Degree Productivity at Maryland's Public Four-Year Institutions from 2008 to 2017

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Executive Summary

This report provides information on degree productivity at Maryland's public four-year institutions from 2008 to 2017 using the measure of "degrees per 100 students" (D100) for both bachelor's and graduate degrees. D100 provides an assessment of institutional effectiveness on degree productivity over time and can be used to compare data from other states and takes into account all students for all degree types regardless of their enrollment or entry status. The measure complements the traditional measure of "graduation rates," which was first introduced by the federal government in the late 1990s.

In 2017 Maryland saw a slight decline in D100 for undergraduate students with a rate of 25.3 (down from 26.1 in 2016). Despite being less productive in bachelor's D100, the state rate was still over 25.0 which is the ideal national benchmark for bachelor's D100 based on the definition of productivity. The state's bachelor degree productivity was also the highest amongst its ten competitor states.

At the graduate level, Maryland's statewide rate was 48.0 in 2017, tying the year with 2015 for having the highest graduate D100 rate over the past decade. Maryland ranked fourth amongst its competitor states in graduate degree productivity and over a five-year span, its rate has been generally stable even though Maryland had an increase in graduate D100 while approximately half of Maryland's competitor states saw decreases from 2016 to 2017.

Introduction

The measure of degrees per 100 students (D100) complements the traditional measure of "graduation rates," which was first introduced by the federal government in the late 1990s.[1] The measure of graduation rates is limited, however, in that only first-time, full-time students are included in the calculation. Thus, graduation rates are not useful for evaluating the progress of part-time students, transfer students, or returning students. In addition to complementing the traditional measure, the Maryland Higher Education Commission (MHEC) is reporting D100 to establish the baseline for degree productivity to assess and identify changes in institutional effectiveness over time and to provide trends of undergraduate and graduate degree productivity at the state's public four-year institutions. This report also compares Maryland to its competitor states[2], which include California[3], Massachusetts, Minnesota, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Virginia, and Washington using data from the Integrated Postsecondary Education Data System (IPEDS) of the National Center for Education Statistics.

D100 is calculated by dividing the number of total degrees awarded in a given year by the fall full-time equivalent (FTE[4]) enrollment and multiplying the ratio by 100. Factors such as institutional admission policies, enrollment of part-time and full-time students, and the time students spend in degree programs may affect the rate of D100.

Tables indicating bachelor's and graduate D100 in Maryland public four-year institutions as well as statewide rates for bachelor's and graduate D100 amongst Maryland and its competitor states over a 10-year span can be found in Tables 1 through 4 in the Appendix of this report.

What is the definition of "productivity" for higher education institutions?

Productivity is commonly defined as the effectiveness of productive effort, especially in industry, as measured in terms of the rate of output per unit of input.[5] With this definition in mind and from a mathematical lens, the ideal benchmark for bachelor's D100 is 25.0. That is, with the assumptions that all students are bachelor degree-seeking and graduate in four years, and that one-fourth of students are in each class ranking (freshmen, sophomore, junior, senior),

[1] The federal government defines graduation rate as the percentage of an institution's first-time, first-year undergraduate students who complete their program within 150% of the published time for the program. For example, for a four-year degree program, entering students who complete within six years are counted as graduates. https://fafsa.ed.gov/help/fotw91n.htm.

[2] In its final 2008 report, as quoted in the 2017 Joint Chairmen's Report (JCR) on Revised Comparable Funding Peers, the Commission to Develop the Maryland Model for Funding Higher Education reported that the State of Maryland competes with ten states more than any other states in the region or nation with regard to job creation and retention. Those states include California, Massachusetts, Minnesota, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Virginia, and Washington. The JCR can be found at: http://dlslibrary.state.md.us/publications/JCR/2017/2017_160.pdf .

[3] Figures for San Diego State University, Imperial Valley Campus, are not included in California data.

[4] Full-time equivalent enrollment is calculated as full-time fall enrollment plus one-third part-time fall enrollment.

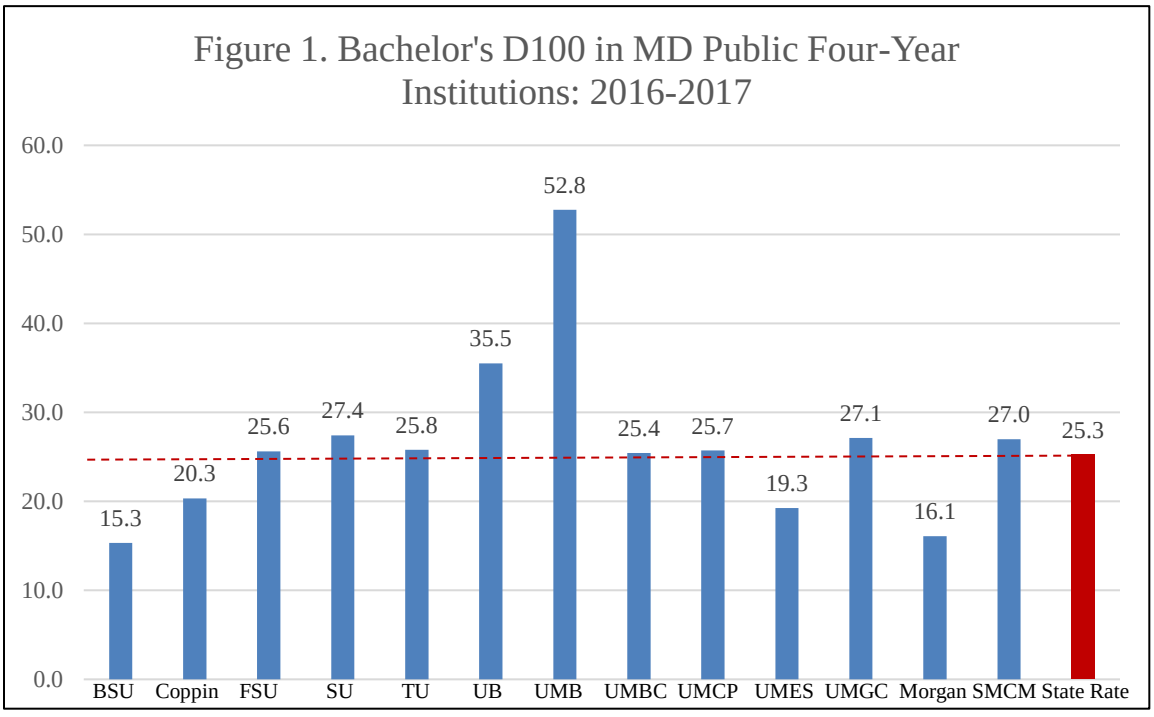
[5] Oxford University Press. Lexico.com "Definition of productivity in English" https://www.lexico.com/en/definition/productivity.

25% of the student population should graduate each year in order for an institution to have "good degree productivity."

Another way to define productivity is *effectiveness*, i.e., how well an organization (college or university) meets the demands of its customers (students). So the more students that graduate, the more productive an institution is. Graduate D100, however, has no benchmark because there are no standard program lengths even within the same degree level; that is, a master's degree may take one, two, or three years of full-time study to complete and doctoral degrees may take anywhere from three to seven years to complete.[6]

Bachelor's and Graduate Degrees per 100 Students in Maryland

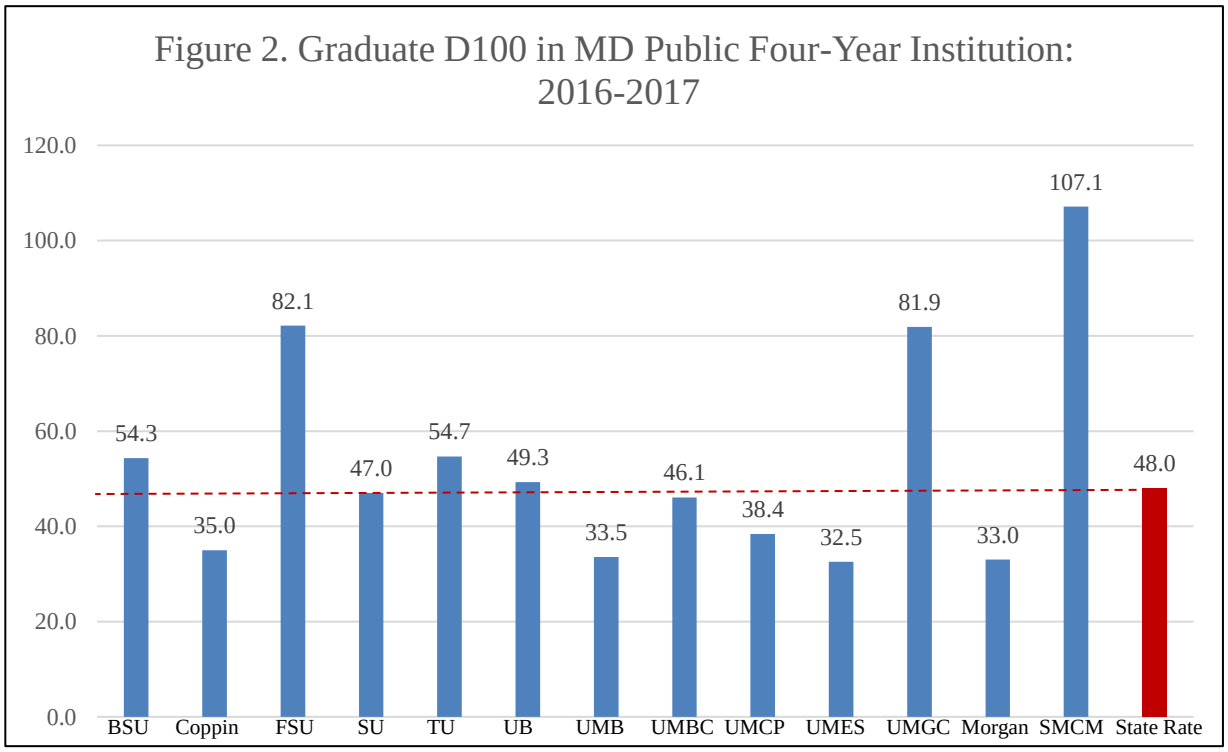
Based on the previously defined definition of productivity, Maryland was less productive in bachelor's D100 but more productive in graduate D100 in 2017 than it was during the last iteration of this report. Despite being less productive in bachelor's D100, the state as a whole was still over the 25.0 benchmark (see Figure 1 below). Even without the outlier rate from the University of Maryland, Baltimore (52.8[7]), the state would still be over the 25.0 benchmark (the rate would be 25.1). And during the past ten years, the statewide rate of bachelor's D100 increased from 22.8 in 2008 to 25.3 in 2017 (see Appendix, Table 2).



[6] For a detailed explanation of D100 interpretations and factors which may affect how an institution performs on the metric, please refer to the 2018 report "Degree Productivity at Maryland's Public Four-Year Institutions from 2007 to 2016" https://mhec.state.md.us/publications/Documents/Research/AnnualReports/2018Degreesper100.pdf .

[7] Outlier rates at UMB may be due to its large share of transfer students; transfer students usually take less than four years after transfer to complete their degrees.

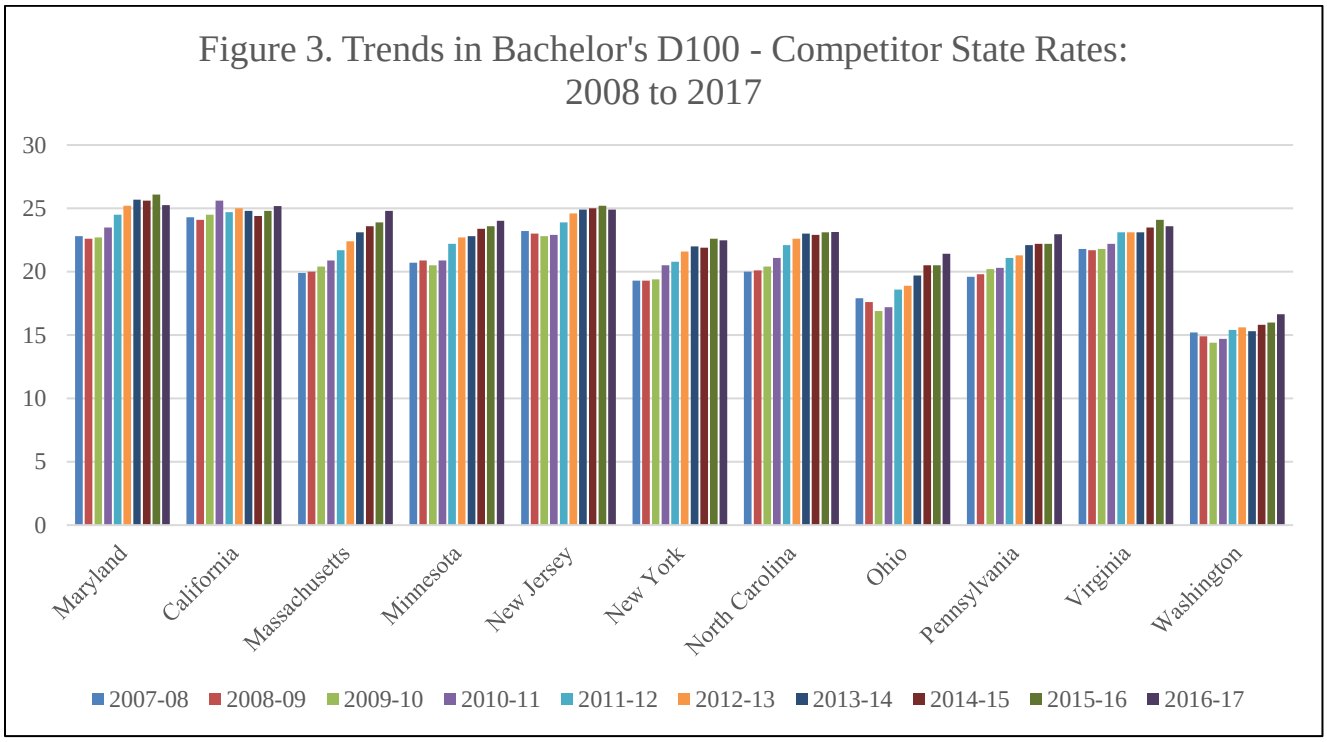
Maryland's statewide rate at the graduate level was 48.0 in 2017, tying the year with 2015 for having the highest rate over the past decade. The 48.0 rate is a slight increase from the 2016 rate of 47.8 and a jump of 7.6 over the span of a decade (see Appendix, Table 4). With the exception of two institutions, all public institutions saw increases in graduate degree productivity in 2017 compared to 2007, however, the rate is stable (see Figure 2 below). Notably, Frostburg State University, University of Baltimore, University of Maryland, Baltimore County, and University of Maryland Global Campus[8] saw a degree productivity rate increase of over 10.0 during the span of a decade. It is also important to note that institutions, such as St. Mary's College of Maryland, with a small population of graduate students, are subject to fluctuations on a year-to-year basis. Small decreases or increases in student enrollment can drastically affect the rate of D100 and cause the rate to exceed 100.



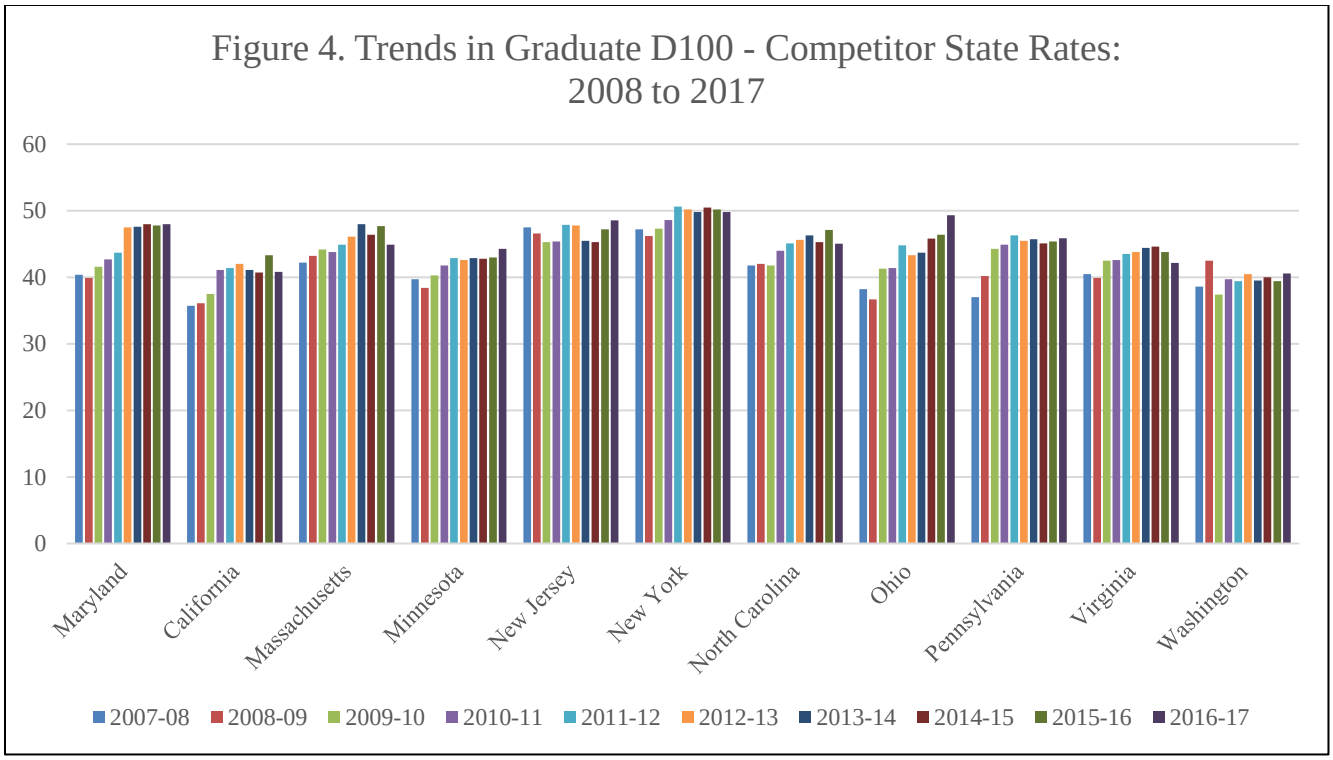
[8] As of July 1, 2019, University of Maryland University College (UMUC) changed its name to University of Maryland Global Campus (UMGC). The new name is used in this report.

Maryland in Comparison to Competitor States

A comparison of statewide rates shows that for the fifth year in a row, Maryland's bachelor's degree productivity rate was higher than those of its ten competitor states at 25.3 (See Figure 3 below). California had the second highest rate at 25.2 and five out of the ten states (California, Massachusetts, Minnesota, Ohio, and Pennsylvania) saw increases in the bachelor's D100 rate. Despite rate increases seen in other states, Maryland's rate remained the highest despite its decrease of 0.8 from 2016 to 2017.



Maryland's graduate degree productivity has generally increased annually during the past ten years with the exception of slight decreases in 2009 and 2016 (See Figure 4 on the next page) but the rates over a five-year span have been generally stable. In 2017, the state ranked fourth amongst its competitor states in graduate degree productivity with New York, Ohio, and New Jersey ranking top three in graduate degree productivity and surpassing Maryland by 1.8, 1.3, and 0.6 respectively. However, the most current rate for Maryland remained generally stable (from 47.8 in 2016 to 48.0 in 2017) even though 50% of Maryland's competitor states saw decreases from 2016 to 2017.



Conclusions and Policy Implications

The productivity measure degrees per 100 students takes into account all students for all degree types regardless of their enrollment or entry status. Because of this, D100 may be a useful measure for determining the state's progress towards the 55% completion goal.[9] The measure alone, however, is not universally telling of an institution's success or future success because the rate of D100 fluctuates and may be affected by many factors, including institutional admission policies, enrollment of part-time and full-time students, the types of graduate degrees awarded, and the time students spend in undergraduate and graduate programs. Results for institutional D100 in both bachelor's degrees and graduate degrees need to be carefully interpreted while taking unique institutional features into account.

Further study should be done to consider other critical inclusive factors for evaluating degree productivity and attainment such as race/ethnicity, gender differences, socioeconomic status, and various other distinguishing student characteristics.

Additionally, although Maryland has generally been on a positive trend in both its statewide figures and comparatively amongst its competitor states, individual institutions should make concentrated efforts to increase their rates (with particular focus on bachelor degree productivity) while taking into account the previously mentioned factors. When inclusive degree productivity measures are analyzed, institutions can make informed decisions and provide targeted interventions to increase degree productivity in the state.

[9] For further details on the progress towards the 55% completion goal, see the Maryland Higher Education Commission, December 2018, "Report on Best Practices and Annual Progress Toward the 55% Completion Goal." https://mhec.state.md.us/publications/Documents/Research/AnnualReports/2018BestPractices.pdf .

Appendix

Table 1: Bachelor's Degrees Per 100 Students in Maryland Public Four-Year Institutions, 2008-2017										
Institution Name	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Bowie State University (BSU)	16.3	16.4	16.0	17.9	18.1	19.8	19.6	20.5	22.1	15.3
Coppin State University (Coppin)	10.9	13.0	13.6	13.6	17.5	15.5	19.4	18.5	21.0	20.3
Frostburg State University (FSU)	19.1	17.4	17.2	18.5	20.2	22.5	23.7	23.6	22.1	25.6
Salisbury University (SU)	24.0	23.7	23.5	23.6	24.0	25.1	25.3	25.9	27.0	27.4
Towson University (TU)	22.0	21.6	23.1	24.6	25.5	25.3	25.0	25.7	25.4	25.8
University of Baltimore (UB)	31.8	28.2	23.8	26.8	26.3	27.1	26.2	27.3	29.2	35.5
University of Maryland, Baltimore (UMB)	54.9	54.7	58.8	58.6	58.7	55.1	55.1	51.9	57.1	52.8
University of Maryland, Baltimore County (UMBC)	22.0	20.8	21.3	20.6	22.5	22.6	22.5	23.9	25.0	25.4
University of Maryland, College Park (UMCP)	26.0	27.0	26.3	27.7	28.1	29.0	29.3	28.2	28.1	25.7
University of Maryland Eastern Shore (UMES)	13.3	12.0	12.6	13.6	17.4	14.6	18.0	17.6	17.0	19.3
University of Maryland Global Campus (UMGC)	32.6	30.2	30.8	30.6	30.3	31.4	33.2	30.4	31.8	27.1
Morgan State University (Morgan)	14.7	14.8	13.4	13.3	14.6	16.1	16.1	16.2	15.5	16.1
St. Mary's College of Maryland (SMCM)	22.4	24.9	22.6	21.5	23.5	24.5	24.4	26.1	26.1	27.0
State of Maryland	**22.8**	**22.6**	**22.7**	**23.5**	**24.5**	**25.2**	**25.7**	**25.6**	**26.1**	**25.3**

Source: National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

Notes: Degrees per 100 students is calculated by using the total number of bachelor's degrees awarded by an institution, divided by the respective institution's undergraduate FTE enrollment, and then multiplied by 100. As of July 1, 2019, University of Maryland University Campus (UMUC) changed its name to University of Maryland Global Campus (UMGC) and is referred to as UMGC throughout this report.

Table 2: Competitor State Rates of Bachelor's Degrees per 100 Students, 2008-2017										
State	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Maryland	***22.8***	***22.6***	***22.7***	***23.5***	***24.5***	***25.2***	***25.7***	***25.6***	***26.1***	***25.3***
California	24.3	24.1	24.5	25.6	24.7	25.0	24.8	24.4	24.8	25.2
Massachusetts	19.9	20.0	20.4	20.9	21.7	22.4	23.1	23.6	23.9	24.8
Minnesota	20.7	20.9	20.5	20.9	22.2	22.7	22.8	23.4	23.6	24.0
New Jersey	23.2	23.0	22.8	22.9	23.9	24.6	24.9	25.0	25.2	24.9
New York	19.3	19.3	19.4	20.5	20.8	21.6	22.0	21.9	22.6	22.5
North Carolina	20.0	20.1	20.4	21.1	22.1	22.6	23.0	22.9	23.1	23.1
Ohio	17.9	17.6	16.9	17.2	18.6	18.9	19.7	20.5	20.5	21.4
Pennsylvania	19.6	19.8	20.2	20.3	21.1	21.3	22.1	22.2	22.2	23.0
Virginia	21.8	21.7	21.8	22.2	23.1	23.1	23.1	23.5	24.1	23.6
Washington	15.2	14.9	14.4	14.7	15.4	15.6	15.3	15.8	16.0	16.6

Source: National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

Notes: Degrees per 100 students is calculated by using the total number of bachelor's degrees awarded by the state's public four-year institutions, divided by the statewide undergraduate FTE enrollment at the state's public four-year institutions, and then multiplied by 100. In its final 2008 report, as quoted in the 2017 Joint Chairmen's Report (JCR) on Revised Comparable Funding Peers, the Commission to Develop the Maryland Model for Funding Higher Education reported that the State of Maryland competes with ten states more than any other states in the region or nation with regard to job creation and retention. Those states include California, Massachusetts, Minnesota, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Virginia, and Washington. The JCR can be found at: http://dlslibrary.state.md.us/publications/JCR/2017/2017_160.pdf. Figures for San Diego State University, Imperial Valley Campus, are not included in California data.

Table 3: Graduate Degrees per 100 Students in Maryland's Public Four-Year Institutions, 2008-2017										
Institution Name	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Bowie State University (BSU)	57.4	53.9	41.5	35.8	44.8	43.1	40.5	41.3	50.5	54.3
Coppin State University (Coppin)	27.0	23.1	26.4	31.2	21.0	28.1	34.2	30.0	32.4	35.0
Frostburg State University (FSU)	66.5	60.4	61.8	59.0	45.0	53.5	58.7	63.8	51.5	82.1
Salisbury University (SU)	62.8	58.5	55.0	54.7	56.1	66.7	63.4	54.7	49.9	47.0
Towson University (TU)	52.6	49.9	46.9	48.4	51.6	56.1	55.6	59.0	55.9	54.7
University of Baltimore (UB)	35.5	35.1	41.3	38.3	40.9	42.0	40.9	42.5	45.3	49.3
University of Maryland, Baltimore (UMB)	33.3	32.1	33.0	33.5	35.9	34.3	34.4	36.5	35.8	33.5
University of Maryland, Baltimore County (UMBC)	35.3	34.7	35.3	41.1	41.5	37.7	40.3	47.9	45.6	46.1
University of Maryland, College Park (UMCP)	34.5	34.1	35.7	35.5	36.0	38.9	39.6	37.0	38.7	38.4
University of Maryland Eastern Shore (UMES)	29.6	36.7	24.7	31.9	28.5	28.7	32.7	27.3	34.4	32.5
University of Maryland Global Campus (UMGC)	56.1	56.4	62.3	65.9	66.3	82.4	83.8	85.5	85.0	81.9
Morgan State University (Morgan)	29.7	36.8	28.3	29.4	31.8	32.4	33.6	32.5	26.5	33.0
St. Mary's College of Maryland (SMCM)	104.5	93.3	90.7	94.3	86.7	91.3	77.4	91.6	88.9	107.1
State of Maryland	**40.4**	**39.9**	**41.6**	**42.7**	**43.7**	**47.5**	**47.6**	**48.0**	**47.8**	**48.0**

Source: National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

Notes: Degrees per 100 students is calculated by using the total number of graduate degrees awarded by an institution, divided by the respective institution's graduate FTE enrollment, and then multiplied by 100. As of July 1, 2019, University of Maryland University Campus (UMUC) changed its name to University of Maryland Global Campus (UMGC) and is referred to as UMGC throughout this report. The rate increase for UMGC between 2011 and 2012 is due to a decrease in enrollment for the first time within the ten year span displayed and a surge of degrees awarded between 2010 and 2012.

Table 4: Competitor State Rates of Graduate Degrees per 100 Students, 2008-2017										
State	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Maryland	***40.4***	***39.9***	***41.6***	***42.7***	***43.7***	***47.5***	***47.6***	***48.0***	***47.8***	***48.0***
California	35.7	36.1	37.5	41.1	41.4	42.0	41.1	40.7	43.3	40.8
Massachusetts	42.2	43.2	44.2	43.8	44.9	46.1	48.0	46.4	47.7	44.9
Minnesota	39.7	38.4	40.3	41.8	42.9	42.6	42.9	42.8	43.0	44.3
New Jersey	47.5	46.6	45.3	45.4	47.9	47.8	45.5	45.3	47.2	48.6
New York	47.2	46.2	47.3	48.6	50.6	50.2	49.8	50.5	50.2	49.8
North Carolina	41.8	42.0	41.8	44.0	45.1	45.6	46.3	45.3	47.1	45.0
Ohio	38.2	36.7	41.3	41.4	44.8	43.3	43.7	45.8	46.4	49.3
Pennsylvania	37.0	40.2	44.3	44.9	46.3	45.5	45.7	45.1	45.4	45.9
Virginia	40.5	39.9	42.5	42.6	43.5	43.8	44.4	44.6	43.8	42.2
Washington	38.6	42.5	37.4	39.7	39.4	40.5	39.5	40.0	39.4	40.6

Source: National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

Notes: Degrees per 100 students is calculated by using the total number of master's and advanced degrees awarded by the state's public four-year institutions, divided by the statewide graduate FTE enrollment at the state's public four-year institutions, and then multiplied by 100. In its final 2008 report, as quoted in the 2017 Joint Chairmen's Report (JCR) on Revised Comparable Funding Peers, the Commission to Develop the Maryland Model for Funding Higher Education reported that the State of Maryland competes with ten states more than any other states in the region or nation with regard to job creation and retention. Those states include California, Massachusetts, Minnesota, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Virginia, and Washington. The JCR can be found at: http://dlslibrary.state.md.us/publications/JCR/2017/2017_160.pdf. Figures for San Diego State University, Imperial Valley Campus, are not included in California data.