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Wage Visibility and Median Quarterly Wage Patterns in the First Two Fiscal Quarters of 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

Wes Moore
Governor

Aruna Miller
Lieutenant Governor

Maryland Longitudinal Data System Center
550 West Baltimore Street
Baltimore, MD 21201
410-706-2085
http://mldscenter.maryland.gov/

Portia Wu
Chair, MLDS Governing Board
Secretary, Department of Labor

Ross Goldstein
Executive Director

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Content Contact
For additional information on this report, please contact the MLDS Center at MLDS.Center@Maryland.gov or call 410-706-2085.

Principal Author
Ann T. Kellogg, Ph.D., Director of Reporting Services
MLDS Center

REPORT REQUIREMENTS

This report is a second supplement to the 2021 report[1] submitted in fulfillment of the requirement in *The Career Preparation Expansion Act* (CPEA), Chapter 695 of 2018 (see Education Article § 21-206, 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.

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.[2] This cohort was the focus of the 2021 CPEA report, and had a five year reporting timeframe that placed them in the labor market at the beginning of the COVID-19 economic shutdown in Maryland in March 2020.

Over 57,000 students graduated from Maryland public high schools in 2015. See **Table A**. The graduating class was half female, half white, and predominantly non-economically disadvantaged (Non-FARMS).[3] High school graduates were disaggregated into educational attainment groups.[4] 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 A. Maryland Public High School Graduates, 2015, Distribution by Demographic and Economic Characteristics

2015 High School Graduates			
All High School Graduates		***57,509***	
		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[2]	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.

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

Educational Attainment Level	2015 High School Graduates	
All High School Graduates	***57,509***	
	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%

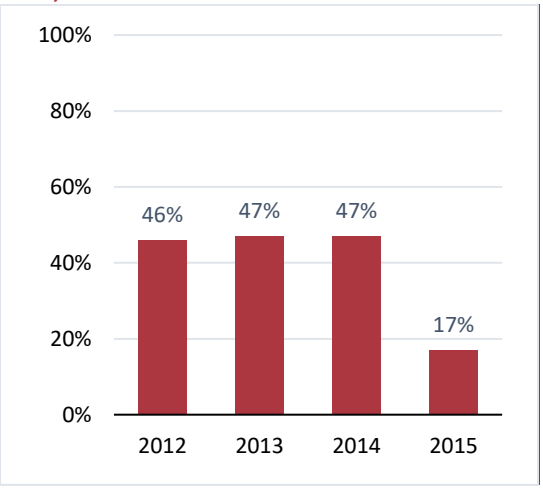
REPORT OVERVIEW, PRIMARY FINDINGS, AND IMPLICATIONS

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.[5] 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). This section highlights the primary findings and implications from this supplemental analysis. Full results and complete data tables appear later in the report.

Wage Visibility Patterns

The impact of the economic shutdown on wage visibility[6] for the 2015 cohort was drastic. See **Chart A**. High school graduates with full-quarter wages[7] five years after high school was reduced by thirty percentage points compared to prior cohorts.

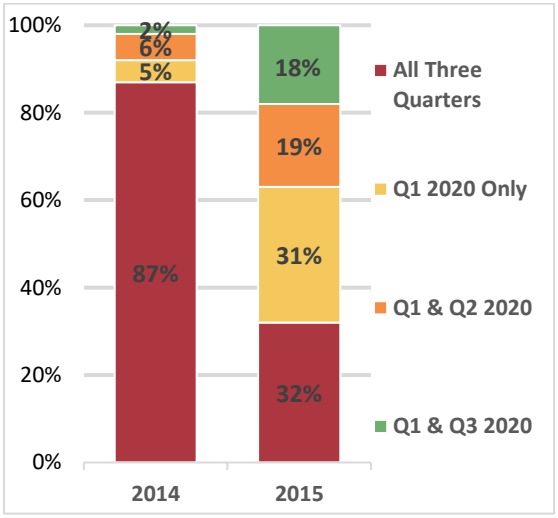
Chart A. Maryland Public High School Graduates with Full-Quarter Wages, 2012, 2013, 2014 and 2015, Five Years after Graduation



The impact can also be visualized by comparing the wage visibility patterns for the 2014 and 2015 cohorts in the first three consecutive fiscal quarters five years after graduation. For the 2014 cohort, 87% of graduates with wages in the first fiscal quarter of 2019 (January to March) had wages in all three fiscal quarters of 2019 (January to September). Comparatively, for the 2015 cohort, only 32% of graduates with wages in the first quarter of 2020 (January to March) had wages in all three fiscal quarters of 2020 (January to September). See **Chart B**. For those *without* wages in all three fiscal quarters (See **Chart B**):

- 31% had wages in the first fiscal quarter (January to March) but were not visible for the next two quarters (April to September);
- 19% were visible in the first fiscal quarter and second fiscal quarters (January to June) but not the third; and
- 18% were visible in the first fiscal quarter (January to March) and third fiscal quarter (July to September) but not the second fiscal quarter (April to June).

Chart B. Maryland Public High School Graduates, 2014 and 2015, Distribution of High School Graduates with Wages in Q19, Five Years after Graduation



This pattern is in stark contrast to that of the 2014 cohort where only a small percentage of the 2014 cohort with wages in first fiscal quarter (January to March 2019) had fluctuating visibility in the second and third fiscal quarters (April to September).

Limitations of the wage data[8] and the distribution of funds related to federal COVID-19 stimulus programs make it difficult to understand if those with intermittent wage visibility remained *employed* but at home with wages supplemented through stimulus funds or were truly unemployed. It is also possible that those who remained visible were not necessarily "working" but receiving stimulus funds. There was no specific guidance on how wage supplement provided through federal COVID stimulus funds were to be reported through unemployment insurance (UI) filings. Additionally, UI wages do not report hours or weeks worked, just wages paid within a fiscal quarter. Further, it is possible that some high school graduates who were visible were actually working at a reduced capacity during Q2 2020 and Q3 2020 or only working intermittently during those quarters. Working at a reduced capacity or intermittently most likely depressed overall earnings for the fiscal quarter. Whether individuals were paid less or worked less cannot be determined using UI wage data.

Wage Visibility and Median Quarterly Wages by Student Group

The drastic decline in wage visibility for the 2015 cohort was equally distributed across all educational attainment, demographic and economic status groups. In only a few instances did the distribution vary by two or three percentage points. High school graduates in the *Black Alone, FARMS* or *Lower Division Degree* groups are distributed at a slightly higher rate (34%) in *All Three Quarters* group than the overall population (32%). And, *Asian Alone*, *Still in College* and *Bachelor's Degree or Higher* also vary up or down by two percentages points. See **Table C.**

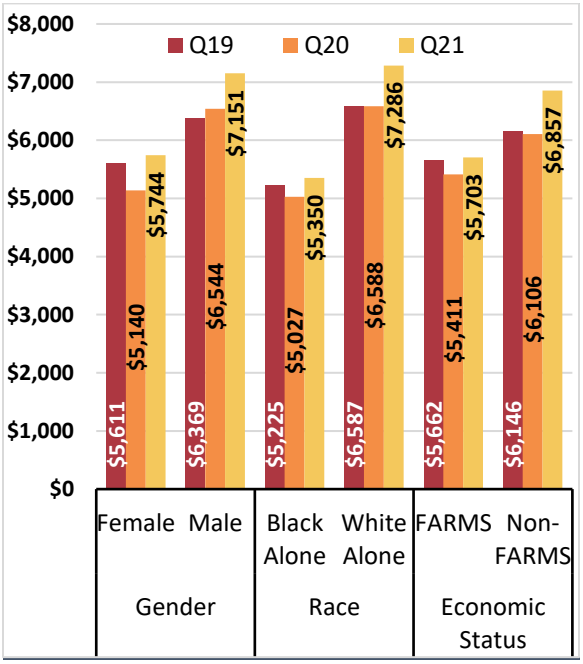
Table C. Maryland Public High School Graduates, 2015, Wage Visibility Distribution by Demographic, Economic Status and Educational Attainment, Five Years after High School Graduation

Group		All Three (Jan-Sept)	Q1 2020 Only (Jan-Mar)	Q1& Q2 2020 (Jan-June)	Q1 & Q3 2020 (Jan-Mar & July-Sept)
All High School Graduates with Q19 Wages		*32%*	*31%*	*19%*	*18%*
Gender	Female	33%	31%	19%	17%
	Male	32%	31%	19%	18%
Ethnicity	Hispanic, Any Race	32%	32%	19%	17%
Race	Black Alone	34%	31%	19%	16%
	Asian Alone	31%	33%	21%	15%
	White Alone	31%	30%	18%	20%
Economic Status[2]	FARMS	34%	31%	19%	17%
	Non-FARMS	31%	31%	19%	18%
Educational Attainment[9]	No College	32%	31%	20%	18%
	Some College	33%	31%	19%	18%
	Still in College	31%	33%	18%	18%
	Lower Division Degree	34%	29%	20%	18%
	Bachelor's Degree or Higher	32%	31%	20%	17%

Wage visibility patterns may not have varied between groups; however, the median quarterly wages did. First, generally, *Males, Non-FARMS,* and *White Alone* not only had higher median quarterly wages than *Females, FARMS* and *Black Alone*, but they also had larger median wage increases between Q1 2020 (January to March 2020) and Q3 2020 (July to September 2020). See **Chart C.**

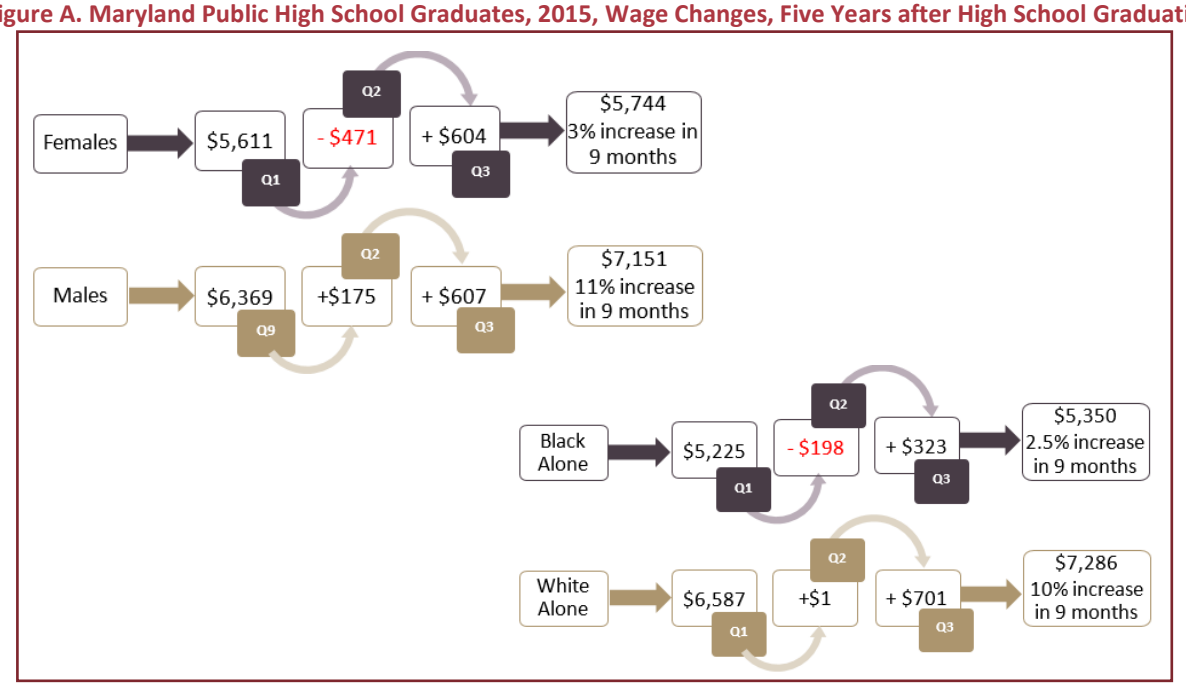
Median quarterly wages for *Females, FARMS* and *Black Alone decreased* in Q2 2020 (April to June 2020) before *increasing* in Q3 2020(July to September 2020) while the median quarterly wages for *Males, White Alone* and *Non-FARMS increased* or remained flat from Q1 2020 to Q2 2020 and then *increased* in Q3 2020. See **Chart C**. The differences in median quarterly wage and wage fluctuations occurred despite all groups being visible in the wage data for three consecutive fiscal quarters (nine straight months from January to September 2020).

Chart C. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Quarter, Five Years after Graduation



Or considered another way, this pattern means that median quarterly wages for *Females* increased $100 or 3% over the nine-month period while median quarterly wages for *Males* increased $800 or 11%. And, earnings for *Black Alone* increased 2.5% while earnings for *White Alone* increased 10%. See **Chart C** and **Figure A.**

Figure A. Maryland Public High School Graduates, 2015, Wage Changes, Five Years after High School Graduation



These median wage patterns resulted in the gaps between median quarterly wages for *Females-Males* and *Black Alone-White Alone* increasing by as much as 50% from Q1 2020 t0 Q3 2020. See **Figure B**. In Q1 2020 or January to March of 2020 the *Female-Male* wage gap was $758 per quarter and the *Black-White* gap was $1,362 per quarter. By Q3 2020 or July to September 2021, the *Female-Male* wage gap was $1,407 per quarter and the *Black-White* gap was $1,936 per quarter.

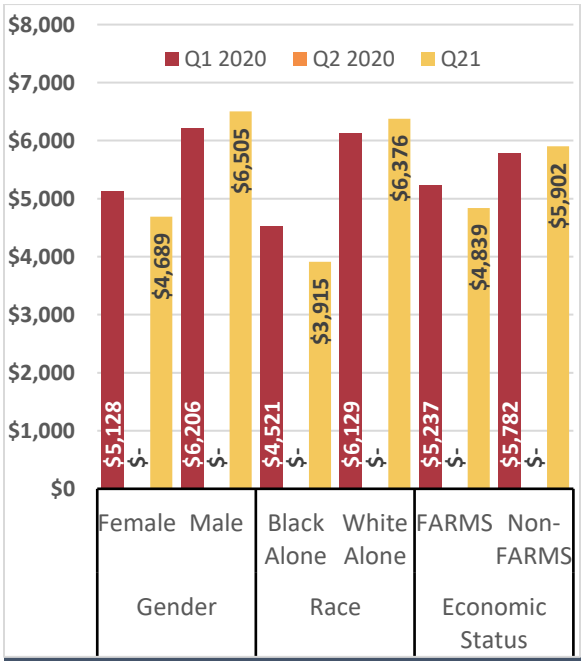
Figure B. Maryland Public High School Graduates, 2015, Wage Gaps, Five Years after High School Graduation

The second notable result with median quarterly wages is for those high school graduates who were visible in the wage data in Q1 of 2020, absent during Q2 2020 (the first full fiscal quarter of COVID), and again visible in Q3 2020 (the second fiscal quarter after COVID).

Males, Non-FARMS, and *White Alone* high school graduates had *increased* median quarterly wages in Q3 2020 over Q1 2020 despite being absent from the labor market in Q2 2020. In other words, there appears to be no consequences on their wage trajectory for these groups from their lack of wage visibility in Q2 2020. See **Chart D**.

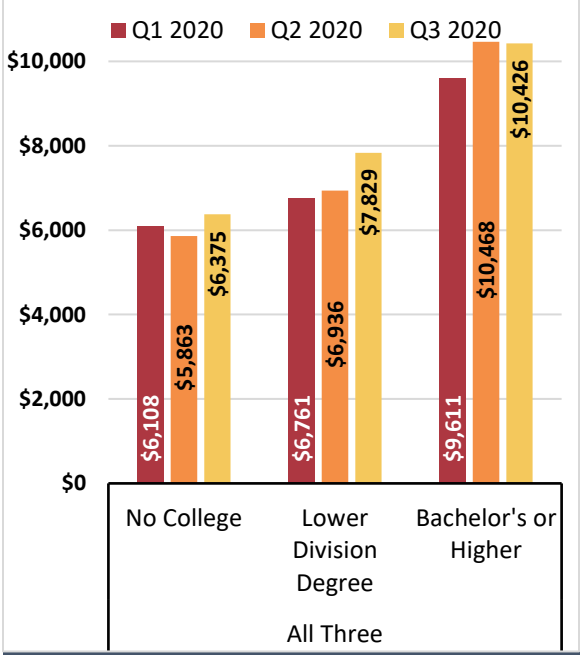
When *Females, FARMS* and *Black Alone* were again visible in the wage data in Q3 2020, they had *decreased* median quarterly wages from Q1 2020. See **Chart D**. The limitations of the wage data make it impossible to know if the declines are attributable to lower pay or the timing of when they resumed employment in Q3. For example, *Females, FARMS* and *Black Alone* may have reentered to Q3 2020 later than *Males, Non-FARMS,* and *White Alone* high school graduates so that earnings reflect fewer weeks worked rather than suggest lower pay. Since the UI wage data do not provide information on hours or weeks worked it is difficult to understand the root cause of the difference.

Chart D. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Quarter, Five Years after Graduation



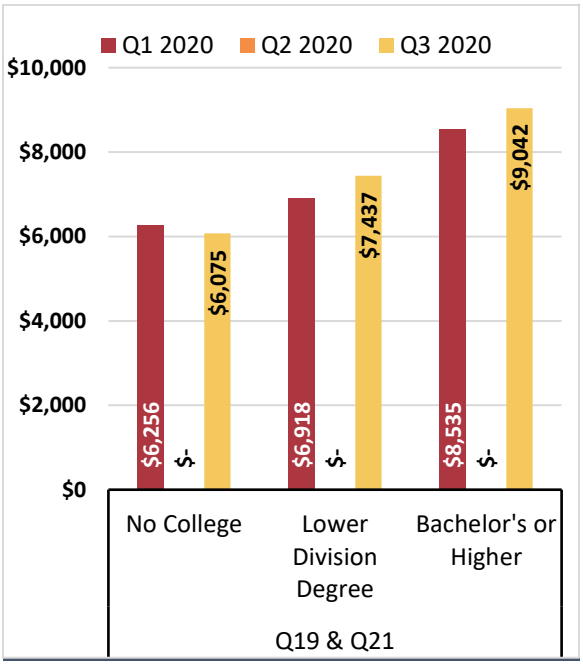
Finally, the patterns noted above are also present in relationship to educational attainment. It is not surprising that those with a college degree have higher earnings than those without a college degree. What may be surprising is the rate at which wages increased by educational attainment during COVID-19. For those with wages in all three fiscal quarters, median quarterly wages for those *with a college degree* increased around $1,000 between Q1 2020 and Q3 2020 or around $4,000 for the year. See **Chart E.** Comparatively, those *without a college degree* had an increase of only $200 from Q1 2020 to Q3 2020 or $800 for the year.

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



Further, like the demographic, race and economic status groups, for those who were visible in Q1 2020, *not visible in Q2 2020*, but again *visible in Q3 2020* (the second fiscal quarter of the economic shutdown), high school graduates with a *college degree* had approximately a $500 increase in median quarterly wages (or an annualized increase of $2,000), while those *without a college degree* had a $200 decrease in median quarterly wages. See **Chart F.**

Chart F. Maryland Public High School Graduates, 2014 and 2015, Distribution of High School Graduates with Q19 and Q21, Five Years after Graduation



Limitations of the wage data make it difficult to determine if the lower wages for *No College* reflects working for only part of fiscal quarter Q2 2020 (**Chart E**) or Q3 2020 (**Chart F**), working fewer hours in the quarter or working in a job that pays less but regardless of reason, the wages patterns result in reduced earnings for this group of high school graduates while those with college degrees did not experience lost wages.

Conclusions and Implications

The analysis in this report demonstrates that outcomes five years after high school were not equitable among educational attainment, demographic and economic status groups. An examination of labor force visibility and wages suggests that some groups experienced greater financial hardships during COVID-19, pushing them farther away from earning a living wage.

The analysis presented here shows that high school graduates, five years after graduation, who had college degrees, were white and/or were male, had either stable earnings throughout the first 6 months of the COVID-19 economic shutdown or even had increased earnings. *Females* not only earned less than *Males* but the wage gap that existed prior to COVID-19 nearly doubled from $758 per fiscal quarter ($3,032 annualized) to $1,407 per fiscal quarter ($5,628 annualized). And, *Females* who were periodically absent from wage data during the first two fiscal quarters of COVID-19, re-entered the labor force with a $500 decline in median quarterly wages of (-$2,000 for the year) while *Males* with similar disruptions re-entered with a $300 increase in median quarterly wages (+$1,200 for the year).

Similar patterns were present between *Black Alone-White Alone* high school graduates. Median quarterly wages grew for *White Alone* by 10% while wages for *Black Alone* grew by only 2.5%. This expanded the pre-existing gap in median quarterly wages between the two groups by about 30%, from $1,362 ($5,448 annualized) to $1,936 ($7,744 annualized).

It is important to remember that these high school graduates are approximately 23 years old at the point of wage observation, likely in entry-level positions, and unlikely to have extensive work histories that would translate to wage premiums, yet gender-based and race-based differences were present and those differences appear to have grown during COVID-19.

The 2015 high school cohort has approximately 40 years (or until 2062) until retirement to recoup wages lost in 2020. The initial impact of COVID-19 on wages and workforce participation may or may not permanently impact lifetime earnings. The Maryland Department of Labor, the Maryland Higher Education Commission and other state agencies should identify and implement policies to support these young Marylanders as they attempt to rebound from any financial set-backs or disruptions to early career-track employment experienced during COVID-19.

Definitions used to determine assignment to educational attainment, demographic and economic status groups can be found in the **Technical Appendix** at the end of this report**.**

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

Additional supplements and the full annual 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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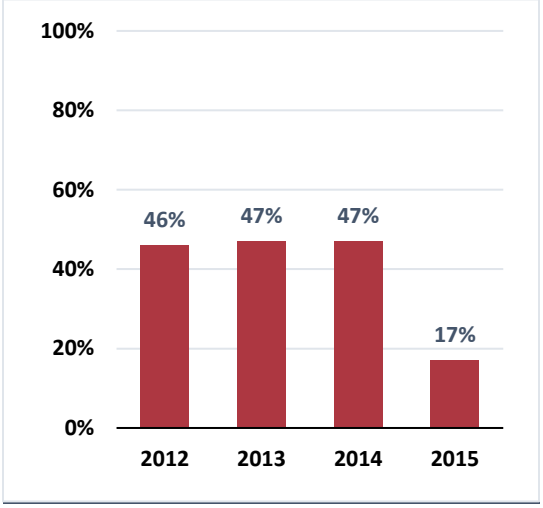
FULL RESULTS

INTRODUCTION

Only 17% (9,706) of all high school graduates (57,509) from the 2015 cohort had full-quarter wages[10] five years after high school graduation. Comparatively, 46%-47% of each previous cohort of high school graduates (around 27,000 graduates in each cohort) had full-quarter wages five years after graduation. See **Chart 1.**

Chart 1. Maryland Public High School Graduates, Wage Visibility Trends, Five Years after High School Graduation



The low rate of full-quarter wages for the 2015 cohort compared to the 2014 cohort is directly tied to the COVID-19 economic shutdown in Maryland. This shutdown disrupted the ability of Marylanders of all ages to fully engage in the labor market and/or required Marylanders to seek alternative employment when entire sectors of the economy either closed or experienced large reductions in operating hours. For example, the stay-at-home orders under the Hogan administration closed all restaurants and bars effective March 16, 2020.

Although few high school graduates had wages for the full nine months, examination of the wage data show that almost half of the 2015 cohort were engaged in the labor market at the time of the COVID-19 shutdown. See **Chart 2**. In total, almost 30,000 of the 57,000 high school graduates of 2015 were engaged in the labor market in the first fiscal quarter of 2020 but did not remain engaged in the Maryland workforce over the next 6 months.

Chart 2. Maryland Public High School Graduates, 2015, Wage Visibility Patterns, Five Years after High School Graduation

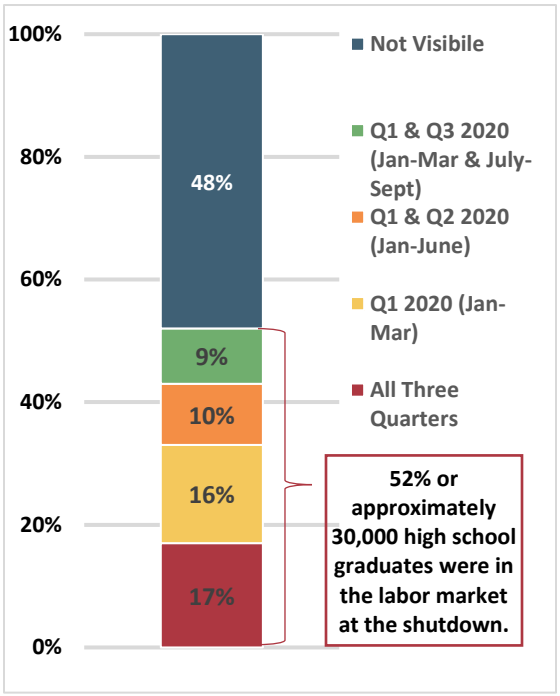
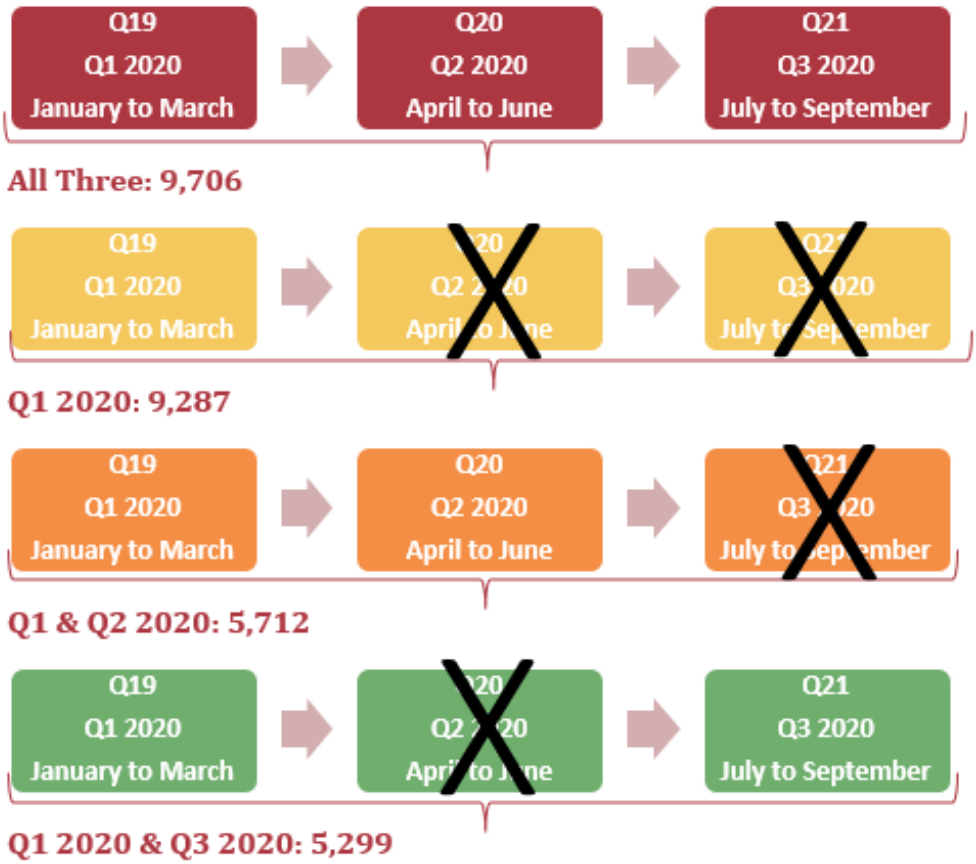


Figure 1. Maryland Public High School Graduates, 2015, Wage Visibility Patterns, Five Years after High School Graduation



While just under 10,000 high school graduates remained visible in the labor market from January 2020 to September 2020, another 20,000 who were visible in Q1 2020 (January to March) either exited the labor market or were intermittently visible in the labor market. See **Figure 1**.

There are three distinct patterns. First, around 9,000 graduates with wages in Q1 2020 exited the labor market at the start of the economic shutdown. This group did not return to the labor market in the next two quarters (April to September. Second, around 6,000 high school graduates with wages in Q1 2020 continued in the labor market in Q2 20202, the first 3 months of the economic shutdown and then exited. And third, around 5,200 graduates exited the labor market immediately with the economic shutdown (Q2 2020) but then re-entered 3 months later.

This report explores these three wage visibility patterns and median quarterly wages by educational attainment, demographics, and economic status to contextualize the impact of the economic shutdown on the 2015 cohort of high school graduates, for those with wages for all three fiscal quarters as well as those who were engaged in periodically in the labor market.

WAGE VISIBILITY PATTERNS

This section will explore the wage visibility patterns by educational attainment, demographic and economic status group. Specifically, this section considers whether or not the wage visibility patterns overall are similar or contain differences among the various groups. See **Appendices 4 to 7** for the full set of tables.

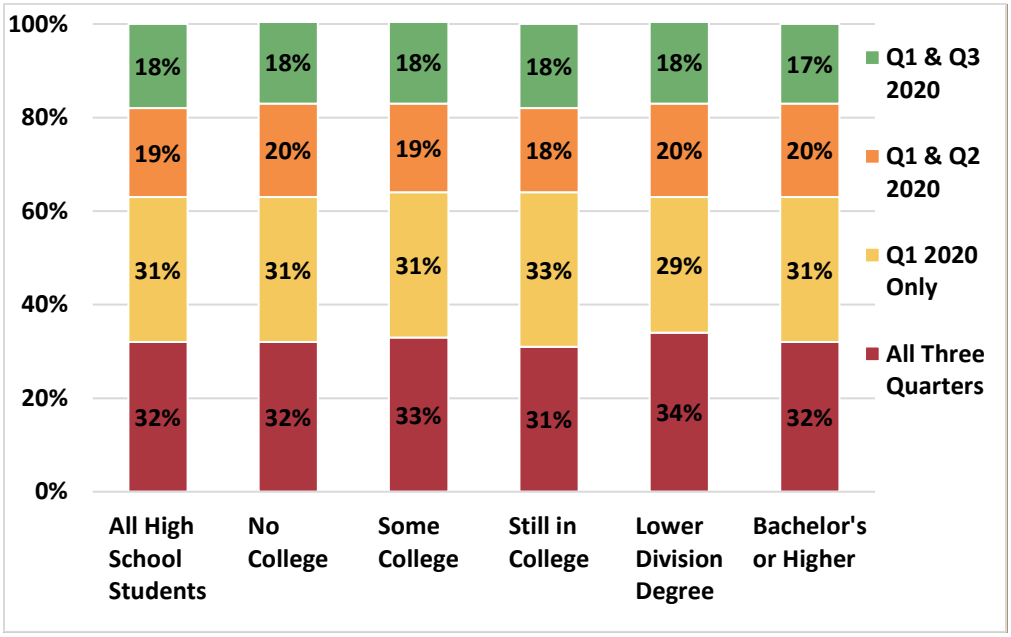
Wage Visibility by Educational Attainment

The 2015 cohort of high school graduates was disaggregated by subsequent educational attainment.[11] See **Chart 3**. The disaggregations reflect small differences between groups. For example, overall 19% of high school graduates with wages had wages in Q1 & Q2 2020, meaning, they were engaged in the labor market in the fiscal quarter prior to COVID-19 (Q1 2020) and remained in the labor market during the first fiscal quarter of economic shut (Q2 2020) but were not visible in the wage data in the second fiscal quarter of the economic shut down (Q3 2020).

This same pattern was present +/- 1 percentage point for all educational attainment groups. In only three instances was there more than a one percentage point difference between the overall group and each educational attainment group. The rate at which those *Still in College* or those with a *Lower Division Degree* were visible in the *Q1 2020 Only* wage group was two percentage points higher than the overall rate. Similarly, the rate at which those with a *Lower Division Degree* were present in the *All Three Quarters* group was two percentage points higher than the overall group.

In short, the wage visibility patterns present for the overall group were mirrored in all educational attainment groups which means that the economic shutdown resulted in similar wage visibility disruptions regardless of educational attainment.

Chart 3. Maryland Public High School Graduates, 2015, Wage Visibility Patterns by Educational Attainment, Five Years after High School Graduation



Wage Visibility by Demographic and Economic Status Group

The 2015 cohort of high school graduates was disaggregated by gender, race, ethnicity, and economic status.[12]

For gender, wage visibility patterns did not vary more than one percentage point when compared to the overall cohort. See **Chart 4.** As with educational attainment, both males and females experienced similar patterns in workforce visibility disruption during the first six months of COVID-19. For example, overall, 31% of high school students with wages in Q1 2020 had wages in *Q1 2020 Only*. This was true for both males (31%) and females (31%).

Small differences in distributions were present when comparing each racial and ethnic group to the overall group of high school graduates with wages in Q1 2020. See **Chart 5**.

Chart 4. Maryland Public High School Graduates, 2015, Wage Visibility Patterns by Gender, Five Years after High School Graduation

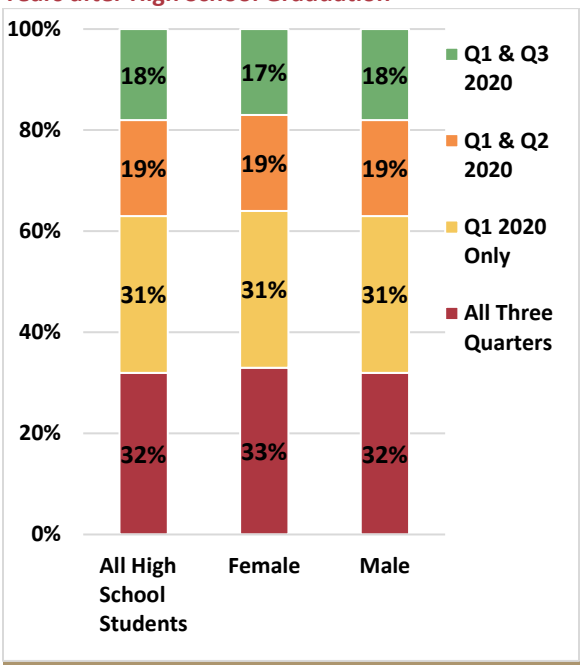
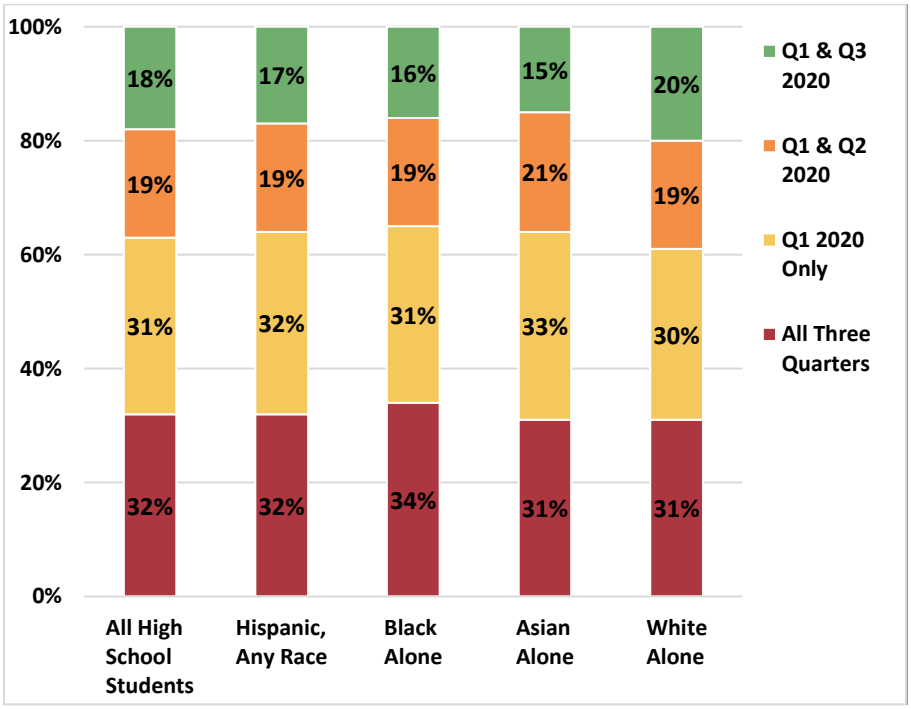


Chart 5. Maryland Public High School Graduates, 2015, Wage Visibility Patterns by Race or Ethnicity, Five Years after High School Graduation

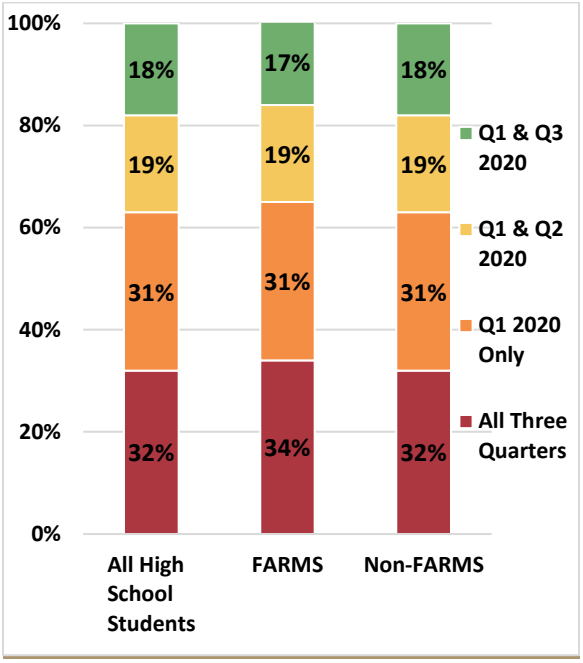


In a few instances there was more than a one-percentage point difference. For example, 19% of all high school graduates with wages in Q1 2020 had wages in *Q1 & Q2 2020*, but this rate

was two percentage points higher for *Asian Alone* (21%). Once again, the wage visibility patterns present for the overall group are mirrored in the majority of racial and ethnic groups, such that the economic shutdown resulted in similar wage visibility disruptions regardless of race or ethnicity.

Finally, both *FARMS* and *Non-FARMS*[13] graduates experienced similar patterns in workforce visibility disruption during the first six months of COVID-19. See **Chart 6.** The one slight variation was for FARMS graduates with wages in all three quarters. Overall, 32% of high school graduates with wages in Q1 2020 had wages in *All Three Quarters*. However, this rate was two percentage points higher for *FARMS* graduates (34%). Otherwise, as with the educational attainment and demographic groups, the wage visibility patterns for *FARMS* and *Non-FARMS* graduates suggest that the economic shutdown resulted in similar wage visibility disruptions regardless of economic status.

Chart 6. Maryland Public High School Graduates, 2015, Wage Visibility Patterns by Economic Status, Five Years after High School Graduation



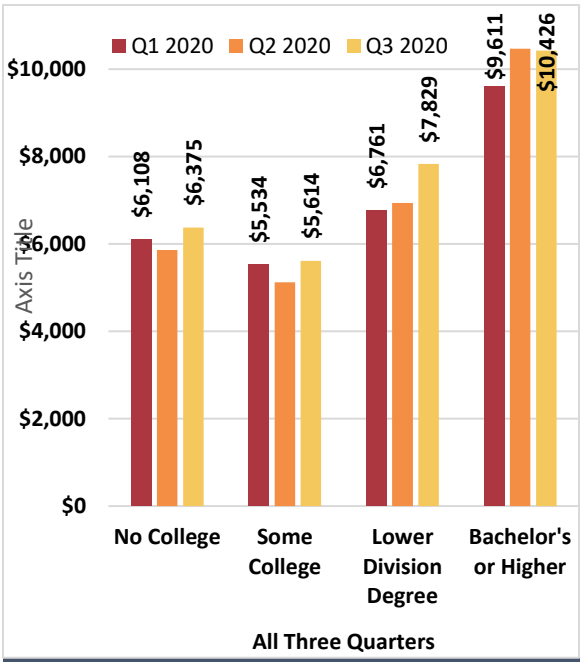
MEDIAN QUARTERLY WAGES BY WAGE VISIBILITY PATTERN

The wage visibility patterns suggest the economic shutdown equally impacted all educational attainment, demographic and economic status groups of high school graduates. This section examines median quarterly wages for each educational attainment, demographic and economic status group. The results suggest that economic shutdown did not equally impact all high school graduates financially and that pre-existing wage gaps were expanded, something that could have longer term economic consequences for large numbers of Marylanders. See **Appendices 4 to 7** for a full set of data tables.

Wage Visibility by Educational Attainment

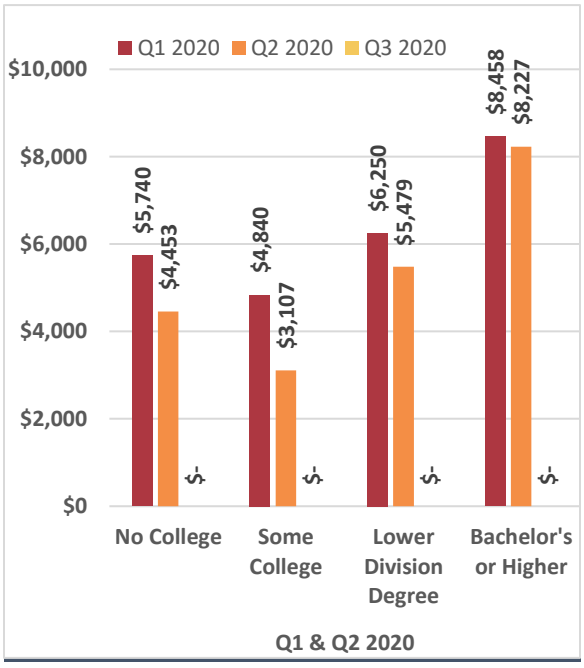
The median quarterly wages for all educational attainment groups with wages in all three fiscal quarters saw small increases from fiscal quarter 1 of 2020 to fiscal quarter 3 of 2020.This means that, even during six months of economic shutdown, these approximately 10,000 high school graduates were engaged in the labor market in ways that both allowed them to remain engaged and increased their earnings. See **Chart 7**.

Chart 7. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Educational Attainment, Five Years after High School Graduation



The median quarterly wages for high school graduates with wages in Q1 2020 and Q2 2020 but not Q3 2020 saw decreases in wages in Q2 2020. The decreases were around $1700 (*No College* and *Some College*) or as little as $200 (*Bachelor's or Higher)*. This means that during the first full quarter of economic shutdown these approximately 5,700 high school graduates who had median quarterly wages similar to those visible in *All Three Quarters* of 2020, remained visible in the labor market but either 1) had decreased earnings likely tied to working fewer hours, 2) were working in a position with lower pay, or 3) exited the labor market before the end of the fiscal quarter. See **Chart 8**.

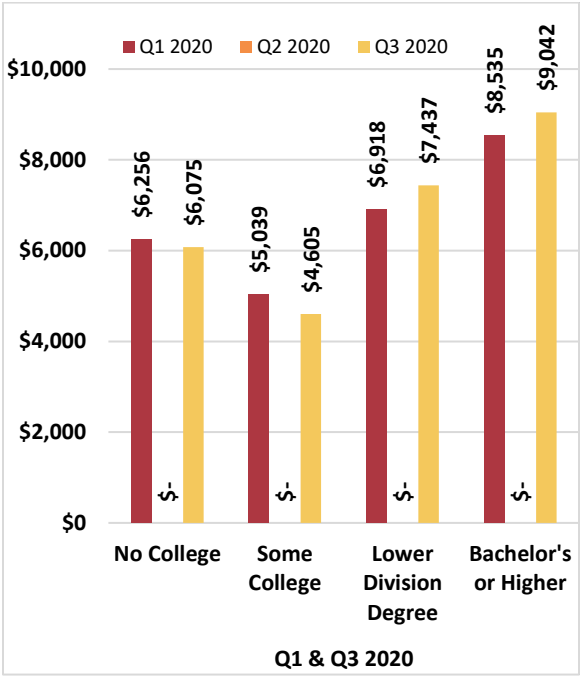
Chart 8. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Educational Attainment, Five Years after High School Graduation



The median quarterly wages for high school graduates with wages in Q1 2020 and Q3 2020 but not Q2 2020 saw both increases and decreases in median quarterly wages between Q1 2020 and Q3 2020. These approximately 5,200 high school graduates were not visible in the wage data during the first full quarter of economic shutdown (Q2 2020) but were again visible in the labor market in the second quarter of shutdown (Q3 2020). This group had either small decreases (around $200-$400) in wages (*No College* and *Some College*) or with small increases ($400-$500) in wages (*Lower Division Degree* and *Bachelor's or Higher)*. The wage data available do not provide information on the number of days or weeks worked in a fiscal quarter so it is possible that decreases reflect either 1) changes in type of employment, including positions with lower wages or fewer hours compared to Q1 2020 employment or 2) only being engaged in the workforce for some portion of the fiscal quarter.

For this group (No Q2 2020 wage), the quarterly median wages in Q1 2020 were similar to those of high school graduates in the *All Three Quarters* and *Q1 & Q2* groups. However, most notable is the comparison of Q3 2020 median quarterly wages between the *All Three Quarters* and this group with intermittent visibility. For this intermittent group, the exit from the labor market in Q2 2020 resulted in considerably lower median quarterly wages in Q3 2020 than for those who remained engaged in the labor market in Q2 2020. This pattern is most pronounced for those in the *Bachelor's Degree or Higher* educational attainment group. Those who remained in the labor market the entire 9-month period had a median quarterly wage $1,500 higher in Q3 2020 than those with the same level of education but who exited the labor market in Q2 2020 and returned in Q3 2020. Or stated another way, high school graduates with a *Bachelor's Degree or Higher* who were absent from the labor market for one fiscal quarter (Q2 2020) had foregone earnings of approximately $11,500 (the missing $10,000 Q2 median quarterly wage + $1,500 lower Q3 median quarterly wage). See **Chart 9**.

Chart 9. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Educational Attainment, Five Years after High School Graduation

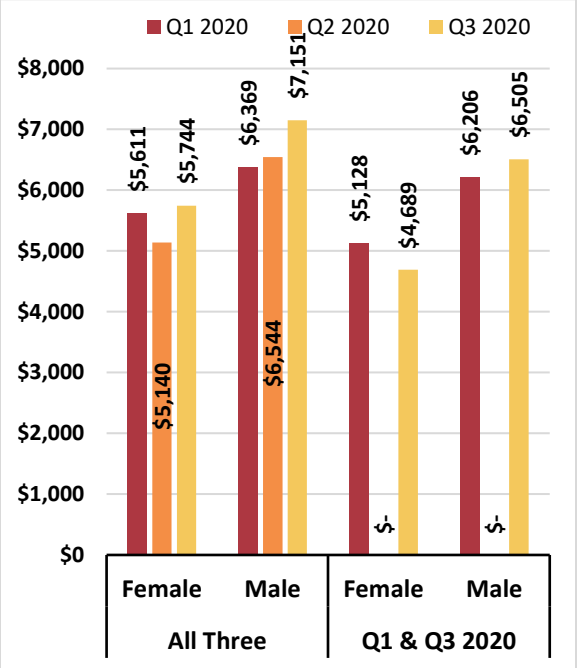


Wage Visibility by Demographic Group

The median quarterly wages for high school graduates by gender, race and ethnicity demonstrate that there were distinct differences in wages between groups during the economic shutdown.

First, median quarterly wages for *Females* were lower in all wage visibility pattern groups. See **Chart 10.** For example, *Females* with wages in all three fiscal quarters had median quarterly wages around $1,500 less than *Males.* When annualized this difference is approximately $6,000 or the amount required to meet the combined cost of food and medical care ($6,009) in the State of Maryland.[14]

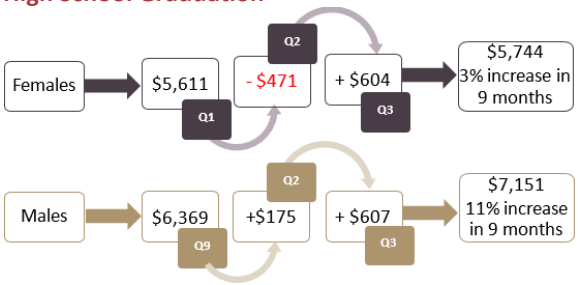
Chart 10. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Gender, Five Years after High School Graduation



Females who were not visible in the wage data in Q2 2020 or the first full quarter of economic shutdown had a $500 wage decrease when they were again visible in Q3 2020. In comparison, *Males* with the same visibility pattern had an increase of $300. See **Chart 10.**

For female high school graduates with wages in all three fiscal quarters, the median quarterly wage declined in Q2 2020 before rebounding in Q3 2020, for a total increase over Q1 2020 of 3%. Comparatively, the median quarterly wage for *Males* increased in Q2 2020 and again increased in Q3 2020 for a total increase of 11% over Q1 2020. See **Figure 3.**

Figure 3. Maryland Public High School Graduates, 2015, Wage Changes by Gender, Five Years after High School Graduation



These results mean that *Females* not only had lower median quarterly wages than *Males*, but that during the economic shut down the wage gap expanded. The wage gap between *Female* and *Male* median quarterly wages was $758 in Q1 2020, the last fiscal quarter before the economic shutdown. The wage gap in Q3 2020, the second fiscal quarter after the economic shutdown, doubled to $1,407. See **Figure 4**.

Figure 4. Maryland Public High School Graduates, 2015, Wage Gap by Gender, Five Years after High School Graduation

When annualized, this gap means that *Males* earned approximately $5,600 more than *Females* or the equivalent of transportation ($5,509) or enough to cover 40% of the cost of housing ($14,726) in the State of Maryland.[15]

For high school graduates who were visible in Q1 2020 and Q2 2020 but not Q3 2020, there was a thirty-one percent reduction in the

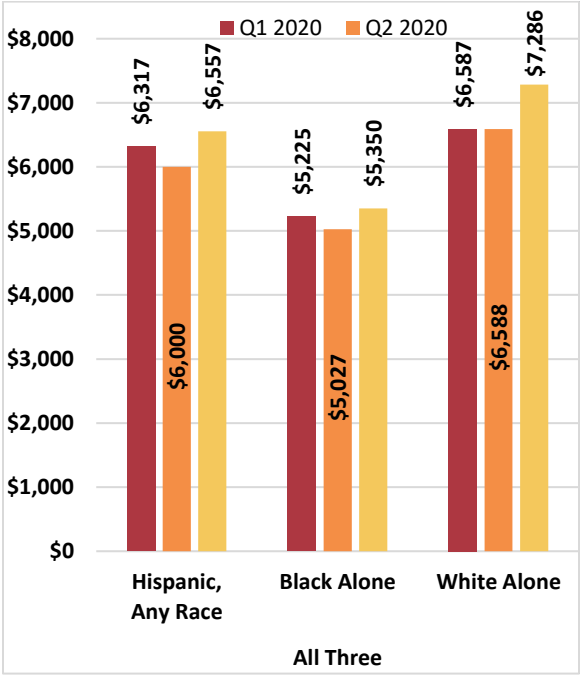
median quarterly wages for *Females* and a twenty-one percent reduction in the median quarterly wage for *Males.* See **Chart 11**. This may mean the *Females* compared to *Males* may have either exited the workforce earlier than *Males* during the first fiscal quarter of the economic shutdown or continued to work in a reduced capacity over the entirety of the fiscal quarter.

Chart 11. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Gender, Five Years after High School Graduation

Prior reporting on high school graduates five years after graduation[16] noted that *Males* are over-represented in labor sectors that both have higher wages (*Goods-Producing* and *Professional & Business Services*) and include businesses and employment that could transition to "work from home." Comparatively, *Females* are over-represented in lower paying labor sectors (*Health Care & Social Assistance* and *Educational Services*) that did not easily transition to "work from home." Some sectors such as healthcare were deemed "essential services"; however, *Females* may have exited the workforce despite job availability to take care of children who were now displaced from school or day care.

The median quarterly wage patterns identified for *Females-Males* were also present in racial and ethnic groups.

Chart 12. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Race and Ethnicity, Five Years after High School Graduation



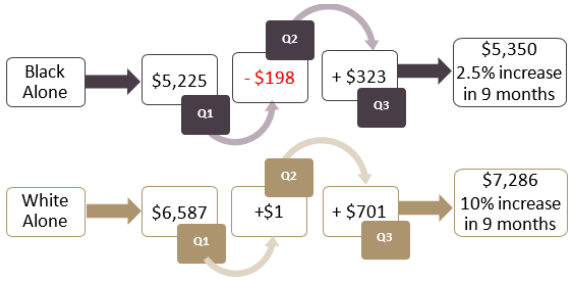
All high school graduates with wages in all three fiscal quarters had small increases in median quarterly wages from Q1 2020 to Q3 2020; however, the median quarterly wages for *White Alone* and *Hispanic, Any Race* were $1,000 to $2,000 higher than *Black Alone* in each fiscal quarter. See **Chart 12.**

Figure 5. Maryland Public High School Graduates, 2015, Wage Gap by Race, Five Years after High School Graduation

This wage pattern means that the wage gaps present between *White Alone* and *Hispanic, Any Race* and *Black Alone* grew during the economic shutdown. The gap between median quarterly

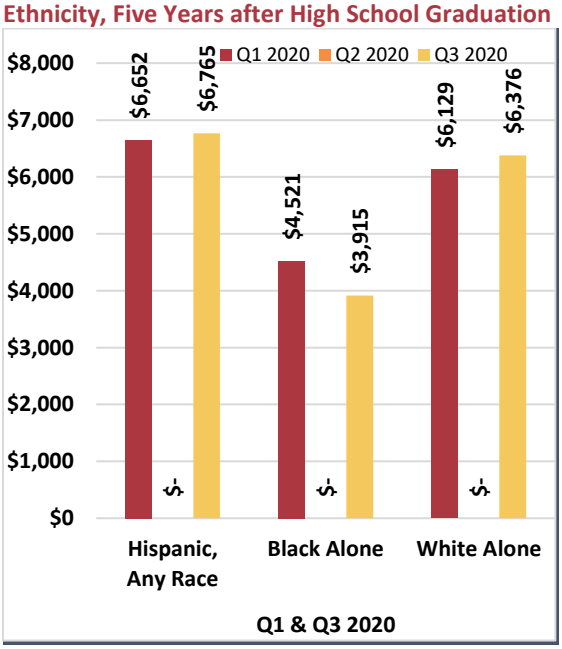
wages for *White Alone* and *Black Alone* in Q1 2020 was $1,362. In Q3 2020, 6 months later, this gap expanded to $1,936. See **Figure 5**. This gap grew as *White Alone* median quarter wages rose by 10% from Q1 2020 ($6,587) to Q3 2020 ($7,286). *Black Alone* median quarterly wages rose only 2.5% in the same time period. See **Figure 6**.

Figure 6. Maryland Public High School Graduates, 2015, Wage Changes by Race, Five Years after High School Graduation



As with *Males, White Alone* and *Hispanic, Any Race* high school graduates with wages in Q1 2020, no visibility in Q2 2020, and wages in Q3 2020 had small increases in median quarterly wages. In comparison, *Black Alone* had a $500 decrease (like *Females*) in median quarterly wages. See **Chart 13**.

Chart 13. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Race and Ethnicity, Five Years after High School Graduation

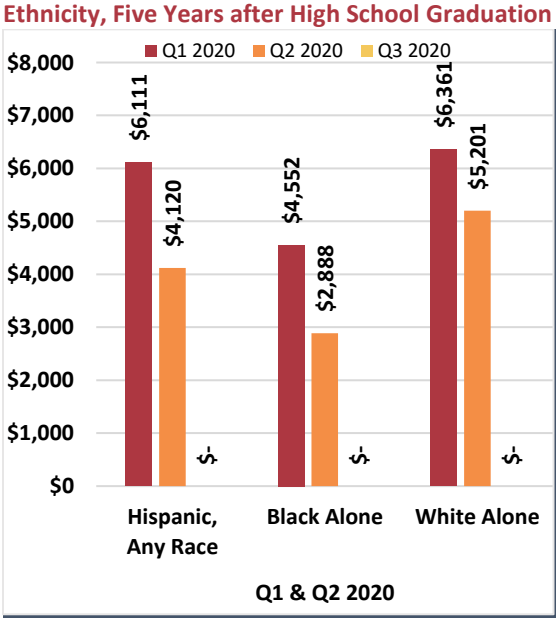


This decrease, when considered in terms of annual earnings, means that *Black Alone* had a $2,000 reduction in earnings between Q1 2020 and Q3 2020. Or, stated another way, the wages lost are the equivalent of covering the costs of medical care for a year in the State of Maryland ($2,658).[17] See **Chart 13**.

Additionally, for this group with intermittent wages, those *Black Alone* and *White Alone* who did re-enter in Q3 2020, had lower median quarterly wages than those who remained in the labor market all three fiscal quarters. Those who are *Black Alone* and *White Alone* with intermittent wages had Q3 2020 median quarterly wages $1,300 and $900 respectively lower than those who remained in the labor market for 9 consecutive months.

The final pattern, also consistent with *Females-Males,* is seen in high school graduates with wage visibility in Q1 2020 and Q2 2020 but not Q3 2020. The median quarterly wages in Q2 2020 for *White Alone* was reduced by 19% while the median quarterly wages for *Hispanic, Any Race* and *Black Alone* were reduced by one-third. See **Chart 14.**

Chart 14. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Race and Ethnicity, Five Years after High School Graduation



This may mean either *Hispanic, Any Race* and *Black Alone* exited the labor market sooner than *White Alone,* that they experienced reductions in hours worked as compared to *White Alone*, or that they changed employment during the fiscal quarter to positions that paid less.

Limitations of the wage data make it impossible to know why the wages were lower. Prior reporting on high school graduates[18], five years after graduation, identified that *Black Alone* high school graduates are over-represented in labor sectors (*Trade, Transportation & Utilities* and *Health Care & Social Assistance*) with lower wages and *White Alone* are over-represented in labor sectors (*Professional & Business Services* and *Goods-Producing*) with higher wages. Additionally, sectors such as *Trade, Transportation & Utilities* include service-related jobs in the retail sector such as clothing stores and grocery stores, and this sector was either entirely closed or operated with reduced hours and capacity during the second and third fiscal quarters. As such, *Black Alone* high school graduates would have immediately felt the effect of the economic shutdown compared to *White Alone* high school graduates who were more concentrated in labor sectors that better aligned to "work from home."

Wage Visibility by Economic Group

Median quarterly wage patterns for FARMS[19] high school graduates were similar to those for *Females* and *Black Alone.*

- *FARMS* median quarterly wages were lower than *Non-FARMS*, despite being engaged in the labor market for nine straight months (See **Chart 15**);
- *FARMS* visible in Q1 and Q2 2020, but not Q3 2020, had larger median wage declines (37% decrease vs. 23% decrease) between Q1 and Q2 2020 than *Non-FARMS* (See **Chart 16**); and
- *FARMS* with wages in Q1 and Q3 2020, but not Q2 2020, had median quarterly wages in Q3 2020 that were lower than Q1 2020, while the median quarterly wages for *Non-FARMS* were slightly higher in Q3 2020 (See **Chart 16**).

Chart 15. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Economic Status, Five Years after High School Graduation

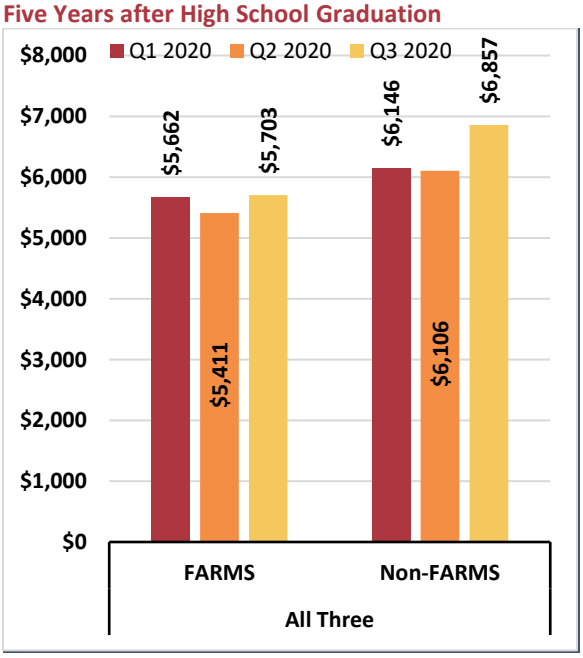
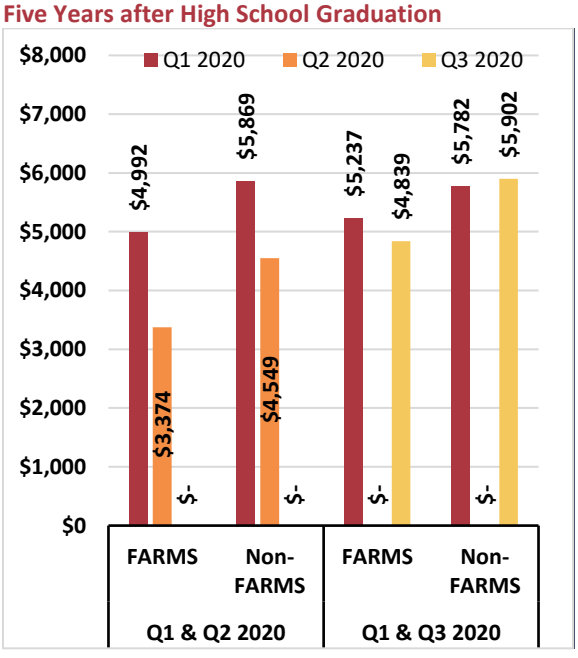


Chart 16. Maryland Public High School Graduates, 2015, Median Quarterly Wages by Economic Status, Five Years after High School Graduation



As with *Females* and *Black Alone* the limitations of the wage data make it challenging to understand if FARMS high school graduates were earning less or if they exited the workforce sooner (Q2 2020) or returned later (Q3 2020). The lower median quarterly wages may be attributable to spending less time in the labor market during these two fiscal quarters rather than receiving lower pay.

Analysis of the 2014 cohort of high school graduates[20] also identified that FARMS high school graduates tend to be over-represented in labor sectors with lower wages (*Trade, Transportation & Utilities* and *Health Care & Social Assistance*) and under-represented in labor sectors with higher wages (*Goods-Producing* and *Professional & Business Services*) compared to non-FARMS who are over-represented in higher paying sectors and under-represented in lower paying sectors. The concentration of FARMS high school graduates in sectors that pay hourly wages and are service oriented also means they were working in positions that did not translate to working "at-home" (e.g. retail, grocery stores, hotels, restaurants), which may have forced their exit from the labor market and reduced their capacity to work in the labor market at a rate greater than non-FARMS high school graduates who were employed in sectors that more directly supported "work from home" jobs.

CONCLUSIONS AND IMPLICATIONS

A report issued by the Pew Research Center[21] summarized results from a 2021 survey where about half of all working adults responded that they believed they will experience long-term financial losses from COVID-19. Further, the respondents at lower income levels, from underserved minorities, or who were less than 30 years old reported job losses or earnings declines that made it difficult to cover household expenses. Conversely, about 40% or more of survey respondents who were white, male or who had higher levels of income or college degrees reported financial gains during COVID-19.

The analysis presented here seems to align to the Pew Research Center survey results. High school graduates, five years after graduation, who had college degrees and were white or male, had stable earnings throughout the first 6 months of the COVID-19 economic shutdown or even had increased earnings. *Females* with wages in all three fiscal quarters had median quarterly wages around $1,500 less than *Males.* This doubled the pre-existing *Female-Male* wage gap from $758 per fiscal quarter to $1,407 per fiscal quarter ($5,628 annualized). *Females* who appear to have had labor participation disruptions during COVID-19 re-entered the labor force with a decline in median quarterly wages of $500 (-$2,000 for the year) while *Males* with similar disruptions re-entered with an increase in median quarterly wages of $300 (+$1,200 for the year).

Another Pew Research Center[22] survey captured responses from working mothers about challenges in the workplace during the pandemic, challenges not reported by working fathers. Many working mothers (27%) reported that not working was their best option during COVID-19 while other working mothers said working part-time was preferable to full-time. The survey responses may align to the patterns seen in this analysis as the median quarterly wage declines may reflect women exiting the workplace and/or opting for part-time employment to allocate more time to meet family obligations.

These *Female-Male* patterns were similar to those between *Black Alone-White Alone*. Median quarterly wages grew for *White Alone* by 10% while wages for *Black Alone* grew by only 2.5%, pushing the gap in median quarterly wages between the two groups from $1,362 to $1,936 ($7,744 annualized). These results are again consistent with the responses reported to Pew, where 66% of Black respondents reported financial challenges due to COVID-19.

It is important to remember that these high school graduates are approximately 23 years old at the point of wage observation, likely in entry-level positions, and unlikely to have extensive work histories that would translate to wage premiums, yet gender-based and race-based differences are present and those differences appear to have grown during COVID-19. An examination of labor force visibility and wages suggests that some groups experienced greater financial hardship, pushing them farther away from earning a living wage.

The 2015 high school cohort, around 23 years old in 2020, has approximately 40 years until retirement to recoup lost wages in 2020. The initial impact of COVID on wages and workforce participation does not have to have substantial implications for lifetime earnings. Identifying programs for worker re-training could help accelerate a labor force re-entry and increase wages for these young Marylanders. For example, the Maryland Department of Labor through its Maryland Apprenticeship and Training Program (MATP) within the Division of

Workforce Development and Adult Learning offers training for new career pathways.

Similarly, a large number of high school graduates had some college but no degree at the onset of COVID-19. Identifying existing Associate's degree, Certificate programs or non-credit workforce training programs that could leverage these credits to quickly reskill or upskill young Marylanders could be another important component on the road to COVID recovery.[23] 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.

While federal and state government provided aid packages to help compensate for lost earnings during COVID-19, long-term solutions are required to support those who disproportionately experienced declines in wages during the pandemic. Policies are needed to address both the pre-existing inequality in wages and the widening of this inequality during COVID-19. 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. These policies may include those that support childcare and offer flexible work conditions so that females, often the primary caregiver, can meet family obligations without sacrificing career goals.

APPENDICES

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 and its supplemental reports 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.

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)[24]. 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 20th 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 20th quarter after graduation is fiscal quarter 2 in a calendar year. For the 2021 report on the 2015 cohort of high school graduates, the 20th quarter was fiscal quarter 2 of 2020. Accordingly, individuals were included in the median wage calculation[25] 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.[26]
- 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 20th 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 the 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.[27]

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.[28] 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 12th 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 students 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	2012 High School Graduates		2013 High School Graduates		2014 High School Graduates		2015 High School Graduates	
	Total	%	Total	%	Total	%	Total	%
High School Graduates, No College	14,118	24%	14,226	24%	13,497	23%	13,768	24%
Some College	20,778	35%	21,316	36%	20,456	35%	19,686	34%
Still in College	12,719	21%	11,704	20%	11,210	19%	11,228	20%
Certificate	213	<1%	269	<1%	218	<1%	209	<1%
Associate's Degree	1,418	2%	1,490	3%	1,568	3%	1,537	3%
Bachelor's Degree	10,213	17%	10,496	18%	11,134	19%	11,019	19%
Other Degree	51	<1%	59	<1%	53	<1%	62	<1%
All High School Graduates	***59,510***		***59,560***		***58,136***		***57,509***	

Appendix 3: Maryland Public High School Graduates, 2014 and 2015, Demographic and Economic Status Groups

Demographic/Economic Group	2014 High School Graduates		2015 High School Graduates	
	Total	%	Total	%
All High School Graduates	***58,136***		***57,509***	
Female	29,663	51%	28,993	50%
Male	28,473	49%	28,516	50%
Hispanic, Any Race	5,913	10%	6,060	11%
Black Alone	20,182	35%	20,112	35%
Asian Alone	3,765	6%	3,858	7%
White Alone	29,031	50%	28,105	49%
FARMS	18,612	32%	19,033	33%
Non-FARMS	39,524	68%	38,476	67%

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	2014 High School Graduates				2015 High School Graduates			
	Total	%	Q2 2019 Full-Quarter Wages	%	Total	%	Q2 2020 Full-Quarter Wages	%
All High School Graduates	***58,136***		***27,330***		***57,509***		***9,706***	
Female	29,663	51%	14,570	53%	28,993	50%	5,138	53%
Male	28,473	49%	12,760	47%	28,516	50%	4,568	47%
Hispanic, Any Race	5,913	10%	2,783	10%	6,060	11%	984	10%
Black Alone	20,182	35%	9,537	35%	20,112	35%	3,698	38%
Asian Alone	3,765	6%	1,309	5%	3,858	7%	467	5%
White Alone	29,031	50%	14,039	51%	28,105	49%	4,606	47%
FARMS	18,612	32%	9,443	35%	19,033	33%	3,653	38%
Non-FARMS	39,524	68%	17,887	65%	38,476	67%	6,053	62%

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

Appendix 6: Maryland Public High School Graduates, 2015, Wage Visibility for each Educational Attainment Group, Demographic Group and Economic Status Group, Five Years after Graduation, Fiscal Quarter 2 of 2020

Educational Attainment	2015 High School Graduates		
	Total	Q2 2020 Full-Quarter Wages	
All High School Graduates	*57,509*	*9,706*	*17%*
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%
Certificate	209	52	25%
Associate's Degree	1,537	315	20%
Bachelor's Degree	11,019	1,444	13%
Other Degree	62	10	16%

Demographic/Economic Group	2015 High School Graduates		
	Total	Q2 2020 Full-Quarter Wages	
All High School Graduates	***57,509***	***9,706***	
Female	28,993	5,138	53%
Male	28,516	4,568	47%
Hispanic, Any Race	6,060	984	10%
Black Alone	20,112	3,698	38%
Asian Alone	3,858	467	5%
White Alone	28,105	4,606	47%
FARMS	19,033	3,653	38%
Non-FARMS	38,476	6,053	62%

Appendix 7: Maryland Public High School Graduates, 2015, Median Quarterly Wages by Wage Pattern for each Educational Attainment Group, Demographic Group and Economic Status Group, Five Years after Graduation, Fiscal Quarter 2 of 2020

Educational Attainment	All Three Quarters			Q1 & Q3 2020			Q1 & Q2 2020			Q1 2020 Only		
	Q1 2020	Q2 2020	Q3 2020	Q1 2020	Q2 2020	Q3 2020	Q1 2020	Q2 2020	Q3 2020	Q1 2020	Q2 2020	Q3 2020
No College	$ 6,108	$ 5,863	$ 6,375	$ 6,256	n/a	$ 6,075	$ 5,740	$ 4,453	n/a	$ 4,627	n/a	n/a
Some College	$ 5,534	$ 5,122	$ 5,614	$ 5,039	n/a	$ 4,605	$ 4,840	$ 3,107	n/a	$ 3,589	n/a	n/a
Still Enrolled	$ 4,833	$ 4,823	$ 5,673	$ 4,000	n/a	$ 4,542	$ 4,423	$ 3,313	n/a	$ 2,985	n/a	n/a
Lower Division Degree	$ 6,761	$ 6,936	$ 7,829	$ 6,918	n/a	$ 7,437	$ 6,250	$ 5,479	n/a	$ 5,231	n/a	n/a
Bachelor's or Higher	$ 9,611	$ 10,468	$ 10,426	$ 8,535	n/a	$ 9,042	$ 8,458	$ 8,227	n/a	$ 6,281	n/a	n/a

Race	All Three Quarters			Q1 & Q3 2020			Q1 & Q2 2020			Q1 2020 Only		
	Q1 2020	Q2 2020	Q3 2020	Q1 2020	Q2 2020	Q3 2020	Q1 2020	Q2 2020	Q3 2020	Q1 2020	Q2 2020	Q3 2020
Hispanic, Any Race	$ 6,317	$ 6,000	$ 6,557	$ 6,652	n/a	$ 6,765	$ 6,111	$ 4,120	n/a	$ 5,016	n/a	n/a
Black Alone	$ 5,225	$ 5,027	$ 5,350	$ 4,521	n/a	$ 3,915	$ 4,552	$ 2,888	n/a	$ 3,343	n/a	n/a
Asian Alone	$ 5,534	$ 5,656	$ 6,236	$ 5,025	n/a	$ 5,725	$ 4,483	$ 3,809	n/a	$ 2,985	n/a	n/a
White Alone	$ 6,587	$ 6,588	$ 7,286	$ 6,129	n/a	$ 6,376	$ 6,361	$ 5,201	n/a	$ 4,766	n/a	n/a

Gender	All Three Quarters			Q1 & Q3 2020			Q1 & Q2 2020			Q1 2020 Only		
	Q1 2020	Q2 2020	Q3 2020	Q1 2020	Q2 2020	Q3 2020	Q1 2020	Q2 2020	Q3 2020	Q1 2020	Q2 2020	Q3 2020
Female	$ 5,611	$ 5,140	$ 5,744	$ 5,128	n/a	$ 4,689	$ 5,202	$ 3,608	n/a	$ 3,824	n/a	n/a
Male	$ 6,369	$ 6,544	$ 7,151	$ 6,206	n/a	$ 6,505	$ 5,880	$ 4,668	n/a	$ 4,160	n/a	n/a

Economic Status	All Three Quarters			Q1 & Q3 2020			Q1 & Q2 2020			Q1 2020 Only		
	Q1 2020	Q2 2020	Q3 2020	Q1 2020	Q2 2020	Q3 2020	Q1 2020	Q2 2020	Q3 2020	Q1 2020	Q2 2020	Q3 2020
FARMS	$ 5,662	$ 5,411	$ 5,703	$ 5,237	n/a	$ 4,839	$ 4,992	$ 3,374	n/a	$ 3,970	n/a	n/a
Non-FARMS	$ 6,146	$ 6,106	$ 6,857	$ 5,782	n/a	$ 5,902	$ 5,869	$ 4,549	n/a	$ 3,952	n/a	n/a

End Notes

[1]MLDS Center. (2021). Career Preparation Expansion Act: Annual Report to the General Assembly and Governor Larry Hogan. Baltimore, MD: Maryland Longitudinal Data System Center.

[2]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).

[3]See Technical Appendix. *Demographic and Economic Groups* section.

[4]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.

[5]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).

[6]See Technical Appendix. *Full-Quarter Wage Methodology* section.

[7]See Technical Appendix. *Full-Quarter Wage Methodology* section.

[8]See Technical Appendix. *Wage Data* section.

[9]See Technical Appendix. *Educational Attainment Methodology* section.

[10]See Technical Appendix. *Full-Quarter Wage Methodology* section.

[11]See Technical Appendix. *Demographic and Economic Groups* section.

[12]See Technical Appendix. *Demographic and Economic Groups* section..

[13]See Technical Appendix. *Demographic and Economic Groups* section.

[14]Glasmeier, A. (2020). Living Wage Calculator. Massachusetts Institute of Technology.

[15]Glasmeier, A. (2020). Living Wage Calculator. Massachusetts Institute of Technology.

[16]MLDS Center. (2020). Career Preparation Expansion Act: Annual Report to the General Assembly and Governor Larry Hogan. Baltimore, MD: Maryland Longitudinal Data System Center.

[17]Glasmeier, A. (2020). Living Wage Calculator. Massachusetts Institute of Technology.

[18]MLDS Center. (2020). Career Preparation Expansion Act: Annual Report to the General Assembly and Governor Larry Hogan. Baltimore, MD: Maryland Longitudinal Data System Center.

[19]See Technical Appendix. *Demographic and Economic Groups* section.

[20]MLDS Center. (2020). Career Preparation Expansion Act: Annual Report to the General Assembly and Governor Larry Hogan. Baltimore, MD: Maryland Longitudinal Data System Center.

[21]Pew Research Center. (2021). *A year into the pandemic, long-term financial impact weighs heavily on many Americans*. Pew Research Center, March 2021. Retrieved from https://www.pewresearch.org/social-trends/2021/03/05/a-year-into-the-pandemic-long-term-financial-impact-weighs-heavily-on-many-americans/

[22]Pew Research Center. (2022). *Working moms in the U.S. have faced challenges on multiple fronts during the pandemic.* Pew Research Center, May 6, 2022. Retrieved from https://www.pewresearch.org/fact-tank/2022/05/06/working-moms-in-the-u-s-have-faced-challenges-on-multiple-fronts-during-the-pandemic/

[23]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

[24]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.

[25]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.

[26]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.

[27]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.

[28]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.