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Differences in Five Year Outcomes for High School Graduates: Wages and Wage Visibility Pre and Post COVID-19

***Supplement to the Annual Career Preparation Expansion Act 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 the first of three supplements to the report 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.

This supplement focuses on the short-term implications of COVID-19 on high school graduates, five years after high school graduation by comparing wage visibility and wages for the 2015 cohort of high school graduates to prior cohorts. The second supplement will focus on wage disruption and resumption patterns during the first three fiscal quarters of 2020 and their relationship to educational attainment and demographics. The final supplement will consider whether the impact of COVID-19 varied by labor sector during the first three fiscal quarters in 2020. See the **Technical Appendix** for information on the MLDS Center, the GWDB, and the data and methods used for this report.

## REPORT OVERVIEW AND PRIMARY FINDINGS

This supplement to the 2021 annual report on high school graduate outcomes explores the initial shock of COVID-19 on the wages and wage visibility of the 2015 cohort of high school graduates five years after graduation.<sup>1</sup> For this cohort, five years after high school graduation was 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).

Almost 60,000 students graduated from Maryland public high schools in 2015. The graduating class was half female, half white, and predominantly non-economically disadvantaged (Not FARMS).<sup>2</sup> The population size, demographic distribution, and economic status of the class of 2015 was approximately the same as all prior graduating classes. See **Appendix 3**. High school graduates from the 2015 cohort also achieved similar educational attainment compared to prior cohorts.<sup>3</sup> See **Appendix 2**. Three-quarters of high school graduates from the 2015 cohort pursued postsecondary education in the five year period after high school the same as prior cohorts.

In short, there is little variation between the composition of the 2015 cohort of graduates and their educational attainment and prior cohorts<sup>4</sup>, except that, five years after high school graduation, when these graduates were in the early stages of their careers, the Maryland economy shutdown due to the global pandemic.

Overall, the rate at which the 2015 high school graduating class was visible in the workforce was thirty-percentage points lower than all prior cohorts at the five-year mark. Wage visibility rates<sup>5</sup> exhibited some variation by demographic and economic characteristics. See **Table A**.

**Table A. Maryland Public High School Graduates, 2014 and 2015, Wage Visibility, Fiscal Quarter 2 of 2019 and 2020**

		2015 Wage Visibility	2014 Wage Visibility
<b>All High School Graduates</b>		<b>17%</b>	<b>47%</b>
<b>Gender</b>	Female	18%	49%
	Male	16%	45%
<b>Ethnicity</b>	Hispanic, Any Race	16%	47%
<b>Race</b>	African-American/Black Alone	18%	47%
	Asian Alone	12%	35%
	White Alone	16%	48%
<b>Economic Status<sup>2</sup></b>	FARMS	19%	51%
	Not FARMS	16%	45%

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

Median quarterly wages were reduced for all demographic and economic groups compared to the 2014 cohort. The reduction was uniform between some groups. For example, the *White Alone-Black Alone* gap was consistent with the prior year. For other groups, *Female-Male* and *White Alone-Hispanic*, the reduction doubled the wage gaps present in 2014 (2019 wages) compared to 2015 (2020 wages). See **Table B**.

**Table B. Maryland Public High School Graduates, 2014 and 2015, Median Wage Gaps, Fiscal Quarter 2 of 2019 and 2020**

Demographic / Economic Group		2015 High School Graduates	2014 High School Graduates
<b>Female to Male Gap</b>		-\$1,404	-\$832
<b>Ethnicity / Race to White Alone Gap</b>	Hispanic, Any Race	-\$588	-\$230
	African-American / Black Alone	-\$1,561	-\$1,479
	Asian Alone	-\$932	-\$776
<b>FARMS to Not FARMS Gap<sup>2</sup></b>		-\$695	-\$678

Wage visibility by educational attainment demonstrated that all high school graduates were impacted by the economic shutdown. Graduates with a *Bachelor's Degree* or *Other Degree* had the smallest percentage point decrease in wage visibility at 24% and 7%, respectively. Their wage visibility was reduced but not as severely as that of other educational attainment groups. See **Table C** and **Appendix 5**.

**Table C. Maryland Public High School Graduates, 2014 and 2015, Wage Visibility, Fiscal Quarter 2 of 2019 and 2020**

Educational Attainment Level	2015 High School Graduates	2014 High School Graduates
<b>All High School Graduates</b>	<b>17%</b>	<b>47%</b>
<b>No College</b>	17%	47%
<b>Some College</b>	19%	51%
<b>Still in College</b>	17%	47%
<b>Certificate</b>	25%	63%
<b>Associate's</b>	20%	59%
<b>Bachelor's</b>	13%	37%
<b>Other Degrees</b>	16%	23%

Further, the median quarterly wage for the 2015 cohort with a *Bachelor's Degree* increased as compared to the 2014 cohort with a *Bachelor's Degree*. All other groups, those with no college education, still in college or with a lower level degree (Associate's or Certificate), had a decrease in median quarter wages as compared to the 2014 cohort. See **Table D**.

**Table D. Maryland Public High School Graduates, 2014 and 2015, Median Quarterly Wages, Fiscal Quarter 2 of 2020 and 2019**

Educational Attainment Level	2015 High School Graduates	2014 High School Graduates
<b>All High School Graduates</b>	<b>\$5,792</b>	<b>\$6,160</b>
<b>No College</b>	\$5,863	\$6,392
<b>Some College</b>	\$5,122	\$5,546
<b>Still in College</b>	\$4,823	\$4,891
<b>Certificate</b>	\$7,594	\$7,885
<b>Associate's</b>	\$6,816	\$7,121
<b>Bachelor's</b>	\$10,454	\$10,000
<b>Other Degree</b>	\$12,235	\$13,973

The full findings for this supplement report, conclusions and policy implications follow this introductory section.

Additional supplements to the full 2021 Career Preparation Expansion Act (CPEA) report will focus on the wage disruption and resumption patterns and impact of the economic shutdown by labor sector. All CPEA reports can be found on the Maryland Longitudinal Data System Center website under:

**Center Output > Center Reports > Annual Report on the Workforce Outcomes of Maryland Public High School Graduates**

<https://mldscenter.maryland.gov/CenterReports.html>.

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# FULL RESULTS

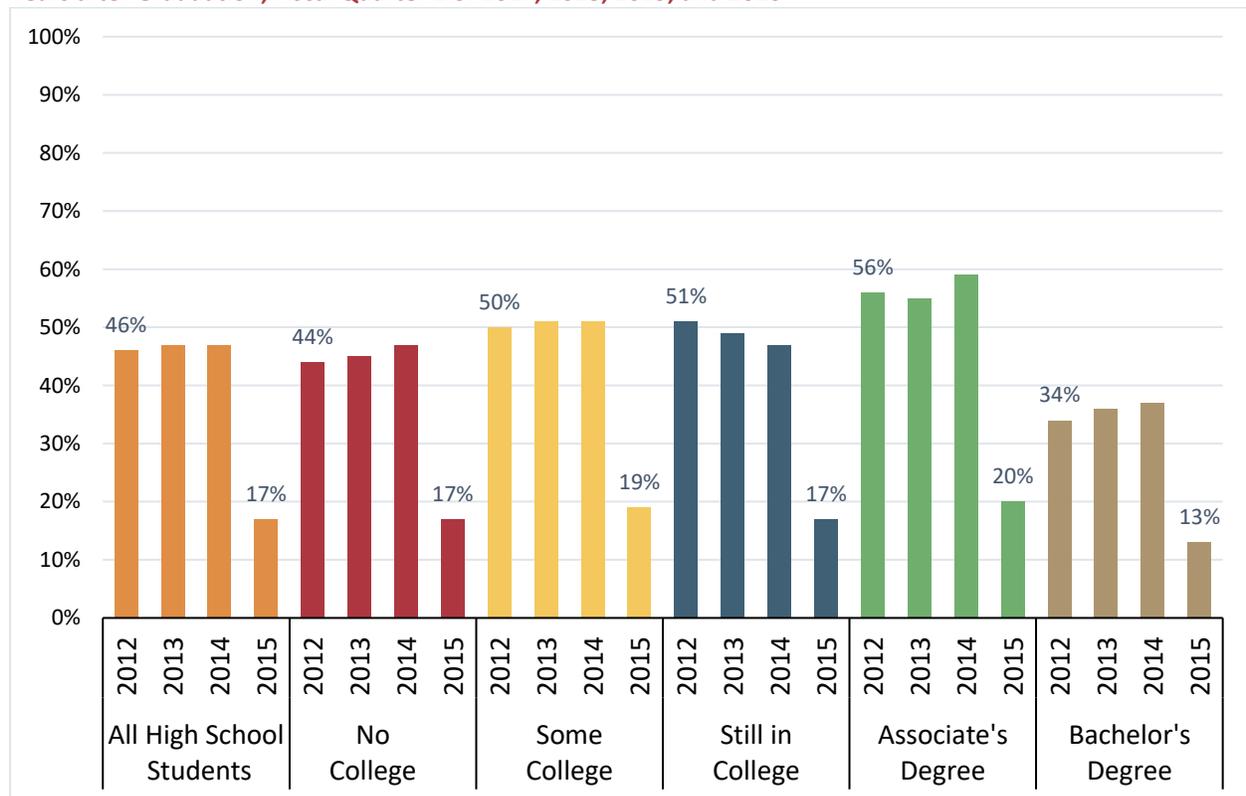
## Wage Visibility and Educational Attainment, 2012 to 2015 Cohorts

The initial shock of the economic shutdown on wage visibility<sup>6</sup> for the 2015 cohort is startling. See **Chart 1** and **Appendix 5**. Wage visibility, which had been consistent for the last three reporting periods,<sup>7</sup> was reduced by almost thirty percentage points compared to all prior years. And, this reduction was nearly uniform across most educational attainment groups. The decline in wage visibility from 2012 to 2015 ranged from a high of thirty-six percentage points for *Associate's Degrees* (56% to 20%) to a low of twenty-one percentage points for *Bachelor's Degrees* (34% to 13%). Those with *No College* or *Some College* were close to the overall average (twenty-seven and thirty-one percentage points respectively).

This result suggests that high school graduates with a Bachelor's degree were engaged in the labor force in ways that supported the transition to "work from home" during the first two fiscal quarters the COVID-19 shutdown. The larger drop in wage visibility for high school graduates without a Bachelor's degree suggests that all other high school graduates experienced greater disruption to workforce participation during this period.

Whether or not wage visibility differentially rebounds or remains somewhat uniformly reduced as the Maryland economy reopened is yet to be studied.

**Chart 1. Maryland Public High School Graduates, 2012 to 2015, Wage Visibility by Educational Attainment, Five Years after Graduation, Fiscal Quarter 2 of 2017, 2018, 2019, and 2020**



## Wage Visibility and Median Quarterly Wages, 2012 to 2015 Cohorts

For those with full-quarter wages<sup>8</sup> (wages for nine consecutive months or spanning January to September of 2020), the median quarterly wages were slightly lower for the 2015 cohort when compared to prior cohorts, except for those high school graduates with a *Bachelor's Degree*. See **Table 1**. High School graduates from the 2015 cohort with a *Bachelor's Degree* had a small increase (\$500) in the median quarterly wage (2020 wages) compared to 2014 cohort (2019 wages) and \$1,000 increase in the median quarterly wage compared to the 2012 cohort (2017 wages).

The decreases in the median quarterly wages for other groups may be driven by a reduction in hours worked rather than an actual reduction

in wage rates. For example, *No College* and *Some College* high school graduates from all four cohort years are concentrated in the *Trade, Transportation & Utilities*, and *Leisure & Hospitality* labor sectors.<sup>9</sup> These sectors include retail stores, grocery stores, restaurants and hotels, many of which rely on hourly wage workers rather than salaried staff. Some businesses in these sectors were considered “essential services” and remained open, but with reduced operating hours and staffing levels. High school graduates from the 2015 cohort in these sectors most likely earned the same hourly wage as the three pre-COVID cohorts, but experienced wage declines due to reductions in hours worked per week.

**Table 1. Maryland Public High School Graduates, 2012 to 2015, Median Quarterly Wages by Educational Attainment, Five Years after Graduation, Fiscal Quarter 2 of 2017, 2018, 2019, and 2020**

Educational Attainment Level	2015	2014	2013	2012
	Median Quarterly Wage Q2 2020	Median Quarterly Wage Q2 2019	Median Quarterly Wage Q2 2018	Median Quarterly Wage Q2 2017
<b>All High School Graduates</b>	\$5,792	\$6,160	\$6,160	\$5,916
<b>High School Graduates, No College</b>	\$5,863	\$6,392	\$6,331	\$5,931
<b>Some College</b>	\$5,122	\$5,546	\$5,532	\$5,425
<b>Still in College</b>	\$4,823	\$4,891	\$5,299	\$5,347
<b>Certificate</b>	\$7,594	\$7,885	\$8,629	\$7,953
<b>Associate's Degree</b>	\$6,816	\$7,121	\$7,509	\$7,059
<b>Bachelor's Degree</b>	\$10,454	\$10,000	\$10,000	\$9,539
<b>Other Degree</b>	\$12,235	\$13,973	\$13,973	\$12,074

High school graduates with an *Associate's Degree* from all four cohort years are concentrated in the *Health Care & Social Assistance, Educational Services*, and *Professional & Business Services* labor sectors.<sup>10</sup> The Health and Education sectors were also deemed essential services, services that should not be impacted by reductions to hours of operations or staffing levels. However, as the

economic shutdown began to impact daily life, some individuals may have elected to reduce their work schedule, take unpaid leave, or change to a job that paid less but provided more flexibility to meet the demands of at-home remote learning for their children or caring for children or family members who would have otherwise gone to day care facilities that were now closed. For *Associate's Degree*

high school graduates with wages in the first nine months of 2020, the lower median quarterly wage as compared to prior cohorts may reflect transitions in employment rather than reductions in hours worked or changes in staffing levels.

High school graduates with a *Bachelor’s Degree* were concentrated in the *Health Care & Social Assistance, Educational Services, and Professional & Business Services* labor sectors.<sup>11</sup>

For these graduates, the slight increase in median quarterly wages compared to pre-COVID cohorts suggests that, for those graduates who could remain working for the full nine-months (January to September), their additional education allowed them to secure jobs that more readily translated to “work from home” and may have offered flexibility in hours worked during the day as well as days of the week so they could better balance the competing demands work and family.

### Median Quarterly Wages and the Living Wage, 2012 to 2015 Cohorts

Median quarterly wages for each cohort can also be compared to the Maryland living wage<sup>12</sup> to determine if high school graduates who were visible in the Maryland workforce for nine consecutive months were earning wages at a level that provides for or exceeds the basic cost of living in Maryland.

Overall, high school graduates with full-quarter wages from all four cohort years did not have sufficient wages to meet the basic cost of living in Maryland despite being engaged in the workforce for three consecutive fiscal quarters, or nine months, five years after high school graduation. This result was not uniform across all educational attainment groups. **See Table 2.**

**Table 2. Maryland Public High School Graduates, 2012 to 2015, Median Quarterly Wages by Educational Attainment, Five Years after Graduation, Fiscal Quarter 2 of 2017, 2018, 2019, and 2020**

Educational Attainment	2015 High School Graduates		2014 High School Graduates		2013 High School Graduates		2012 High School Graduates	
	Median Quarterly Wage Q2 2020	Variation to Living Wage (\$8,959)	Median Quarterly Wage Q2 2019	Variation to Living Wage (\$8,902)	Median Quarterly Wage Q2 2018	Variation to Living Wage (\$8,757)	Median Quarterly Wage Q2 2017	Variation to Living Wage (\$8,513)
<b>All High School Graduates</b>	\$5,792	↓ \$3,167	\$6,160	↓ \$2,742	\$6,160	↓ \$2,597	\$5,916	↓ \$2,597
<b>High School Graduates, No College</b>	\$5,863	↓ \$3,096	\$6,392	↓ \$2,510	\$6,331	↓ \$2,426	\$5,931	↓ \$2,582
<b>Some College</b>	\$5,122	↓ \$3,837	\$5,546	↓ \$3,356	\$5,532	↓ \$3,225	\$5,425	↓ \$3,088
<b>Still in College</b>	\$4,823	↓ \$4,136	\$4,891	↓ \$4,011	\$5,299	↓ \$3,458	\$5,347	↓ \$3,166
<b>Certificate</b>	\$7,594	↓ \$1,365	\$7,885	↓ \$1,017	\$8,629	↓ \$128	\$7,953	↓ \$560
<b>Associate’s Degree</b>	\$6,816	↓ \$2,143	\$7,121	↓ \$1,781	\$7,509	↓ \$1,248	\$7,059	↓ \$1,454
<b>Bachelor’s Degree</b>	\$10,454	↑ \$1,495	\$10,000	↑ \$1,098	\$10,000	↑ \$1,243	\$9,539	↑ \$1,026
<b>Other Degrees</b>	\$12,235	↑ \$3,276	\$13,973	↑ \$5,071	\$13,973	↑ \$5,216	\$12,074	↑ \$3,561

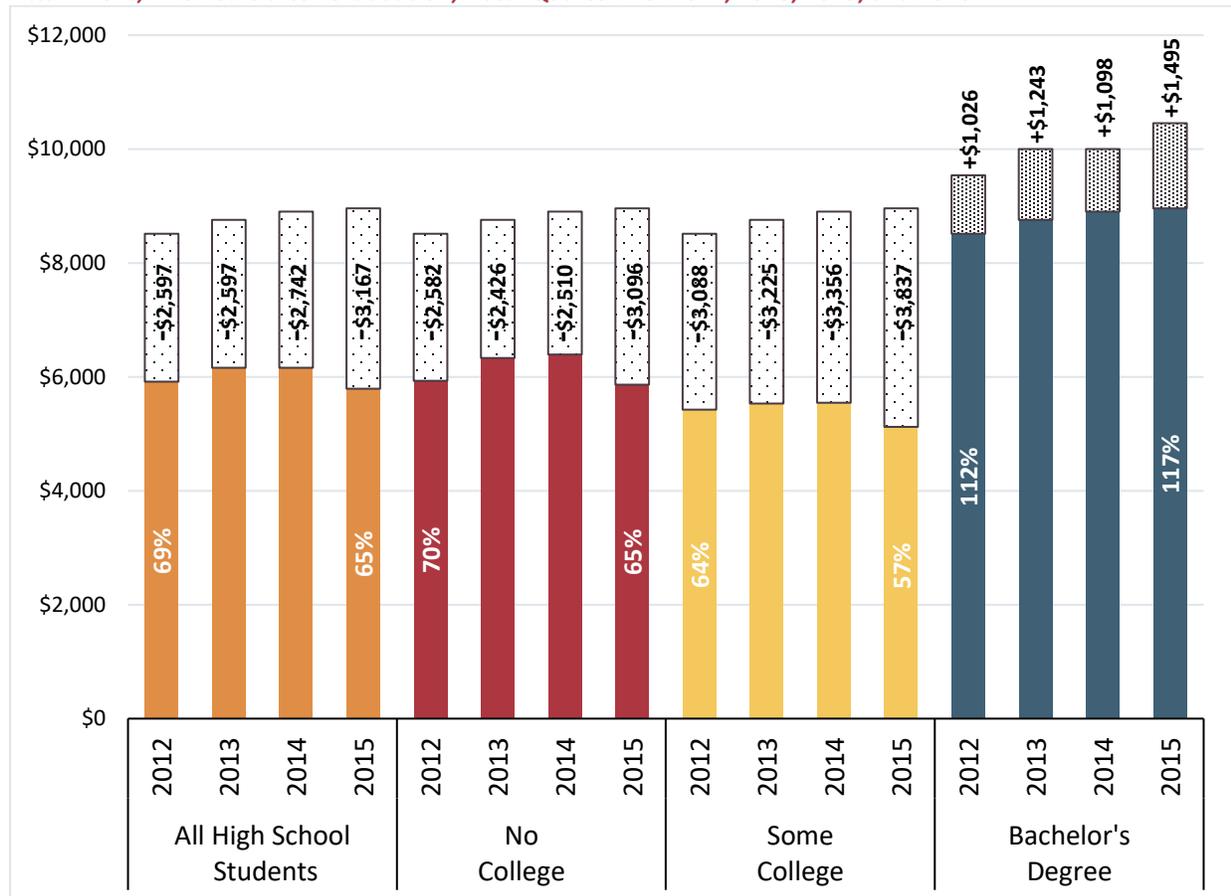
↑value is above the living wage, ↓ value is below the living wage

For all cohort years only the *Bachelor's Degree* and the *Other Degree* (post-baccalaureate and graduate level degrees) groups had a median quarterly wage above the living wage.<sup>13</sup> See **Table 2**. The median quarterly wage for all other groups for all years ranged from \$200 below the living wage (*Certificate, 2013*) to \$4,000 below the living wage (*Still in College, 2015*). While lower wages may be expected for those still pursuing a postsecondary education, both pre-COVID and during COVID the *No College* and *Some College* high school graduates had median quarterly wages that resulted in annual shortfalls for meeting the cost of living in Maryland of \$12,000 and \$16,000 respectively. Those with an *Associate's Degree* or *Certificate* fared better than those without a college degree. The gap between the median wages

and the living wage for these groups was about half that of those with no college degree (\$6,000 to \$8,000 annually).

The gap between the living wage and median quarterly wages does not just persist across cohort years, but for those with a deficit the gap increased during COVID. See **Chart 2**. For example, the median quarterly wage covered 70% of the living wage for those with *No College* in the 2012 cohort. Coverage dropped to 65% of the living wage for the 2015 cohort. The decline was even more pronounced for those with *Some College*. The median quarterly wage for the 2012 cohort covered 65% of the living wage, but under COVID, coverage dropped to 57% for the 2015 cohort. These decline increased the annual earnings shortfall by almost \$3,000 for the 2015 cohort.

**Chart 2. Maryland Public High School Graduates, 2012 to 2015, Living Wage Coverage by Educational Attainment, Five Years after Graduation, Fiscal Quarter 2 of 2017, 2018, 2019, and 2020**



Conversely, the *Bachelor's Degree* group realized additional wage growth between 2012 and 2015. In 2017, high school graduates from the 2012 cohort with a *Bachelor's Degree* had a median quarterly wage that was 112% of the living wage, for a surplus of \$1,000 per quarter or \$4,000 for the year. In 2020, the 2015 cohort of high school graduates, despite the economic shutdown, experienced a \$500 growth in the surplus. High school graduates with a *Bachelor's Degree* who were able to remain in the workforce for nine consecutive months had a median quarterly wage in fiscal quarter 2 of 2020, the first full quarter of economic shutdown that exceeded the living wage by 17%, providing a surplus of almost \$1,500 per quarter or \$6,000 per year.

While the wage variation between educational attainment groups both pre and during COVID are stark, it is hard to understand if the living

wage during fiscal quarter 2 of 2020 accurately represents the *actual* living wage for this period. Wages required to meet the cost of living in Maryland during COVID may have varied greatly depending on family circumstances. The economic shutdown may have resulted in some financial savings for some individuals as children no longer went to daycare, commuting to work ceased for many Marylanders, and spending on entertainment and dining was suspended.

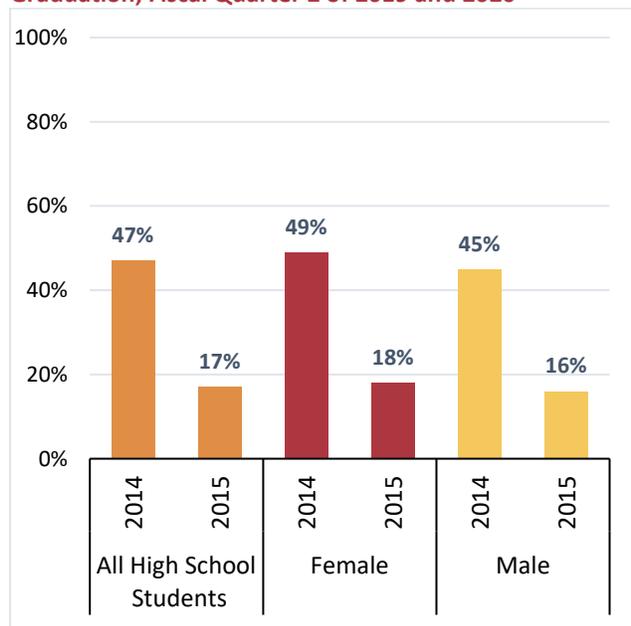
Conversely, inflation and scarcity drove up costs for food and other household items, increasing the cost of living. Further, households that may have been able to go without broadband Internet or a computer could no longer forgo something that previously may have been considered a luxury, again adding to the cost of living for some families.

## Demographic and Economic Groups: Wage Visibility and Median Quarterly Wages

The impact of the economic shutdown on wage visibility reduction was primarily uniform across all demographic and economic<sup>14</sup> groups. However, there were some more pronounced variation within racial groups. More surprising is the disproportionate decline in median quarterly wages and the pronounced intra-group wage difference within gender and some race/ethnicity groups.

Wage visibility was down thirty-one percentage points for males and twenty-nine percentage points for females compared to the 2014 cohort, leaving females slightly more visible in the wage data than males. See **Chart 3**.

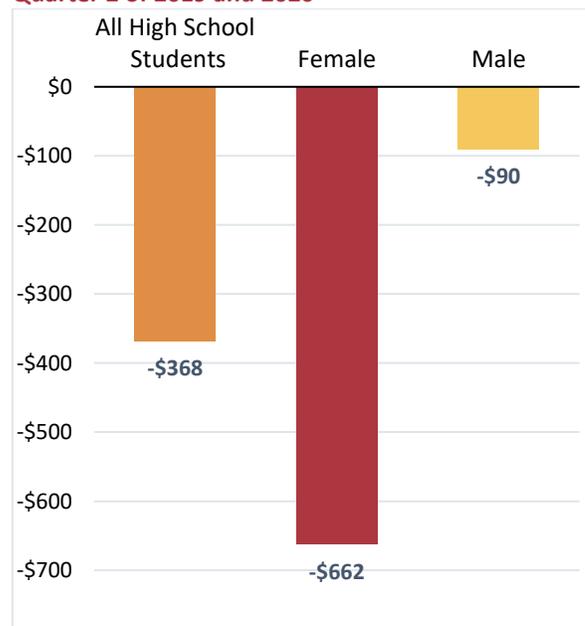
**Chart 3. Maryland Public High School Graduates, 2014 and 2015, Wage Visibility by Gender, Five Years after Graduation, Fiscal Quarter 2 of 2019 and 2020**



More pronounced is the contrast in the decline in median quarterly wages between these two groups. Males had only a \$90 decrease in median quarterly wages between the 2014 to 2015 cohorts (\$6,634 to \$6,544), while females had a decline of \$662 (\$5,802 to \$5,140) or almost \$2,500 for the year despite being more visible in the wage data than males. See **Chart 4**. This decline is compounded by the fact that the gap

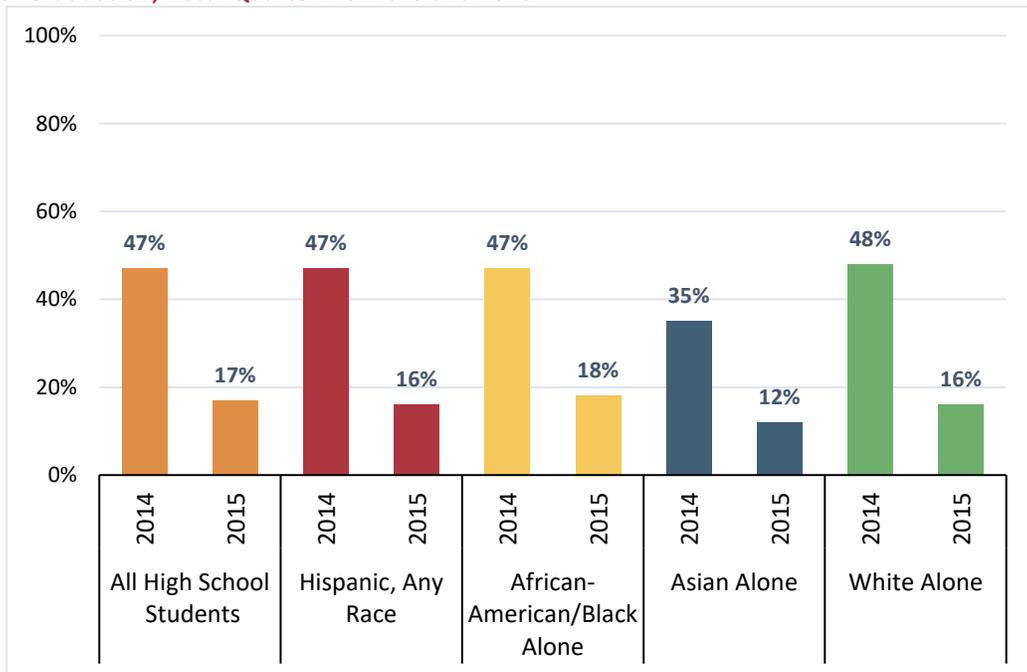
between female and male median quarterly wages nearly doubled. Males from the 2014 cohort (2019 wages) had a median quarterly wage that was \$832 more than the female median quarterly wage. For the 2015 cohort the gap between median quarterly wages (2020 wages) grew to \$1,404. See **Table 4**. A gap that grew despite both groups being engaged in the workforce for nine months.

**Chart 4. Maryland Public High School Graduates, 2014 and 2015, Median Quarterly Wage Decline by Gender, Five Years after Graduation, Fiscal Quarter 2 of 2019 and 2020**



The rate of wage visibility decline between 2014 and 2015 had greater variation when considered by race and ethnicity. The decline in visibility was smaller for *Asian Alone* (twenty-three percentage point drop from 2014 to 2015) and larger for all other groups. *African-American/Black Alone, Hispanic, Any Race, and White Alone* all had larger, similar declines in wage visibility ranging between twenty-nine and thirty-two percentage points from 2014 to 2015. See **Chart 5**.

**Chart 5. Maryland Public High School Graduates, 2014 and 2015, Wage Visibility by Race and Ethnicity, Five Years after Graduation, Fiscal Quarter 2 of 2019 and 2020**

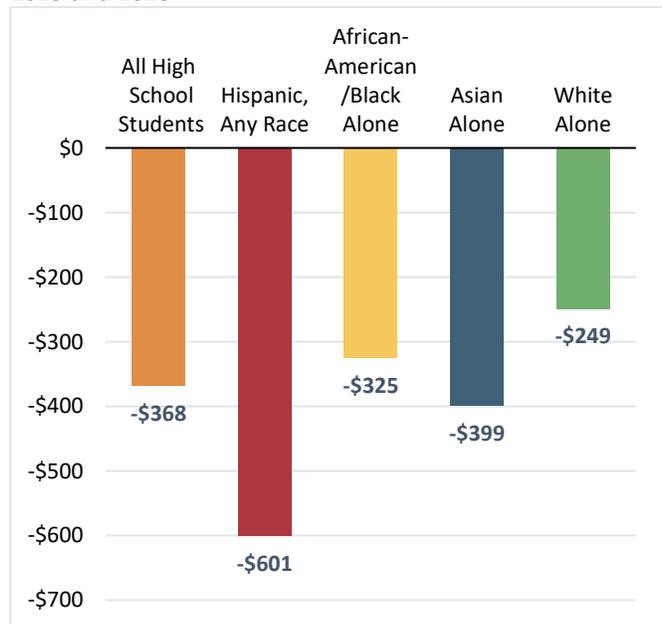


More disproportionate is the decline in median quarterly wages for some racial and ethnic groups from 2014 to 2015. The decrease in median quarterly wages for *Hispanics, Any Race* was almost double the overall decrease (\$601 vs \$368) while the decrease for *White Alone* was two-thirds of the overall rate (\$249 vs \$368). See **Chart 6**. Unlike the growth in the gap between male and female wages, the gaps present between *African-American/Black Alone* and *Asian Alone* as compared to *White Alone* remained constant. For example, in 2014, the median quarter wage for *African-American/Black Alone* was \$5,352, around \$1,500 less than *White Alone*. In 2015, the gap was still around \$1,500 as both groups' experienced similar rates of decline in median quarterly wages.

Conversely, the gap in median quarterly wages between *Asian Alone -White Alone* and *Hispanic, Any Race-White Alone* grew

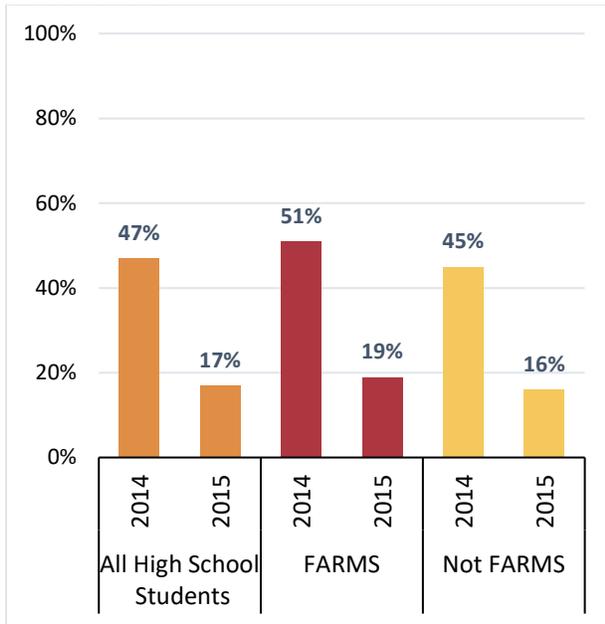
from 2014 to 2015 as *White Alone* high school graduates experience smaller decreases in median quarterly wages by comparison. See **Table 4**.

**Chart 6. Maryland Public High School Graduates, 2014 and 2015, Median Quarterly Wage Decline by Race and Ethnicity, Five Years after Graduation, Fiscal Quarter 2 of 2019 and 2020**

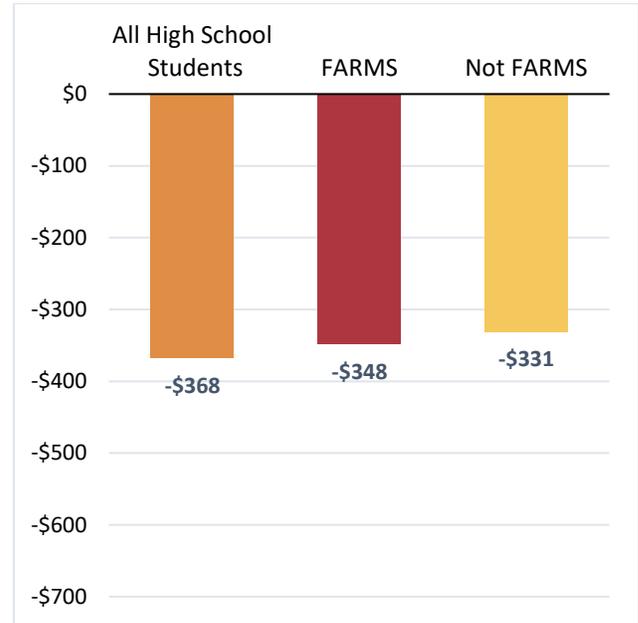


Wage visibility decline from 2014 to 2015 between economic groups<sup>15</sup> was slightly higher for *FARMS* than *Not FARMS* high school graduates. Wage visibility for *FARMS* high school graduates dropped by thirty-two percentage points while *Not FARMS* dropped by twenty-nine percentage points. See **Chart 7**.

**Chart 7. Maryland Public High School Graduates, 2014 and 2015, Wage Visibility by Economic Status, Five Years after Graduation, Fiscal Quarter 2 of 2019 and 2020**



**Chart 8. Maryland Public High School Graduates, 2014 and 2015, Median Quarterly Wage Decline by Economic Status, Five Years after Graduation, Fiscal Quarter 2 of 2019 and 2020**



Both groups experienced about the same decrease in median quarterly wages from 2014 to 2015. See **Chart 8**. In 2014, the median quarterly wage for *FARMS* high school graduates was about \$800 lower than *Not FARMS* high school graduates. In 2015, this amount increase slightly to just over \$900. See **Table 4**.

**Table 3. Maryland Public High School Graduates, 2014 and 2015, Wage Visibility by Demographic and Economic Group, Five Years after Graduation, Fiscal Quarter 2 of 2019 and 2020**

Demographic/Economic Group	2015 High School Graduates			2014 High School Graduates			Percentage Point Visibility Change 2014 to 2015
	Total	Q2 2020 Full-Quarter Wages		Total	Q2 2019 Full-Quarter Wages		
		Total	%		Total	%	
<b>All High School Graduates</b>	57,509	9,706	17%	58,136	27,330	47%	30%
Female	28,993	5,138	18%	29,663	14,570	49%	31%
Male	28,516	4,568	16%	28,473	12,760	45%	29%
Hispanic, Any Race	6,060	984	16%	5,913	2,783	47%	31%
African-American/Black Alone	20,112	3,698	18%	20,182	9,537	47%	29%
Asian Alone	3,858	467	12%	3,765	1,309	35%	23%
White Alone	28,105	4,606	16%	29,031	14,039	48%	32%
FARMS	19,033	3,653	19%	18,612	9,443	51%	32%
Not FARMS	38,476	6,053	16%	39,524	17,887	45%	29%

**Table 4. Maryland Public High School Graduates, 2014 and 2015, Median Quarterly Wage Decrease by Demographic and Economic Group, Five Years after Graduation, Fiscal Quarter 2 of 2019 and 2020**

Demographic/Economic Group	2015 High School Graduates		2014 High School Graduates		Change in Median Quarterly Wage 2014 to 2015
	Median Quarterly Wage Q2 2020	Wage Gap Q2 2020	Median Quarterly Wage Q2 2019	Wage Gap Q2 2019	
<b>All High School Graduates</b>	\$5,792	-	\$6,160	-	↓\$368
<b>Female</b>	\$5,140	↓\$1,404	\$5,802	↓\$832	↓\$662
<b>Male</b>	\$6,544	-	\$6,634	-	↓\$90
<b>Hispanic, Any Race</b>	\$6,000	↓\$588	\$6,601	↓\$230	↓\$601
<b>African-American/Black Alone</b>	\$5,027	↓\$1,561	\$5,352	↓\$1,479	↓\$325
<b>Asian Alone</b>	\$5,656	↓\$932	\$6,055	↓\$776	↓\$399
<b>White Alone</b>	\$6,588	-	\$6,831	-	↓\$243
<b>FARMS</b>	\$5,411	↓\$695	\$5,759	↓\$678	↓\$348
<b>Not FARMS</b>	\$6,106	-	\$6,437	-	↓\$331

Note: Wage gaps is the within fiscal quarter difference in median quarterly wages between Female to Male, Hispanic, Any Race to White, African-American/Black to White, Asian to White, and FARMS to Not FARMS.

The variation in the median quarterly wages between demographic and economic groups may reflect changes in hours work rather than differential pay. As the economy shut down, even high school graduates working in “essential services” may have experienced reductions in work schedules due to reduced hours of operations for many businesses. Other high school graduates may have transitioned to lower wage and/or part-time positions that offered flexible schedules in order to care for children no longer able to attend daycare or support online learning for school-aged children. Finally, it is possible that some high school graduates, despite having wage data across three consecutive fiscal quarters, went through periods of unemployment within the period, reducing overall wages for any one fiscal quarter.

It is also important to consider the impact that gender and race-based clustering within labor sectors may have had on the decreases in wage visibility and median quarterly wages, and that this clustering may magnify wage disparities during COVID. The 2020 Career Preparation Expansion Act report<sup>16</sup> explored the impact of

gender, race, ethnicity, and economic status on the workforce outcomes of the 2014 cohort of high school graduates five years after high school in fiscal quarter 2 of 2019. The analysis for this report highlighted that some demographic and economic groups were concentrated within labor sectors which have lower wages, and those sectors may have experienced differential changes during COVID that contributed to the growth in wage disparities for the 2015 cohort. For example, for the 2014 cohort, *Females* were concentrated in the *Health Care & Social Assistance* labor sector which had an overall median quarterly wage of \$6,881 and *Males* were concentrated in *Goods Producing* labor sector which had an overall median quarterly wage of \$10,120. Similar patterns were also identified by race/ethnicity and FARMS/Not FARMS. *Females, Non-White* and *FARMS* high school graduates tended to be overrepresented in labor sectors with lower wages. An additional supplement to the report on the 2015 cohort will consider if these same clustering patterns persisted and explore the wage visibility and median quarterly wages by labor sector under COVID.

## CONCLUSIONS AND IMPLICATIONS

The fiscal quarter of interest for this report was fiscal quarter 2 of 2020 which reports on wages paid from April to June. The State of Maryland, under emergency declarations from Governor Hogan, entered stay-at-home orders on March 13, 2020. These stay-at-home orders brought much of the Maryland economy to a halt at the end of fiscal quarter 1 of 2020 and suspended much of the Maryland economy during the fiscal quarters of interest for this report.

The analysis in this report, like prior reports, demonstrates that outcomes, five years after high school graduation, vary greatly by educational attainment. Wages are higher for high school graduates who finish college at all degree levels than those who 1) do not pursue postsecondary education or 2) 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>17</sup> Most notably, only high school graduates who earned a Bachelor's degree or higher have earnings above the living wage, and, were less impacted by the economic shutdown, at least in the short-term. Bachelor's degree earners remained visible in the wage data at a higher rate than other groups and those who were visible in the wage data experienced wage increases compared to the prior year when all other groups experienced wage decreases.

The results presented here also suggest that females and some racial or ethnic groups experienced greater disruptions to employment and/or greater reductions in earnings during the economic shutdown. Females were visible in the wage data at rates slightly higher than males yet their median quarterly wages were almost \$1,500 less than males. The limitations of the wage data make it difficult to fully interpret the wage gaps between groups. **See**

**Appendix 1: Wage Data.** Wage data provide the sector of the employer rather than the job of the employee. The wage differentials may exist to due wage inequality where some individuals receive lower pay for the same position or they may be attributable to the wide range of positions within each industry. For example, all industries require specialized skills, such as accounting, or technical skills, such as network security, these positions require specific training or expertise like are likely to have higher pay. Other positions within the same industry require general skills, such as managers or sales representatives, and are likely to pay less, especially at entry level. The between group wage gaps may really reflect a concentration of demographic or economic groups within a lower paying labor sector or in lower-paying positions within a labor sector rather than lower pay for the same job.

The differences in median quarterly wages between some groups may appear small; however, even small wages gaps when annualized can be meaningful. For example, the difference in median quarterly wages between *Hispanic, Any Race* and *White Alone* was just under \$600 per quarter, a difference that translates to \$2,400 per year. Or, considered another way, this difference covers the cost of food (\$3,010) or medical expenses (\$3,177) per year in the State of Maryland for one working adult according to the MIT Living Wage Calculator.<sup>18</sup>

Finally, in considering the wages and wage gaps presented in this supplement, it is important to remember that these high school graduates are approximately 23 years old at the point of wage observation, in entry-level positions, and unlikely to have extensive work histories that would translate to wage premiums, yet differences are present and those differences

appear to have grown under COVID. In some regards, all high school graduates appear to have had nearly equal workforce disruptions during the initial economic shutdown; however closer examination of wages suggests that some groups experienced greater financial hardship, pushing them farther away from earning a living wage. The initial impact of COVID on wages and workforce participation may have substantial implications for lifetime earnings.

The limitations of the UI Wage data<sup>19</sup> make it impossible to know if a high school graduate was *not* working or if a graduate had fluctuations in the number of days/hours/weeks worked in a fiscal period. It is possible the lower wages for the 2015 cohort represents periodic unemployment and underemployment within a fiscal quarter which would have reduced overall earnings in a period. Further, the federal response to COVID included the passage of the CARES Act on March 27, 2020, and the Paycheck Protection Program and Health Care Enhancement Act (PPP) on April 24, 2020. These acts provided funds to states to support individuals and businesses impacted by the economic shutdown. Governor Hogan committed federal and state funds to support small businesses, economically and socially disadvantaged Marylanders, education, and critical sectors of the economy. These funds provided direct cash transfers, extended unemployment benefits, covered expenses for childcare services, offered access to low interest/no interest loans and other critical

supports to Marylanders. The funds Marylanders received from these programs, whether as unemployment insurance claims or from their employer in lieu of or to supplement regular pay are not reported in unemployment insurance filings. It is possible that some high school graduates reported as *not visible* in the wage data or reported with lower wages actually remained employed receiving full wages or supplemental wages through CARES or PPP. Without these data, unemployed high school graduates cannot be distinguished from those who were employed but being paid through CARES or PPP. Or to determine if high school graduates who were *visible* received supplemental funds through these programs so that what appears to be reductions in earnings or growth in wage gaps really reflects only those wages earned directly from the employer not those earned indirectly through CARES or PPP. In short, data limitations make it difficult to understand if overall financial resources were really reduced in 2015 and for whom.

Additional supplements to the 2021 Career Preparation Expansion Act report on the outcomes of high school graduates from 2015 will continue to explore workforce participation, patterns of workforce disruption, and the disparate impact of the economic shutdown on demographic and economic groups. Collectively these reports will help to quantify the short-term impact of COVID on high school graduates who are in the beginning stages of their careers.

## POLICY IMPLICATIONS

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While COVID-19 impacted many facets of life for Marylanders, the policy implications considered here are limited to those that directly tie to the Maryland economy and the wages received by Marylanders engaged in the labor force. COVID has changed the Maryland economy. Some businesses are now gone while new businesses have emerged. Both have direct implications for the labor market. The collapse of some sectors means that individuals who were previously employed now need to be retrained to return to the new labor market while emerging and expanding markets have skill needs that may not be addressed by current education programs or licenses. While this report focuses on the short-term impact of COVID on high school graduates five years after high school, the thirty percentage point drop in wage visibility suggests that programs that support long-term outcomes for workforce reentry will be critical to stabilizing the post-COVID Maryland economy.

One workforce retraining policy to consider is whether the emergency healthcare credentials that were established in response to COVID could be made permanent. At the onset of the pandemic Maryland needed to increase its capacity to care for the sick. Neither the Maryland Department of Labor (Labor) nor the Maryland Higher Education Commission (MHEC) alone could address this critical workforce shortage; however, the Maryland Institute for Emergency Medical Services Systems (MIEMSS), had the authority to establish emergency credentials for healthcare workers. MIEMSS established new tiers of credentials for nurses and other healthcare workers and partnered with Maryland's institutions of higher education to identify students in the education pipeline who had the competencies to qualify for these emergency credentials. The emergency credentials, in turn, allowed the holder to enter

into the workforce and perform limited and specific duties. This approach was endorsed by the Maryland Department of Health's Board of Nursing.

The emergency healthcare credentials expired when the state of emergency was lifted; however, this policy highlights an opportunity to isolate – and license – components of longer educational programs into shorter-term specializations. These short-term credentials have the potential to rapidly return displaced workers to the labor market in highly skilled jobs.

This policy also suggests that there may be other licensed fields that could be subdivided into smaller components and/or restructured to provide stackable credentials. These options would support rapid re-development of the workforce when the economy shifts. The Maryland Department of Labor oversees twenty-five different occupational and professional licensing divisions.<sup>20</sup> The Maryland Department of Health oversees twenty licensing boards.<sup>21</sup> Collectively these cover a wide range of professions, including architecture, accounting, real estate, pharmacy, massage therapy, social work and more. Further, Labor provides career pathways through its Maryland Apprenticeship and Training Program (MATP) within the Division of Workforce Development and Adult Learning. Finding opportunities to restructure licensed occupations and expand MATP programs could help accelerate a return to the labor force for Marylanders displaced by the pandemic.

Similarly, existing Associate's degree programs offered at Maryland community colleges could be reviewed to see which would be feasible to convert into shorter Certificate programs or non-credit workforce training programs. Short-term (3 to 9 months) programs as compared to

a two year Associate's degree could quickly reskill or upskill Marylanders who became unemployed during COVID. Analysis completed on workforce outcomes for Certificate graduate suggest these short term credentials offer a wage premium and therefore could be another important component on the road to COVID recovery.<sup>22</sup> Students in these programs may be eligible for MHEC's Workforce Shortage Student Assistance Grant Program or its Workforce Development Sequence Scholarship to defray costs with pursuing training to reenter the workforce.

An additional policy area to explore is the award of postsecondary credit. MHEC holds regulatory authority for establishing policies related to the award credit. MHEC could consider building on policies established by the American Council on Education that support the evaluation and award credit for life experience. Individuals who experienced workforce disruptions could receive credit for the skills they developed from a previous job to help accelerate their time to program completion or degree attainment. These credit award policies may also help high school graduates with *Some College*. Approximately one-third of high school graduates attempt college and disengage without earning a degree. Programs that expand the acceptance of transfer credit such as those outlined in the 2021 Transfer with Success Act or proposed 2022 Transfer Platform Act or define policies for awarding credit prior learning such as those proposed in the 2022 Academic Credit for Prior Learning Examinations Act would support this group's reentry into the education pipeline and recovery from economic hardship.

This supplemental report suggests that high school graduates with a Bachelor's degree or higher appear to be engaged in career track employment that offers greater stability and flexibility in uncertain times. MHEC could

expand the presence of and programs offered at the Regional Higher Education Centers (RHEC) in Maryland to increase Bachelor's degree attainment. The eight RHECs are located in areas that lack access to comprehensive four-year postsecondary institutions. The intent of the RHEC is to increase access to Bachelor's degrees in unserved and underserved areas. RHECs could be an option for high school graduates, who five years after graduation, have never attended college (around 14,000 graduates), have some college (around 20,000 graduates) or have an Associate's degree or Certificate (around 2,000 graduates). At age 23, these graduates have established roots in a community and may be less likely to move for additional education but may pursue additional education if it is locally available. RHECs could even be located within the Maryland Department of Labor's American Jobs Centers (AJC) located in each county. The AJCs provide services to job seekers, including referrals for training programs, but perhaps they could also house RHECs or, conversely, AJCs could house RHECs for a synergistic relationship to help those seeking additional education reenter the workforce.

Finally, policies are needed to address inequality in wages independent of COVID. Some wage gaps may be driven by pay discrimination, while other wage gaps may be the results of women and people of color concentrating in lower paying labor sectors rather than pay discrimination for the same job. Policies are needed to attract and retain females and people of color in labor sectors with higher wages or to increase the pay for sectors with low wages to break the cycle of generational poverty. Labor sectors with wage premiums often require additional education and training. Recruitment strategies to attract women and people of color to these labor sectors are needed, as is funding to complete the necessary training to enter these sectors.

## APENDICES

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### Appendix 1: 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 General Educational Development 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

### 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.

### 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>23</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>24</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.

## 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>25</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>26</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>27</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.

## Appendix 2: Maryland Public High School Graduates, 2012 to 2015, Educational Attainment, Five Years after Graduation

Educational Attainment	2015 High School Graduates		2014 High School Graduates		2013 High School Graduates		2012 High School Graduates	
	Total	%	Total	%	Total	%	Total	%
High School Graduates, No College	13,768	24%	13,497	23%	14,226	24%	14,118	24%
Some College	19,686	34%	20,456	35%	21,316	36%	20,778	35%
Still in College	11,228	20%	11,210	19%	11,704	20%	12,719	21%
Certificate	209	<1%	218	<1%	269	<1%	213	<1%
Associate's Degree	1,537	3%	1,568	3%	1,490	3%	1,418	2%
Bachelor's Degree	11,019	19%	11,134	19%	10,496	18%	10,213	17%
Other Degree	62	<1%	53	<1%	59	<1%	51	<1%
<b>All High School Graduates</b>	<b>57,509</b>		<b>58,136</b>		<b>59,560</b>		<b>59,510</b>	

## Appendix 3: Maryland Public High School Graduates, 2014 and 2015, Demographic and Economic Distribution

Demographic/Economic Group	2015 High School Graduates		2014 High School Graduates	
	Total	%	Total	%
<b>All High School Graduates</b>	<b>57,509</b>		<b>58,136</b>	
Female	28,993	50%	29,663	51%
Male	28,516	50%	28,473	49%
Hispanic, Any Race	6,060	11%	5,913	10%
African-American/Black Alone	20,112	35%	20,182	35%
Asian Alone	3,858	7%	3,765	6%
White Alone	28,105	49%	29,031	50%
FARMS	19,033	33%	18,612	32%
Not FARMS	38,476	67%	39,524	68%

Appendix 4: Maryland Public High School Graduates, 2014 and 2015, Wage Visibility by Demographic and Economic Group, Five Years after Graduation, Fiscal Quarter 2 of 2019 and 2020

Demographic/Economic Group	2015 High School Graduates				2014 High School Graduates			
	Total	%	Q2 2020 Full-Quarter Wages	%	Total	%	Q2 2019 Full-Quarter Wages	%
<b>All High School Graduates</b>	<b>57,509</b>		<b>9,706</b>		<b>58,136</b>		<b>27,330</b>	
Female	28,993	50%	5,138	53%	29,663	51%	14,570	53%
Male	28,516	50%	4,568	47%	28,473	49%	12,760	47%
Hispanic, Any Race	6,060	11%	984	10%	5,913	10%	2,783	10%
African-American/Black Alone	20,112	35%	3,698	38%	20,182	35%	9,537	35%
Asian Alone	3,858	7%	467	5%	3,765	6%	1,309	5%
White Alone	28,105	49%	4,606	47%	29,031	50%	14,039	51%
FARMS	19,033	33%	3,653	38%	18,612	32%	9,443	35%
Not FARMS	38,476	67%	6,053	62%	39,524	68%	17,887	65%

Appendix 5: Maryland Public High School Graduates, 2012 to 2015, Wage Visibility by Educational Attainment, Five Years after Graduation, Fiscal Quarter 2 of 2017, 2018, 2019, and 2020

Educational Attainment	2015 High School Graduates			2014 High School Graduates			2013 High School Graduates			2012 High School Graduates		
	Total	Q2 2020 Full-Quarter Wages	%	Total	Q2 2019 Full-Quarter Wages	%	Total	Q2 2018 Full-Quarter Wages	%	Total	Q2 2017 Full-Quarter Wages	%
<b>All High School Graduates</b>	57,509	9,706	17%	58,136	27,330	47%	59,560	27,822	47%	59,510	27,535	46%
High School Graduates, No College	13,768	2,303	17%	13,497	6,298	47%	14,226	6,355	45%	14,118	6,251	44%
Some College	19,686	3,677	19%	20,456	10,508	51%	21,316	10,973	51%	20,778	10,421	50%
Still in College	11,228	1,905	17%	11,210	5,292	47%	11,704	5,686	49%	12,719	6,472	51%
Certificate	209	52	25%	218	138	63%	269	167	62%	213	133	62%
Associate's Degree	1,537	315	20%	1,568	925	59%	1,490	822	55%	1,418	793	56%
Bachelor's Degree	11,019	1,444	13%	11,134	4,157	37%	10,496	3,797	36%	10,213	3,450	34%
Other Degree	62	10	16%	53	12	23%	59	22	37%	51	15	29%

## End Notes

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- <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>The Career Preparation Expansion Act has required annual reporting on labor market outcomes for high school graduates five years after graduation since 2018. All annual reports can be retrieved from <https://mldscenter.maryland.gov/CenterReports.html> under the Annual Report on the Workforce Outcomes of Maryland public High School Graduates sections.
- <sup>5</sup>See Technical Appendix. *Full-Quarter Wage Methodology* section. See Technical Appendix. *Demographic and Economic Groups* section.
- <sup>6</sup>See Technical Appendix. *Full-Quarter Wage Methodology* section.
- <sup>7</sup> The Career Preparation Expansion Act has required annual reporting on labor market outcomes for high school graduates five years after graduation since 2018. All annual reports can be retrieved from <https://mldscenter.maryland.gov/CenterReports.html> under the Annual Report on the Workforce Outcomes of Maryland public High School Graduates sections.
- <sup>8</sup>See Technical Appendix. *Full-Quarter Wage Methodology* section.
- <sup>9</sup>The Career Preparation Expansion Act has required annual reporting on labor market outcomes for high school graduates five years after graduation since 2018. All annual reports can be retrieved from <https://mldscenter.maryland.gov/CenterReports.html> under the Annual Report on the Workforce Outcomes of Maryland public High School Graduates sections.
- <sup>10</sup>Ibid.
- <sup>11</sup>Ibid.
- <sup>12</sup>See Technical Appendix. *Contextual Data* section.
- <sup>13</sup>See Technical Appendix. *Contextual Data* section.
- <sup>14</sup>See Technical Appendix. *Demographic and Economic Groups* section.
- <sup>15</sup>See Technical Appendix. *Demographic and Economic Groups* section.
- <sup>16</sup>MLDS Center. (2020). Career Preparation Expansion Act: Annual Report to the General Assembly and Governor Larry Hogan. Baltimore, MD: Maryland Longitudinal Data System Center. [https://mldscenter.maryland.gov/egov/publications/CenterReports/CareerPreparationExpansionAct/CPEA\\_final\\_2020.pdf](https://mldscenter.maryland.gov/egov/publications/CenterReports/CareerPreparationExpansionAct/CPEA_final_2020.pdf)
- <sup>17</sup>Baum, S., Pender, M. & Welch, M. (2019). [Education Pays 2019: The benefits of higher education for individuals and society](#). College Board.
- <sup>18</sup>See Technical Appendix. *Contextual Data* section.
- <sup>19</sup>See Technical Appendix. *MLDS Data* section.
- <sup>20</sup> See <https://dllr.state.md.us/license/oplic.shtml>
- <sup>21</sup> See <https://health.maryland.gov/Pages/boards.aspx>
- <sup>22</sup>MLDS Center. (2017). *More Jobs for Marylanders - Data Analysis and Goal Recommendations*. Report to the General Assembly and Governor Larry Hogan. Baltimore, MD: Maryland Longitudinal Data System Center. <https://mldscenter.maryland.gov/egov/publications/CenterReports/MoreJobsforMarylanders/03CSB317WageGoalsFinalReport.pdf>
- MLDS Center (nd). *Exploring Postsecondary Certificates and Earnings: Supplement to the More Jobs for Marylanders Report*. Baltimore, MD: Maryland Longitudinal Data System Center. <https://mldscenter.maryland.gov/MJFMCerts.html>

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<sup>23</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>24</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>25</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>26</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>27</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>.