at entrance criteria high schools were generally much lower, ranging between 26.3 and 70.7%. Similarly, entrance criteria high schools serve smaller shares of students receiving special education services. Whereas 17.5% of all high school students received special education services in 2013-14, less than 5.0% of students received special education at entrance criteria high schools.

The published minimum composite score for entrance to most of the entrance criteria schools is 610. However, the actual composite score needed for admission is higher when demand exceeds the number of students achieving the minimum score who applied to the same school, and since demand may change from year to year, each cohort of students may be different in terms of their middle school preparation. Also, populations among the entrance criteria schools may differ slightly as a result of differing emphases; Western High School serves an all-girls population, Baltimore Polytechnic Institute traditionally offers advanced course taking in math, science and engineering, while Baltimore City College emphasizes studies in the Humanities along with an International Baccalaureate (IB) program. In 2013-14 entrance criteria schools' graduates represented 28.8% of all City Schools' graduates.

Table 5 shows total fall enrollment for the 2012 through 2014 graduates of entrance criteria high schools, along with the number of graduates and the corresponding 4-year cohort graduation rate. For most of these schools, the percent who enrolled in college has declined over the most recent three years for which enrollment data are available. Graduates of these schools have had the highest fall college enrollment rates across all Baltimore high schools. This is not surprising, as these schools have the most discerning admissions criteria and market themselves as the most academically preparatory programs (i.e., extensive Advanced Placement and IB options).

Table 5
Four-Year Cohort Graduation Rate and Percentage Enrolling in College the First Fall after Graduation, Classes of 2012 through 2014 – Entrance Criteria High Schools

Class of:	2012			2013			2014		
	# Grads	Grad Rate	% Enrolled	# Grads	Grad Rate	% Enrolled	# Grads	Grad Rate	% Enrolled
City College	270	92.0	80.0	319	>95.0	69.9	282	>95.0	69.1
Paul Laurence Dunbar	120	91.3	57.5	149	>95.0	63.1	252	93.2	50.8
Polytechnic Inst.	369	>95.0	81.3	419	93.0	70.9	393	92.7	68.4
School for the Arts	95	>95.0	87.4	81	>95.0	80.2	78	>95.0	76.9
Western High	192	>95.0	87.0	207	>95.0	74.4	242	>95.0	69.8

Career-Tech Entrance Criteria (CTE)

CTE high schools offer career training for a dozen career pathways;[2] they seek to prepare students for either further education or careers in media, business, information technology, and health fields, among others. These schools also have academic entrance requirements based on middle school performance that additionally includes students' middle grades attendance rate. The published minimum composite score for entrance is 475, though as with the other entrance criteria high schools, the actual minimum score used to determine admission may be higher due to demand. Also, students apply for membership to a specific academy within the high school, so not only must a student's composite score be competitive among all high school applicants, it must also be competitive relative to other students applying to the same academy. In 2013-14, CTE graduates represented 16.4% of all City Schools' graduates.

Table 6
Four-Year Cohort Graduation Rate and Percentage Enrolling in College the First Fall after Graduation, Classes of 2012 through 2014 – Career & Technology Schools with Entrance Criteria (CTE)

Class of:	2012			2013			2014		
	# Grads	Grad Rate	% Enrolled	# Grads	Grad Rate	% Enrolled	# Grads	Grad Rate	% Enrolled
Carver Vo-Tech	159	84.3	32.7	175	92.9	34.3	200	84.9	27.0
Edmondson-Westside	186	82.2	41.9	201	87.1	35.8	180	79.5	41.1
Mergenthaler Vo-Tech	281	82.2	47.3	299	78.9	36.5	329	83.3	37.4

[2] http://www.baltimorecityschools.org/cms/lib/MD01001351/Centricity/domain/8832/2015-16_pdfs/2015-16_ChoiceGuide-English.pdf

As seen in Table 6, between 27.0 and 41.1% of recent graduates of CTE schools have enrolled in college the following fall, with rates going down between 2012 and 2014 at Mergenthaler and Carver but fluctuating somewhat at Edmondson-Westside.

Traditional High Schools

Perhaps the most diverse set of high schools are those in the traditional category. There were 16 schools in this group who in spring 2014 produced a class of graduates, and none use strict, objective entrance criteria for determining admission, though a handful interview prospective students as part of their selection process. Historically, many of these schools served the local neighborhoods, but City Schools currently allows most students to choose where they enroll in high school, either through the application process at entrance criteria schools or through the system-wide lottery for the remaining schools. In 2014 traditional schools' graduates represented 30.6% of all City Schools' graduates.

Table 7
Four-Year Cohort Graduation Rate and Percent Enrolling in College the First Fall after Graduation, Classes of 2012 through 2014 – Traditional High Schools

Class of:	2012			2013			2014		
	# Grads	Grad Rate	% Enrolled	# Grads	Grad Rate	% Enrolled	# Grads	Grad Rate	% Enrolled
Augusta Fells Savage	139	69.2	23.0	94	78.1	18.1	59	61.9	22.0
Benj. Franklin High	61	63.6	29.5	76	67.7	32.9	61	58.6	39.3
Bluford J. STEM West	--	--	--	--	--	--	43	86.0	44.2
Digital Harbor High	198	71.2	41.4	194	66.9	52.6	231	65.0	39.8
Frederick Douglass High	196	55.6	15.8	183	60.9	21.3	142	57.4	21.8
Forest Park High	113	55.7	36.3	105	60.7	27.6	79	69.8	36.7
Heritage High	121	50.9	27.3	94	56.6	34.0	68	56.7	19.1
KASA Academy	48	73.8	35.4	28	53.5	35.7	25	60.0	36.0
Maritime Industries Acad	79	52.9	31.6	63	55.1	44.4	64	72.4	23.4
Nat'l Acad Foundation	71	79.1	57.7	87	81.0	50.6	76	76.8	46.1
Northwestern High	165	62.3	44.2	151	61.6	26.5	102	60.5	31.4
Patterson High	262	62.8	41.2	199	61.5	38.7	144	66.8	40.3
Reginald F. Lewis	77	51.2	37.7	68	54.6	39.7	63	69.6	27.0
Renaissance Acad	45	64.6	33.3	61	67.1	34.4	51	69.8	37.3
Vivien Thomas Med Arts	91	78.3	46.2	70	78.9	50.0	68	80.7	54.4
W.E.B. DuBois	116	60.6	37.1	90	65.5	33.3	37	58.6	45.9

-- not applicable.

High schools designated as "traditional" are a dynamic set of schools, as they include smaller academy settings that opened within the past 10 years (e.g., Renaissance Academy, KASA Academy), as well as larger, comprehensive schools with long histories in Baltimore of serving their local neighborhood populations (i.e., Frederick Douglass, Northwestern, Patterson, and Forest Park High). This diversity in high school offerings reflects the different perspectives of City Schools' past and current leaders and their varying approaches to education reform. There are important advantages and disadvantages to each type of setting; for instance, larger high schools may be able to offer a greater range of course sequencing and extracurricular options while smaller academies can perhaps offer a personalized setting with close-knit adult-student relationships, though this may come at the expense of having an extensive menu of resources that

large high schools might offer. Furthermore, several of these schools were initiated by contract organizations, though some of these contracts have since been converted to traditional district management.

The diversity of school settings in this category is also mirrored in the vastly different graduation rates and the percent of graduates enrolling in college, as seen in Table 7. Notably, rates of fall college enrollment between Traditional and CTE with entrance criteria high schools have been very similar for recent cohorts of graduates, despite the fact that they purportedly serve different populations, as a result of CTE schools' more selective admissions process at high school entry.

Charter and Transformation Schools

Charters are externally operated public schools of choice (or lottery admission), without entrance criteria. Each school has a specific contract with the district that details its curriculum, goals, and assessment methods. Transformation schools serve grades six through twelve (instead of the traditional nine through twelve), are externally operated schools of choice (or lottery admission), and their curricula are focused on college, career, or specialized career technology programming. In 2013-14 charter and transformation schools' graduates represented 13.5% of all City Schools' graduates.

Table 8
Four-Year Cohort Graduation Rate and Percentage Enrolling in College the First Fall after Graduation, Classes of 2012 through 2014 – Charter and Transformation High Schools

Class of:	2012			2013			2014		
	# Grads	Grad Rate	% Enrolled	# Grads	Grad Rate	% Enrolled	# Grads	Grad Rate	% Enrolled
Charter									
City Neighbors High	--	--	--	--	--	--	81	90.0	45.7
ConneXions Acad	33	86.1	54.5	42	80.0	42.9	30	77.1	46.7
Coppin Acad	74	85.0	45.9	74	90.0	41.9	68	87.0	51.5
Independence Local I	21	62.1	19.0	18	56.7	33.3	19	69.6	36.8
MD Acad of Tech/Health	55	87.1	63.6	42	94.9	59.5	43	76.8	46.5
Transformation									
ACCE	76	71.7	42.1	90	72.9	41.1	82	69.2	39.0
Friendship Acad Engineering/Tech	88	78.4	60.2	48	54.4	58.3	65	43.1	30.8
New Era Acad	44	69.1	29.5	52	65.8	42.3	40	73.1	35.0
REACH!	47	82.8	34.0	33	77.5	42.4	38	68.4	39.5

The charter/transformation school category is at least as diverse as the set of schools included as traditional schools, but tends to serve relatively smaller school populations. As such, graduation rates and the percentage of graduates enrolling in college the next fall tend to fluctuate a great deal from one year to the next, as can be seen in Table 8.

Alternative Schools

High schools that serve students seeking alternative paths to a diploma are specially designed to help students who are over-age and severely under-credited earn a diploma. Students are assigned to these schools by the Office of Student Placement. In 2013-14 there were just three alternative/special education schools with a graduating class, representing 10.7% of all City Schools' graduates.

Table 9 includes the graduation and college enrollment rates for the Classes of 2012 through 2014 for these three high schools. The students who graduate from alternative high schools demonstrate extremely high levels of persistence in overcoming tremendous barriers to complete their diploma requirements; thus, it is not surprising that many likely face additional challenges in enrolling in college the next fall, as shown by relatively low enrollment rates. However, for some graduating classes, fall enrollment shares are as high as those at several of the traditional high schools.

Table 9
Four-Year Cohort Graduation Rate and Percentage Enrolling in College the First Fall after Graduation, Classes of 2012 through 2014 – Alternative High Schools

Class of:	2012			2013			2014		
	# Grads	Grad Rate	% Enrolled	# Grads	Grad Rate	% Enrolled	# Grads	Grad Rate	% Enrolled
Achievement Acad	136	32.2	17.6	126	29.1	13.5	139	27.1	13.7
Excel Acad/FM Wood	43	12.7	18.6	31	12.5	9.7	76	21.5	9.2
Balto Community High	21	32.7	23.8	32	36.0	15.6	52	34.3	11.5

A more detailed set of findings for each high school can be found in Appendix D, which provides enrollment according to type of college (2-year and 4-year) for the classes of 2012 through 2014.

Enrollment by College

For the sake of presentation, we show enrollment counts by college only for the Classes of 2010 through 2014. As shown in Table 10, the colleges enrolling the largest share of City Schools graduates has changed very little over the last few years; however, the biggest change was the switch in popularity of Baltimore City Community College (BCCC) to the Community College of Baltimore County (CCBC), where most graduates now enroll. Since 2010, the number of students enrolled in CCBC increased from 431 to 508 with a peak of 706 in 2012, while enrollment in BCCC declined from 449 to 323. Yet the top five most popular destinations have not changed. The two community colleges and three historically Black universities, Morgan State, Coppin State, and University of Maryland at Eastern Shore, have consistently been the most frequently attended.

Table 10
Number of Baltimore City Graduates with Fall Enrollments
By College and Graduating Class, Ranked by Class of 2014 Enrollments

	Graduating Class				
	2010	2011	2012	2013	2014
Comm College of Balto County	603	586	706	601	508
Balto City Comm College	372	434	331	366	323
Univ of MD - Eastern Shore	83	61	66	48	84
Morgan State University	165	143	132	107	82
Coppin State University	144	159	117	100	68
University of Baltimore	34	17	45	87	63
Bowie State University	41	50	41	52	45
Univ of MD - College Park	34	28	51	37	45
Howard Comm College	10	--	--	12	27
Garrett College	--	--	14	15	26
McDaniel College	10	19	19	22	24
Frostburg State University	37	39	44	31	21
Stevenson University	61	34	38	25	21
Towson University	57	61	37	27	21
Univ of MD – Balto County	17	14	14	22	21
Anne Arundel Comm College	12	29	23	24	17
Johns Hopkins University	--	14	16	11	14
Stratford University	--	--	--	--	14
Allegany College of Maryland	13	32	24	19	12
Howard University	--	--	--	--	12
Trinity Washington University	--	--	--	--	11
Chowan University	--	--	--	--	10
Delaware State University	14	19	--	--	10
Goucher College	--	--	--	--	10
Other IHEs with fewer than 10	351	352	345	318	330
Total Enrolled	**2156**	**2158**	**2115**	**1951**	**1819**

Source: National Student Clearinghouse data, received April 2015, supplemented with archival NSC data.
-- fewer than 10 students

Degree Completion

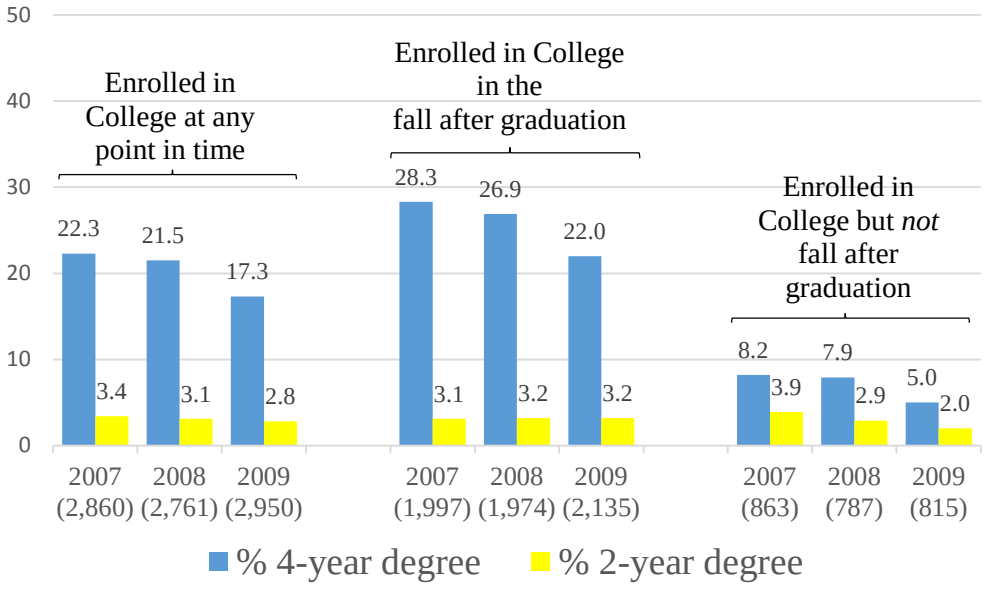
To allow for comparability across cohorts of graduates, we examined rates of degree completion occurring six years after fall enrollment for the Classes of 2007 and 2008. However, current NSC data allowed only 5 years and 9 months for degrees to be conferred among the Class of 2009. As a result, older classes (i.e., 2007 and 2008) by definition had slightly more time to finish, so we expect their completion rates to be higher than for the Class of 2009. We also expect degrees for the Class of 2009 to increase as additional data become available.

Enrollment Timing and Degree Completion

The majority of fall enrollees among the Classes of 2007, 2008 and 2009 began their studies at 4-year colleges (61.7%, 58.4%, and 52.9%, respectively), and most began college the fall after high school graduation. Some students enrolled one or more years later, however, and as seen in Figure 2, those who began during the fall were more likely to have completed a degree after six years had elapsed.

Among the Class of 2007, 31.4% of students who enrolled during the first fall earned a degree (28.3% + 3.1%), while their classmates who enrolled later but not during the fall after high school finished degrees at the much lower rate of 12.1%. For the Class of 2008, the corresponding figures are 30.1% compared to 10.8%. The percent completing degrees among those enrolling at any point in time represents all City Schools graduates who received a degree among these three cohorts.

Figure 2. Percentage of City Schools College Enrollees Completing Degrees (2-year and 4-year) Within Six Years, for the Classes 2007 through 2009†



† Class of 2009 had only 5 years and 9 months to complete degrees.

The type of student who enrolls in college immediately after graduation is likely to be different than the student who enrolls later. National data support this assertion: students who delayed college enrollment in the National Education Longitudinal Study of 1988 (NELS: 88) were more likely to be socioeconomically disadvantaged (e.g., have lower family incomes) and less academically prepared (e.g., had stopped out of high school, had lower SAT scores) than those who enrolled in college immediately after graduating high school. Notably, students who delayed enrollment in the NELS:88 study were 64% less likely to graduate college, even when controlling for socioeconomic and academic factors (Bozick & DeLuca, 2004). This pattern is

consistent with the disparity we find for City Schools graduates who delayed enrollment. Additional descriptive data for degree completion for the Classes of 2007 through 2009 are available in Appendix E.

Degree Completion by College and College Type

Besides timing of enrollment, intensity of enrollment relates to likelihood of completing a degree. And for several of the schools that Baltimore graduates frequently attend, information regarding full-time and part-time enrollment is not available. As a result, our reported rates of degree completion among City Schools graduates are likely more conservative than if we only considered full-time enrollees. For example, the Beginning Postsecondary Survey of 2003 estimated the difference in degree completion after six years for full-time students to be over twice as high as for students not enrolled full time (Radford, Berkner, Wheeless & Shepherd, 2010).

Reflecting the national research, degree completion among Baltimore graduates is also related to the type of college at which students initially enrolled. As seen in Table 11, students who enrolled in 4-year colleges the fall after graduation were much more likely to complete a degree than students who first enrolled in 2-year institutions. For the Classes of 2007, 2008 and 2009, between 38.7% and 42.5% of students enrolling in 4-year colleges completed a 4-year degree. Students who initially enrolled in 2-year colleges were over 400% less likely to complete any degree. Among those who began at 2-year colleges, between 4.9% and 6.0% have earned a 2-year degree and between 3.3% and 5.6% have earned a 4-year degree.

Table 11
Percentage of First Fall Enrollment College Graduates Completing Degrees within Six Years, 2-year versus 4-year

Class of	Fall Institution Type	2-Yr Degree %	4-Yr Degree %	Any Degree* %
2007	2-Yr (N=765)	5.4	5.6	9.3
	4-Yr (N=1,232)	1.7	42.5	43.7
2008	2-Yr (N=821)	6.0	5.0	10.1
	4-Yr (N=1,153)	1.2	42.5	43.4
2009†	2-Yr (N=1006)	4.9	3.3	7.9
	4-Yr (N=1,129)	1.7	38.7	40.3

Source: NSC data, received April 2015 supplemented with archival NSC data
*Some students earned both 2-year and 4-year degrees.
†Class of 2009 had only 5 years and 9 months to complete degrees, rather than 6 years.

Approximately 10% of City Schools graduates who first enrolled in a 2-year college finished any type of degree. In contrast, around 43% of those who started in a 4-year college have completed degrees. Both nationally and in City Schools data, it is clear that students who enroll in 2-year colleges are far less likely to complete *either* a 4-year *or* a 2-year degree. According to national statistics, 29.2% of full-time freshmen who entered public 2-year institutions in 2006 earned a

degree within three years, whereas for freshmen entering 4-year institutions, the completion rate was 59.2% after six years (Snyder & Dillow, 2014).

Degree completion rates for specific postsecondary institutions with the most common enrollments are provided in Table 12. Degrees are listed according to the institution in which the student began their postsecondary studies, though degree completion from any college is shown.

Table 12
Number of First Fall Enrolled City Schools Graduates and Percentage Receiving Degrees within Six Years, by First Enrolled Institution for the Classes of 2007 through 2009, and National IPEDS Rates

Class of	2007		2008		2009†		
2-year Degree-Granting IHEs	Enrolled fall after Grad (N)	Earned Degree* (%)	Enrolled fall after Grad (N)	Earned Degree* (%)	Enrolled fall after Grad (N)	Earned Degree* (%)	IPEDS^ Grad Rate Full-time - Entering in 2009
Balto City Comm College	456	3.7	432	3.7	449	3.3	4.0
Comm College of Balto Cnty	248	4.8	308	6.5	431	6.0	8.0
Anne Arundel Comm College	--	20.0	12	16.7	21	9.5	15.0
4-year Degree-Granting IHEs							Entering in 2005
Coppin State University	155	11.0	177	20.9	160	14.4	15.0
U of MD-Eastern Shore	137	35.8	89	30.3	68	33.8	31.0
Morgan State University	123	26.0	147	28.6	152	22.4	28.0
Towson University	118	44.1	92	60.9	80	43.8	64.0
Bowie State University	79	34.2	77	36.4	48	39.6	41.0
University of Baltimore	24	45.8	37	43.2	50	26.0	38.0^
U of MD – College Park	61	75.4	45	82.2	34	88.2	82.0
Frostburg State University	52	40.4	55	32.7	45	44.4	45.0
Stevenson University	40	52.5	16	56.3	18	61.1	62.0
U of MD – Baltimore County	19	42.1	21	42.9	18	38.9	57.0
Johns Hopkins University	20	100.0	14	92.9	13	100.0	91.0
Delaware State University	--	20.0	14	35.7	17	41.2	35.0
Other Colleges Enrolling Fewer than 10 Students¥	455	51.0	438	50.7	531	42.7	n/a
Total Students¥	**1997**	**30.5**	**1974**	**29.5**	**2135**	**25.0**	**n/a**

Sources: NSC data, received April 2015, supplemented with archival NSC data; freshmen graduation rate from the Integrated Postsecondary Education Data System, National Center for Education Statistics, 2015.

†Class of 2009 had only 5 years and 9 months to complete degrees, rather than 6 years. -- fewer than 10

¥ Percentage reflects any type of degree. * If a 2-year institution, 2 year degree is reported; 4-year degree reported otherwise.

^ The IPEDS rate reports the percentage of all entering full-time freshmen students who completed their degree program within 150% of the expected time frame at that same school. Total degree completion rates are 'n/a' because IPEDS provides only graduation rates by institution. University of Baltimore graduation rate is for entering full-time freshmen of 2007.

To place these rates into some context, Table 12 also presents IPEDS-reported graduation rates for each of these colleges. Degree completion rates presented in this report for Baltimore graduates are not absolutely comparable with what is provided by IPEDS, as the IPEDS graduation rates are based upon the number of enrolled *full-time* students from an entering freshman cohort who earn a 4-year degree within six years, or a 2-year degree within three years (National Center for Education Statistics, 2012). The NSC data, however, allow us to follow Baltimore student cohorts through time regardless of whether they remain at the institution at which they started, and as mentioned above, we report degree completion after enrollments of any intensity.

Among graduates who enrolled at the two local community colleges, BCCC and CCBC, less than 10% completed an Associate's Degree, from any college. The next most popular college destination among the Class of 2007 was Coppin State, from which about 20% earned a 4-year degree. Among students enrolling at Morgan State, slightly more than 25% earned a degree, while for those at University of Maryland Eastern Shore, the degree completion rate was approximately 41%.

Clearly, the probability of a student completing a degree at these most commonly enrolled institutions varies a great deal. For students enrolling at Stevenson and University of Maryland College Park, the percent completing a degree was greater than 50%, while at most other schools featured in Table 12, the average probability of finishing was somewhat lower than half. Notably, for the Class of 2007, Baltimore City graduates completed degrees at a higher rate than the IPEDS-reported rate for all freshmen at three colleges. These colleges include University of Baltimore, University of Maryland at Eastern Shore, and Johns Hopkins University.

After six years, less than 5% of students beginning college at BCCC have completed a 2-year degree (as shown in Table 12), and this is similar to the overall rate for all BCCC freshmen as reported in IPEDS, which may reflect the fact that City Schools graduates represent a substantial proportion of the student body. Baltimore City graduates who began at CCBC completed degrees at a similar but slightly lower rate as all CCBC freshmen, where approximately 8% completed a degree compared to 5-7% of City Schools graduates who started there.

Relatedly, previous research has demonstrated that the vast majority of entering students at BCCC and CCBC are required to complete developmental (non-credit-bearing) classes before they may proceed to credit-bearing coursework. According to Connolly, Olson, Durham & Plank (2014), over 95% of City Schools' Class of 2011 who enrolled at BCCC and CCBC were required to take developmental math, two-thirds were placed in developmental reading classes, and three-fourths required writing before proceeding to entry-level courses. Further, at BCCC and CCBC over 60% of Baltimore city graduates were required to take developmental courses in *all three* subjects. These challenges no doubt affect both City Schools enrollees' ability to complete a degree, and to complete a degree within the expected amount of time.

Indeed, in analyses not shown, we found that many City Schools students have taken more than six years to complete a degree. Specifically, around 10% of Class of 2007 graduates who earned a 4-year degree did so after 72 months had elapsed since their initial fall enrollment. Moreover, 15% completed a 2-year degree after more than 6 years.

Community Colleges Enrollees Who Earn a 4-year Degree

Some students choose to begin their postsecondary studies at 2-year colleges in order to earn credits toward a 4-year degree at a lower cost, so we looked for this pattern among each of the three cohorts of City Schools graduates. We found that across the Classes of 2007 through 2009 who started at BCCC or CCBC, only between 2% and 6% had earned a bachelor's degree within six years (see Table 13).

Table 13
Number and Percentage of Baltimore City Schools Graduates
Enrolling in 2-year schools in the Fall Who Earn 4-year Degrees within Six Years

	2007		2008		2009 †	
Most Often Fall-Enrolled 2-year Institutions	Enrolled fall after Grad (N)	Earned 4-Year Degree (%)	Enrolled fall after Grad (N)	Earned 4-Year Degree (%)	Enrolled fall after Grad (N)	Earned 4-Year Degree (%)
Balto City Comm Coll	456	5.5	432	2.8	449	2.2
Comm Coll of Balto Cnty	248	6.0	308	3.6	431	2.3
Total Students¥	**765**	**5.6**	**821**	**5.0**	**1006**	**3.3**

Source: NSC data, received November 2012 (2005-2006); NSC data, received January 2011 (2004).
¥All Baltimore graduates who were fall enrolled at 2-year institutions are included in these totals.
† Class of 2009 had only 5 years and 9 months to complete degrees.

Discussion and Recommendations

Cohort graduation rates among City Schools students have increased 8.2% over the last seven years. Generally, graduation rates increase as struggling students are given extra support to help them meet missing diploma requirements. At the same time, improving high school graduation rates may reduce college enrollment rates by increasing the overall number eligible for college and changing the academic composition of a graduating class, as some of these added students may have additional barriers to continuing their academic career. Indeed, the percent of graduates who have enrolled in college decreased by 6.5% between 2007 and 2014. However, a decline in fall enrollment across Maryland as a whole has been found in other research, especially among minority students (Popovich, 2015), so Baltimore's trends may be reflective of a much wider phenomenon.

Further, the majority of City Schools graduates are eligible for FARMs, indicating that in addition to academic challenges, difficulties in financing college costs may confer an extra barrier to enrollment. Students eligible for FARMS are also more likely to be first-generation college goers lacking adults at home who from their own experience, can offer more comprehensive guidance in the college search and application process, as well as orient the child early in life about aspirations for college.

The high school choice process plays an early role in students' college opportunity landscape, as different high schools have varying amounts of college-preparatory resources, and notably, some high schools offer no AP or IB courses. High schools serve disparate populations of economically at-risk students, and while 300:1 is the current standard for student-to-counselor staffing, in reality, high schools differ in terms of their capacity to offer students individualized college access supports. Helping large shares of first-generation students prepare for college arguably requires an intensive support system. These differences in capacity also extend to schools serving the middle grades, and impact how well-prepared students are for the high school selection process, as well as academic readiness for rigorous course taking in high school.

When we examined the college readiness profile of recent graduates, we found that a relatively small share (16.0%) had achieved a GPA of 3.0 or higher upon graduation. Prior BERC research has shown that students' final GPAs are impacted negatively by academic struggles in 9th grade, when approximately one-third of students fail at least one core course and a quarter are chronically absent, on average (Connolly et al., 2014).

Of those who do graduate and enter college, more than half are choosing to enroll in 2-year colleges. This trend towards a preference for 2-year colleges warrants further investigation because it has significant implications for future degree completion. Among previous Classes of City Schools graduates who first enrolled in a 2-year college, approximately 10% have completed any degree. In contrast, approximately 43% of those who started in a 4-year college completed degrees.

When we analyzed graduates' college destination type by their high school wGPA and SAT scores, we found that most students who enrolled in a 2-year college had a final wGPA of less than 2.5 and less than 1000 SAT score. Thus part of the explanation for low degree completion when beginning college at a 2-year school may be that middle and high schools are not adequately preparing students for the rigor of college coursework. Prior research has also

pointed to high rates of developmental course taking, which can potentially delay a student's progression to credit-bearing courses and completing a degree. Further research is warranted concerning how students are remediated at 2-year colleges, and what supports are available to low-income or first-generation students.

Recommendations for Further Inquiry

- Further research is needed about the college choice process, specifically how students adjudicate the 2-year versus 4-year option. It would be enlightening and beneficial for BERC and City Schools (as well as other partners) to pursue additional qualitative research to address the questions raised in this report concerning students' college search process. In particular, more information is needed about the sources of information students are provided for making these crucial decisions, as well as how school counselors and other staff work with students to identify colleges and fulfill application requirements.

- City Schools should systematically collect data on students' career and college expectations prior to graduation.
  - It would be valuable to know students' goals before they enroll in college. Without further research concerning the correspondence between students' long term aims and their college choices, it is impossible to know whether the evident low rate of transfer from 2-year to 4-year colleges should be a high-priority area of focus.
  - Collecting basic information about whether students' parents or guardians have experienced college would be useful for identifying first-generation college-goers. Research has demonstrated that first-generation students face more barriers in completing the many steps needed for college acceptance, admission, and degree completion.

- City Schools should consider engaging with the local area's colleges and universities to develop an MOU that would encourage data sharing.
  - In order to examine students' patterns of persistence in college and its relationship to developmental course performance and credit accrual, a greater range of information about how students fare once enrolled is needed. These data would allow City Schools to better understand and remedy any gaps in graduates' preparation for college, and the colleges could gain knowledge about how to support matriculating students. For instance, knowing which levels of developmental coursework students are required to complete before enrolling in credit-bearing classes would inform City Schools about the extent of under-preparation among its students.
  - We (BERC and City Schools) currently have no information about postsecondary certificate completion. Occupation- or skill-relevant certificates, as well as the emerging phenomenon of micro-credentialing through badges, are important parts of the postsecondary landscape. BCCC and CCBC especially should be encouraged to provide these data to NSC so they can be used in future reporting and provide a more nuanced picture of City Schools graduates' success in preparing for specific career and technical fields.

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Appendices

Appendix A: Data Sources and Collection Methods

Baltimore City Public Schools Office of Achievement and Accountability (OAA) provides student-level data on City Schools graduates to NSC to match postsecondary institutional records. It is also used to help complete the demographic profile of City School students, identify their graduating high school, and capture high school academic characteristics (e.g., final GPA and SAT scores). City Schools also provided attendance data, and we present information about graduates' chronic absence in high school, defined as being absent for one-ninth or more of total enrolled days.

The Maryland State Department of Education (MSDE) provides school, district, and state level data on demographics, graduation rate, and school performance on its public accountability web site, http://www.mdreportcard.org/. Data on school and citywide graduation rates, as well as student population characteristics, were obtained here.

National Student Clearinghouse (NSC) is currently the most comprehensive national data source to identify college enrollment and degree completion. However, the reader should note several caveats about the accuracy and completeness of NSC data. First, NSC data does not capture 100% of all students enrolled in a postsecondary institution, but it is the best centralized source for student-level postsecondary enrollment – more than 3,600 colleges, institutes and universities participate with the NSC, capturing 98% of all students enrolled in public and private colleges across the country.[3] However, students enrolled at several types of schools, such as some small specialty schools, trade schools, and some arts conservatories and religious schools, may be undercounted by the Clearinghouse. Further, NSC data does not currently provide complete information on full-time versus part-time status, which is important for understanding degree completion rates. It also does not provide information about specific courses taken by enrollees, nor whether the courses are credit-bearing (i.e., developmental or non-developmental).

National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS) is the most accessible national level data source for information on education. IPEDS provides national degree completion rates for various groups, as well as individual colleges' enrollment and degree completion information. NCES Fast Facts and the Digest of Education Statistics provided all statistics concerning national high school graduation rates and student demographics [http://nces.ed.gov/ipeds/datacenter/]

College Results Online is an online college data service provided by The Education Trust. Most of College Results Online's figures are derived from the Integrated Postsecondary Education Data System (IPEDS), which is the federal government's annual survey of higher education institutions. Other sources for the data featured in College Results Online include other Department of Education databases, Barron's Profile of American Colleges, College Board, Peterson's Databases, and the National Association of State Student Grant and Aid Programs [see: http://collegeresults.org/aboutthedata.aspx#question-2]

[3] http://www.studentclearinghouse.org/about/

Appendix B: Data Processing and Methods of Analysis

Identifying Fall College Enrollees

The NSC data is capable of providing enrollment and degree completion information for eight consecutive cohorts of graduates (2007 through 2014). We followed a standard procedure to classify fall enrollment. Fall enrollees were identified in either the NSC data (current or previous returns) or in Morgan State University's (MSU) enrollment files, received directly from the Institutional Research Office (IRO) at MSU. Fall enrollment status was then determined by comparing students' high school graduation dates with their college enrollment status the next fall. Students who graduated from high school in the fall rather than the spring are included if they enrolled in college the next fall, regardless of whether they enrolled in college the spring subsequent their fall high school graduation. Students who did not enroll before or during the fall after they graduated from high school were excluded from fall enrollees.

Morgan State began to participate with the NSC in 2011. At that point, they not only submitted enrollment and degree completion data to NSC for the most recent entrants, but for previous freshmen cohorts as well. We use the NSC data concerning MSU as a primary indicator of fall enrollment but supplement this with data received directly from MSU's IRO at an earlier time, to cross check for accuracy. One challenge in using the older MSU IRO data is that it does not distinguish between fall and spring enrollment. In those instances when MSU IRO data are used, we categorize all students enrolled at MSU at some point during the year as fall enrollees. Though this may slightly inflate our fall enrollment count, it is preferable to excluding students who did attend college in the year after they graduated.

NSC continually solicits enrollment and degree completion information from its participating colleges, and all colleges do not submit their data on the same date each term. For each reporting interval (e.g., fall, spring, etc.) NSC must make a determination concerning when their data are suitable for release to the data consumers, e.g., school districts. The NSC enrollment report, therefore, may be released on different dates each year. For fall enrollments, the NSC reports in approximately November, and for spring, in approximately April. Since participating colleges operate on different schedules and have varying levels of reporting capacity, the NSC must account for both on-time and "late" reporters and adjust accordingly when determining the date that data will be merged and reported.

Another challenge with NSC data is that the NSC uses data submitted by the school district to perform a matching algorithm with data it receives from participating postsecondary institutions. In general, the match utilizes student names, high school codes, and birthdates; thus, errors may occur when the information a college provides for a student is different from that submitted by the school district (e.g., name spelling differences or inaccurate birthdates). College students are also permitted to place a "FERPA block" on their enrollment data, which would result in *false negatives* for college enrollment. Therefore, in some cases a student may actually be enrolled in a college when the data would indicate he/she is not enrolled. Furthermore, *false positives* for college enrollment may occur when, e.g., a different student with an identical name or birthdate is mistakenly identified as enrolled, when the intended student is not actually enrolled.

These challenges make NSC a dynamic database, even though data on the same graduating classes are reported over time. City Schools has solicited enrollment data from NSC for several

years, and BERC has assisted in the analysis of this data since 2009. In 2012, BERC began comparing the data files received from NSC over time and determined that there were a relatively small number of instances where no enrollment was reported in the most recent NSC file, but earlier NSC did show postsecondary enrollments. There were also instances where previously reported degrees had been excluded from the newest data release, even though earlier NSC files had indicated otherwise. In order not to lose these earlier data, BERC analysts elected to assign a status reflecting information received over all current and previously received NSC data, in effect creating a cumulative status (i.e., fall enrollment, the college attended in the fall, and degree completion status). In this way, current NSC data are supplemented with archival NSC data to provide the most liberal possible estimate of enrollment and degree completion. Thus, the current accounting of enrollment during the fall semester after high school graduation includes indications of fall enrollment from previous NSC files even if there is no indication of fall enrollment in the most recent file.

Also, for the current analyses the newest NSC data represented enrollments between spring of 2008 and the spring of 2015. As the current report features NSC data for the Class of 2007, their fall enrollments are almost exclusively derived from the archival NSC data, though subsequent enrollment and degree completion events for the Class of 2007 would be captured in more current data.

Degree Completion Data

College degree completions are calculated for the Classes of 2007 through 2009 for degrees completed within six years. The current report features the most recently generated NSC update, which was delivered in April 2015. Thus, for Class of 2009, enrollees had only 5 years and 9 months to complete degrees. We expect degree completion to be lower for the Class of 2009 than for the Classes of 2007 and 2008, and that their completion rate will increase with additional data availability.

Students with no first fall enrollment record but who earned a 4-year degree within four years of graduation in NSC are included in degree completion analysis. These students are not included in tables identifying first fall enrollment, as we have no record indicating the actual institution.

Appendix C: Graduation (9th Grade Cohort Rate) and Fall College Enrollment For the Baltimore City Schools Graduating Classes of 2010 through 2014

	2010 Graduates		2011 Graduates		2012 Graduates		2013 Graduates		2014 Graduates	
Graduation rate (4-year adjusted cohort)	61.5		65.8		66.5		68.5		69.7	
Characteristic	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Number of d*iploma* graduates	4412		4596		4629		4464		4327	
Enrolled in college fall following graduation	2156	48.9	2158	47.0	2115	45.7	1951	43.7	1819	42.0
Analysis of Graduates Enrolled in the First Fall Following Graduation										
Of Enrolled, 4-year college	1078	50.0	1012	46.9	955	45.2	871	44.6	834	45.8
Of Enrolled, 2-year college	1078	50.0	1146	53.1	1160	54.8	1080	55.4	985	54.2
Sub-Group Analysis										
Number of male graduates	1905		1993		2108		1954		1975	
Male fall enrolled in 4-year college	409	21.5	362	18.2	353	16.7	307	15.7	303	15.3
Male fall enrolled in 2-year college	457	24.0	452	22.7	496	23.5	470	24.1	443	22.4
Number of female graduates	2507		2603		2521		2510		2352	
Female fall enrolled in 4-year college	669	26.7	650	25.0	602	23.9	564	22.5	531	22.6
Female fall enrolled in 2-year college	621	24.8	694	26.7	664	26.3	610	24.3	542	23.0
Number of grads received special ed. svcs.	457		534		568		595		574	
Received special ed. svcs. enrolled in 4-year	24	5.3	28	5.2	35	6.2	32	5.4	41	7.1
Received special ed. svcs. enrolled in 2-year	106	23.2	130	24.3	111	19.5	118	19.8	104	18.1
Number of grads received FARMS	3249		3143		3478		3078		3121	
FARMS grads enrolled in 4-year college	711	21.9	583	18.5	586	16.8	495	16.1	492	15.8
FARMS grads enrolled in 2-year college	830	25.5	836	26.6	910	26.2	792	25.7	706	22.6
Number of African-American Graduates	4031		4202		4204		3967		3826	
African-American enrolled in 4-year college	955	23.7	901	21.4	838	19.9	724	18.3	685	17.9
African-American enrolled in 2-year college	1003	24.9	1071	25.5	1081	25.7	957	24.1	899	23.5

Source: National Student Clearinghouse (NSC), April 2015 from City Schools Office of Achievement and Accountability; supplemented with archival NSC data from City Schools received 2009-2013.

--Fewer than 10

Appendix C: Graduation (9th Grade Cohort Rate) and Fall College Enrollment For the Baltimore City Schools Graduating Classes of 2010 through 2014 – *continued*

First Fall Enrollment Rate by High School Type:										
	2010 Graduates		2011 Graduates		2012 Graduates		2013 Graduates		2014 Graduates	
Characteristic	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Number of entrance criteria graduates	1061		1011		1046		1175		1247	
Entrance criteria enrolled at 4-year	615	58.0	607	60.0	604	57.7	550	46.8	541	43.4
Entrance criteria enrolled at 2-year	191	18.0	174	17.2	231	22.1	283	24.1	280	22.5
Number of Entrance Criteria CTE graduates	671		721		626		675		709	
EC-CTE enrolled at 4-year	104	15.5	108	15.0	82	13.1	75	11.1	77	10.9
EC-CTE enrolled at 2-year	201	30.0	199	27.6	181	28.9	166	24.6	174	24.5
Number of traditional (no criteria) graduates	2082		2020		1957		1638		1324	
Traditional fall college enrolled at 4-year	268	12.9	200	9.9	168	8.6	152	9.3	146	11.0
Traditional fall college enrolled at 2-year	560	26.9	536	26.5	504	25.8	429	26.2	318	24.0
Number of charter/transformation graduates	376		522		641		603		582	
Charter/transformation enrolled at 4-year	88	23.4	87	16.7	90	14.0	84	13.9	67	11.5
Charter/transformation enrolled at 2-year	90	23.9	170	32.6	198	30.9	164	27.2	161	27.7
Number of alternative graduates	222		322		359		373		465	
Alternative enrolled at 4-year	--	-	10	3.1	11	3.1	10	2.7	--	-
Alternative enrolled at 2-year	36	16.2	67	20.8	46	12.8	38	10.2	52	11.2

Source: National Student Clearinghouse (NSC), April 2015 from City Schools Office of Achievement and Accountability; supplemented with archival NSC data from City Schools received 2009-2013. Numbers may not sum to totals due to suppression of small cell values.

-- Fewer than 10

Appendix D: First Fall College Enrollment for the Baltimore City Schools Graduating Classes of 2012 through 2014, by High School

	Class of 2012						Class of 2013						Class of 2014					
	Grads	Enr	4-year		2-year		Grads	Enr	4-year		2-year		Grads	Enr	4-year		2-year	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Entrance Criteria (minimum 610)																		
Polytechnic (403)	369	81.3	243	65.9	57	15.4	419	70.9	197	47.0	100	23.9	393	68.4	179	45.5	90	22.9
City College (480)	270	80.0	132	48.9	84	31.1	319	69.9	151	47.3	72	22.6	282	69.1	129	45.7	66	23.4
Dunbar High (414)	120	57.5	29	24.2	40	33.3	149	63.1	44	29.5	50	33.6	252	50.8	58	23.0	70	27.8
Western High (407)	192	87.0	126	65.6	41	21.4	207	74.4	104	50.2	50	24.2	242	69.8	120	49.6	49	20.2
School for the Arts (415)	95	87.4	74	77.9	--	-	81	80.2	54	66.7	11	13.6	78	76.9	55	70.5	--	-
CTE-Entrance Criteria (minimum 475)																		
Mergenthaler Vo-Tech (410)	281	47.3	42	14.9	91	32.4	299	36.5	28	9.4	81	27.1	329	37.4	41	12.5	82	24.9
Carver Vo-Tech (454)	159	32.7	16	10.1	36	22.6	175	34.3	29	16.6	31	17.7	200	27.0	23	11.5	31	15.5
Edmondson-Westside (400)	186	41.9	24	12.9	54	29.0	201	35.8	18	9.0	54	26.9	180	41.1	13	7.2	61	33.9
Traditional (no criteria)																		
Digital Harbor (416)	198	41.4	28	14.1	54	27.3	194	52.6	32	16.5	70	36.1	231	39.8	22	9.5	70	30.3
Patterson High (405)	262	41.2	20	7.6	88	33.6	199	38.7	--	-	69	34.7	144	40.3	13	9.0	45	31.3
Frederick Douglass (450)	196	15.8	--	-	25	12.8	183	21.3	--	-	33	18.0	142	21.8	11	7.7	20	14.1
Northwestern (401)	165	44.2	19	11.5	54	32.7	151	26.5	12	7.9	28	18.5	102	31.4	13	12.7	19	18.6
Forest Park (406)	113	36.3	--	-	33	29.2	105	27.6	--	-	23	21.9	79	36.7	10	12.7	19	24.1
Nat'l Acad. Foundation (421)	71	57.7	13	18.3	28	39.4	87	50.6	17	19.5	27	31.0	76	46.1	19	25.0	16	21.1
Heritage High (425)	121	27.3	--	-	26	21.5	94	34.0	--	-	25	26.6	68	19.1	--	-	13	19.1
Vivian Thomas Med Arts (429)	91	46.2	10	11.0	32	35.2	70	50.0	10	14.3	25	35.7	68	54.4	12	17.6	25	36.8
Maritime Industries Acad (431)	79	31.6	--	-	18	22.8	63	44.4	--	-	24	38.1	64	23.4	--	-	10	15.6
Reginald F. Lewis (419)	77	37.7	12	15.6	17	22.1	68	39.7	16	23.5	11	16.2	63	27.0	--	-	13	20.6
Benj. Franklin High (239)	61	29.5	--	-	14	23.0	76	32.9	--	-	18	23.7	61	39.3	--	-	17	27.9
Augusta Fells Savage (430)	139	23.0	--	-	24	17.3	94	18.1	--	-	11	11.7	59	22.0	--	-	10	16.9
Renaissance Academy (433)	45	33.3	--	-	11	24.4	61	34.4	--	-	12	19.7	51	37.3	--	-	10	19.6
Bluford J. STEM West (364)													43	44.2	11	25.6	--	-
W.E.B. DuBois (418)	116	37.1	11	9.5	32	27.6	90	33.3	--	-	24	26.7	37	45.9	--	-	14	37.8
KASA Academy (342)	48	35.4	--	-	15	31.3	28	35.7	--	-	--	-	25	36.0	--	-	--	-

Source: National Student Clearinghouse (NSC), April 2015 from City Schools Office of Achievement and Accountability; supplemented with archival NSC data from City Schools received 2009-2013. Numbers may not sum to totals due to suppression of small cell values.

-- Fewer than 10

Enr = Enrolled in the fall following graduation.

Appendix D: First Fall College Enrollment for the Baltimore City Schools Graduating Classes of 2012 through 2014, by High School – *continued*

	Class of 2012						Class of 2013						Class of 2014					
	Grads	Enr	4-year		2-year		Grads	Enr	4-year		2-year		Grads	Enr	4-year		2-year	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Charter																		
City Neighbors High (376)													81	45.7	10	12.3	27	33.3
Coppin Academy (432)	74	45.9	13	17.6	21	28.4	74	41.9	15	20.3	16	21.6	68	51.5	11	16.2	24	35.3
MD Acad of Tech/Health (331)	55	63.6	20	36.4	15	27.3	42	59.5	--	-	17	40.5	43	46.5	--	-	11	25.6
ConneXions Lead. Acad (325)	33	54.5	--	-	13	39.4	42	42.9	--	-	12	28.6	30	46.7	--	-	11	36.7
Independence Local I (333)	21	19.0	--	-	--	-	18	33.3	--	-	--	-	19	36.8	--	-	--	26.3
Transformation																		
ACCE (427)	76	42.1	12	15.8	20	26.3	90	41.1	11	12.2	26	28.9	82	39.0	13	15.9	19	23.2
Friend Acad Eng/Tech (339)	88	60.2	10	11.4	43	48.9	48	58.3	--	-	19	39.6	65	30.8	--	-	14	21.5
New Era Academy (422)	44	29.5	--	-	11	25.0	52	42.3	--	-	15	28.8	40	35.0	--	-	12	30.0
REACH! (341)	47	34.0	--	-	15	31.9	33	42.4	--	-	10	30.3	38	39.5	--	-	14	36.8
Alternative/Special Ed																		
Achievement Acad (413)	136	17.6	--	-	19	14.0	126	13.5	--	-	15	11.9	139	13.7	--	-	19	13.7
Excel Acad/FM Wood (178)	43	18.6	--	-	--	-	31	9.7	--	-	--	-	76	9.2	--	-	--	-
Baltimore Comm. High (367)	21	23.8	--	-	--	-	32	15.6	--	-	--	-	52	11.5	--	-	--	-
New Hope Academy (345)	12	33.3	--	-	--	-	12	8.3	--	-	--	-	--	-	--	-	--	-

Source: National Student Clearinghouse (NSC), April 2015 from City Schools Office of Achievement and Accountability; supplemented with archival NSC data from City Schools received 2009-2013. Numbers may not sum to totals due to suppression of small cell values.

-- Fewer than 10

Enr = Enrolled in the fall following graduation.

Appendix E. Degree Completion Outcomes within Six Years for City Schools Graduates and Subgroups, Classes of 2007 through 2009

	2007 Graduates					2008 Graduates					2009 Graduates †				
Number of Graduates	4116					4011					4286				
	Enr	**4-Yr Degree**		**2-Yr Degree**		**Enr**	**4-Yr Degree**		**2-Yr Degree**		**Enr**	**4-Yr Degree**		**2-Yr Degree**	
	N	N	%	N	%	N	N	%	N	%	N	N	%	N	%
All first fall enrollees	1997	566	28.3	62	3.1	1974	531	26.9	63	3.2	2135	470	22.0	68	3.2
College Start Type															
4-yr college first fall	1232	523	42.5	21	1.7	1153	490	42.5	14	1.2	1129	437	38.7	19	1.7
2-yr college first fall	765	43	5.6	41	5.4	821	41	5.0	49	6.0	1006	33	3.3	49	4.9
Subgroup Analysis															
All male first fall enrollees	693	161	23.2	23	3.3	736	165	22.4	23	3.1	788	139	17.6	24	3.0
Male 4-yr college first fall	413	144	34.9	–	-	412	145	35.2	–	-	396	122	30.8	–	-
Male 2-yr college first fall	280	17	6.1	15	5.4	324	20	6.2	17	5.2	392	17	4.3	19	4.8
All female fall enrollees	1304	405	31.1	39	3.0	1238	366	29.6	40	3.2	1347	331	24.6	44	3.3
Female 4-yr college first fall	819	379	46.3	13	1.6	741	345	46.6	–	-	733	315	43.0	14	1.9
Female 2-yr college first fall	485	26	5.4	26	5.4	497	21	4.2	32	6.4	614	16	2.6	30	4.9
All special ed. services first fall enrollees	78	–	-	–	-	104	–	-	–	-	125	–	-	–	-
Special ed. svcs. 4-yr college first fall	12	–	-	–	-	12	–	-	–	-	17	–	-	–	-
Special ed. svcs. 2-yr college first fall	66	–	-	–	-	92	–	-	–	-	108	–	-	–	-
All FARMS first fall enrollees	861	217	25.2	25	2.9	958	219	22.9	30	3.1	1177	217	18.4	33	2.8
FARMS grads 4-yr college first fall	521	197	37.8	11	2.1	542	201	37.1	–	-	555	194	35.0	–	-
FARMS grads 2-yr college first fall	340	20	5.9	14	4.1	416	18	4.3	22	5.3	622	23	3.7	27	4.3
All African-American first fall enrollees	1820	473	26.0	56	3.1	1779	439	24.7	53	3.0	1919	373	19.4	48	2.5
African-American 4-yr college first fall	1095	435	39.7	20	1.8	1016	404	39.8	11	1.1	975	341	35.0	14	1.4
African-American 2-yr college first fall	725	38	5.2	36	5.0	763	35	4.6	42	5.5	944	32	3.4	34	3.6

Source: National Student Clearinghouse (NSC), April 2015 from City Schools Office of Achievement and Accountability; supplemented with archival NSC data from City Schools received 2009-2013. Numbers may not sum to totals due to suppression of small cell values.

– Fewer than 10

† Degree Completions within 6 years after high school graduation, except for the Class of 2009 which had 5 years and 9 months to complete a degree.