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Educational and Workforce Outcomes for
Associate's Degree Graduates from
Maryland's Community Colleges:
Supplement to Full Report

INTRODUCTION

Overview

There are sixteen community colleges in Maryland which collectively enrolled over 138,000 students in the Fall 2013 term.¹ Maryland's community colleges are predominantly open enrollment, providing access to a college education to high school graduates and adult learners at all levels of academic preparation. Collectively, these colleges serve a diverse population of degree-seeking and non-degree seeking students. This report supplements the *Educational and Workforce Outcomes for Associate's Degree Graduates from Maryland's Community Colleges* report by providing college-level results for select tables in the primary report.

Primary Report and Supplement Objectives

The primary and supplement reports explore the outcomes for Associate's degree graduates from Maryland's community colleges five years after degree attainment. Specifically, the reports explore the

1. Wages earned; and
2. Industry of employment.

Research Agenda Questions

All research conducted by the MLDS Center focuses on what happens to students before and after critical transitions between education and workforce pathways. All research and analysis using the MLDS is cross-sector. MLDS Center research is guided by a Research Agenda. The primary report and supplement are responsive to the following Maryland Longitudinal Data System Center research agenda questions:

- What happens to students who start at community colleges and do not go on to 4-year institutions?
- Are exiters of Maryland colleges successful in the workforce?

MLDS Data

The MLDS is the State's central repository for student and workforce data. The MLDS Center develops and maintains the System in order to provide analyses, produce relevant information, and inform choices to improve student and workforce outcomes in the State of Maryland.

The MLDS System connects data from across Maryland's education and workforce agencies. These data are subject to strict data management, security, and privacy requirements. The MLDS may only report aggregated, de-identified data.

This analysis focuses on the employment of individuals as they move from earning their Associate's degree into the workforce, including whether or not any of the graduates enrolled in college or earned another college degree subsequent to graduation. Below is an overview of the available data within the System to support this analysis:

¹Maryland Higher Education Commission. (2015). Data Book.

Education Data

The MLDS System contains education data on all students from Maryland's public schools, community colleges, 4-year public institutions and state-aided independent institutions. Education data begin with the 2007-2008 academic year and are current through the 2018-2019 academic year. The System does not contain education data on students in private high schools or private institutions of higher education. Nor does the System contain data on postsecondary students in continuing education or non-credit programs. The System contains limited information out-of-state college enrollment and graduation for Maryland public high school graduates.

Wage Data

The MLDS workforce data include quarterly Unemployment Insurance (UI) wages from 2008 through the third quarter of 2019. Unemployment Insurance (UI) filings are only available for employees who work for a business required to file UI. UI wages reflect the sum of all compensation. For some records, wages include bonuses, commissions, tips and other forms of compensation. Bonuses and other forms of compensation are periodic and may cause fluctuations in earnings. Wages reflect the period the compensation was paid, not when the compensation was earned. The wage data contained in the System cannot distinguish between part-time and full-time employment, hourly and salaried wages, regular wages and commissions, bonuses and other incentive pay. The UI data provided do not indicate the number of days a person worked in a particular quarter or the number of hours a person worked in a week.

The federal government (including the military), certain non-profits, and self-employed and independent contractors are not subject to Maryland UI filings. Individuals working in temporary employment, including federal postsecondary work-study programs, are also not subject to UI filings. MLDS data do not include information on out-of-state employment. These data gaps mean it is incorrect to assume that individuals not counted as "employed" in this report are unemployed.

Wage data in the System include North American Industry Classification System (NAICS) codes for employers. This system classifies employers by sector rather than identifies the specific jobs performed by employees.

Contextual Data: MIT Living Wage Calculator

The [Living Wage Calculator](http://livingwage.mit.edu/) developed by the Massachusetts Institute of Technology² provides data on the cost of living in various geographic areas across the United States. The living wage calculator incorporates the cost of food, housing, health insurance, transportation, taxes,

²Glasmeier, Amy K. (2018). [Living Wage Calculator](http://livingwage.mit.edu/). (<http://livingwage.mit.edu/>) Massachusetts Institute of Technology.

clothing and other personal items to derive the minimum annual income required for basic self-sufficiency. It is more comprehensive than traditional poverty measures, which do not incorporate these broader costs of living. More information on the MIT Living Wage Calculator is available on their [website](#). The measure selected for from the Living Wage Calculator was “required annual income before taxes” for one adult with no dependent children. This wage was \$31,365 annually or \$7,841³ per fiscal quarter for the State of Maryland in 2018. This income was converted to a quarterly income to align to the MLDS quarterly wage data and is referred to as the “living wage” in the remainder of this analysis. Living wages were also derived from this measure for each county in the state.

³Values reported in the Living Wage Calculator were \$31,365 annually in 2018 dollars. This was divided to a quarterly wage of \$7,841 in 2018 dollars. This value did not need to be adjusted for inflation as it is contemporary to the period under study.

Population of Interest

The population of interest was graduates of Maryland's community colleges who earned their Associate's degree between July 2012 and June 2013. Slightly more than 12,000 unique students earned their Associate's degree during this period. See **Table 1**⁴.

The Associate's degree graduates were disaggregated into educational attainment groups based upon subsequent educational experiences. Analyzing wage data by educational attainment is critical to any exploration of wage and industry of employment for the following reasons:

1. Research suggests that employment outcomes and wages may vary by level of educational attainment⁵;
2. Variation in length of degree program impacts the length of time in the workforce post-degree, which in turn impacts employment outcomes and wages; and
3. Enrollment in school negatively impacts amount of hours available for work each week.

Table 1. Associate's Degree Graduates, State of Maryland, 2012-2013, Distribution by Educational Attainment

Educational Attainment	Total	Percentage
Associate's Degree Only	4,453	35%
Associate's Degree with Some College	2,036	16%
Associate's Degree Still in College	2,126	17%
Associate's Degree with Additional Lower Division Degree	583	5%
<i>Certificate</i>	297	
<i>Associate's</i>	286	
Associate's Degree with Bachelor's or Higher Degree	3,411	27%
<i>Bachelor's Degree</i>	3,189	
<i>Graduate Degree</i>	222	
Total	12,609	

⁴Educational attainment should not be interpreted as college graduation rates as this report does not provide data on the number of students starting each degree, only the number of students who obtained each degree, are still enrolled in college or stop attending college without graduating. Reporting on time to degree and college completion is outside the scope of this report. See **Appendix 1** for the definitions used to for group assignment.

⁵For example, see:

Baum, Sandy, Jennifer Ma and Kathleen Payea. (2013). Education Pays 2013: The benefits of higher education for individuals and society. College Board.

Hout, Michael. (2012). Social and economic returns to college education in the United States. Annual Review of Sociology. 38: 379-400.

Kane, T.J. and Rouse, C. E. (1995). Labor market returns to two-year and four-year college. The American Economic Review, 85(3): 600-614

Thomas, Scott L. and Liang Zhang. (2005). Post-baccalaureate wage growth within 4 years of graduation: The effects of college quality and college major. Research in Higher Education. Volume 46. 4: 437-459.

ANALYSIS AND RESULTS

Question 1. Wages Earned Five Years after Graduation

This section outlines the approach used to analyze wage data, calculate median quarterly wages, and construct income bands for Associate's degree graduates five years after graduating from a Maryland community college.

Part 1. Median Wage Methodology

The Associate's degree graduates included in the wage analysis were selected by using the U. S. Census Bureau Stable or Full-Quarter Employment Methodology (referenced as Full-Quarter throughout this supplement)⁶. This methodology excludes individuals from analysis who do not have wage data in both the fiscal quarters before and after the period of interest. The Full-Quarter Employment Methodology was selected because it provides a standardized method of determining whose wages to include in the analysis. Restricting the analysis to full-quarter wage earners provides a clear picture of wage outcomes for workers fully engaged in the workforce and eliminates the potential to deflate median wage calculations by including the wages, or lack of wages, for workers who are absent, transient, or not fully engaged in the workforce. The primary report discusses issues related to Associate's degree graduates that may not be fully engaged in the workforce or have limited wage data available for analysis.

For this study, the period of interest was the 20th quarter, or five years after earning an Associate's degree from a Maryland community college. Accordingly, graduates were included in the wage analysis⁷ if, in addition to having wages in the 20th quarter, they also had wages in the 19th and 21st quarters. The median quarterly wage was then derived from the 20th quarter wage. The median quarterly wage was derived for the entire cohort of graduates with full-quarter wages as well as for each educational attainment group.

Wage bands were constructed to align to the contextual indicator selected for this report. The wages earned in the 20th quarter for those with full-quarter employment were used to assign each graduate to one of two wage groups. See **Table 2**.

Table 2. Quarterly Wage Bands

Income Band	20 th Fiscal Quarter Wage
Less than Living Wage	\$1 to \$7,841 (or county wage)
Greater than or equal to the Living Wage	>= \$7,842 (or county wage)

⁶The Full-Quarter or Stable Employment methodology is utilized by the U. S. Census Bureau to calculate average monthly earnings for individuals engaged in stable employment with any employer. The methodology is applied here to derive quarterly, rather than monthly median earnings. https://lehd.ces.census.gov/doc/QWI_101.pdf.

⁷ Some individuals have wages in a quarter from more than one employer. Those wages were summed and then the sum was used in the median quarterly wage calculation.

Associate's degree graduation dates occurred throughout the entire 12 month period of July 2012 to June 2013. The table below provides the alignment of degree date to the 20th quarter used for this report. This alignment means that some graduates who completed their degree in the first or second month of the fiscal quarter have an additional 4 to 8 weeks of time between degree attainment and the start of the 20th fiscal quarter to secure post-degree employment as compared to those who earn their degrees at the end of period. See **Table 3**.

Table 3. Associate's Degree Graduation Date to Fiscal Quarter Alignment

Associate's Degree Graduation Semester	20 th Fiscal Quarter	Months in Fiscal Quarter
Summer 2012 (Graduation July to September)	Q2 2017	April-May-June
Fall 2012 (Graduation October to December)	Q3 2017	July-August-September
Spring 2013 (Graduation January to March)	Q4 2017	October-November-December
Spring 2013 (Graduation April to June)	Q1 2018	January-February-March

Part 1. Results

Median Quarterly Wages, Statewide and College-Level

There were 7,228 Associate's degree graduates, or 57% of all graduates, who met the definition for full-quarter employment and were therefore included in this wage analysis. See **Table 4** for statewide analysis and **Table 6** for college-level analysis⁸. Graduates excluded from this analysis include individuals who may have had wage data for some but not all of the quarters required to meet the full-quarter employment definition, who may have had wages from a source not reported to the MLDS (contractors, military personnel and federal employees), who may have been working out-of-state, or who may have been unemployed.

Table 4. Associate's Degree Graduates, State of Maryland, 2012-2013, Graduates with Full-Quarter Wages, Median Quarterly Wage, and Variation to Living Wage, Five Years after Graduation

Educational Attainment	Total	Total with Full-Quarter Employment	% with Full Quarter Employment	Median Wage for Quarter 20	Variation to State Living Wage (\$7,841)
<i>All Associate's Degrees</i>	12,609	7,228	57%	\$10,967	↑ \$3,126

Another way to analyze wages five years after graduating with an Associate's degree is to determine the number of graduates with wages in each of the wage bands. The median quarterly wage identifies the quarterly wage for the person in the exact middle of a population; half the records in that population have a quarterly wage above this value, and half the records have a quarterly wage below this value. Identifying the number of Associate's degree graduates with quarterly wages in the two wage bands helps quantify the number of graduates that are engaged in the workforce at a level that provides for or exceeds the basic cost of living in Maryland. Overall, 70% of all Associate's degree graduates with full-quarter employment had quarterly wages at or above the living wage while 30% were below the quarterly living wage. See **Table 5** for statewide analysis and **Table 7** for college-level analysis.

Table 5. Associate's Degree Graduates, State of Maryland, 2012-2013, Graduates with Full-Quarter Wages, Median Quarterly Wage, and Variation to Living Wage, Five Years after Graduation

	Graduates with Full-Quarter Wages	Graduates Above State Living Wage (\$7,841)	% Graduates Above State Living Wage (\$7,841)
<i>All Associate's Degrees</i>	7,228	5,075	70%

⁸Wages are actual for Q2 2017, Q3 2017, Q4 2017 and Q1 2018 and not inflation adjusted to current day values. If an individual had more than one source of wages for the period those sources were summed to a personal quarterly wage and that value was used in determining the median.

Table 6. Associate's Degree Graduates, State of Maryland, 2012-2013, Graduates with Full-Quarter Wages, Median Quarterly Wages, and Variation to Living Wage by Educational Attainment and College, Five Years after Graduation ⁹

College Name	All Graduates	Graduates with Full-Quarter Wages	% Graduates with Full-Quarter Wages	Median Quarterly Wage	Variation to State Living Wage (\$7,841)	County Living Wage	Variation to County Living Wage
Allegany College of Maryland	476	206	43%	\$9,873	↑ \$2,032	\$5,676	↑ \$4,198
Anne Arundel Community College	1,378	834	61%	\$11,063	↑ \$3,222	\$6,869	↑ \$4,194
Baltimore City Community College	395	263	67%	\$11,091	↑ \$3,250	\$6,869	↑ \$4,223
Carroll Community College	598	401	67%	\$10,808	↑ \$2,967	\$6,869	↑ \$3,940
Cecil College	187	85	45%	\$11,174	↑ \$3,333	\$6,793	↑ \$4,381
Chesapeake College	288	187	65%	\$10,346	↑ \$2,505	\$6,783	↑ \$3,563
College of Southern Maryland	914	481	53%	\$11,369	↑ \$3,528	\$8,759	↑ \$2,610
Community College of Baltimore County	1,897	1,246	66%	\$11,541	↑ \$3,700	\$6,869	↑ \$4,672
Frederick Community College	810	498	61%	\$10,716	↑ \$2,875	\$8,759	↑ \$1,957
Garrett College	101	50	50%	\$6,189	↓ -\$1,653	\$5,532	↑ \$657
Hagerstown Community College	488	272	56%	\$9,858	↑ \$2,017	\$6,045	↑ \$3,813
Harford Community College	843	553	66%	\$10,831	↑ \$2,990	\$6,869	↑ \$3,963
Howard Community College	866	550	64%	\$11,511	↑ \$3,670	\$6,869	↑ \$4,642
Montgomery College	2,124	953	45%	\$11,096	↑ \$3,255	\$8,759	↑ \$2,337
Prince George's Community College	832	371	45%	\$12,580	↑ \$4,739	\$8,759	↑ \$3,821
Wor-Wic Community College	412	278	67%	\$9,145	↑ \$1,304	\$6,366	↑ \$2,779
Statewide	12,609	7,228	57%	\$10,967	↑ \$3,126	-	-

⁹ Note: College of Southern Maryland operates in three counties: Charles, Calvert, and St. Mary's. The living wage for both Charles and Calvert was \$8,759. The living wage for St. Mary's was \$6,910. Chesapeake College operates in Talbot and Dorchester counties, the living wage in Dorchester was \$6,499. Wor-Wic Community College operates in Worcester and Wicomico counties, the living wage in Worcester was \$6,400.

Table 7. Associate's Degree Graduates, State of Maryland, 2012-2013, Graduates with Full-Quarter Wages, Median Quarterly Wages, and Variation to Living Wage by Educational Attainment and College, Five Years after Graduation¹⁰

College Name	Graduates with Full-Quarter Wages	Graduates Above State Living Wage (\$7,841)	% Graduates Above State Living Wage (\$7,841)	County Living Wage	Graduates Above County Living Wage	% Graduates Above County Living Wage
Allegany College of Maryland	206	131	64%	\$5,676	167	81%
Anne Arundel Community College	834	613	74%	\$6,869	654	78%
Baltimore City Community College	263	185	70%	\$6,869	209	79%
Carroll Community College	401	280	70%	\$6,869	312	78%
Cecil College	85	64	75%	\$6,793	69	81%
Chesapeake College	187	120	64%	\$6,783	134	72%
College of Southern Maryland	481	345	72%	\$8,759	326	68%
Community College of Baltimore County	1,246	887	71%	\$6,869	963	77%
Frederick Community College	498	347	70%	\$8,759	319	64%
Garrett College	50	18	36%	\$5,532	28	56%
Hagerstown Community College	272	174	64%	\$6,045	219	81%
Harford Community College	553	393	71%	\$6,869	428	77%
Howard Community College	550	395	72%	\$6,869	421	77%
Montgomery College	953	688	72%	\$8,759	631	66%
Prince George's Community College	371	263	71%	\$8,759	245	66%
Wor-Wic Community College	278	172	62%	\$6,366	211	76%
Statewide	7,228	5,075	70%	\$7,841	5,336	74%

¹⁰ Note: College of Southern Maryland operates in three counties: Charles, Calvert, and St. Mary's. The living wage for both Charles and Calvert was \$8,759. The living wage for St. Mary's was \$6,910. Chesapeake College operates in Talbot and Dorchester counties, the living wage in Dorchester was \$6,499. Wor-Wic Community College operates in Worcester and Wicomico counties, the living wage in Worcester was \$6,400.

Median Quarterly Wages by Educational Attainment

The percentage of graduates meeting the definition for full-quarter employment varied by educational attainment. See **Table 8** for statewide results and **Tables 9 and 10** for college-level results.

Table 8. Associate's Degree Graduates, State of Maryland, 2012-2013, Graduates with Full-Quarter Wages and Median Quarterly Wages by Educational Attainment, Five Years after Graduation

Education Level	Total	Total with Full-Quarter Employment	% of Group with Full-Quarter Employment	Median Wage for Quarter 20	Variation to Living Wage (\$7,841)
All Associate's Degrees	12,609	7,228	57%	\$10,967	↑ \$3,126
Associate's Degree Only	4,453	2,195	49%	\$11,780	↑ \$3,939
Associate's Degree with Some College	2,036	1,144	56%	\$9,874	↑ \$2,033
Associate's Degree Still in College	2,126	1,404	66%	\$9,734	↑ \$1,893
Associate's Degree with Lower Division Degree	583	375	62%	\$12,711	↑ \$4,870
Associate's Degree with Bachelor's or Higher	3,411	2,110	64%	\$11,247	↑ \$3,406

Overall, the median quarterly wage for all Associate's degree graduates with full-quarter employment was \$10,967 in the 20th quarter. This quarterly wage was approximately \$3,000 above the quarterly living wage.¹¹ The difference between the median quarterly wage and the living wage varied by educational attainment. See **Tables 8, 9 and 10**. Associate's degree graduates who did not continue their postsecondary education had a median quarterly wage that was \$4,000 above the quarterly living wage. Associate's degree graduates who obtained an additional lower division degree or obtained a Bachelor's degree or higher also had higher than average median quarterly wages. Conversely, those with *Some College* and those *Still in College* had lower median quarterly wages; however the median wage was still above (\$2,000) the living wage

¹¹Glasmeier, Amy K. (2018). [Living Wage Calculator](#). Massachusetts Institute of Technology.

Table 9. Associate's Degree Graduates, State of Maryland, 2012-2013, Graduates with Full-Quarter Wages by Educational Attainment and College, Five Years after Graduation

College Name	Graduates	Graduates with Full-Quarter Wages	% Graduates with Full-Quarter Wages	Associate's Degree Only	Associate's Degree with Some College	Associate's Degree Still in College	Associate's Degree + Additional Lower Division Degree	Associate's Degree + Bachelor's or Higher Degree
Allegany College of Maryland	476	206	43%	113	19	22	21	31
Anne Arundel Community College	1,378	834	61%	219	134	174	57	250
Baltimore City Community College	395	263	67%	106	43	70	n/a	44
Carroll Community College	598	401	67%	125	53	79	23	121
Cecil College	187	85	45%	31	*	*	*	17
Chesapeake College	288	187	65%	79	28	26	11	43
College of Southern Maryland	914	481	53%	127	87	86	28	153
Community College of Baltimore County	1,897	1,246	66%	412	219	278	41	296
Frederick Community College	810	498	61%	155	91	87	23	142
Garrett College	101	50	50%	20	*	*	*	13
Hagerstown Community College	488	272	56%	85	57	33	25	72
Harford Community College	843	553	66%	158	80	112	19	184
Howard Community College	866	550	64%	136	70	122	28	194
Montgomery College	2124	953	45%	201	129	190	22	411
Prince George's Community College	832	371	45%	124	66	70	28	83
Wor-Wic Community College	412	278	67%	104	41	41	36	56

Table 10. Associate's Degree Graduates, State of Maryland, 2012-2013, Quarterly Median Wage by Educational Attainment and College, Five Years after Graduation

College Name	All Graduates with Full-Quarter Wages		Associate's Degree Only		Associate's Degree with Some College		Associate's Degree Still in College		Associate's Degree + Additional Lower Division Degree		Associate's Degree + Bachelor's or Higher Degree	
	n	Median Quarterly Wage	n	Median Quarterly Wage	n	Median Quarterly Wage	n	Median Quarterly Wage	n	Median Quarterly Wage	n	Median Quarterly Wage
Allegany College of Maryland	206	\$9,873	113	\$11,613	19	\$6,305	22	\$6,687	21	\$10,324	31	\$9,788
Anne Arundel Community College	834	\$11,063	219	\$11,434	134	\$10,834	174	\$10,147	57	\$12,349	250	\$11,375
Baltimore City Community College	263	\$11,091	106	\$11,954	43	\$9,950	70	\$9,711	n/a	\$9,328	44	\$14,141
Carroll Community College	401	\$10,808	125	\$11,242	53	\$10,162	79	\$10,408	23	\$12,711	121	\$10,636
Cecil College	85	\$11,174	31	\$11,281	*	\$9,562	*	\$10,958	*	\$10,316	17	\$12,243
Chesapeake College	187	\$10,346	79	\$12,527	28	\$6,925	26	\$5,404	11	\$11,955	43	\$10,404
College of Southern Maryland	481	\$11,369	127	\$12,115	87	\$10,391	86	\$9,474	28	\$14,730	153	\$11,551
Community College of Baltimore County	1,246	\$11,541	412	\$12,605	219	\$10,058	278	\$10,325	41	\$15,217	296	\$11,950
Frederick Community College	498	\$10,716	155	\$11,866	91	\$10,865	87	\$9,250	23	\$10,028	142	\$10,747
Garrett College	50	\$6,189	20	\$5,298	*	\$8,707	*	\$3,841	*	\$3,987	13	\$7,595
Hagerstown Community College	272	\$9,858	85	\$11,082	57	\$8,433	33	\$9,926	25	\$10,605	72	\$9,872
Harford Community College	553	\$10,831	158	\$11,458	80	\$10,914	112	\$9,140	19	\$11,932	184	\$11,368
Howard Community College	550	\$11,511	136	\$13,227	70	\$9,589	122	\$10,176	28	\$16,895	194	\$11,249
Montgomery College	953	\$11,096	201	\$11,121	129	\$9,296	190	\$10,813	22	\$12,929	411	\$11,691
Prince George's Community College	371	\$12,580	124	\$14,611	66	\$11,374	70	\$10,706	28	\$17,251	83	\$10,980
Wor-Wic Community College	278	\$9,145	104	\$10,776	41	\$8,752	41	\$7,237	36	\$12,106	56	\$10,001

Question 2. Industry of Employment Five Years after Graduating with an Associate's Degree

This section outlines the approach used to analyze the industry of employment and corresponding wages for Associate's degree graduates five years after graduation.

Methodology

The industry of employment was determined by evaluating the North American Industry Classification System (NAICS) code reported with each wage record. NAICS codes were grouped according to standard reporting categories.¹² The U. S. Census Bureau Stable Employment Methodology¹³ was used as a basis for selecting Associate's degree graduates to include in the analysis with the added requirement that they must have been employed by the same employer for the nine month period before deriving median wage calculations for the 20th quarter¹⁴ (referenced as Same-Employer throughout this report).

¹²The 20 NAICS codes were grouped based upon industry sector as aligned to Bureau of Labor Statistics and U.S. Statistical Agencies Office of Management and Budget (Federal), Economic Classification Policy Committee.

¹³The Full-Quarter Employment (Stable) methodology is utilized by the U. S. Census Bureau to calculate average monthly earnings for individuals engaged in stable employment with the same employer. The methodology applied here derives quarterly, rather than monthly, median earnings.

https://lehd.ces.census.gov/doc/QWI_101.pdf.

¹⁴For the NAICS quarterly median wage calculation, some individuals had wages in the quarter from more than one employer and more than one NAICS. Only wages from the employer that covered all three quarters were used in median wage calculations. 490 graduates had the same employer however, the employer changed NAICS over the course of 19th, 20th and 21st quarters. The NAICS of the 20th quarter were selected for these graduates. Additionally, 84 graduates had employment in the same NAICS for all three quarters, but, with different employers. These graduates were omitted from the analysis.

¹⁴The 20 NAICS codes were grouped based upon industry sector as aligned to Bureau of Labor Statistics and U.S. Statistical Agencies Office of Management and Budget (Federal), Economic Classification Policy Committee.

¹⁴The Full-Quarter Employment (Stable) methodology is utilized by the U. S. Census Bureau to calculate average monthly earnings for individuals engaged in stable employment with the same employer. The methodology applied here derives quarterly, rather than monthly, median earnings.

https://lehd.ces.census.gov/doc/QWI_101.pdf.

Results

The Full-Quarter Employment with Same-Employer Methodology (Same-Employer) yielded 6,738 Associate's degree graduates for analysis. This is 53% of all graduates, and 93% of all graduates with full-quarter employment. See **Table 11**. This means that 93% of all Associate's degree graduates with full-quarter employment had wages from the same employer for all three fiscal quarters; only 7% of graduates with full-quarter employment changed employers at least once during this period.

Table 11. Associate's Degree Graduates, State of Maryland, 2012-2013, Full-Quarter and Same-Employer, Five Years after Graduation

College Name	Graduates	Graduates with Full-Quarter Wages	% Graduates with Full-Quarter Wages	Graduates with Full-Quarter Same-Employer Employment	% of Graduates with Full-Quarter Same-Employer Employment	% of Full-Quarter Graduates with Same-Employer Employment
Allegany College of Maryland	476	206	43%	198	42%	96%
Anne Arundel Community College	1378	834	61%	777	56%	93%
Baltimore City Community College	395	263	67%	244	62%	93%
Carroll Community College	598	401	67%	371	62%	93%
Cecil College	187	85	45%	79	42%	93%
Chesapeake College	288	187	65%	179	62%	96%
College of Southern Maryland	914	481	53%	455	50%	95%
Community College of Baltimore County	1897	1,246	66%	1152	61%	92%
Frederick Community College	810	498	61%	455	56%	91%
Garrett College	101	50	50%	45	45%	90%
Hagerstown Community College	488	272	56%	257	53%	94%
Harford Community College	843	553	66%	510	60%	92%
Howard Community College	866	550	64%	514	59%	93%
Montgomery College	2124	953	45%	900	42%	94%
Prince George's Community College	832	371	45%	339	41%	91%
Wor-Wic Community College	412	278	67%	263	64%	95%
Statewide	12,609	7,228	57%	6,738	53%	93%

Overall, 71% of *Same-Employer* Associate's degree graduates had a median quarterly wage that was above the living wage. See **Table 12**.

Table 12. Associate's Degree Graduates, State of Maryland, 2012-2013, Industry of Employment and Median Quarterly Wages Compared to Living Wage, Five Years after Graduation

College Name	All Same-Employer Employment					
	Full-Quarter, Same-Employer	Median Quarterly Wage	# Above State Living Wage	% Above State Living Wage (\$7,841)	# Above County Living Wage	% Above County Living Wage
Allegany College of Maryland	198	\$9,845	126	64%	160	81%
Anne Arundel Community College	777	\$11,320	582	75%	620	80%
Baltimore City Community College	244	\$11,216	176	72%	199	82%
Carroll Community College	371	\$10,950	261	70%	291	78%
Cecil College	79	\$11,174	60	76%	65	82%
Chesapeake College	179	\$10,402	117	65%	130	73%
College of Southern Maryland	455	\$11,619	334	73%	316	69%
Community College of Baltimore County	1,152	\$11,714	837	73%	910	79%
Frederick Community College	455	\$10,778	321	71%	294	65%
Garrett College	45	\$6,290	16	36%	26	58%
Hagerstown Community College	257	\$9,926	168	65%	210	82%
Harford Community College	510	\$11,092	368	72%	400	78%
Howard Community College	514	\$11,613	372	72%	397	77%
Montgomery College	900	\$11,224	663	74%	610	68%
Prince George's Community College	339	\$13,228	248	73%	231	68%
Wor-Wic Community College	263	\$9,797	168	64%	205	78%
Statewide	6,738	\$11,154	4,817	71%	5,064	75%

The median quarterly wage for graduates with *Same-Employer* varied by sector of employment. See **Tables 13 to 16** for comparison of each NAICS median quarterly wage to overall *Same-Employer* median quarterly wage.

Table 13. Associate's Degree Graduates, State of Maryland, 2012-2013, Industry of Employment and Median Quarterly Wages by College, Five Years after Graduation

College Name	All Same-Employer Employment		Goods Production		Trade, Transportation, & Utilities	
	Full-Quarter, Same-Employer	Median Quarterly Wage	Full-Quarter, Same-Employer	Median Quarterly Wage	Full-Quarter, Same-Employer	Median Quarterly Wage
Allegany College of Maryland	198	\$9,845	*	\$9,033	21	\$5,822
Anne Arundel Community College	777	\$11,320	48	\$11,535	104	\$9,068
Baltimore City Community College	244	\$11,216	*	\$4,941	25	\$7,544
Carroll Community College	371	\$10,950	27	\$11,660	32	\$7,410
Cecil College	79	\$11,174	*	\$12,732	11	\$8,400
Chesapeake College	179	\$10,402	*	\$10,807	20	\$7,986
College of Southern Maryland	455	\$11,619	26	\$12,977	69	\$9,216
Community College of Baltimore County	1,152	\$11,714	74	\$13,243	161	\$7,730
Frederick Community College	455	\$10,778	40	\$9,773	57	\$8,769
Garrett College	45	\$6,290	*	\$11,997	12	\$5,324
Hagerstown Community College	257	\$9,926	14	\$11,915	34	\$8,629
Harford Community College	510	\$11,092	39	\$12,488	76	\$7,470
Howard Community College	514	\$11,613	24	\$12,672	62	\$7,569
Montgomery College	900	\$11,224	39	\$13,768	101	\$9,127
Prince George's Community College	339	\$13,228	*	\$10,859	35	\$6,783
Wor-Wic Community College	263	\$9,797	*	\$12,385	28	\$6,106
Statewide	6,738	\$11,154	380	\$12,004	848	\$8,203

Table 14. Associate's Degree Graduates, State of Maryland, 2012-2013, Industry of Employment and Median Quarterly Wages by College, Five Years after Graduation

College Name	All Same-Employer Employment		Information		Financial Activities		Professional & Business Services	
	Full-Quarter, Same-Employer	Median Quarterly Wage	Full-Quarter, Same-Employer	Median Quarterly Wage	Full-Quarter, Same-Employer	Median Quarterly Wage	Full-Quarter, Same-Employer	Median Quarterly Wage
Allegany College of Maryland	198	\$9,845	*	\$10,031	*	\$6,164	20	\$9,607
Anne Arundel Community College	777	\$11,320	17	\$9,077	38	\$11,232	162	\$13,184
Baltimore City Community College	244	\$11,216	*	\$10,722	12	\$12,999	16	\$9,784
Carroll Community College	371	\$10,950	*	\$5,470	25	\$11,711	60	\$11,664
Cecil College	79	\$11,174	*	\$12,162	*	\$8,189	*	\$13,798
Chesapeake College	179	\$10,402	*	\$14,987	10	\$9,793	11	\$13,462
College of Southern Maryland	455	\$11,619	*	\$9,887	*	\$12,232	88	\$13,083
Community College of Baltimore County	1,152	\$11,714	20	\$13,689	78	\$13,033	132	\$11,102
Frederick Community College	455	\$10,778	*	\$12,359	35	\$12,117	65	\$9,960
Garrett College	45	\$6,290	*	\$7,293	*	\$6,189	*	\$7,130
Hagerstown Community College	257	\$9,926	*	\$9,036	23	\$10,375	33	\$8,222
Harford Community College	510	\$11,092	*	\$12,158	37	\$12,453	84	\$11,912
Howard Community College	514	\$11,613	11	\$12,153	34	\$12,243	95	\$12,188
Montgomery College	900	\$11,224	15	\$12,687	63	\$11,673	208	\$11,961
Prince George's Community College	339	\$13,228	*	\$11,285	*	\$14,298	59	\$13,285
Wor-Wic Community College	263	\$9,797	*	\$13,028	15	\$10,105	26	\$10,610
Statewide	6,738	\$11,154	104	\$11,801	404	\$11,876	1,072	\$11,891

Table 15. Associate's Degree Graduates, State of Maryland, 2012-2013, Industry of Employment and Median Quarterly Wages by College, Five Years after Graduation

College Name	All Same-Employer Employment		Education & Health Services		Leisure and Hospitality	
	Full-Quarter, Same-Employer	Median Quarterly Wage	Full-Quarter, Same-Employer	Median Quarterly Wage	Full-Quarter, Same-Employer	Median Quarterly Wage
Allegany College of Maryland	198	\$9,845	120	\$11,883	*	\$6,299
Anne Arundel Community College	777	\$11,320	297	\$12,088	46	\$5,800
Baltimore City Community College	244	\$11,216	155	\$11,941	*	\$5,975
Carroll Community College	371	\$10,950	152	\$12,035	30	\$7,045
Cecil College	79	\$11,174	31	\$11,599	*	\$8,344
Chesapeake College	179	\$10,402	91	\$11,955	13	\$5,912
College of Southern Maryland	455	\$11,619	164	\$11,279	20	\$6,446
Community College of Baltimore County	1,152	\$11,714	531	\$12,774	51	\$6,182
Frederick Community College	455	\$10,778	165	\$11,645	30	\$7,457
Garrett College	45	\$6,290	13	\$7,307	*	\$3,127
Hagerstown Community College	257	\$9,926	115	\$11,330	*	\$5,970
Harford Community College	510	\$11,092	210	\$11,773	28	\$7,100
Howard Community College	514	\$11,613	225	\$12,774	30	\$5,877
Montgomery College	900	\$11,224	343	\$11,287	56	\$6,051
Prince George's Community College	339	\$13,228	194	\$15,468	16	\$4,805
Wor-Wic Community College	263	\$9,797	122	\$12,413	29	\$6,656
Statewide	6,738	\$11,154	2,928	\$12,131	380	\$6,351

Table 16. Associate's Degree Graduates, State of Maryland, 2012-2013, Industry of Employment and Median Quarterly Wages by College, Five Years after Graduation

College Name	All Same-Employer Employment		Other Services		Public Administration	
	Full-Quarter, Same-Employer	Median Quarterly Wage	Full-Quarter, Same-Employer	Median Quarterly Wage	Full-Quarter, Same-Employer	Median Quarterly Wage
Allegany College of Maryland	198	\$9,845	*	\$8,595	*	\$10,203
Anne Arundel Community College	777	\$11,320	18	\$8,163	47	\$11,182
Baltimore City Community College	244	\$11,216	*	\$15,249	23	\$10,851
Carroll Community College	371	\$10,950	*	\$7,511	26	\$13,083
Cecil College	79	\$11,174	*	\$8,181	*	\$10,282
Chesapeake College	179	\$10,402	*	\$4,995	16	\$9,658
College of Southern Maryland	455	\$11,619	21	\$7,466	43	\$10,919
Community College of Baltimore County	1,152	\$11,714	39	\$9,643	66	\$11,951
Frederick Community College	455	\$10,778	*	\$11,219	47	\$16,478
Garrett College	45	\$6,290	*	\$5,693	*	\$8,115
Hagerstown Community College	257	\$9,926	*	\$9,785	17	\$9,533
Harford Community College	510	\$11,092	*	\$6,096	26	\$12,545
Howard Community College	514	\$11,613	17	\$7,623	16	\$9,741
Montgomery College	900	\$11,224	29	\$9,462	46	\$12,954
Prince George's Community College	339	\$13,228	*	\$7,050	16	\$11,235
Wor-Wic Community College	263	\$9,797	*	\$4,499	23	\$10,880
Statewide	6,738	\$11,154	189	\$8,434	433	\$11,780

APPENDICES

Appendix 1. Educational Attainment Methodology

Educational attainment has the following important implications for workforce outcomes. First, research suggests that employment outcomes and wages may vary by level of educational attainment¹⁵. Second, Associate's degree graduates who pursued an additional college degree may be employed in part-time entry-level minimum-wage positions so they can prioritize college; comparatively Associate's degree graduates that did not pursue an additional college degree may have been available to enter the workforce in full-time career-track employment. Finally, the time to degree widely varies based upon the type the postsecondary degree. Certificate's, Associate's, and Bachelor's degree programs are designed to require one, two, or four years of full-time study respectively. The length of each program impacts the amount of time graduates may have been in the workforce after earning their Associate's degree. For example, Associate's degree graduates who earn a second Associate's degree may enter the workforce two years earlier than those that complete a Bachelor's degree. The time required to complete the additional degree is subject to transfer credit policies and the graduation requirements of the subsequent degree. If the student changes majors rather than continues in a major related to the first degree, the credit loss from transfer or major change may extend the time to degree.

Accordingly, separating the population of interest into groups by educational attainment helps identify wages differences that may occur when using a common point in time (five years after earning an Associate's degree) as a measure for a population who has had different amounts of time in the workforce. These distinctions in educational attainment should not be interpreted as college graduation rates as this report does not provide the starting number of students entering each educational attainment category, only the number of students who obtained each degree, are still enrolled in college, or stopped attending college without graduating. Reporting on time to degree and college completion rates is outside the scope of this report.

¹⁵For example, see:

Baum, Sandy, Jennifer Ma and Kathleen Payea. (2013). Education Pays 2013: The benefits of higher education for individuals and society. College Board.

Hout, Michael. (2012). Social and economic returns to college education in the United States. *Annual Review of Sociology*. 38: 379-400.

Kane, T.J. and Rouse, C. E. (1995). Labor market returns to two-year and four-year college. *The American Economic Review*, 85(3): 600-614

Thomas, Scott L. and Liang Zhang. (2005). Post-baccalaureate wage growth within 4 years of graduation: The effects of college quality and college major. *Research in Higher Education*. Volume 46. 4: 437-459.

For this report, the following five educational groups were created for wage analysis. See **Figure 1** and **Table 1** in the report for distributions. Education attainment definitions:

1. **Associate's Degree Only:** Associate's degree graduates with no additional postsecondary degree or college enrollment record by the end of spring term 2017. Note, a small number of graduates earned two Associate's degree concurrently or an Associate's and a Certificate concurrently rather than a single Associate's degree.
2. **Associate's Degree with Some College:** Associate's degree graduates enrolled for at least one term between fall 2012 and fall 2016 but who did not earn a postsecondary degree and are not actively enrolled in college in the spring 2017 or fall 2017 terms.
3. **Associate's Degree Still in College:** Associate's degree graduates enrolled in college in the spring 2017 and/or fall 2017 terms. These graduates may have earned another postsecondary degree by the end of the fall 2016 term; however, they are still actively pursuing additional postsecondary education in the spring 2017 and/or fall 2017 terms.
4. **Associate's Degree with Additional Lower Division Degree:** Associate's degree graduates who earned another Associate's degree or a Certificate degree by the end of the fall term 2016 and are not enrolled in college in the spring 2017 or fall 2017 terms. Additionally, the category includes any Associate's degree graduates that obtained an Associate's degree or Certificate PRIOR to earning the Associates degree included in this study.
5. **Associate's Degree with Bachelor's or Higher Degree:** Associate's degree graduates who earn a Bachelor's degree, Master's degree, or other degree above the baccalaureate level by the end of the fall term 2016 and are not enrolled in college in the spring 2017 or fall 2017 terms.

Note, some Associate's degree graduates received more than one degree during the five year period. Each graduate is counted only once, based upon highest degree attained or their enrollment status at the five year evaluation period. For example, if an Associate's degree graduate completed an additional Associate's degree and then a Bachelor's degree, the graduate is counted in the Bachelor's category. Other Associate's degree graduates that completed another Associate's degree but were still progressing toward an additional degree were counted in the Still in College category rather than in the Associate's Degree with Additional Lower Division Degree category. Due to data limitations, it is possible that some Associate's degree graduates earned a postsecondary credential prior to data contained within the MLDS Center System or completed a postsecondary degree out-of-state pre or post the Associate's degree.

The matrix below provides the alignment of Associate's degree graduation date to the academic period used to evaluate subsequent postsecondary activity and the final academic period consider for evaluating if a graduate had earned an additional degree or was still enrolled in college. Any Associate's degree graduate that did not earn a postsecondary degree in the last academic period of evaluation that was not enrolled in the academic period of the 20th fiscal quarter was considered no longer progressing and classified as Some College.

The decision to use these cut-offs for placement into an educational attainment category was made to allow students in each category time to transition from college to workforce and thus provide a more accurate picture of wages and industry of employment after college.

Table A. Associate's Degree Graduation Dates Aligned to Evaluation Periods

Associate's Degree Graduation Dates	Last Academic Period Evaluated for College Degree Attainment	Academic Period at 20th Fiscal Quarter	20th Fiscal Quarter
July, August or September 2012	Fall 2016	Spring 2017	Q2 2017
October, November or December 2012	Spring 2017	Fall 2017	Q3 2017
January, February or March 2013	Spring 2017	Fall 2017	Q4 2017
April, May or June 2013	Fall 2017	Spring 2018	Q1 2018