Late Graduates, GED Earners and, Non-completers: The Relative Labor and Postsecondary Value Non-traditional High School Exit

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Abstract

The transition out of adolescence signals a period of increasing personal and social responsibility. For many this means entering college or the workforce. Previous research has demonstrated that youth who do not finish high school in four years have less favorable postsecondary and labor outcomes. There is less evidence to support young people, parents or educators in deciding among the remaining options, namely pursuing a GED, late high school graduation or permanent dropout. The current study presents the first statewide analyses comparing labor and postsecondary outcomes for on-time graduates, GED earners, non-completers and late graduates. The results provide a detailed description of an under-researched and underserved group of vulnerable young people. Notably, we found no significant differences in the odds of labor market participation 6 years after their expected graduation date. We also found no differences in postsecondary enrollment or graduation, although the graduation rates were low for both groups.

High school graduation rates have jumped by at least 10 points since the turn of the century (Harris, Liu, Barrett, & Li, 2020). Concurrently, researchers and practitioners have raised concerns about the diminishing returns of a high school diploma. Efforts to combat the declining value of a high school diploma in the labor market have included a shift away from high school completion as an end goal, and towards an emphasis on college and career readiness (Wong-Parodi, 2016). There is however a 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 post-secondary transition (Uretsky, Henneberger & Woolley, 2016). For example, recent research focusing on persisting non-graduates—students who do not earn a diploma after four years, but remain engaged through four, five, or even six years of high school before earning a diploma or eventually dropping out—has found meaningful differences in early labor and postsecondary experiences based on if and how students complete high school (Uretsky, 2019; Uretsky & Henneberger, 2020).

For many, high school is the foundation from which they set their educational and career trajectories. Youth are eligible for their first academic credentials and have the opportunity to formally participate in the labor pool for the first time. As such there is a need for research that considers how both the type and timing of academic achievements (e.g. four-year [on-time] vs. later graduate) in high school impact later outcomes.

Background

The causes and correlates of high school graduation and dropout are well documented in the research literature (Rumberger, 2011, Zaff et al, 2016). Non-completers are more likely to experience poor health (Blackwell, Lucas, Clarke, 2014), have higher rates of drug use (Reingle Gonzalez et al., 2016), and higher rates of arrest and

incarceration (Maynard, Salas-Wright, & Vaughn, 2015, 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 years of high school without earning a diploma (Uretsky, 2019). As such, our knowledge of the relative prevalence and predictors of labor and post-secondary outcomes for non-traditional completers, such as later graduates and General Educational Development [GED] earners is comparatively limited (Hill & Mirakhur, 2018; Uretsky et al., 2016; Uretsky & Henneberger, 2020).

Economic and academic corollaries of non-traditional graduation

Although the benefits of on-time graduation are well established, some questions remain about the relative value of later graduation and alternative credentials such as the GED certificate. If viewed through the human capital model (Becker 1975) 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 signaling value than a GED. In contrast, 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 graduation.

Most GED research has used high school graduates or dropouts as the comparison groups. 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 dropouts; 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 did not pass the test (Jepsen, Mueser, & Troske, 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 (Maralani, 2011; Jepsen et al., 2017).

Though 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 HS or later were more likely to be employed or in a training program than non-completers (Albæk et al., 2019). Another study found that late graduates outperformed GED earners or dropouts in labor market participation. Postsecondary enrollment and postsecondary graduation (Hull, 2009) than 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 the expected graduation date (Murnane, Willett, & Tyler, 2000). An analysis of young people between the ages of 18 and 29, using national data, found that about 1% of dropouts, 15% of GED earners and 33% of high school graduates enrolled in postsecondary. The same study reported that between 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 enrolled in college 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 workforce outcomes of persisters, dropouts and on-time graduates. Uretsky et al., (2016) looked at college enrollment and workforce participation one year after their expected graduation date and found that on-time graduates had much higher rates of post-secondary enrollment than persisters who went on to graduate in their fifth year. However even persisters who left high school after the fourth year 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 dropouts and persisters. A subsequent study found that more than half of all students who did not earn a diploma in four years were neither employed nor enrolled in school two years later (Uretsky & Henneberger, 2020).

Youth Employment

There is a rich body of research considering the questions of whether employment during adolescence is a positive influence on later academic and labor outcomes. Although individual studies have reported compelling arguments in both directions, overall the question of whether working during adolescence has a net positive effect on future academic or labor outcomes is not known. Some have reported positive effects on education (Neyt, Omey, Verhaest, & Baert, 2019) while others have found the opposite (Warren, 2002). Some have found little or no impact on future employment outcomes (Neyt et al., 2019), where others have found a positive but diminishing impact (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 are likely have meaningful differences beyond labor participation (e.g. race, ethnicity, socio-economic status [SES]), which

may also be associated with later outcomes (Behr &Theune, 2016; Rothstein, 2007; Sirin, 2005). Conversely the same issue 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 to control for when considering this subject. Youth will have differing opportunities to gain early labor experience depending on whether they dropout, seek a GED, or persist into a fifth-year of high school.

The present study

The present study will advance research knowledge in this understudied area using 10 years of cross-sector linked administrative data from the Maryland Longitudinal Data System (MLDS) to examine the relationships between high school completion and later workforce participation and postsecondary outcomes 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, and (3) graduating from postsecondary 10 years after entering their first-freshman year of high school?

Methods

The present study draws on 10 years of de-identified linked administrative education and workforce data from Maryland, a Mid-Atlantic state enrolling nearly 900,000 k-12 students in 2019 with and 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 and 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 2008-09 school year (SY) and ending with SY 2018-19. Labor data was available through the end of the 2019 calendar year.

Cohort Selection

The cohort for the current study was constructed by identifying students who enrolled in a Maryland public HS as a first-time freshman during the 2009-10 school year (SY; Year 1). Students who transferred out of the Maryland public schools prior to Year 4 (SY 2012-13) and did not re-enroll were excluded from the study. Of the 64,130 students from the Year 1 cohort, 84% (*n*=54,150) met the inclusion criteria.

Sample

Student-level descriptive statistics for the study sample are presented in Table 1 and school-level descriptive statistics are presented in Table 2. More than four-fifths of the students in the study sample earned a HS diploma by the end of Year 4 compared to just 4% of students who earned a diploma in Year 5 or later. By the end of Year 10 (SY 2018-19), about 2% of students in the sample had earned a GED and the remaining 9% had no earned achievements. Nearly 9 in 10 students were at grade level (on-track) at the beginning of Year 4 and more than two-thirds of the students worked at some point in high school.

Table 1.

Descriptive Statistics for the Study Sample (*N*=54,150).

	%
On-Time Grad	84
Year 5+ Grad	4
GED	2
Non-completer	9
Female	49
Race	
White	48
Black	37
Other	16
Hispanic	9
Ever FARMs	42
Ever Special Education	12
Ever Chronically	18
Grades Behind	
0	89
1	5
2	4
3	3
Ever Dropout	8
Ever Mobile	9
Ever Discipline	28
Ever Work	68

Measures

Outcome Variables. Labor and academic outcomes were assessed beginning in Year 5 (SY 2013-14) through the end of Year 10 and were coded as binary variables. *Postsecondary participation* was coded as having enrolled in and attended at least one term at a Maryland or out-of-state college between Years 5 and 10 (vs. not). *Postsecondary completion* was coded earning a postsecondary degree from a Maryland or out-of-state college before the end of Year 10 (vs. not). *Labor participation* was coded as working at least one quarter in Year 8, 9, or 10 (vs not). Labor participation is included for students working for employers in Maryland subject to unemployment insurance, excluding federal

government or military employment, self-employment, and independent contractors. In addition, wages data was collected for all study participants who worked between Years 5 and 10.

Table 2.

School-level characteristics. (k=249)

	Mean	Std Dev
%Persister	11%	15%
%Female	48%	11%
%White	44%	34%
%Black	44%	35%
%Other Race	8%	10%
%Hispanic	7%	10%
%Ever FARMs	51%	29%
%Ever Special Education	14%	10%
%Ever Chronically Absent	31%	28%
Mean Grades Behind	.44	.61
%Ever dropout	15%	22%
%Ever mobile	14%	15%
%Ever discipline	35%	23%
%Worked Y3	46%	14%
%Worked Y4	60%	13%
%Passed English HSA	58%	21%
%Passed Math HSA	60%	22%
	k	%
Voc-Tec School	14	6
Alternative School	32	13
Charter School	8	3
Traditional/Combined	174	70
Combined	20	8

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 Years 5 and 10 (reference category). A student was a *GED earner* if they received a passing score on the

GED test by the end of Year 10. A student was a *non-completer* if they had no earned high school credential by the end of Year 10.

Statistical Controls. Most student-level factors were dichotomous indicators measured during high school (Years 1 - 4). Covariates were selected using on prior theory and literature on student academic performance, on-time graduation, and dropout (Rumberger, 2011; Zaff, 2016). Student demographic factors included indicators of whether a student was female (vs. male) or Hispanic (vs. not). Just over 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 experiences in Years 1 through 4. This included whether a student was ever eligible for Free or Reduced Meals (FARMs) (vs. not), ever eligible for special education services (vs. not), had a previous dropout experience (vs. not), was ever suspened or expelled from school (discipline vs. none) or worked during years 3 or 4 (vs. not). We coded youth as having a history of chronic absenteeism was if they attended less than 80% of days during the August-to-June reporting period of at least one school year in Years 1-4. Additionally, we included a variable describing whether a student had sufficient credits to be on-track (i.e. 12^{th} grade) at the beginning of Year 4. If not, we determined how many grades behind they were (grades behind; 1, 2 or 3).

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. Listwise deletion

was used resulting in a final sample of 54,150. Data were not missing at random. Students with missing data were more likely to be non-completers.

First, descriptive statistics were used to examine rates of postsecondary attendance, postsecondary graduation, and working in years 8, 9, or 10. Next, we conducted series of multilevel generalized linear mixed modeling approach for binary data using the GLIMMIX module for SAS 9.3 to examine the predictors of postsecondary participation, graduating from postsecondary, and labor participation. A logit link was used to accommodate the binary outcomes across all three models (Dai et al., 2006; METHOD=LAPLACE). Outcomes were nested in the student's final county of record to adjust for the potential between-jurisdiction effects on the estimation of standard errors (Hox, 2000).

Results

First, we ran descriptive statistics summarizing the postsecondary and labor outcomes by high school completion status through Year 10 of the study period (see Table 3 and Figure 1) Four out of five on-time graduates attended college during the study period compared to about a third of later graduates and GED earners. Less than one in 10 non-completers attended postsecondary by Year 10. Nearly half of on-time graduates had earned a postsecondary diploma by Year 10 compared to less than 5% of later graduates and GED earner and 1% of non-completers. Three quarters of on-time graduates participated in the labor market in years 8, 9, or 10 compared to nearly four-fifths of later graduates and GED earners and three fifths of non-completers.

Table 3.

Postsecondary and Labor Outcomes by High School Completion Type through Year 10 (*N*= 54,150)

	On-time Graduate	Late Graduate	GED	Non-completer
	(*n*=45,661)	(*n*=2,385)	(*n*=1,165)	(*n*=4,939)
	%	%	%	%
Attend Postsecondary	80	33	33	7
Postsecondary Graduation	44	4	3	1
Labor Participation (Years 8, 9, or 10)	75	78	79	60

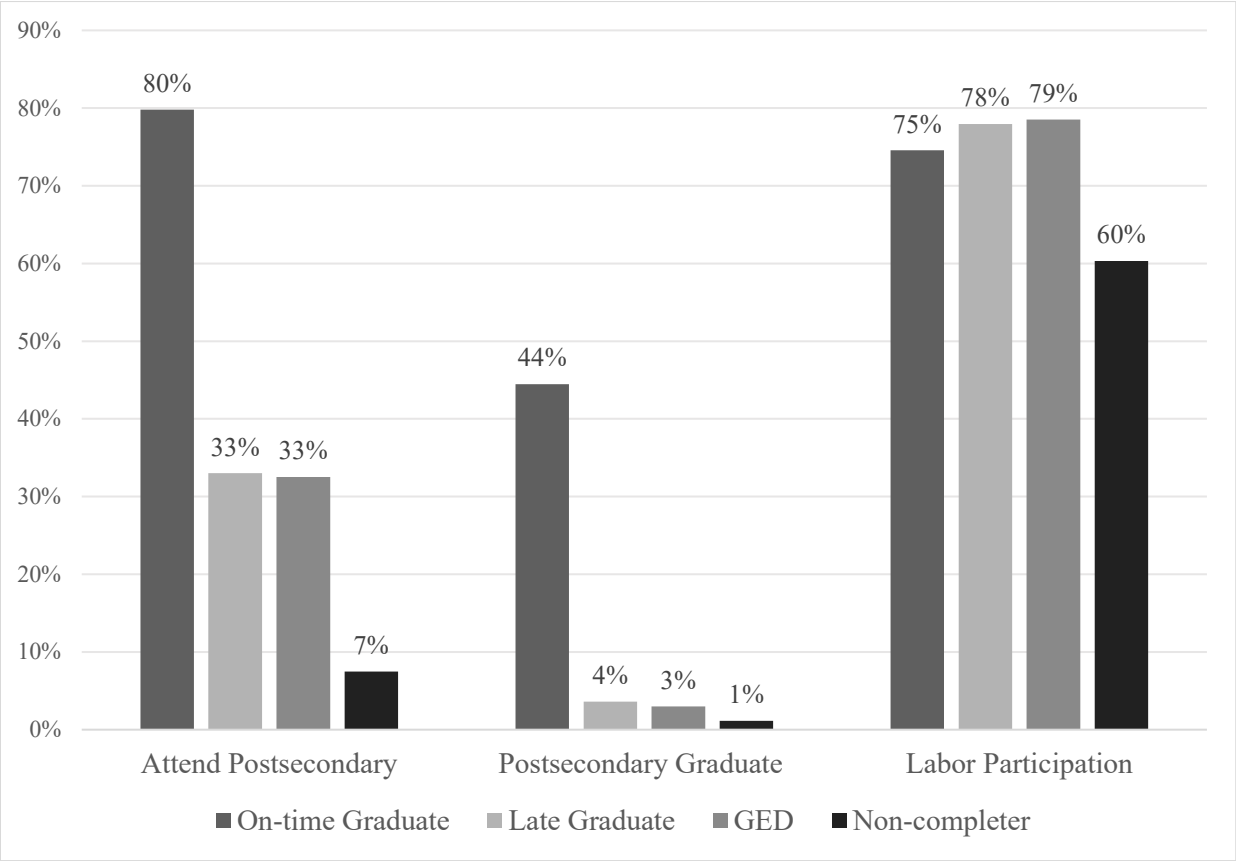

Figure 1. College and Workforce Experiences at Year 10

Multilevel Models

Next, we ran a series of multivariate models in order to assess whether the patterns of postsecondary and labor outcomes remained after controlling for demographic and background

information. The z-test for the covariance parameters indicated statistically significant between-school variation in labor participation (z = 3.21, p=.0007), postsecondary enrollment (z = 3.52, p=.0004), and postsecondary graduation (z = 3.38, p=.0004) providing justification for the use of MLM techniques across models (Hox, 2002). Results for the multilevel models fitted to evaluate the contributions of student -level factors on work in years 8, 9 or 10, postsecondary enrollment, and postsecondary graduation are presented in Table 4.

Table 4.

Results for the Multilevel Logit Models Fitted to Evaluate the Contributions of Student-level Factors on the Odds of Postsecondary and Labor Outcomes 10 years after Freshman Year (N=54,150)

	Postsecondary Participation			Postsecondary Graduation			Labor Participation		
	OR	*p*	SE	OR	*p*	SE	OR	*p*	SE
Intercept	.268	.010	.096	-1.54	<.0001	.145	.407	<.0001	.077
On-Time Graduate [b.]	3.203	<.0001	.055	5.998	<.0001	.122	.878	.021	.056
Non-completer [b.]	.200	<.0001	.079	.439	<.0001	.179	.405	<.0001	.064
GED [b.]	1.161	.120	.096	1.213	.389	.225	.887	.207	.095
Ever work	1.195	<.0001	.026	.857	<.0001	.024	2.505	<.0001	.021
Chronically Absent	.525	<.0001	.036	.278	<.0001	.053	.950	.170	.037
Ever drop	1.052	.475	.071	.790	.106	.146	1.226	.000	.055
Ever discipline	.487	<.0001	.026	.331	<.0001	.031	1.101	.000	.026
Grades Behind	.847	<.0001	.035	1.084	.352	.086	.990	.693	.026
Female	1.672	<.0001	.024	1.743	<.0001	.022	1.074	.001	.021
Black [c.]	1.274	<.0001	.034	.568	<.0001	.031	1.428	<.0001	.030
Other Race [c.]	1.788	<.0001	.045	1.237	<.0001	.035	1.281	<.0001	.034
Hispanic	.553	<.0001	.049	.465	<.0001	.045	1.020	.623	.041
FARMs	.459	<.0001	.027	.371	<.0001	.027	1.279	<.0001	.025
Special Education	.390	<.0001	.034	.292	<.0001	.045	1.063	.057	.032
Covariance Parameter Estimates									
Intercept (County)	3.26[a.]	.0008	.038	3.14 [a.]	.0006	.040	3.16 [a.]	.0008	.015

Note. a. = z-score; b. = Reference group is late graduate; c. = Reference group is White.

Postsecondary Participation. On-time graduates were more likely than late graduates to enroll in postsecondary (OR=3.203, p <.0001). Whereas non-completers were less likely

(*OR*=.200, *p* <.0001) to enroll in postsecondary than late graduates. Working in high school (*OR*=1.195, *p*<.0001) and being Female (*OR*=1.672, *p*<.0001) were related to increased odds of postsecondary enrollment. Black students (*OR*=1.274, *p*<.0001) and Other race students (*OR*=1.788, *p*<.0001) were more likely than White students to enroll in postsecondary. Whereas Hispanic students were less likely than non-Hispanic students to enroll in postsecondary (*OR*=.553, *p*<.0001). Student who were eligible for FARMs (*OR*=.459, *p* <.0001), special education services (*OR*=.390, *p*<.0001), had a history of chronic absenteeism (*OR*=.525, *p*<.0001), or discipline (*OR*=.487, *p*<.0001) during high school had reduced odds of postsecondary participation. Each additional grade level high a student was behind at the end of their fourth year was associated behind with decreased likelihood of enrolling in a postsecondary institution (*OR*=.847, *p*<.0001). After controlling for other variables in the model, there was no significant relationship between being a GED earner (vs. late graduate; *p*=.120) or having a history of dropout during high school (*p*=.475) and the odds of enrolling in postsecondary.

Postsecondary Graduation. Just as with enrollment, on-time graduates were more likely (*OR*=5.998, *p*<.0001) and students with no achievement were less likely (*OR*=.439, *p*<.0001) to graduate from a postsecondary institution than late graduates. Working in high school (*OR*=.857, *p*<.0001) was related to lower odds of postsecondary graduation, whereas being Female (*OR*=1.743, *p* <.0001) was related to higher odds of postsecondary graduation. Black students (*OR*=.568, *p*<.0001) were less likely White students to graduate postsecondary; whereas Other race students (*OR*=1.237, *p*<.0001) were more likely the White students to graduate postsecondary. Hispanic students were less likely than non-Hispanic students to graduate from postsecondary (*OR*=.465, *p*<.0001). Students who were eligible for FARMs (*OR*=.371, *p* <.0001), special education services (*OR*=.292, *p*<.0001), or had a history of chronic absenteeism

(*OR*=.278, *p*<.0001) or discipline (*OR*=.331, *p*<.0001) in high school had reduced odds of postsecondary graduation during the study period. After controlling for other variables in the model, there was no significant relationship between earning a GED (vs. late graduates; *p*=.389), having a history of dropout during high school (*p*=.106) or being behind in credits at the end of Year 4 and the odds of graduating from postsecondary.

Labor participation. On-time graduates (*OR*=.878, *p* =.021) and students with no achievement (*OR*=.405, *p* <.0001) were both less likely to participate in the labor market in Years 8, 9 or 10 than late graduates. Working in high school (*OR*=2.505, *p*<.0001) and being Female (*OR*=1.074, *p* =.001) were related to increased odds of later labor participation. Black students (*OR*=1.428, *p*<.0001) and students in the Other race category (*OR*=1.281, *p*<.0001) were more likely than White students to participate in the labor market in years 8, 9 or 10. Student who were eligible for FARMs (*OR*=1.279, *p* <.0001), had a history of or discipline (*OR*=1.226, *p*<.0001), or dropout (*OR*=1.101, *p*<.0001) during high school had higher odds of later labor participation. After controlling for other variables in the model, there was no significant relationship between earning a GED (vs. late graduates; *p*=.207), being (*p*=.623), being eligible for special education services (*OR*=.390, *p* =.057), having a history of chronic absenteeism (*p*=.170), or being behind in credits (grade level; *p*=.170) and the odds of work in years 8, 9 or 10.

Post-hoc analyses

Additional post-hoc descriptive analyses summarizing the median salary for Years 5 through 10 by high school completions type were run in order to better understand the multivariate results for labor participation (see Table 5). In the year following the cohorts expected graduation date (Year 5; 2014) the median salaries of the groups were very similar with

Ontime graduates ($6,558) and GED earners ($6,460) having the highest median salaries, 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 salaries, 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 GED earners followed a very similar trajectory four times and ending up with a difference in median salary of just over $1,000 favoring the late completers. Figure 2 presents an illustration of the median salaries by high school completion type for Years 5 - 10.

Table 5.

Median Salary by High School Completion Type 2014-2019 (*N*= 54,150)

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

Strengths and Limitations

The findings presented in the present study should be situated within the context of the subsequent limitations. Although state administrative data allows for population-level analysis, the data is limited to a single state. The high school graduation data was also limited to public schools within that state. In addition, participant who entered federal employment, private contracting, were self-employed, or worked out of state employees were not included in the labor

market data. Students with certain high school completion types (e.g. on-time graduates) disproportionately working in these types of jobs could bias the labor market findings. One potential proxy for the share of study participant who may work out of state could be the proportion of students who enroll in out of state postsecondary institutions. Previous research, using MLDSC data found that the proportion of students who attended enrolled in out of state postsecondary was similar across subgroups. This provides some support for confidence in the labor market findings from the present study (MLDS Center, n.d.). Finally, there are likely many key constructs that were unavailable for the present study, such as student motivation or peer effects, that may relate the postsecondary and labor outcomes.

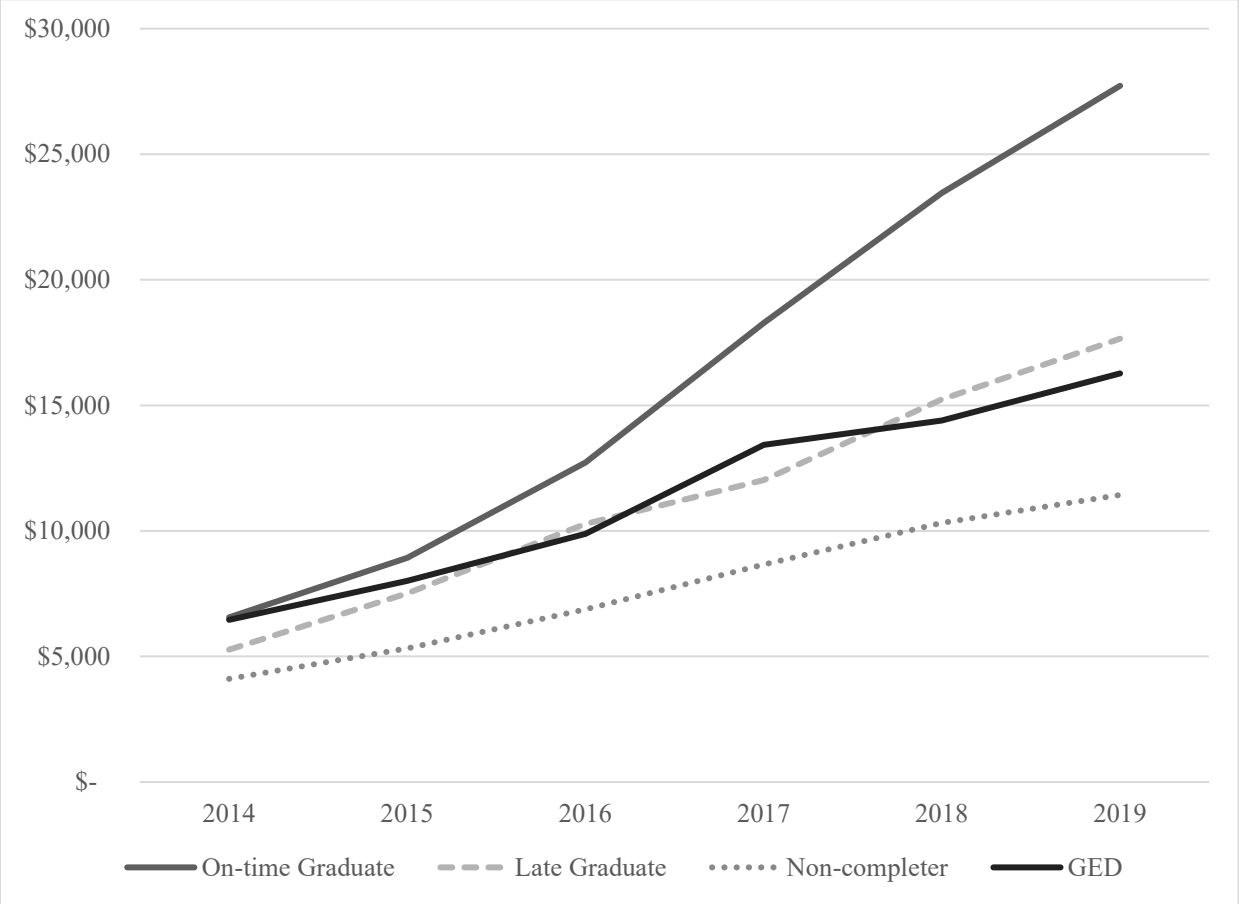

Figure 2 Median Salary by High School Completion Type

Discussion

The present study used 10 years of state-level linked administrative data to examine the relationships between the type and timing of high school completion with later participation in the labor market, postsecondary enrollment, and postsecondary graduation. Results from this study expand the previous literature on high school completion type in which the differing completion types have been modeled separately or without statistical controls. In general, on-time graduates outperformed late graduates and GED earners who in turn outperformed non-completers, providing some evidence for the human capital conceptual model to the topic under study.

On-time vs. late graduates

Consistent with the literature and the human capital conceptual model on-time graduates had higher odds of both enrolling in and graduating from postsecondary compared to later graduates (Albæk et al., 2019; Hull, 2009; Sum et al., 2012). This is supported by the descriptive findings which showed 8 out of 10 on-time graduates enrolling in postsecondary by the end of year 10 compared to one third of later graduates. The advantage for on-time graduates was even more pronounced for postsecondary graduation where nearly half of on-time graduates earned a postsecondary diploma compared to just 4% of late graduates. Contrary to literature and theory, on-time graduates were slightly less likely to have participated in the labor market in years 8, 9 or 10. This is evidenced by the 3% advantage of late graduates over on-time graduates in the descriptive findings. The wage data told a slightly different story, with on-time graduates earning a median salary that was 60% higher than late graduates ($27,726 vs. $17,655). Thus, even though late graduates were more likely to have some employment, on-time graduates earned more than later graduates. This advantage increased over time. These results 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 the study data (e.g. federal employment, contractor).

Non-completers vs. late graduates

Non-completers were significantly less likely than late graduates to enroll in or graduate from a postsecondary institution. This is consistent with the existing literature that showed that between 1 and 6% of non-completers enrolled in college, depending on the definition, compared to nearly one-fifth of late graduates (Sum et al.; 2012; Hull, 2009; Uretsky & Henneberger, Under Review; Uretsky, et. al, 2016). The extant findings are similar to, yet slightly lower than, the rates reported in the current study. This may however be explained by the longer period of observation in the present study.

Non-completers were also less likely than late graduates to graduate from a postsecondary institution. There is very little literature on this subject, however Hull (2009) found that no non-completers had earned a postsecondary degree 8 years after their expected graduation data compared to 12% of late graduates. 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% made it to year 3. Non-completers were less likely than late graduates to be working, and had a median salary 50% lower than late graduates by the end of the study period. This is consistent with previous studies demonstrating that 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).

GED earners vs. late graduates

There was no significant difference in the odds of postsecondary enrollment or graduation for GED earners compared to late graduates. Although we were unable to locate any studies that compared postsecondary graduation rates for GED earners and late graduates, the enrollment findings are supported by two studies that have shown very little or no difference in college enrollment rates for late graduates and GED earners (NCES, 2004; Uretsky & Henneberger, Under Review). In contrast, two studies did report that GED earners enrolled in postsecondary at a higher rate than late graduates (Hull, 2009; Garner, 2006).

Within the literature reviewed there was no significant difference in the odds of labor participation in years 8, 9, or 10 for GED earners compared to late graduates. There is very little evidence to compare this finding to. 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 has compared it to non-completers or high school graduates in general. These studies have generally found that the effect of the GED on future labor outcomes is non-significant or only present for certain sub-groups (e.g. White students) or when paired with postsecondary education (Murname, Willett & Tyler, 2000; Tyler, 2005; Jepsen et al., 2016). In the context of these findings, the results suggesting equivalence between late graduation in both labor and postsecondary outcomes are novel.

Adolescent employment as a moderator of the effect

Although it was not the focus of the present study, the findings related to adolescent labor participation are worth noting. Formal participation in the workforce during high school was significantly related to increased odds of postsecondary enrollment, but decreased odds of graduation. In a national Australian sample Marsh and Kleitman (2005) found negative effects on postsecondary enrollment and achievement. In a national U.S. sample Carr, Wright & Brody

(1996) found similar results. Other more recent studies have found that the type and intensity of work is a critical factor in understanding the effect (Neyt et al., 2019). Overall it appears the finding in the present study of a negative effect for adolescent labor participation on graduation is in line with previous literature, whereas the finding of a positive effect on postsecondary enrollment runs contrary to the extant literature. In the current study we found that working in high school was related to higher odds of later employment. This contradicts previous literature that has found little or no effect on future employment outcomes (Baum & Ruhm, 2016; Neyt et al., 2019). It is possible that these findings may be related to the inclusion of high school exit type in the model. These findings suggest a need for future research investigating whether adolescent employment moderates the effect of high school completion type on postsecondary and labor outcomes.

Conclusion

The transition out of adolescence signals a period of increasing personal and social responsibility, where youth are expected to move towards independence. For many this means entering college or the workforce. Previous research has demonstrated that youth who do not finish high school in the traditional four years have less favorable postsecondary and labor outcomes (Rumberger, 2011; Zaff, 2016). There is much less evidence to support young people, parents or educators in deciding among the remaining options, namely pursuing a GED, late high school graduation or permanent dropout. High school non-completers can eventually go on to earn a diploma or an alternative credential, but as evidenced by existing research and the present study, those who do have difficulties in the labor market, low rates of postsecondary enrollment, and near negligible rates of postsecondary graduation. Previous evidence has not clearly answered the question of whether the effort required to obtain a GED provides sustained

academic or labor benefit above non-completion; or whether the effort required for late graduation provides any benefit above an earned GED.

The current study presents the first statewide analyses comparing the labor and postsecondary outcomes of on-time graduates, GED earners, non-completers and late graduates. The results of this project provide a detailed description of an under-researched and underserved group of vulnerable young people. Notably, we found no significant differences in the odds of labor market participation 10 years after their first-freshman year of high school. Both groups had labor participation rates nearing 80% and very similar median wages across the study period. We also found no differences in postsecondary enrollment or graduation, although the graduation rates were very low for both groups. Although the research should be replicated with other cohorts and in other states, the results from the present study suggest that the labor and postsecondary value of a late graduation and the GED are functionally equivalent. As such, educators and policy makers will need to think increasingly meaningfully and holistically about which path provides the most opportunity for true success.

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