

Three-Year Completion Study

Summer 2019



Office of Institutional Effectiveness
and Analytics

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Executive Summary

BMCC's challenge is to improve our completion rates and to ensure that the students from all backgrounds and situations who come to this college will find the resources they need here to make that goal. At the moment, student outcomes are not equal for students classified as Black or Hispanic – the largest segment of our population – compared to those who are Asian or White, or who are international students.

This Completion Study is an updated attempt to look at the factors that contribute to success and to understand better students whose high school performance is not that good, who have some developmental needs in English, Reading or Math, and who come from racial or ethnic populations that have been traditionally underrepresented minorities in higher education.

Factors shown to be predictive of completion at BMCC included starting full-time, entering a cohort success program, choice of major, attending summer immersion, passing Math 56 in the first term, taking the SAT test, using the tutoring labs and registering well before classes start. Factors negatively predictive include the WU grade, indicative of students who simply stop attending class, and having an identified developmental need. Once these factors, residency, and gender (males have lower success rates than females) are included in the model, racial and ethnic background characteristics are no longer predictive of completion. However, the factors used to predict completion also vary significantly by race and ethnicity.

Among the 2,091 new freshmen males in Fall 2014 and 2015 who were Black or Hispanic, had at least one remedial need, and had a high school College Admissions Average score less than 75; there were 146 (7%) who nevertheless graduated BMCC within 3 years. These successful students have beaten the odds, made use of services like cohort programs and tutoring, enrolled in immersion, and mostly, managed to pass their courses.

Factors Related to Completion at BMCC

Gender and Ethnicity

Success outcomes at BMCC frequently differ significantly by race/ethnicity and by gender. Combining the three-year outcomes over two fall freshmen cohorts, 2014 and 2015, we see these differences still: 24.7% of Asian students graduated from BMCC within 3 years, compared to only 14.9% of Black students. White students were only slightly ahead of Hispanic students, with 18.8% completion for Whites and 18.3% for Hispanics.¹ However, for all groups, the difference between male and female students within the race/ethnicity category is often as large as or larger than the rates between race/ethnicity categories. In all

¹ Ethnicity categories used in this report do not break out non-resident and international students who could fall in any of these categories. Students who are non-residents or international students generally have higher completion rates in the model. The Native American group contains only 51 students over the two cohorts and so is not shown here because percentages will be misleading.

cases, the graduation rate for females is significantly larger. Among Black and White students, females have a 5 percentage point advantage, while among Asian and Hispanic students, females have a 10 percentage point advantage in the three-year graduation rates.

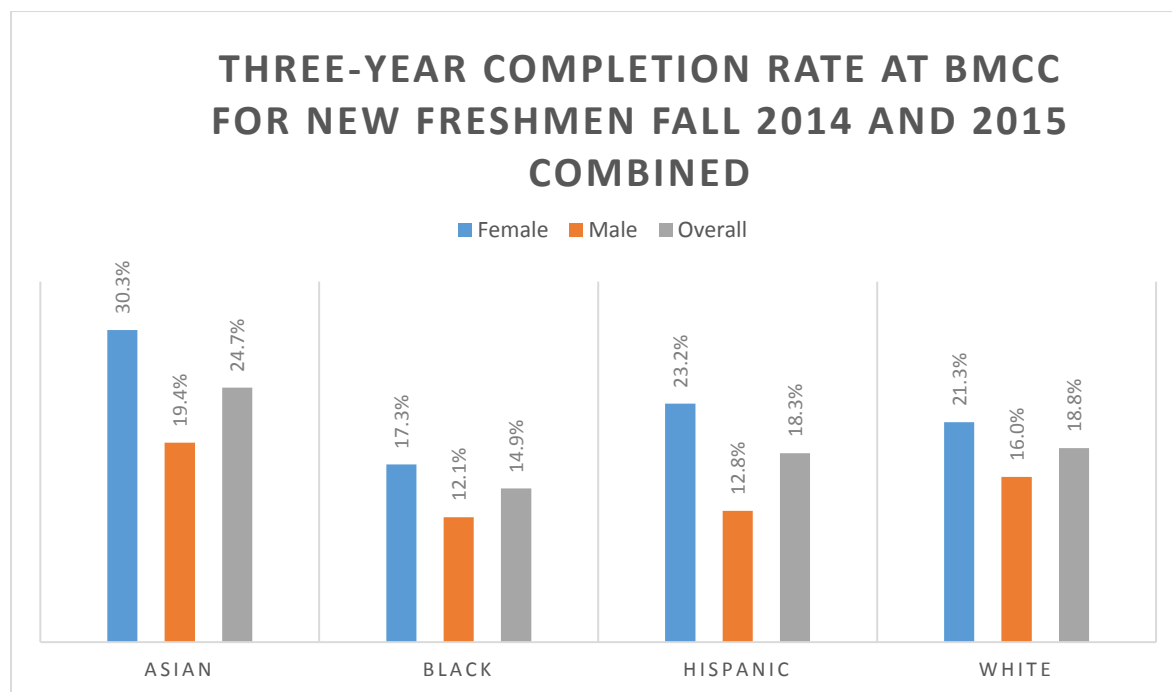


Figure 1. BMCC Completion Rates for Combined Cohorts

There are many other factors we found that relate to success and that differ significantly by ethnicity. For example, only 37% of Black students in the new freshmen cohorts had taken the SAT exam, compared to 48% of Latinos, 42% of White students, and 50% of Asians. Similarly, 82% of Black and 81% of Hispanic students needed developmental math compared to 69% of White students and 46% of Asian students. On the other hand, Asian students are more likely to need reading and writing development. Black students and White students were more likely to enroll late, though the numbers in both cases are still small. Asian students are substantially more likely to enroll full-time in their first semester, with 84% registering on time while other groups have between 75% and 76% as full-time students. More of the Asian students (44%) attended at least one tutoring lab compared to less than 30% of the Hispanic students, 31% of the White students, and 35% of the Black students.

If we control our prediction model by all these other factors, ethnicity alone loses its predictive value. (For a list of the factors in the model, please see Table 1 on page 3) This is perhaps good news. Yet we see that the factors and behaviors most related to graduation are generally less often found among Black and Hispanic male students. This report explores the strength of these factors in predicting 3-year completion at BMCC with particular emphasis on behaviors that lead to success.

Relative Strength of Factors

The table below presents the factors that our logistic regression modelling found to be significantly predictive (positively or negatively) of graduation within three years. The Strength/Odds Ratio column is based on the best predicting model where all factors are highly significant. The factors selected are generally independent.

Table 1. Factors found to be related to 3-year completion at BMCC.

Factor	Direction	Strength/Odds Ratio
Full-Time Enrolled	+	235.7%
In Cohort Program	+	226.6%
Accounting Major	+	79.3%
Criminal Justice Major	+	77.9%
Nonresident or International Student	+	71.2%
Attended Immersion	+	53.0%
Passed Math 56	+	50.8%
Teacher Education Major	+	49.0%
SAT Test Taken	+	31.9%
High School CAA 75 or more	+	21.6%
Visits to Tutoring Lab*	+	3.5%
Days between first registration and start of classes*	+	0.4%
Males	-	-32.9%
Developmental Need	-	-40.5%
At least 1 WU Grade in Fall 1	-	-91.4%

*for these factors, the odds ratio is for each visit to tutoring or each day between first registration and classes.

Cohort Programs

Evidence is found that the Student Success Cohort Programs at BMCC, which here include Accelerated Studies in Associate Programs (ASAP), BMCC Learning Academy (BLA), and College Discovery (CD), have a very strong positive impact on the three-year completion rate. In fact, among our variables, it is very close to the top-ranked in terms of more than doubling the odds for graduation, right after the impact of full-time enrollment and even more than the impact of having a High School College Admissions Average score of 75 or higher. As shown in Figure 2, all cohort programs more than double the graduation rate compared to those not in a cohort.²

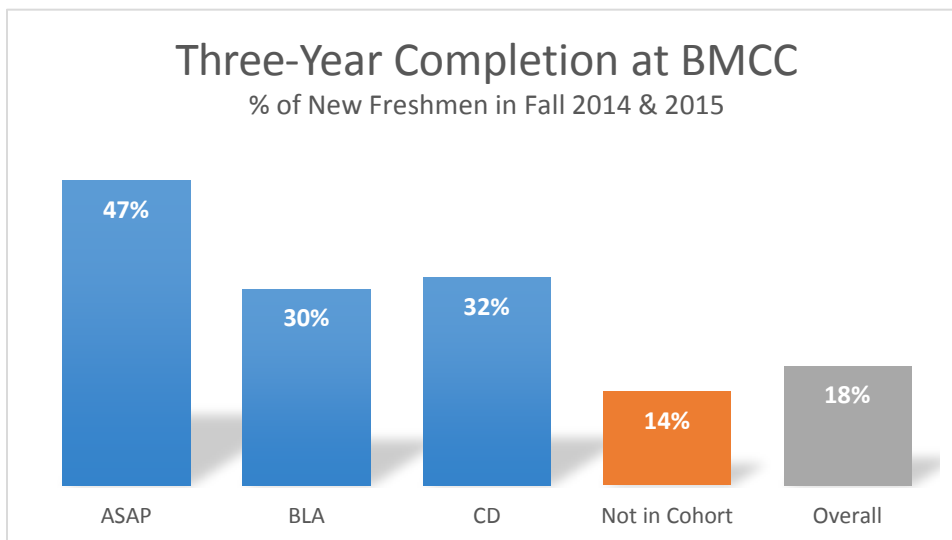


Figure 2. Three-Year Completion by Cohort

The cohort programs have different levels of support and different requirements to join, but all involve intensive advisement. ASAP is the largest of these programs and offers financial support in the form of transportation and books. It is also somewhat selective in that students must have no more than two developmental requirements and must maintain a 2.0 GPA to

² Students in the cohort programs are generally required or expected to attend full-time. The Not in Cohort group may contain a larger proportion of part-time students.

stay in the program. College Discovery is a smaller and older program that specifically targets students with financial need and who may not have such a good high school record. The program provides stipends and academic support to students. The BMCC Learning Academy is another smaller but newer program originally designed for Liberal Arts students but later admitted all majors except in the Allied Health area. The program does not offer the same financial support to students as the other programs, but does offer success seminars, high-impact experiences, and intensive advisement. A newer benefit in BLA since fall 2018 is that students have the opportunity to receive one monthly unlimited-ride Metro Card at the end of the semester. For the students in these combined freshmen cohorts, this would not have affected their first three years.

These programs are all costly to some extent and for these 2014 and 2015 fall freshmen cohorts, only about 16% of the population was served. Hispanic students have the best representation in the cohort programs, while White students are least represented.

Table 2. Cohort Participation by Gender and Ethnicity

% of Each Gender/Ethnicity in a Cohort Program			
	Female	Male	Total
Asian	16.3%	11.5%	13.9%
Black	15.4%	13.6%	14.5%
Hispanic	22.6%	15.3%	19.2%
White	13.3%	10.7%	12.1%
Total	18.6%	13.8%	16.3%

Criminal Justice, Accounting, and Teacher Education Programs

Among the larger majors, first semester freshmen in these two cohorts who are majoring in Criminal Justice, Accounting, or in one of the programs in the Teacher Education department have higher rates of completion at BMCC within three years. When these three majors are added to the general predictive model, it improved the overall percentage of correctly predicted three-year outcomes significantly. Adding Undeclared Health to the model was also a significant predictor of (in this case) non-completion but not quite as much. It's important to note that while our best selection of variables to predict completion outcomes was correct 82.1% of the time, had we predicted that no one would graduate from BMCC within three years, we would be correct 80.4% of the time.

Table 3. Variation in Completion Rates by Starting Major

Starting Major	% Graduated BMCC in 3 years	Rate for all other Majors	Change in Odds
Criminal Justice	21.6%	17.7%	+ 66% to 78%
Accounting	26.7%	17.9%	+ 62% to 79%
Teacher Education	24.5%	17.8%	+ 37% to 49%
Liberal Arts	18.2%	18.2%	-
Undeclared Health	12.3%	18.7%	- 48%

The Odds ratio represents the strength of the variable compared to the other factors that we are including as predictive of 3-year completion at BMCC. So after we account for the high school CAA scores, being in a Cohort Program, being full-time, and all the other variables found to be significant and discussed in this

report, we still see that starting in these majors has an effect on the outcome. The strength of that effect is measured in the Odds ratio. In Table 3 above, the *Change in Odds* column has a range for the first three majors because these were present in the main model to select indicators. The addition of Undeclared Health changed the odds ratio to the lower figure because we had more information about majors and could separate out the Undeclared Health students, but the model was not as strong overall. Looked at individually, the gap between these three programs and all others is evident except for Liberal Arts, which constitutes the average outcome in many ways. Students in the Undeclared Health program have a much lower graduation rate.

While some of the smaller majors do have higher completion rates – for example, the Communications Studies’ rate was 24.3% compared to Criminal Justice’s 21.6% – the smaller programs don’t reach significance as predictors. Among the other large majors with at least 500 new freshmen in the combined two cohorts, 18.2% of new freshmen in Liberal Arts graduate within 3 years, 18.5% of the Business Administration majors, and 15.1% of the Business Management majors.

Non-Resident and International Students

There were 672 non-resident and international students starting with these combined fall freshmen cohorts in 2014 and 2015. Non-resident students usually have much different outcomes from the rest of the student body. While about one-third of the non-resident students were Hispanic, they only made up 3.5% of all Hispanic students at BMCC. At the opposite end, just 16% of the non-resident students made up over 8% of the White student population. Nearly 16% of the U.S. resident students at BMCC were independent, but only about 2% of the non-residents were independent, with 98% depending on parents or guardians. At the same time, over 63% of non-resident new freshmen were 19 or older, compared to only 45% of U.S. residents. Non-residents pay the highest tuition rates and are not eligible for government funded support programs like Pell or Tap, though some find scholarships from the college fund or from private donors. Separating these students from the rest is key, since over 29% of them graduated BMCC within three years, compared to 17.6% of U.S. resident students.

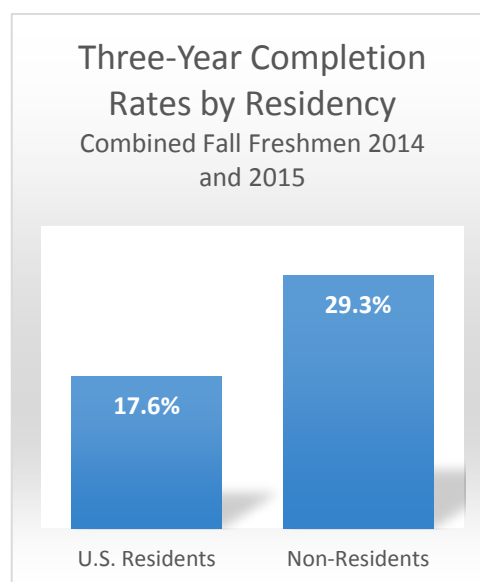


Figure 3. BMCC Completion Rates by Residency

Summer Immersion

Table 4. Immersion Participation by Gender

	% Attending Immersion
Female	10%
Male	7%
Overall	8%

Incoming students who have developmental needs have been offered a summer immersion program of workshops to help them to bring their skills up to the level needed without taking a developmental course. While not all students succeed in passing out of developmental courses through immersion, simply attending the program is predictive of three-year completion rates. Still, the

immersion program reached only 8% of the new freshmen in the study period. Those who attended immersion workshops before their first fall term showed a significantly higher completion rate, with about one-third of them graduating from BMCC within the three-year time frame. (See bar chart in Figure 4 below.)

The effect seemed even stronger for male students since among those who did not attend immersion only about 13% completed their program.

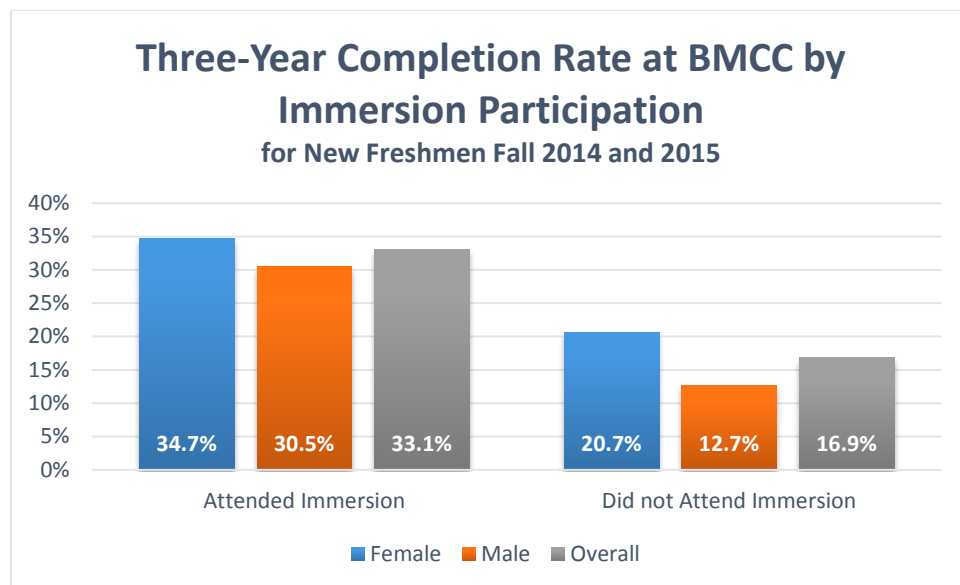


Figure 4. Three-Year Completion Rate by Immersion Participation

In terms of race/ethnicity, roughly equal proportions of each group attended immersion, but the numbers show a potential, borderline significant difference in which Asian students benefit most while Black students show the least benefit.

Math 56

Non-credit-bearing developmental courses are intended to bring the students’ skills to a higher level that will make it easier for them to pass the next credit-bearing course. However, many of these courses have very low pass rates, essentially blocking students’ progress. (See further discussion on Developmental Need on page 8). We initially looked at the “S” grade (the passing grade for non-credit developmental level courses) as a marker for success, but there was a problem. More than 50% of the “S” grades earned were for Math 56. While considered a non-credit developmental course at BMCC, this intermediate algebra course is not required for every major, and students taking Math 56 need to have passed or be exempt from Math 51. If we only look at passing rates for all the other non-credit developmental courses, the graduation predictor goes the other way and “passing a developmental course” in the first semester is a negative predictor of three-year graduation at BMCC, with less than 15% of these students graduating in three years.

Passing Math 56 in the first fall semester turns out to be significantly related to completion, even though the numbers are small. But of the 471 new freshmen who passed Math 56 in their first term, 41.4% graduated from BMCC within 3 years, compared with 17.4% of everyone else in the combined 2014 and 2015 cohorts, which includes students who did not take it in their first term, students who failed it in the first term, and students who never took the course. Passing Math 56 in the first term means that these students had no initial development need in math and were successful in passing a course considered to be difficult. It also typically indicates that they are in or are considering a major that requires calculus or higher levels of mathematics, and have demonstrated skills in this area.

Taking the SAT Test

As an open-admissions community college, BMCC does not require the SAT test, so students who take the test are likely more interested in attending college (or their parents or high school advisors are more interested

in this and encourage them). Among the students in the two freshmen cohorts studied here, 44.4% had sent SAT scores to the college when they applied. These students had a three-year completion rate of 24.5%, compared to 13.2% for the larger portion with no SAT scores.

Like so many other factors, whether or not someone takes the SAT test varies by Race/Ethnicity and Gender categories, but with surprising twists. For most factors predicting completion, we find Asian females in the top category, but here we see Hispanic females had the highest rate of submitting SAT scores, followed by Asian females. Black students overall had the lowest rates of taking the SAT.

Table 5. Percentage of Each Race/Ethnicity and Gender Group who Submitted SAT scores. Based on Fall 2014 and 2015 New Freshmen Cohorts

	Female	Male	Total
Asian	52.5%	47.6%	50.0%
Black	39.8%	33.7%	37.0%
Hispanic	54.2%	41.2%	48.2%
White	42.3%	42.7%	42.5%
OVERALL	48.3%	40.0%	44.4%

Visits to Tutoring Lab

A previous Upshot report ([BMCC Learning Resource Center, September 2018](#)) found that visits to the tutoring lab related positively to course pass rates. The biggest jump in pass rates was found after the first visit, but additional visits generally showed increasing benefits. In this study looking at three-year completion outcomes at BMCC we find a similar pattern where increased visits to the tutoring labs are associated with higher graduation rates.

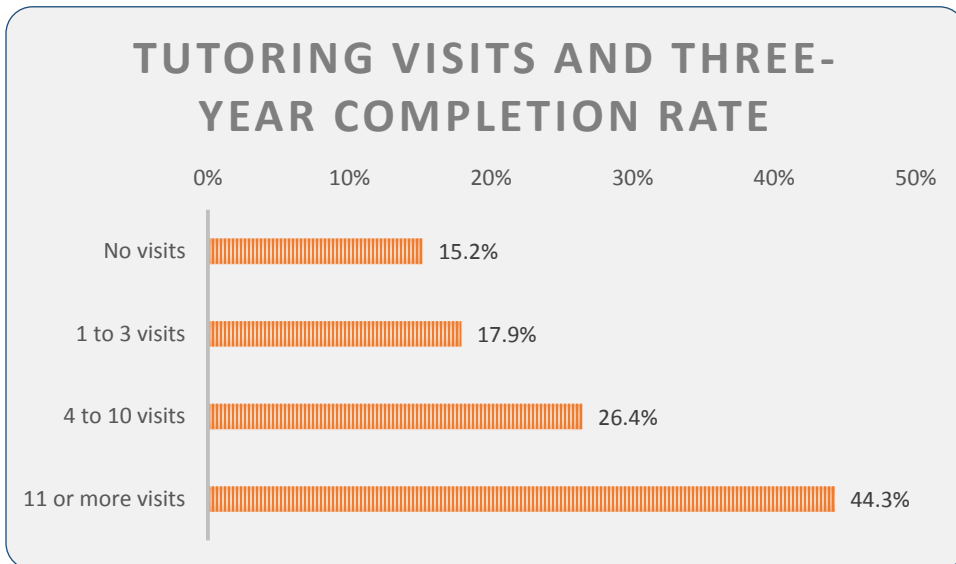


Figure 5. Three-year Completion Rate at BMCC by number of visits to the tutoring center. Based on New Freshmen in their first term in fall 2014 and 2015

Late Registration

Compared to those new freshmen who graduated within three years, students in these cohorts who did not graduate had an average of between 13 and 16 days less time between registration and the start of classes. This replicates the result of numerous studies. A study by A.M. Safer (2009) found that late registration was related lower than average grades.³ While registering late may be related to a tendency to procrastinate, and to one's motivation to attend college, it also has consequences in terms of limiting the choices of available classes for the students, leaving them in classes that are less interesting to them or that are inconveniently scheduled making it more difficult for them to attend.⁴

The WU Grade

The Unofficial Withdrawal, or WU grade, is given when a student simply stops coming to class and doesn't complete the work required or the final exam. Unlike a movie, where a person can walk at the point when he or she is bored or doesn't like the film anymore, students who walk out of their credit-bearing classes before the end without officially withdrawing not only lose the funds paid for the course but also earn a failing grade that is calculated into their GPA on their transcript. A WU grade in the first term makes it extremely difficult to achieve the good academic standing required for graduation. Only 1.5% of the 2,288 new freshmen who had a WU in their first term at BMCC were able to graduate within three years. On the other hand, among everyone else who did not receive a WU in their first term, completion at BMCC within three years reached 20.5%.

Table 6. Frequency of WU Grade by Gender and Race/Ethnicity

	Female	Male	Total
Asian	5.8%	12.3%	9.1%
Black	16.3%	19.0%	17.5%
Hispanic	16.8%	20.5%	18.5%
White	12.8%	15.9%	14.3%
Overall	14.9%	18.4%	16.5%

Since students choose to drop out of class unofficially, for whatever reason, it is concerning that this happens with Black and Hispanic students more than others, and with males more than females.

Asian students have the lowest rates, and White students are in the middle range.

Developmental Need

Generally speaking, when we talk about developmental needs for BMCC new freshmen, we are talking about mathematics. In the time period covered in this report, the fall freshmen cohorts for 2014 and 2015, fully three-fourths of BMCC new freshmen were placed in developmental math. Of these, just under 15% graduated BMCC within the three-year window. For the 27% who needed developmental writing, the outcomes were a bit worse, with just 11% graduating. For the just over 20% who needed reading support, only 8.1% graduated within three years. Finally, for the 12% who needed all three subjects, just under 6% were able to complete that work and graduate. While any developmental need impacts success and should be

³ Safer, A. M. (2009). The Effect of Late Registration for College Classes. *College Student Journal*, 43(4), 1380–1388. Retrieved from <https://lib2.bmcc.cuny.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=48318661&site=ehost-live&scope=site>

⁴ See Gurantz, O. "Who Loses Out? Registration Order, Course Availability, and Student Behaviors in Community College," *The Journal of Higher Education*, Vol 86, No 4 (July/August), 1985.

addressed if BMCC really wants to improve the graduation rate, the numbers suggest that math is the core factor.

Math Preparation

Identifying trends in developmental math placement and success is complicated by the changes in the placement exams and policies for cut scores at the CUNY level and at BMCC. By fall 2014, new students were placed in one of three levels of developmental math or in college level largely on the basis of the ACT Compass Math Tests. A combination of Arithmetic (Math 1) and Algebra (Math 2) tests determined the placement. However, in a break from the past, students who passed the Algebra test with a score of 40 or higher were considered “college-ready” and did not need to take the Arithmetic placement test. For everyone else – most of the students – both tests were needed to determine placement.

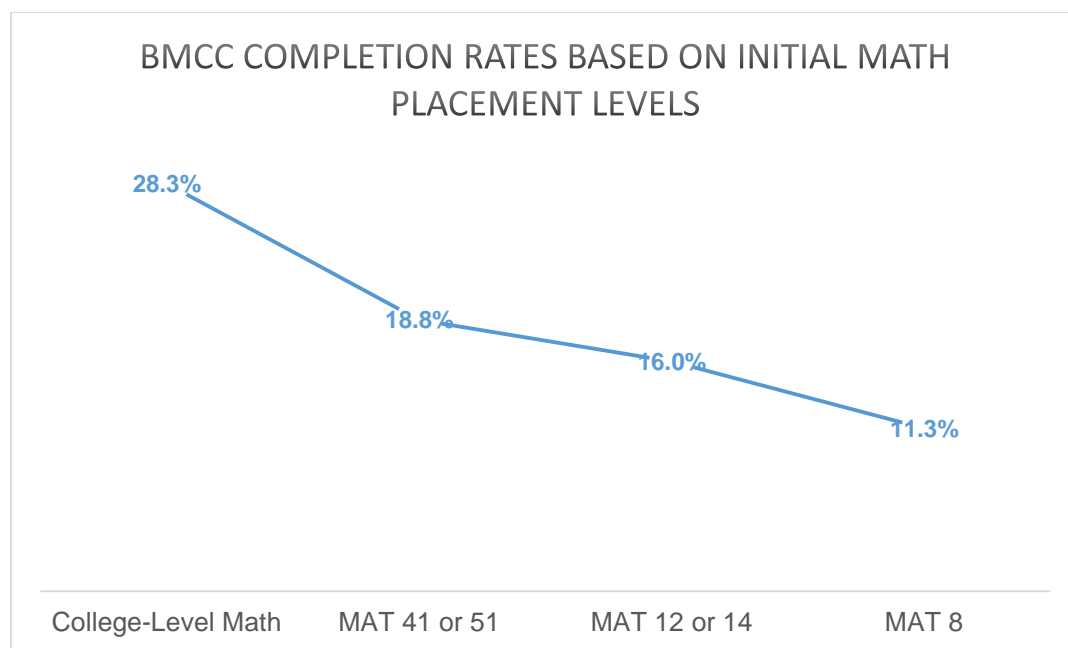


Figure 6. Math Placement for Cohorts 2014 and 2015, with Completion Rates

A new, stricter policy raised the test cut score on the Math 1 exam from 35 to 45, so while previously the most common placement was for Elementary Algebra (MAT 51), the dominant math course from 2014 through 2016 fall cohorts was a combined 6-hour Algebra and Arithmetic course (MAT 12) that in the years studied here was passed by only one-third of all students who took the course: very similar to the results for the MAT 51 course. A Quantitative Reasoning course was offered as an alternative to Algebra at both these levels, and for those who took that course, it seemed to be a better option even though more recently the pass rates for both Quantitative Reasoning courses dropped and enrollment has plummeted as students are being guided more into the co-requisite MAT 150.5, which offers college math credit for those who pass it.

The math placement tests have also tended to place women at a lower level of math than men. Notably, women were more frequently failing the “Math 1” ACT Compass and being placed in MAT 8 or MAT 12. Among new freshmen, 53.3% of women placed in MAT 8 or MAT 12 compared with 45.6% of men. Ironically, or perhaps tellingly, in every developmental math course in the same time period, the first year average pass rate for these same women was higher than for the men in these courses.

In 2017 the ACT Compass test was discontinued and CUNY selected Accuplacer as the placement test. At the same time, another policy was changed that allowed the students to retake the exam without requiring 20

hours of tutoring or other interventions first. As a result of these two changes, the number of students placed in remedial courses dropped dramatically in all subjects. Math showed the largest drop because it had much further to drop. While the overall report here deals with the 2014 and 2015 cohorts in order to have the three years needed to calculate three-year graduation rates, it seems worth including more recent years with the changes that have taken place in math placement policy with the 2017 cohort that may have a larger impact on the graduation rate for under-prepared populations.

Math 8 – Lowest Level

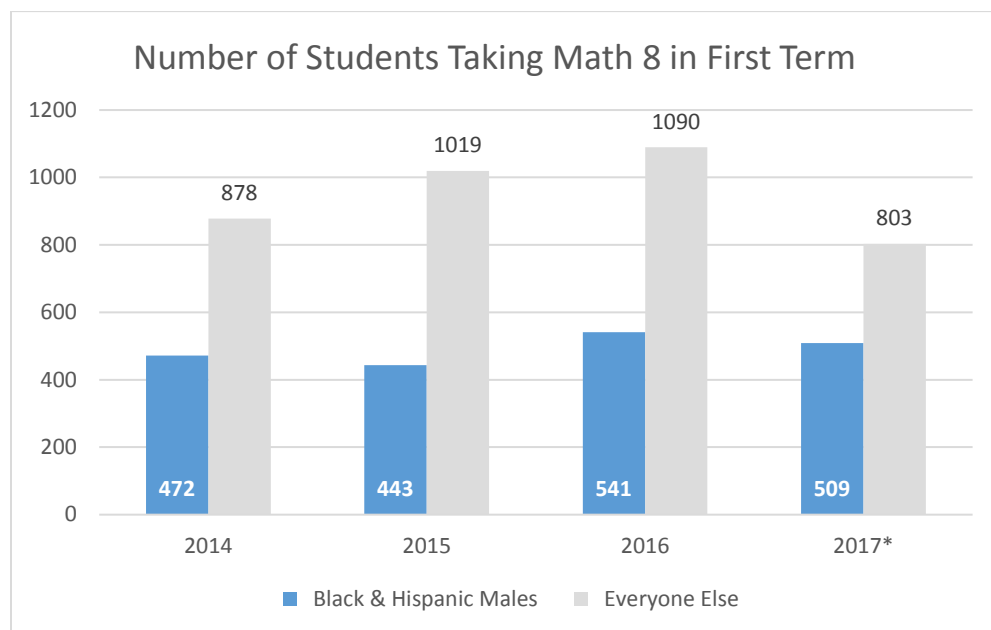


Figure 7. Distribution of Students Taking Math 8 in their first term

* Fall 2017 new students took a different placement test (Accuplacer instead of ACT Compass)

Among our new freshmen cohorts for fall 2014 and 2015, only 11.3% of those placed in Math 8 were able to graduate BMCC within three years. As overall rates have dropped dramatically from fall 2017 – due to a different test and policy – the college hopes to see an improvement in graduation rates. However, with much lower retention rates and higher probation rates for that cohort, there is some concern.

Super Stars

The overall three-year completion rates and many of the factors found to be related to three-year completion at BMCC show that Black and Hispanic males are quite often at a disadvantage compared to other students. More of them in our two cohorts had low High School College Admissions Averages and entered BMCC as new freshmen with some developmental need – most often, in math. Nevertheless, we identified 146 Black or Hispanic male students with High School College Admissions averages below 75, with developmental skills needed, who nevertheless persisted and graduated from BMCC within three years of their first term. We’re calling these students our “Super Stars” and are determined to study what worked for this group of students.

Compared to their Peers

For this analysis, all Black and Hispanic males in our combined freshmen cohort were selected if they had College Admission scores below 75 and any developmental need identified. Our Super Stars were also similar

to their peers in that they were just as likely to be “first generation” – over 70% had no parent who had attended college. Like their peers, 87% were dependents, and only 13% were living independently. More than half had family adjusted gross incomes of less than \$24,000, which was just below the average income. Well over three-fourths were awarded Pell grants. Just under 40% of them – slightly more than their peers but not significantly so – had taken the SAT exam. They were likely to live in the Bronx or Brooklyn more so than Manhattan or Queens, but the pattern again was similar to their peers. There was an even distribution of Black and Hispanic, comparable to the overall cohort.

The differences, however, are key. The Super Stars were more likely to be in a special program or make use of college services, and they completed more of their courses and performed better. They persisted. While all had some developmental need, fewer of the Super Stars group needed the lowest level of math, and a small group was already able to take Math 56, so were considered college-ready in math for most majors. Super Stars were less likely to need developmental reading than their peers who did not graduate. Finally, some significant differences in their initial majors may play a role.

Special Programs and Services

- Over one-third of Super Stars were in a Cohort success program (ASAP, BLA, CD), but less than 13% of their peers were in such a program.
- Among the Super Stars, 26% participated in summer immersion while less than 8% of their peers were in immersion.
- While most students did not visit the Learning Resource Center in their first term, 45% of the Super Stars did, and only 28% of their peers visited the Center at least once. Super Stars had an average of three lab visits compared to their peers with an average of one visit.
- Over 31% of Super Stars participated in the Freshman Year Experience compared to 23% of their peers who did not graduate.

Grades and Persistence

- Only 7.5% of the Super Stars qualified for Probation after their first fall, while over 34% of their peers did.
- Nearly 96% of the Super Stars had a GPA above 2.0 in their first term, compared to only 29% of their peers. The average first fall GPA for Superstars was 2.66, and was 1.16 for their peers.
- Over one-fourth (26.2%) of the non-graduating peers earned at least one WU grade in their first fall. This was true for only 5 students (3.4%) in the Super Stars group.
- Super Stars attempted three more credits in their first fall (9.29 versus 6.29) and one less remedial hour (average was 4.52 compared to 5.80). They earned almost five more credits than their peers in their first term.
- Over 99% (all but one) of the Super Stars returned in the spring, compared to 75% of their peers who did not graduate.
- Almost all (95%) were attending full-time, compared to 69% of their peers.

Developmental Needs and Courses

Among Super Stars, almost 12% needed reading development, compared to over one-fourth of those who didn't graduate. Similarly 16% of Super Stars and 23% of their peers were enrolled in Math 8 in their first

term. Math 56 was possible for 5.5% of the Super Stars in their first terms, but only 1.8% of their peers who didn't graduate enrolled in Math 56 in their first term.

Majors

Not surprisingly, we found almost 31% of the Super Stars in the Criminal Justice Program, but they were joined by under 18% of their peers who didn't graduate. This is the largest difference in terms of choice of major, but we still found a small but significant difference in the percentage of Super Stars in Accounting compared to their peers (6.2% compare to 3.0%). On the other hand, more of their peers who did not graduate were attracted to the Paramedic program (which attracted no Super Stars) and the Undeclared Health option which attracted only one student who graduated within three years. Altogether, 6.6% of their peers were enrolled in Allied Health, Community Health, or the Undeclared Health Programs, compared to 1.4% of the Super Stars.

Compared to other BMCC Graduates

The most critical difference between our Super Stars and the others who also graduated BMCC within three-years is the difference in the High School College Admissions Average scores. By definition, Super Stars entered with a College Admissions scores *below* 75. In comparison, 78% of other graduates had scores of 75 or *higher*, and just over half the other graduates had scores above 80. The average College Admissions scores were almost 10 points apart, with 70.16 for the Super Stars and 80.14 for the other three-year graduates.

In addition, while all of the Super Stars came in with some developmental need, this was also true for 67% of the other three-year graduates. With the changes in the testing and placement policies already in place and those planned, this number is likely to drop in future years.

Finally, though only a few students were affected, 7.5% of the Super Stars qualified for academic probation in their first term, and still persisted to graduation at BMCC within three years. Among the other graduates, only 2.5% faced probation. This difference is small but significant.

The role of the cohort programs is underscored by the fact that 34% of all the three-year BMCC graduates were in cohort programs.

On the other hand, we did not find any difference in the percentages who receive TAP or PELL grants, or the percentages who had neither parent attending college (74%), or the percentages who were part of a cohort program. The role of the cohort programs is underscored by the fact that 34% of all the BMCC three-year graduates were in cohort programs.

Math Levels

While no significant difference was found for Superstars compared to the overall 83.5% of the three-year graduates at BMCC from the fall 2017 and 2015 combined freshmen cohorts who were college-ready in English, the Super Stars were significantly less prepared in mathematics than other three-year graduates from these cohorts, and more likely to start out in lower level remedial math (most commonly MAT 12 or 14).

Table 7. Math Levels for Super Stars and Other Graduates from the same fall freshmen combined cohorts.

Math Developmental Level	Super Stars	Other Graduates
College Level	4.8%	40.1%
MAT 41 or 51	25.3%	14.3%
MAT 12 or 14	48.6%	30.0%
MAT 8	15.6%	21.2%

Given the lower starting level for mathematics, it is not surprising that fewer of the Super Stars attempted math courses at the 200-level or higher. For most, higher levels of math were also not required for their

majors, given that almost 31% started out in the Criminal Justice program compared to just 15% of the other graduates.

Table 8. Highest Level of Math Attempted by Graduates

Highest Math Course Taken	Unknown	150	150.5	All 100 Level	200 or 300 level
Super Stars	0.0%	71.9%	3.4%	90.4%	9.6%
Other 3-year BMCC Graduates	0.4%	54.5%	0.8%	71.9%	27.7%

Participation in Immersion

We found immersion participation increased the odds of three-year degree completion at BMCC and we also found that significantly more of the Super Stars took advantage of this and generally succeeded in passing their Immersion Workshops.

Table 9. Rates of participation and success in Immersion prior to first fall

	Superstars	Other Grads
Enrolled in Immersion	26.0%	14.3%
Passed Immersion	23.3%	11.5%

The information in Table 9, above, includes only the students who enrolled in immersion in the summer before their first fall. But immersion workshops were also offered for those who failed one of the developmental math courses, or who moved up a level and still needed additional developmental work. Among Super Stars, 130 students took 230 developmental-level math courses or immersion workshops – an average of two developmental math interventions per person.

The patterns vary, but this additional immersion opportunity served some of the superstars well. For example, one student enrolled in immersion for Math 8 in the summer before his first fall. Then in fall and spring he tried unsuccessfully to take Math 51, so he enrolled in the immersion workshop for Math 51 the following summer. He passed and then the next fall earned a B+ in Math 150. Another student who did not initially enroll in a summer immersion workshop was enrolled in Math 12 in his first fall. He failed that course, but apparently qualified for Math 51. Instead of attempting Math 51 in the spring, he waited until summer to take the immersion Math 51, and the following spring enrolled in MAT 150, earning a B.

When we add the College Discovery math workshops to the immersion workshops, 28% of the Super Stars enrolled in these interventions as their first math course. But there were 23 instances of students enrolled in math immersion workshops after they had taken another math course or immersion workshop. Overall, of the 230 developmental math courses or interventions taken by the Super Stars, 64 were immersion or CD math workshops offered at BMCC.

Tutoring Labs

Given the importance of attending tutoring labs in predicting graduation, we tested to see whether our Super Stars were using the tutoring labs more than other graduates. In fact, their pattern of visits is very similar to graduates overall, with about 44% using the services at least once, and about 25% making at least 4 visits to the Learning Resource Center.

Performance Measures

Finally, some small but statistically significant differences are found in their final outcomes, including overall GPA, Course Pass Rate, number of Courses Taken, and percent of courses that are online or hybrid. Again, given their starting point, these Super Stars have achieved excellent results.

Table 10. Significant differences in averages for Super Stars versus Other 3-Year BMCC Graduates

	GPA	Course Pass Rate	Courses Taken	% e-learning courses
Super Stars	2.79	91.5%	23.76	4.6%
Other 3-year BMCC Graduates	3.10	93.8%	23.04	6.7%

Next Steps

To understand better the factors that contributed to the success of our Super Stars, a follow-up study is being planned to try to contact these students for brief interviews and to develop some case studies highlighting ways in which the college could assist more of these students to be able to reach this level of success.