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Earning to Learn: Working While Enrolled in Tennessee Colleges and Universities

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Although some students choose to work while enrolled in college, others may have no choice but to work, even if work may be detrimental to their chances of succeeding in college. Leveraging 17 years of statewide student-level records from Tennessee, the authors examine the relationship between working while enrolled and degree completion, time to degree, credit accumulation, and grade point average. The authors aim to increase understanding of how the timing and intensity of work relate to student outcomes and to explore how these relationships differ by college sector, industry of employment, and student characteristics. The authors find consistent negative associations between work and academic success, especially at higher levels of work intensity. Working students attempt and earn fewer credits and are 4 to 7 percentage points less likely to complete college. Among completers, working students take longer to graduate, even though they earn similar grade point averages and complete their attempted credits at similar rates to nonworking students.

Keywords: *postsecondary success, employment, adult students, longitudinal data*

Common conceptions of work and college attendance depict them as mutually exclusive pathways after high school or as activities that young adults choose to do for a specific benefit, for example, to earn spending money or to obtain practical work experience in their field of study prior to graduation. In fact, 43% of full-time students and 81% of part-time students work while enrolled in college (Hussar et al., 2020; National Center for Education Statistics, 2018). For a growing number of students, however, there is no choice between college and work. As the cost of college has outpaced inflation and household earnings, many students are working both to support themselves and the direct costs of their higher education, even when they are aware of the potential drawbacks of working while enrolled (Goldrick-Rab & Kendall, 2016; Robotham, 2012).

The preponderance of evidence to date on working while enrolled in college suggests that on average, working has detrimental effects on a student's educational outcomes (see the review by Neyt et al., 2019). Yet we know less about how these effects vary by student characteristics and intensity of their work, as well as the type of educational institution they attend. The reasons that college students work vary, as do the number of hours they work, when they work, the types of jobs they do, and where the work takes place. In a recent review of the literature on working college students, Remenick and Bergman (2021) distinguished "students who work" (and prioritize their studies) from "employees who study" (and prioritize their work) and called for more research to better understand differences in how students combine work full-time or part-time with studies full-time or part-time. Indeed, as working has become the norm among college students, it is important to expand and update our knowledge on the effects of working while enrolled on students' educational progress and outcomes.

We use statewide longitudinal data from all students enrolled in Tennessee public postsecondary institutions to examine the relationship between working while enrolled and postsecondary outcomes. We begin by looking at patterns in work among students enrolled in different types of institutions in Tennessee and across student populations, as well as by part-time and full-time student and work status. In our analysis of how working while enrolled relates to

postsecondary students' educational outcomes, we aim to make three primary contributions: (a) add to the evidence base on the relationship between work and academic outcomes including graduation, time to degree, grade point average (GPA), and credit accumulation; (b) increase our understanding of how the *intensity* of work relates to college student educational outcomes; and (c) explore how these relationships differ across college sector, industry of employment, and student populations.

We find that 47% of Tennessee's 4-year university students and 62% of community college students work while enrolled. Work peaks during the summer months for 4-year students, whereas community college students work at about the same rate year-round. Working while enrolled is, on average, associated with moderately lower attempted credits but no substantial decline in GPA or credit completion rates. We estimate associations suggesting that students who work are 4 to 7 percentage points less likely to complete college than otherwise similar students who do not work. Among completers, working students tend to take longer to complete their degree. We also find that these associations differ by the *amount* that students work, with limited evidence of differences in academic outcomes for students who work only minor amounts, but stronger, negative associations with academic outcomes for the students working the most.

Previous Literature and Theoretical Framework

Discretionary time is a relatively fixed resource, so time allocated to work reduces time available for studying, although it is not necessarily a one-for-one trade-off (Darolia, 2014; Stinebrickner & Stinebrickner, 2004). As the existing body of research suggests, students could instead reduce their time in nonacademic activities, such as leisure activities, without compromising their academic effort (Kalenkoski & Pabilonia, 2010; Triventi, 2014). In a study of time use among full-time college students in 1961 compared with college students in 2004, Babcock and Marks (2011) found that students were devoting 13 fewer hours per week to studying in 2004 (accounting for changes in student composition), a pattern that held regardless of work hours. Working students studied less than others, but average study hours decreased for students in all categories of work intensity, as well as for those who did not work at all.

The type of work and the skills and knowledge acquired from work are also likely to influence the extent to which student employment affects academic progression and labor market outcomes after college. If students engage in work that is relevant to knowledge they are gaining in school, or that accumulates transferable skills, work could contribute to their postsecondary education and later labor market success (Geel and Backes-Gellner, 2012; Hotz et al., 2002). In a study of college students in Switzerland, Geel and Backes-Gellner (2012) found that *only* employment related to the students' field of study generated positive effects on short-term labor market outcomes. Carnevale et al. (2015) similarly concluded that working while learning is more likely to benefit students when they work in jobs related to their field of study, and that these human capital benefits extend to their entry into the full-time job market after school. Focusing on community colleges, Bailey, Jaggars, and Jenkins (2015) found that gains from working in one's field while in school were more likely for students pursuing science, technology, engineering, and mathematics degrees and occupations, including health care and applied sciences. More generally, Remenick and Bergman's (2021) review of this body of studies concluded that part-time work *on campus* is most beneficial for students.

A recent review of the cross-national research evidence on working while enrolled in college (Neyt et al., 2019) reported that 20 of 20 studies conducted between 1997 and 2017 revealed a negative effect of student employment on educational outcomes. More specifically, 15 of the studies found *only* negative effects, 4 reported both negative and null effects, and only 1 identified both positive and negative effects for different outcomes. The authors characterized these findings as contrary to some theoretical expectations, such as those based on human capital accumulation, but consistent with time constraints or primary orientation theory (Warren, 2002). Neyt et al. (2019) also reported that work has a more detrimental effect at the postsecondary level than the high school level, possibly because college coursework is more challenging. Considering the quality of jobs available to college students, Carnevale and Rose (2015) alternatively argued that as fewer jobs require a high school degree or less, there are fewer high-quality work experiences available to college students, which results in a larger gap between the skills they gain while working in college and the skills needed for entry-level careers.

How much can students work, on average, without harming their grades or college progress? Estimated turning points vary widely across studies, from 8 to 25 hours of work per week (Neyt et al., 2019). Darolia (2014) and Triventi (2014) investigated the relationship between work intensity and credit accumulation in, respectively, the United States and Italy, distinguishing full-time from part-time students. Darolia found that for full-time students, each marginal hour of weekly work was associated with 0.62 to 0.63 fewer credits per year, particularly for students at 4-year colleges. Triventi defined high-intensity work as more than 20 hours of work weekly; the low-intensity subgroup worked an average of 11 hours per week, compared with an average of 35 hours per week among the high-intensity subgroup. Whereas the low-intensity subgroup and nonworking students completed similar numbers of college credits, the high-intensity work subgroup accrued 66 percent fewer credits per year. Both Darolia and Triventi suggested that their evidence corroborates the concern that working while

enrolled in postsecondary education constrains the time available for students to dedicate to academic activities, although Darolia called for additional research on the effects of working among community college and part-time students, given large standard errors for these subgroups' estimates. It is also important to note that there may be other ways that college students are affected by their efforts to balance work with college attendance that are not carefully studied in this literature, such as effects on their physical or mental health and family relationships.

In their extensive review of this literature, Neyt et al. (2019) also identified and compared studies according to the methodology employed, in particular, if and how the authors adjusted for preexisting differences between working and nonworking students that might also affect their educational outcomes. They pointed out that various authors hypothesized different reasons that students select into work, which led to different (and sometimes opposing) sources of omitted variable bias in estimates of the causal effect of work on schooling and later outcomes. Expectations differed, for example, as to whether more motivated and capable students would be more or less likely to work while enrolled in college. Among the methodological approaches applied, simple linear regressions controlling for observable student characteristics were more common in the earlier literature, whereas more recent studies (e.g., Behr and Theune, 2016; Scott-Clayton and Minaya, 2016) are more likely to use propensity score matching methods, which similarly assume that selection of students into work is random conditional on the observable covariates used to calculate the propensity scores.

When longitudinal data are available—as in the case of our Tennessee study—researchers typically employ fixed effect regression methods, adding controls for individual fixed effects to adjust for time-invariant unobserved heterogeneity between working and non-working students (see, e.g., Darolia, 2014; Sabia, 2009; Wenz and Yu, 2010). We likewise estimated a student fixed-effects regression in some of our analyses, recognizing that this will not account for unobservable, *time-varying* factors that determine selection into work and may also influence college progression and outcomes. Other methods employed in this body of research include difference-in-differences (sometimes in combination with matching), instrumental variables, and dynamic discrete choice models. Across the nine studies Neyt et al. (2019) found to produce plausibly causal estimates, methods included fixed effects, instrumental variables, and dynamic discrete choice. The consistency in reporting negative or null effects of working while enrolled in college is remarkable given the diversity of methods and settings.

Although we do not claim to generate causal estimates in our analysis, we make a novel contribution to this literature in our application of dose-response models to estimate the relationship between intensity of student work and academic outcomes, as described below. In addition, even though we do not interpret the relationships as causal, our findings still have relevance for policy makers and practitioners, particularly those seeking to design financial supports, interventions, and other policies that may target students who work while enrolled or who might consider doing so. For example, the Tennessee Promise program requires students to attend college full-time, while we find that students working more hours attempt fewer credits. A community college (Nashville State) and its partners are currently piloting a supplemental program that expands financial and advising supports specifically for students who are attending part-time (and frequently working large numbers of hours weekly). Similarly, Complete College America advises developing more supportive pathways to graduation that recognize students' unique needs to promote more equitable outcomes. Because working students are a large group that colleges and universities can potentially identify by observing how many credits students register for, this may open the door for more experimentation and implementation of programs that recognize many students will continue to work while enrolled and may need additional supports to persist toward college completion.

Data Sources, Measures, and Analytical Methods

We leverage student-level statewide longitudinal data for Tennessee from 2001 to 2017. These data include enrollment records and academic outcomes (credits attempted, credits earned, GPA, and degree completion) at all public 4-year universities and community colleges, along with student demographic information that includes gender, race, ethnicity, age, veteran status, parental income, citizenship, state of residence, parental education, and high school GPA. As much of these data come from the Free Application for Federal Student Aid, we restrict our sample to students who filed this application at least once during the observed time period. This restriction causes us to lose approximately 29% of original student-by-term observations, although in additional work (available from authors upon request), we find that the sample would look very similar with or without this restriction, in terms of student characteristics (gender, first-generation status, race, etc.), work intensity (wages earned), and outcomes (credits, GPA). We also observe quarterly employment and earnings data from unemployment insurance (UI) records. Our analytic sample includes records from 591,959 enrolled students across 4,403,552 individual enrollment terms.

To begin, we look descriptively at patterns of student work while enrolled in college, overall and across different populations, institution types, and academic year and summer terms. We use two complementary measures of "working" in our analyses. First, we use a binary categorization of

students as working. We consider students to be "working" if they earned enough to indicate they are working 10 hours per week, assuming they are working at the minimum wage, as measured in their UI earnings.[1] We use a threshold of 10 hours per week for 12.5 weeks (out of 13 in a quarter, to allow for 2 weeks' time off per year) at Tennessee's minimum wage during the enrolled term. For example, from summer 2009 onward, Tennessee's minimum wage was \$7.25, making \$906.25 the threshold to be considered "working" in those terms. (Before then, we use the minimum wage of \$5.15 prior to summer 2007, \$5.85 from summer 2007 to spring 2008, and \$6.55 from summer 2008 to spring 2009 to construct our "working" threshold.) For analyses that span multiple terms, we use a weighted average of the minimum wages on the basis of a student's first term of enrollment. Using this 10 hours per week threshold allows us to focus on those students who have made a substantial time commitment to their work while enrolled. We tested other thresholds including 15 and 20 hours, finding similar patterns between working and academic outcomes. Second, to allow a more nuanced consideration of the extent to which additional work may matter for academic outcomes, we also use a logged continuous measure of earnings. As each measure offers distinct benefits for interpretation, we include both in our analyses and results.

We next examine the relationship between working and student academic outcomes. We use several regression-based approaches that allow us to compare students who work with students who are otherwise similar on observable characteristics but do not work (or who work at different levels of intensity). Specifications described in the next section include several student, family, and institutional controls, as well as student fixed effects in some models, to address some of the observable factors that predict work as well as college outcomes. Selection into work on the basis of *unobservable* determinants of college progression and completion may nonetheless confound our ability to interpret results as causal effects of working while enrolled.

Our analyses can be considered in two broad categories: across term and within term. We first examine relationships between working and outcomes that span multiple terms, namely, degree completion and the number of terms to completion among those who do complete. Second, in seeking to better understand potential mechanisms for these across-term relationships, we explore a number of within-term outcomes (credits attempted, credits earned, credit completion rates, and GPA) as particularly proximal outcomes within a given term that may affect longer term academic success.

To consider relationships between working and across-term student outcomes (completion and time to degree), we first construct average earnings for students during enrollment periods. We take an average of all trimester earnings from the first term a student is enrolled in a Tennessee college or university, and the term in which they completed their first degree *or* the term that would have been their "normal graduation term," whichever comes first. For "normal time," we use 150% of the typical on-time measures (6 years for students at 4-year universities and 3 years for students at community colleges). As robustness checks, we also consider "on-time" and "200% time" (8 years for 4-year universities and 4 years for community colleges). Because the nature of summer classes is somewhat unique and differs across institutions and academic programs, we separately fit models that include or exclude summer earnings.

Estimation Approach

When considering across-term outcomes (degree completion or terms to degree), we fit the following model:

$$Academic\,Outcome_i = \beta_1 work_i + \boldsymbol{X}'_i\boldsymbol{\gamma} + \tau_{t1} + \lambda_c + \epsilon_i \quad (1)$$

where work is either the binary measure of work described above or average $\log(1 + \text{earnings})_{it}$ for student i; $\boldsymbol{X}'_i$ is a set of observable student demographic, personal, and family characteristics; τ_{t1} is a fixed effect for students' term of entry to account for any time-related trends (e.g., recessions), and λ_c is a fixed effect for the institution a student attends to account for any institutional or regional differences in working and/or student outcomes. We also present results from models without institution fixed effects, as it may be of policy interest to understand these relationships net of any particular initiatives and contexts at specific campuses.

To better understand potential mechanisms that might drive the longer term relationships we observe, we also consider the relationship between student work within a specific term t and academic outcomes (namely, credits attempted, credits earned, credit completion rate, and GPA) within that same term:

$$Academic\,Outcome_{it} = \beta_1 work_{it} + \boldsymbol{X}'_i\boldsymbol{\gamma} + \tau_t + \lambda_c + \epsilon_{it} \quad (2)$$

In these within-term analyses, we only use earnings from terms in which students are enrolled.

Given that a chief limitation in this research design is the potential for omitted variable bias, we also fit models that incorporate student fixed effects. This allows us to control for time-invariant unobservable characteristics such as work ethic, aspirations, or financial need not captured by family income. In Model 3, we include student fixed effects (ρ_i) to estimate how the *same student* performed differently in school when they worked at different levels in different terms. If these results echo results from Model 2, that should provide greater confidence in the reliability of our findings:

$$Academic\,Outcome_{it} = \beta_1 work_{it} + \boldsymbol{X}'_i\boldsymbol{\gamma} + \tau_t + \rho_i + \epsilon_{it} \quad (3)$$

In exploring the relationship between intensity of work and student outcomes, we employ Cerulli's (2015) dose-response

framework, which allows for nonlinear relationships between work and student outcomes and allows $\boldsymbol{\gamma}$ estimates to differ between working and nonworking students. Consider two population processes, one for the "untreated" college student (whose intensity of work is zero, $w = 0$) and one for a working student whose engagement in work is measured continuously by d:

$$w = 1 : y_1 = \alpha_1 + \boldsymbol{X}_i' \boldsymbol{\gamma}_1 + h(d) + e_1 \tag{4a}$$

$$w = 0 : y_0 = \alpha_0 + \boldsymbol{X}_i' \boldsymbol{\gamma}_0 + e_1 \tag{4b}$$

In these submodels, α is the intercept, $\mathbf{X}_i$ is as defined in Equations 1 to 3, $h(d)$ is the response function to the level of work, and e is the error term. The following linear regression estimates parameters in Equations 4a and 4b:

$$\begin{aligned} y_i = \alpha_0 + \boldsymbol{w}_i \boldsymbol{ATE} + \boldsymbol{X}_i' \boldsymbol{\gamma}_0 + w_i * \left(\boldsymbol{X}_i' - \overline{\boldsymbol{X}} \right) \boldsymbol{\gamma} \\ + \boldsymbol{w}_i * \{ h(d_i) - \bar{h} \} + \epsilon_i \end{aligned} \tag{5}$$

where *ATE* estimates the unconditional average treatment effect of working, and $\epsilon_i = w_i * (e_{1i} - e_{oi})$. Note also that $\boldsymbol{\gamma} = \boldsymbol{\gamma}_1 - \boldsymbol{\gamma}_0$. We specify a quadratic response to intensity of work: $h(d) = \lambda_1 d + \lambda_2 d^2$. Parameter estimates from Equation 5 are used to compute a dose-response function:

$$ATE(d) = \begin{cases} \alpha + \overline{\boldsymbol{X}}_{d>0} \boldsymbol{\gamma} + h(d) & \text{if } d > 0 \\ \alpha + \overline{\boldsymbol{X}}_{d=0} \boldsymbol{\gamma} & \text{if } d = 0 \end{cases} \tag{6}$$

We use results from Equation 6 to visualize the estimated relationship between work intensity and academic outcomes. This method does not weaken the standard conditional independence assumption necessary to interpret that relationship as causal, but it does allow working and nonworking students to have a different relationship between academic outcomes and $\boldsymbol{X}$. We implement Cerulli's (2015) method using the ctreatreg command in Stata. Results discussed below rely on standard errors that are clustered by entry term. In results not shown, we find similarly sized confidence intervals from bootstrapped standard errors without meaningful differences in interpretation.

Throughout the article, we also pay special attention to heterogeneity by exploring these relationships for different subpopulations, on the basis of prior research that finds variation in the relationship between work and academic outcomes by students' levels of education or age, race, gender, and first-generation status (Dustmann & van Soest, 2007; Montmarquette, Viennot-Briot, & Dagenais, 2007; Neyt et al., 2019; Oettinger, 1999). In addition, in light of findings that the effects of working may differ on the basis of student propensities for more intensive work (e.g., working more than 20 hours per week) and their "primary orientation" (work oriented vs. academic oriented), we also examine heterogeneity in the relationship by whether students attend community colleges or universities, recognizing that work year-round is more common for community college students (Baert et al., 2017; Lee & Staff, 2007; Warren, 2002). In addition, we examine differences in the relationship between work and academic outcomes for students who work in different industries (retail, construction, health care, etc.), given observed differences in the effects of working while enrolled on the basis of the field of work (Bailey et al., 2015). Finally, our dose-response models examine how these relationships vary on the basis of the *amount* students work, with the understanding (based on prior research such as Darolia, 2014, and Remenick & Bergman, 2021) that observed relationships may differ substantially between students who work only minor amounts and those who work a great deal.

Results

Descriptive Findings

Figure 1 plots the rate of working while enrolled by sector and gender and over time. Descriptively, we find that working while enrolled is quite common at both 4-year universities and community colleges. Approximately 54% of students in Tennessee colleges work at least 10 hours per week in a given semester. A few notable trends and differences stand out. First, working while enrolled is substantially more common at community colleges (where 63% of students work 10 or more hours per week) than at 4-year universities (48%). In both sectors, there was a dip in the rate of working during the Great Recession, with steady increases since. Female students, especially at 4-year universities, are more likely to work than their male counterparts, with a gender gap that has grown increasingly prominent in recent years. Finally, we observe seasonal differences in the rate of working, particularly at 4-year universities, where work is more common among students enrolled in summer terms. At community colleges, meanwhile, enrolled students work during the summer about as much as during the spring and fall terms.

Table 1 highlights descriptive differences in the population of students considered to be working while enrolled. There are several notable findings. First-generation college students are substantially overrepresented among working students (first-generation students make up 50% of all working students, but only 42% of nonworking students). This pattern is more pronounced at 4-year universities than at community colleges; first-generation students at community colleges are only slightly overrepresented among working students. Dependent students are underrepresented among 4-year university students who work but are overrepresented among community college workers. Both of these findings highlight that first-generation and dependent students in these two sectors face different experiences when it comes to working while enrolled.

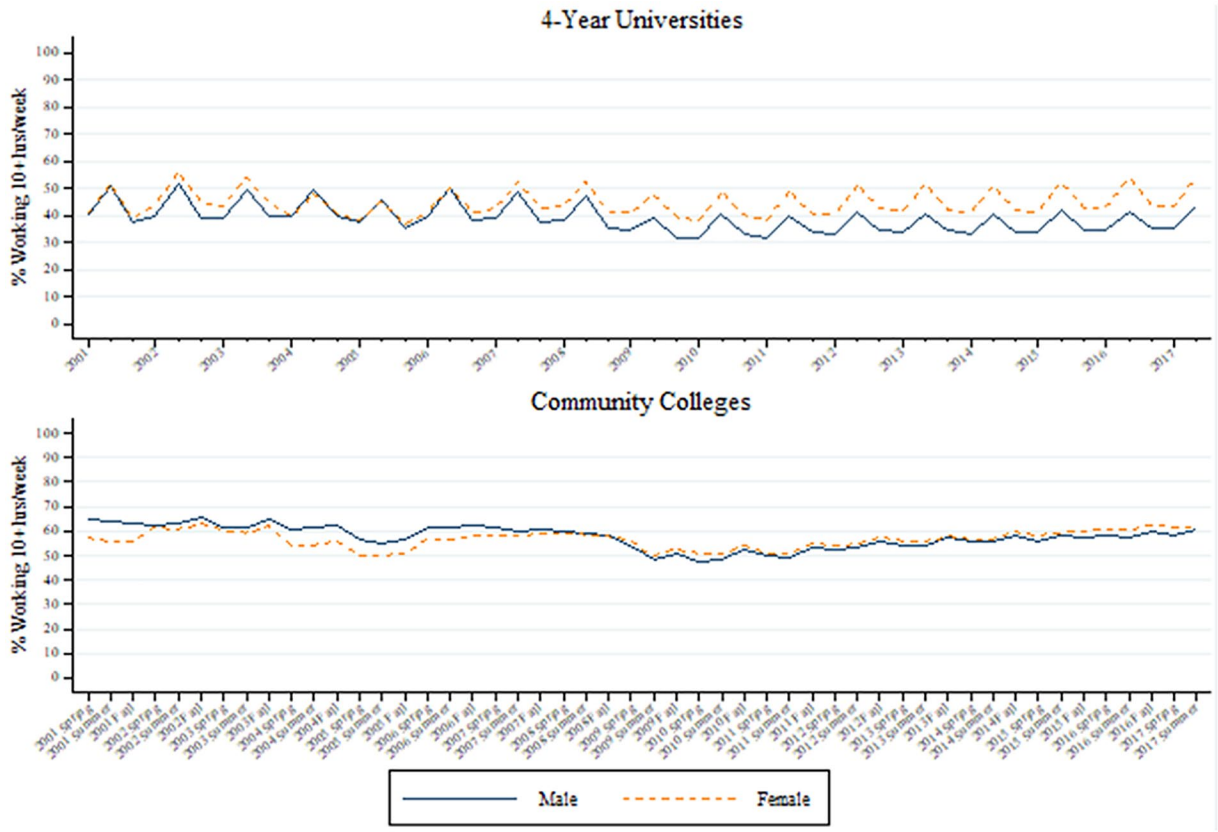

FIGURE 1. *Percentage of students working by gender and sector.*
Note. Includes all students enrolled in Tennessee public 4-year universities and community colleges (Tennessee Higher Education Commission institutions). Working is defined as an average of 10 or more hours per week (assuming minimum wage and 2 weeks not working each year).

Demographically, Table 1 highlights that female students are overrepresented among working students compared with their nonworking students by about 3 percentage points, driven largely by 4-year universities. Black students are also more likely to work, with Black students making up 22% of all students working, compared with 19% of nonworking students. Meanwhile, White students are slightly underrepresented among working students.

At 4-year universities, working becomes increasingly common as students advance in their studies, with seniors especially likely to work. At community colleges, this pattern is reversed, with freshmen particularly overrepresented among working students. This likely reflects a higher dropout rate at community colleges, where many working students never achieve sophomore status. Relatedly, working students are older on average than their nonworking peers, though this is driven by differences at 4-year universities, where the average working student is more than a year older than the average nonworking student. Meanwhile, at community colleges, nonworking students are actually slightly older than working students.

Perhaps the most striking difference between working and nonworking students at 4-year universities is the $18,871 difference in the average annual income of their parents. Family income constraints may increase the need to work for 4-year university students. Equally striking, however, was that this large difference between working and nonworking students' parental income did *not* hold at community colleges. Although the incomes of community college students' parents were substantially lower as a whole than at 4-year universities, there was no large difference between working and nonworking students' family income at community colleges. Thus, regardless of class and income divides between working and nonworking students, lower parental earnings may imply a greater need for student work while enrolled in college to meet expenses.

Finally, one noteworthy finding was in the similarity of the average high school GPAs of working and nonworking students. If prior academic performance provides an indication of students' likelihood of success in college, it is important to note that working and nonworking students both enter college with relatively similar level prior academic success.

Considering the second panel of Table 1, we see that, as expected, students we classify as "working" earn substantially higher wages than students we classify as "nonworking." It is worthwhile to note that some "nonworking"

TABLE 1
Characteristics of Working Students Compared With Nonworking Students

	Overall		4-Year Universities		Community Colleges	
	Working Students	Nonworking Students	Working Students	Nonworking Students	Working Students	Nonworking Students
Percentage female	61	58	58	55	65	65
Percentage first-generation college student	50	42	45	36	57	55
Percentage dependent status	66	72	75	81	55	52
Percentage Black	22	19	23	19	22	20
Percentage White	70	72	69	71	71	72
Percentage Asian	2	2	2	3	1	2
Percentage Latinx	2	2	2	2	2	2
Percentage freshmen	34	37	19	29	52	56
Percentage sophomores	33	29	21	22	48	44
Percentage juniors	13	14	24	20	—	—
Percentage seniors	20	20	36	29	—	—
Average age in term	24.25	23.31	23.44	22.20	25.22	25.76
Average age when first enrolled	20.43	20.22	19.39	19.10	21.68	22.67
Average HS GPA	2.99	3.07	3.11	3.17	2.85	2.84
Average parents' annual income ($)	51,639	70,510	65,209	87,061	35,489	34,334
Select outcomes						
Average wages per term ($)	4,876	131	4,460	143	5,371	103
Average credits attempted per term	10.90	12.37	11.92	13.11	9.69	10.77
Average credits earned per term	9.02	10.59	10.32	11.55	7.42	8.44
Average credit completion rate	84%	87%	88%	90%	79%	80%
Average term GPA	2.54	2.74	2.69	2.85	2.36	2.48
Observations	2,391,569	2,011,983	1,302,128	1,383,226	1,089,441	628,757
Percentage of students	54.31	45.69	48.49	51.51	63.41	36.59

Note. Each observation represents a student in each semester in which they were enrolled in college. Students are considered to be working in a given semester if they earned enough to average 10 hours per week (assuming minimum wage and 50 weeks of work each year). Numbers in this table represent the percentage of students who met a certain characteristic (or the average for the final four characteristics) among the population of students who were working, compared with those not working in each semester. GPA = grade point average; HS = high school.

students do earn some wages (as seen by the nonzero averages); although these students may work a small amount, they earn below the 10 hour/week threshold that we use to distinguish students who had made substantial time commitments to work.

Table 1 also highlights that nonworking students tend to see stronger academic success than their working peers, particularly in terms of the number of credits attempted and earned, with working students earning about two credits fewer per term on average, and seeing a 0.2 lower average GPA.

Fixed Effects and Dose-Response Model Findings

Turning next to the relationship between working while enrolled and graduation outcomes, we find evidence across fixed-effects model specifications that working while enrolled is associated with a lower likelihood of degree completion. As seen in Table 2, students who work at least 10 hours per week are 3.9 percentage points (or 28.5% from baseline) less likely to complete on time than otherwise similar nonworking peers.[2] The negative relationship is strong for students at both 4-year universities (5.7 percentage points less likely to complete on time, or a 28.1% decrease from baseline completion rates at universities) and at community colleges (2.5 percentage points, or a 32.9% decrease from baseline at community colleges). Moreover, the predicted decreases in graduation remain large when considering longer term completion rates (150% and 200% of on time), suggesting a significant association between work and drop-out behavior, rather than just delaying time to degree. For example, when using a completion rate that allows university students 6 years to graduate and community college students 3 years to graduate, the predicted decreases in completion associated with working are relatively similar: a 7 percentage point (23.3% from baseline) decrease overall, an 8.8 percentage point (21.6%) decrease at 4-year universities, and a 6 percentage point decrease (30%) at community colleges.

TABLE 2
Fixed-Effect Estimates of Difference in Likelihood of Completion in Different Time Frames (by Sector)

	(1)	(2)	(3)	(4)	(5)	(6)
	All Institutions	4-Year Universities	Community Colleges	All Public Institutions (No Summer Work)	4-Year Universities (No Summer Work)	Community Colleges (No Summer Work)
I. Treatment defined as working at least 10 hours/week						
"On-time" completion	−0.039**	−0.057**	−0.025**	−0.046**	−0.067**	−0.031**
	(0.006)	(0.008)	(0.002)	(0.007)	(0.009)	(0.003)
150% "on-time" completion	−0.070**	−0.088**	−0.060**	−0.093**	−0.125**	−0.076**
	(0.010)	(0.012)	(0.005)	(0.014)	(0.016)	(0.005)
200% "On-time" completion	−0.069**	−0.075**	−0.068**	−0.092**	−0.109**	−0.087**
	(0.009)	(0.011)	(0.006)	(0.013)	(0.014)	(0.006)
Student characteristics	X	X	X	X	X	X
Term of entry fixed effects	X	X	X	X	X	X
Institution fixed effects	X	X	X	X	X	X
Observations	591,959	288,616	303,343	591,959	288,616	303,343
II. Treatment defined as log earnings						
"On-time" completion	−0.017**	−0.008**	−0.003**	−0.017**	−0.009**	−0.004**
	(0.002)	(0.001)	(0.000)	(0.002)	(0.001)	(0.000)
150% "on-time" completion	−0.032**	−0.013**	−0.008**	−0.039**	−0.020**	−0.010**
	(0.004)	(0.002)	(0.001)	(0.005)	(0.003)	(0.001)
200% "on-time" completion	−0.032**	−0.011**	−0.009**	−0.039**	−0.017**	−0.011**
	(0.004)	(0.002)	(0.001)	(0.005)	(0.003)	(0.001)
Student characteristics	X	X	X	X	X	X
Term of entry fixed effects	X	X	X	X	X	X
Institution fixed effects	X	X	X	X	X	X
Observations	591,959	288,616	303,343	591,959	288,616	303,343

Note. Shown are the coefficients on working an average of at least 10 hours per week assuming minimum wage (panel I) and log earnings (panel II) over the full time of enrollment, or what would have been on time (or 150% or 200% of on time, respectively) completion, whichever comes first. Columns 1 to 3 include earnings in the summer, while columns 4 to 6 do not include summer earnings. On-time completion is 2 years for students starting at community colleges and 4 years for students starting at 4-year universities. Values in parentheses are standard errors. Models include fixed effects for first term enrolled and for student's institution. Standard errors are clustered by first term enrolled.
**$p < .01$.

Additionally, the magnitude of the estimates is larger (more negative) when excluding summer work, indicating that work during the traditional school year period is especially associated with lower completion rates.

Examining this relationship for different student populations finds similar associations across several student populations; that is, we do not find differential effects by the demographic subgroups. As Figure 2 displays, students from specific demographic groups (e.g., female, Black, first-generation college students) who work while enrolled can expect lower completion rates in the range of 4 to 8 percentage points compared with otherwise similar nonworkers from the same demographic group. All confidence intervals in Figure 2 overlap—and this is without *p*-value adjustments for multiple comparisons—confirming no significant differences in how this relationship presents across the different demographic groups examined. The full results from our analysis of heterogeneity in effects by subgroups are available upon request.

Next, we turn to the dose-response model to consider how the relationship between work and graduation varies for students who work at different rates. Figure 3 displays the predicted difference in the likelihood of graduation at different amounts of work. We use the percentile of work intensity, where students who earn the least during a semester are in the lowest percentiles, students who earn the most in a semester are in the highest percentiles, and the median working student is at the 50th percentile. For students who work only a small amount, we find that the relationship between work and completion (within 150% of on time) is relatively minor and not statistically significant. In fact, we find no predictive relationship between work and completion for students in the bottom 40% of earnings during enrolled terms. However, we estimate

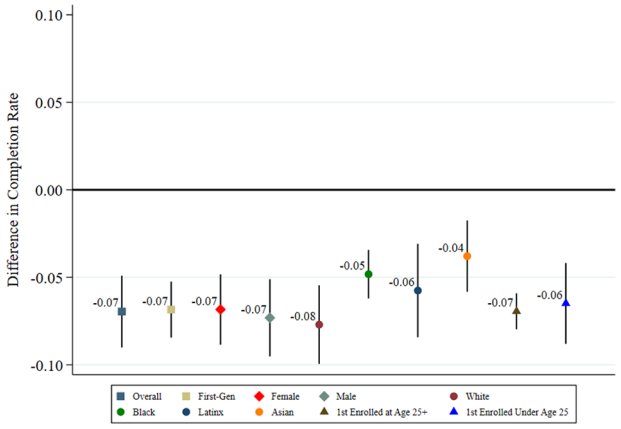

FIGURE 2. *Estimated difference in 150% of on-time completion from working ≥10 hours per week.*

Note. Includes all students enrolled in Tennessee public 4-year universities and community colleges (Tennessee Higher Education Commission institutions). Estimates are the coefficient associated with working an average of 10 or more hours per week (assuming minimum wage and 2 weeks' not working each year) compared with students in the same demographic group who were otherwise similar on observable characteristics. Fixed-effect models also include student controls, term of entry and institution fixed effects, with standard errors clustered by term of entry. Bars represent 95% confidence intervals.

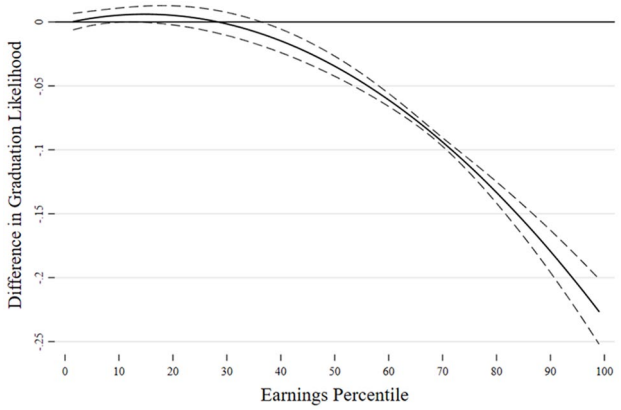

FIGURE 3. *Expected difference in graduation likelihood by work amount.*

Note. Includes all students enrolled in Tennessee public 4-year universities and community colleges (Tennessee Higher Education Commission institutions). Lines represent the average treatment effect(*t*) on completion rates (with 150% of "on-time" completion) associated with additional earnings, given level of treatment (earning percentile across term of enrollment). All dose-response models include student controls, term of entry and institution fixed effects. Estimates are from the Stata CTREATREG package (Cerulli, 2015) with standard errors clustered by term of entry.

larger differences in completion rates for students who work more. The median working student (who earns at a rate consistent with about 30 hours per week, assuming minimum wage) is roughly 4 percentage points less likely to graduate than similar nonworking students. Students earning at the highest levels (at and above the 95th

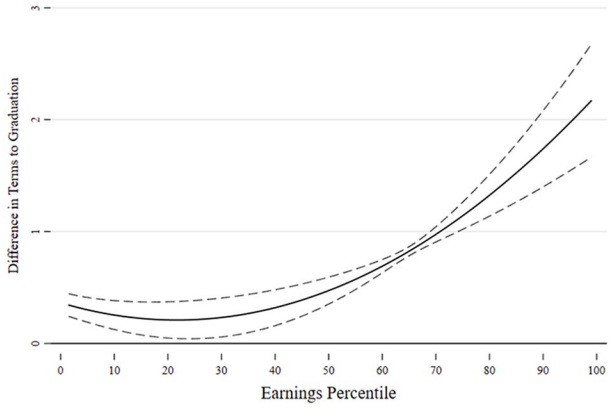

FIGURE 4. *Expected difference in terms to graduation among graduates.*

Note. Includes all students enrolled in Tennessee public 4-year universities and community colleges (Tennessee Higher Education Commission institutions). Lines represent the average treatment effect(*t*) on terms to completion associated with additional earnings, given level of treatment (average earning percentile across term of enrollment). All dose-response models include student controls, term of entry and institution fixed effects. Estimates are from the Stata CTREATREF package (Cerulli, 2015) with standard errors clustered by term of entry.

percentile) are upward of 20 percentage points less likely to complete than otherwise similar nonworkers.

Among students who *do* complete, we also find that work while enrolled is associated with a longer time to degree. Working students take about 0.6 more terms to complete than similar peers (a 4.1% increase from the average of 14.7 terms for completers). Notably, the relationship between working and terms to completion is stronger at community colleges (i.e., it takes 1.02 terms longer to complete for students who work ≥10 hours per week, a 7% increase from the average for community college students) than at 4-year universities. It takes 4-year university students 0.74 terms longer to complete (a 4.9% increase from the university student average). Figure 4 highlights the especially strong expected difference for students working greater amounts.

In seeking to understand what may be driving these differences in graduation rates and time to completion, we turn to the fixed-effects model estimation of within-term metrics. Equation 2 results are reported in Table 3. Coefficients represent the conditional difference in outcomes between working and nonworking students in the same school and term. We find that students who work attempt and complete fewer credits, with students working 10 hours per week attempting just under 1 fewer credit per term (0.875 credits, a 7.7% decrease from baseline rates) than otherwise similar students. Similarly, students who work are predicted to earn 0.936 fewer credits per term than might otherwise be expected. This, along with the relatively modest relationship with term credit completion rates, suggests that most of the decrease in credit earning can be primarily attributed to simply attempting fewer credits in the first place, rather than any

TABLE 3
Fixed-Effect Estimates of Predicted Differences in Within-Term Outcomes in Different Time Frames (by Sector)

	(1)	(2)	(3)	(4)	(5)	(6)
	All Public Institutions	4-Year Universities	Community Colleges	All Public Institutions (No Summer)	4-Year Universities (No Summer)	Community Colleges (No Summer)
I. Treatment defined as working at least 10 hours/week						
Term credits attempted	−0.875**	−0.726**	−1.054**	−0.862**	−0.726**	−1.009**
	(0.003)	(0.004)	(0.006)	(0.004)	(0.005)	(0.007)
Term credits earned	−0.936**	−0.823**	−1.019**	−0.903**	−0.791**	−0.988**
	(0.006)	(0.008)	(0.010)	(0.007)	(0.009)	(0.012)
Term credit completion rate	−0.020**	−0.016**	−0.022**	−0.019**	−0.015**	−0.022**
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Term GPA	−0.143**	−0.147**	−0.120**	−0.138**	−0.141**	−0.119**
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)
Student characteristics	X	X	X	X	X	X
Term of entry fixed effects	X	X	X	X	X	X
Institution fixed effects	X	X	X	X	X	X
Observations	4,403,552	2,685,354	1,718,198	2,856,178	1,736,785	1,119,393
II. Treatment defined as log earnings (in thousands of dollars)						
Term credits attempted	−0.116**	−0.095**	−0.146**	−0.112**	−0.092**	−0.137**
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Term credits earned	−0.121**	−0.103**	−0.145**	−0.116**	−0.098**	−0.139**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Term credit completion rate	−0.002**	−0.002**	−0.003**	−0.002**	−0.002**	−0.003**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Term GPA	−0.018**	−0.018**	−0.018**	−0.018**	−0.018**	−0.017**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Student characteristics	X	X	X	X	X	X
Term fixed effects	X	X	X	X	X	X
Institution fixed effects	X	X	X	X	X	X
Observations	4,403,552	2,685,354	1,718,198	2,856,178	1,736,785	1,119,393

Note. Shown are the coefficients on working an average of at least 10 hours per week assuming minimum wage (panel I) and log earnings (panel II) in each term. Columns 1 to 3 include earnings in the summer, while columns 4 to 6 do not include summer earnings. Models includes fixed effects for term and for student's institution. Standard errors are clustered by first term enrolled. GPA = grade point average.
**$p < .01$.

great difference in how likely students are to complete once in their courses.

Working while enrolled is associated with a more substantial predicted decrease in credit attempts per semester at community colleges, where working students attempt 1.054 fewer credits per term (a 10.6% decrease), compared with students at 4-year universities (where working students attempted 0.726, fewer credits per semester, a 7.4% decrease). We find relatively minor differences in expected GPA for working students, suggesting that credit attempts may be the primary route through which working predicts completion and time to degree.

As shown in Figure 5, we find a similar negative relationship among work, credits, and GPA across different student populations. One exception is for older versus younger students; working is associated with larger gaps in credits attempted and earned for older students than for younger students. That said, in the absence of *p*-value adjustments for multiple comparisons, we interpret this one statistically significant difference as suggestive and warranting of further exploration. Notably, working while enrolled did not predict as large a decrease in GPA among older students, and it predicted no difference in credit completion, again suggesting that decreased credit attempts are the primary mechanism through which working affects student progression. Figure 6 considers the possibility of different relationships for students working in different sectors of the economy to understand whether the relationship between work and academic outcomes differs for students working in sectors such as retail compared with financial services.

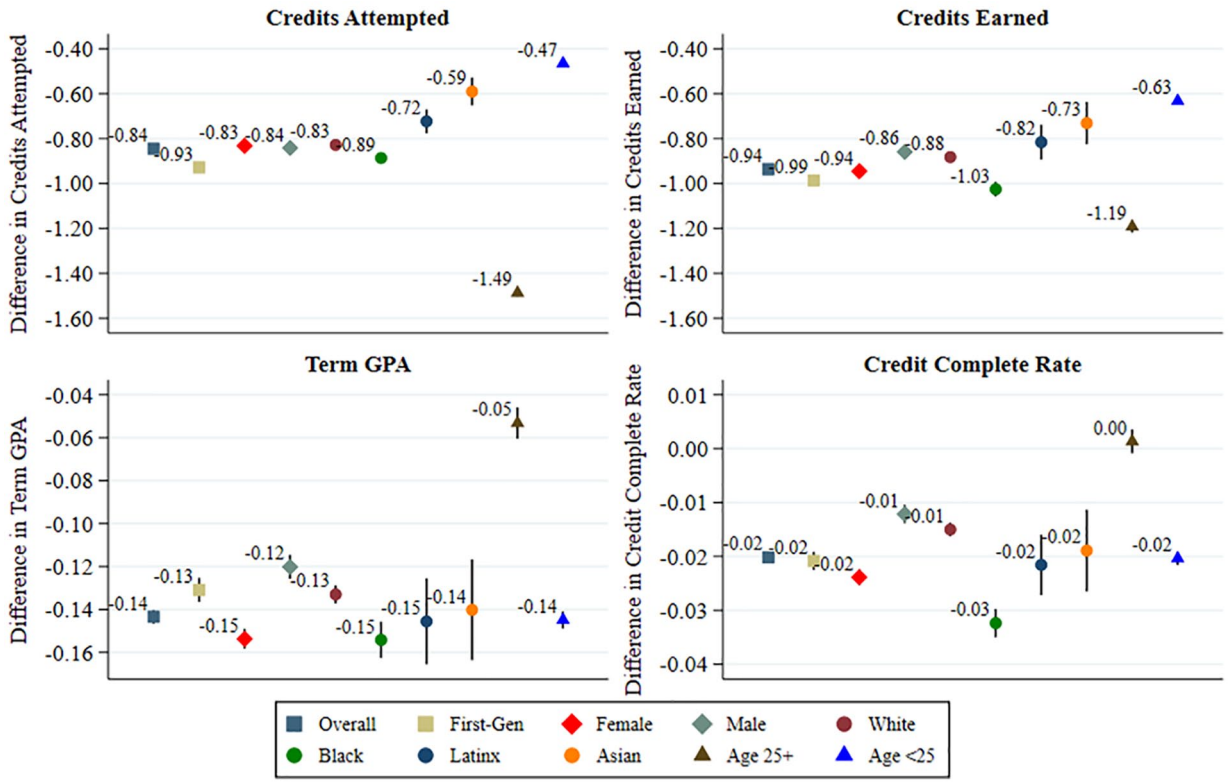

FIGURE 5. *Within-semester metrics (overall): estimated difference from working ≥ 10 hours per week.*
Note. Includes all students enrolled in Tennessee public 4-year universities and community colleges (Tennessee Higher Education Commission institutions). Estimates are the coefficient associated with working an average of 10 or more hours per week (assuming minimum wage and 2 weeks' not working each year) compared with students in the same demographic group who were otherwise similar on observable characteristics. Fixed-effect models also include student controls, term of entry and institution fixed effects, with errors clustered by term of entry. Bars represent 95% confidence intervals.

We find little evidence to suggest that students working in certain industries are predicted to have a meaningfully larger or smaller difference in their academic progression.

These within-semester findings are bolstered by similar results from models with student fixed effects (see Table 4), through which we are able to compare students who worked in some terms but not in others (or who worked at varying levels). By accounting for unobserved characteristics of students, these estimates allow stronger isolation of the role of students' different work levels across different semesters, providing further confidence that the relationship between working and these within-term outcomes is meaningful.

Finally, results from the dose-response model shown in Figure 7 illustrate that the relationship between work and credit attempts is especially strong among those working larger amounts. Although we find a small significant relationship between working and lower credit attempts even for those working small amounts, the negative relationship becomes progressively stronger for those working more. The median working student earns about 0.7 fewer credits per semester than similar nonworking students, while for those students who work the most (near the 100th percentile of earnings), working is associated with a decrease in credit attempts of approximately 3 credits in a single semester, on average.

Study Limitations

Each of our estimation methods identifies associations between college students' work and their postsecondary outcomes rather than causal effects. We acknowledge that unobserved student characteristics may have influenced their employment, intensity of work, and educational outcomes. As such, we limit our discussion of these results to center the association between work and academic outcomes, rather than any causal effects.

In addition, our measures of work hours are themselves limited, in that we do not observe the actual number of hours students worked while enrolled in college or their wage per hour. Instead, we estimate students' work hours on the basis of their total quarterly earnings and the Tennessee minimum wage. For students working in salaried jobs or jobs with hourly wages higher than the minimum wage, we will have overestimated their work hours in translating earnings into work estimates. As such, we consider our results (and the estimated 10 hours per week threshold we use throughout) to

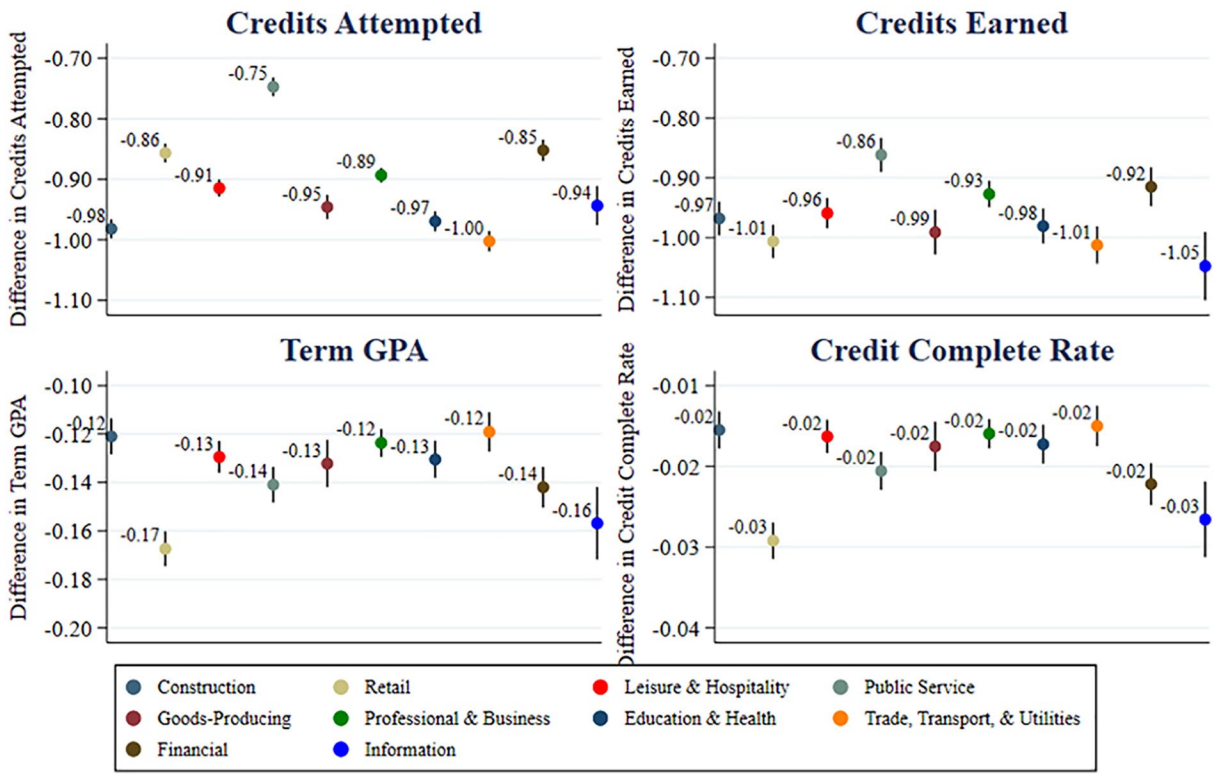

FIGURE 6. *Within-semester metrics (overall): estimated difference from working ≥ 10 hours per week.*
Note. Includes all students enrolled in Tennessee public 4-year universities and community colleges (Tennessee Higher Education Commission institutions). Estimates are the coefficient associated with working an average of 10 or more hours per week (assuming minimum wage and 2 weeks' not working each year) in the specified industry, compared with nonworking student who were otherwise similar on observable characteristics. Fixed-effects models also include student controls, term of entry and institution fixed effects, with errors clustered by term of entry. Bars represent 95% confidence intervals.

speak to a more general work intensity, rather than to the precise number of working hours. Moreover, our earnings records only include those earnings reported to the state's UI system, and as such, do not include earnings from out-of-state work, federal occupations, or self-employment (including "gig economy" work). For students with unobserved earnings, we may have miscategorized their workforce participation and intensity.

Finally, as with any geographic or context-specific study, attempts to generalize from these results to other states or postsecondary educational settings beyond Tennessee will need to take into consideration differences in the respective settings, though certain characteristics of Tennessee, including its racial and ethnic diversity,[3] along with its mix of urban, rural and suburban settings, suggest some reasons why findings from Tennessee may generalize to a wide range of contexts.

Conclusions and Discussion

This study brings to the forefront several important findings. First, the associations we find are suggestive of a strong and negative relationship (about 4–7 percentage points) between working while enrolled in college and degree completion. Results suggest that working is not merely related to a delay in college completion, but rather a decreased likelihood in any completion. Moreover, among students who *do* complete college, students who work while enrolled are expected to take longer to earn their degree (by more than half an extra term, on average, with larger expected differences for community college students). The extent to which one views the longer time required to earn a degree as problematic may depend on a range of factors, including opportunity costs for the students (e.g., labor market earnings) and any costs to the institution (such as providing support services for students over a longer period).

Examining the relationship between work and student outcomes within the same schedule provides further insight into mechanisms through which we might expect to better understand the longer term relationships. First, we find only minor negative associations between working while enrolled and student performance in their classes, with only very small predicted drops in either GPA or in the percentage of attempted credits that are actually completed. This is consistent with the literature, which has found mixed results on the relationship of college students' work to their GPAs,

TABLE 4

Fixed-Effect Estimates of Predicted Differences in Within-Term Outcomes in Different Time Frames (by Sector) With Student Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)
	All Public Institutions	4-Year Universities	Community Colleges	All Institutions (No Summer)	4-Year Universities (No Summer)	Community Colleges (No Summer)
I. Treatment defined as working at least 10 hours/week						
Term credits attempted	−0.715**	−0.575**	−0.805**	−0.779**	−0.646**	−0.852**
	(0.005)	(0.006)	(0.009)	(0.006)	(0.008)	(0.012)
Term credits earned	−0.820**	−0.625**	−1.078**	−0.822**	−0.630**	−1.065**
	(0.009)	(0.011)	(0.017)	(0.011)	(0.013)	(0.020)
Term credit completion rate	−0.029**	−0.017**	−0.052**	−0.026**	−0.014**	−0.049**
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Term GPA	−0.113**	−0.086**	−0.171**	−0.104**	−0.078**	−0.160**
	(0.002)	(0.003)	(0.005)	(0.003)	(0.003)	(0.006)
Student characteristics	X	X	X	X	X	X
Term fixed effects	X	X	X	X	X	X
Student fixed effects	X	X	X	X	X	X
Observations	4,403,552	2,685,354	1,718,198	2,856,178	1,736,785	1,119,393
II. Treatment defined as log earnings (in thousands of dollars)						
Term credits attempted	−0.104**	−0.082**	−0.123**	−0.109**	−0.089**	−0.126**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Term credits earned	−0.120**	−0.091**	−0.162**	−0.118**	−0.090**	−0.157**
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.003)
Term credit completion rate	−0.004**	−0.002**	−0.007**	−0.004**	−0.002**	−0.007**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Term GPA	−0.017**	−0.013**	−0.025**	−0.015**	−0.012**	−0.023**
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
Student characteristics	X	X	X	X	X	X
Term fixed effects	X	X	X	X	X	X
Student fixed effects	X	X	X	X	X	X
Observations	4,403,552	2,685,354	1,718,198	2,856,178	1,736,785	1,119,393

Note. Shown are the coefficients on working an average of at least 10 hours per week assuming minimum wage (panel I) and log earnings (panel II) in each term. Columns 1 to 3 include earnings in the summer, while columns 4 to 6 do not include summer earnings. Values in in parentheses are standard errors. Models includes fixed effects for term enrolled and for student. Standard errors are clustered by first term enrolled. GPA = grade point average.
**$p < .01$.

including positive, negative and null effects (Darolia, 2014; Remenick & Bergman, 2021). Instead, we find stronger evidence that a decrease in credits attempted when students work, particularly for those working large amounts, is related to longer times to degree and lower completion rates. For students who work the most, they enroll in up to a full three-credit course less per semester than would otherwise be expected. For students who work less, they are expected to take only modestly fewer credits per semester, leaving open the possibility that other mechanisms (e.g., failure to reenroll, taking terms off) may contribute to the lower completion rates and longer time to completion among completers. Although we found substantial variation by work intensity, on average, our results closely align with those of Darolia (2014), finding that students attempt about a half credit fewer per term for each 1 standard deviation increase in earnings (or about one fewer three-credit class every 2–3 years, depending on whether students take summer courses).

Next, we find little to suggest major differences in how different student populations experience the relationships between working and academic outcomes. Across demographic groups, working and nonworking students exhibit similar gaps in academic outcomes. Likewise, our analysis does not show that the industry in which a student works substantially alters these associations. We do not, for example, find that students who work in a specific industry are especially likely to have larger positive or negative relationships. At the same time, we do not have information on

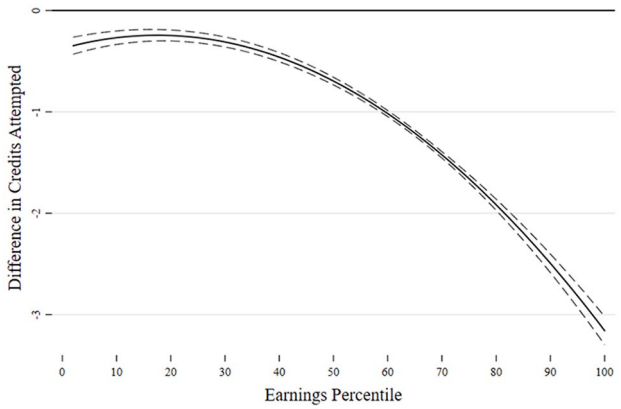

FIGURE 7. *Expected difference in credits attempted by work amount.*

Note. Includes all students enrolled in Tennessee public 4-year universities and community colleges (Tennessee Higher Education Commission institutions). Lines represent the average treatment effect(*t*) on the number of credits attempted associated with additional earnings, given level of treatment (earning percentile in that term). All dose-response models include student controls, term and institution fixed effects. Estimates are from the Stata ctreatreg package (Cerulli, 2015).

whether students are working on or off campus, or whether the work takes place in an internship or other work-based learning environment, so it is possible that variation in effects by industry that might depend on the context of work are obscured.

These findings have important implications for policy makers as they consider how to best support students who work while enrolled in college. Although working while enrolled may have some benefits for students (both financial and otherwise), these findings raise questions about the extent to which working serves as an impediment to academic progress. Working is more strongly related to attempted credits than to outcomes like GPA or the ratio of completed to attempted credits, in which working students performed similarly to their nonworking peers. This suggests that policy makers and institutions could better support working students by targeting barriers to enrollment and credit uptake.

Given that we find the strongest associations between work and the number of credits that working students *attempt*, compared with student success once in those courses, it is critical for policy makers and institutional leaders to consider policies that address the lower levels of credit-taking associated with time spent working. For some students, course schedules themselves may be a barrier, particularly if courses are not scheduled during times that allow working students to enroll. Remenick and Bergman (2021) recommended increasing the number of counselors or advisers who are skilled in assisting students in finding work that is compatible with their course schedules and attentive to the needs of working students. They also encouraged the provision of more part-time work opportunities on campus, and particularly employment options that link student work experiences to what students are learning in their courses. For other students, financial assistance may be key, especially for students who view time spent in additional classes as time that would take away from necessary financial support provided by employment. Each of these suggested strategies are features of new pilot programs (Nashville GRAD and Nashville Flex) offered by Nashville State Community College. Preliminary findings indicate that Nashville GRAD program participants are persisting to the next term at a higher rate (about 11 percentage points higher than similar nonparticipants) and that the intensity of their interactions with advisers and use of financial supports (e.g., textbook stipends) is linked with higher rates of persistence (Dickason, Heinrich, & Smith, 2021).

Our findings also suggest that working only small amounts is *not* associated with large negative outcomes, indicating that institutions and policy makers would be wise to target policies to those students who currently or may feel compelled to work larger numbers of hours, as this appears to substantially limit their ability to complete college. For work study and other campus-based employment programs, this may also have implications, as more moderate workloads do not appear related to a slowdown in academic progress in the same way that heavier workloads do.

Moreover, although some may have a misconception that student employment is an impediment only for some (e.g., older adult students), these findings suggest that work has the potential to serve as an impediment across a wide range of student populations. Policy and programs designed to support students should account for the fact that work is a common fact of life for a large portion of the college student population.

At community colleges, where a full-time courseload is less common and a culture and expectation of completing in a set time frame is less clear, work appears to be especially related to a slowdown in credit accumulation and time to degree. This may be worrisome for students whose financial aid programs have limited time frames that do not adjust for part-time enrollment. At community colleges, in particular, policy makers and institutions should consider flexibility in the amount of time that students can access important supports including financial aid, given that students who need to work while enrolled may need more time to complete. In fact, this was the motivation for Nashville State Community College's newest pilot program (Nashville Flex), which was designed specifically to support part-time students, who frequently work longer hours and take more time to complete, with additional financial and advising supports.

In light of the growing prevalence of employment among college students, these findings enhance our understanding of how working students fare in terms of their academic progression and degree completion. A consistent negative

relationship found across the evidence base between work and college completion motivates policies to better support working students, financially and otherwise, so that they can progress and complete degrees in a timely manner. Postsecondary students today are unlikely to be either a "college student" or a "working person" alone, and higher education would be well served to build systems and supports that help students addressing cash-flow constraints and competing demands on their time.

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Notes

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1. Because UI earnings data are reported quarterly, whereas the academic calendar includes three primary terms (spring, summer, and fall), we estimate earnings per academic term on the basis of the quarterly earnings and an approximation of the academic calendar. We use a student's full quarter 1 (January to March) earnings plus one third of their quarter 2 (April to June) earnings to represent spring academic term earnings. We use two thirds of a student's quarter 2 (April to June) earnings and two thirds of their quarter 3 (July to September) earnings to represent summer academic term earnings. We use one third of quarter 3 (July to September) plus full quarter 4 (October to December) earnings to represent fall academic term earnings. Although it is certainly possible that this causes our analysis to improperly label the term in which some students actually worked (especially students who worked during April and September, which would not show in our data as spring or fall work), we view the risk of improperly assigning summer work to the fall and spring terms to be greater, given the confines of earnings data that are reported quarterly.

2. "On-time" completion is 4 years for students at universities and 2 years for students at community colleges. Because many students take more time to complete, we also report findings associated with 150% and 200% of "on-time" completions.

3. According to the U.S. Census Bureau's (2021) Diversity Index, the chance of two randomly chosen people in the state of Tennessee being from different racial/ethnic groups is 46.6%, putting it near the middle of all states.

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