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EdWorkingPaper No. 25-1346

Fast Track to Success? A Mixed Methods Evaluation of Condensed Course Formats at Tennessee Community Colleges

Kaylee T. Matheny
Georgetown University

Madison Dell
University of Zurich

Gus Gluek
University of Pennsylvania

Rachel Baker
University of Pennsylvania

Eric Bettinger
Stanford University

Alex Monday
Ithaka S+R

Hidahis Mesa
The College System of Tennessee

Do policies that broaden educational access also foster success? We study this question in the context of North Carolina's universal Advanced Placement (AP) exam fee waiver policy. Using student-course level administrative data, we exploit within-student variation on a sample of students who took multiple AP courses to estimate the policy's effect on exam participation (access) and pass rates (success). We find that fee waivers significantly increased exam participation but had no overall effect on the pass rate for these enrollees. This, however, masks a robust 3 percentage point increase in the pass rates among low-SES students. We also find imprecise but suggestive evidence of gains among underrepresented minorities (non-Asian and non-White). A complementary analysis, leveraging the full sample of AP courses, shows that fee waivers had the greatest impact in courses where predicted financial barriers to exam participation were highest, and that the policy's benefits far exceed its cost. Finally, our results help reconcile the seemingly disparate findings from prior work on AP exam funding.

VERSION: November 2025

Suggested citation: Rahman, Md Twfiqur, and M. Cade Lawson. (2025). Removing Barriers to College Credits: Where and for Whom AP Exam Fee Waivers Work. (EdWorkingPaper: 25-1345). Retrieved from Annenberg Institute at Brown University: https://doi.org/10.26300/df8y-4q69

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Kaylee T. Matheny, Georgetown University
Madison Dell, University of Zurich
Gus Gluek, University of Pennsylvania
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Eric Bettinger, Stanford University
Alex Monday, Ithaka S+R
Hidahis Mesa, TBR – The College System of Tennessee

Abstract: As colleges face increasing pressure to improve student outcomes, one solution gaining traction is the adoption of condensed courses (i.e., shortened academic terms). We employ quasi-experimental methods to estimate the effect of enrolling in a condensed course on course- and student-level outcomes at all public community colleges in Tennessee. We also leverage interviews with college faculty, students, and staff to examine potential mechanisms that explain these outcomes. Our findings indicate that enrolling in condensed courses leads to higher course grades and lower withdrawal rates. Qualitative analyses suggest students are more focused and motivated in condensed courses, and faculty adapt grading practices to manage the shorter course length. We find a more nuanced story regarding associations between condensed course-taking and longer-term outcomes. Despite finding positive associations between condensed course-taking and average GPA, we find mixed associations between condensed course-taking and persistence. We also find substantial heterogeneity based on the number of condensed courses a student took in their first semester. Analyses of student and faculty interviews reveal concerns about knowledge retention as well as challenges building relationships with peers and instructors.

I. Introduction

Colleges face mounting pressure to improve student outcomes amid increasingly stretched resources, declining academic preparation, and external demands from policymakers and employers. Institutional strategies to address these concerns are often fragmented and incremental (see Feygin et al., 2022). One solution that has gained momentum in colleges across the country focuses on the structure of the term. A growing number of colleges have begun to split their semester-length courses into shorter, more intensive courses over seven or eight weeks. For example, inspired by the high success rates[1] of their "flex terms," Texas's Odessa College converted 80% of its semester-length offerings into eight-week terms in 2014 (Achieving the Dream [ATD], 2021c). The results were compelling: After implementing condensed courses, all student subgroups had greater success rates—and for some subgroups, such as Pell-eligible Black men, success rates grew by more than 20 percentage points (Odessa College, 2021). Similarly, in 2014, South Carolina's Trident Technical College transitioned almost all their semester-length offerings into condensed courses after seeing declining student success rates when they moved from a quarter-based to a semester-based calendar (ATD, 2021d). Three years after transitioning to condensed courses, the college touted higher success rates, higher graduation rates, and lower withdrawal rates (ATD, 2021e).

Despite growing popularity and compelling case studies, little research has rigorously evaluated the impacts of condensed courses or assessed their impact at scale. Moreover, prior research might attribute the impacts of condensed courses to who selects into them. If high achieving students, either universally or strategically, take condensed courses more than low achieving students, then differences in outcomes for condensed course takers should appear higher,

[1] Success rates are typically defined as the share of students earning a C or higher in a course.

even if condensed courses have no direct effect on students. Similarly, estimated "effects" could be downwardly biased if low-achieving students are more likely to take condensed courses than other students. More information on selection is necessary for interpreting existing evidence, and any empirical strategy that aims to identify the impacts of condensed courses must account for such selection.

Our research focuses on understanding the impacts of condensed courses. We use data from the state of Tennessee, where there is substantial variation in the share of courses offered in the condensed format across community colleges and over time. To understand both selection into these courses and the effects of the courses on student outcomes, we use student- and enrollment-level data from all public community colleges in Tennessee. We track over three million enrollments covering nearly 340,000 students and 183,000 course sections. We augment our quantitative analyses with qualitative interview data from students, faculty, and staff at three of these colleges to understand the estimated effects. With our quantitative and qualitative data, we answer the following research questions:

1) Does condensed course-taking affect students' academic outcomes?

2) What explains the effects of condensed course-taking on students' academic outcomes?

We use two empirical approaches to identify the causal impacts of condensed course-taking. First, we rely on fixed effects modeling. When examining outcomes at the enrollment (student × course) level, we can include fixed effects for time, course, and student. As such, our models can distinguish whether students' performance in condensed courses differs from their performance in semester-length courses. Second, we use an instrumental variable strategy to control for the potential endogeneity of enrolling in condensed courses. Our instrumental variable strategy uses the supply of condensed courses from the prior year as a predictor for the number of

condensed courses offered each year and, hence, the probability that a student enrolls in a condensed section for a given course.

We find that condensed courses have positive effects on students' near-term academic outcomes. In condensed courses, students are more likely to pass, are less likely to withdraw or fail, and earn higher grades on average. These findings are consistent across fixed effects and instrumental variables specifications. Interviews with students and faculty suggest that students are more engaged and focused in condensed courses, and faculty adapt their grading practices to accommodate constrained timelines in condensed courses.

Considering long-term outcomes, students who have taken at least one condensed course have higher GPAs throughout their academic careers, though the evidence for persistence is mixed. Taking only a single condensed course in one's first semester is negatively associated with persistence, but taking two or more condensed courses in one's first semester is positively associated with persistence and graduation. Analyses of student and faculty interviews reveal concerns about knowledge retention as well as building relationships with peers and instructors.

II. Background and Setting

Background

Most US colleges divide the academic year into two semesters, each of which is typically 15 to 18 weeks long (Malone, 1946; National Center for Education Statistics, 2023). Condensed courses deliver a semester's worth of content in about half that time. This allows students greater flexibility in designing their course schedules, but it may also increase the consequences if students struggle because of a lack of academic preparation or competing responsibilities outside of the classroom (Fladd et al., 2021).

Missing one day of class in a condensed course is equivalent to missing two days in a semester-length course, which means that in a condensed course, getting a flat tire while driving to class equates to losing twice as much instructional time. In this way, everyday challenges students may face can be even more detrimental in condensed courses. Condensed courses may also introduce new challenges, such as creating more tenuous relationships between students and their classmates and instructors, or exacerbating student stress due to the courses' faster pace and greater workload.

However, proponents have argued that these very weaknesses are actually strengths. For example, Northeast Wisconsin Technical College, which introduced its "8 Week Advantage" program in 2020, argues that condensed courses allow students to accumulate credits more efficiently and insulate them from losing an entire semester's worth of coursework when adverse events (e.g., job loss; family illness) occur in the middle of the semester (ATD, 2021b). Indeed, students may find condensed course formats attractive due to shorter time horizons, with fewer opportunities for issues to arise that may interfere with course completion (DeLuca et al., 2021). Shorter terms provide students with more enrollment entry and exit points and potentially more autonomy over their schedule, which may be especially valuable for non-traditional students whose responsibilities outside of school (e.g., employment; caretaking) may require them to stop out. This scenario is what inspired Texas's Grayson College to incorporate condensed courses into its curriculum in Fall 2018 (ATD, 2021a). The demand for flexible course formats, especially among non-traditional students, is evident in the explosion of enrollments at for-profit institutions in recent decades (Deming et al., 2013). This revealed preference makes condensed courses a promising strategy for institutions seeking to recruit more non-traditional students.

From a behavioral perspective, students may benefit from focusing more intensely on fewer courses during these condensed terms. This is one of the arguments many secondary schools used to justify the transition from traditional to block scheduling in the 1990s (see Gullatt, 2006; Zepeda & Mayers, 2006). One of the colleges in our study, Chattanooga State Community College (henceforth Chattanooga), explicitly makes this claim. Chattanooga has publicly promoted the condensed course model, and their analyses suggest that all students, regardless of gender, race, income, or age, are 10 to 15% more likely to complete a condensed class than a semester-length class (Chattanooga State Community College, n.d.). They attribute this success to "being able to stay focused because of fewer classes, stay motivated because of a shorter term, and stay on track because of fewer classes to plan around" (Chattanooga State Community College, n.d.).

However, the empirical evidence documenting the effects of condensed courses remains limited. The closest approximation is a recent study from Bostwick et al. (2022), who use quasi-experimental methods to estimate the impact of institutions switching from quarters to semesters (i.e., from shorter to longer terms). They find that switching to a semester-based calendar lowers the probability of full-time enrollment and on-time graduation, lowers first-year grades, and delays when students declare a major. In other words, switching from shorter to longer terms negatively affected key measures of student success.

Our study extends this work in important ways. First, we focus more explicitly on community college students where the potential barriers and benefits of condensed courses might be more acute. Second, we introduce enrollment-level data which allows us not only to exploit college-level variation but also variation within individual students' schedules. Third, we introduce an instrumental variable strategy that might provide the most rigorous causal evidence to date on the effectiveness of these course offerings. Fourth, we show the robustness of Bostwick et al.

(2022) both by demonstrating that the concept of shortened class periods applies with differing timelines (compressed schedules in our context and semesters/quarters in theirs) and by showing that the lessons are valid in a different context, the College System of Tennessee. Finally, we combine qualitative data, in the form of interviews with students, faculty, and staff, with our quantitative analyses to provide robust evidence for potential mechanisms that might explain our findings.

Setting

We draw on data from The College System of Tennessee (TBR), the system of higher education that serves the largest number of students across the state (see Appendix Table 1). TBR is a large, coordinated public higher education system, consisting of 13 community colleges (as well as 24 colleges of applied technology, excluded from our current analyses). TBR regularly collects enrollment, course, and degree data from their colleges. The depth and breadth of TBR's data system and the number of students it serves provide a rich dataset to track students' enrollment and educational outcomes.

Importantly, some of TBR's colleges were early adopters of condensed courses. In Fall 2020, 8% of all course enrollments in Tennessee's community colleges were in a condensed format, a figure that increased to 14% by Fall 2022 (TBR, 2021b). One college, Chattanooga, has widely adopted this format, with 70% of course enrollments offered in a condensed format since Fall 2021. Though Chattanooga has been at the helm in scaling condensed courses, many other Tennessee community colleges have followed their lead and increased their condensed course offerings.

Lastly, community colleges serve larger shares of students who are older, are from economically disadvantaged backgrounds, and have the lowest average success rates (Monaghan

et al., 2018). Like in other states, community college students in Tennessee are more likely to work full-time and take care of dependents while enrolled in school (TBR, 2021a). Additionally, as Appendix Table 1 shows, 24% of all community college students in Tennessee are over the age of 24, and 53.1% attend part-time. These are the students that scholars have hypothesized to be the most vulnerable and who potentially stand to benefit from or struggle the most in condensed courses.

III. Data and Methods

Our data come from TBR and include all 13 public community colleges in the state. We focus on enrollments between Fall 2015 and Spring 2023, conducting analyses at two levels: by enrollment in a specific course (i.e., student × course) and by student. Descriptive statistics of our sample are shown in Table 1. The enrollment-level data include a broader group of students (sample restrictions described in Appendix Table 2). Due to our analytic strategy, we impose an additional sample restriction that limits the student-level data to only first-time students in the fall cohorts between 2015 and 2021. This important distinction between the two samples explains some of the differences observed in Table 1 (e.g., the lower share of non-traditional students observed in the student-level data relative to the enrollment-level data).

Table 1. Descriptive Statistics of Sample

Variable	Enrollment-Level Data	Student-Level Data
Non-Traditional (Age 25+)	0.26	0.08
Female	0.59	0.57
Asian	0.02	0.02
Black	0.15	0.16
Hispanic	0.07	0.07
Multiracial	0.03	0.03
Other Race	0.01	0.00
White	0.72	0.69
Pell Grant Recipient	0.46	0.54
Learning Support Courses (0, 1, 2, or 3)	0.90 (1.07)	1.22 (1.18)
High School GPA (4.0 Scale)	3.05 (0.61)	3.00 (0.59)
High School GPA Missing	0.10	0.07
First-Time Freshman	0.20	0.89
N	3,069,639	141,369

Notes: This table displays descriptive statistics for the student- and enrollment-level data in our study. Student-level characteristics are based on *first-time undergraduates,* which helps explain some of the differences between enrollment-level and student-level characteristics (e.g., why non-traditional students are disproportionately represented in the enrollment-level data). Values for binary variables are based on the first value we observe for a student in the administrative data. While the age cutoff for a "non-traditional student" varies in the literature, we use NCES's definition of "being over the age of 24" (NCES, 2025). Standard deviations for discrete and continuous variables are included in parentheses. Learning support courses focus on remedial or development education.

Enrollment-Level Data

The first type of analysis focuses on students' experiences in each course in which they enroll (student × course). We apply several restrictions to the data, eliminating enrollments in special courses (e.g., independent study), special terms (e.g., bootcamp terms), dual enrollment for high school students, and courses from Tennessee's virtual campus. Appendix Table 2 describes the sample restrictions that we employ to get to our analytic sample of 3,069,639 course enrollments covering 337,877 students in 182,793 courses. To measure the impacts of condensed courses at the enrollment level, we estimate versions of the following equation:

$$Y_{ijkst} = \beta\left(Condensed_{ijkst}\right) + a_i + \gamma_j + \delta_k + \theta_s + \mu_t + \mathbf{Z'}_i\varphi + \varepsilon_{ijkst} \quad (1)$$

Our main outcomes of interest (Y_{ijkst}) are measured at the enrollment level and vary by college, term (e.g., Fall 2018), and modality (i.e., online, hybrid, or in person). In different model specifications, we also consider variation within subject areas (using course CIP codes), courses, and students. Our outcomes are defined as follows:

- *An indicator for course pass*[2]
- *An indicator for course failure*
- *An indicator for course withdrawal*
- *Grade point average* (on a 4-point scale)[3]

For more details on how our outcomes are defined, please see Appendix Table 3. In our preferred model (Equation 1), our key explanatory variable is an indicator for whether the enrollment is in a condensed format ($Condensed_{ijkst}$) for student i, subject j, modality k, college s, and term t. We include fixed effects for the student (a_i), subject (γ_j), modality (δ_k), college (θ_s), and term (μ_t) as well as a vector of student-level characteristics ($\mathbf{Z'}_i$). These include indicators for whether a student is "non-traditional" (age 25 or older), sex, race/ethnicity (for Black, Hispanic, and Other Race[4]), Pell Grant receipt, which learning support courses students have been placed in, and a student's high school GPA.

[2] Grades of P and S indicate the student passed a course graded on a pass/fail basis. A grade of FA indicates the student failed due to attendance (i.e., an unofficial withdrawal). Grades of N and U indicate the student failed a course graded on a pass/fail basis. Students could withdraw without a grade of W if they withdrew prior to the census date on the 14th calendar day of the term. These early withdrawals are not observable in our data. A grade of I indicates an "Incomplete," which means a student has not fulfilled all course requirements at the end of the grading period. A grade of I automatically turns into an F if the student does not complete all requirements by the deadline set by the college.

[3] For GPA, we assign 0 if the final grade is F, FA, N, U, or I. We assign 2.5 if the final grade is P or S, which is the midpoint value for a passing grade (i.e., 1 point awarded for a D; 4 points awarded for an A). We also run models excluding values for pass/fail courses (that is, excluding grades of P, S, N, and U).

[4] Other Race includes all racial/ethnic groups that compose 5% or less of the students in our analytic sample. This group includes students identifying as Asian/Pacific Islander, Native American/Alaska Native, and Multiracial.

Our identifying variation is the comparison between courses in the same subject area that are taught in different formats—either as a full semester (defined here as 14, 15, or 16 weeks) or in a condensed format (defined here as 6, 7, or 8 weeks). One could argue this identification strategy lends itself to selection effects such that savvy students might strategically choose a specific format for a particular class. However, evidence from our qualitative analyses suggests this identification strategy is likely to reveal unbiased treatment effects in this instance. In brief, our qualitative findings reveal students typically prioritized other factors in their course selection process (e.g., day/time of course meetings; curricular requirements). Many students described not knowing they had even signed up for a condensed course until the term had already begun. Additionally, in many cases, and as we explicitly leverage in our instrumental variable models, at least some of the variation in course enrollments arises from seemingly exogenous differences in the availability of a course in a specific format across terms. We discuss this in more detail below.

Student-Level Data

For student-level analyses, the sample is limited to first-time freshmen who have two years of outcome data for all cohorts, meaning we restrict the sample to include all fall-entering cohorts from 2015 through 2021. This results in seven cohorts. We further restrict to students who have a non-missing value for the following outcomes measured after the first fall: term GPA, cumulative GPA, and percent of attempted hours earned. To see how each of these decisions impacts the sample, see Appendix Table 2. This results in an analytic sample of 141,369. To measure the impacts at the student level, we estimate Equation 2.

$$Y_{isg} = \beta\left(Condensed_{isg}\right) + \alpha_{sg} + \mathbf{Z'}_i\varphi + \varepsilon_{isg} \quad (2)$$

The key explanatory variable ($Condensed_{isg}$) is defined in two ways (each with its own model): first as a *binary condensed courses indicator* (equal to 1 if student i took 1 or more condensed

courses in their first semester of enrollment and equal to 0 otherwise) and second as a discrete variable describing the *number of courses taken in a condensed format* in a student's first semester of enrollment (equal to 0 if student i took no condensed courses in their first semester, 1 if the student took one condensed course in their first semester, and 2 if the student took two or more condensed courses in their first semester). We also include cohort (college × first term) fixed effects (α_{sg}) and a vector of student-level covariates ($\mathbf{Z'}_i$), including all those for Equation 1 as well as student major/program of study.

Endogeneity and Instrumental Variables

While our fixed effects strategies can control for much of the selection by student, cohort, and college, students could still strategically select into condensed courses in different subjects, maintaining some endogeneity. For example, a student hoping to major in biology may take a "slower" approach to biology courses while taking a condensed-course approach to other subjects. If this within-student, across-subject selection is correlated with outcomes, our fixed effects strategies could exacerbate biases. To account for such selection, we use an instrumental variable strategy aimed at exploiting exogenous variation in the availability of condensed courses.

Our source of exogeneity comes from temporal variation in how many sections of a specific course at a college are offered in the condensed format. At the onset of registration for any given semester, an administrator must make decisions about how many sections of a given course will be condensed. However, this decision can be affected by both exogenous factors unrelated to student outcomes (e.g., supply of staff; scheduling constraints) as well as endogenous factors related to student outcomes (e.g., cohort size; student characteristics).

One approach for addressing the potential endogeneity in this temporal variation is instrumenting for condensed sections in a given term using the share of condensed sections the

department offered one year prior (i.e., the prior spring for a spring term; the prior fall for a fall term). This instrument is a clear indicator of the supply and is plausibly unrelated to student characteristics. We operationalize the use of this instrument in the following way. In the first stage, we use the proportion of sections of a given course that a given college offered in the condensed format in the previous term to predict whether a student took that course in the condensed format in the current term. In the second stage, we use this predicted binary variable (i.e., whether the student took the course in the condensed format) to predict enrollment-level outcomes.

Qualitative Data Collection

In addition to extensive quantitative data, we also draw on rich qualitative data to understand potential mechanisms underlying our findings. To collect our qualitative data, we selected three of Tennessee's 13 community colleges: Chattanooga, Nashville, and Dyersburg. We focused on Chattanooga given how prevalent condensed courses have become as part of their course offerings. We selected Nashville and Dyersburg because they represent colleges at an earlier stage of implementing condensed courses and serve different localities (urban and rural, respectively) and student populations. From these colleges, we interviewed 44 students, 29 of whom participated in both a first and second interview (a 66% retention rate). Interviewees are roughly evenly represented across sites, with a few more in Chattanooga. Interviews ranged from 23 to 65 minutes, lasting 48 minutes on average. Four members of the study team conducted interviews throughout Fall 2023.

We designed the qualitative analysis with three purposes in mind: complementarity, initiation, and expansion (Greene, 2007). Complementarity and initiation aim to identify convergent and divergent patterns, respectively, in the phenomenon of interest; for us, we were interested in understanding how students' narratives did and did not align with the positive learning

outcomes we estimated in our quantitative analysis. For example, we explored how students reported their experiences with the pacing, workload, and relationships with peers and faculty. We also aimed to get a strong understanding of how students heard about and chose their current courses to gain insight into the assumptions underlying our quantitative analytic strategies.

These purposes also guided our interviews with faculty (N = 27) and staff (N = 13) across the three colleges. Faculty interviews covered how condensed courses were implemented in the classroom, with topics such as how faculty were recruited to teach in this new format as well as how they revised their course design and instructional strategies. Staff interviews covered introducing and scaling condensed courses as part of colleges' overall offerings. We transcribed interviews using a combination of AI Media Services and manual transcription by members of the research team (i.e., transcription by hand). We used a team-based approach to coding interviews, developing a codebook based on the research questions and interview guide. We then analyzed interviews in Dedoose, a qualitative analysis software.

Below, we report results for three sets of findings, each of which draws on both quantitative and qualitative evidence: selection into condensed courses, enrollment-level effects of condensed courses, and student-level effects of condensed courses.

IV. Results

Estimating Student Selection into Condensed Courses

Table 2 quantifies student selection by estimating the relative overrepresentation or underrepresentation of various student subgroups in condensed courses relative to semester-length courses. In Table 2, we conduct analyses at two levels: the enrollment level (i.e., student × course) and the student level. For the enrollment-level models (Models A and B), the predictor is a binary independent variable equal to 1 if the enrollment was for a course taught in a condensed format.

Control means refer to the average values across enrollments in semester-length courses. Model A (Column 1) includes no fixed effects (FEs). Model B (Column 2) includes FEs for college, term, modality, and course.

We also examine patterns at the student level, focusing on a student's first semester enrolled (Models C and D). Control means refer to the average values for students who took only semester-length courses in their first semester. In Model C (Column 3), the predictor is a binary indicator for whether a student took one or more condensed courses in their first semester. In Model D, the predictor for condensed course-taking is discrete and multi-valued: It is equal to 0 if the student took no condensed courses in their first semester (the reference goup), 1 if the student took only one condensed course in their first semester (Column 4), and 2 if the student took two or more condensed courses in their first semester (Column 5).

Table 2. Student Selection into Condensed Courses

	Enrollment Level			Student Level			
Model →		(A)	(B)		(C)	(D)	
Column →		(1)	(2)		(3)	(4)	(5)
Student Subgroup	Control Mean & Std Dev	Predictor: Enrollment is for a Course in a Condensed Format	Predictor: Enrollment is for a Course in a Condensed Format	Control Mean & Std Dev	Predictor: Student took 1+ Condensed Courses in First Semester	Predictor: Student took 1 Condensed Course in First Semester	Predictor: Student took 2+ Condensed Courses in First Semester
Age: 25 and over	0.255	0.064***	0.035***	0.080	0.005	0.003	0.014*
		(0.001)	(0.001)		(0.003)	(0.003)	(0.006)
Race: Black	0.146	0.049***	0.013***	0.155	0.004	0.005	-0.003
		(0.001)	(0.001)		(0.003)	(0.004)	(0.007)
Race: Hispanic	0.065	0.010***	-0.001	0.068	0.004	0.006*	-0.003
		(0.001)	(0.001)		(0.003)	(0.003)	(0.005)
Race: White	0.723	-0.061***	-0.012***	0.698	0.013**	0.010*	0.030***
		(0.001)	(0.001)		(0.004)	(0.004)	(0.009)
Race: Other	0.066	0.002***	-0.001	0.079	-0.022***	-0.021***	-0.024***
		(0.001)	(0.001)		(0.003)	(0.003)	(0.005)
Sex: Female	0.588	0.027***	0.006***	0.564	-0.013**	-0.007	-0.038***
		(0.001)	(0.001)		(0.005)	(0.005)	(0.010)
First-Time Freshman	0.199	0.017***	-0.011***	0.890	0.020***	0.023***	0.006
		(0.001)	(0.001)		(0.003)	(0.004)	(0.008)
HS GPA (4-point scale)	3.058	-0.052***	-0.031***	3.011	-0.007	-0.016**	0.040**
	(0.575)	(0.001)	(0.002)	(0.592)	(0.006)	(0.006)	(0.012)
	0.095	0.017***	0.012***	0.067	0.001	0.004	-0.012*

HS GPA Missing		(0.001)	(0.001)		(0.003)	(0.003)	(0.005)
LS Number Required (0-3)	0.896	0.072***	0.025***	1.216	-0.110***	-0.060***	-0.358***
	(1.066)	(0.003)	(0.003)	(1.177)	(0.011)	(0.012)	(0.023)
Pell Recipient	0.464	0.014***	-0.003*	0.541	-0.013**	-0.008	-0.034***
		(0.001)	(0.001)		(0.005)	(0.005)	(0.010)
College FE		No	Yes		Yes	Yes	Yes
Term FE		No	Yes		No	No	No
Modality FE		No	Yes		No	No	No
Subject FE		No	Yes		No	No	No
Course FE		No	Yes		No	No	No
Cohort FE		No	No		Yes	Yes	Yes
Observations	3,069,639	3,069,639	3,069,639	141,369	141,369	141,369	141,369

Notes: FE = fixed effects. LS = Learning Support course. For models A and B, each cell represents a separate regression using data at the enrollment level where the student subgroup is the dependent variable and the independent variable is a binary indicator equal to 1 if the course was taught in a condensed format. Models C and D (student-level data) include (cohort × college) FEs and observations from the seven fall cohorts from 2015 through 2021. In Column 3 (Model C), each cell represents a separate regression where the student subgroup is the dependent variable and the independent variable is a binary indicator equal to 1 if the student took one or more condensed courses in their first semester. In Columns 4 and 5 (Model D), the coefficients on each row are from the same regression where the student subgroup is the dependent variable and the independent variable is such that 0=the student took no condensed courses in their first semester, 1=the student took 1 condensed course in their first semester, and 2=the student took 2 or more condensed courses in their first semester. The independent variable is run as a factor variable in Model D, creating dummies for the group of students who took 1 condensed course in their first semester and 2 or more condensed courses in their first semester. Robust standard errors are reported in parentheses for all model coefficients. *** $p<0.001$, ** $p<0.01$, * $p<0.05$

Non-traditional students (age 25 or older) are overrepresented in condensed courses across many of our model specifications. At the enrollment level, as shown in Column 2, non-traditional students are overrepresented by about 3.5 percentage points (relative to the control mean of 25.5%, i.e., the share of non-traditional students in semester-length course enrollments). This is smaller than the naïve estimate (6.4 percentage points) presented in Column 1 but still significant. Among the group of students who took one or more condensed courses in their first semester enrolled (Column 3), non-traditional students are not significantly overrepresented (0.5 percentage points); however, condensed courses make up a higher proportion of non-traditional students' overall coursework, as shown in both the enrollment-level outcomes and in Model D, Column 5, where non-traditional students make up 8% of first-time students with no condensed courses in their first semester but are overrepresented by 1.4 percentage points among students with two or more condensed courses in their first semester ($p<0.05$). Altogether, this evidence suggests that non-traditional students take up condensed courses at higher rates.

Black students are also overrepresented in condensed courses, though the magnitudes of the estimates are smaller than for non-traditional students. Black students are overrepresented in condensed course enrollments by about 1.3 percentage points (shown in Column 2, relative to the control mean of 14.6%) after controlling for college, term, modality, and course. Black students are not significantly overrepresented in the student-level data (see Models C and D). There are no clear trends for Hispanic students or students of other race/ethnicities; these students are roughly evenly represented across condensed and semester-length enrollments (though students of other races/ethnicities are somewhat underrepresented at the student level). White students are somewhat underrepresented in the enrollment-level data, at 1.2 percentage points lower (shown in Column 2, relative to the control mean of 72.3%). At the student level, this pattern reverses: White students are overrepresented among students who took at least one condensed course in their first

semester (Models C and D). This suggests that White students are more likely to take at least one condensed course in their first semester enrolled, but condensed courses constitute a smaller than average share of White students' overall course enrollments. The opposite pattern is true for female students: female students are overrepresented among condensed course enrollments (Model B, Column 2), but they are significantly less likely to take one or more condensed courses in the first semester (Model C, Column 3).

Students who have taken condensed courses have slightly lower high school GPAs, on average (Columns 1-2), though there is a GPA split among how students approach their first semester coursework: Students who took only one condensed course in their first semester had high school GPAs 0.016 grade points lower than those of students who took no condensed courses in their first semester, while students who took two or more condensed courses in their first semester had high school GPAs 0.040 grade points higher. The overrepresentation of students with a missing high school GPA in condensed courses is likely attributable to the high correlation between missing GPA and non-traditional students.

Overall, these results suggest that there is some evidence of selection into condensed courses based on student characteristics. The magnitude of these effects is generally small, and the estimates are attenuated when we use fixed effects to account for important structural factors such as college, term, modality, and course, indicating that selection is not as prevalent as descriptive comparisons or naïve estimates might suggest. However, the selection effects that do exist underscore the importance of including both fixed effects and controls for student characteristics in our main models that estimate the impact of condensed courses on student outcomes.

Selecting Into Condensed Courses: Evidence from Interviews

Interviews with students help explain the modest selection effects and substantiate our modeling strategy. In interviews, we asked open-ended questions to elicit students' decision-

making process for course selection, and students almost never mentioned course length. Students instead described program or major requirements, course meeting days and times, and modality as their primary criteria. As one Chattanooga student shared, “Most importantly, it’s the stuff that fits within your major.” Major requirements were top of mind for students. Some students even described fulfilling major requirements as good stewardship of their scholarship dollars and a reliable pathway to on-time graduation.

After course requirements, students typically described choosing courses based on scheduling needs. A student from Dyersburg noted, “I tried to make it to where [my schedule] was all Tuesday/Thursday classes because I live about 30 minutes away from the college and I just didn’t want to waste gas.” These types of personal constraints mattered significantly for students, whether it was saving gas, fitting courses within one’s work schedule, or accommodating caretaking responsibilities. Students drew on similar rationales when selecting courses based on modality (online, in-person, or hybrid): A nursing major told us, “The fact that [my classes] were online was crucial to me, ‘cause of my work schedule. It really didn’t matter if they were the [condensed] or the full semester courses ‘cause I’ve taken a mixture of both by going to nursing school.” For this student, modality was what mattered most, regardless of whether the course was offered in a condensed or semester-length format. Broadly, students focused on the features of courses that would best fit into their lives outside of school. Course requirements, the time at which a course was offered, and modality mattered for students, but course length was rarely a factor.

For estimating the effects of condensed courses at the enrollment level, our identifying variation is the comparison between sections of the same course that are taught in different formats—either in a full semester (14 to 16 weeks) or in a condensed format (6 to 8 weeks). One could argue this identification strategy is susceptible to selection effects such that savvy students might strategically choose an optimal course length, biasing our estimates. However, our

qualitative analysis suggests this identification strategy might reveal largely unbiased treatment effects. In fact, for students to even consider course length in their decision-making process, students must know whether a course is offered in a condensed format. Evidence from our interviews suggests that for many students, this was not the case. The first time they enrolled in a condensed course, some students did not realize it until after the course had begun. This was the case for one Nashville student who felt especially overwhelmed in her first semester:

> "I wasn't [aware that I had signed up for a condensed course] to be honest with you. I was unaware until the second week I was in class and realized that's why everything felt rushed and overwhelmed is because they kind of crammed it."

In this case, the student chose her courses using the same schema that other students shared: She wanted to "focus on getting those credits out of the way that are required," and she needed to select courses that made sense for her status as a single mom working a full-time job. However, she quickly realized she had signed up for a condensed course, which came with a faster pace than she had anticipated.

This Nashville student was not alone; students across all three campuses reported similar experiences of only learning they were in a condensed course after attending the first class, and staff interviews corroborated this finding. How could enrolling in a condensed course escape a student's notice? Students mentioned that course length was not an obvious feature in the course registration system. One student, an aspiring social worker, described this in detail:

> "You really have to pay attention [when registering for courses] because it really don't *[sic]* jump out at you…If you're not really paying attention, you will miss it because there's no really special, you know, designation or asterisk or anything like that to let you know that this is going to be [a condensed course]."

As this student describes, there is no special label to indicate a course is condensed. The registration system does include the dates for the first and last week of class, but from this, a student must infer the course length. Further, if a student is not aware that condensed courses are

even an option, then they have no reason to incorporate course dates into their selection criteria. This is especially true for students enrolling in their very first semester, since many such students were not yet aware of the existence of condensed courses.

Overall, student interviews suggest students were not strategically opting into condensed courses. From a policy implementation perspective, colleges might consider a special designation for condensed courses in the registration system so students have more information to guide course selection. Further, this finding supports our identification strategy because it suggests that the effects we estimate may not be due to selection into (or out of) condensed courses. In our student-level models, we use a variable indicating the number of condensed courses taken in a student's first semester as our primary independent variable. The evidence that many students were not aware of the distinction between condensed and semester-length courses (especially when they first enrolled), combined with the evidence that students selected courses mainly on factors besides length, provides support for our modeling approaches.

Do Condensed Course Formats Improve Course Outcomes?

Fixed Effects Models

Table 3 presents estimates of the impact of the condensed format on course pass rates, failure rates, and withdrawal rates, as well as students' GPAs. Columns 1 through 6 progressively add in student covariates and fixed effects for college, term, subject, modality, and course. Columns 7 through 10 include student fixed effects. Each row shows the dependent variable in each iteration of our model.

Table 3: Fixed Effects Models Estimating the Impact of Condensed Courses on Outcomes at the Enrollment Level

Outcome	Control Mean	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Course Pass	0.771	0.026***	0.033***	0.046***	0.034***	0.040***	0.038***	0.062***	0.067***	0.066***	0.049***
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Course Failure	0.159	0.006***	0.001	-0.011***	-0.003***	-0.008***	-0.006***	-0.027***	-0.031***	-0.030***	-0.017***
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Course Withdrawal	0.065	-0.033***	-0.035***	-0.035***	-0.031***	-0.032***	-0.033***	-0.034***	-0.036***	-0.037***	-0.032***
		(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Grade Points	2.394	0.205***	0.228***	0.237***	0.167***	0.190***	0.175***	0.322***	0.332***	0.328***	0.237***
	(1.547)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Grade Points (Exc. Pass/ Fail)	2.394	0.207***	0.234***	0.234***	0.175***	0.198***	0.175***	0.328***	0.339***	0.334***	0.242***
	(1.549)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Covariates?			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
College FE				Yes	Yes	Yes	Yes			Yes	Yes
Term FE				Yes	Yes	Yes	Yes			Yes	Yes
Modality FE						Yes	Yes		Yes	Yes	Yes
Subject FE					Yes	Yes					Yes
Course FE							Yes				
Student FE								Yes	Yes	Yes	Yes

Notes: Each cell represents a separate regression where the outcome (reported in the leftmost column) is the dependent variable, and the independent variable is a condensed course indicator. Column 1 is a naïve model, column 2 is a naïve model with student-level covariates, and the fixed effects applied in columns 3 through 10 are specified in the bottom six rows. Observation count is 3,069,639 in each model except for models that exclude pass/fail grades (the last row), for which the observation count is 3,060,719. Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05

Across almost all models, and consistently in all models that include student fixed effects, we find positive effects on course pass rates and grade points and negative effects on course failure and course withdrawal rates. In our preferred model, Column 10, we estimate a 4.9 percentage point increase in course pass rates, a 1.7 percentage point reduction in course failure, and a 3.2 percentage point reduction in course withdrawal. The positive effect on course pass rates appears to be driven by a reduction in both course withdrawals and course failures. Regarding grades, taking condensed courses increases students' GPAs by 0.237 grade points; this estimate changes only modestly, to 0.242 grade points, when excluding imputed grades for pass/fail courses.

The estimated effects on course withdrawal rates are especially noteworthy. Course withdrawal rates in condensed courses are 49% lower than course withdrawal rates in semester-length courses (-3.2 percentage points in Column 10 relative to the control mean of 6.5%). The magnitude of this point estimate is stable across specifications.

For pass rates and GPA, the magnitudes of the point estimates are much larger after adding student fixed effects. The coefficient for course pass increases from 3.8 percentage (Column 6) points to 4.9 percentage points (Column 10), while the coefficient for grade points increases from 0.175 grade points (Column 6) to 0.237 grade points (Column 10).

The only outcome that changes direction as we add fixed effects is course failures. The naïve estimate in column 1 suggests that the failure rate is slightly higher in condensed courses (0.6 percentage points), but all the estimates in columns 3 through 10 are negative. Like pass rates and grade points, the magnitude of the coefficients for course failures is larger when we include student fixed effects.

Instrumental Variables Models

Results remain largely similar when we employ our instrumental variables approach (Table 4) in which we leverage plausibly exogenous variation in the share of sections of each course that were offered in the condensed format in the prior year. We report the Anderson-Rubin Wald F statistic in brackets for each model in Table 4. All F statistics have a p-value < 0.001, suggesting our instruments are sufficiently strong. We focus our description of the results from Model 6, which uses the share of course enrollments (measured in thousands of students) in the previous year, though the results are quite similar across all model specifications.

Table 4: Instrumental Variable Models Estimating the Impact of Condensed Courses on Course Outcomes

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
Course Pass	0.061***	0.065***	0.064***	0.053***	0.056***	0.056***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
	[5248.90]	[5513.47]	[4442.31]	[3006.15]	[3266.60]	[1201.46]
Course Failure	-0.022***	-0.025***	-0.024***	-0.015***	-0.018***	-0.017***
	(0.002)	(0.002)	(0.002)	(0.002)	-0.002	(0.002)
	[5232.68]	[5437.13]	[4910.13]	[3263.82]	[3520.28]	[1650.61]
Course Withdrawal	-0.036***	-0.037***	-0.038***	-0.035***	-0.036***	-0.037***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
	[531.43]	[599.76]	[425.11]	[351.08]	[396.79]	[419.85]
Grade Points	0.256***	0.269***	0.268***	0.234***	0.247***	0.248***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
	[6310.19]	[7213.92]	[4409.36]	[4080.25]	[4761.52]	[1405.78]
Observations	2,741,793	2,741,793	2,741,793	2,511,243	2,511,243	2,511,243
IV is Share of...	Course Sections	Course Enrollments	Course Enrollments	Course Sections	Course Enrollments	Course Enrollments
IV is Last...	Term	Term	Term	Year	Year	Year
Total Students...	ln	ln	in 1000s	ln	ln	in 1000s

Notes: Each cell in columns 1 through 6 represents the results from the second stage of an instrumental variables model (i.e., two-stage least squares or 2SLS model) in which the dependent variable is the outcome listed in the leftmost column, the endogenous regressor is the binary indicator equal to 1 if the course was taught in a condensed format, and the instrument is the share of course enrollments/sections taught in a condensed format in the previous term/year. We include fixed effects for college, term and year, instructional method, and course subject plus a full set of covariates in all models. Standard errors in parentheses. First-stage Anderson-Rubin Wald test (F statistic) reported in brackets. *** p<0.001, ** p<0.01, * p<0.05

The results largely align with our findings from the fixed effects models. We find that students are more likely to pass a class offered in the condensed format (5.6 percentage points) and are and less likely to fail (1.7 percentage points) or withdraw (3.7 percentage points). Students also receive grades that are 0.248 grade points higher in condensed courses as compared to semester-length courses. Each of these estimates is quite close to the estimates from the fixed effects models, illustrating the consistency of our results.

How Do Condensed Formats Improve Course Outcomes? Evidence from Interviews

Evidence from interviews with students, faculty, and staff explains and complicates the improved outcomes students experience from enrolling in condensed courses. Broadly, both students and faculty report higher student motivation in condensed courses, and faculty describe adapting grading practices in condensed courses. At the same time, students also report challenges with enrolling in such fast-paced courses, such as increased stress and decreased flexibility to accommodate issues that arise.

Faculty consistently shared that students in their condensed courses seemed more engaged and motivated than students in their semester-length courses. One faculty member teaching a popular entry-level course told us, “I'm getting, you know, greater than 90% of [students in my condensed section] completing all the material on time, doing pretty well on it, versus my 15-week sections where I would be probably closer to like 70 to 80%.” Condensed courses are designed to cover a semester’s worth of content in half the time, so most of these courses include twice as much class time and twice as many assignments in each week. Milestone assignments such as exams and projects occur in rapid succession. As a student studying education put it, “I think I personally have learned more just because I would have lost interest and probably given up if it was longer…I had something to do all the time. I thought it was fun.” This was a common theme

across interviews, with students often reporting higher levels of engagement throughout a condensed course.

One reason students may find it easier to stay engaged is that students often take fewer classes concurrently when they are taking a condensed course. An English instructor explained that students "have mainly two or three classes that they're taking, so they are able to give more energy per class…my Comp 1 [English Composition 1] essay…it's not competing with the A&P [Anatomy & Physiology] exam, the statistics homework, whatever is going on in sociology." Instead of a typical four- or five-course load for a full-time student, students can take fewer courses with greater focus. Still, if students are taking both condensed and semester-length courses concurrently, time constraints may cause students to prioritize their condensed courses. For example, the education major quoted previously shared that her condensed course "was [her] priority," whereas she put key assignments for her two 15-week classes on "the back burner."

In addition to greater student engagement and focus, faculty reported adapting their grading practices in condensed courses. One faculty member with more than a decade of teaching experience told us, "The [grading] standards dramatically change…your B paper becomes your A paper, or the D paper becomes your C paper…so when in doubt, faculty are just giving an A." In part, this is because the volume of assignments not only affects how much work students must do, but also how much work faculty must grade. This was a common theme across faculty interviews, with significant variation in the strategies faculty employed to manage the workload. Some faculty described defaulting to pass/fail grades on specific assignments, "spot checking" for specific content, offering opportunities to earn extra credit, and developing a bank of common feedback. In other cases, faculty might simply grade more leniently. One instructor who incorporates a lot of writing into their courses shared the following:

> "Grading is less rigorous. One, because we're having to resort to things like rubrics instead of like that extended in-line feedback. I think that would be part of it. But I also think that our faculty, the majority of us, are interested in student success, and that's why we're here. So we know that our students aren't learning as much, but we also have a heart. And so, to grade students on with the same rigor that you would grade them on a 15-week scale seems, uh, ethically questionable when they've had less time to learn and master the skills…we're not teaching the skills in the same way or at the same length, so you just can't expect them to perform at the same level. So it doesn't seem ethically sound to grade them with the same rigor when we know they're not getting the same education."

As this faculty member notes, there are key trade-offs to condensed courses. While both course lengths ostensibly expose students to the same content over the same number of hours in class, students have nearly two months longer to master the content and skills in semester-length courses. Mastery was a concern across both student and faculty interviews, with students often describing easier courses as more amenable to the condensed format. This pattern crossed disciplinary boundaries: Students who self-identified as having strong reading and writing skills reported that English classes would be suitable for the condensed format, while students who described themselves as good at math reported that math classes would be suitable for the condensed format.

Students' greater focus and faculty's differential grading practices help explain greater student success in condensed courses compared to semester-length courses. However, additional findings complicate the broad success narrative and offer insights to improve students' experiences in condensed courses even further. Along with greater focus, students in condensed courses described feeling higher levels of stress, more pressure related to time constraints, and less ability to prepare for their condensed courses. The fast pace of condensed courses can make it more difficult to catch up after missing one session, as this music major describes:

> "I think a lot of the time it is easy to fall behind in seven-week classes, and it's really hard to make up for that time. You know, when you get sick in the semester, you miss one day, that's really, really important in a seven-week class… there's also time to make it up in a 14-week class. It's like with a seven-week class, we missed that. We're moving on."

This student's description reflects a common theme across student and faculty interviews: In condensed courses, it is easier to get behind on assignments, and there is less time for students to catch up. Further, the challenges that faculty face in managing the workload in condensed courses means that faculty may not have the bandwidth to identify and scaffold learning opportunities for struggling students. Thus, colleges implementing condensed courses might not only consider how to adapt course curricula to a condensed format but also how to adapt student supports to make success rates even greater in condensed courses.

Do Condensed Courses Improve Longer-Term Student Outcomes?

Fixed Effects Models

We next present findings on the impact of condensed courses on student-level outcomes, including term and cumulative GPA, percent of credit hours earned, persistence, and graduation (see Table 5). The difference in Model A (Column 1) and Model B (Columns 2 and 3) is how the main independent variable is specified. In Model A, the independent variable is binary and equal to 1 if the student took at least one condensed course in their first semester enrolled. In Model B, the independent variable is discrete and takes three values: 0 if the student took no condensed courses in their first semester, 1 if the student took one condensed course in their first semester, and 2 if the student took two or more condensed courses in their first semester. All models include cohort × college fixed effects.

Table 5: Effect of Taking Any Condensed Courses on Outcomes at the Student Level

Model →		Model A	Model B	
Column →		(1)	(2)	(3)
Outcome	Control Mean	Predictor: Took Any Condensed Course(s) in First Semester	Predictor: Took 1 Condensed Course in First Semester	Predictor: Took 2+ Condensed Courses in First Semester
Term GPA (1st Fall)	2.137	0.045***	0.017	0.181***
	(1.411)	(0.012)	(0.013)	(0.025)
Pct Hours Earned (1st Fall)	0.686	-0.002	-0.010**	0.035***
		(0.003)	(0.004)	(0.007)
Persist (1st Spring) or Graduated	0.740	-0.018***	-0.023***	0.004
		(0.004)	(0.004)	(0.009)
Cumulative GPA (1st Year)	1.976	0.079***	0.068***	0.131***
	(1.366)	(0.011)	(0.012)	(0.024)
Pct Hours Earned (1st Year)	0.637	-0.003	-0.010**	0.032***
		(0.003)	(0.004)	(0.007)
Persist (2nd Fall) or Graduated	0.527	-0.019***	-0.030***	0.033***
		(0.005)	(0.005)	(0.010)
Graduate (2 Years)	0.145	-0.003	-0.010**	0.032***
		(0.003)	(0.003)	(0.008)

Notes: All columns in this table use student-level data and include cohort × college fixed effects. All models include 141,369 observations from the seven fall-entering cohorts from 2015 through 2021. In Column 1 (Model A), each cell represents a separate regression where the outcome is the dependent variable and the independent variable is a binary indicator equal to 1 if the student took one or more condensed courses in their first semester. In Columns 2 & 3 (Model B), the coefficients on each row are from the same regression where the independent variable's values are assigned as follows: 0=the student took no condensed courses in their first semester; 1=the student took 1 condensed course in their first semester; and 2=the student took 2 or more condensed courses in their first semester. The independent variable is run as a factor variable in Model B, creating dummies for the group of students who took 1 condensed course in their first semester and 2 or more condensed courses in their first semester. Definitions for each outcome are included in Appendix Table 3. Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05

In Model A, we find a positive effect of taking at least one condensed course on term GPA in the student's first fall semester, no impact on the percentage of attempted hours earned in the first fall, and a negative effect of condensed courses on persistence to the first spring. We find similar effects for outcomes measured after the first year: a positive effect on cumulative GPA, no

effect on percent of attempted hours earned, and a negative effect on persistence to the second year.

These inferences change somewhat in Model B. Here, the positive effect on term GPA in the first fall seems to be driven by students who took two or more condensed courses. The negative effect on persistence in Model A seems to be driven by students who took only one condensed course in the first semester. For nearly every longer-term outcome, we see positive effects for taking two or more condensed courses in the first semester and negative effects for taking only one condensed course in the first semester. The exception is cumulative GPA at the end of the first year, for which there is a positive effect for both predictors—though the effect is nearly twice as large for students taking two or more condensed courses in their first semester.

One might think that the differences in estimates between Model A and Model B may be attributable to the fact that many students who took only one condensed course in their first semester did so for their "First Year Experience" (FYE) course (e.g., a first-year seminar or introduction to college course). These students are primarily first-time freshmen who have recently graduated from high school. The differences in the estimates may be evidence of heterogeneous effects for different types of students or courses, or non-linear effects of taking a greater number of condensed courses. We test this directly, reporting results in Appendix Table 4. Results indicate that while students who take FYE as their only condensed course fare better than students who take a non-FYE course as their only condensed course in their first fall, effects remain significantly better for students who take two or more condensed courses. For example, students' first fall semester, students earned .009 (n.s.) more credit hours when their only condensed course was FYE; 0.19 *fewer* ($p<.001$) credit hours when their only condensed course was something else; and .036 *more* ($p<.001$) credit hours when they took two or more condensed courses.

How Do Condensed Formats Matter for Longer-Term Outcomes? Evidence from Interviews

While students earn higher GPAs after taking condensed courses, the evidence for persistence is mixed. Students and faculty report higher engagement and focus in condensed courses, but they also note challenges that could hamper long-term knowledge retention and key social connections. Students pursuing the medical field, for example, have many years of education ahead of them, as this science professor notes:

> "I still remain concerned about retention after the class is over, like how successful are they going to be…in nursing school or in medical school or whatever program they're going on to is my main concern. We have fifteen weeks. They have more time to study, more time to sit with it, more time to think with it."

For many students, community college is the first step in a pathway that leads to a bachelor's degree or graduate school. The courses they take in their first few years set the foundation for their long-term knowledge and skill-building. Both faculty and students expressed concerns about retention after taking condensed courses, which could explain why some students do not persist (e.g., they may not feel prepared for the next course in the sequence).

Connections to peers and instructors could also affect student retention. In interviews with students, we found heterogeneous evidence. Some students reported feeling more connected to peers and instructors. For example, a student completing their general education requirements shared, "All the [class] meetings, we put a lot more of ourselves into it because I feel when it's a 15-week, it takes even longer for everybody to kind of get used to each other. But for seven-week, everybody was like, they were trying to get the most out of that seven-week." This student was able to forge close connections with peers faster due to the condensed format, which helped them feel comfortable asking questions, participating in class, and working with their peers on assignments. At the same time, other students reported weaker connections with their instructors and peers due to the fast pace of condensed courses. An aspiring paralegal told us that in their

condensed course, “We didn’t really have much time to like, communicate or network or just vibe with students who are in the same course just because we had to cover the material so quickly.” Other students offered similar sentiments regarding relationships with both peers and faculty, with implications for student learning as well as for developing soft skills, building social capital, and soliciting letters of recommendation from faculty.

V. Robustness and Supplemental Analyses

We include two robustness checks to examine if our quantitative results are driven by certain courses or colleges. In Table 6, we present results from models in which we first limit our sample to only classes taught in both the semester-length and condensed formats at the same college, then restrict further to classes taught in both the semester-length and condensed formats at the same college and in the same modality. This allows us to examine if a subset of courses that are offered only in one format are driving the overall results. The results presented in Table 6 indicate that this is not the case. The enrollment-level results don’t change substantially from our original model (shown in Column 1 of Table 6) when we limit the analysis only to courses taught in both the condensed and semester-length formats.

Table 6. Subsample of Courses Offered in Both Semester-Length and Condensed Formats

	All Courses		Courses Offered in a Semester-Length and Condensed Format at the Same College		Courses Offered in a Semester-Length and Condensed Format at the Same College and in the Same Modality	
Outcome	Control Mean	(1)	Control Mean	(2)	Control Mean	(3)
Course Pass	0.771	0.049***	0.731	0.043***	0.721	0.039***
		(0.001)		(0.001)		(0.002)
Course Failure	0.159	-0.017***	0.197	-0.013***	0.206	-0.009***
		(0.001)		(0.001)		(0.001)
Course Withdrawal	0.065	-0.032***	0.068	-0.030***	0.069	-0.030***
		(0.001)		(0.001)		(0.001)
Grade Points	2.394	0.237***	2.24	0.192***	2.21	0.168***
		(0.004)		(0.005)		(0.005)
Observations		3,069,639		1,645,013		1,239,007

Notes: Each cell represents a separate regression where the outcome is the dependent variable shown in the leftmost column and the independent variable is a condensed course indicator. All models include college, term by year, modality, student, and subject area fixed effects plus a full set of covariates (aligned with column 10 in Table 3). Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05

The effects from Column 1 are somewhat attenuated in Column 3, which examines only courses offered in both condensed and semester-length formats at the same college and in the same modality. In particular, the effect on course failure is reduced by half. However, the effects of course withdrawal are consistent across models, and there are only small reductions in course pass rates and grade points. This suggests that the bulk of the effects we estimate are due to the condensed format.

In Table 7, we also re-estimate our enrollment-level results excluding course enrollments at Chattanooga State Community College from our sample (Column 2). In our analysis window, Chattanooga offered more condensed courses than any other college: 19% of Chattanooga's

enrollments were in condensed courses, relative to a range of 0.6% to 7.3% at other colleges in our sample. Indeed, 34% of the condensed course enrollments in our sample are at Chattanooga relative to less than 9% of the semester-length enrollments. The results excluding Chattanooga (Column 2) are smaller in magnitude than the main results (Column 1), suggesting that the overall estimates are, in part, driven by Chattanooga.

Table 7: Subsamples Without Chattanooga and with Only Chattanooga

	(1)	(2)	(3)
Outcome	Full Sample	Without Chattanooga	Chattanooga Only
Course Pass	0.049***	0.032***	0.084***
	(0.001)	(0.001)	(0.003)
Course Failure	-0.017***	-0.004***	-0.043***
	(0.001)	(0.001)	(0.002)
Course Withdrawal	-0.032***	-0.028***	-0.041***
	(0.001)	(0.001)	(0.002)
Grade Points	0.237***	0.162***	0.384***
	(0.004)	(0.004)	(0.009)
Observations	3,069,639	2,765,338	304,301

Note: Each cell represents a separate regression where the outcome is the dependent variable listed in the leftmost column, and the independent variable is a condensed course indicator. All models include college, term by year, modality, student, and subject fixed effects plus a full set of covariates (aligned with column 10 in Table 3). Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05

In addition to the generic concern that our results could be driven by one school that contributes an outsized proportion of observations to our treatment group, the scale of adoption at Chattanooga makes it interesting to examine on its own. Condensed course enrollments made up 70% of Chattanooga's total course enrollments in Spring 2023, compared to 1 to 17% at Tennessee's other 12 community colleges. The results are substantially larger in magnitude when we estimate on a sample that includes only Chattanooga (Column 3 in Table 7) compared to our

main results (Column 1), again suggesting that our overall estimates are driven partly by large effects observed at Chattanooga.

It is nearly impossible for students at Chattanooga to avoid condensed courses, so Chattanooga's estimates might provide a good indication of what to expect at scale. Chattanooga has also included condensed courses as part of their offerings for longer than other colleges in the system. This comes with significant benefits. For example, faculty members across colleges described some initial hesitation about condensed courses, but the onboarding processes that colleges implemented helped ease the transition. Chattanooga's faculty have had longer to familiarize themselves with the format, adapt their courses, and address issues. A Chattanooga faculty member said it this way:

> "You know, with anything, there's going to be initial resistance…Well then, seven weeks isn't going anywhere, and we know that. So that's just wasted time and energy. The, the question is how, how do we do it then?... How do we reverse engineer a 15-week course into a seven-week course? So I mean, it was exciting. I thought it was exciting and fun, and it still is fun. I mean, of course it's challenging. But I think, you know, that was I think the initial resistance."

This instructor describes initial resistance to the adoption of condensed courses, but they also describe the transition as "exciting and fun." Faculty at all three colleges with which we conducted interviews described similar mindsets, but those at Chattanooga are the furthest along in transitioning their courses. These narratives may offer a glimpse into what other institutions can expect in later stages of implementation.

VI. Discussion and Conclusion

Our findings provide a rich understanding of both selection into condensed courses and differences in student outcomes associated with condensed course formats. While non-traditional and Black students are overrepresented among condensed courses enrollments, our qualitative evidence suggests that students are not necessarily strategically selecting into condensed formats

in a way that would bias outcome estimates. Instead, course selection was primarily driven by program requirements and personal constraints, such as scheduling preferences and modality. This underscores the value of considering broader factors beyond course length in designing course offerings.

The positive effects of condensed courses on academic performance—especially in terms of pass rates, grade points earned, and withdrawal rates—are consistent across all models, including those with various fixed effects and instrumental variables. These course outcome improvements may be attributable to increased engagement and reduced course load, as highlighted by qualitative interviews. However, the observed reduction in persistence to subsequent semesters—especially for students taking only one condensed course—points to potential risks associated with the fast-paced nature of condensed courses. From a survey we administered to students at the three colleges in our qualitative sample, we learned that students who took condensed courses felt they had little time to prepare for class, had little time to complete required assignments, and felt rushed when completing their coursework. Among surveys with students who had taken both condensed and semester-length courses, students felt their condensed courses were more stressful. Further, even though students who took a condensed course reported feeling just as connected to their instructor as in a semester-length course, they felt less connected to their peers. These findings warrant additional attention to the impacts of increased stress and limited opportunities to connect with instructors and peers in condensed courses.

This study draws on mixed methods, multiple causal inference techniques, statewide administrative data, and interviews with students, faculty, and staff to estimate and contextualize the effects of condensed courses. However, this study still has limitations. Findings from the Tennessee context may not be generalizable to other states. Further, we specifically limit our

definition of condensed courses to those spanning six, seven, and eight weeks and our definition of semester-length to those spanning 14, 15, and 16 weeks. These criteria only exclude up to 3% of course enrollments from the sample (see Appendix Table 2), but our results can only be interpreted for courses of the specified lengths.

Lastly, our results highlight the importance of offering adequate support to students, particularly those who may not be fully aware of the demands of condensed courses. Researchers might also examine the effects of condensed courses on summative assessments and post-requisite course performance. Future research should continue to explore the long-term impact of condensed courses on student persistence, particularly among different student subgroups, and consider the potential challenges related to workload and stress for students, faculty, and staff. Institutions should be thoughtful about these complex dynamics when implementing or expanding condensed course offerings to ensure the benefits of condensed courses are fully realized and sustained over time.

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Appendix Tables

Appendix Table 1: Characteristics of Tennessee Higher Education System, Fall 2023

	TBR Community Colleges (2-year Colleges)	University of Tennessee System (4-year Colleges)	Other (Non-UT) Public Universities (4-year Colleges)
Total Undergraduate Enrollment	74,400	46,327	69,673
Female	61.2%	56.7%	56.9%
White	65.2%	76.9%	54.5%
Black	16.1%	6.4%	25.0%
Hispanic	9.0%	5.6%	8.0%
Other Race/Ethnicity	6.0%	7.6%	7.7%
Unknown Race/Ethnicity	3.7%	3.5%	4.8%
Age 25 or Over	24.0%	6.5%	15.0%
Pell Eligible	65.1%	39.5%	57.6%

Notes: "Other Race/Ethnicity" includes American Indian, Native Alaskan, Asian and Pacific Islander, and Multiracial students.
Source: Tennessee Higher Education Commission. (2024). *Tennessee Higher Education Fact Book.* https://www.tn.gov/thec/data-research-reports/reports-studies-pub/fact-book.html, Tables 1.7, 1.8, and 1.9

Appendix Table 2: Impact of Exclusions on Sample

Sample Restriction	Course Sections	Students	Course Enrollments
Panel A. Enrollment-Level Data			
Full sample, Fall 2015-Spring 2023	272,376	459,745	4,207,550
Exclude summer, winter, and special terms[1]	245,872	436,718	3,894,657
Exclude special course types[2]	238,734	436,616	3,839,791
Exclude eCampus courses	218,408	430,864	3,739,598
Exclude dual enrollment students and terms	204,036	341,439	3,380,235
Exclude courses < 6 weeks and > 16 weeks long[3]	202,039	340,379	3,357,356
Exclude courses between 9 and 13 weeks in length	197,713	338,201	3,287,990
Exclude learning support courses[4]	182,851	337,982	3,071,363
Exclude courses with invalid final grades[5]	182,793	337,877	3,069,639
Final Analytic Sample	**182,793**	**337,877**	**3,069,639**
Panel B. Student-Level Data			
Enrollment-level analytic sample, Fall 2015-Spring 2023		337,877	
Exclude students who are non-first-time freshmen and/or begin in a spring cohort		158,088	
Exclude students who begin in a fall cohort after Fall 2021		142,058	
Exclude students with no first-semester outcomes		141,369	
Final Analytic Sample		**141,369**	

Notes: [1]Special terms include continuing education terms and bootcamp terms. [2]Special course types include study abroad (TNCIS) and courses with instructional method descriptions of clinicals, independent study, practicum, and student teaching/field supervision/co-op. [3]Course length is rounded to the nearest integer, so (for example) excluding courses < 6 weeks includes courses 5.5 weeks and greater in length and excluding courses > 16 weeks includes courses less than 16.5 weeks in length. [4]Learning support courses include math (MATH), reading (READ), and writing (ENGL) courses with a course number < 1000. [5]Valid course grades include A, B, C, D, F, FA (failure for non-attendance), I (incomplete), N (no credit), P (pass), S (satisfactory), U (unsatisfactory), and W (withdrawal).

Appendix Table 3: Definitions for Outcomes at the Student Level

Dependent Variable	**Definition/Notes**
Term GPA (1st Fall)	On a 4-point scale
Pct Hours Earned (1st Fall)	0-1 proportion; earned hours divided by attempted hours
Persist (1st Spring)	Equal to 1 if the student enrolled in the spring immediately following their initial fall enrollment (or completed a credential in a prior semester)
Cumulative GPA (1st Year)	On a 4-point scale; includes hours earned at the home institution and transfer hours; last reported cumulative GPA carried forward in terms that a student was not enrolled
Pct Hours Earned (1st Year)	0-1 proportion; earned hours divided by attempted hours; sum of hours earned in first year divided by sum of hours attempted in first year
Persist (2nd Fall)	Equal to 1 if the student enrolled in the fall immediately following their initial fall enrollment (or completed a credential in a prior semester); missing for cohorts for which we don't yet have year 2 data (Fall 2022 cohort)
Graduate (2 Years)	Equal to 1 if the student completed a degree or certificate within 2 years of initial enrollment; missing for cohorts for which we don't yet have year 2 data (Fall 2022 cohort)

Appendix Table 4: Student-Level Effects of Condensed Courses, Disaggregated by FYE

Column →		(1)	(2)	(3)
Outcome		Predictor: Only Condensed Course in First Semester **Was FYE**	Predictor: Only Condensed Course in First Semester **Was Not FYE**	Predictor: Took 2+ Condensed Courses in First Semester
Term GPA (1st Fall)	2.137	0.091***	-0.021	0.184***
	(1.411)	(0.022)	(0.015)	(0.025)
Pct Hours Earned (1st Fall)	0.686	0.009	-0.019***	0.036***
		(0.006)	(0.004)	(0.007)
Persist (1st Spring) or Graduated	0.740	0.005	-0.038***	0.006
		(0.007)	(0.005)	(0.009)
Cumulative GPA (1st Year)	1.976	0.188***	0.005	0.135***
	(1.366)	(0.020)	(0.014)	(0.024)
Pct Hours Earned (1st Year)	0.637	0.002	-0.016***	0.032***
		(0.006)	(0.004)	(0.007)
Persist (2nd Fall) or Graduated	0.527	-0.005	-0.043***	0.034***
		(0.008)	(0.006)	(0.010)
Graduate (2 Years)	0.145	0.010	-0.021***	0.032***
		(0.005)	(0.004)	(0.008)

Notes: All columns in this table use student-level data, include student-level covariates (e.g., race; adult learner) , and include cohort × college fixed effects. All models use 141,369 observations from the seven fall-entering cohorts from 2015 through 2021. Each row represents a separate regression where the outcome is the dependent variable and the independent variable is discrete such that it is equal to 0 if the student took no condensed courses in his first semester enrolled, 1 if the student took the First-Year Experience (FYE) course as his only condensed course, 2 if the student took any other course as his only condensed course, and 3 if the student took two or more condensed courses in his first semester. Definitions for each outcome are included in Appendix Table 3. Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05