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Career Preparation Expansion Act  
Report

***Annual Report to the Governor and General  
Assembly on the Workforce Outcomes of  
Maryland Public High School Graduates***

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## REPORT REQUIREMENTS

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This Report is submitted in fulfillment of the requirement in *The Career Preparation Expansion Act* (CPEA), Chapter 695 of 2017 (see Education Article § 21-205, Annotated Code of Maryland). The Maryland Longitudinal Data System (MLDS) Center and the Governor’s Workforce Development Board (GWDB) are required to produce a report on high school graduates for the five-year period after graduation on:

1. Wages earned;
2. Hours worked per week; and
3. The industry of employment.

See the **Technical Appendix** (Appendix 4) for information on the MLDS Center, the GWDB, and the data and methods used for this report.

## REPORT POPULATION

The population of interest for this report was high school students who graduated from a Maryland public high school with a diploma between January and October of 2015 and are between the ages of 16 and 24 at the time of graduation<sup>1</sup>. This is the latest year that high school graduates had five years of available wage data post-high school graduation.

Almost 60,000 students graduated from Maryland public high schools in 2015 under the high school graduate definition used for this report. See **Table A**. The graduating class was half female, half white, and predominantly non-economically disadvantaged (Non-FARMS).<sup>2</sup>

**Table A. Maryland Public High School Graduates, 2015, Distribution by Demographic and Economic Characteristics**

2015 High School Graduates			
<i>All High School Graduates</i>		<i>57,509</i>	
		n	%
Gender	Female	28,993	50%
	Male	28,516	50%
Ethnicity	Hispanic, Any Race	6,060	11%
Race	African-American/ Black Alone	20,112	35%
	Asian Alone	3,858	7%
	White Alone	28,105	49%
Economic Status <sup>2</sup>	FARMS	19,033	33%
	Non-FARMS	38,476	67%

Note: Race is reported independent of ethnicity therefore values do not equal the total. Some races are omitted to protect small populations.

High school graduates were disaggregated into educational attainment groups.<sup>3</sup> See **Table B**. Three-quarters of high school graduates pursued postsecondary education after high school. Definitions used to determine assignment to each group can be found in the **Technical Appendix** at the end of this report.

**Table B. Maryland Public High School Graduates, 2015, Distribution by Educational Attainment, Five Years after Graduation**

Educational Attainment Level	2015 High School Graduates	
<i>All High School Graduates</i>	<i>57,509</i>	
	n	%
No College	13,768	24%
Some College	19,686	34%
Still in College	11,228	20%
Lower Division Degree	1,746	3%
Certificate	209	<1%
Associate's	1,537	3%
Bachelor's Degree or Higher	11,081	19%
Bachelor's	11,019	19%
Other Degree	62	<1%

## EXECUTIVE SUMMARY

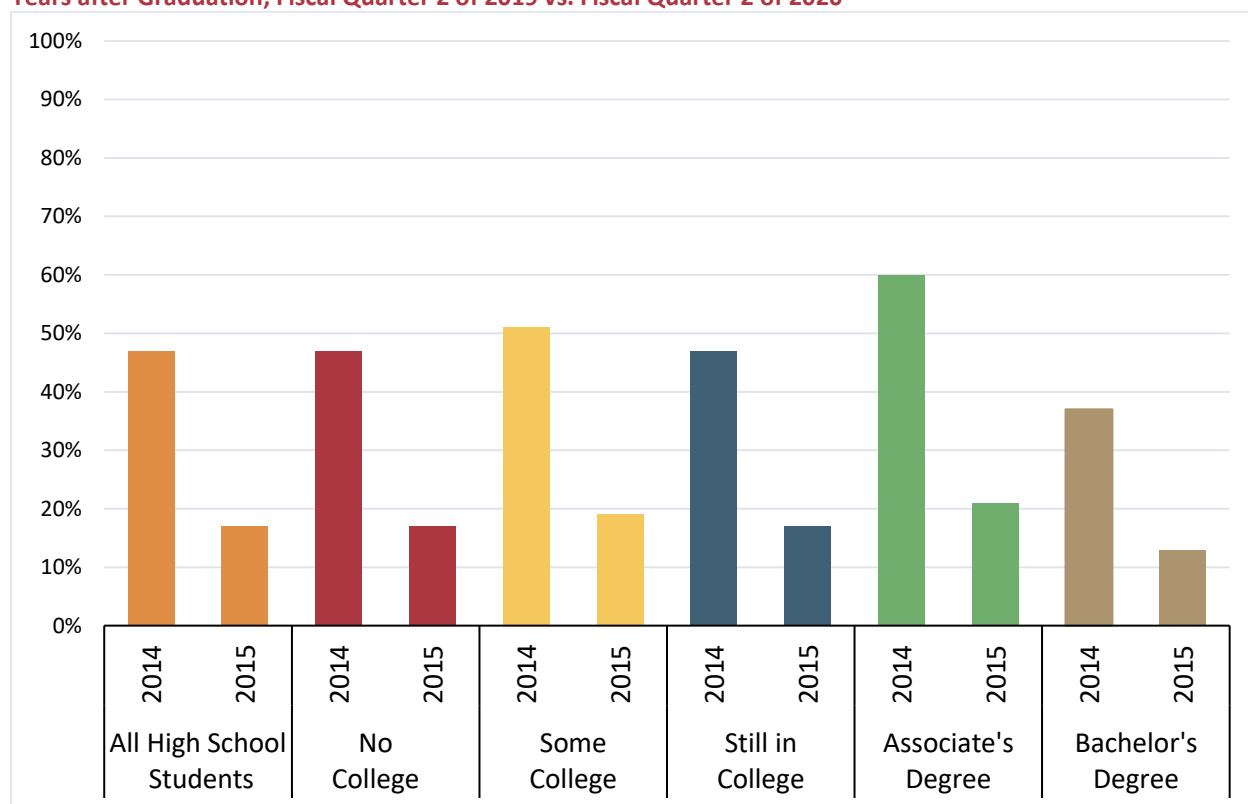
The requirements in the Career Preparation Expansion Act for this report are straightforward: analyze the wages earned, the hours worked per week, and the industry of employment for Maryland high school graduates five years after they graduate. The purpose of the report is also straightforward: it seeks to quantify how high school graduates are doing during the early stages of their careers.

This year's report focuses on the 2015 cohort of high school graduates. For this cohort, five years after high school graduation is fiscal quarter 2 of 2020 which includes the months of April, May, and June. The COVID-19 economic shutdown in Maryland began in mid-March

2020, two weeks before the end of fiscal quarter 1 (January, February and March).

The impact of the economic shutdown on wage visibility for this cohort is drastic. See **Chart A**. Wage visibility was reduced by almost thirty percentage points compared to the 2014 population of high school graduates studied in last year's report. And, this reduction was nearly uniform across all educational attainment groups. It appears, at least in the short-term, that COVID-19 impacted all high school graduates equally. Whether or not wage visibility differentially rebounds or remains uniformly reduced as the Maryland economy reopens is yet to be determined.

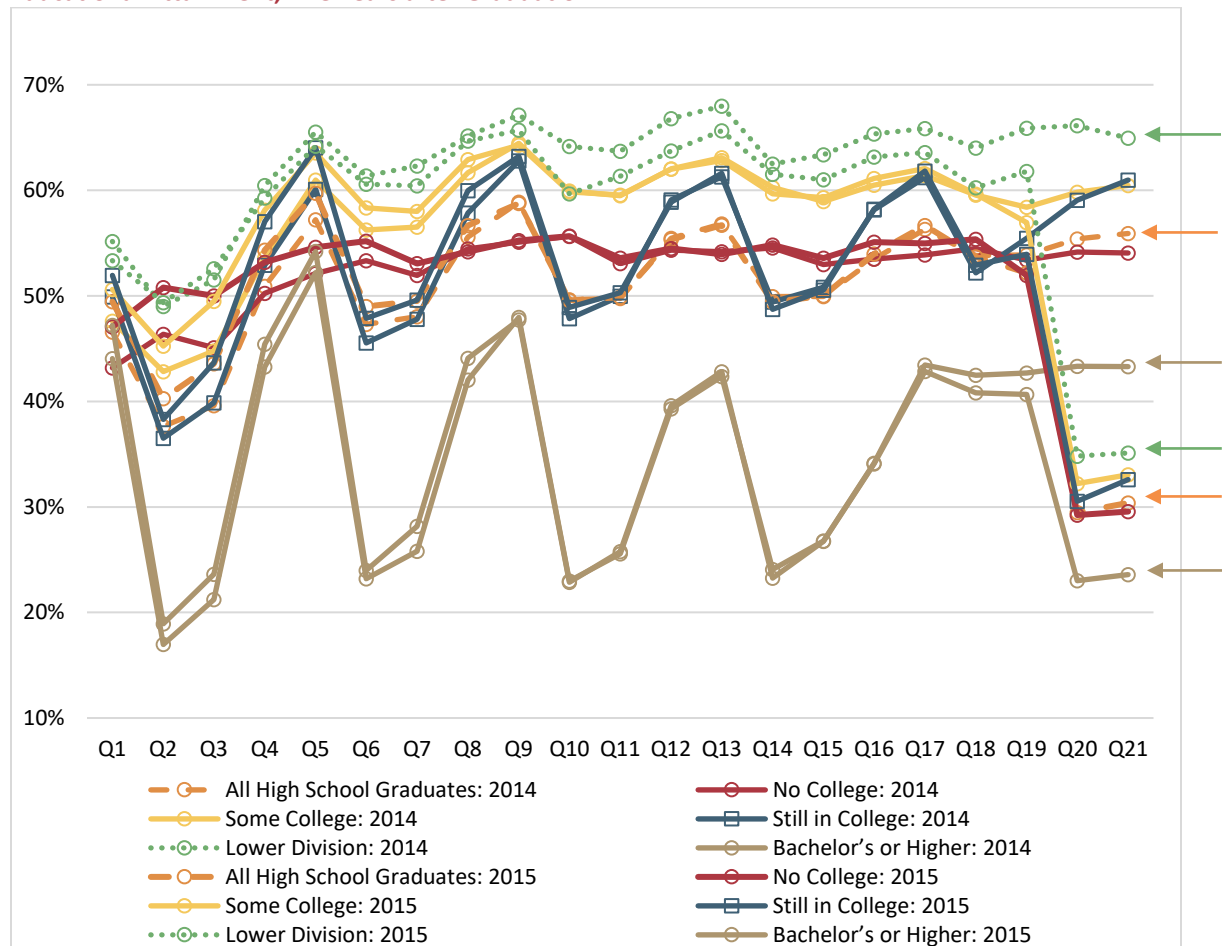
**Chart A. Maryland Public High School Graduates, 2014 and 2015, Wage Visibility by Educational Attainment, Five Years after Graduation, Fiscal Quarter 2 of 2019 vs. Fiscal Quarter 2 of 2020**



The impact of the economic shutdown can be visualized by overlaying the fiscal quarter by fiscal quarter wage visibility for the 2014 cohort with the wage visibility for the 2015 cohort. See **Chart B**. Prior to fiscal quarter 2 of 2020, the first full fiscal quarter of economic shutdown in Maryland, the wage visibility for the 2015 cohort tracked identically to the 2014 cohort, until the 20<sup>th</sup> quarter. Wage visibility drops for the 2015 cohort in this 20<sup>th</sup> quarter and remains

at the Q20 level even in the next fiscal quarter (Q21 or Q3 of 2020). For example, the orange, green, and brown arrows point to the sudden drop in wage visibility in Q20 when comparing the 2014 cohort to the 2015 cohort for *All High School Graduates*, *Lower Division Degrees* and *Bachelor's or Higher*. These three educational attainment groups experienced visibility drops ranging between twenty-five and thirty percentage points.

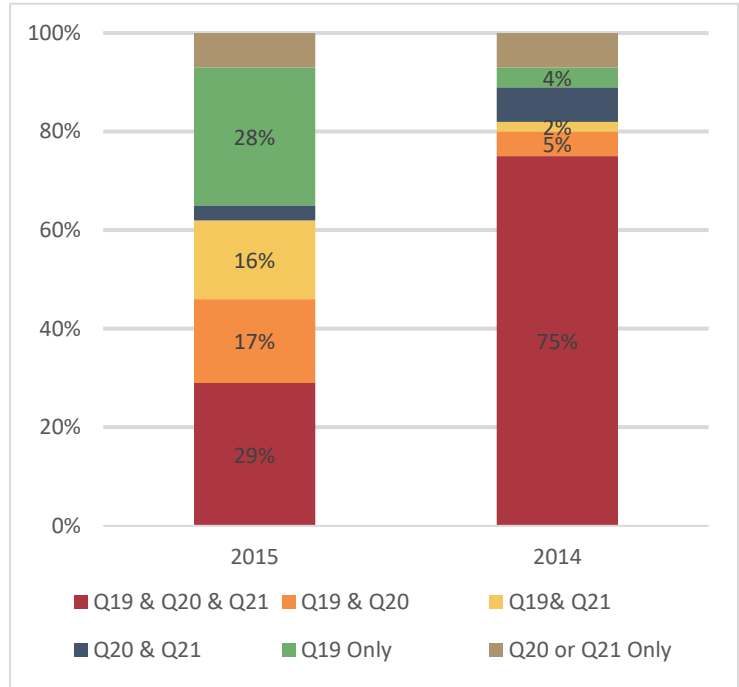
**Chart B. Maryland Public High School Graduates, 2014 and 2015, Wage Visibility by Fiscal Quarter and Educational Attainment, Five Years after Graduation**



The impact can also be visualized by comparing the distributions of those with any wages in Q19, Q20 or Q21 for the 2014 and 2015 cohorts. Of those with wages in one of these fiscal quarters, 75% of the 2014 cohort had wages in all three quarters compared to 29% of the 2015 cohort. See **Chart C**. The 2015 cohort's visibility patterns in these three quarters tell a tale of those who were able to remain visible (17%) in the workforce in the first full quarter of shutdown (Q20 or Q2 2020) but could not continue in the second full quarter of shutdown (Q21 or Q3 of 2020) as well as those who were not visible (16%) in the first full quarter of shutdown (Q20 or Q2 2020) and reappeared in the second full quarter (Q21 or Q3 2020). Finally we see that 28% had wages in Q19 (Q1 2020) but were not visible in either the first or second quarters of shutdown (Q2 and Q3 2020).

For those who were visible in all three quarters, median quarterly wages were slightly lower in 2015 than in 2014, except for *Bachelor's Degree or Higher*. See **Table C**. This group had a small increase in the median quarterly wage in 2015 compared to 2014.

**Chart C. Maryland Public High School Graduates, 2014 and 2015, Distribution of High School Graduates with Q19, Q20 and/or Q21, Five Years after Graduation**



Additional time is needed to collect and analyze data to understand the long-term impact of COVID-19 on wages. Additional supplements to this report will explore the impact of COVID-19 this cohort of high school graduates by labor sector, educational attainment, and demographic groups to understand the full impact of the economic shutdown.

**Table C. Maryland Public High School Graduates, 2014 and 2015, Median Quarterly Wages by Educational Attainment, Five Years after Graduation, Fiscal Quarter 2 of 2019 vs. Fiscal Quarter 2 of 2020**

Educational Attainment	2015 High School Graduates			2014 High School Graduates		
	Q2 2020 Full-Quarter Wages	Median Quarterly Wage	Variation to Living Wage (\$8,959)	Q2 2019 Full-Quarter Wages	Median Quarterly Wage	Variation to Living Wage (\$8,902)
<b>All High School Graduates</b>	<b>9,706</b>	<b>\$5,792</b>	<b>↓ \$3,167</b>	<b>27,330</b>	<b>\$6,160</b>	<b>↓ \$2,742</b>
High School Graduates, No College	2,303	\$5,863	↓ \$3,096	6,298	\$6,392	↓ \$2,510
Some College	3,677	\$5,122	↓ \$3,837	10,508	\$5,546	↓ \$3,356
Still in College	1,905	\$4,823	↓ \$4,136	5,292	\$4,891	↓ \$4,011
Lower Division Degree	367	\$6,936	↓ \$2,023	1,063	\$7,245	↓ \$1,657
Bachelor's Degree or Higher	1,454	\$10,468	↑ \$1,509	4,169	\$10,000	↑ \$1,098

↑ value is above the living wage, ↓ value is below the living wage, \$8,959 or \$8,902

For those in the 2015 cohort with full-quarter wages, results were consistent with prior reporting. The first five years after high school is traditionally the time when high school graduates engage in college; and that is certainly the case with the cohort analyzed for this report. Notably, 76% of the high school graduates had or continue to have some involvement with college during the first five years after high school graduation. The association between college and workforce outcomes is of critical importance and highlighted throughout this report.

Also consistent with prior reports, the median quarterly wages are higher for those with a college degree than those without. As shown in the first section of the Full Results, the only educational attainment group with the majority (58%) with earnings above the living wage was the *Bachelor's Degree or Higher* group. For all other groups, between 18% (*Some College*) and 33% (*Lower Division Degree*) had wages above the living wage. This result is different than prior years but is likely due to the change in the living wage calculation for 2020. The calculation was expanded to include new categories of expenses, increasing the living wage approximately \$1,000 per quarter in Maryland.

The last reporting requirement is to identify the industry in which the high school graduates are employed. As with prior reports, five years after high school, the sector with the largest

percentage of high school graduates was again *Trade, Transportation, & Utilities* (29%). This sector had a median quarterly wage \$3,000 below the living wage. And, while the median quarterly wage was still below the living wage for *Bachelor's Degree or Higher* it was \$800 to \$2,000 more than those in other educational attainment groups.

Further, as with prior year reports, *Goods Producing* again has median quarterly wages above or close to the living wage for all educational attainment groups, while the *Leisure & Hospitality* sector had the lowest wages, \$4,000 or more below the living wage, for all educational attainment groups.

This report again demonstrates the importance of education beyond high school in increasing earnings potential. When examining labor sector wages by educational attainment the relationship between education and wages is evident. The median quarterly wage was higher than the living wage for those with a *Bachelor's Degree or Higher* in 8 out of 10 sectors. For all other groups, the median quarterly wage was above the living wage in only one to four sectors.

This year's report is broken into two sections. The first provides high level results for the two primary research questions: *overall wages* and *wages by labor sector*. The second section provides more detailed results and analysis to examine how these results vary by educational attainment.



## PRIMARY FINDINGS

### Wages

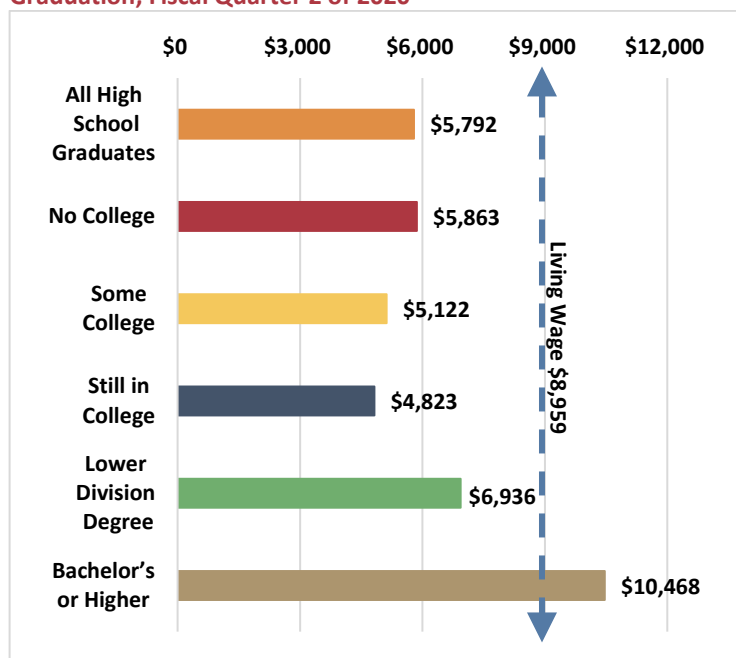
The first five years after high school is traditionally the time when high school graduates engage in college. Notably, 76% of the high school graduates in this report had or continued to have some involvement with college during the first five years after high school graduation. The relationship between education and workforce outcomes is of critical importance and highlighted throughout this report.

Five years after high school graduation, overall, the class of 2015 had median quarterly earnings of \$5,792<sup>4</sup> – an amount that is \$3,100 below the quarterly living wage<sup>5</sup> in Maryland for a single adult with no children. See **Chart 1**. High school graduates who earned a Bachelor’s degree or higher had median quarterly wages that were almost \$5,000 higher than the overall population and \$1,500 higher than the living wage. Certificate and Associate’s degree earners (*Lower Division Degree*) had median quarterly wages close to \$7,000 which is almost \$1,000 higher than the overall population but still falls \$2,000 short of living wage.

Finally, the high school graduates with some college but no degree and those still in college had the lowest median quarterly wages, \$5,122 and \$4,823 respectively, which puts them both more than \$4,000 below the Maryland living wage. This finding may not be surprising for the high school graduates who are still in college, since attending college may limit their options and level

of engagement in a career track position. This result highlights that there is no immediate return on the investment (both time and money) in college unless a degree is earned as those with some college have a median quarterly wage that is lower than high school graduates that never went to college.

**Chart 1. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Educational Attainment, Five Years after Graduation, Fiscal Quarter 2 of 2020**



**Table 1. Maryland Public High School Graduates, 2015, Comparison to Living Wage, Five Years after Graduation, Fiscal Quarter 2 of 2020**

Education Level	Total with Full-Quarter Wages <sup>4</sup> Q2 2020	At or Below Living Wage (\$8,959)		Above Living Wage (\$8,960)	
		#	%	#	%
<b>All High School Graduates</b>	9,706	7,055	73%	2,651	27%

The report also analyzed wages to determine the number of high school graduates with wages above and below the living wage. Overall, 73% of high school graduates with full-quarter wages<sup>4</sup> did not have sufficient wages to meet the basic cost of living in Maryland despite being engaged in the workforce for three fiscal quarters, or nine months, five years after graduation. See **Table 1**.

## Sector

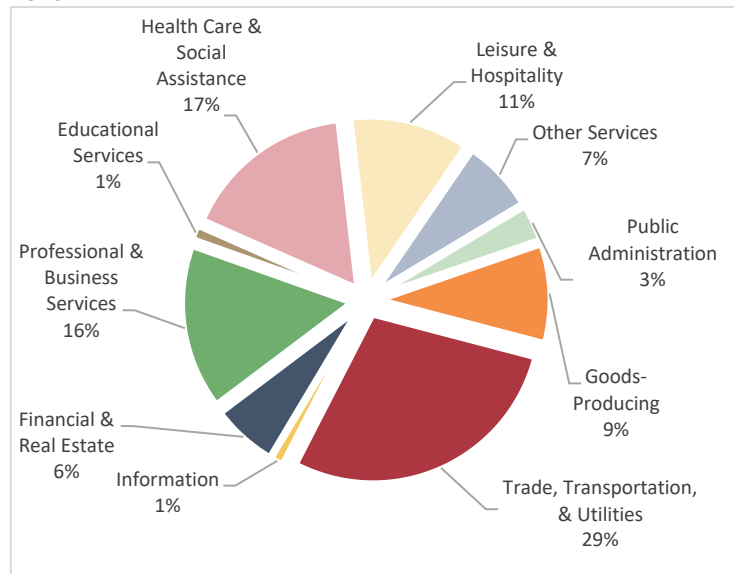
Five years after high school graduation, the labor sector with the largest share of high school graduates with same-employer wages<sup>6</sup> was *Trade, Transportation, & Utilities* (29%). See **Figure 1**. This sector, which includes the retail trade, had the second lowest median quarterly wages, \$5,708, which is about \$3,000 below the living wage. See **Chart 2**.

Another thirty-percent of students were concentrate in sectors with median quarterly wages thousands of dollars below the living wage (*Health Care & Social Assistance, Other Services, and Leisure & Hospitality*).

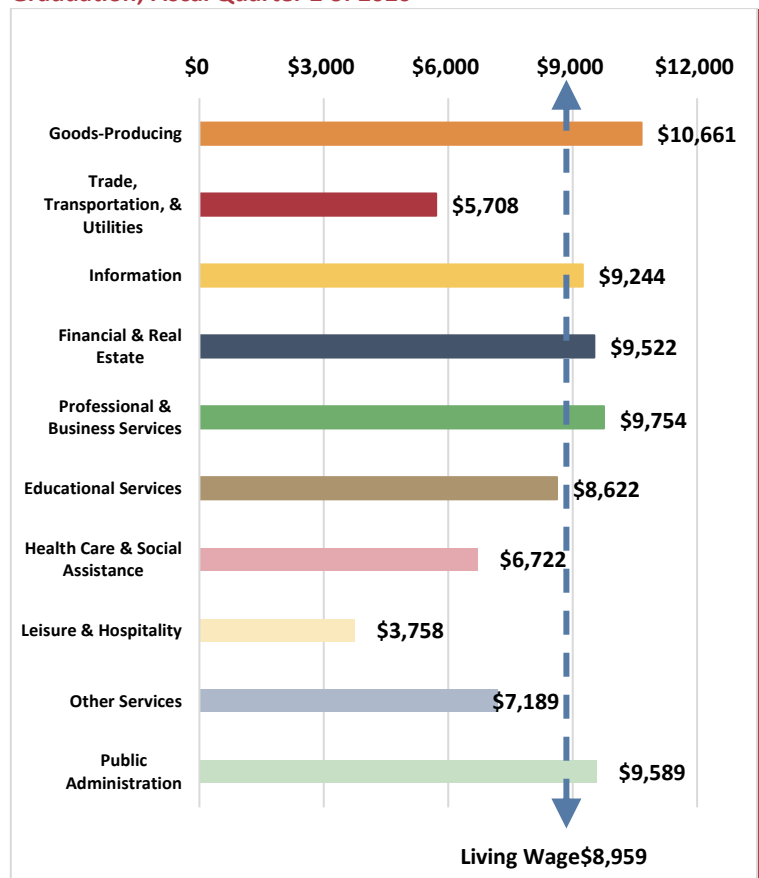
Only one-third of high school graduates with same-employer wages<sup>7</sup> were employed in sectors where the median quarterly wage was over the living wage. The majority of these high school graduates were in *Professional & Business Services* (16%). The others were in *Goods-Producing* (9%), *Information* (1%), *Financial & Real Estate* (6%) and *Public Administration* (3%). The median quarterly wages for these sectors were about \$500 more than the living wage.

Collectively the result presented here mean that close to two-thirds (66%) of all high school graduates who are employed with the same employer for nine consecutive months are not earning wages sufficient to meet the cost of living in Maryland.

**Figure 1. Maryland Public High School Graduates, 2015, Sector of Wages, Five Years after Graduation, Fiscal Quarter 2 of 2020**



**Chart 2. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Sector of Wages, Five Years after Graduation, Fiscal Quarter 2 of 2020**



## IMPLICATIONS

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The analysis in this report demonstrates that outcomes, five years after high school graduation, vary greatly by educational attainment and labor sector. Wages are higher for high school graduates who finish college than those who 1) do not pursue postsecondary education, 2) are still in college or 3) do pursue postsecondary education but disengage without earning a degree. These results are also consistent with national data available on earnings by level of educational attainment.<sup>8</sup> Nationally, earnings for Bachelor's degree graduates were nearly double the earnings of those without a college degree (\$52,500 vs. \$29,800).<sup>9</sup> This national pattern is detectable in the 2015 cohort. Bachelor's degree graduates had median quarterly wages of \$10,468, almost double that of graduates with no college (\$5,863).

Overall, high school graduates with *Some College* had a lower median quarterly wage than those without any exposure to college (\$5,122 vs. \$5,863), suggesting that trying college and not finishing may be a worse career decision than not going to college at all. Identifying financially viable career opportunities for those with some level of postsecondary education but not a degree is critical to keeping this large group of high school graduates, nearly 20% of the entire graduating class, engaged and out of poverty.

This report also demonstrates that high school graduates seek financial resources to pay for college and that they must balance the demands of work, home, and a postsecondary academic career. Almost 20% of high school graduates in the *Still in College* group were actively working for nine consecutive months while progressing toward a college degree.

Finally the analysis identifies that six of the ten labor sectors in Maryland had median quarterly wages near or above the living wage. Only one-third of high school graduates with full-quarter, same-employer wages were visible in these six sectors. Two-thirds (66%) of graduates were concentrated in sectors where the median quarterly wage was one-thousand dollars or more below the living wage.

The Maryland General Assembly enacted the College and Career Readiness and College Completion Act of 2013 (CCR-CCA) to focus attention on educational pathways through high school and college into a career. CCR-CCA also codified an educational attainment goal for the State of Maryland: *55% of its adult citizen must hold at least an Associate's degree by 2025*. CCR-CCA's intent is to make sure the Maryland workforce possesses the skills necessary to sustain and grow Maryland's economy and to allow Marylanders to have long-term career growth and financial stability. This report helps identify Maryland's progress toward fulfilling these goals.

It is important to remember the analysis presented here is conducted at the early stages in this population's career and represents entry level wages. Many high school graduates may be exploring career options and training programs during this period which may depress wages during the first two or three years of employment after high school. The wage patterns and inter-group gaps may change as this cohort progresses through their careers.

The full results that follow provide more detailed analysis and discussion of the variation in wages and labor sector for each educational attainment group.

# Table of Contents

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REPORT REQUIREMENTS .....	i
REPORT POPULATION.....	ii
EXECUTIVE SUMMARY .....	iii
PRIMARY FINDINGS.....	vii
Wages.....	7
Sector .....	viii
IMPLICATIONS .....	ix
FULL RESULTS.....	2
Question 1. Wages Earned Five Years after High School Graduation.....	2
Question 2. Hours Worked Per Week .....	8
Question 3. High School Graduates and Labor Sector .....	9
CONCLUSIONS AND POLICY IMPLICATIONS .....	15
APPENDICES.....	19
Appendix 1: High School Graduates, State of Maryland, 2015, Educational Attainment, Demographic and Economic Characteristics .....	19
Appendix 2: High School Graduates, State of Maryland, 2015, Graduates with Wages Above the Living Wage by Sector and Educational Attainment, Five Years after High School Graduation, Fiscal Quarter 2 of 2020 .....	20
Appendix 3: High School Graduates, State of Maryland, 2015, Median Quarterly Wage by Sector and Educational Attainment, Five Years after High School Graduation, Fiscal Quarter 2 of 2020 .....	21
Appendix 4: Technical Documentation .....	22

## FULL RESULTS

### Question 1. Wages Earned Five Years after High School Graduation

#### Wage Visibility by Educational Attainment

There were 9,706 high school graduates, or 17% of all graduates, who had full-quarter wages and were therefore included in the wage analysis. See **Table 2**<sup>10</sup>. Conversely, 83% of high school graduates did not have wage data for the three consecutive fiscal quarters five years after high school graduation.

High school graduates excluded from this calculation include individuals who may have had wage data for some but not all of the quarters required to meet the full-quarter definition, had wages from a source not reported to the MLDS, or were unemployed.

A major contributing factor to the low rate of wage visibility is that the period of analysis, fiscal quarter 2 of 2020, is the first fiscal quarter that Maryland's economy was fully shutdown due to COVID-19. The wage visibility rates reported in in prior years for high school graduates from the 2012, 2013, and 2014 cohorts was consistently around 45% overall, with a range between from the mid-30% for Bachelor's degrees to the mid-60% for Associate's degrees.

It is worth noting that wage visibility for all educational attainment groups was reduced by one-third when compared to prior year reporting. All educational attainment groups

were similarly impacted by the economic shut down from COVID-19. No educational group was immune to the disruption in the labor market that occurred in the second fiscal quarter of 2020.

The full impact of COVID-19 on Maryland's economy and on this cohort of high school graduates is beyond the scope of this report but will be discussed in a forthcoming supplement.

**Table 2. Maryland Public High School Graduates, 2015, Wage Visibility, Five Years after High School Graduation, Fiscal Quarter 2 of 2020**

Educational Attainment	Total	Total with Q2 2020 Full-Quarter Wages	%
<b>All High School Graduates</b>	<b>57,509</b>	<b>9,706</b>	<b>17%</b>
High School Graduates, No College	13,768	2,303	17%
Some College	19,686	3,677	19%
Still in College	11,228	1,905	17%
Lower Division Degree	1,746	367	21%
Bachelor's Degree or Higher	11,081	1,454	13%

## Median Quarterly Wages by Educational Attainment

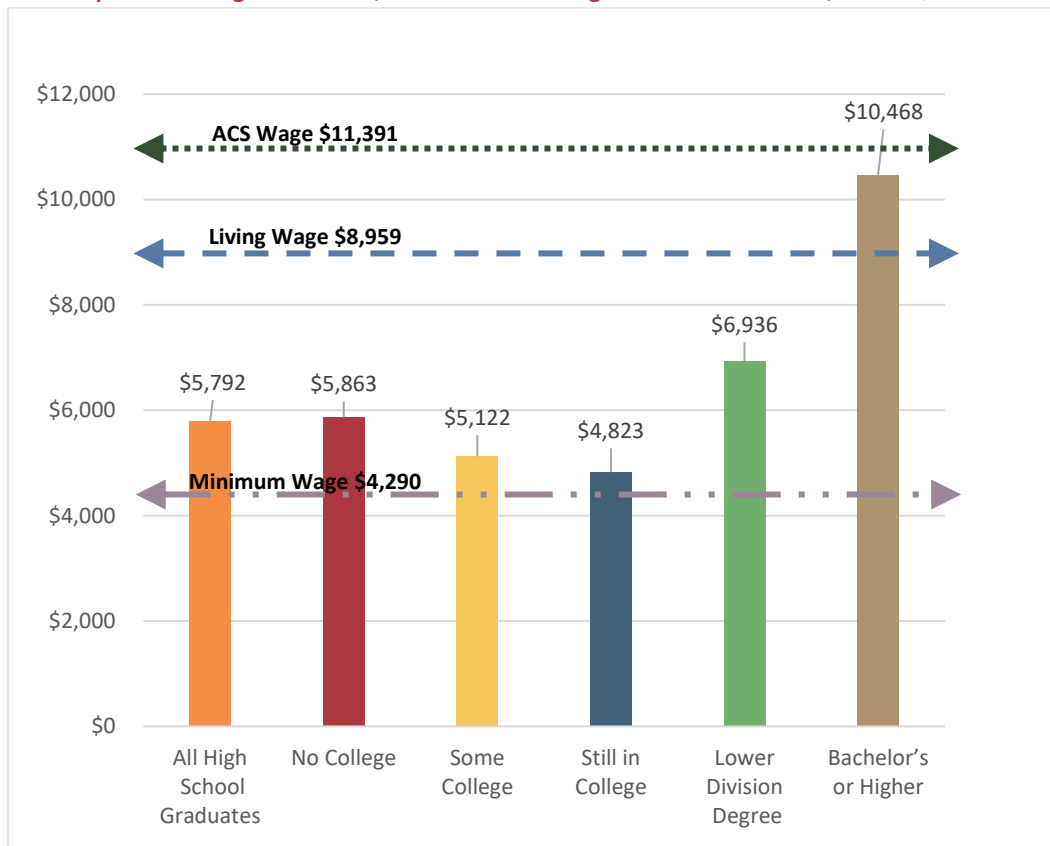
Overall, the median quarterly wage for all high school graduates with full-quarter wages was \$5,792 in the 20<sup>th</sup> quarter – fiscal quarter 2 of 2020. This was approximately \$3,000 below the living wage<sup>11</sup> in Maryland and \$5,500 below the ACS median earnings for all workers in Maryland.<sup>12</sup> This result was not uniform across all educational attainment groups. See **Chart 3** and **Table 3**.

High school graduates who did not continue to college, those with some college, and those still in college had a median quarterly wage that fell approximately \$3,000 below the living wage. In fact, those with some college or those still in college had median quarterly wages that were

just barely above the minimum wage. Of these three educational attainment groups, the *No College* group, which presumably went directly into the workforce, had higher wages than the *Some College* and *Still in College* groups.

The fact that students in the *Still in College* group fell below the living wage is likely the result of working in a part-time capacity to prioritize education. These students may have had a portion of their living expenses covered by their parents or received federal, state, or institutional financial aid to cover their living expenses.

**Chart 3. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Educational Attainment Compared to Wage Indicators, Five Years after High School Graduation, Fiscal Quarter 2 of 2020**



**Table 3. Maryland Public High School Graduates, 2015, Wage Visibility and Median Quarterly Wages, Five Years after High School Graduation, Fiscal Quarter 2 of 2020**

Educational Attainment	2015 High School Graduates				
	Total	Total with Full-Quarter Wages Q2 2020	% with Full-Quarter Wages Q2 2020	Median Quarterly Wage Q2 2020	Variation to Living Wage (\$8,959)
<b>All High School Graduates</b>	<b>57,509</b>	<b>9,706</b>	<b>17%</b>	<b>\$5,792</b>	<b>\$3,167 ↓</b>
High School Graduates, No College	13,768	2,303	17%	\$5,863	\$3,096 ↓
Some College	19,686	3,677	19%	\$5,122	\$3,837 ↓
Still in College	11,228	1,905	17%	\$4,823	\$4,136 ↓
Lower Division Degree	1,746	367	21%	\$6,936	\$2,023 ↓
Bachelor's Degree or Higher	11,081	1,454	13%	\$10,468	\$1,509 ↑

↑value is above the living wage, ↓ value is below the living wage, \$8,959

Perhaps unexpected is the median quarterly wage for the *Some College* group. This group, who had some college but did not earn a degree, had a median quarterly wage approximately \$700 less than those who never went to college. This lower wage may reflect two concepts. First, the *No College* high school graduates had five years to build progressively higher wages, while the *Some College* high school graduates delayed entry into career track employment and are just now receiving entry level wages. Second, the low median wage for *Some College* may reflect limited employment opportunities as these high school graduates continued to intermittently pursue postsecondary education, splitting their time and focus between college and the workforce.

High school graduates who completed a bachelor's degree or higher had median quarterly earnings about \$1,500 above the living wage, while those with an Associate's degree or postsecondary Certificate (*Lower Division Degree*) had a median quarterly wage about \$1,200 above high school graduates without a college degree but still \$2,000 below the living wage.

At the point of wage evaluation, *Lower Division Degree* graduates may have been in the workforce post-college graduation for two or more years, while those in the *Bachelor's Degree or Higher* group realized these earnings despite having only nine months lapse since completing their college degrees.

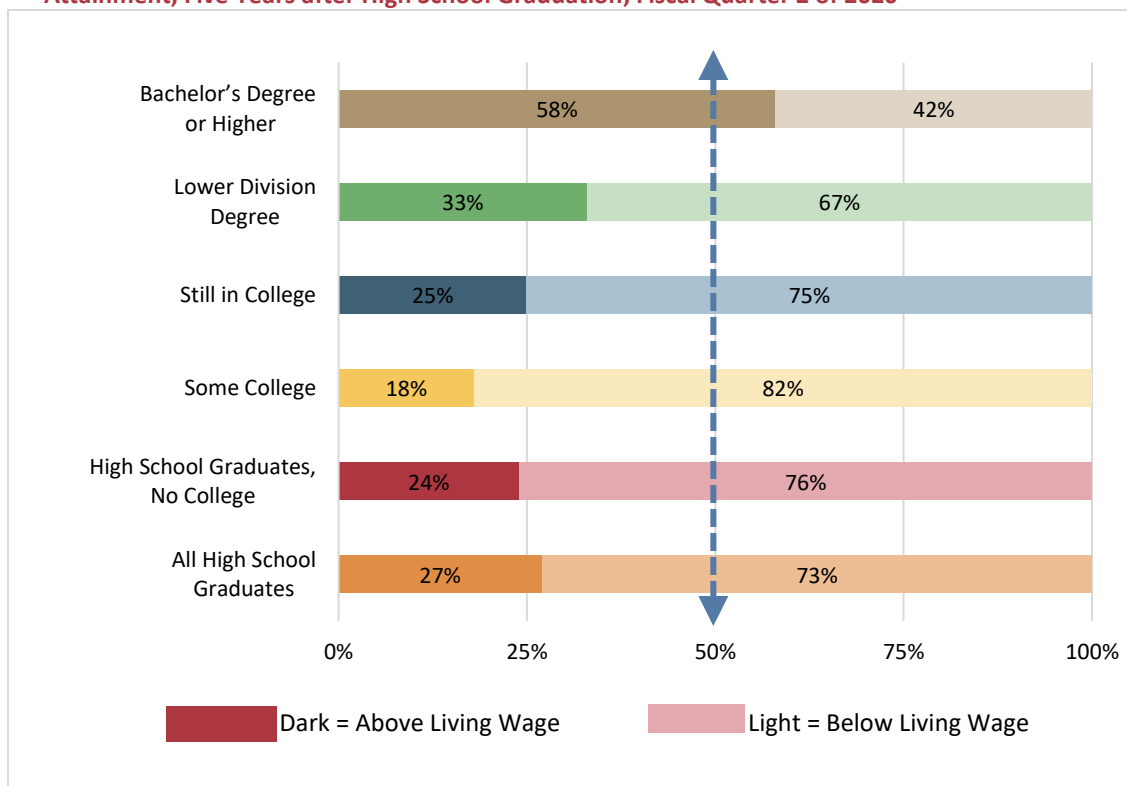
Whether the earnings gaps between educational attainment groups persists, narrows, or widens will be determined as additional time passes in the workforce. Currently, the *No College*, *Some College*, and *Still in College* groups are on pace to earn \$1 million in their lifetime, while individuals with some level of college degree are on pace to earn \$1.5 to \$2 million in their lifetime.<sup>13</sup> The results for both groups align to research<sup>14</sup> on the financial returns to education. What is unknown is what the long-term effects of COVID-19 will have on wages for this cohort. If the economy rebounds quickly enough, since these high school graduates are in the early stages of their careers, they may not experience a significant decline in lifetime earnings. If the economic disruption continues, this cohort may, like graduates from the 2008 recession, have significant declines in life-long earnings.<sup>15</sup>

## Wage Bands by Educational Attainment

Another way to analyze wages five years after high school graduation is to determine the number of graduates with full-quarter wages that are above or below the living wage. The median quarterly wage identifies the quarterly wage 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 high school graduates with quarterly wages above or below the living wage helps quantify the number of graduates that were engaged in the workforce at a level that provides for or exceeds the basic cost of living in Maryland and the number who may be engaged in the workforce but unable to meet these basic expenses.

Overall, 73% of high school graduates with full-quarter wages did not have sufficient wages to meet the basic cost of living in Maryland despite being engaged in the workforce for three fiscal quarters, or nine months, five years after high school graduation. See **Chart 4** and **Table 6**. This result is about ten percentage points higher than previously reported in this reporting series. This decline is primarily attributable to modifications in the Living Wage<sup>16</sup> calculation to include costs for cell phones, broadband, and social activities not previously included rather than inflation or reductions in wages or the COVID-19 economic shutdown.

**Chart 4. Maryland Public High School Graduates, 2015, Above and Below Living Wage by Educational Attainment, Five Years after High School Graduation, Fiscal Quarter 2 of 2020**





**Table 4. Maryland Public High School Graduates, 2015, Educational Attainment and Wage Band, Five Years after High School Graduation, Fiscal Quarter 2 of 2020**

Education Level	2015 High School Graduates								
	Total with Full-Quarter Wages Q2 2020	Below Minimum Wage (\$4,290)		Above Minimum Wage (\$4,290) and Below Living Wage (\$8,959)		Above Living Wage (\$8,960) and Below ACS Wage (\$11,391)		At or Above ACS Wage (\$11,391)	
		#	%	#	%	#	%	#	%
<b>All High School Graduates</b>	<b>9,706</b>	<b>3,714</b>	<b>38%</b>	<b>3,341</b>	<b>34%</b>	<b>1,074</b>	<b>11%</b>	<b>1,577</b>	<b>16%</b>
High School Graduates, No College	2,303	844	37%	909	39%	289	13%	261	11%
Some College	3,677	1,574	43%	1,430	39%	380	10%	293	8%
Still in College	1,905	881	46%	554	29%	173	9%	297	16%
Lower Division Degree	367	108	29%	137	37%	48	13%	74	20%
Bachelor's Degree or Higher	1,454	307	21%	311	21%	184	13%	652	45%

Applying this measure also calls attention to differences in outcomes at each educational attainment level. See **Chart 4** and **Table 4**. The majority of high school graduates with a *Bachelor's Degree or Higher* with full-quarter wages had wages above the living wage. Further, 45% of high school graduates in this group had wages at or above the *ACS Wage*. This is the only educational attainment group to have this distinction. The majority of high school graduates who did not continue on to college (*No College*), are *Still in College*, or attempted college without earning a degree (*Some College*) had quarterly wages below the living wage. And, the majority were not just below the living wage, but had quarterly wages below those of an individual working 30 hours per week in a minimum wage job.

The group with the largest share of high school graduates below the living wage is the *Some College* high school graduates, with 82% of this group, the largest group with full-quarter wages, having quarterly wages below the living wage. This is seven percentage points more than the *Still in College* group, a group presumably working part-time to prioritize

college and yet more high school graduates still pursuing postsecondary education had earnings above the living wage than those who had discontinued their postsecondary education.

Further, when comparing outcomes for *No College* to *Some College* not only do *No College* high school graduates have slightly higher median quarterly wages than *Some College* the proportion with wages above the living wage is six percentage points higher (76% vs. 82%). While *No College* high school graduates fair better in the labor market than those with *Some College*, it should still be noted that three-quarters of high school graduates with full-quarter wages had wages below the living wage even though they were presumably available to enter the labor market full-time immediately following high school graduation and have had five years to build career-track employment.

Lastly, high school graduates with a *Lower Division Degree*, a postsecondary Certificate or an Associate's degree, also had the majority (66%) with wages below the living wage. However, when looking at those who did have wages above the living wage, 20% have wages

above the *ACS Wage* while 13% are between the *Living Wage* and *ACS Wage*.

As was noted in the prior sections, reporting on the impact of COVID-19 on wages during Q2 2020, the 20<sup>th</sup> fiscal quarter after high school graduation, is beyond the scope of this report. However, it should be noted that limitations of UI Wage data make it difficult to understand if the wages reported in a fiscal quarter reflect declines in actual earnings or declines in

duration of employment. It is possible that disruptions in Q2 2020 meant that individuals worked fewer weeks or days in the fiscal quarter rather than received lower wages. UI Wage data report earnings for the entire period, not the number of weeks worked or days worked in the fiscal quarter. The forthcoming COVID-19 supplement to this report will provide further analysis on this point.

## Question 2. Hours Worked Per Week

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The MLDS Center does not contain data on hours worked therefore this section of the reporting requirement cannot be fulfilled. In prior reports, this section provided an analysis of the level of workforce engagement for high school graduates for the full five-year period after graduation. That analysis will not be repeated this year, but can be found in the 2018, 2019, and 2020 reports (go to [mldscenter.maryland.gov](http://mldscenter.maryland.gov); select Center Output from the top menu; select Center Reports from the left hand menu; and select *Annual Report on the Workforce Outcomes of Maryland Public High School Graduates*).

### Question 3. High School Graduates and Labor Sector

There were 6,898 high school graduates, or 12% of all high school graduates, who had wages with the same employer<sup>17</sup> for three consecutive fiscal quarters five years after high school graduation that can be analyzed for wages by labor sector. See **Table 5**.

This means that 71% of high school graduates with full-quarter wages (wages for three quarters) remained with the same employer for all three fiscal quarters; 29% of high school graduates with full-quarter wages changed employers at least once during this period and

are therefore removed from analysis in this section.

**Table 5. Maryland Public High School Graduates, 2015, Full-Quarter and Same-Employer Wages, Five Years after High School Graduation, Fiscal Quarter 2 of 2020**

2015 High School Graduate	Total	%
<b>All High School Graduates</b>	<b>57,509</b>	
Full-Quarter Wages Q2 2020	9,706	17%
Same-Employer Wages Q2 2020	6,898	12%

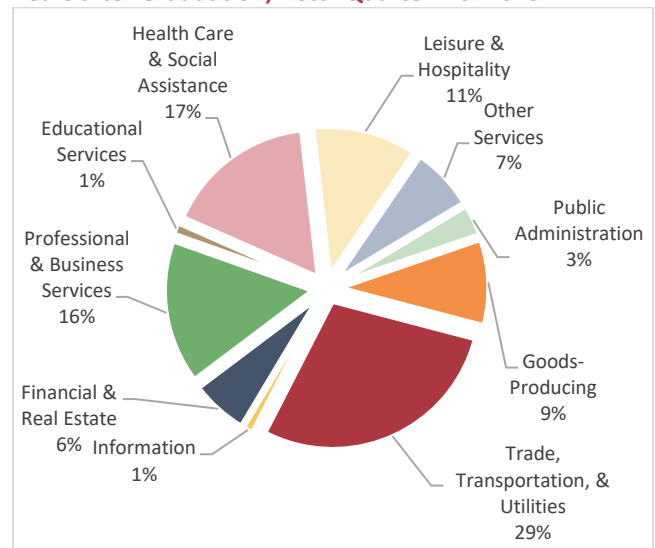
### Labor Sector and Median Quarterly Wages by Educational Attainment

Five years after high school graduation, the labor sector<sup>18</sup> with the largest share of high school graduates with same-employer wages was *Trade, Transportation, & Utilities* (29%). *Health Care & Social Assistance* and *Professional & Business Services* were the next two largest sectors with 17% and 16% respectively. See **Figure 2**.

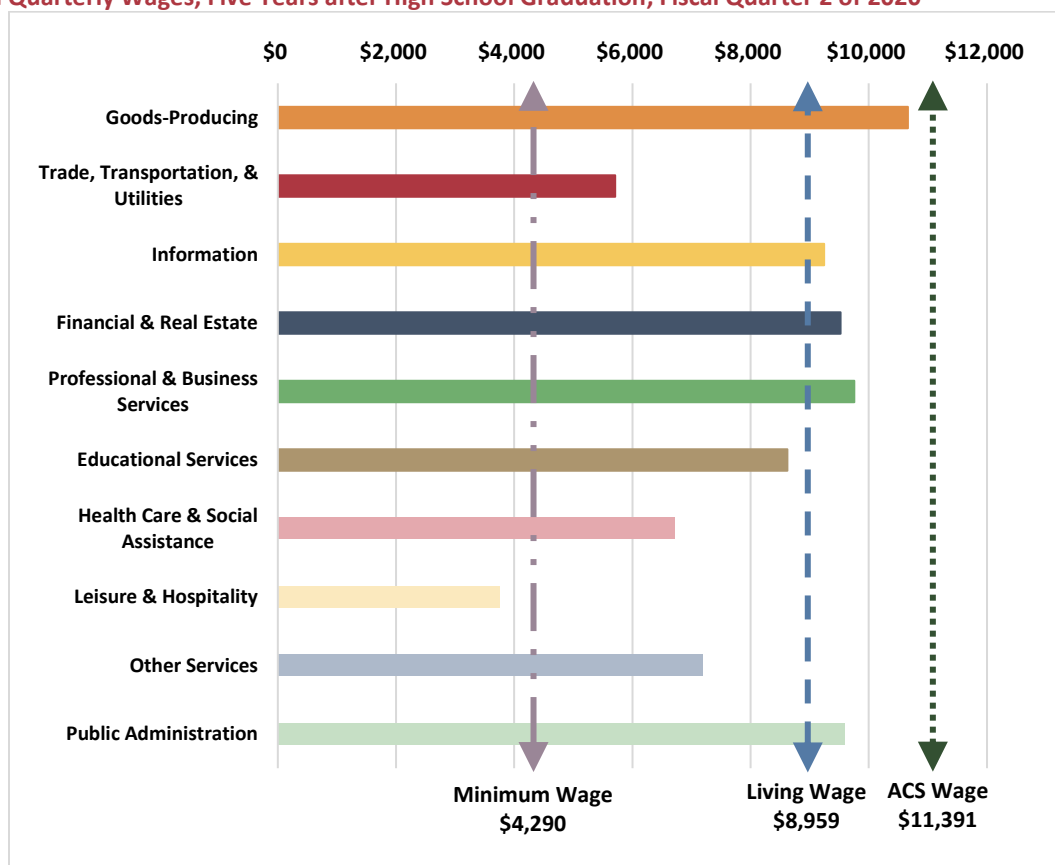
In 2020, these three sectors were also the largest non-government private sector employers in Maryland.<sup>19</sup> Collectively, these three sectors employed over 1.3 million Marylanders (around half of all wage earners)<sup>20</sup> through more than 90,000 businesses and paid \$19 billion in wages (half of all wages paid).<sup>21</sup> These three sectors represented \$142 billion of the \$329 billion private sector gross domestic product in 2020<sup>22</sup> and included industries important to Maryland’s infrastructure, business administration, and health, including freight and air transportation, retail trades,

power distribution, accounting, law, nursing, and home health care.

**Figure 2. Maryland Public High School Graduates, 2015, Same-Employer Wages, Sector of Wages, Five Years after Graduation, Fiscal Quarter 2 of 2020**



**Chart 5. Maryland Public High School Graduates, 2015, with Same-Employer Wages, Sector of Employment and Median Quarterly Wages, Five Years after High School Graduation, Fiscal Quarter 2 of 2020**



Overall, high school graduates with same-employer wages had a quarterly wage median of \$7,031, which is about \$1,300 higher than that of all high school graduates with full-quarter wages (\$5,792). This slight increase may indicate that high school graduates who remained with the same employer rather than changing jobs were able to realize wage increases or promotions from their tenure.

High school graduates with same-employer wages had median quarterly wages at or above the living wage in five of the ten labor sectors. See **Chart 5** and **Table 6**. These five sectors account for 35% of all high school graduates

with same-employer wages. The remaining 65% were in labor sectors with a median quarterly wage below the living wage by as little as \$300 (*Educational Services*) to as much as \$5,000 (*Leisure & Hospitality*). The largest labor sector, *Trade, Transportation, & Utilities*, with 29% of all high school graduates with same-employer wages, had a median quarterly wage \$3,200 below the living wage.

Further, only two sectors, *Goods-Producing* and *Public Administration* had median quarterly wages close to the *ACS Wage*. These two sectors account for 9% and 3% of all same-employer high school graduates, respectively.

**Table 6. Maryland Public High School Graduates, 2015, Same-Employer Wages and Median Quarterly Wages, Five Years after High School Graduation, Fiscal Quarter 2 of 2020**

2015 High School Graduates Same-Employer Wages			
Sector	Total	%	Median Wage Quarter 2 2020 (\$8,959)
<b>Goods-Producing</b>	645	9%	↑ \$10,661
<b>Trade, Transportation, &amp; Utilities</b>	1,962	29%	↓ \$5,708
<b>Information</b>	71	1%	↑ \$9,244
<b>Financial &amp; Real Estate</b>	424	6%	↑ \$9,522
<b>Professional &amp; Business Services</b>	1,082	16%	↑ \$9,754
<b>Educational Services</b>	82	1%	↓ \$8,622
<b>Health Care &amp; Social Assistance</b>	1,142	17%	↓ \$6,722
<b>Leisure &amp; Hospitality</b>	783	11%	↓ \$3,758
<b>Other Services</b>	473	7%	↓ \$7,189
<b>Public Administration</b>	229	3%	↑ \$9,589
<b>Total</b>	<b>6,893</b>		<b>↓ \$7,031</b>

↑value is above living wage, ↓ value is below living wage, \$8,959

The share of high school graduates within each sector and the median quarterly wage varied by educational attainment. See **Table 9** and **Chart 5**. None of the labor sectors had median quarterly wages above the living wage for every educational attainment group. Eight of the ten sectors had median quarterly wages above the living wage for *Bachelor's Degree or Higher* where medians ranged from a low of \$4,661 (*Leisure & Hospitality*) to a high of \$16,962 (*Goods-Producing*).

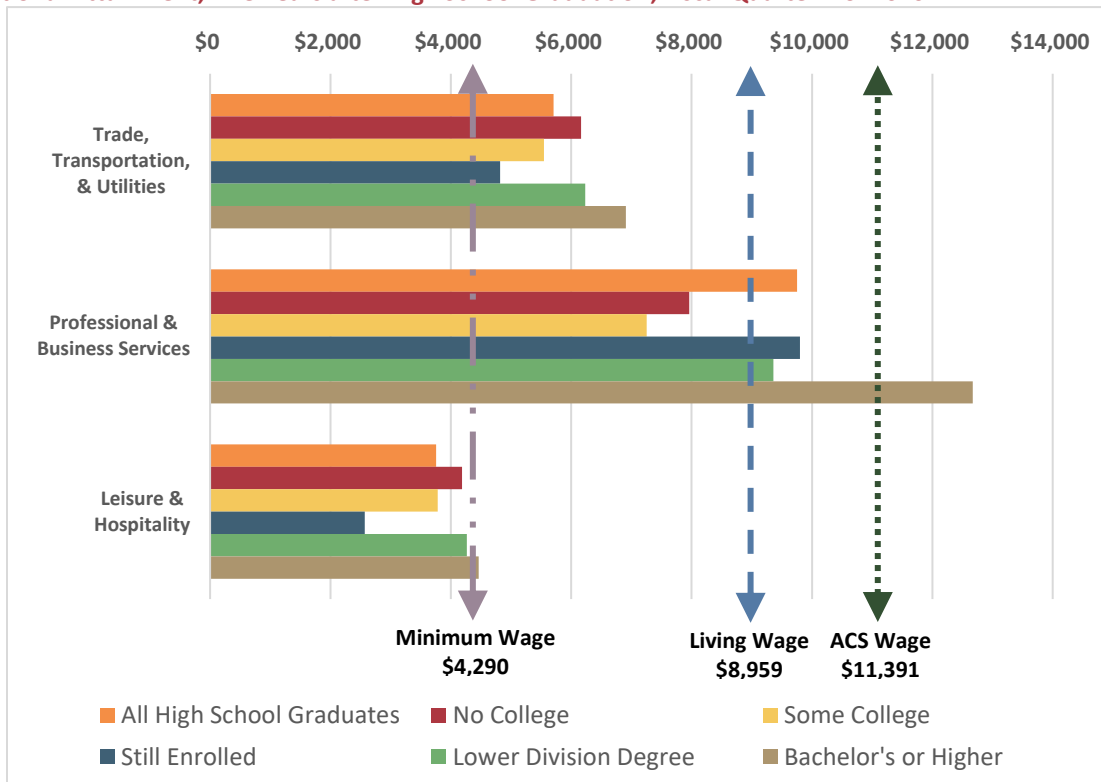
While only one labor sector (*Information*) had a median quarterly wage higher than the living wage for those with *Some College*, three additional labor sectors had median quarterly wages within a few hundred dollars of the living wage (*Goods-Producing*, *Financial & Real Estate*, and *Public Administration*) for this group. Those with *No College* had a median quarterly wage higher than the living wage in three sectors (*Goods-Producing*, *Information*, and *Public Administration*). By comparison, *Still in College* had median quarterly wages over the living wage in four sectors. This is a surprising pattern as those still engaged in postsecondary education would be presumed to be working at

a reduced capacity to prioritize education and yet they fared better in several labor sectors than those who would be expected to be engaged in the labor market full-time (*No College* and *Some College*).

It is also worth noting that the median quarterly wage for those with a *Lower Division Degree* was higher than the living wage in four labor sectors and within a few hundred dollars of the living wage in three additional sectors for a total of seven labor sectors with medians at or near the living wage. These results are closer to those of the *Bachelor's Degree or Higher* group (eight of ten groups) than the other educational attainment groups who only fared this well in three to four sectors.

When considered from the perspective of the labor sector, two sectors, *Trade, Transportation, & Utilities* with 29% of all same-employer high school graduates and *Leisure & Hospitality* with 11% did not have a median quarterly wage above the living wage overall or for any educational attainment group. These two sectors account for 40% of all same-employer high school graduates.

**Chart 5. Maryland Public High School Graduates, 2015, Sector of Employment and Median Quarterly Wages by Educational Attainment, Five Years after High School Graduation, Fiscal Quarter 2 of 2020**



As seen in **Chart 5** above and **Table 7** below, outcomes varied by educational attainment group and sector. Sectors such as *Leisure & Hospitality* had median quarterly wages not just below the living wage but below the wage for a 30 hour per week employee earning minimum wage across all educational attainment groups. Other sectors, such as *Professional & Business Services* had median quarterly wages near or above the living wage for all educational attainment groups. *Trade, Transportation, & Utilities* had similar medians regardless of educational attainment.

**Table 7. Maryland Public High School Graduates, 2015, Same-Employer Wages and Median Quarterly Wages, Five Years after High School Graduation, Fiscal Quarter 2 of 2020**

Sector	All High School Graduates	No College	Some College	Still in College	Lower Division Degree	Bachelor's Degree or Higher
<b>Goods-Producing</b>	↑ \$10,661	↑ \$9,954	\$8,777	↑ \$12,692	\$8,329	↑ \$16,962
<b>Trade, Transportation, &amp; Utilities</b>	\$5,708	\$6,164	\$5,547	\$4,819	\$6,233	\$6,907
<b>Information</b>	↑ \$9,244	↑ \$9,692	↑ \$9,425	\$4,172	↑ \$9,667	↑ \$10,305
<b>Financial &amp; Real Estate</b>	↑ \$9,522	\$7,522	\$8,530	↑ \$9,008	↑ \$10,989	↑ \$12,807
<b>Professional &amp; Business Services</b>	↑ \$9,754	\$7,962	\$7,254	↑ \$9,799	↑ \$9,357	↑ \$12,674
<b>Educational Services</b>	\$8,622	\$7,316	\$7,200	\$8,064	\$8,770	↑ \$10,000
<b>Health Care &amp; Social Assistance</b>	\$6,722	\$6,260	\$6,094	\$6,364	\$8,549	↑ \$11,040
<b>Leisure &amp; Hospitality</b>	\$3,758	\$4,186	\$3,782	\$2,570	\$4,267	\$4,661
<b>Other Services</b>	\$7,189	\$7,480	\$6,719	\$6,587	\$7,115	↑ \$9,024
<b>Public Administration</b>	↑ \$9,589	↑ \$9,839	\$8,401	↑ \$9,476	↑ \$17,825	↑ \$10,439
<b>Total</b>	<b>\$7,031</b>	<b>\$6,920</b>	<b>\$6,118</b>	<b>\$6,173</b>	<b>\$7,802</b>	<b>↑ \$11,870</b>

↑value is above living wage, \$8,959

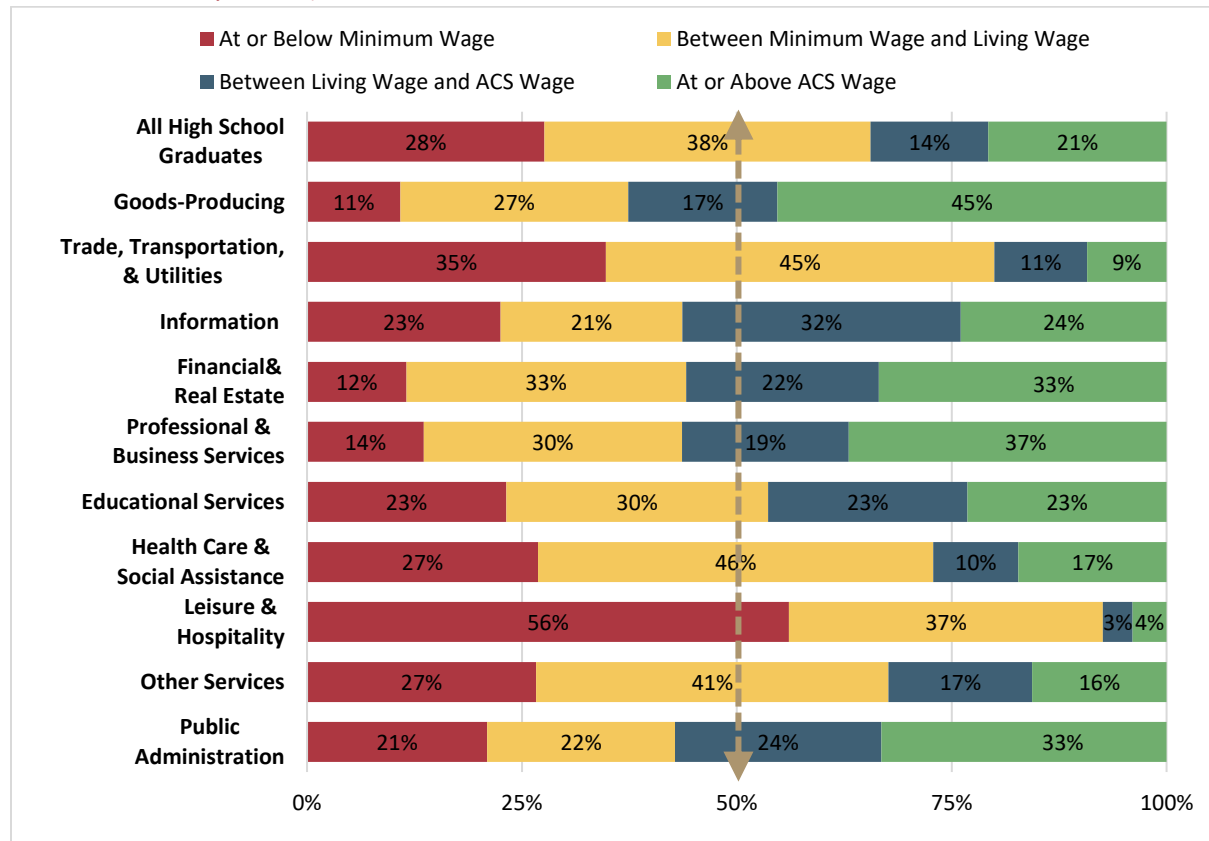
## Wage Bands by Labor Sector and Educational Attainment

Wages in each sector were also analyzed to determine the number of graduates with same-employer wages that fell into the wage bands constructed from the wage indicators. The median quarterly wage identifies the quarterly wage for the exact middle wage; half the records have a quarterly wage above this value, and half the records have a quarterly wage below this value. Identifying the number of high school graduates with quarterly wages at different levels of income helps quantify the number of graduates who were engaged in the workforce in each sector at a level that provides for or exceeds the basic cost of living in Maryland.

Overall, 35% of high school graduates with same-employer wages had a quarterly wage at or above the living wage. See **Chart 6** and **Table 8**.

Distributions by wage indicator varied by sector. The majority or near majority of same-employer high school graduates in *Goods-Producing, Information, Financial & Real Estate, Professional & Business Services, Educational Services, and Public Administration* had quarterly wages at or above the living wage and above the average by as much as twenty to thirty percentage points.

**Chart 6. Maryland Public High School Graduates, Sector of Employment by Wage Band, Five Years after High School Graduation, Fiscal Quarter 2 of 2020**





The majority of graduates in the remaining four sectors had a quarterly wage below the living wage. Three of these sectors, *Trade, Transportation, & Utilities, Health Care & Social Assistance, and Leisure & Hospitality*, were three of the largest labor sectors for same-employer high school graduates.

Most notably, when viewed through this distribution, one sector, *Leisure & Hospitality*, has a startling result: only 7% of same-employer high school graduates, graduate who have been working for nine straight months with the same employer, had wages above the living wage. See **Appendices 2 and 3** for median quarterly

wages and percentage of graduates above the living wage by educational attainment.

As noted in other sections of this report, the full effects of COVID-19 on employment and wages for this cohort will be the subject of a supplemental analysis. It is likely the variation in results reported here can be tied to the varying effect the economic shut down had on different labor sectors. Sectors such as *Leisure & Hospitality* came to a complete standstill in the second fiscal quarter of 2020, while *Education Services, Public Administration, and Health Care & Social Services* remained functioning out of necessity or classification as an “essential services”.

**Table 8. Maryland Public High School Graduates, 2015, Same-Employer Wages and Median Quarterly Wages, Five Years after High School Graduation, Fiscal Quarter 2 of 2020**

Sector	Same-Employer Wages Q2 2020				
	Total	At or Below Living Wage (\$8,959)		Above Living Wage (\$8,959)	
		#	%	#	%
<b>All High School Graduates</b>	<b>6,893</b>	<b>4,519</b>	<b>65%</b>	<b>2,374</b>	<b>35%</b>
<b>Goods-Producing</b>	645	241	38%	404	62%
<b>Trade, Transportation, &amp; Utilities</b>	1,962	1,569	80%	393	20%
<b>Information</b>	71	31	44%	40	56%
<b>Financial &amp; Real Estate</b>	424	187	44%	237	56%
<b>Professional &amp; Business Services</b>	1,082	472	44%	610	56%
<b>Educational Services</b>	82	44	54%	38	46%
<b>Health Care &amp; Social Assistance</b>	1,142	832	73%	310	27%
<b>Leisure &amp; Hospitality</b>	783	725	93%	58	7%
<b>Other Services</b>	473	320	67%	153	33%
<b>Public Administration</b>	229	98	43%	131	57%

## CONCLUSIONS AND POLICY IMPLICATIONS

The analysis in this report, like prior reports, demonstrates that outcomes, five years after high school graduation, vary greatly by educational attainment and labor sector. Wages are higher for high school graduates who finish college than those who 1) do not pursue postsecondary education, 2) are still in college, or 3) do pursue postsecondary education but disengage without earning a degree. These results are also consistent with national data available on earnings by level of educational attainment.<sup>23</sup>

Nationally, wages for Bachelor’s degree graduates were nearly double the earnings of those without a college degree (\$52,500 vs. \$29,800).<sup>24</sup> The unemployment rate in 2019, just prior to COVID-19 amongst Bachelor’s degree graduates between the ages of 25 and 34 was just over 2%. Conversely, the unemployment rate amongst high school graduates without any college degree was more than double that at 5.5%.<sup>25</sup> Applied to this report, this means that as many as 30,000 high school graduates from the 2015 cohort or half of the graduating class (*No College + Some College*) included in this report may be more likely to experience lower wages and unemployment, both of which can have long

term implications for lifetime earnings and career growth.

Also consistent across all four reporting years is the proportion of high school graduates who do not pursue college, attempt college but do not graduate, or earn a college degree. One-quarter of each cohort never attempted college in the five-year period after high school graduation. Around 35% of each cohort year attempted college but suspended their educational pursuits without earning a degree.

Postsecondary degree attainment within five years of high school graduation remained two percentage points higher than in the first report, increasing from 20% of high school graduates in 2012 to 22% of high school graduates in 2015. It is important to recall that the purpose of this report is to analyze wages rather than college enrollment and completion, therefore this report focuses on earnings outcomes in relation to educational attainment rather than on educational attainment itself. High school graduates continue to graduate from college six or more years after high school graduation. Those results are out-of-scope for this five-year out report.

Educational Attainment	2012 Cohort		2013 Cohort		2014 Cohort		2015 Cohort	
<b>All High School Graduates</b>	<b>59,510</b>		<b>59,560</b>		<b>58,136</b>		<b>57,509</b>	
<b>No College</b>	14,118	24%	14,226	24%	13,497	23%	13,768	24%
<b>Some College</b>	20,778	35%	21,316	36%	20,456	35%	19,686	34%
<b>Still in College</b>	12,719	21%	11,704	20%	11,210	19%	11,228	20%
<b>College Degree</b>	11,895	20%	12,314	21%	12,973	22%	12,827	22%

Exploring the *Some College* pathway identified an interesting pattern. Overall, high school graduates with full-quarter wages and *Some College* had a lower median quarterly wage than those without any exposure to college, suggesting that trying college and not finishing may be a worse career decision than not going to college at all. However, this may not be true for those with *Some College* in all labor sectors or those with *Some College* who remain with the same employer and have an opportunity to build a work history and demonstrate the value that their limited college engagement can provide. Four of ten labor sectors had median quarterly wages near or above the living wage for *Some College* high school graduates who remained with the same employer for nine months. This result is consistent with other research that suggests that *Some College* does not necessarily mean lower wages compared to *No College*.<sup>26</sup> Identifying financially viable career opportunities for those with some level of postsecondary education but not a degree is critical to keeping this large group of high school graduates, nearly 20% of the entire graduating class, out of poverty.

The *Still in College* group with same-employer wages yielded results that were not suggested by considering only the overall median quarterly wage for those with full-quarter wages. *Still in College* high school graduates with same-employer wages, five years after graduation, had median quarterly wages above the living wage in five of ten labor sectors. Restricting analysis to just same-employer for *Still in College* high school graduates likely separates true college students rotating through a series of part-time minimum wage jobs from those pursuing career-track employment. This connection between college and work may prove beneficial in translating in-

college employment to permanent career employment after college degree completion.

The *No College* group, the only group with five full years to pursue career track employment and experience wage progressions had wages that were \$4,000 lower per year than those with a *Lower Division Degrees* and \$20,000 per year lower than those with a *Bachelor's Degree or Higher*. Pursuing a Bachelor's degree takes both time and money, and it is not necessary for all career fields. Nonetheless, it is possible that some high school graduates with *No College* could benefit from one or two years of study at a Maryland community college. This requires an investment of approximately \$7,800 over a two year period. Under the new Promise program, this investment may be further reduced to only require covering fees and books.<sup>27</sup> Short-term credentials like a Certificate or Associate's degree may help increase the lifelong earning potential for this group.

The Maryland General Assembly enacted the *College and Career Readiness and College Completion Act of 2013* (CCR-CCA) to focus attention on educational pathways through high school to college or to a career. CCR-CCA codified new education initiatives at both the high school and college levels. This report focused on the 2015 cohort of high school graduates, a cohort that graduated before the CCR-CCA high school curriculum revisions and state funding for dual enrollment were fully in place. However, they did benefit from the postsecondary programs outlined in CCR-CCA. These programs included policies intended to increase the transferability of credit between colleges, clarify degree pathways within a college, incentivize students to return to college to complete in-progress degrees (near completers), and allow credits from four-year institutions to be applied to an Associate's

degree at community colleges (reverse transfer).

CCR-CCA also codified an educational attainment goal for the State of Maryland: *55% of its adult citizens must hold at least an Associate's degree by 2025*. The intent of this goal is to make sure the Maryland workforce possesses the skills necessary to sustain and grow Maryland's economy and have the skills needed for individual career growth and long-term career transitions. Increasing degree attainment amongst high school graduates is an important component of Maryland achieving this goal.

This report does suggest that high school students who continued on to college may be benefiting from the programs outlined in CCR-CCA and contributing to the state's degree attainment goal. There was a small increase in college degree attainment for this cohort as compared to the rate reported in the CPEA report for the 2012 cohort. It is also noteworthy that almost 20% of high school graduates in the *Still in College* group were actively working while completing a degree. This suggests that high school students need financial resources to pay for college and that they must balance the demands of work, home, and a postsecondary academic career.

The results of this study also show that as much as one-third of high school graduates (those with *Some College*), five years after high school graduation, may be able to participate in the CCR-CCA *Near Completer* and *Reverse Transfer* programs. However, increasing degree attainment at the Bachelor's level for this group may require more than the funding or transfer credit policies outlined in CCR-CCA. These students may lack access to comprehensive four-year colleges. They may live in education

deserts, or areas that are lacking in comprehensive open-access postsecondary institutions that grant bachelor's degrees. In those cases, policies that expand access, such as those that established regional higher education centers (RHEC) in Maryland, may provide increased access to bachelor's degrees in unserved and underserved areas. Moving these students, the largest block of high school graduates, from *Some College* to a college degree will help lift them beyond the living wage, position them for long-term career stability, and significantly contribute to Maryland's 55% degree attainment goal.

The major contextual indicator selected for this analysis, the living wage for one adult with no dependent children (\$8,959 per fiscal quarter), is the living wage for the entire State of Maryland. This report provides a high-level statewide overview, one that may or may not hold if the analysis was conducted at the county level and/or accounted for other personal factors. The living wage across Maryland varies widely, from a low of \$6,844 in Allegany County to a high of \$10,396 in Montgomery County. This means that some graduates reported as being at or above the living wage may not be, while other reported as below the living wage may actually be above it. Further, some high school graduates, five years after high school graduation, may be married or have children, increasing the wages required to meet the basic cost of living.

The most startling change in this year's report compared to prior reports is the drastic decline in wage visibility. Wage visibility was reduced by almost thirty percentage points compared to prior years. And, this reduction was nearly uniform across all educational attainment groups. It appears, at least in the short-term, that COVID-19 impacted all high school

graduates, five years after graduation equally. Whether or not wage visibility differentially rebounds or remains uniformly reduced as the Maryland economy reopens is yet to be determined. Additional time is needed to collect and analyze data to understand the long-term impact of COVID-19. Additional supplements to this report will explore the impact of COVID-19 on the 2015 cohort of high school graduates by educational attainment, labor sector, race, ethnicity, and gender to obtain a better understand of how different groups and labor sectors were impacted by the economic shut down.

Finally, it is important to note that the analysis presented here was conducted at the early stages in this population's career and represents entry level wages. Many individuals in this population have only been in the workforce for 1 to 3 years after college graduation. The wage outcomes reported here

may increase rapidly. Associate's degree graduates from Maryland's community colleges, five years after *college* graduation, had a median quarterly wage of \$10,967. This represents a gain of approximately \$3,000 in two to three years over the median reported for Associate's degree graduates five years after *high school* graduation.<sup>28</sup> Even for high school graduates who do not continue to college, many may be exploring career options and training programs, including completing licensure requirements or apprenticeships, which may depress wages during the first two or three years of employment after high school. It is difficult to predict if the wage gaps present in early-career, entry-level wages between educational, demographic, or economic groups will widen or narrow as this cohort progresses through their career.

## APPENDICES

### Appendix 1: High School Graduates, State of Maryland, 2015, Educational Attainment, Demographic and Economic Characteristics

The table below provides the distribution of high school graduates by subsequent educational attainment five years after high school graduation. Race and ethnicity groups are not mutually exclusive. Racial groups include all ethnicities, and ethnicity may be of any race. Values for race and ethnicity do not total due to omitted categories. Free or Reduced Price Meals (FARMS) indicates a student's eligibility to receive low-cost or no-cost meals each school day. Students may be eligible for free or reduced-price meals through participation in certain Federal Assistance Programs or based on their family's income falling below a specified poverty threshold. The education community and this report rely on FARMS eligibility to identify economically disadvantaged students. See **Technical Appendix** for additional FARMS information.

Education Level	Overall	Gender		Ethnicity Hispanic, Any Race	Race			Economic Status	
		Female	Male		African- American/ Black Alone	Asian Alone	White Alone	FARMS	Non- FARMS
<b>All High School Graduates</b>	<b>57,509</b>	<b>28,993</b>	<b>28,516</b>	<b>6,060</b>	<b>20,112</b>	<b>3,858</b>	<b>28,105</b>	<b>19,033</b>	<b>38,476</b>
High School Graduates, No College	13,768	5,455	8,313	1,855	5,894	284	6,263	6,993	6,775
Some College	19,686	9,656	10,030	2,400	8,489	1,182	7,812	7,580	12,106
Still in College	11,228	6,453	4,775	1,019	3,290	1,079	5,865	2,738	8,490
Lower Division Degree	1,746	886	860	166	308	105	1,168	410	1,336
Bachelor's Degree or Higher	11,081	6,543	4,538	620	2,131	1,208	6,997	1,312	9,769

Note: Race is reported independent of ethnicity therefore values do not sum to total.

## Appendix 2: High School Graduates, State of Maryland, 2015, Graduates with Wages Above the Living Wage by Sector and Educational Attainment, Five Years after High School Graduation, Fiscal Quarter 2 of 2020

This table presents the number of high school graduates with full-quarter same-employer wages in quarters 19, 20, and 21 by labor sector and education level, and the percentage of each education-sector group with a quarterly wage above the living wage (**\$8,959**). See the **Technical Appendix** for information on full-quarter same-employer wage.

Sector	All High School Graduates		No College		Some College		Still in College		Lower Division Degree		Bachelor's Degree or Higher	
	Total	% >Living Wage	Total	% >Living Wage	Total	% >Living Wage	Total	% >Living Wage	Total	% >Living Wage	Total	% >Living Wage
<b>All High School Graduates with Same-Employer Wages</b>	<b>6,893</b>	<b>34%</b>	<b>1,641</b>	<b>31%</b>	<b>2,579</b>	<b>24%</b>	<b>1,284</b>	<b>32%</b>	<b>283</b>	<b>40%</b>	<b>1,106</b>	<b>67%</b>
Goods-Producing	645	63%	225	60%	175	48%	93	68%	25	44%	127	87%
Trade, Transportation, & Utilities	1,962	20%	584	21%	885	19%	325	14%	70	27%	98	40%
Information	71	56%	*	*	26	*	*	*	*	*	25	60%
Financial & Real Estate	424	56%	68	38%	159	47%	77	49%	*	*	109	82%
Professional and Business Services	1,082	56%	193	40%	291	36%	214	58%	48	50%	336	83%
Education	82	46%	*	*	19	*	*	*	*	*	29	66%
Health Services	1,142	27%	179	13%	422	15%	264	27%	56	43%	221	57%
Leisure & Hospitality	783	7%	160	10%	361	6%	158	*	30	*	74	15%
Other Services	473	32%	169	33%	175	26%	70	34%	23	43%	36	50%
Public Administration	229	57%	45	69%	66	45%	53	53%	14	79%	51	61%

\*MLDS Center may only report aggregate, de-identified data. Data requests containing data elements subject to the Family Educational Rights and Privacy Act (FERPA) require suppressing values less than 10 to avoid unauthorized disclosure of protected information. Additional values are masked to prevent calculating masked values when group totals and sub-totals are provided. The MLDS Center uses a variety of methods for suppressing, including rounding and perturbing. Suppressed cells are indicated with an \*.

### Appendix 3: High School Graduates, State of Maryland, 2015, Median Quarterly Wage by Sector and Educational Attainment, Five Years after High School Graduation, Fiscal Quarter 2 of 2020

This table presents the number of high school graduates with full-quarter same-employer wage in quarters 19, 20, and 21 and their median quarterly wage. See the **Technical Appendix** for information on full-quarter same-employer wage.

Sector	Same-Employer High School Graduates			No College			Some College			Still in College			Lower Division Degree			Bachelor's Degree or Higher		
	#	%	Median Quarterly Wage	#	%	Median Quarterly Wage	#	%	Median Quarterly Wage	#	%	Median Quarterly Wage	#	%	Median Quarterly Wage	#	%	Median Quarterly Wage
<b>All High School Graduates with Same-Employer Wages</b>	<b>6,893</b>		<b>\$7,031</b>	<b>1,641</b>		<b>\$6,920</b>	<b>2,579</b>		<b>\$6,118</b>	<b>1,284</b>		<b>\$6,173</b>	<b>283</b>		<b>\$7,802</b>	<b>1,106</b>		<b>\$11,870↑</b>
<b>Goods-Producing</b>	645	9%	\$10,661↑	225	14%	\$9,954↑	175	7%	\$8,777	93	7%	\$12,692↑	25	9%	\$8,329	127	11%	\$16,962↑
<b>Trade, Transportation, &amp; Utilities</b>	1,962	29%	\$5,708	584	36%	\$6,164	885	34%	\$5,547	325	25%	\$4,819	70	25%	\$6,233	98	9%	\$6,907
<b>Information</b>	71	1%	\$9,244↑	*	*	*	26	1%	\$9,425↑	*	*	*	*	*	*	25	2%	\$10,305↑
<b>Financial &amp; Real Estate</b>	424	6%	\$9,522↑	68	4%	\$7,522	159	6%	\$8,530	77	6%	\$9,008↑	11	4%	\$10,989↑	109	10%	\$12,807↑
<b>Professional and Business Services</b>	1,082	16%	\$9,754↑	193	12%	\$7,962	291	11%	\$7,254	214	17%	\$9,799↑	48	17%	\$9,357↑	336	30%	\$12,674↑
<b>Education</b>	82	1%	\$8,622	*	*	*	19	1%	\$7,200	*	*	*	*	*	*	29	3%	\$10,000↑
<b>Health Services</b>	1,142	17%	\$6,722	179	11%	\$6,260	422	16%	\$6,094	264	21%	\$6,364	56	20%	\$8,549	221	20%	\$11,040↑
<b>Leisure &amp; Hospitality</b>	783	11%	\$3,758	160	10%	\$4,186	361	14%	\$3,782	158	12%	\$2,570	30	11%	\$4,267	74	7%	\$4,661
<b>Other Services</b>	473	7%	\$7,189	169	10%	\$7,480	175	7%	\$6,719	70	5%	\$6,587	23	8%	\$7,115	36	3%	\$9,024↑
<b>Public Administration</b>	229	3%	\$9,589↑	*	*	*	66	3%	\$8,401	53	4%	\$9,476↑	*	*	*	51	5%	\$10,439↑

↑value is above the living wage, \$8,959

\*MLDS Center may only report aggregate, de-identified data. Data requests containing data elements subject to the Family Educational Rights and Privacy Act (FERPA) require suppressing values less than 10 to avoid unauthorized disclosure of protected information. Additional values are masked to prevent calculating masked values when group totals and sub-totals are provided. The MLDS Center uses a variety of methods for suppressing, including rounding and perturbing. Suppressed cells are indicated with an \*.



## Appendix 4: Technical Documentation

### Introduction

This technical documentation contains information on the primary data and methods used to prepare *The Career Preparation Expansion Act* (CPEA) report as well as overviews of the two state agencies who produce the report.

The annual CPEA report is submitted in fulfillment of the requirement in *The Career Preparation Expansion Act* (CPEA), Chapter 695 of 2017 (see Education Article § 21-205, Annotated Code of Maryland).

#### Report Requirements:

The Maryland Longitudinal Data System (MLDS) Center and the Governor’s Workforce Development Board (GWDB) are required to produce a report on high school graduates for the five-year period after graduation on:

1. Wages earned;
2. Hours worked per week; and
3. The industry in which the individuals are employed.

### State Agencies

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

The **Governor's Workforce Development Board** (GWDB) helps plan, coordinate, and monitor the State of Maryland’s programs and services for workforce development, and advises the Governor on the development, implementation, and modification of the four-year State Plan, as required by federal law.

## MLDS Data

The MLDS 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. 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.

The analysis in the CPEA report focuses on the employment of individuals as they transition into the workforce after receiving their high school diploma, including whether any of the graduates enrolled in college or earned a college degree subsequent to high school graduation. Below is an overview of the available data within the System to support this analysis:

### Education Data

The MLDS contains education data on all students from Maryland public high schools, students attending Maryland public and state-aided independent institutions of higher education, and adults completing GED® Testing or the National External Diploma Program® (NEDP®). Education data begin with the 2007-2008 academic year. The MLDS does not contain education data on students in private high schools or private institutions of higher education. Nor does the MLDS contain data on postsecondary students in continuing education or non-credit programs. Further, data on unsuccessful attempts at fulfilling the GED® or NEDP® requirements are not included in the System. The MLDS contains limited information on out-of-state college enrollment and graduation for Maryland public high school graduates.

### Wage Data

The MLDS System contains workforce data from quarterly Unemployment Insurance (UI) filings beginning with the first fiscal quarter of 2008 for individuals with a Maryland educational record (see the [MLDS Data Inventory](#) for a definition of *educational record*). UI filings are only available for Maryland employees who work for an in-state employer required to file UI and have a Maryland education record. Examples of employers that are not required to file UI include the federal government (including the military), certain non-profits, and self-employed and independent contractors. Individuals working in temporary employment, including federal postsecondary work-study programs, are also not subject to UI filings. These omissions mean it is incorrect to assume that individuals not counted as “employed” are unemployed.

The UI wages reported reflect the compensation paid during a fiscal quarter, rather than when the compensation was earned. UI wages reflect the sum of all compensation, including bonuses, commissions, tips, and other forms of compensation. The UI wage data do not distinguish between part-time and full-time employment, hourly and salaried wages, regular wages and commissions, bonuses, and other incentive pay. The UI wage data provided do not indicate the number of days or the number of hours a person worked in a fiscal quarter.

UI filings for a fiscal quarter may be incomplete. Employers may have filed UI wages after the data have been transmitted to the MLDS Center or have omitted individuals from their file.

Missing wage data and/or corrections to previously reported wages may be provided in subsequent fiscal quarters. While there is no time limit on correcting UI filings, most changes (additions and/or corrections) are completed within one fiscal quarter. The CPEA report includes three fiscal quarters of UI wage data. Two of the fiscal quarters have had at least one fiscal quarter of subsequent UI data reported, including the fiscal quarter used to derive median quarterly wages; therefore, errors in wage amounts due to corrections and late filings have been minimized. One of the fiscal quarters has not yet had a subsequent quarter of UI wage data filed. This fiscal quarter is used as part of the wage full-quarter wage methodology (see below); therefore, the reported wage visibility may be either overstated or understated.

Wage data in the MLDS 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. For example, NAICS 62 is Health Care and Social Assistance, and NAICS 6221 is General Medical and Surgical Hospitals. Individuals who are doctors, hospital administrators, dietitians, and janitorial staff at a hospital would all have this same NAICS code. Employers select the sector and may change their sector designation at any time.

## Contextual Data

Three sources of data were selected to provide context for the results and guide the analysis. Collectively, these sources provide comparisons to the outcomes reported.

### MIT Living Wage Calculator

The [Living Wage Calculator](#) developed by the Massachusetts Institute of Technology (MIT) provides data on the cost of living in various geographic areas across the United States. The living wage calculator considers the cost of food, housing, health insurance, transportation, taxes, 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. The measure selected from the Living Wage Calculator is *required annual income before taxes for one adult with no dependent children* (“Living Wage”). This annual income is converted to a quarterly income to align to the MLDS quarterly wage data. The Living Wage Calculator is reviewed each year in preparation for producing the CPEA report and the income reported is inflation adjusted (if necessary) using the CPI Inflation Calculator provided by the U. S. Department of Labor, Bureau of Labor Statistics to align to the wage period of the CPEA report. In 2020, the Living Wage Calculator was modified to include new categories of living expenses which, in turn, increase the living wage in Maryland by approximately \$1,000 per quarter over the prior formula.

### American Community Survey 5 Year Estimates

The second source of contextual data was American Community Survey (ACS) 5-Year Estimates, 2014-2018. This survey provides extensive data on demographic characteristics, housing, and wages for states and counties throughout the United States. The measure selected from the ACS is *median earnings for workers* (“ACS Wage”). This annual income measure is converted to quarterly earnings to align to the MLDS quarterly wage data. This value is adjusted each year using the CPI inflation calculator provided by the U. S. Department of Labor, Bureau of Labor Statistics to align to the wage period of the CPEA report. It will continue to be used until a new 5-year estimates survey is available.

### Minimum Wage in Maryland

The minimum wage in Maryland from July 2018 to December 2019 was \$10.10 per hour. Maryland raised the minimum wage to \$15.00 per hour with an annual phased-in increase of \$0.60 to \$0.75 per hour between January 1, 2020 and January 1, 2026 contingent upon the number of employees. The quarterly minimum wage is calculated based upon employment for 30 hours per week for 52 weeks per year. The 30 hours per week threshold was selected to calculate earnings as employment at 30 hours is the minimum to be classified as full-time.

## Full-Quarter Wage Methodology

The high school graduates included in the wage analysis are selected by using the U. S. Census Bureau Stable or Full-Quarter Employment Methodology (referenced as Full-Quarter throughout the report)<sup>29</sup>. This methodology excludes individuals from the median calculation who do not have wage data in either

the fiscal quarter before or after the period of interest. The period of interest for CPEA is five years or the 20<sup>th</sup> fiscal quarter after high school graduation; accordingly, individuals were included in the median wage calculation if, in addition to having wages in quarter 20, they also had wages in quarters 19 and 21. For each high school cohort, the 20<sup>th</sup> quarter after graduation is fiscal quarter 2 in a calendar year. For the 2021 report on the 2015 cohort of high school graduates, the 20<sup>th</sup> quarter was fiscal quarter 2 of 2020. Accordingly, individuals were included in the median wage calculation<sup>30</sup> if, in addition to having wages in quarter 2 of 2020, they also had wages in fiscal quarter 1 of 2020 and fiscal quarter 3 of 2020.

The Full-Quarter Methodology provides a standardized method of determining whose wages to include in the analysis. Restricting analysis to “stable wage earners” provides a clearer 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, of workers who are absent, transient, or not fully engaged in the workforce. This method also reduces the impact of UI wage data limitations by excluding wages that may be incorrect due to incomplete or late filings.

### Same-Employer Wage Methodology

The U.S. Census Bureau Stable or Full-Quarter Employment Methodology<sup>31</sup> was used as a basis for selecting high school graduates to include in the industry-level wage analysis with the added requirement that the high school graduate must have been employed by the same employer for the nine-month period (Q19, Q20, and Q21) before deriving median wage calculations using Q20 wages.<sup>32</sup>

## Wage Bands

Wage bands were constructed to align to the contextual indicators selected for this report. The wages earned in the 20<sup>th</sup> quarter for those with full-quarter employment were used to assign each high school graduate to one of four wage groups. The wage band values are updated each year to align to that year's wages.

Income Band	20 <sup>th</sup> Fiscal Quarter Wage
<b>Less than Minimum Wage</b>	\$1 to <Minimum Wage
<b>Between Minimum Wage and Living Wage</b>	>=Minimum Wage to Living Wage
<b>Between the Living Wage and ACS Wage</b>	>=Living Wage to ACS Wage
<b>Greater than or equal to the ACS Wage</b>	>= ACS Wage

## NAICS Groupings

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.<sup>33</sup>

Sector Category	Sector Sub-Category	NAICS
Goods Producing	Natural Resources & Mining	Agriculture (11)
Goods Producing	Natural Resources & Mining	Mining (21)
Goods Producing	Goods Production	Construction (23)
Goods Producing	Goods Production	Manufacturing (31-33)
Service Providing	Trade, Transportation, & Utilities	Utilities (22)
Service Providing	Trade, Transportation, & Utilities	Wholesale & Retail (42-45)
Service Providing	Trade, Transportation, & Utilities	Transportation & Warehousing (48-49)
Service Providing	Information	Information Technology (51)
Service Providing	Financial & Real Estate	Finance & Insurance (52)
Service Providing	Financial & Real Estate	Real Estate (53)
Service Providing	Professional & Business Services	Professional, Scientific, Technical Services (54)
Service Providing	Professional & Business Services	Management (55)
Service Providing	Professional & Business Services	Administrative, Support & Waste Management (56)
Service Providing	Education & Health Services	Educational Services (61)
Service Providing	Education & Health Services	Health Care & Social Assistance (62)
Service Providing	Leisure & Hospitality	Arts, Entertainment & Recreation (71)
Service Providing	Leisure & Hospitality	Accommodation & Food Services (72)
Service Providing	Other Services	Other Services (81)
Service Providing	Public Administration	Public Administration (92)

## Educational Attainment Methodology

Educational attainment has important implications for workforce outcomes:

- First, research suggests that employment outcomes and wages may vary by level of educational attainment.<sup>34</sup>
- Second, high school graduates enrolled in college may be employed in part-time entry-level minimum-wage positions so they can prioritize college; comparatively high school graduates that did not enroll in college 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 of postsecondary degree. Certificate, 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 college degree. For example, Certificate graduates may enter the workforce three years earlier than Bachelor's degree graduates, while Associate's graduates may enter the workforce two years earlier than Bachelor's degree graduates.

Accordingly, separating the population of interest into groups by educational attainment helps identify wage differences that may occur when using a common point in time (five years after high school graduation) as a measure for a population who has had different amounts of time in the workforce.

Educational attainment was frozen 6 months prior to the end of the five-year period 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. The 20<sup>th</sup> quarter after high school graduation aligns with the postsecondary Spring term which would end in May or June of a given year; however, assignment to an educational attainment category is made as of each student's status in Fall (for example, December 2019 or Quarter 18 post-high school graduation for the 2015 cohort).

Seven educational attainment groups were created using the definitions below. The dates referenced below are for the 2015 cohort of high school graduates. The time periods advance one year with each subsequent cohort.

1. **No College:** High school graduates without an in-state or out-of-state college enrollment record by the end of Spring term 2020.
2. **Some College:** High school graduates enrolled for at least one term between Fall 2015 and Fall 2019 but who are not actively enrolled in college in the Spring 2020 or Fall 2020 terms and did not earn any level of postsecondary degree.
3. **Still in College:** High school graduates enrolled in college in-state or out-of-state in the Spring 2020 and/or Fall 2020 terms. These graduates may have earned a postsecondary degree by the end of the Fall 2019 term; however, they are still actively pursuing additional postsecondary education.
4. **Certificate Graduates:** High school graduates who earned a postsecondary Certificate by the end of the fall term 2019 and are not enrolled in college in the Spring 2020 or Fall 2020 terms. These graduates may have continued their postsecondary education beyond the Certificate; however, they had disengaged from postsecondary education without earning an additional degree by Fall term 2019.

5. **Associate's Graduates:** High school graduates who earned an Associate's degree by the end of the Fall term 2019 and are not enrolled in college in the Spring 2020 and/or Fall 2020 terms. These graduates may have continued their postsecondary education beyond the Associate's; however, they had disengaged from postsecondary education without earning an additional degree by Fall term 2019.
6. **Bachelor's Graduates:** High school graduates who earned a Bachelor's degree by the end of the Fall term 2019 and are not enrolled in college in the Spring 2020 and/or Fall 2020 terms. These graduates may have continued their postsecondary education beyond the Bachelor's; however, they had disengaged from postsecondary education without earning an additional degree by Fall term 2019.
7. **Other Degree Attainment:** High school graduates who earned a post-baccalaureate degree or a graduate degree by the end of Fall 2019 term and are not enrolled in college in the Spring 2020 or Fall 2020 terms. These graduates may have continued their postsecondary education; however, they had disengaged from postsecondary education without earning an additional degree by Fall term 2019.

Educational attainment should not be interpreted as college graduation rates as the CPEA 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 stop attending college without graduating. Reporting on time to degree and college completion rates is outside the scope of this report.

Note, some high school graduates received more than one degree during the five-year period. Each graduate is counted only once, based upon highest degree attained. For example, if a high school graduate earned an Associate's degree and then earned a Bachelor's degree, the high school graduate is counted in the Bachelor's category. Other high school graduates earned a degree but were still progressing toward an additional degree, therefore some high school graduates in the *Still in College* category have already earned a degree. No high school graduates in the *Some College* category earned any level of postsecondary degree.

## Demographic and Economic Groups

All high school graduates were assigned to one racial category, one ethnic category, one gender category, and one economic category.<sup>35</sup>

Assignment to racial and ethnic categories were made based upon the methodology used by the U. S. Census for its Current Population Survey (CPS) which reports race independent of ethnicity. The racial and ethnic categories included in CPEA align to standard reporting practices employed by the U.S. Bureau of Labor Statistics (BLS). BLS reports labor data for three racial categories: White alone, Black or African-American alone, and Asian alone. Each racial category consists of individuals that identify with a single race but may be of any ethnicity. All other racial categories, including individuals identifying with two or more races, are omitted from BLS reports due to the small population size.<sup>36</sup> Small populations limit the conclusions that can be drawn from the data and may compromise the quality of any research.



This report uses student-level data on free or reduced-price meals (FARMS) eligibility for assignment to an economic category. FARMS is part of the National School Lunch Program (NSLP), administered by the United States Department of Agriculture (USDA). Students may be eligible for free or reduced-price meals through participation in certain need-based Federal Assistance Programs or if their family's income falls below a specified poverty threshold. Eligibility status may be determined through annual household applications or through direct certification. Students living in households with incomes at or below 130% of the federal poverty level are eligible for free meals, while students living in households with incomes between 130% and 185% of the federal poverty level are eligible for reduced-priced meals. Some students are directly certified based on participation in certain programs rather than exclusively on financial need (e.g., migrant education program, education of homeless children and youth, foster care).

FARMS does not measure socioeconomic status. Socioeconomic status is a complex measure that includes social status or prestige, occupation, educational attainment, income, and other factors. Many researchers use FARMS eligibility as a proxy for poverty. Using FARMS participation as a proxy for poverty may not correctly identify students experiencing poverty and treats all students as experiencing the same level of poverty. Using FARMS participation as a proxy for student poverty has limitations:

- The USDA has determined the number of children applying for FARMS declines in middle and high school due to the stigma associated with FARMS.
- Individual schools with 40% or more FARMS eligible students can elect to participate in the FARMS community eligibility provision. This election may report all students as FARMS even though some do not meet the poverty threshold.
- Student eligibility for FARMS can also change over time. Identifying FARMS participation in a single year may omit students who participated in FARMS in previous years.
- Not all students that participate in FARMS have identical levels of poverty. FARMS eligibility ranges from 130% to 185% of the federal poverty level.

A student's FARMS participation may be evaluated in a single year or based upon duration of time a student participates in FARMS. The method selected for determining FARMS participation can produce quite different results. The CPEA report evaluates FARMS status during 12<sup>th</sup> grade. As such, it likely underrepresents the number of students experiencing poverty in a given cohort, students living in poverty for longer durations, and does not include student cycling in and out of poverty throughout their elementary and secondary education.

Sources on FARMS:

- U.S. Department of Agriculture. Food and Nutrition Service. *Child nutrition programs: Income eligibility guidelines (July 1, 2019 - June 30, 2020)* <https://www.fns.usda.gov/cnp/fr-032019>
- Nation Center for Education Statistics. *Free or reduced price lunch: A proxy for poverty?* <https://nces.ed.gov/blogs/nces/post/free-or-reduced-price-lunch-a-proxy-for-poverty>
- Harwell, M., & LeBeau, B., *Student eligibility for a free lunch as an SES measure in education research*. Educational Researcher, 39(2), 120-131.

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## End Notes

- <sup>1</sup>This definition of high school graduate was selected to align to reporting definitions used by the National Center for Education Statistics (NCES) and the U. S. Bureau of Labor Statistics (BLS).
- <sup>2</sup>See Technical Appendix. *Demographic and Economic Groups* section.
- <sup>3</sup>See Technical Appendix. *Educational Attainment Methodology* section. Educational 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 college completion is outside the scope of this report.
- <sup>4</sup>See Technical Appendix. *Full-Quarter Wage Methodology* section.
- <sup>5</sup>See Technical Appendix. *Contextual Data* section.
- <sup>6</sup>See Technical Appendix. *Same-Employer Wage Methodology* section
- See Technical Appendix. *Same-Employer Methodology* section
- <sup>8</sup>Baum, S., Pender, M. & Welch, M. (2019). [Education Pays 2019: The benefits of higher education for individuals and society](#). College Board.
- <sup>9</sup>Baum, S, Pender, M. & Welch, M. (2019). [Education Pays 2019: The benefits of higher education for individuals and society](#). College Board.
- <sup>10</sup>Wages are actual for Q2 2020 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.
- <sup>11</sup>Glasmeyer, A. (2020). [Living Wage Calculator](#). Massachusetts Institute of Technology.
- <sup>12</sup>United States Census Bureau. (2019). 2014-2018 American Community Survey 5-Year Estimates. U.S. Census Bureau's American Community Survey Office. <https://www.census.gov/programs-surveys/acs>
- <sup>13</sup>Projected lifetime earnings are based on the sum of median quarterly wages for individuals through the age of 65 for each education level.
- <sup>14</sup>For example, Baum, S, Ma, J. & Payea, K. (2013). [Education Pays 2013: The benefits of higher education for individuals and society](#). College Board.
- <sup>15</sup>Greenstone, M. & Looney, A. (2011). Unemployment and Earnings Losses: A Look at Long-Term Impacts of the Great Recession on American Workers. Brookings Institute. November 4, 2011. <https://www.brookings.edu/blog/jobs/2011/11/04/unemployment-and-earnings-losses-a-look-at-long-term-impacts-of-the-great-recession-on-american-workers/>
- <sup>16</sup> Living wage footnote
- <sup>17</sup> SEM footnote
- <sup>18</sup>See Technical Appendix. *NAICS Groupings* section
- <sup>19</sup>Maryland Office of Workforce Information & Performance. (2020). *Annual Maryland Current Employment Statistics (CES) - Workforce Information & Performance*.
- <sup>20</sup>Maryland Department of Labor. (2021). *Maryland at a Glance*. <https://msa.maryland.gov/msa/mdmanual/01glance/economy/html/labor.htm>
- <sup>21</sup>Maryland Department of Labor. (2021). *Maryland - Second Quarter 2020 - Industry Series - Maryland's Quarterly Census of Employment and Wages (QCEW) – OWIP*. <https://www.dlrr.state.md.us/lmi/emppay/tab1md22020.shtml>
- <sup>22</sup>U.S. Bureau of Economic Analysis. (2021). *Quarterly Gross Domestic Product (GDP) by State*. <https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1&acrdn=1>
- <sup>23</sup>Baum, S., Pender, M. & Welch, M. (2019). [Education Pays 2019: The benefits of higher education for individuals and society](#). College Board.
- <sup>24</sup>Baum, S, Pender, M. & Welch, M. (2019). [Education Pays 2019: The benefits of higher education for individuals and society](#). College Board.
- <sup>25</sup>Bureau of Labor Statistics, U.S. Department of Labor. (2020). *The Economics Daily*, <https://www.bls.gov/opub/ted/2020/unemployment-rate-2-percent-for-college-grads-3-8-percent-for-high-school-grads-in-january-2020.htm>.

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<sup>26</sup>For example:

Baum, S, Pender, M. & Welch, M. (2019). [Education Pays 2019: The benefits of higher education for individuals and society](#). College Board.

Hussar, B., Zhang, J., Hein, S., Wang, K., Roberts, A., Cui, J., Smith, M., Bullock Mann, F., Barmer, A., and Dilig, R. (2020). [The Condition of Education 2020](#) (NCES 2020-144). U.S. Department of Education. Washington, DC: National Center for Education Statistics.  
<https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2020144>.

<sup>27</sup> Maryland Higher Education Commission. (2017). Data Book.  
<https://mhec.maryland.gov/publications/Pages/research/index.aspx>

<sup>28</sup>MLDS Center. (2020). Educational and Workforce Outcomes for Associate's Degree Graduates from Maryland's Community Colleges. Baltimore, MD: Maryland Longitudinal Data System Center.

<sup>29</sup>The 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 any employer. The methodology is applied here to derive quarterly, rather than monthly median earnings.  
[https://lehd.ces.census.gov/doc/QWI\\_101.pdf](https://lehd.ces.census.gov/doc/QWI_101.pdf).

<sup>30</sup>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.

<sup>31</sup>The 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](https://lehd.ces.census.gov/doc/QWI_101.pdf).

<sup>32</sup>For 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.

<sup>33</sup>The 20 NAICS codes were grouped based upon industry sector as aligned to U. S. Bureau of Labor Statistics and U.S. Statistical Agencies Office of Management and Budget (Federal), Economic Classification Policy Committee.

<sup>34</sup>For example, see:

Baum, S., Ma, J. & Payea, K. (2013). Education Pays 2013: The benefits of higher education for individuals and society. College Board.

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

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

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

<sup>35</sup>Economic status was determined through a student's Free or Reduced Price Meals (FARMS) eligibility in their final year of high school. FARMS indicates that a student is eligible to receive low-cost or no-cost meals each school day. Students may be eligible for free or reduced-price meals through participation in certain Federal Assistance Programs or based on their family's income falling below a specified poverty threshold. The education community and this report rely on FARMS eligibility to identify economically disadvantaged students. See Appendix 8 for a discussion on FARMS.

<sup>36</sup>U.S. Bureau of Labor Statistics. (2020). Labor Force Statistics from the Current Population Survey: Concepts and Definitions. <https://www.bls.gov/cps/definitions.htm#race>