

**MCPS Graduates Earning College Degrees in
STEM-Related Fields**

Office of Shared Accountability

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OFFICE OF SHARED ACCOUNTABILITY

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Executive Summary

The Office of Shared Accountability (OSA) conducted a study of Montgomery County Public Schools (MCPS) 2001 through 2006 graduates earning college degrees in Science, Technology, Engineering, and Mathematics (STEM). The study is the second in a series of college tracking reports from OSA.¹ The study examined the proportions of students in these six cohorts earning various types of STEM degrees, as well as their high school achievement and course taking patterns.

Five research questions guided this study:

1. What proportion of MCPS college graduates earned a bachelor's degree or higher in a STEM-related field, and what was the breakdown of STEM categories?
2. What proportion of MCPS college graduates earned a bachelor's degree in a STEM-related field among racial/ethnic and gender subgroups?
3. What were the high school SAT and AP scores, GPA, and science and mathematics courses taken among MCPS graduates earning STEM degrees?
4. What were the colleges most frequently attended by MCPS graduates earning STEM degrees?
5. Does enrollment in a science-related high school program relate to STEM degree completion?

The Office of Shared Accountability examined the bachelor's degrees earned by MCPS graduates, including graduating cohorts from 2001 through 2006, using data available from the National Student Clearinghouse (NSC) as of May 2011—including college of enrollment, degree received, and major area of study. MCPS high school records were used for students' mathematics and science course history, GPA, SAT scores, and AP scores, as well as student demographic characteristics. STEM and non-STEM categories of degree majors were coded based on the National Science Foundation's (NSF) classification of degrees.

To view the MCPS data within a broader context, the percentage of bachelor's degrees earned in STEM fields nationally were computed from the last two years of NSF data available (2005 and 2006) to best correspond with MCPS cohorts of students who graduated from high school in 2001 and 2002.

Summary of Findings

Research Question 1: What proportion of MCPS college graduates earned a bachelor's degree or higher in a STEM-related field, and what was the breakdown of STEM categories?

The data reported by the NSC in May 2011 indicated that a range of 37% to 52% of MCPS 2001–2006 graduates received a bachelor's degree, with 52% from the 2001 cohort. Across all cohorts of MCPS graduates earning a bachelor's degree, 19% earned a degree in a STEM field of

¹ See *College Enrollment, Persistence, and Degree Attainment for High School Graduates in Montgomery County Public Schools, Maryland* [Zhao, Liu, & Wolanin, 2012] for the first.

study. Nationally, the percentage of STEM bachelor's degrees for years 2005 and 2006 was 16%. Of those MCPS graduates who earned STEM-related bachelor's degrees, over half were in the field of science, followed by engineering, technology, and mathematics degrees.

Data show that of the 2001–2005 MCPS graduates holding bachelor's degrees, between 4% and 23% of each cohort also earned a higher degree prior to May 2011. Of the higher degrees earned so far among MCPS 2001–2005 graduates, the majority have earned non-STEM related higher degrees. Of the MCPS 2001 cohort who earned a bachelor's degree and have had the most time of all the cohorts to earn a higher degree, 14% went on to earn a higher degree in a STEM-related field. Of the graduates across cohorts who earned a STEM-related higher degree, the most frequently acquired degree was engineering and science.

Research Question 2: What proportion of MCPS college graduates earned a bachelor's degree in a STEM-related field among racial/ethnic and gender subgroups?

A higher proportion of MCPS male college graduates than female graduates received STEM-related bachelor's degrees over non-STEM (25% compared with 15%). Nationally, the percentage of STEM bachelor's degrees for years 2005 and 2006 was 24% among males and 11% among females. Compared with other racial/ethnic subgroups, a higher proportion of Asian American graduates, earned a STEM-related field of study. Over one third of Asian American graduates earned a STEM degree, which is much higher than the percentage of STEM degrees earned among White (16%), African American (15%), and of Hispanic (12%) graduates. Nationally, the percentage of STEM bachelor degrees for years 2005 and 2006 was 29% among Asian American, 16% among White, 14% among Hispanic, and 12% among African American graduates.

Research Question 3: What were the high school SAT and AP scores, GPA, and science and mathematics courses taken among MCPS graduates earning STEM degrees?

The majority of graduates with STEM degrees took four or more science classes in high school, AP calculus or higher, and one or more AP science and mathematics classes in high school. They also scored higher on science and mathematics AP tests and SATs, and had a higher high school GPA than graduates who earned non-STEM degrees. The average SAT scores (English and mathematics combined), were higher among graduates with STEM degrees (average score of 1274) compared to those with non-STEM degrees (average score of 1170). Individual English and mathematics SAT scores also were higher for graduates with STEM degrees. Among all cohorts, the average MCPS high school GPA among STEM degree graduates was higher than non-STEM (3.51 compared to 3.27) as well as the weighted GPA (4.07 compared to 3.67).

Research Question 4: What were the colleges most frequently attended by MCPS graduates earning STEM degrees?

There was a wide variety of colleges and universities where MCPS graduates acquired their bachelor's degrees. The University of Maryland, College Park is the college where the largest percentage of 2001–2004 MCPS graduates acquired their bachelor's degree whether it was a STEM degree (37%) or non-STEM degree (28%). The second most popular college for

acquiring bachelor's degrees was University of Maryland, Baltimore County among STEM degree graduates (10%) and Towson University among non-STEM degree graduates (6%).

Research Question 5: Does enrollment in a science-related high school program relate to STEM degree completion?

The high school with the highest percentage of STEM degrees across all the cohorts was Montgomery Blair High School (Blair). Over one fourth of graduates from Blair who received a college bachelor's degree earned a STEM degree across all cohorts; however, as explained in the limitations section, accurate student-level data indicating enrollment in MCPS special school level science, technology, engineering, and mathematics programs are not available for all students across the cohorts. Therefore, the percentage of students who were enrolled in special academic high school programs and went on to earn STEM bachelor's degrees cannot be determined.

Recommendations

Findings of the current study suggest the following recommendations:

1. Explore ways to engage more students in STEM subjects, especially technology, engineering, and mathematics to increase participation in STEM-related fields after high school.
2. Explore ways to engage more female students in STEM subjects in order to close the gender gap between female and male graduates who earn a STEM bachelor's degree.
3. Explore ways to engage all student racial/ethnic subgroups in STEM subjects to close the gap between these groups.
4. Develop a centralized student specific tracking system of individual participation in specific school-level academies and programs in order to track students with STEM bachelor's degrees and their participation in STEM-related high school programs.

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MCPS Graduates Earning College Degrees in STEM-Related Fields

Natalie Wolanin and Julie Wade

The Office of Shared Accountability (OSA) conducted a study of Montgomery County Public Schools (MCPS) 2001 through 2006 graduates earning college degrees in Science, Technology, Engineering, and Mathematics (STEM). The study is the second in a series of college tracking reports from OSA.² Data available from the National Student Clearinghouse (NSC) as of May 2011 were used. The study examined the proportions of students in these six cohorts earning various types of STEM degrees, as well as their high school achievement and course taking patterns.

Background

Education in STEM is a growing concern among educators, policymakers, and the science community. In MCPS, STEM education is a key ingredient in a students' school experience; MCPS promotes the vision that "all students achieve full science, technology, engineering, and mathematics (STEM) literacy through seamlessly integrated instruction that is project/problem and standards-based. STEM literate students are critical thinkers who are able to solve nonroutine problems in a globally competitive society" (MCPS, 2012). STEM education in MCPS includes a comprehensive kindergarten through Grade 12 curriculum, as well as a range of special programs for students in middle and high school. In addition, with support from Howard Hughes Medical Institute (HHMI), MCPS has implemented several professional development initiatives for teachers in STEM (see Wolanin & Wade, 2012).

Beyond their MCPS experience in STEM, the question remains, how many students go on to pursue a STEM degree in college? To address that question, this study tracked six cohorts of MCPS graduates to determine what proportion of them attained a bachelor's degree in a STEM-related field. In addition to a description of STEM degree completion among MCPS graduates, additional analytic questions were addressed, such as an examination of high school course-taking patterns (e.g., type and number of science, mathematics, and technology courses) and academic measures (e.g., Grade Point Average [GPA] and Advanced Placement [AP] scores) in relation to STEM degree completion. As the interest in engaging students in the STEM fields grows, this initial examination of STEM degree completion by MCPS students may provide a baseline measure for possible future investigations of STEM degree attainment.

Literature Review

The number of bachelor's degrees awarded to U.S. citizens grew during the years 2003 through 2007, but the share of degrees in STEM fields actually shrank during those years (National Science Board, 2010, appendix table 2-13; Business-Higher Education Forum, 2010). According to the U.S. Department of Education's report, *The Condition of Education, 2012*, (Aud et al., 2012) more than half of the 1.7 million bachelor's degrees awarded in 2009–2010

² See *College Enrollment, Persistence, and Degree Attainment for High School Graduates in Montgomery County Public Schools, Maryland* [Zhao, Liu, & Wolanin, 2012] for the first.

were in five fields: business (including management, marketing, personal and culinary services) (22%); social sciences and history (10%); health professions and related programs (8%); education (6%); and psychology (6%). In the same year, the percentage of bachelor's degrees awarded in engineering and biological sciences, two STEM-related fields of study, was 5% in each.

A report from the Georgetown University Center on Education and the Workforce (Carnevale, Smith, & Melton, 2012) projects 2.4 million job vacancies for STEM occupations between 2008 and 2018, with a substantial portion of the projected vacancies (65%) requiring bachelor's and graduate degrees. The President's Council of Advisors on Science and Technology (2012) asserts that to retain preeminence in science and technology, the United States will need to increase the number of students who receive undergraduate STEM degrees by about 34% annually over current rates.

In the United States, the "pipeline" to a STEM degree narrows quickly; students fall out of the STEM pipeline at all levels of schooling. Less than 25% of high school graduates heading to college enter into STEM majors, and 38% of those who start with a STEM major do not graduate with one (Carnevale, Smith, & Melton, 2012; Boundaoul, 2011). Figure 1 illustrates the diminishing number of students at each stage on the way to a STEM degree. Nationally, in 2001, about 2.7 million students graduated from high school; in the same year, almost 1.7 million students enrolled in two- or four-year colleges (National Center for Education Statistics, 2009). However, by 2007 only about 233,000 students earned a STEM bachelor's degree, about 15.6% of all bachelor's degrees awarded (National Science Board, 2010).

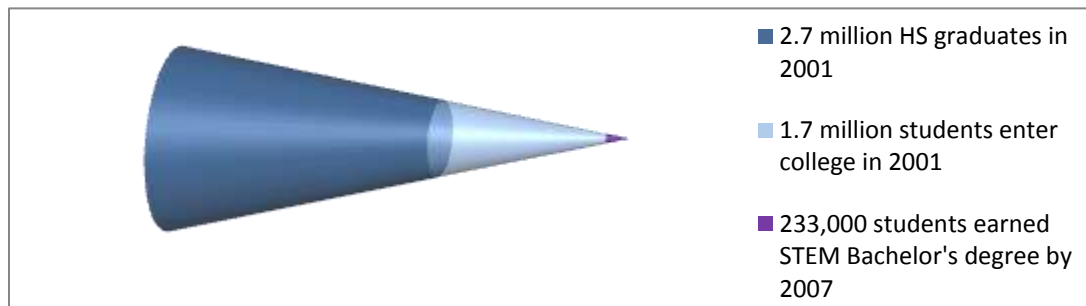


Figure 1. Numbers of students at stages of education toward a STEM degree (Chen, 2009; National Science Board, 2010).

The pipeline to a STEM degree is even narrower for some groups of students. Educators and the scientific community express concerns over the lower proportion of women and minority students earning degrees in STEM fields. Historically, these groups have been underrepresented in many of the STEM fields, particularly engineering and mathematics. Efforts to engage more female and minority students in the STEM fields are numerous, but gaps remain overall, and differences in career choices and employment patterns are still evident (Beebe, Julian, Langdon, McKittrick, & Doms, 2011; National Science Foundation, 2011).

Research Questions

The following research questions guided the study:

1. What proportion of MCPS college graduates earned a bachelor's degree or higher in a STEM-related field, and what was the breakdown of STEM categories?
2. What proportion of MCPS college graduates earned a degree in a STEM-related field among racial/ethnic and gender subgroups?
3. What were the high school SAT and AP scores, GPA, and science and mathematics courses taken among MCPS graduates earning STEM degrees?
4. What were the colleges most frequently attended by MCPS graduates earning STEM degrees?
5. Does enrollment in a science-related high school program relate to STEM degree completion?

Methodology

The Office of Shared Accountability examined the bachelor's degrees earned by MCPS graduates, including graduating cohorts from 2001 through 2006, using data available from the NSC.

Data Sources

College Data from NSC. College degree data used for this report were obtained from the NSC, a nonprofit organization that collects and verifies students' postsecondary enrollment and degree attainment on a national level. NSC student data are updated multiple times each year; StudentTracker Data are available for over 92% of American collegiate enrollment (NSC, 2012). Over 3,300 participating colleges and universities nationwide provide data to the NSC. School districts, universities, and agencies can obtain information about students' postsecondary educational outcomes from the NSC. Students who declined to release their information were not included in the NSC data in order to comply with the *Family Educational Rights and Privacy Act* (FERPA).

NSC data used for this study included college of enrollment, degree received, and major area of study through May 2011. Results are based on unduplicated counts of students across all colleges and universities; if a student was enrolled in multiple institutions during their postsecondary education only the institution that granted the degree was considered. If a student received multiple degree levels (e.g., bachelor's and master's), both were counted in this study.

Information from National Science Foundation. STEM and non-STEM categories of degree majors were coded based on the National Science Foundation's (NSF) classification of degrees for its *2010 Science and Engineering Degrees, by Race/Ethnicity: 1997–2006* report (NSF, 2010), which was derived from the Integrated Postsecondary Education Data System (IPEDS) Completions survey, conducted by the National Center for Education Statistics (NCES), U.S. Department of Education. Additionally, data published by the NSF's report (NSF, 2010), were used to derive national findings.

For this report, a STEM degree refers to a degree in one of the following broad fields: science, technology, engineering, or mathematics, since many education initiatives address shortages in those areas specifically (Chen, 2009). A non-STEM degree refers to all other degrees such as business, English, psychology, education, social sciences, health, arts, etc.; however, some reports include psychology and social science in a broad science category (e.g., NSF, 2010; see NCES 2009 for discussion of STEM fields definition). A more comprehensive list of degrees can be found in Appendix Table A-1.

To view the MCPS data within a broader context, the percentage of bachelor's degrees earned in STEM fields nationally were computed from the last two years of NSF data available (2005 and 2006) to best correspond with MCPS cohorts of students who graduated from high school in 2001 and 2002.

Data from MCPS. MCPS high school records were used for students' mathematics and science course history, GPA, and SAT and AP test scores, as well as student demographic characteristics.

Sample

MCPS graduates. Results are based on students who graduated from MCPS from 2001 to 2006 and received at least a bachelor's degree prior to May 2011, regardless of how long after graduation and regardless of when they enrolled in college. Since the current report focuses on completing a bachelor's degree or higher, the class of 2006 is the last class that would allow four years to earn a bachelor's degree after high school graduation and for the colleges to report the information to NSC by May 2011. The MCPS cohorts used for analyses in this report are as follows:

- **Degree attainment** is reported for MCPS graduating classes 2001 to 2006; however, the graduating classes of 2005 and 2006 may still need to be viewed with caution as the data may not be complete since those students haven't had a commonly used six-year window of time to complete their degrees.
- **Percentage of degrees in STEM** findings are reported for all cohorts from 2001 to 2006 because there is a large enough sample in these cohorts to look at the proportional representation of groups of students.
- **Higher degree attainment (overall and in STEM) findings** are reported for all cohorts from 2001 to 2005 to extend the window for a higher degree completion. Because of the varying length of time it takes to earn a higher degree, as well as the common practice of gaining work experience before pursuing a graduate degree, we cannot assume that any of the higher degree data from the MCPS graduating classes in our sample are complete; therefore, the information in this part of the report may be underestimated. It also should be noted that there are some five-year programs where students can earn a bachelor's and master's degree within five years.
- **Colleges** where the highest number of students completed STEM and non-STEM degrees are reported for 2001 to 2004 to ensure the most complete data, since there is variability by college in the time taken to report to NSC.

Data Analysis Procedures

Descriptive statistics were used to present the findings in this report. The number and percentage of MCPS graduates receiving a bachelor's degree, and type of bachelor's degree received (field of study, STEM and non-STEM) were presented. Among bachelor's degree recipients, the number and percentage of graduates receiving STEM and non-STEM degrees were presented for all students, and for racial subgroups and male and female students. To provide a broader context, the number and percentage of STEM degrees were reported for MCPS and a national sample. SAT scores, GPAs, and AP scores were reported with means and standard deviations; the number and percentage of students taking advanced science and mathematics courses were reported for students receiving STEM and non-STEM degrees.

Limitations

Of the bachelor's degrees reported for 2001 to 2006 MCPS graduates, 12.4% were nonspecified as to the type of degree earned; therefore they could not be categorized as STEM or non-STEM and were placed in a "non-specified degree" category. After further investigation, it was determined that some colleges gave their data to NSC with nonspecified degrees while other nonspecified degrees were scattered throughout the data regardless of cohort or college.

The findings for the MCPS graduating classes of 2005 and 2006 need to be viewed with caution as complete bachelor's degree data may not yet have been reported by all colleges to NSC. In addition, the time allowed to complete a degree is shorter for these more recent cohorts, and STEM and non-STEM degrees may be differentially affected (Cataldi et al., 2011). Also, because of the varying length of time it takes to earn a higher degree, as well as the common practice of gaining work experience before pursuing a graduate degree, we cannot assume that any of the higher degree data from the MCPS graduating classes in our sample are complete; therefore, the information in this part of the report may be underestimated.

Comparisons between MCPS and national findings need to be viewed with caution. MCPS cohorts represent the years students graduated from high school; the years reported in NSF's national data represent the years students received their college degrees. Furthermore, across the cohorts, there are approximately 12% of college graduates from MCPS who have unspecified degrees (i.e. STEM vs. non-STEM), unlike NSF's data of bachelor's degree types.

Complete and accurate information is not yet available for students' enrollment in MCPS special school-level science, technology, engineering, and mathematics programs. Therefore, the percentage of students who were enrolled in special academic high school programs and went on to earn STEM bachelor's degrees cannot be determined, and research question 5 cannot be fully addressed. However, MCPS high school-level data for STEM and non-STEM degree graduates are shown for each cohort in Appendix Table A-2.

Findings

Research Question 1: What proportion of MCPS college graduates earned a bachelor's degree or higher in a STEM-related field, and what was the breakdown of STEM categories?

Bachelor's Degrees Among MCPS Graduates

The data reported by the NSC in May 2011 indicated that a range of 36.8% to 51.8% of MCPS 2001–2006 graduates received a bachelor's degree, with 51.8% from the 2001 cohort (Table 1). It should be noted that the later cohorts 2005 and 2006 may have incomplete data, as those students haven't had six years, a commonly used window, to complete their degrees. The bachelor's degrees obtained by students in the 2001 through 2004 cohorts were between 48.6% and 51.8%.

Table 1
MCPS 2001–2006 Graduates Who
Received a Bachelor's Degree by Spring 2011

MCPS class	Graduated MCPS <i>N</i>	Received bachelor's <i>n</i>	Received bachelor's <i>%</i>
2001	7,837	4,062	51.8
2002	8,305	4,286	51.6
2003	8,865	4,394	49.6
2004	9,062	4,408	48.6
2005*	9,313	4,173	44.8
2006*	9,856	3,623	36.8

Note. A total row is not shown due to the influence of incomplete data in later years.

*These years may not have complete data due to reporting or insufficient time to earn a bachelor's degree.

Bachelor's Degrees in STEM

Across all cohorts of MCPS graduates earning a bachelor's degree, 19.4% earned a degree in a STEM field of study (Table 2). There was a slight increase in the percentage of students receiving STEM-related degrees over the years, from 18.8% among 2001 graduates to 21.1% among 2006 graduates.

Table 2
MCPS 2001–2006 Graduates with Bachelor’s Degree by
Type of Degree

MCPS class	Bachelor’s degree <i>N</i>	STEM degree		Non-STEM degree		Non-specified degree	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
All cohorts	24,946	4,833	19.4	17,010	68.2	3,103	12.4
2001	4,062	762	18.8	2,739	67.4	561	13.8
2002	4,286	786	18.3	2,970	69.3	530	12.4
2003	4,394	804	18.3	3,038	69.1	552	12.6
2004	4,408	863	19.6	3,047	69.1	498	11.3
2005	4,173	853	20.4	2,836	68.0	484	11.6
2006	3,623	765	21.1	2,380	65.7	478	13.2

Among bachelor’s degrees awarded nationally during 2005 and 2006, 16.2% were in a STEM-related field as shown in Table 3 (as derived from NSF raw data). Data for college bachelor’s degrees earned in 2005 and 2006 provide the best available alignment with MCPS data for students who graduated from high school in 2001 and 2002.

Table 3
National Data: Percentage of Bachelor’s Degrees
in U.S. awarded in STEM Fields^a

	Bachelor’s degree	STEM degree	
	<i>N</i>	<i>n</i>	%
Total	2,910,935	472,969	16.2

^aNational numbers and percentages derived from NSF 2005 & 2006 raw data (NSF, 2010).

Table 4 shows the non-STEM degrees broken down by social science, psychology, and other non-STEM fields of study in addition to the STEM and non-specified degrees. The social science and psychology degrees make up almost one fourth (23.5%) of the MCPS bachelor’s degrees earned across all cohorts. As discussed previously, some national reports include psychology and social sciences in a broad science category (NSF, 2010; see Chen, 2009 for discussion of STEM fields definition).

Table 4
MCPS 2001–2006 Graduates with Bachelor’s Degree by
More Specific Type of Degree

MCPS class	Bachelor’s degree <i>N</i>	STEM degree		Non-STEM Degree				Non-specified degree type	
		<i>n</i>	%	Social Science/ Psychology		Other non-STEM degree		<i>n</i>	%
				<i>n</i>	%	<i>n</i>	%		
All Cohorts	24,946	4,833	19.4	5,859	23.5	11,151	44.7	3,103	12.4
2001	4,062	762	18.8	920	22.6	1,819	44.8	561	13.8
2002	4,286	786	18.3	999	23.3	1,971	46.0	530	12.4
2003	4,394	804	18.3	1,069	24.3	1,969	44.8	552	12.6
2004	4,408	863	19.6	1,028	23.3	2,019	45.8	498	11.3
2005	4,173	853	20.4	1,006	24.1	1,830	43.9	484	11.6
2006	3,623	765	21.1	837	23.1	1,543	42.6	478	13.2

Type of STEM Degrees

Of those MCPS graduates who earned STEM-related bachelor’s degrees, over half (55.1%) were in the field of science (Table 5). This is followed by 28.3% holding engineering degrees, 12.2% with technology degrees, and 4.4% with mathematics degrees. The percentage of science degrees increased 10 percentage points over the years from 48.3% in 2001 to 58.3% in 2006; technology degrees decreased 7.4 percentage points from 17.6% in 2001 to 10.2% in 2006.

Table 5
MCPS 2001–2006 Graduates with Bachelor’s Degree by
STEM Type of Degree

MCPS class	STEM degree <i>N</i>	Science		Engineering		Technology		Mathematics	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
All Cohorts	4,833	2,661	55.1	1,367	28.3	590	12.2	214	4.4
2001	762	368	48.3	230	30.2	134	17.6	30	3.9
2002	786	409	52.0	243	30.9	102	13.0	32	4.1
2003	804	426	53.0	253	31.5	100	12.4	25	3.1
2004	863	502	58.2	227	26.3	86	10.0	48	5.6
2005	853	510	59.8	213	25.0	90	10.6	40	4.7
2006	765	446	58.3	201	26.3	78	10.2	40	5.2

Higher Degrees Among MCPS Graduates

Because of the varying length of time it takes to earn a master’s or doctorate degree, or professional law degree, as well as the common practice of gaining work experience before pursuing a higher degree, we cannot assume that any of the higher degree data from the MCPS graduating classes in our sample are complete; therefore, the information in this part of the report may be underestimated. However, data show that of the 2001–2005 MCPS graduates holding bachelor’s degrees, between 4.1% and 22.7% of each cohort also earned a higher degree prior to

May 2011. Of the students from the MCPS 2001 graduating class who earned a bachelor's degree and have had the most time of all the cohorts to earn a higher degree, 22.7% went on to earn a higher degree (Table 6).

Table 6
MCPS 2001–2005 Graduates Who Received a Higher Degree
in Addition to a Bachelor's Degree by Spring 2011

MCPS class	Received bachelors <i>N</i>	Received higher degree	
		<i>n</i>	%
2001	4,062	924	22.7
2002	4,286	757	17.7
2003	4,394	518	11.8
2004	4,408	322	7.3
2005	4,173	170	4.1

Note. A total row is not shown due to the influence of incomplete data in later years. More recent years may not have complete data due to reporting lag or insufficient time to earn a higher degree. Higher degree includes master's, doctorate and professional law.

STEM Higher Degrees Among MCPS graduates

Of the higher degrees earned so far among MCPS 2001–2005 graduates, the majority have earned non-STEM related higher degrees (68.2% to 86.0% across the years), as shown in Table 7. Of the MCPS 2001 cohort who earned a bachelor's degree and have had the most time of all the cohorts to earn a higher degree, 14.0% went on to earn a higher degree in a STEM-related field. The data also show that the percentage of graduates earning a STEM higher degree increased over the years from 14.0% for 2001 MCPS graduates to 31.8% for 2005 graduates; however, caution should be used when viewing later years, as students have not had much time to acquire a higher degree prior to the May 2011 data.

Table 7
MCPS 2001–2005 Graduates with a Higher Degree by
Type of Higher Degree

MCPS class	Higher degree <i>N</i>	STEM higher degree		Non-STEM higher degree	
		<i>n</i>	%	<i>n</i>	%
2001	924	129	14.0	795	86.0
2002	757	111	14.7	646	85.3
2003	518	99	19.1	419	80.9
2004	322	85	26.4	237	73.6
2005	170	54	31.8	116	68.2

Note. A total row is not shown due to the influence of incomplete data in later years. More recent years may not have complete data due to reporting lag or insufficient time to earn a higher degree. Higher degree includes master's, doctorate and professional law.

Of the graduates who earned a STEM-related higher degree (Table 8), the most frequently acquired degree was engineering (ranging from 40.7% to 49.5%) and science (ranging from 27.8% to 47.1%). However, when only looking at the MCPS class of 2001 graduates, who had the most time to earn a higher degree, the most common degree was science (44.2%) followed by engineering (41.9%).

Of the non-STEM higher degrees that have been earned so far, up to 15.3% were in the medical field, shown in Table 8. In keeping with the degree coding used by NSF, the degrees earned in the medical fields were classified as non-STEM.

Table 8
MCPS 2001–2005 Graduates With a
STEM Higher Degree by Type of Degree

MCPS class	All higher degree <i>N</i>	STEM higher degree <i>N</i>	STEM								Non-STEM				
			Science		Engineering		Technology		Math		Non-STEM higher degree <i>N</i>	Medical ^a		Other Non-STEM	
			<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%
2001	924	129	57	44.2	54	41.9	16	12.4	2	1.6	795	111	14.0	684	86.0
2002	757	111	40	36.0	55	49.5	13	11.7	3	2.7	646	99	15.3	547	84.7
2003	518	99	41	41.4	45	45.5	10	10.1	3	3.0	419	30	7.2	389	92.8
2004	322	85	40	47.1	35	41.2	9	10.6	1	1.2	237	11	4.6	226	95.4
2005	170	54	15	27.8	22	40.7	14	25.9	3	5.6	116	0	0.0	116	100.0

Note. A total row is not shown due to the influence of incomplete data in later years. More recent years may not have complete data due to reporting lag or insufficient time to earn a higher degree. Higher degree includes master’s, doctorate and professional law.

^aMedical degrees include: medicine, chiropractic, pharmacy, veterinary medicine, and nursing.

Of the graduates across five cohorts that earned STEM-related higher degrees, more than 80% of each cohort (ranging from 81.4% to 85.9%) also earned a STEM-related bachelor’s degree (Table 9). Furthermore, less than 11% (ranging from 3.0% to 10.9%) earned a non-STEM bachelor’s degree, but went on to earn a STEM higher degree.

Table 9
MCPS 2001–2005 Graduates with a
STEM Higher Degree by Type of Bachelor’s Degree

MCPS class	STEM higher degree <i>N</i>	STEM bachelor’s degree		Non-STEM bachelor’s degree		Non-specified bachelor’s degree	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
		2001	129	105	81.4	14	10.9
2002	111	91	82.0	10	9.0	10	9.0
2003	99	84	84.8	3	3.0	12	12.1
2004	85	73	85.9	8	9.4	4	4.7
2005	54	44	81.5	5	9.3	5	9.3

Note. A total row is not shown due to the influence of incomplete data in later years. More recent years may not have complete data due to reporting lag or insufficient time to earn a higher degree. STEM higher degree includes master’s or doctorate.

Research Question 2: What proportion of MCPS college graduates earned a bachelor’s degree in a STEM-related field among racial/ethnic and gender subgroups?

Student Gender Subgroups and Types of Degrees Earned

A higher proportion of MCPS male college graduates than female graduates earned STEM-related bachelor’s degrees over non-STEM. Across all the cohorts, one fourth of males (24.9%) earned a STEM degree compared to 15.1% of females (Table 10). There was a slight upward trend over the years among males who acquired a STEM bachelor’s degree (from 23.8% in 2001 to 28.0% in 2006).

Table 10
MCPS 2001–2006 Gender Subgroups by Type of STEM Bachelor’s Degree

MCPS class	Male						Female							
	Bachelor’s degree	STEM		Non-STEM		Non-specified	Bachelor’s degree	STEM		Non-STEM		Non-specified		
	<i>N</i>	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>N</i>	<i>n</i>	%	<i>n</i>	%		
All Cohorts	10,887	2,714	24.9	6,793	62.4	1,380	12.7	14,059	2,119	15.1	10,217	72.7	1,723	12.3
2001	1,816	432	23.8	1,126	62.0	258	14.2	2,246	330	14.7	1,613	71.8	303	13.5
2002	1,922	451	23.5	1,221	63.5	250	13.0	2,364	335	14.2	1,749	74.0	280	11.8
2003	1,895	466	24.6	1,196	63.1	233	12.3	2,499	338	13.5	1,842	73.7	319	12.8
2004	1,927	469	24.3	1,225	63.6	233	12.1	2,481	394	15.9	1,822	73.4	265	10.7
2005*	1,814	472	26.0	1,128	62.2	214	11.8	2,359	381	16.2	1,708	72.4	270	11.4
2006*	1,513	424	28.0	897	59.3	192	12.7	2,110	341	16.2	1,483	70.3	286	13.6

*Later years may not have complete data due to reporting or insufficient time among some to earn a bachelor’s degree.

A similar gender gap is evident in the national data. The national percentage of STEM bachelor’s degrees among males was 23.7% and 10.8% among females (Table 11), which was derived from NSF data in years 2005 and 2006.

Table 11
National Data: STEM Bachelor’s Degrees Awarded to U.S. Male and Female Graduates in 2005 and 2006^a

	Male				Female					
	Bachelor’s Degree	Stem Degree		Non-Stem Degree		Bachelor’s Degree	Stem Degree		Non-Stem Degree	
	<i>N</i>	<i>n</i>	%	<i>n</i>	%	<i>N</i>	<i>n</i>	%	<i>n</i>	%
Total	1,230,173	291,246	23.7	938,927	76.3	1,680,762	181,723	10.8	1,499,039	89.2

^aNational numbers and percentages derived from NSF 2005 and 2006 raw data (NSF, 2010).

Student Racial/Ethnic Subgroups and Types of Degrees Earned

Compared with other racial/ethnic subgroups, a higher proportion of Asian American graduates, who received a bachelor’s degree, earned a STEM-related field of study. As shown in Table 12, over one third (34.7%) of Asian American graduates earned a STEM degree, which was much higher than the percentage of STEM degrees earned among Whites (16.3%) and African

Americans (15.3%) followed by 11.9% of Hispanic graduates. The percentage of Asian Americans with a STEM degree increased from 31.0% in 2001 to 39.0% in 2006.

Table 12
MCPS 2001–2006 Degree Type Among Racial/Ethnic Subgroups

MCPS Class	Bachelor's Degree <i>N</i>	Asian American						African American						
		STEM		Non-STEM		Non-Specified		Bachelor's Degree <i>N</i>	STEM		Non-STEM		Non-Specified	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
All Cohorts	4,654	1,616	34.7	2,580	55.4	458	9.8	2,811	430	15.3	1,914	68.1	467	16.6
2001	722	224	31.0	404	56.0	94	13.0	479	79	16.5	307	64.1	93	19.4
2002	835	256	30.7	501	60.0	78	9.3	466	72	15.5	329	70.6	65	13.9
2003	764	276	36.1	402	52.6	86	11.3	516	79	15.3	356	69.0	81	15.7
2004	817	285	34.9	458	56.1	74	9.1	507	86	17.0	349	68.8	72	14.2
2005*	796	294	36.9	432	54.3	70	8.8	511	71	13.9	359	70.3	81	15.9
2006*	720	281	39.0	383	53.2	56	7.8	332	43	13.0	214	64.5	75	22.6
All Cohorts	<i>N</i>	White						Hispanic						
		STEM		Non-STEM		Non-Specified		<i>N</i>	STEM		Non-STEM		Non-Specified	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
All Cohorts	16,088	2,620	16.3	11,468	71.3	2000	12.4	1,358	162	11.9	1,020	75.1	176	13.0
2001	2,605	430	16.5	1,837	70.5	338	13.0	250	29	11.6	185	74.0	36	14.4
2002	2,722	425	15.6	1,941	71.3	356	13.1	255	32	12.5	193	75.7	30	11.8
2003	2,868	421	14.7	2,093	73.0	354	12.3	239	26	10.9	183	76.6	30	12.6
2004	2,843	464	16.3	2,061	72.5	318	11.2	238	28	11.8	176	73.9	34	14.3
2005*	2,646	464	17.5	1,880	71.1	302	11.4	213	24	11.3	158	74.2	31	14.6
2006*	2,404	416	17.3	1,656	68.9	332	13.8	163	23	14.1	125	76.7	15	9.2

*Later years may not have complete data due to reporting or insufficient time among some to earn a bachelor's degree.

A higher proportion of Asian Americans in the national study (28.6%) also earned a STEM-related field of study compared to other racial/ethnic groups (Table 13); data were derived from NSF data in years 2005 and 2006. 15.5% earned a STEM degree among White graduates, 13.7% among Hispanic, and 12.3% among African American graduates earned a STEM degree.

Table 13
National Data: Degree Type Among Racial/Ethnic Subgroups^a

	Bachelor's Degree <i>N</i>	Asian American				African American				
		STEM		Non-STEM		Bachelor's Degree <i>N</i>	STEM		Non-STEM	
		<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%
Total	185,660	53,139	28.6	132,521	71.4	255,502	31,517	12.3	223,985	87.7
	<i>N</i>	White				Hispanic				
		STEM		Non-STEM		<i>N</i>	STEM		Non-STEM	
		<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%
Total	1,973,752	305,475	15.5	1,668,277	84.5	224,922	30,743	13.7	194,179	86.3

^aNational numbers and percentages derived from NSF 2005 & 2006 raw data (NSF, 2010).

Research Question 3: What were the high school SAT and AP scores, GPA, and science and mathematics courses taken among MCPS graduates earning STEM degrees?

SAT Scores and High School GPA for Students Earning STEM and Non-STEM Bachelor's Degrees

The average SAT scores (English and mathematics combined), shown in Table 14, are higher among graduates with STEM degrees (average score of 1273.9) compared to those with non-STEM degrees (average score of 1170.0). The STEM graduates' average mathematics SAT score was 663.6 compared to the non-STEM average mathematics SAT score of 593.1. The STEM graduates' average English SAT score was 610.3 compared to the non-STEM average English SAT score of 576.9.

Table 14
MCPS 2001–2006 Graduates' SAT Scores by Degree Type

MCPS Class	SAT Test Takers w/ Bachelor's Degree (N)	STEM			Non-STEM		
		Avg Score (SD)	Avg Math (SD)	Avg Verbal (SD)	Avg Score (SD)	Avg Math (SD)	Avg Verbal (SD)
All Cohorts	4,676	1273.9 (174.9)	663.6 (89.6)	610.3 (102.1)	1170.0 (184.9)	593.1 (98.4)	576.9 (102.9)
2001	736	1244.6 (188.2)	649.9 (95.6)	594.7 (111.7)	1158.2 (188.6)	586.3 (99.5)	571.9 (105.7)
2002	760	1258.0 (181.2)	658.9 (94.5)	599.1 (103.4)	1155.2 (189.3)	588.4 (100.7)	566.8 (105.0)
2003	784	1259.0 (173.5)	656.5 (90.0)	602.5 (101.4)	1158.0 (179.1)	587.5 (96.3)	570.5 (98.9)
2004	830	1278.2 (166.1)	664.4 (87.2)	613.8 (97.5)	1172.9 (186.2)	593.5 (99.0)	579.4 (103.7)
2005	841	1290.7 (169.5)	668.7 (87.7)	622.0 (99.0)	1183.4 (183.3)	599.4 (97.2)	584.0 (102.0)
2006	725	1311.9 (156.7)	682.9 (78.7)	629.0 (95.4)	1198.2 (178.4)	606.2 (95.6)	592.0 (99.3)

Note. Non-specified degree type is not shown. Avg – average; SD = standard deviation.

Among all cohorts, shown in Table 15, the average MCPS high school GPA among STEM degree graduates was higher than non-STEM degree graduates (3.51 compared to 3.27) as well as the weighted GPA (4.07 compared to 3.67). The average GPA increased over the years for both the STEM group of graduates (3.46 in 2002 to 3.59 in 2006) and the non-STEM group (3.24 in 2002 to 3.35 in 2006). Also, the weighted GPA increased over the years among both the

STEM group (3.97 in 2002 to 4.23 in 2006) and the non-STEM group (3.58 in 2002 to 3.83 in 2006).

Table 15
MCPS 2002–2006 Graduates' GPA by Degree Type

MCPS Class	STEM			Non-STEM		
	Bachelor's Degree (N)	Avg GPA (SD)	Avg WGPA (SD)	Bachelor's Degree (N)	Avg GPA (SD)	Avg WGPA (SD)
All Cohorts	4,071	3.51 (.38)	4.07 (.56)	14,266	3.27 (.44)	3.67 (.63)
2002	786	3.46 (.42)	3.97 (.61)	2,970	3.24 (.46)	3.58 (.65)
2003	804	3.48 (.42)	3.99 (.61)	3,037	3.23 (.46)	3.57 (.65)
2004	863	3.52 (.37)	4.07 (.53)	3,044	3.27 (.44)	3.67 (.64)
2005	853	3.52 (.38)	4.11 (.54)	2,836	3.29 (.42)	3.72 (.60)
2006	765	3.59 (.33)	4.23 (.45)	2,379	3.35 (.39)	3.83 (.55)

Note. Non-specified degree type is not shown. 2001 GPA not available. Avg = average; SD = standard deviation.

Science Courses Taken by Students Earning STEM and Non-STEM Bachelor's Degrees

MCPS high school students are required to earn at least three science credits (one in biology, one in physical science, and one in other science) to graduate. A large majority of MCPS students with bachelor's degrees in a STEM field of study, took four or more science courses in high school (37.0% took four courses and 53.4% took five or more) compared to 46.6% of non-STEM graduates who took four courses and 17.5% who took five or more courses (Table 16). Over one third (35.1%) of non-STEM graduates took the required three science credits compared to 9.5% of STEM graduates.

Table 16
MCPS 2001–2006 Graduates’
High School Science Courses by Degree Type

MCPS Class	STEM								Non-STEM							
	Bachelor’s Degree	Took 3 Science Courses		Took 4 Science Courses		Took 5+ Science Courses		Bachelor’s Degree	Took 3 Science Courses		Took 4 Science Courses		Took 5+ Science Courses			
		<i>N</i>	<i>n</i>	%	<i>n</i>	%	<i>n</i>		%	<i>N</i>	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Total	4,833	457	9.5	1,790	37.0	2,579	53.4	17,010	5,975	35.1	7,931	46.6	2,981	17.5		
2001	762	85	11.2	310	40.7	367	48.2	2,739	973	35.5	1,323	48.3	420	15.3		
2002	786	96	12.2	286	36.4	402	51.1	2,970	1,137	38.3	1,306	44.0	502	16.9		
2003	804	78	9.7	316	39.3	409	50.9	3,038	1,079	35.5	1,440	47.4	488	16.1		
2004	863	67	7.8	344	39.9	451	52.3	3,047	1,028	33.7	1,395	45.8	605	19.9		
2005	853	79	9.3	286	33.5	486	57.0	2,836	952	33.6	1,359	47.9	512	18.1		
2006	765	52	6.8	248	32.4	464	60.7	2,380	806	33.9	1,108	46.6	454	19.1		

Note. Non-specified degree type is not shown. Students who took 3.5 courses (i.e. three plus one semester) were included in three science classes; students who took 4.5 were included in four science classes. The less than 1% who took two science courses (due to moving into high school after freshman year/intern/academy) are missing information or are not shown.

Among students who earned a STEM degree across all cohorts, under one third (29.3%) took four honors-level science courses in high school, and 41.6% took five or more honors-level high school science courses (Table 17). Among graduates earning non-STEM degrees, 23.0% took four honors-level science courses in high school, and 10.1% took five or more.

Table 17
MCPS 2001–2006 Graduates' High School
Honor Science Courses by Degree Type

MCPS Class	Bachelor's Degree	STEM							
		Took 0-2 Honors Science Courses		Took 3 Honors Science Courses		Took 4 Honors Science Courses		Took 5+ Honors Science Courses	
		<i>N</i>	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>
All Cohorts	4,833	845	17.5	561	11.6	1,418	29.3	2,009	41.6
2001	762	198	26.0	88	11.5	222	29.1	254	33.3
2002	786	176	22.4	96	12.2	223	28.4	291	37.0
2003	804	161	20.0	104	12.9	232	28.9	307	38.2
2004	863	134	15.5	105	12.2	276	32.0	348	40.3
2005	853	113	13.2	91	10.7	244	28.6	405	47.5
2006	765	63	8.2	77	10.1	221	28.9	404	52.8
Non-STEM									
<i>N</i>	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	%
All Cohorts	17,010	7,704	45.3	3,667	21.6	3,914	23.0	1,725	10.1
2001	2,739	1,453	53.0	515	18.8	552	20.2	219	8.0
2002	2,970	1,547	52.1	607	20.4	552	18.6	264	8.9
2003	3,038	1,527	50.3	605	19.9	650	21.4	256	8.4
2004	3,047	1,346	44.2	608	20.0	731	24.0	362	11.9
2005	2,836	1,063	37.5	685	24.2	760	26.8	328	11.6
2006	2,380	768	32.3	647	27.2	669	28.1	296	12.4

Note. Non-specified degree type is not shown. Students who took 3.5 courses (i.e., three plus one semester) were included in three science classes; students who took 4.5 were included in four science classes.

Advanced placement science courses in high school include: AP Biology, AP Chemistry, AP Physics B, AP Physics C Mechanics, AP Physics C Electricity & Magnetism, and AP Environmental Science. As shown in Table 18, across all cohorts, a much higher percentage of MCPS students who went on to get STEM degrees in college took one or more AP science courses (63.8%) in high school compared to non-STEM graduates (26.9%).

Table 18
MCPS 2001–2006 Graduates' High School
AP Science Courses by Degree Type

MCPS Class	STEM			Non-STEM		
	Bachelor's Degree <i>N</i>	Took 1 or more AP Science Courses		Bachelor's Degree <i>N</i>	Took 1 or more AP Science Courses	
		<i>n</i>	%		<i>n</i>	%
Total	4,833	3,085	63.8	17,010	4,581	26.9
2001	762	423	55.5	2,739	589	21.5
2002	786	468	59.5	2,970	698	23.5
2003	804	477	59.3	3,038	740	24.4
2004	863	551	63.8	3,047	845	27.7
2005	853	598	70.1	2,836	846	29.8
2006	765	568	74.2	2,380	863	36.3

Note. Non-specified degree type is not shown.

Advanced Placement Test Scores in Science Achieved by Students Earning STEM and Non-STEM Bachelor's Degrees

The next section examines a selection of high school AP test scores among MCPS students who received a bachelor's degree in STEM and non-STEM fields of study. AP scores range from 1 to 5, with 5 being the highest score possible. Only high school students who take an AP course typically take the corresponding AP test following the course.

Students who earned STEM-related college degrees had a higher average AP score in both Biology and Chemistry (Table 19) than those with non-STEM degrees. For Biology, STEM graduates earned an average score of 4.1 across the cohorts compared to 3.4 among non-STEM graduates; and for Chemistry, STEM graduates had an average of a 3.9 score compared to a 3.3 average score among non-STEM graduates.

Higher AP scores also were found among STEM test takers for Physics C Mechanical and Environmental Science (Table 20). For Physics, an average AP score of 3.9 was earned by STEM degree graduates compared to an average score of 3.4 among non-STEM graduates. Also shown in Table 22, for Environmental Science, an average score of 3.8 was

earned by STEM graduates versus 3.0 among non-STEM graduates.

It is also interesting to note that in every cohort year, more STEM graduates took the Chemistry and Physics AP tests than non-STEM graduates and more non-STEM graduates took the Biology (except in 2006) and Environmental Science AP tests than STEM graduates.

Table 19
MCPS 2001–2006 Graduates’
AP Biology and Chemistry Scores by Degree Type

MCPS Class	AP Biology Score				AP Chemistry Score			
	STEM		Non-STEM		STEM		Non-STEM	
	AP Test Takers (N)	Avg Score (SD)	Test Takers (N)	Avg Score (SD)	AP Test Takers (N)	Avg Score (SD)	AP Test Takers (N)	Avg Score (SD)
All Cohorts	1,386	4.1 (1.1)	1,516	3.4 (1.2)	1,289	3.9 (1.2)	903	3.3 (1.3)
2001	158	3.9 (1.2)	184	3.2 (1.3)	182	3.9 (1.1)	129	3.4 (1.3)
2002	208	3.9 (1.2)	260	3.3 (1.3)	188	3.7 (1.2)	147	3.1 (1.3)
2003	175	3.9 (1.1)	217	3.3 (1.3)	200	3.7 (1.2)	160	3.2 (1.2)
2004	260	4.0 (1.1)	279	3.4 (1.2)	218	3.9 (1.2)	172	3.2 (1.3)
2005	310	4.2 (1.0)	313	3.6 (1.2)	224	3.8 (1.1)	146	3.3 (1.3)
2006	275	4.3 (0.9)	263	3.7 (1.2)	277	4.1 (1.0)	149	3.6 (1.3)

Note. Non-specified degree type is not shown. Score range 1–5. SD = standard deviation; Avg = average.

Table 20
MCPS 2001–2006 Graduates' AP Physics C Mechanical and
Environmental Science Scores by Degree Type

MCPS Class	AP Physics C, Mechanical				AP Environmental Science			
	STEM		Non-STEM		STEM		Non-STEM	
	AP Test Takers (N)	Avg Score (SD)	Test Takers (N)	Avg Score (SD)	AP Test Takers (N)	Avg Score (SD)	AP Test Takers (N)	Avg Score (SD)
All Cohorts	997	3.9 (1.1)	531	3.4 (1.2)	340	3.8 (1.1)	1,217	3.0 (1.2)
2001	125	4.0 (1.0)	68	3.6 (1.1)	23	3.7 (1.3)	98	2.9 (1.3)
2002	145	3.9 (1.1)	71	3.4 (1.1)	41	4.0 (1.0)	118	3.3 (1.1)
2003	169	3.8 (1.1)	77	3.2 (1.1)	36	3.7 (1.1)	165	2.7 (1.2)
2004	173	3.8 (1.2)	111	3.3 (1.3)	61	3.8 (1.2)	242	2.9 (1.3)
2005	194	3.8 (1.2)	98	3.6 (1.1)	95	3.8 (1.1)	268	2.9 (1.3)
2006	191	4.0 (1.1)	106	3.3 (1.3)	84	3.9 (1.1)	326	3.1 (1.2)

Note. Non-specified degree type is not shown. Score range 1–5. SD = standard deviation;
Avg = average.

Mathematics Courses taken by Students Earning STEM Bachelor's Degrees

MCPS requires students to take four credits of high school mathematics to graduate, two of which must include one credit of algebra and one credit of geometry. Table 21 shows that the majority of MCPS graduates with college STEM degrees took AP Calculus or higher in high school (65.2% of students across all the cohorts), with more than three fourths (76.6%) of the 2006 cohort having taken AP Calculus or higher. This compares to about one fourth (25.5% across all cohorts) of the graduates with non-STEM degrees having taken AP Calculus or higher; although, the percentage of non-STEM graduates taking AP Calculus or higher increased each year (19.6% in 2001 to 31.4% in 2006). The most common higher mathematics course among MCPS students with non-STEM college degrees was Pre-calculus or Statistics, with 34% across all the cohorts; however, that percentage decreased over each of the cohorts (37.2% in 2001 to 27.1% in 2006).

Table 21
MCPS 2001–2006 Graduates'
Highest High School Mathematics Course by Degree Type

MCPS Class	Bachelor's Degree <i>N</i>	STEM Degree											
		Other ^b		Alg2/ Hon. Alg2		Precalculus/ Statistics		Honors Precalculus/ AP Stat		Calculus w/ Applications		AP Calculus or Higher	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
All Cohorts	4,833	15	0.3	82	1.7	574	11.9	422	8.7	591	12.2	3,149	65.2
2001	762	3	0.4	28	3.7	143	18.8	75	9.8	111	14.6	402	52.8
2002	786	4	0.5	13	1.7	118	15.0	76	9.7	100	12.7	475	60.4
2003	804	2	0.2	15	1.8	94	11.7	78	9.7	97	12.1	518	64.4
2004	863	0	0.0	10	1.1	94	10.9	79	9.2	100	11.6	580	67.2
2005	853	3	0.4	10	1.1	80	9.4	75	8.8	97	11.4	588	68.9
2006	765	3	0.4	6	0.8	45	5.9	39	5.1	86	11.2	586	76.6
		Non-STEM Degree											
<i>N</i>		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
All Cohorts ^a	17,010	250	1.5	1,282	7.5	5,787	34.0	2,802	16.5	2,523	14.8	4,362	25.5
2001	2,739	55	2.0	276	10.1	1,020	37.2	392	14.3	459	16.8	537	19.6
2002	2,970	64	2.2	260	8.8	1,123	37.8	462	15.6	368	12.4	693	23.3
2003 ^a	3,038	59	1.9	263	8.7	1,120	36.9	480	15.8	378	12.4	737	24.3
2004	3,047	35	1.1	207	6.8	1,027	33.7	489	16.0	438	14.4	851	27.9
2005	2,836	26	0.9	169	6.0	854	30.1	543	19.1	447	15.8	797	28.1
2006 ^a	2,380	11	0.5	107	4.5	643	27.1	436	18.3	433	18.2	747	31.4

Note. Non-specified degree type is not shown.

^a2003 is missing mathematics course data for one student, 2006 is missing course data for three students, all cohorts reflects this missing course data.

^bOther indicates remedial mathematics, Algebra 1, Geometry, and Honors Geometry.

The majority of STEM degree graduates took four or more honors-level mathematics courses in high school (Table 22); 43.1% took four courses and 17.3% took five or more. This compares to 21.6% of non-STEM graduates across all cohorts taking four honors-level mathematics courses, and 5.8% taking five or more. The majority (61%) of non-STEM graduates took two or fewer honors-level high school mathematics courses.

Table 22
MCPS 2001–2006 Graduates' High School
Honor Mathematics Courses by Degree Type

MCPS Class	Bachelor's Degree <i>N</i>	STEM							
		Took 0–2 Honors Math Courses		Took 3 Honors Math Courses		Took 4 Honors Math Courses		Took 5+ Honors Math Courses	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Total	4,833	1,344	27.8	572	11.8	2,081	43.1	836	17.3
2001	762	287	37.7	88	11.5	295	38.7	92	12.1
2002	786	259	33.0	96	12.2	297	37.8	134	17.0
2003	804	249	31.0	84	10.4	359	44.7	112	13.9
2004	863	223	25.8	102	11.8	399	46.2	139	16.1
2005	853	204	23.9	112	13.1	376	44.1	161	18.9
2006	765	122	15.9	90	11.8	355	46.4	198	25.9
		Non-STEM							
	<i>N</i>	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Total	17,010	10,382	61.0	1,964	11.5	3,676	21.6	988	5.8
2001	2,739	1,840	67.2	247	9.0	525	19.2	127	4.6
2002	2,970	1,979	66.6	276	9.3	574	19.3	141	4.7
2003	3,038	1,987	65.4	313	10.3	592	19.5	146	4.8
2004	3,047	1,810	59.4	346	11.4	727	23.9	164	5.4
2005	2,836	1,586	55.9	386	13.6	684	24.1	180	6.3
2006	2,380	1,180	49.6	396	16.6	574	24.1	230	9.7

Note. Non-specified degree type is not shown.

High school AP mathematics courses include Calculus AB, Calculus BC, or Statistics. Among all cohorts, almost two thirds (63.7%) of MCPS graduates who earned a STEM degree took one or more AP mathematics courses in high school (Table 23). This compares to just over one third (34.8%) of non-STEM degree graduates across the cohorts. In both groups, the percentage of graduates taking one or more AP mathematics courses increased throughout the cohort years. Among STEM graduates, 49.7% took one or more AP mathematics courses in 2001, which increased to 73.6% in 2006. Among non-STEM graduates, 27.3% took one or more AP mathematics courses in 2001, which increased to 43.6% in 2006.

Table 23
MCPS 2001–2006 Graduates' High School
AP Mathematics Courses by Degree Type

MCPS Class	STEM			Non-STEM		
	Bachelor's Degree <i>N</i>	Took 1 or more AP Math Courses		Bachelor's Degree <i>N</i>	Took 1 or more AP Math Courses	
		<i>n</i>	%		<i>n</i>	%
Total	4,833	3,077	63.7	17,008	5,925	34.8
2001	762	379	49.7	2,739	748	27.3
2002	786	449	57.1	2,970	902	30.4
2003	804	507	63.1	3,038	985	32.4
2004	863	588	68.1	3,047	1,129	37.1
2005	853	591	69.3	2,836	1,125	39.7
2006	765	563	73.6	2,378	1,036	43.6

Note. Non-specified degree type is not shown.

Advanced Placement Test Scores in Mathematics Achieved by Students Earning STEM Bachelor's Degrees

On average, STEM degree graduates scored higher on AP mathematics tests in high school compared to their non-STEM degree counterparts. The STEM graduates received an average score of 4.1 for AP Calculus AB, 4.0 for AP Calculus BC (Table 24) and 3.9 for AP Statistics (Table 25) across all the cohorts. This compares to non-STEM graduates who received an average score of 3.7 for AP Calculus AB, 3.6 for AP Calculus BC, and 3.1 for AP Statistics.

Table 24
MCPS 2001–2006 Graduates' AP Calculus Scores
by Degree Type

MCPS Class	AP Calculus AB				AP Calculus BC			
	STEM		Non-STEM		STEM		Non-STEM	
	Test Takers (N)	Avg Score (SD)	Test Takers (N)	Avg Score (SD)	Test Takers (N)	Avg Score (SD)	Test Takers (N)	Avg Score (SD)
Total	2,837	4.1 (1.1)	3,485	3.7 (1.2)	1,905	4.0 (1.2)	1,658	3.6 (1.3)
2001	346	4.3 (0.9)	423	3.8 (1.0)	254	4.1 (1.1)	239	3.7 (1.2)
2002	412	4.2 (0.9)	529	3.9 (1.1)	304	4.0 (1.2)	300	3.6 (1.3)
2003	464	4.1 (1.0)	573	3.6 (1.1)	314	3.9 (1.2)	239	3.5 (1.3)
2004	535	4.0 (1.2)	676	3.7 (1.3)	355	3.8 (1.3)	315	3.6 (1.3)
2005	537	4.1 (1.1)	656	3.6 (1.3)	325	4.1 (1.2)	293	3.5 (1.4)
2006	543	4.2 (1.1)	628	3.7 (1.3)	353	4.1 (1.2)	272	3.8 (1.4)

Note. Non-specified degree type is not shown. SD = standard deviation; Avg = average.

Table 25
MCPS 2001–2006 Graduates' AP Statistics
Scores by Degree Type

MCPS Class	AP Statistics			
	STEM		Non-STEM	
	Test Takers	Avg Score (SD)	Test Takers	Avg Score (SD)
	N		N	
Total	946	3.9 (1.1)	2,225	3.1 (1.2)
2001	109	3.9 (1.0)	275	3.3 (1.1)
2002	152	3.9 (1.1)	308	3.2 (1.2)
2003	125	3.8 (1.1)	345	3.0 (1.2)
2004	179	3.7 (1.2)	406	3.1 (1.2)
2005	196	3.8 (1.1)	436	3.1 (1.1)
2006	185	4.1 (1.0)	455	3.2 (1.2)

Note. Non-specified degree type is not shown.
SD = standard deviation; Avg = average.

Research Question 4: What were the colleges most frequently attended by MCPS graduates earning STEM degrees?

Colleges Attended by Students Earning STEM Bachelor's Degrees

There was a wide variety of colleges and universities where MCPS graduates acquired their bachelor's degrees, with 244 colleges among STEM degree graduates and 528 colleges among non-STEM degree graduates represented across the 2001–2004 year cohorts. The University of Maryland, College Park is where the largest percentage of MCPS students acquired their bachelor's degree whether it was a STEM degree (38.0%) or non-STEM degree (27.8%) (Table 26). The second most popular college across the cohorts for acquiring a bachelor's degree was University of Maryland, Baltimore County among STEM degree graduates (10.0%) and Towson University among non-STEM degree graduates (6.0%). No other college across all four cohorts exceeds 10% of where students received their bachelor's degree; after the second most popular college, each school makes up less than 5% of the students.

When looking at the colleges where the largest percentage of 2001–2004 MCPS graduates received their bachelor's degree, it is interesting to note that there are colleges in the top 16

among STEM degree graduates that are not in the non-STEM top 16 and vice versa; and these rankings change from year to year (Table 26). Colleges that are only in the top 16 among STEM degree graduates are: Cornell University (1.9%), Carnegie Mellon University (1.6%), Duke University (1.2%), Stanford University (1.1%), Massachusetts Institute of Technology (0.9%), University of Illinois Urbana (0.9%) and University of Pennsylvania (0.9%). Colleges that are only in the top sixteen among non-STEM degree students are: Frostburg University (2.0%), New York University (1.1%), James Madison University (1.0%), George Washington University (1.0%), American University (1.0%), University of Delaware (1.0%) and West Virginia University (0.9%).

Table 26
MCPS 2001–2004 Graduates' Top Colleges
for Receiving Bachelor's Degrees by Degree Type

College	STEM			Non-STEM			
	Rank	<i>n</i>	%	College	Rank	<i>n</i>	%
Univ of Maryland College Park	1	1,221	38.0	Univ of Maryland College Park	1	3,279	27.8
Univ of Maryland Baltimore County	2	320	10.0	Towson University	2	707	6.0
Virginia Polytech and State University	3	77	2.4	Univ of Maryland Baltimore County	3	515	4.4
Pennsylvania State University	4	73	2.3	Salisbury University	4	362	3.1
Towson University	5	69	2.1	Frostburg State University	5	238	2.0
Cornell University	6	62	1.9	St. Marys College of Maryland	6	203	1.7
Carnegie Mellon University	7	50	1.6	Pennsylvania State University	7	187	1.6
St. Marys College of Maryland	8	47	1.5	Virginia Polytech and State University	8	135	1.1
George Washington University	9	39	1.2	University of Michigan-Central Campus	9	127	1.1
Duke University	10	38	1.2	New York University	10	126	1.1
Stanford University	11	34	1.1	James Madison University	11	122	1.0
Salisbury University	12	33	1.0	George Washington University	12	120	1.0
Massachusetts Institute of Technology	13	29	.9	American University	13	119	1.0
University of Illinois @ Urbana	14	29	.9	University of Delaware	14	117	1.0
University of Pennsylvania	15	29	.9	University of West Virginia	15	112	0.9
University of Michigan-Central Campus	16	28	.9	Georgetown University	16	105	0.9
Other Colleges	17-244	1,037	32.3	Other Colleges	17-528	5,220	44.3
Total		3,215	100.0			11,794	100.0

Note. Non-specified degree type is not shown. 2001 through 2004 data is shown to report the most complete data. Each STEM and non-STEM list of colleges is ranked in descending order of students receiving bachelor's degrees among MCPS 2001–2004 graduates. Percentages may not total 100.0% due to rounding.

Research Question 5: Does enrollment in a science-related high school program relate to STEM degree completion?

The percentage of MCPS graduates who earned STEM bachelor's degrees by May 2011 varied for each cohort year among individual MCPS high schools (see Appendix Table A-2). The high school with the highest percentage of STEM degrees across all the cohorts was Montgomery Blair High School (Blair). Just over one fourth (26.6%) of graduates from Blair who received a college bachelor's degree earned a STEM degree across all the cohorts.

As explained in the limitations section, accurate student-level data indicating enrollment in MCPS special school level science, technology, engineering, and mathematics programs are not available for all students across the cohorts. Therefore, the percentage of students who were enrolled in special academic high school programs and went on to earn STEM bachelor's degrees cannot be determined. However, Blair houses an Academy of Science, Technology, Engineering, and Mathematics, which complements its Science, Mathematics, and Computer Science Magnet program; these programs are likely related to the high rate of graduates going on to earn STEM bachelor's degrees.

Summary

STEM Degrees Among MCPS Graduates

- Of MCPS graduates who received a bachelor's degree across all cohorts—
 - about 19% received a STEM degree;
 - about 12% of degrees were non-specified; and
 - about 24% of non-STEM degrees were psychology and social sciences.
- There was a slight increase of students who received STEM degrees over the years.
- Science degrees made up over half of the STEM degrees, while mathematics made up the least.
- Science degrees increased over the cohort years and technology degrees decreased.
- Nationally, the percentage of STEM bachelor's degrees for years 2005 and 2006 was 16%.

STEM Higher Degrees Among MCPS Graduates

- Across the cohorts of MCPS graduates who earned a bachelor's degree, a range of 4% to 23% also earned a higher degree.
- Almost one fourth of bachelor's degree holders from the MCPS class of 2001 earned a higher degree.
- A range of 14% to 32% across cohorts earned a STEM higher degree.
- The most frequently earned types of STEM higher degrees so far across all the cohorts were in engineering and science, with science being the most frequently earned type of STEM higher degree from the class of 2001.
- More than 80% of MCPS college graduates with a STEM higher degree also earned a STEM-related bachelor's degree.

Breakdown Among Gender and Race/Ethnicity

- More male MCPS graduates with bachelor's degrees chose a STEM degree compared to female MCPS graduates; a similar gap was found nationally in years 2005 and 2006.
- There was slight increase among males obtaining a STEM degree.
- More than one third of Asian American graduates with bachelor's degrees earned a STEM degree, compared to 12–16% of Hispanic, African American, and White graduates. Likewise, nationally, Asian American graduates also had a much higher

percentage of STEM degrees compared to Hispanic, African American, and White graduates.

- The percentage of Asian American graduates with STEM degrees increased over the six cohorts.

SAT Scores and GPA

- The average SAT scores among MCPS STEM degree holders was higher than those with non-STEM bachelor's degrees.
- The average GPA and weighted GPA among MCPS STEM degree students was higher than those with non-STEM bachelor's degrees.

Science Courses and Science AP Exams

- A large majority of MCPS graduates with STEM degrees took four or more science courses in high school, while more than one third of non-STEM graduates took the required three courses and just under half took four courses.
- Across cohorts, a much higher percentage of graduates with STEM degrees took one or more AP science courses in high school (almost two thirds) compared to non-STEM graduates (just over one fourth).
- Graduates who earned a STEM degree had higher average AP science scores than non-STEM degree graduates.
- More graduates with STEM degrees took Chemistry and Physics AP exams compared to non-STEM graduates and more non-STEM graduates took the Biology and Environmental Science AP tests over the years.

Mathematics Courses and Mathematics AP Exams

- The majority of MCPS graduates with STEM degrees took AP Calculus or higher in high school (almost two thirds) compared to one fourth of non-STEM graduates across the years; however, the percentage of non-STEM graduates taking AP Calculus or higher increased over the years.
- More STEM graduates (almost two thirds) took one or more AP mathematics courses in high school compared to just over one third of non-STEM graduates; however, the percentage increased for both groups over the years.
- STEM degree graduates scored higher on AP mathematics exams compared to their non-STEM degree counterparts.

Colleges Attended by Graduates

- The University of Maryland, College Park is the college where the largest percentage of MCPS graduates acquired their bachelor's degree whether it was a STEM degree or non-STEM degree. Outside of University of Maryland, there was a wide variety of colleges and universities where MCPS graduates have acquired their bachelor's degrees.

- Among colleges where the largest percentage MCPS graduates received their bachelor's degrees, there are colleges in the top sixteen percentages among STEM degree graduates that are not in the non-STEM top sixteen such as: Cornell University, Carnegie Mellon University, Duke University, Stanford University, Massachusetts Institute of Technology, University of Illinois Urbana, and University of Pennsylvania.

MCPS School-level STEM Degrees

- Across all the cohorts, Montgomery Blair High School, which houses a mathematics, science, and computer science magnet program, had the highest percentage of STEM degrees among its graduates who received a bachelor's degree compared to other MCPS schools.

Conclusion and Recommendations

Almost one fifth of MCPS graduates from 2001–2006 who earned a college bachelor's degree, earned it in a STEM-related field, and this has increased slightly over the years. Proportionately, more males and more Asian American MCPS graduates with bachelor's degrees chose STEM fields of study than their respective counterparts, which is consistent with the national sample. The majority of graduates with STEM degrees took four or more science classes in high school, AP calculus or higher, and one or more science and mathematics AP classes in high school. They also scored higher on science and mathematics AP tests and SATs and had a higher high school GPA.

Findings of the current study suggest the following recommendations:

- Explore ways to engage more students in STEM subjects, especially technology, engineering, and mathematics to increase participation in STEM-related fields after high school.
- Explore ways to engage more female students in STEM subjects in order to close the gender gap between female and male graduates who earn a STEM bachelor's degree.
- Explore ways to engage all student racial/ethnic subgroups in STEM subjects to close the gap between these groups.
- Develop a centralized student specific tracking system within MCPS to record individual participation in specific school-level academies and programs. Such a system would allow tracking of students with STEM bachelor's degrees and their participation in STEM-related high school programs.

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Appendix

Table A-1
Coding Scheme of Bachelor’s Degrees into STEM and non-STEM Categories

STEM Degrees	Non-STEM Degrees
Science Degrees such as: Biology/Microbiology/Biological Sciences Chemistry Biochemistry Environmental Science Physics Agricultural Science Marine Biology Animal Behavior Forensic Science Astronomy Food Science Engineering Degrees such as: Civil Engineering Mechanical Engineering Electrical Engineering Biomedical Engineering Computer Engineering Aerospace Engineering Mathematic Degrees Technology Degrees such as: Robotics Computer Science/Information Systems	Business Degrees such as: Accounting Marketing Finance Management English Foreign Language Liberal Arts Journalism Communication Education: Elementary, Secondary, specified field, Early Childhood Medicine Nursing Fields Exercise Science/Kinesiology/Nutrition Pharmacy Veterinary History/Art History Music/Drama Graphic Design Architecture Parks and Recreation Hotel and Tourism Philosophy Linguistics Psychology Social Sciences such as: Political Science/Government/International Relations Sociology American/Women’s/Urban Studies Anthropology Economics Criminal Justice/Criminology Geography

Note. The above table is not a complete list of all degrees acquired. This is to give a sense of the major types of degrees and their classifications. Coding is based upon the National Science Foundation’s Classification of degrees for its *Science and Engineering Degrees, by race/ethnicity: 1997–2006 report*, which was derived from the Integrated Postsecondary Education Data System completions survey, conducted by the National Center for Education Statistics, U.S. Department of Education. However, this report categorizes social science and psychology under non-STEM.

Table A-2
Montgomery County Public Schools 2001–2006 Graduates With STEM Bachelor’s Degree Among Those Receiving Bachelor’s by High School

MCPS Class	Bethesda-Chevy Chase			Blair			Blake			Churchill			Clarksburg ^a		
	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%
Total	1,146	162	14.1	1,642	437	26.6	950	120	12.6	1,907	366	19.2	N/A		
2001	166	22	13.3	246	63	25.6	117	20	17.1	284	47	16.5			
2002	156	24	15.4	313	81	25.9	140	12	8.6	337	48	14.2			
2003	174	20	11.5	282	73	25.9	172	18	10.5	320	58	18.1			
2004	220	33	15.0	283	73	25.8	165	24	14.5	345	71	20.6			
2005	228	27	11.8	283	73	25.8	192	24	12.5	314	56	17.8			
2006	202	36	17.8	235	74	31.5	164	22	13.4	307	86	28.0			

MCPS Class	Damascus			Einstein			Gaithersburg			Walter Johnson			Kennedy		
	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%
Total	1,178	239	20.3	522	90	17.2	963	193	20.0	1,390	286	20.6	546	113	20.7
2001	174	32	18.4	100	15	15.0	181	33	18.2	213	42	19.7	106	17	16.0
2002	198	40	20.2	105	17	16.2	166	36	21.7	230	44	19.1	113	24	21.2
2003	223	52	23.3	105	16	15.2	187	31	16.6	243	43	17.7	110	20	18.2
2004	206	39	18.9	112	22	19.6	154	30	19.5	245	52	21.2	84	18	21.4
2005	203	47	23.2	100	20	20.0	149	36	24.2	254	63	24.8	71	19	26.8
2006	174	29	16.7	69	9	13.0	126	27	21.4	205	42	20.5	62	15	24.2

MCPS Class	Magruder			Richard Montgomery			Northwest			Northwood ^a			Paint Branch		
	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%
Total	1,293	231	17.9	1,259	249	19.8	845	153	18.1	N/A			970	220	22.7
2001	211	37	17.5	207	34	16.4	115	19	16.5				186	36	19.4
2002	230	42	18.3	214	44	20.6	147	16	10.9				187	47	25.1
2003	231	46	19.9	221	44	19.9	146	25	17.1				166	30	18.1
2004	236	40	16.9	231	44	19.0	151	36	23.8				146	35	24.0
2005	201	36	17.9	198	48	24.2	159	31	19.5				163	45	27.6
2006	184	30	16.3	188	35	18.6	127	26	20.5				122	27	22.1

Continued

Table A-2
Montgomery County Public Schools 2001–2006 Graduates With STEM Bachelor’s Degree Among Those Receiving Bachelor’s by High School

MCPS Class	Poolesville			Quince Orchard			Rockville			Seneca Valley			Sherwood		
	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%
Total	554	119	21.5	1,176	213	18.1	557	102	18.3	635	120	18.9	1,309	197	15.0
2001	75	17	22.7	197	38	19.3	127	33	26.0	112	23	20.5	210	28	13.3
2002	100	22	22.0	197	29	14.7	104	18	17.3	105	18	17.1	205	16	7.8
2003	91	13	14.3	195	41	21.0	98	17	17.3	120	23	19.2	242	37	15.3
2004	112	26	23.2	221	41	18.6	81	10	12.3	114	21	18.4	246	40	16.3
2005	91	23	25.3	200	33	16.5	89	13	14.6	96	25	26.0	208	38	18.3
2006	85	18	21.2	166	31	18.7	58	11	19.0	88	10	11.4	198	38	19.2

MCPS Class	Springbrook			Watkins Mill			Wheaton			Whitman			Wootton		
	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%	Bachelor’s <i>N</i>	STEM Degree <i>n</i>	%
Total	1,044	230	22.0	926	189	20.4	354	56	15.8	1,740	261	15.0	1,957	474	24.2
2001	209	42	20.1	182	38	20.9	89	21	23.6	264	38	14.4	284	65	22.9
2002	184	42	22.8	187	34	18.2	56	8	14.3	290	45	15.5	320	78	24.4
2003	188	39	20.7	177	32	18.1	68	9	13.2	319	52	16.3	315	65	20.6
2004	209	46	22.0	153	27	17.6	53	9	17.0	288	42	14.6	351	83	23.6
2005	128	31	24.2	133	34	25.6	56	5	8.9	294	37	12.6	363	89	24.5
2006	126	30	23.8	94	24	25.5	32	4	12.5	285	47	16.5	324	94	29.0

^aNorthwood and Clarksburg High Schools did exist yet and therefore did not have graduating classes from 2001 to 2006.