First-Time Freshman Student Success across Colleges

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The purpose of this report is to present results of an analysis into differences in retention, persistence, and graduation rates across colleges for first-time full-time freshmen.

Table 1 depicts the enrollment growth of first-time full-time freshmen across colleges that matriculated during Fall 2009 semester through Fall 2014. The Colleges of Management (CM) and Science & Mathematics (CSM) sustained high levels of growth over this period.

Table 1: Undergraduate enrollment growth across Colleges, Fall 2009-2014 Cohorts

College	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	09-'14 Growth
CM	74	107	159	153	146	206	178%
CNHS	105	83	109	95	92	116	10%
CLA	473	573	584	520	521	553	17%
CSM	278	305	381	389	532	537	93%
All FYR	**930**	**1068**	**1233**	**1157**	**1291**	**1412**	**52%**

During a period of high enrollment growth for some colleges, there were no indications of a drop in retention rates. Table 2 depicts the first-year retention rates for students that enrolled in the designated college in their first semester and then returned to UMass Boston for a second year, regardless of what college they were enrolled in.

Table 2: Undergraduate first-year retention across Colleges, Fall 2010-2015 Cohorts

College	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	6-Year Average
CM	78.4%	73.8%	77.4%	81.7%	82.9%	77.2%	78.6%
CNHS	76.2%	73.5%	89.0%	75.8%	77.2%	77.6%	78.2%
CLA	72.1%	75.2%	75.3%	74.0%	77.5%	78.1%	75.4%
CSM	81.2%	75.4%	82.4%	80.7%	82.0%	77.8%	79.9%

Table 3 depicts the first-year persistence rates for students that enrolled in the designated college in their first semester and then returned to the same college for a second year. While CM tended to have the least attrition (~3%), the other colleges suffered an average of 5-7% attrition of students switching majors to other colleges upon return for a second year.

Table 3: Undergraduate first-year persistence in Colleges, Fall 2010-2015 Cohorts

College	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	6-Year Average
CM	77.0%	71.0%	73.6%	79.7%	80.8%	71.8%	75.7%
CNHS	71.4%	69.9%	84.4%	68.4%	68.5%	71.6%	72.4%
CLA	67.9%	70.3%	71.1%	68.3%	70.2%	72.2%	70.0%
CSM	70.9%	69.8%	77.2%	73.5%	75.2%	71.7%	73.1%

A common cause of switching majors involves the lack of persistence in STEM majors, with persistence rates that tend to fall below other disciplines (Seymour & Hewitt, 1997). Figure 1 illustrates the enrollment growth in STEM majors compared to all first-time freshmen for cohorts since the Fall 2008 cohort. While overall enrollment growth for first-year freshmen has been 46% over that period, enrollment in STEM majors has grown 129%.

According to the Consortium of Student Retention Data Exchange (CSRDE), STEM majors consist of the following CIP codes:

- CIP 03.xxxx Environmental Sciences
- CIP 11.xxxx Computer Science and Information Technology
- CIP 14.xxxx Engineering
- CIP 15.xxxx Engineering Technology
- CIP 26.xxxx Biology and Biochemistry
- CIP 27.xxxx Mathematics
- CIP 40.xxxx Chemistry, Physics, and Undeclared Science & Math

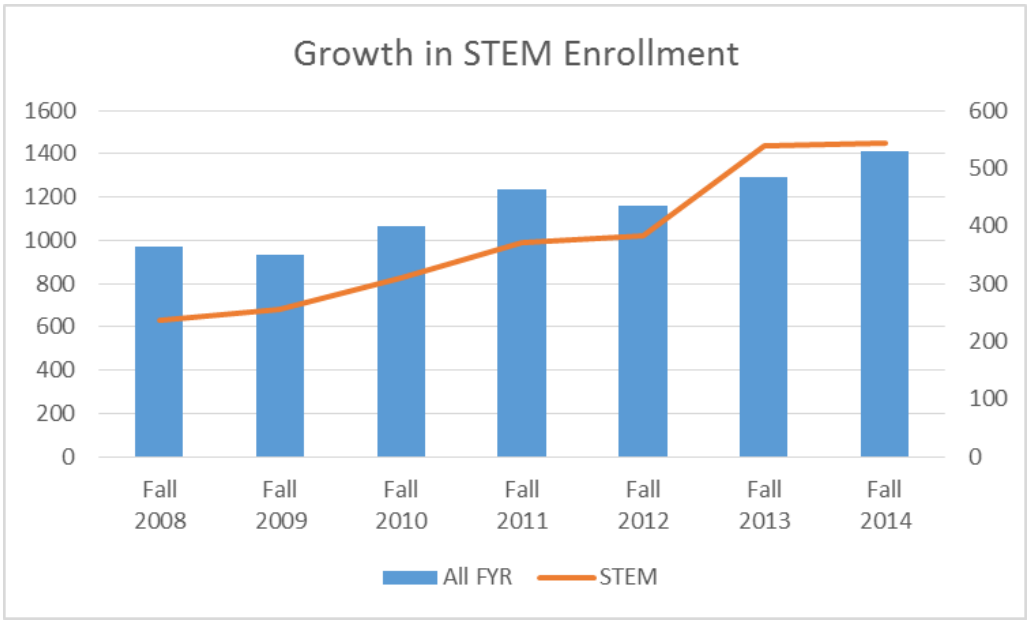

***Figure 1*. Undergraduate enrollment growth in STEM majors, Fall 2008-2014 Cohorts**

Table 4 depicts a comparison of first-year persistence rates between STEM majors and all majors. As expected, persistence in STEM disciplines was lower than the institution average for first-year freshmen. However, it is not known whether this level of switching from STEM majors may be consistent with that of other similar institutions. Therefore, STEM retention and graduation data have been submitted to CSRDE to attain a peer comparative analysis, with results anticipated over the summer 2016.

Table 4: Undergraduate first-year persistence in STEM majors, Fall 2008-2014 Cohorts

Major	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	7-Year Average
All FYR	77.3%	75.0%	75.0%	78.8%	77.5%	79.7%	77.9%	77.3%
STEM	70.0%	71.5%	70.0%	77.2%	79.9%	75.3%	71.4%	73.6%

Table 5 depicts 4-year graduation rates across the colleges. Students that started off in CLA and CSM were less likely to graduate in 4 years than students that started off in CM and CNHS.

Table 5: 4-Year Graduation Rates across Colleges, Fall 2009-2011 Cohorts

College	Fall 2009	Fall 2010	Fall 2011	3-Year Average
CM	23.0%	36.4%	34.6%	31.3%
CNHS	28.6%	33.7%	24.8%	29.0%
CLA	10.8%	14.7%	12.8%	12.8%
CSM	11.9%	15.4%	13.6%	13.6%

Table 6 depicts graduation rates for those students that persisted in the college they originally enrolled in.

Table 6: Persisted and Graduated within 4 Years from College, Fall 2009-2011 Cohorts

College	Fall 2009	Fall 2010	Fall 2011	3-Year Average
CM	23.0%	23.4%	30.2%	25.5%
CNHS	24.8%	26.5%	22.0%	24.4%
CLA	8.5%	8.6%	10.6%	9.2%
CSM	7.6%	6.9%	10.0%	8.2%

Table 7 depicts graduation rates for those students that persisted in STEM disciplines if originally enrolled in a STEM major. While some students do switch to majors in STEM disciplines after initially enrolling in a non-STEM major, the numbers tend to be low. Spot checks during this analysis indicated approximately 4% of students switch into a STEM major.

Table 7: Persisted and Graduated within 4 Years in STEM Discipline, Fall 2009-2011 Cohorts

Major	Fall 2008	Fall 2009	Fall 2010	Fall 2011	4-Year Average
All FYR	15.5%	16.5%	18.2%	16.7%	16.7%
STEM	5.9%	7.8%	7.4%	10.2%	7.8%

Table 8 depicts 5-year graduation rates across colleges. While students in CNHS, CLA, and CSM are more likely to graduate within 5 years than 4 years, slightly more CM students graduate within 4 years than 5 years.

Table 8: 5-Year Graduation Rates across Colleges, Fall 2009-2010 Cohorts

College	Fall 2009	Fall 2010
CM	50.0%	57.9%
CNHS	56.2%	55.4%
CLA	28.5%	35.6%
CSM	30.2%	36.4%
All FYR	**36.3%**	**39.2%**

Table 9 depicts 5-year graduation rates for students that persisted in the college they originally enrolled in.

Table 9: Persisted and Graduated within 5 Years from College, Fall 2009-2010 Cohorts

College	Fall 2009	Fall 2010
CM	45.9%	41.1%
CNHS	46.7%	47.0%
CLA	22.8%	22.7%
CSM	16.5%	19.0%

Table 10 depicts 5-year graduation rates for students that persisted in STEM disciplines if originally enrolled in a STEM major.

Table 10: Persisted and Graduated within 5 Years in STEM Discipline, Fall 2009-2010 Cohorts

Major	Fall 2008	Fall 2009	Fall 2010
All FYR	34.7%	36.3%	39.2%
STEM	16.0%	17.6%	19.4%

Differences among students that enroll in certain colleges may explain why some students persist in their major areas of study. Therefore, attributes of students that enrolled in respective colleges during Fall 2009 are depicted in Table 11. One difference among students involves students that start off in CLA or CSM tend to have lower HS GPA and SAT scores than those students that start off in CM or CNHS. These factors may be predictors of future graduation rates. More analysis is needed on future cohorts to understand this possible relationship.

Table 11: Student Attributes for Fall 2009 Cohort (*N* = 930) across Colleges

		CM	CNHS	CLA	CSM
Gender	**F**	33	88	285	141
	M	41	17	188	137
Gender (%)	**F**	45%	84%	60%	51%
	M	55%	16%	40%	49%
Ethnicity	**AI**	1	0	1	0
	Asian	11	14	51	68
	Blk	8	13	58	50
	Hisp	7	6	74	37
	N-Res	15	1	14	7
	W	29	68	231	89
	Unk	3	3	44	27
Ethnicity (%)	**AI**	1%	0%	0%	0%
	Asian	15%	13%	11%	24%
	Blk	11%	12%	12%	18%
	Hisp	9%	6%	16%	13%
	N-Res	20%	1%	3%	3%
	W	39%	65%	49%	32%
	Unk	4%	3%	9%	10%
HS GPA		3.27	3.35	2.98	3.13
SAT	**V**	516	519	495	470
	M	563	541	502	519
	Comb	1079	1060	996	988

Conclusion

CM and CSM have sustained high levels of enrollment growth from Fall 2009-2014 cohorts, but there has been no apparent drop in first-year retention. Moreover, while CLA and CSM lag behind CM and CNHS in graduation rates, the rate of graduation and persistence in original college until graduation has increased over this period for all colleges except for CNHS. These results suggest that freshmen learning communities may be having a positive effect on student outcomes.

References

Seymour, E., & Hewitt, N. M. (1997). *Talking about leaving: Why undergraduates leave the sciences.* Boulder, CO: Westview Press.