Supporting Late Graduates, GED Earners, and Non-completers through the Transition into Postsecondary and the Labor Market

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Abstract

The transition out of adolescence signals a period of increasing personal and social responsibility. For many this means entering postsecondary or the labor market. Previous research has demonstrated that youth who do not finish high school in four years have less favorable postsecondary and labor outcomes. However, few studies compare the postsecondary and labor market outcomes within the group of students who do not finish high school in four years. The current study uses 12 years of linked-administrative data from Maryland to present the first statewide analyses comparing postsecondary and labor market outcomes for on-time graduates, GED earners, non-completers, and late graduates. The results describe an under-researched and underserved group of vulnerable students, with implications for supporting students during high school to improve the postsecondary and labor market transition.

Keywords: GED; High School Graduation; Labor Market; Late Graduates; Postsecondary

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Emerging research focusing on students with non-traditional high school exits—including late graduates, General Educational Development [GED] earners, and non-completers—has found meaningful differences in the near-term postsecondary and early labor market experiences of students based on the type and the timing of high school exit (Hull, 2009; Uretsky, 2019; Uretsky & Henneberger, 2020). With high school graduation rates at an all-time high and dropout at an all-time low (Harris et al., 2020), recent national policy initiatives (i.e., the 2015 Every Students Succeeds Act; [ESSA], 2015) have begun to shift attention away from high school graduation as an end goal. Instead refocusing major policy efforts towards an emphasis on college and career readiness (Wong-Parodi, 2016). As this new approach has taken root, researchers and educators have voiced growing concern that students who take non-traditional pathways out of high school may fall outside the reach of current policies and programs related to the postsecondary college and career transition (Hill & Mirakur, 2018; Hull, 2009; Uretsky et al., 2016). However, few studies have examined the long-term college and career outcomes associated with non-traditional pathways of high school completion, and even fewer have compared outcomes across student groups based on how, when, and if they complete high school (i.e. on-time graduate, late graduate, GED earner, non-completer). A better understanding of the differential outcomes for these students can help practitioners and policymakers better direct services to support students while in high school to ensure student success when transitioning into postsecondary and the labor market, regardless of the type and timing of high school completion.

Background

The outcomes associated with high school graduation and dropout are well documented in the research literature (Alexander et al., 2001; Dupere et al., 2015; Rumberger, 2011, Zaff et al, 2016). Non-completers are more likely to experience poor health (Blackwell et al., 2014), have higher rates of drug use (Reingle Gonzalez et al., 2016), and higher rates of arrest and incarceration (Maynard et al., 2015). In addition, research has consistently demonstrated that non-credentialed adults have difficulties in the labor market that include lower earnings and higher rates of unemployment (Maynard et al., 2015; Rouse, 2007; U.S. Department of Labor, 2019). There has been much less attention paid to youth who persist through four, five, or even six years of high school without earning a diploma (Uretsky, 2019, Uretsky & Henneberger, 2020). As such, the current understanding of the relative prevalence and predictors of positive college and labor market outcomes for non-traditional completers (i.e., late graduates, GED earners) in comparison to on-time high school completion and non-completion is comparatively limited (Hill & Mirakhur, 2018; Uretsky et al., 2016; Uretsky & Henneberger, 2020).

Academic and Early Labor Market Correlates of Non-traditional Graduation

Although the benefits of on-time graduation versus non-completion are well established, questions remain about the relative value of later graduation and alternative credentials such as the GED (Hull, 2009). The human capital model (Becker, 1975) posits that any increase in productivity or human capital would show positive benefits in the labor market, suggesting that any high school credential should provide future benefits, at least in terms of employment. However, we might expect a high school diploma, even when earned at a later date, to have more value in postsecondary and early labor markets than a GED (Hull, 2009; Tyler, 2005). In contrast to the human capital approach, when approached through the lens of the zero-sum conceptual model, the energy and attention spent in a fifth or sixth year of high school, or even preparing for

a GED, is borrowed from energy that could have been spent on other activities such as accruing experience and wages in the labor market (Warren, 2002). These contrasting perspectives provide a fairly accurate picture of the mixed evidence on non-traditional high school exits.

Most research examining the outcomes of students who attained a GED has used high school graduates or dropouts as the comparison group. For example, in a review conducted by Tyler (2005), the author cited multiple studies that compared the labor market value of the GED to high school graduates. Tyler found that GED earners generally underperformed high school graduates in both employment rates and wages and outperformed low skilled, but not high skilled dropouts. Other more recent research using a regression discontinuity design reported similar results, concluding that the labor market outcomes for GED earners are indistinguishable from dropouts who attempted, but did not pass the test (Jepsen et al., 2016). There is also some evidence for an increase in postsecondary attendance and credit accrual for GED earners compared to dropouts; however, there was no evidence for an effect on postsecondary graduation (Jepsen et al., 2017; Maralani, 2011).

Although the evidence is somewhat thin, some recent studies have documented positive labor and postsecondary outcomes for late graduates. For example, one study of four Nordic nations found that youth who earned a diploma in their fifth year of high school or later were more likely to be employed or in a training program than non-completers (Albæk et al., 2019). Another study, based in the U.S., found that late graduates outperformed GED earners and dropouts in both labor participation and postsecondary completion (Hull, 2009). There were however no significant differences in wages between late graduates, GED earners, and dropouts. One study using statewide data in Texas found that both on-time graduates and GED earners had higher rates of college enrollment than late graduates three years after their expected graduation

date (Murnane et al., 2000). An analysis of young people between the ages of 18 and 29 found that about 1% of dropouts, 15% of GED earners, and 33% of high school graduates enrolled in postsecondary. The same study reported that 7% of GED holders and 32% of high school graduates earned some type of postsecondary diploma (Sum et al., 2012). Another study found that about half of GED earners who expressed an interest in college before taking the exam had enrolled within a year of earning their GED; however, they were not compared with non-completers or late graduates (Rossi & Bower, 2018).

Some exploratory research has provided insight into the comparative near-term postsecondary and labor outcomes of dropouts, *persisters*—students who are still enrolled in high school, but have not earned a diploma by their expected graduation date—and on-time graduates. Uretsky and colleagues (2016) looked at college enrollment and labor market participation one year after students' expected graduation date and found that on-time graduates had much higher rates of postsecondary enrollment (71%) than persisters who went on to graduate in their fifth year (22%). However, even persisters who did not return for a fifth year of high school enrolled in college at twice the rate of students who dropped out before the end of their fourth year. The authors also found that two-thirds of on-time graduates earned some wages in the fifth year, outperforming both dropouts and persisters. A subsequent study found that nearly half (45%) of students who did not earn a diploma in four years were neither employed nor enrolled in school two years later (Uretsky & Henneberger, 2020).

Early Employment and Subsequent Academic and Labor Market Outcomes

A key confounding factor when examining the economic and academic corollaries of non-traditional high school completion is experience in the labor market during high school. A

rich body of research examines the link between employment in adolescence and later academic and labor market outcomes. From the human capital lens (Becker, 1975), early experience in the labor market should provide additional network connections, leading to more beneficial outcomes in the longer-term. From the zero-sum lens (Warren, 2002), the additional time spent in the labor market should provide benefits in terms of accruing experience and wages in the labor market. Although individual studies have reported compelling arguments in both directions, overall, the question of whether working during adolescence is positively related to future academic or labor outcomes is not known. Some have reported positive associations with education outcomes (Neyt et al., 2019), while others have found the opposite (Warren, 2002). Some have found little or no association with future employment outcomes (Neyt et al., 2019), where others have reported a positive but diminishing association (Baum & Ruhm, 2016).

One problem that may be complicating the issue is the question of how to identify an appropriate comparison group. Students who work during high school likely have meaningful differences beyond labor participation (e.g. race, ethnicity, socio-economic status), which may also be associated with later outcomes (Behr & Theune, 2016; Rothstein, 2007; Sirin, 2005). The same issue likely holds when considering the relationship between high school completion type and later outcomes. Although there are multiple relevant factors to consider, early labor experiences may be particularly important covariates to include when examining the relationship between high school exit and subsequent postsecondary and labor market experiences. This may be especially salient as youth will likely have differing opportunities to gain early labor experience depending on whether they dropout, seek a GED, or persist in their effort to earn a high school diploma.

The Present Study

Although prior studies have examined the postsecondary and labor market outcomes associated with dropout versus high school graduation (Rumberger, 2011; Maynard et al., 2015; Rouse, 2007; Zaff et al., 2016) and earning a GED (Jepsen et al., 2016; Maralani, 2011; Tyler, 2005), few studies incorporate late graduates as a comparison group (see Hull, 2009 and Murnane et al., 2000 for exceptions). Recent exploratory research examined the near-term college and labor market outcomes for on-time graduates, dropouts, and persisting students—including fifth-year graduates—and reported more favorable college and career outcomes for on-time graduates (Uretsky et al., 2016; Uretsky & Henneberger, 2020). The current study extends this line of research using linked administrative data from Maryland to better understand the longer-term relative outcomes associated with on-time graduation, late graduation, GED attainment, and non-completion, 11 years after entering the first freshman year of high school. Also, high school labor market participation is examined to sort the roles of experience in the labor market and high school completion on later outcomes. The current paper addresses this gap in research knowledge through the following research question:

> To what extent does the type and timing of high school completion relate to the odds of a student (1) participating in the labor market, (2) enrolling in postsecondary, and (3) graduating from postsecondary 11 years after entering their first-freshman year of high school?

Method

The present study draws on 12 years of de-identified linked administrative education and labor market data from Maryland, a Mid-Atlantic state enrolling nearly 900,000 K-12 students in 2019 with an attendance rate over 90% and a graduation rate

nearing 87% (Maryland State Department of Education, 2020). The data was provided by the Maryland Longitudinal Data System (MLDS) Center, an independent agency that is responsible for linking and hosting longitudinal data from the Maryland State Department of Education, the Maryland Higher Education Commission, and the Maryland Department of Labor. Out-of-state college enrollments are provided for Maryland public 12th grade students through the National Student Clearinghouse. At the time that the data for the current study was accessed, the MLDS included de-identified individual level data for all students attending public schools in Maryland beginning with the 2007-08 school year (SY) and ending with SY 2019-20. Labor data were available through the end of the 2019 calendar year (CY).

Cohort Selection

The cohort for the current study was constructed by identifying students who enrolled in a Maryland public high school as a first-time freshman during the 2009-10 school year (SY 1). Student records from SY 2008-09 (SY 0) were crosschecked with 2009-10 records to ensure students did not have a previous high school enrollment. Students who permanently transferred out of the Maryland public schools before SY 4 (SY 2012-13) were excluded from the study. In addition, as a measure to avoid overlap of timing in GED attainment and postsecondary and labor market outcomes, students who earned a GED January 1, 2018 or later were excluded from the study (n=114). We also excluded students who were enrolled in college before earning their GED (n=13). Of the 64,130 students from the SY 1 cohort, 84% (n=54,023) met the final inclusion criteria.

Sample

Student-level descriptive statistics by high school completion type are presented in Table 1. More than four-fifths of the students in the study sample earned a high school diploma by the end of SY 4. An additional 4% of students earned a diploma in SY 5 or later. By the end of CY 9 (CY 2017), about 2% of students in the sample had earned a GED and the remaining 9% had not earned a high school credential. Nearly 9 in 10 students were at grade level (on-track) at the beginning of SY 4 and more than two-thirds of the students worked at some point in high school.

Measures

Outcome Variables

Labor and academic outcomes were assessed beginning in SY 5 (SY 2013-14) through the end of SY 11 (SY 2019-20) and were coded as binary variables. *Postsecondary enrollment* was coded as having enrolled in at least one term at a Maryland or out-of-state college between SY 5 and 11 (vs. not). *Postsecondary completion* was coded as earning a postsecondary degree from a Maryland or out-of-state college before the end of SY 11 (vs. not). *Labor participation* was coded as working at least three quarters in CY 2018 or 2019 (CY 10 or 11; vs. not). Working in CY 10 or 11 roughly corresponds with labor participation in the two years following college graduation for an on-time high school graduate with four years of college enrollment. Labor participation was included for students working for employers in Maryland subject to unemployment insurance, excluding federal government or military employment, self-employment, and independent contractors.

Predictor variables

A series of dummy variables were constructed to describe high school completion type. A student was an *on-time graduate* if they earned a regular Maryland high school diploma four years after the first-freshman year. A student was a *late graduate* if they

earned a regular Maryland high school diploma between SY 5 and 11 (reference category). A student was a *GED earner* if they received a passing score on the GED test on or before December 31, 2017 (end of CY 9). A student was a *non-completer* if they had not earned a high school credential by the end of CY 9. Working during high school (youth employment) was measured using quarterly wage data aligned with SY 3 and 4 (vs. not).

Statistical Controls

Most student-level factors were dichotomous indicators measured during high school (SY 1 - 4). Covariates were selected using prior theory and literature on student academic performance, on-time graduation, and dropout (see Alexander et al., 2001; Dupere et al., 2015; Rumberger, 2011; Zaff et al., 2016). Student demographic factors included indicators of whether a student was female (vs. male) or Latinx (vs. not). Just under half of the student population that met inclusion criteria for this study was White (48%) and just over a third was Black (37%). The remaining racial groups ranged from less than one to about four percent. Therefore, we created three dummy variables for race (Black, White, Other race).

A series of indicators were developed to describe student program eligibility and academic experiences in SYs 1 through 4. This included whether a student was eligible for Free or Reduced Priced Meals (FRPMs; vs. not), eligible for special education services (vs. not), had a previous dropout experience (vs. not), or was suspended or expelled from school (vs. not). We coded youth as having a history of chronic absenteeism if they attended fewer than 80% of days during the August-to-June reporting period of at least one school year in SYs 1-4. In addition, we included a variable describing whether a student had sufficient credits to be on-track (i.e. 12^{th} grade) at the beginning of SY 4. If not, we determined how

many grades behind they were (grades behind; 1, 2, or 3). Lastly, as indicators of academic performance we included variables describing performance (pass vs. not pass) on the English language arts and math (Algebra) high school assessments (HSA), which were Maryland's end of course standardized tests required for graduation at the time of this study.

Data Analysis

All analyses for the present study were conducted using SAS, Version 9.3. Twenty-three students had missing data on at least one of the variables included in this study and were thus excluded from the study. Data were not missing at random. Students with missing data (<1%) were more likely to be non-completers. Students who earned a GED December 31, 2017, or later (*n*=114) or attended college before earning a GED (*n*=13) were excluded from the study to avoid overlap between earning a GED and the measurement of the outcome variables resulting in a final sample of 54,023.

First, descriptive statistics were used to examine rates of postsecondary attendance (SY 5-11), postsecondary completion (SY 5-11), and labor participation (CY 10 or 11). Next, we conducted a series of three multilevel generalized linear mixed models for binary data using the GLIMMIX module for SAS 9.3 to examine the predictors of postsecondary enrollment, postsecondary completion, and labor participation. A logit link was used to accommodate the binary outcomes across all three models (Dai et al., 2006; METHOD=LAPLACE). A random intercept modeling approach was used so that outcomes were nested in the student's final school district of record in order to adjust for the potential between-district effects on the estimation of standard errors (Hox, 2000). In Maryland, there are 24 school districts, which correspond with county lines. All other model parameters were treated as fixed effects.

Results

First, we ran descriptive statistics summarizing the postsecondary and labor outcomes by high school completion status through Year 11 of the study period (see Table 2). Four out of five on-time graduates attended college during the study period compared to about a third of late graduates and GED earners. Less than one in 10 non-completers attended postsecondary by the conclusion of SY 11. Nearly half of on-time graduates had completed postsecondary by SY 11 compared to less than 5% of late graduates and GED earners and 1% of non-completers. Nearly two-thirds of on-time graduates, late graduates, and GED earners worked three or more quarters in CYs 10 or 11 compared to just over two fifths of non-completers.

Multilevel Models

Next, we ran a series of multilevel models in order to assess whether the patterns of postsecondary and labor outcomes remained after controlling for student demographic and academic background characteristics and employment while in high school. The z-test for the covariance parameters in the unconditional means (null) models indicated statistically significant between-school variation in labor participation (z=3.21, p=.0007), postsecondary enrollment (z=3.52, p=.0004), and postsecondary completion (z=3.38, p=.0004), providing justification for the use of multilevel modeling techniques for each outcome examined (Hox, 2002). Results for the multilevel models fitted to evaluate the associations between student-level factors and postsecondary and labor outcomes are presented in Table 3.

Postsecondary Enrollment

After controlling for student demographic and academic background characteristics, on-time graduates (OR=3.189, p <.0001) and GED earners (OR=1.375, p=.002) were more likely than late graduates to enroll in postsecondary. Non-completers were less likely to enroll in

postsecondary than late graduates (*OR*=.225, *p* <.0001). Working during high school was related to increased odds of postsecondary enrollment (*OR*=1.189, *p*<.0001).

Postsecondary Completion

Just as with enrollment, on-time graduates were more likely (*OR*=6.435, *p*<.0001) and non-completers were less likely (*OR*=.512, *p*=.0005) to complete postsecondary than late graduates. Working in high school was related to lower odds of postsecondary completion (*OR*=.873, *p*<.0001). After controlling for other variables in the model, there was no significant relationship between earning a GED and the odds of postsecondary completion (vs. late graduates; *p*=.064).

Labor Participation

Non-completers were less likely to participate in the labor market for three or more quarters in CYs 10 or 11 than late graduates (*OR*=.487, *p* <.0001). Working in high school was related to increased odds of later labor participation (*OR*=2.065, *p*<.0001). After controlling for other variables in the model, there was no significant relationship between being an on-time graduate (*p*=.353) or earning a GED (vs. late graduates; *p*=.143) and the odds of working three or more quarters in CYs 10 or 11.

Post-hoc Wage Analysis

Post-hoc descriptive analyses summarizing the median annual earnings for CYs 6 through 11 by high school completion type were run to better understand the multivariate results for labor participation (see Table 4). Median annual earnings were calculated by summing the quarterly earnings for each CY between 6 and 11 (CY 2014- CY2019) and identifying the median. One year after the cohort's expected graduation date (CY 6; 2014) the median annual earnings of the groups were similar, with on-time graduates ($6,558) and GED earners ($6,460)

having the highest median annual earnings, followed by late graduates ($5,273) then non-completers ($4,111). Over the course of the study period, all groups saw growth in their median annual earnings, although on-time graduates experienced the highest rate of growth (323%), followed by late graduates (234%), non-completers (178%) and GED earners (152%). The rank order remained relatively stable with on-time graduates expanding their advantage over the other groups and non-completers remaining at the bottom. Despite the early advantage of GED earners, they followed a similar trajectory to late completers, with a difference in median annual earnings of about $1,000 more for late completers in CY 11. Figure 1 presents an illustration of the median annual earnings between CYs 6 through 11 by high school completion type.

Discussion

The current study extends recent research on the near-term academic and early labor market outcomes associated with on-time graduation, late-graduation, earning a GED, and non-completion (Uretsky et al., 2016; Uretsky & Henneberger, 2020), using linked administrative data from Maryland to better understand the longer-term relative academic and labor market outcomes 11 years after entering the ninth grade. High school labor market participation was included to control for prior labor market experiences. Few studies have examined the long-term postsecondary and labor market outcomes associated with non-traditional pathways of high school completion in comparison to students who earn a regular high school diploma and students who do not complete. In doing so, practitioners and policy makers can leverage the identification of students who are at-risk for high school non-completion, helping to support students through completion and improving the transition to postsecondary and the labor market.

Building on prior research we found that, overall, on-time graduates outperformed late graduates and GED earners who in turn outperformed non-completers in postsecondary and the labor market, suggesting that school systems should continue the current practice of prioritizing four-year graduation. Although there was no difference in labor market participation between on-time and late graduates, on-time graduates had a large and persistent wage advantage over late graduates. GED earners were more likely to enroll in postsecondary; however, there was no difference in postsecondary completion or labor market participation for GED earners and late graduates. In addition, late graduates had higher median earnings than GED earners at CY 11. Critically, non-completers fared worse than late graduates and GED earners across all outcomes.

Postsecondary Enrollment and Completion

Consistent with prior literature (Albæk et al., 2019; Hull, 2009; Sum et al., 2012) on-time graduates had higher odds of both enrolling in and completing postsecondary compared to later graduates. This is supported by the descriptive findings which showed 8 out of 10 on-time graduates enrolling in postsecondary by the end of SY 11 compared to one third of late graduates. The advantage for on-time graduates was even more pronounced for postsecondary completion where nearly half of on-time graduates earned a postsecondary diploma compared to just 4% of late graduates. This is somewhat in conflict with the human capital conceptual model (Becker, 1975). If a diploma is the signifier of capital, then on-time graduation and late graduation should earn the same human capital and have similar outcomes. The findings are probably more in line with the zero-sum model (Warren, 2002), as the additional time late graduates spent pursuing a diploma was available to the on-time graduates to accrue experience and wages in the labor market. This

however does not account for other historical differences (e.g. skills, family support, financial resources) between on-time and late graduates that may explain the discrepancy in outcomes.

Non-completers were significantly less likely than late graduates to enroll in or complete postsecondary. This is consistent with the existing literature that showed between 1 and 6% of non-completers enrolled in college, depending on the definition of non-completion, compared to nearly one-fifth of late graduates (Sum et al.; 2012; Hull, 2009; Uretsky & Henneberger, 2020; Uretsky, et. al, 2016). Also, non-completers were less likely than late graduates to complete postsecondary which aligns well with Becker's (1975) human capital model. There is little literature on this subject; however, somewhat consistent with our findings, Hull (2009) found that none of the non-completers in their study had earned a postsecondary degree 8 years after their expected graduation date compared to 12% of late graduates. In addition, Sum et al. (2012) reported that just 1 in 10 high school dropouts who did enroll in postsecondary were still enrolled by their second year of college and just 4% of those who enrolled made it to Year 3.

Although GED earners had higher odds of postsecondary enrollment, there was no significant difference in the odds of postsecondary completion for GED earners compared to late graduates. Although we were unable to locate any studies that compared postsecondary completion rates for GED earners and late graduates, the enrollment findings are supported by two studies that reported higher rates of postsecondary enrollment for GED earners compared to late graduates (Hull, 2009; Garner, 2006). In contrast, two studies found little or no difference in college enrollment rates for late graduates and GED earners. However, both studies had a shorter study period for follow up, mostly focusing on college enrollment immediately after degree attainment (NCES, 2004; Uretsky & Henneberger, 2020).

Labor Market Participation

Contrary to previous literature demonstrating an advantage for on-time graduates (Hull, 2009), there was no difference in the odds of labor market participation in CYs 10 or 11 for on-time graduates compared to late graduates. This result should be interpreted with caution, especially if there is reason to believe that on-time graduates were more likely than other groups to be employed in the job categories that are not available in Maryland's administrative data (e.g. federal employment, contractor). We also considered the possibility that students who were enrolled in college during CYs 10 and 11 may have been less likely to work during that same period. Seven percent of the study population were enrolled in college during this period of time (*n*=3,790). As an additional measure of caution, we ran a sensitivity analysis—repeating the multilevel model excluding those who were enrolled in college in CYs 10 or 11—and found no meaningful changes in the relationships between the model parameters and the outcome variable.

We also found that non-completers were less likely to be participating in the labor market than late graduates, and that there was no difference in labor market participation for GED earners and late graduates. This is consistent with previous studies demonstrating that, compared to non-completion, late graduation is associated with higher odds of labor participation in U.S. and international samples (Albæk et al., 2019; Uretsky & Henneberger, 2020; Uretsky et al., 2016). Few studies have compared the labor market participation of GED earners and late graduates. One study reported that late graduates had a higher labor participation rate than GED earners (Hull, 2009). Most research investigating the labor market value of the GED compared GED earners to non-completers or high school graduates in general. These studies have generally found that the relationship between earning a GED and future labor outcomes is non-significant

or only present for certain sub-groups (e.g., White students, low performing dropouts) or when paired with postsecondary education (Jepsen et al., 2016; Murnane et al, 2000; Tyler, 2005).

The current study is among the first to use longitudinal multivariate models to report equivalence in labor market participation outcomes between GED earners and late graduates. However, additional research that includes a longer period of study and additional contextual covariates would help to extract additional meaningful interpretation and implications. Labor market participation is more than a policy discussion based on student academic history and labor potential. Employment may relate to decisions to work (or not), ability to work (or not), and factors related to individual, family, and community that can drive a student's hiring potential (e.g., family capital; community capital). Family factors such as early parenthood or caring for additional members of the family relate to students' decisions to spend four plus years seeking a postsecondary degree rather than working and potentially saving money. Such factors may play into a students' ability to remain enrolled in high school for a fifth year, versus seeking a GED or permanent dropout.

Median Annual Labor Market Earnings

Post-hoc analyses examined labor market earnings to better contextualize the labor participation results, and slightly different patterns emerged when considering the median annual earnings in CYs 6-11 by high school completion type. On-time graduates earned a higher median wage than all other high school completion groups beginning in CY 6. This advantage increased over time so that, by CY 11, on-time graduates were earning median annual earnings that were 60% higher than late graduates ($27,726 vs. $17,655 respectively). Thus, even though late graduates were equally likely as on-time graduates to participate in the labor market, they may be working in jobs or industries with lower earnings or working part-time. Non-completers were

less likely than late graduates to be participating in the labor market and had median annual earnings that were 50% lower than late graduates by the end of the study period (CY 11). Although there were no differences in labor market participation between GED earners and late graduates, examining the median annual earnings over time revealed a slightly different story. GED earners started out with a wage advantage over late graduates, but by the end of the study period, annual earnings for GED earners were lower than those of late graduates providing additional support for the application of the human capital model in the study of high school completion (Becker, 1975).

This contradicts the finding by Hull (2009) that there were no significant wage differences between late graduates, GED earners, and dropouts; suggesting that longer-term earnings associated with a GED may be lower than those associated with earning a high school diploma after the typical four-year graduation period. Although there are important differences in how the groups were operationalized, the present findings are supported by previous research that found GED earners had lower rates of employment and wages compared to high school graduates and outperformed low skilled, but not high skilled dropouts (Tyler, 2005). It is important to note that the wage findings presented above are descriptive, not inferential. In addition, some of the labor market data were collected before the individual earned their GED.

Sorting the roles of adolescent work experience and high school completion

A major advantage of the current study was the ability to control for high school labor experiences when examining the associations between high school non-completion and postsecondary and labor market outcomes. Prior research indicates a link between working during high school, educational outcomes and labor market outcomes (Baum & Ruhm, 2016; Neyt et al., 2019; Warren, 2002). The inclusion of high school labor experience as a covariate in

our multivariate models increased our confidence that high school completion timing and type are related to postsecondary and labor market outcomes above and beyond the role of high school labor experience. Future research should further examine the type and intensity of work during high school as a critical factor for sorting the roles of high school labor market experience and high school completion on outcomes (Monahan et al., 2011). In addition, high school employment may moderate the relationship between high school completion and postsecondary and labor market outcomes.

Limitations

The findings presented in this study should be interpreted within the context of the following limitations. Although state administrative data allow for population-level analysis, the data are limited to a single state. As such, the data are representative, but the generalizability is limited to areas with similar student, school, and labor market characteristics as the Maryland population. In addition, the labor market data used for this study excluded federal employment, private contracting, self-employment, and out-of-state employment. The relative proportion of students working in excluded labor markets may vary by high school completion type (i.e., on-time graduate, GED, late-completer, non-completer), which could introduce bias into the labor market findings. In this study, student-level data were nested in the 24 districts in Maryland to control for the between-district variation in outcomes. District characteristics and characteristics of the high school were not included as covariates, and the student-level estimates may be overestimated to the extent that school and district characteristics are associated with the outcomes of interest in this study. Furthermore, unmeasured confounders may bias the multilevel modeling results of the current study. For example, student motivation (Wentzel & Miele, 2009) may be a key underlying mechanism for high school completion and subsequent postsecondary

and labor outcomes. The timing of measurements in the current study may have influenced the results. Some students may still have been in college when labor market outcomes were measured, and some students may have been participating in the labor market during college, increasing time to postsecondary completion. It is possible that some students in the current study continue to complete postsecondary after the 11-year study period, and it is possible that longer investigations of labor market earnings could reveal more nuanced patterns. In addition, the timing of earning a GED may be important for making comparisons to late graduates, and future research should examine the earnings of students who earn a GED immediately after leaving high school in comparison to students who earn a GED later in life.

Implications for Practice and Policy

The findings from the current study reinforce the importance of persisting in the face of non-completion and suggest that the extra effort required to earn a regular high school diploma was rewarded for both on-time and late graduates. The importance of working in high school in relation to postsecondary and labor market outcomes was highlighted, and an exploratory analysis of annual earnings helped to unpack labor market participation over time. A better understanding of these outcomes can help policymakers and practitioners to better direct services meant to ensure that all students are college and career ready, regardless of when, if, and how students complete high school.

For many students, high school is the foundation from which they set their academic and labor market trajectories. As such, there is a need for early identification of students who are at risk for non-completion, so that guidance can help support these students as they transition into postsecondary and the early labor market. National policy initiatives have increasingly moved towards college and career readiness as a goal (ESSA, 2015; Wong-

Parodi, 2016), and results from the current study indicate that students with non-traditional high school completion types may be underprepared for college and career.

Specifically, when we consider students who do not graduate high school in four years, it is critical that we set goals beyond retention and reengagement and move our focus towards completion and the transition into college or career. For many of these students, simple, low-cost, short term, high-intensity interventions that are common practice in social work such as brief behavior therapies paired with mentoring or case management, may be enough to bridge the gap between persistence and completion (Castleman & Page, 2015; Kim & Franklin, 2009). Other students with more complex lives may need more complex solutions like wraparound (Fries et al., 2012; Hill, 2020), but such solutions are not beyond the skillset of our educators, counselors, and social workers. It is a matter of setting priorities, providing resources, and setting metrics for accountability.

Previous research has provided little evidence to support students, parents, and educators in deciding among pursuing late high school graduation, a GED, or dropout in the face of non-completion after the traditional four years of high school have concluded. Findings from the current study support the long-term postsecondary and labor market value of the continued pursuit of a late high school diploma or a GED. This suggests that targeted efforts that promote continued engagement or re-engagement with school (e.g. mentoring, brief therapeutic approaches, apprenticeships) may improve longer-term academic and labor market outcomes among non-completers, providing benefits to both the individual student and the communities where they reside.

Conclusion

The current study is among the first to use statewide longitudinal data with multivariate models to examine the relative postsecondary and labor market outcomes of on-time graduates, GED earners, non-completers, and late graduates, while controlling for labor market participation during high school. Previous research has demonstrated that students who do not finish high school in four years have less favorable near-term postsecondary and labor outcomes (Rumberger, 2011; Uretsky & Henneberger, 2020; Zaff et al., 2016). The current study extends this research to examine outcomes eleven years after the students first entered high school. Findings from the present study indicate that on-time graduates had the most favorable postsecondary and labor market outcomes, followed by late graduates and GED earners who in turn outperformed non-completers. Providing additional supports during high school can help to ensure successful completion and improve the transition into postsecondary and the labor market.

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Table 1

Descriptive Statistics for Student-level Factors by High School Exit Type (*N*=54,023)

	Total	Non-Completer	GED Earner	Late Graduate	On-time Graduate
	(*N*=54,023)	(*n*=4,939)	(*n*=1,041)	(*n*=2,385)	(*n*=45,658)
	%	%	%	%	%
Total	100	9	2	4	85
Youth employment	68	43	70	55	72
Ever Chronically Absent	19	84	92	53	8
Ever Dropped out	8	60	83	15	0
Ever Suspended or Expelled	28	58	64	59	22
Grades Behind (Year 4)					
On-track	89	20	17	48	>99
1	5	25	30	36	<1
2	4	31	33	14	<1
3	3	24	19	2	<1
Female	49	40	39	37	51
Race					
White	48	28	50	23	51
Black	37	59	36	61	33
Other	16	14	14	16	16
Latinx	9	14	11	16	8
Free and Reduced Meals	42	75	61	72	36
Special Education	12	32	11	24	9
Passed High School Exit Exam					
English	65	21	42	48	72
Math	67	23	49	51	73

Note. Year 4 is the 2012-2013 School Year.

Table 2.

Postsecondary and Labor Outcomes by High School Completion Status through Year 11 (*N*= 54,023)

	On-time Graduate (*n*=45,661)	Late Graduate (*n*=2,385)	GED (*n*=1,041)	Non-completer (*n*=4,939)
	%	%	%	%
Attend College [a]	80	33	35	7
College Completion [a]	44	4	3	1
Working in Year 9 or 10[b]	60	59	58	41

Note. a. Academic Years (August-June) 5-10. b. Working three financial quarters or more in calendar years 10 or 11.

Table 3.

Results for the Multilevel Logit Models Fitted to Evaluate the Association between Student-level Factors and the Odds of Postsecondary and Labor Outcomes 11 years after Freshman Year (*N*=54,023).

	Postsecondary Enrollment			Postsecondary Completion			Labor Participation [a.]		
Effect	OR	*p*	SE	OR	*p*	SE	OR	*p*	SE
Intercept		.241	.098		<.0001	.149		<.0001	.077
On-Time Graduate [b.]	3.189	<.0001	.055	6.435	<.0001	.125	.955	.353	.050
Non-completer [b.]	.225	<.0001	.082	.512	.0005	.191	.487	<.0001	.060
GED [b.]	1.375	.002	.100	1.569	.064	.243	.875	.143	.086
Youth employment	1.189	<.0001	.026	.873	<.0001	.024	2.065	<.0001	.020
Chronically Absent	.519	<.0001	.036	.274	<.0001	.053	.854	<.0001	.033
Ever dropout	1.005	.948	.072	.733	.036	.148	1.102	.059	.051
Ever suspended or expelled	.491	<.0001	.026	.334	<.0001	.031	.968	.161	.023
Grades Behind	.866	<.0001	.036	1.002	.979	.086	1.056	.027	.025
Pass English HSA	1.309	<.0001	.033	.968	.376	.037	1.063	.032	.029
Pass Math HSA	.954	.172	.034	.694	<.0001	.038	1.291	<.0001	.029
Female	1.646	<.0001	.024	1.758	<.0001	.022	1.057	.003	.019
Black [c.]	1.278	<.0001	.034	.575	<.0001	.031	1.245	<.0001	.027
Other Race [c.]	1.798	<.0001	.045	1.233	<.0001	.035	1.2	<.0001	.031
Hispanic	.550	<.0001	.049	.479	<.0001	.046	1.195	<.0001	.038
FRPM [d.]	.458	<.0001	.028	.374	<.0001	.027	1.209	<.0001	.023
Special Education	.391	<.0001	.034	.280	<.0001	.045	1.085	.005	.029
Covariance Parameter Estimates									
Intercept	3.26 [e.]	.001	.038	3.12 [e.]	.001	.040	3.3 [e.]	.001	.020

Note. a. Worked three or more financial quarters in calendar years 10 (2018) or 11 (2019). b. Reference group is late graduate; c. Reference group is White. d. FRPM = eligibility for free or reduced-price meals; e. z-score; Postsecondary enrollment and graduation were examined in school years 5-11.

Table 4.

Median Annual Earnings by High School Completion Type Calendar Years 6-11 (*N*= 54,023)

	On-Time Graduate		Late Graduate		GED		Non-completer	
	Median	SD	Median	SD	Median	SD	Median	SD
Year 6 (2014)	$ 6,558	$ 8,226	$ 5,273	$ 7,268	$ 6,460	$ 8,279	$ 4,111	$ 7,605
Year 7 (2015)	$ 8,924	$ 10,479	$ 7,513	$ 8,513	$ 8,007	$ 10,100	$ 5,324	$ 9,287
Year 8 (2016)	$ 12,734	$ 13,847	$ 10,276	$ 10,681	$ 9,887	$ 12,123	$ 6,884	$ 10,657
Year 9 (2017)	$ 18,288	$ 17,105	$ 12,033	$ 12,644	$ 13,430	$ 13,644	$ 8,659	$ 11,517
Year 10 (2018)	$ 23,462	$ 20,073	$ 15,235	$ 14,463	$ 14,394	$ 16,338	$ 10,324	$ 12,935
Year 11 (2019)	$ 27,726	$ 69,504	$ 17,655	$ 15,958	$ 16,272	$ 18,552	$ 11,433	$ 14,752

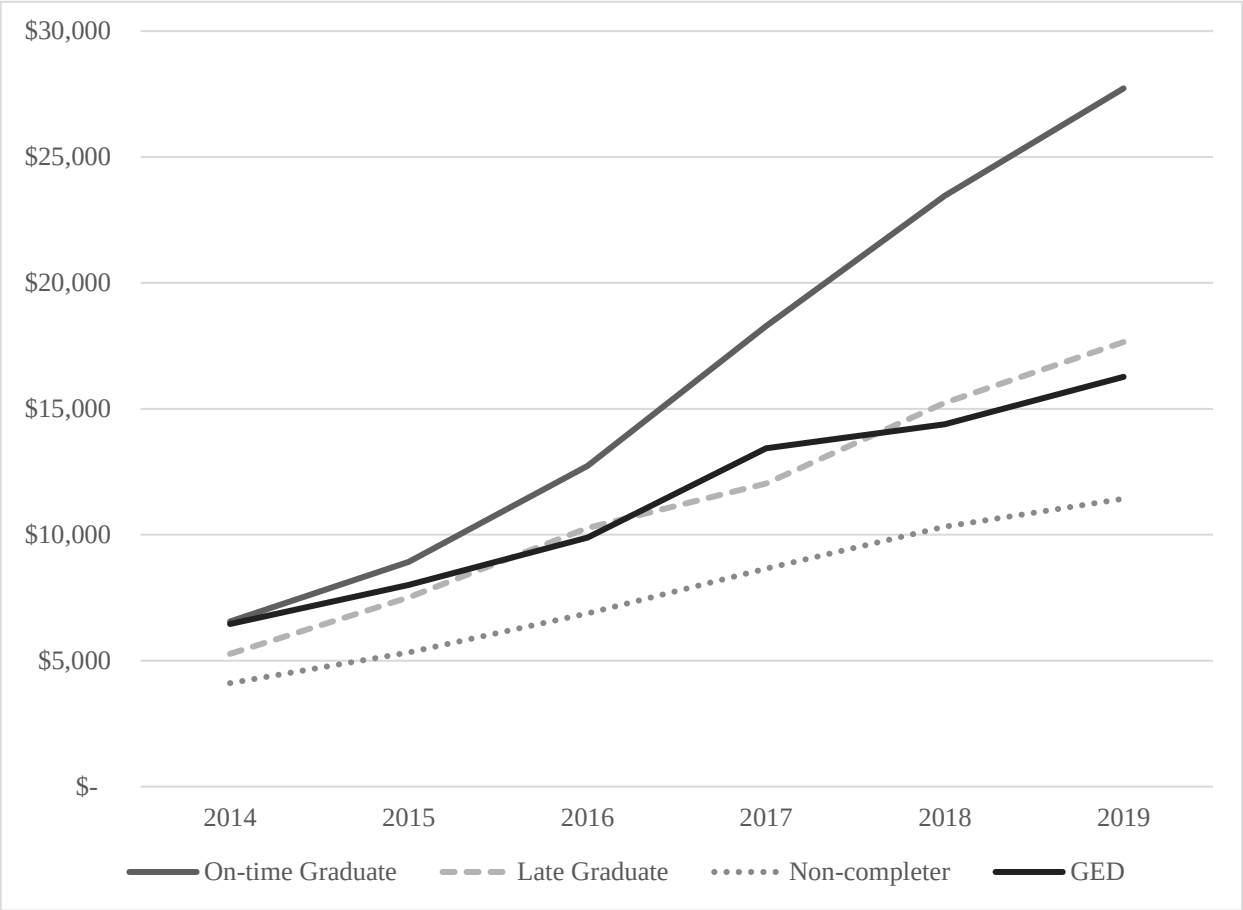

Figure 1 Median Annual Earnings by High School Completion Type Calendar Years 6-11