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Efficiency or Burnout? The Effects of Condensed Course Formats on Student Achievement in Community Colleges

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EFFICIENCY OR BURNOUT?: THE EFFECTS OF CONDENSED COURSE FORMATS ON STUDENT ACHIEVEMENT IN COMMUNITY COLLEGES

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Abstract

Condensed courses—those that compress instructional content into a shorter time frame—are increasingly popular in higher education. While they offer greater flexibility, concerns remain that the accelerated pace may compromise learning. Using administrative data from a state community college system, we provide the first large-scale evidence of their effects on students' immediate and downstream outcomes. Leveraging a two-way fixed effects model, we find that condensed courses increase pass rates and improve both enrollment and performance in subsequent courses. The positive impacts on downstream outcomes are particularly pronounced among adults and underrepresented minority students, who are also disproportionately enrolled in condensed formats.

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INTRODUCTION

Over the past half-century, the profile of U.S. college students has changed considerably, where a growing share is combining their studies with substantial work and family responsibilities. Earlier research already documents a steady rise in labor force participation among college students through the late 20th century (Scott-Clayton, 2012). Recent national data indicate that over 40 percent of full-time undergraduates are employed during the academic year, with 27 percent working more than 20 hours per week (NCES, 2021). The proportion of non-traditional students is particularly high at open-access institutions such as community colleges, where the average age is 27, with roughly half of the population over age 22 and 80 percent working while enrolled (AACC, 2025). The demands of balancing work, family, and academic commitments present unique scheduling challenges for these students (Bahr et al., 2020).

In response to these evolving demands, many colleges have adopted condensed course formats, which commonly compress courses into 7 or 8 weeks while maintaining the same credit hours and content (Daniel, 2000; Walsh et al., 2019). These formats have been increasingly integrated into academic calendars at a growing number of institutions, often as part of efforts to improve flexibility, retention, and credit accumulation (Krug et al., 2016; Miller & Bliss, 2023). For instance, one recent analysis of 15 community colleges found that about one third of students took at least one 8-week course in a single academic year, though full replacement of traditional terms remained rare. In California, there is an ongoing initiative that fosters a collaboration involving 20 colleges to implement condensed course formats across full programs (Mowreader, 2024, 2025).

Advocates of condensed course formats argue that they offer greater flexibility by providing multiple entry points within a traditional semester, allowing students to fit course schedules around their existing commitments. Additionally, by completing courses in a shorter time, students may have the option to take more courses within a single semester, potentially accelerating their progress toward a degree if they can manage the increased workload (e.g., Carman & Bartsch, 2017; Miller & Bliss, 2023; Talley, 2024). This flexibility is particularly

appealing to students with significant work and family responsibilities, as it enables them to adapt course schedules to meet both academic and personal needs (Austin & Gustafson, 2006; Brenner, 2024; Daniel, 2000).

However, despite the potential benefits of condensed course formats, researchers and educators have also raised concerns about the intensified nature of this format. Critics argue that the tight schedule may hinder comprehension and reflection and increase the risk of burnout, diminishing students' overall learning experience (Anastasi, 2007; Holzweiss et al., 2019; Lutes & Davies, 2018). These concerns, along with the growing policy focus on condensed courses as a potential solution to enrollment declines post-pandemic (e.g., Mowreader, 2025; Tamburin, 2021), underscore the need for rigorous evaluation of their impacts on student outcomes.

A small but growing literature has examined the effects of condensed courses (e.g., Austin & Gustafson, 2006; Harlow et al., 2015; Miller & Bliss, 2023; Walsh et al., 2019). However, much of the existing research remains descriptive in nature and limited to individual institutions. Furthermore, prior studies almost exclusively focus on current course performance without considering students' downstream outcomes, such as enrollment patterns and performance in subsequent courses. Yet, current course performance alone may not fully capture the impact of condensed course formats on student learning, especially considering that current grades may be affected by other factors such as instructor grading leniency (Ran & Xu, 2019). The lack of comprehensive evidence leaves critical questions unanswered about the broader implications of condensed courses for student success.

Our study addresses these gaps by leveraging administrative data from the Virginia Community College System (VCCS) consisting of 23 institutions. Using data on almost 180,000 students enrolled between 2010-2011 and 2014-2015 academic years and tracked until Fall 2020, we examine the impact of taking a condensed course during students' initial exposure to a specific subject area on both their immediate and downstream outcomes. We begin by documenting enrollment patterns in condensed courses to better understand when and by whom these courses are taken. Descriptive results show that condensed courses appear to be more popular among adult learners and part-time enrollees, suggesting that the flexible structure of condensed courses may be particularly attractive to students managing competing demands. Additional analyses of students' enrollment patterns over time further indicate that students are significantly more likely to take a higher share of courses in condensed formats during terms

when they attempt a heavier course load. These patterns suggest that students might use condensed courses strategically—allocating them to periods of greater academic intensity. This type of over-time sorting raises important concerns for causal inference: observed differences in performance across course formats may reflect differences in students' underlying capacity or availability during the term, rather than effects of the instructional format itself.

To address students' over-time sorting into condensed courses, we limit our primary analyses to students' initial term in college, which allows for a more plausible comparison of student outcomes across course formats under more uniform conditions. To account for potential selection bias from student sorting into condensed courses within the same term, we employ a two-way fixed effects model that controls for both student fixed effects and college-by-course fixed effects, therefore addressing biases arising from unobserved student characteristics that remain constant within an individual, as well as variations across courses. For subsequent course performance, we further include next-class fixed effects into the model. This approach enables comparisons among students enrolled in the same next class section taught by the same instructor after their initial exposure to different course formats within a subject area.

Our results indicate that condensed course formats have significant positive impacts on students' current course outcomes, including course persistence, completion rates, and grades. These benefits also extend to downstream outcomes, where students are more likely to enroll in and pass subsequent courses within the same subject area. Moreover, additional heterogeneity analyses by student characteristics reveal that the benefits on downstream outcomes are particularly strong among adult learners and underrepresented minority students—populations that often face structural barriers to academic progress and degree attainment. The findings are robust to a range of alternative model specifications and sample restrictions. To our knowledge, this is the first large-scale study that provides causal evidence on the impact of condensed course formats across multiple institutions and subject areas. These results contribute to a growing literature on flexible instructional formats and offer valuable insights for improving academic progression among nontraditional student populations.

LITERATURE REVIEW

The prevalence and rationale for condensed courses

Condensed courses, which compress traditional course content into shorter time frames while maintaining the same credit value, have been offered by U.S. higher education institutions for several decades (Daniel, 2000; Mena-Guacas et al., 2023; Scott & Conrad, 1992). These courses offer flexibility to students managing multiple obligations, making them particularly valuable in the community college context, where a large proportion of students are non-traditional learners balancing work, family, and other responsibilities (Austin & Gustafson, 2006; Brenner, 2024; Daniel, 2000; Stith, 2023).

Historically, condensed courses have been primarily concentrated during summer sessions, allowing students to make progress toward their degrees outside of the regular academic calendar. More recently, in response to declining enrollment and the growing demand for flexible learning options, many institutions have expanded the use of condensed course formats during regular semesters (NSCRC, 2024; Tamburin, 2021). A common approach is dividing the traditional 16-week semester into two 8-week terms and enabling students to complete multiple courses sequentially within the same semester. This structure introduces more frequent entry points, making it easier for students balancing work or family obligations to begin or continue coursework. This format also allows students to take more courses within a semester if they can handle the course load, potentially accelerating their progress toward degree completion.

Policy interest in condensed courses has grown substantially, especially at community colleges where a large proportion of students have diverse responsibilities and face scheduling challenges (Mowreader, 2025). At the Virginia Community College System (VCCS), where this study is conducted, the state launched the *Accelerate Opportunity* Initiative in 2024, which aims to award 300,000 cumulative credentials by 2030 (VCCS, 2025). A central component of the plan is the expansion of shortened academic sessions, such as 8-week terms, to facilitate more flexible and accelerated completion pathways. Notably, the six-year strategic plan explicitly mandates that by 2030, "all colleges will offer shortened sessions for courses included in the Passport and Uniform Certificate of General Studies"—which represent the two statewide general education pathways widely used by students to pursue associate degrees or transfer to four-year institutions.

Condensed courses and student learning

Despite the fast growth of condensed course formats, the existing research on how this format might influence student learning outcomes relative to traditional semester-length format is fairly limited. Some researchers have documented the key features of these courses and noted that they often involve structural differences that could influence learning outcomes. For instance, some studies reported that condensed courses often include fewer assessments or assignments to accommodate the fast-paced schedules, which raises concerns about limiting the depth of student engagement with the learning materials (e.g., Lutes & Davies, 2018).

Qualitative studies have provided valuable insights into student perceptions of condensed courses' challenges and benefits. It is not surprising that students in general feel that condensed courses are fast-paced and require them to have stronger time-management skills, and the ability to meet tight deadlines (Paasch, 2020). On the other hand, students report that condensed courses also foster a sense of responsibility and accomplishment that enhances their learning experience (Walsh et al., 2019; White, 2023). These qualitative insights provide valuable information for understanding how students navigate and experience condensed courses, and underscore the need for relating the condensed format with concrete student academic outcome measures.

A handful of studies have used student transcript data to examine the impact of condensed course format on student outcomes, although much of the work is limited in scope by focusing on courses offered at a single institution, on a specific subject area, and during summer sessions (e.g., Austin & Gustafson, 2006; Brenner, 2024; Carman & Bartsch, 2017; Guillory, 2018; Miller & Bliss, 2023; Paasch, 2020; Walsh et al., 2019). Overall, these studies suggest that students in condensed courses generally perform as well as, if not better than, their peers in traditional-length courses (e.g., Austin & Gustafson, 2006; Miller & Bliss, 2023; Walsh et al., 2019). For example, Austin and Gustafson (2006) conducted one of the foundational studies, finding positive outcomes in grades and course completion for students enrolled in condensed courses at a public university. These findings were mirrored by Walsh et al. (2019), who reported that students in condensed courses frequently earned higher grades compared to their peers in traditional-length courses.

Unique contributions of the current study

Despite promising evidence on condensed courses, there are several limitations in the current literature that point to the need for more comprehensive and methodologically rigorous research. One major limitation is that much of the current research has been conducted within a single institution or is focused on a specific subject area, which limits the generalizability of the results. For example, studies like Austin and Gustafson (2006) and Guillory (2018) examine only a few courses or subject areas at one individual college. Since course offerings and instructional practices can vary widely across institutions and disciplines, these studies leave open questions about the generalizability of their results and their relevance to broader policy contexts.

Another key limitation is the over-reliance on research conducted during summer sessions. The majority of current studies (e.g., Anastasi, 2007; Austin & Gustafson, 2006; Walsh et al., 2019) focus on condensed courses offered during the summer sessions, which raises concerns about possible sample selection bias: Students who enroll in summer sessions often differ systematically from the general student population; they tend to be more motivated and have fewer competing obligations (Liu, 2016). The learning environment during summer also tends to differ; students generally take fewer courses (e.g., Walsh et al., 2019) and have time to concentrate more on their coursework. These contextual factors limit the ability to generalize findings to condensed courses offered during regular academic semesters when students face heavier course loads and more competing demands.

Moreover, existing studies often fail to fully control for students sorting into condensed course formats, which threatens the internal validity of the findings. Although some studies, such as Walsh et al. (2019) control for observable student characteristics (e.g., gender, prior GPA, citizenship), the results are still subject to unobserved factors that may influence both course selection and performance outcomes. For example, student characteristics such as motivation and employment status could confound student decision to enroll in condensed courses and their learning outcomes. Without research designs that fully address student sorting, it is difficult to determine whether the positive outcomes observed in condensed courses are due to the course structure itself or to pre-existing differences among students.

Lastly, most prior research focuses exclusively on immediate course outcomes without examining students' downstream academic outcomes such as enrollment and performance in subsequent courses. While current course outcomes are informative, they can be influenced by

other course-level factors, such as assessment design or grading policies, which may not necessarily represent skill mastery. In addition, the accelerated pace of condensed courses may encourage short-term strategic preparation aimed at succeeding on immediate assessments, rather than promoting durable learning (Holzweiss et al., 2019). As a result, students may earn high grades without retaining the knowledge necessary for success in more advanced coursework. Therefore, it is critical to look beyond immediate course performance and to understand downstream academic consequences—such as enrollment and performance in subsequent courses. This can help us to determine if enrollment in condensed coursework promotes sustained academic progress, which is particularly relevant in fields where cumulative learning and foundational knowledge are essential for student success in advanced courses.

In summary, while existing studies have provided valuable insights into the potential benefits of condensed courses, there remain substantial limitations that restrict the scope of these findings. Our study seeks to address these gaps by utilizing data from multiple cohorts of students across an entire state community college system. The data include students' full transcript records, which enables us to track both immediate course outcomes (e.g., grades and completion) and downstream outcomes (e.g., enrollment and performance in subsequent courses). To account for students' selection into condensed course formats, we implement a two-way fixed effects model that controls for both observed and unobserved student characteristics that are constant within individuals.

BACKGROUND AND DATA

Institutional context and data

Virginia Community College System (VCCS) includes 23 colleges of varying sizes, spread across rural and urban regions, and serves a diverse student population. Table 1 presents the institutional characteristics of VCCS and compares them with the characteristics of the national public two-year colleges based on data from the Integrated Postsecondary Education Data System (IPEDS) for Fall 2010. Compared to the national average, VCCS serves a larger share of Black students.

We use administrative data drawn from five cohorts of first-time-in-college students enrolled in VCCS, with initial enrollments spanning the academic years 2010-2011 to 2014-2015. The data track students through 2020 and thus enable us to observe student outcomes for

up to six years after their initial enrollment. The data include individual-level information, such as demographic characteristics (e.g., sex, race/ethnicity, age) and indicators for socioeconomic status (e.g., first-generation college student status, Pell Grant eligibility). Student transcript records on course enrollments and grades received are also available in the data, with several course-section-level attributes, such as class duration (traditional versus condensed formats), instructional modality (online versus face-to-face), as well as instructor characteristics, including their gender, race/ethnicity, and employment status (full-time versus part-time).

Condensed course offerings and enrollment at VCCS

VCCS operates on a semester-based academic calendar, where standard courses run for 16 weeks. However, colleges within the system also offer a substantial number of condensed courses, which are shorter in duration but equivalent in content and credit hours. These courses are offered both within and between semesters. For instance, within a given semester, many colleges offer a "First 8-Week Session" and a "Second 8-Week Session" alongside the standard "16-Week Session". Colleges have the autonomy over the design and scheduling of condensed courses, including the specific duration and scheduling within the semester. Instructors may also propose condensed course offerings, though this requires approval from department heads or deans. Information about the availability and duration of these courses is typically published on college websites.

Figure 1 shows the distribution of course durations (in weeks) for college-level, credit-bearing courses offered between the 2010-2011 and the 2014-2015 academic years. During this period, approximately a quarter of the course sections at VCCS were with a duration of 10 weeks or fewer, with the majority being either 8-week or 10-week durations.[1] Following the literature and the observed distribution of course durations across VCCS, we define condensed courses as those with a duration of 10 weeks or fewer. Condensed course formats are widely offered across the VCCS, spanning different colleges and a broad range of disciplines. As shown in Figure 2, all subject areas have a substantial proportion of courses offered in condensed formats; Social Sciences and Applied subjects offer the highest proportion of condensed courses (around 30

[1] Appendix Figure 1 provides a more granular breakdown of course durations for those defined as using condensed formats. The figure shows that about two-thirds of condensed courses are 8-week and 10-week, while another 20 percent are 5-week and 6-week courses.

percent), while Humanities and STEM (Science, Technology, Engineering, and Mathematics) fields offer relatively lower proportion (around 20 percent)[2]. Condensed course offerings also vary across colleges, ranging from 10 percent to 30 percent, as shown in Appendix Figure 3. These descriptive patterns highlight the importance of accounting for variations in condensed course availability across subject areas and colleges, which could otherwise confound estimates of the format's effects on student outcomes.

Figure 3 shows the proportion of course enrollments in condensed formats across VCCS between 2010 and 2020. The share has remained generally steady at around 22 percent over the past decade, with a modest increase in 2020, likely as a result of the COVID-19 pandemic. To better understand how students engage with condensed course formats across their academic trajectories, we conduct a student-by-term level analysis using a student fixed effects model to predict the proportion of credits taken in condensed formats in a given semester. The key explanatory variables include the total number of credits attempted that term and an indicator for labor market participation, defined as whether the student had any reported earnings in that term. Results presented in Appendix Table 1 indicate that students enroll in a significantly higher share of credits through the condensed format during terms when they reduce labor market participation and when they attempt a heavier academic course load. These patterns suggest that students may use condensed courses not just sporadically or randomly, but rather strategically facilitate academic progression during terms when they are more academically focused.

These findings have important methodological implications, as students appear to vary their use of condensed courses depending on time-varying factors such as work obligations or academic load. Analyses that fail to account for such over-time, within-student sorting may bias the estimated effects of condensed course enrollment due to underlying shifts in student motivation, availability, and academic intensity. To eliminate biases from potential endogenous time-varying sorting, we limit our primary analyses to courses taken during students' initial term in college. We describe our sample restriction and its implications for identification in the following section.

[2] Appendix Figure 2 provides a more detailed breakdown of condensed course offerings by specific academic programs categorized according to HEGIS classifications.

Analytic sample and summary statistics

To assess the impact of condensed course formats on student academic outcomes, we focus on the first college-level course a student takes in each field of study during their first term in college. This restriction serves several important methodological purposes. First, early course selections are less likely to be driven by students' strategic choices based on prior college experiences. Accordingly, this approach mitigates the potential bias that may arise from students' endogenous sorting into different course formats based on prior knowledge and experiences of condensed courses at VCCS. In addition, by focusing on students' first term, we also eliminate time-varying confounding factors such as shifting labor market participation and evolving academic intensity discussed above. Since students typically take entry-level courses during their initial exposure to a field of study, we refer to these courses as "introductory courses" thereafter. Approximately 12 percent of the students in the sample are enrolled in multiple courses that begin simultaneously during their initial exposure to a field of study. To avoid disproportionately weighting students who enroll in an unusually high number of introductory courses in a given field, we randomly select one course per student per field. For the analysis of downstream outcomes, if students later enroll in multiple follow-up courses in the same subject, we focus on the earliest one to consistently measure progression.[3]

Our analytic sample includes 447,573 introductory course enrollments from 179,146 unique students. Table 2 presents descriptive statistics at the student level, disaggregated by whether students enrolled in at least one condensed course in their first term in college. Roughly 22 percent of students in our analytic sample attempted a condensed course in their first term. Compared to their peers who enrolled exclusively in traditional-length courses, these students were more likely to be adult learners (28 percent versus 15 percent) and Black students (26 percent versus 22 percent). They were also less likely to begin their first term in the Fall semester (52 percent versus 77 percent), to enroll full-time (44 percent versus 59 percent), or to indicate an intent to pursue an Associate's degree (70 percent versus 78 percent). These descriptive patterns suggest that students who opt into condensed courses may have had heavier

[3] For subsequent course enrollment and performance, approximately 9 percent of the students in the sample enrolled in multiple courses within the same subject area during the same term, and in such cases, one course is randomly selected to represent the student's next course in the same field for the analysis of downstream academic outcomes. This approach would allow us to include next course-section fixed effects into the model to better address student sorting.

responsibilities outside of school and come from more disadvantaged backgrounds. However, these differences may not solely reflect individual-level sorting. As shown in Figure 2 and Appendix Figure 2, the availability of condensed course formats varies widely across subject areas. Programs in certain fields, such as career and technical education, are more likely to offer condensed formats and also tend to serve particular student populations. As a result, observed differences in student characteristics may partly reflect broader structural patterns in how condensed courses are distributed. To better disentangle these dynamics, we conduct a formal sorting analysis in the next section to explore student sorting within the same college-course combinations.

Table 3 provides summary statistics at the course-section level, comparing course characteristics and course outcomes between condensed course and traditional-length formats, based on aggregated student-by-course-section data. Panel A of Table 3 focuses on course-section characteristics, such as course modality, class size, course schedule (weekend course, daytime course), course credits, and instructor's characteristics. Notably, online sections are more common in condensed courses, accounting for 26 percent of course sections compared with 17 percent in traditional-length courses. In terms of instructor demographics, Black instructors are slightly more represented in condensed courses (14 percent) than in traditional-length courses (12 percent), and there is a lower proportion of full-time instructors in condensed courses (39 percent) as opposed to traditional-length courses (45 percent). To mitigate potential confounding, we account for all observed section-level characteristics in our model specifications, which we explain in the next section.

The next two panels in Table 3 summarize key outcome measures by course format. Panel B presents student performance in introductory courses, where condensed course formats appear to be associated with better outcomes across all measures. Specifically, the average course-section persistence rate (as opposed to early course withdrawal after the official add/drop period) is 93 percent for condensed courses, compared to 89 percent for traditional-length courses. The gap in course persistence rates widens once we further take into account course performance: 77 percent of students in condensed course sections earn a grade of C or higher (as opposed to earning a D, failing, or withdrawing from the course), compared to 66 percent in traditional-length course sections. Additionally, the average section-level mean grade is higher in condensed courses (2.7) than in traditional-length courses (2.2).

Finally, Panel C of Table 3 shows downstream outcomes, including whether students enrolled in a subsequent course within the same field of study and their performance in those follow-up courses. It appears that 42 percent of students who took the condensed format during their initial exposure to a subject area enrolled in a subsequent course within the same subject, compared to 35 percent of students whose initial exposure was through the traditional-length format. This gap suggests that the condensed course formats may be more effective at encouraging continued study in the same field. Among students who enrolled in subsequent courses, both the course persistence rate and passing rate are comparable between the two groups. While these descriptive patterns are informative, they may reflect underlying student selection into course formats rather than causal effects, which we address in the next section.

EMPIRICAL STRATEGY

Empirical model for concurrent course outcomes

Evaluating the impact of condensed courses on student outcomes with observational data presents multiple challenges. First of all, as discussed earlier, the availability of condensed course sections varies systematically across colleges (Appendix Figure 3) and subject areas (Figure 2), which may reflect differences in institutional norms, programmatic priorities, and academic standards. These differences could confound simple comparisons of student outcomes across formats. To address this, we include course-by-college fixed effects that enable us to address between-course variations by comparing students enrolled in the same course at the same college but in different course sections.

Yet, even within a given college-by-course combination, students may still sort into condensed or traditional sections due to individual preferences and characteristics—such as time constraints and motivation—that can independently influence course performance. We directly explore the extent of this problem by relating condensed course format to a wide range of student-level and course section-level characteristics while controlling for college-by-course fixed effects. The results presented in Table 4 indicate that students with substantial family responsibilities—such as adult learners and part-time students—are significantly more likely to enroll in condensed courses. To address student systematic sorting, we incorporate student fixed effects into the model to account for unobserved student characteristics that are constant within an individual. Specifically, the model writes as follows:

$$Y_{iscjt} = \alpha + \beta Condensed_{iscjt} + \tau_i + \gamma_{cj} + X_{scjt} + \mu_{iscjt} \quad [1]$$

which relates student *i*'s outcome in section *s* of course *c* at college *j* during time *t*[4] to the format of the course that the student had during their initial exposure to this subject area in their first semester enrolled at VCCS ($Condensed_{iscjt}$ is equal to one if the course is condensed and is zero if it is traditional-length); τ_i indicates student fixed effects that account for student consistent preferences for condensed course formats; γ_{cj} represents college-by-course fixed effects, which enable comparisons among different sections of the same course taught within a particular college. As a robustness check, we also estimate a model that includes college-by-course-by-term fixed effects, which further controls for time-varying shocks at the course level within a college. The results shown in Appendix Table 2 remain consistent with our main findings.

While college-by-course fixed effects control for between-course variation, disparities may still exist across course sections within the same course, which could potentially affect student outcomes independently. These section-level differences include delivery modality (e.g., online versus in-person), scheduling differences, and instructor characteristics such as employment status and teaching experience, all of which can influence student learning and performance. Indeed, statistics presented in Table 4 reveal that condensed classes are more frequently delivered online and taught by part-time instructors. This is important because prior research has consistently found that both online instruction and part-time faculty status are associated with lower student performance, on average (e.g., Xu & Jaggars, 2013; Xu, 2019). These patterns suggest that students enrolled in condensed courses may be exposed to instructional conditions that are, if anything, less conducive to success. Thus, to the extent that unmeasured section-level characteristics are correlated with these observable factors, the direction of bias would likely attenuate the estimated benefits of the condensed course format, making our main results conservative.

That said, to mitigate the influence of these factors, we control for a rich set of course-section-level and instructor-level confounders in the model (denoted as X_{scjt}), including the

[4] Since we restrict the sample to students' first term in the VCCS, time *t* is held constant across course observations within an individual, and is absorbed by the student fixed effects. As a result, separate term fixed effects are not included in the model.

mode of delivery, class size, class schedule, as well as instructor's gender, race/ethnicity, employment status (full-time versus part-time), and teaching experiences.

Key assumptions underlying the identification and potential threats

Subject-specific sorting. Our identification strategy exploits within-student variation in exposure to course formats across different subject areas during one's initial term in college, while holding constant overall variations in student performance across different courses. Thus, a key identifying assumption underlying our strategy is that students have consistent preferences, if any, for course format across different subject areas. One potential threat to this assumption is students' differential sorting by discipline. For example, students might opt for condensed formats in subject areas they expect to be easier and enroll in tradition-length formats in subject areas they perceive as more challenging.

To address within-student endogenous sorting into condensed formats, we conduct two additional checks. First, we leverage variation in subject-specific developmental placement—that is, whether students are required to take developmental education in math or English—as a proxy for their preparedness and likely self-perceived ability in the same subjects. We then use an individual fixed effects model to examine whether students assigned to developmental coursework in math (or English) are less likely to take condensed-format in math (or English) courses. If students anticipate struggling in a particular subject and view condensed courses as more intensive or risky, we would expect underprepared students to be systematically less likely to enroll in condensed-format in related subjects. However, results presented in Appendix Table 3 reveal no consistent evidence of such subject-specific sorting behavior: students placed into developmental math or English are not significantly less likely to take condensed-format college-level courses in those same subjects.

In addition, in Appendix Table 4, we re-estimate our models using a restricted sample of course enrollments in terms when only one format was offered—either condensed or traditional. In these cases, students did not have the option to select between formats. Therefore, any difference in outcomes across formats cannot be attributed to student-level selection into course formats. This approach eliminates within-term, within-subject student choice, limiting variation to differences in format that are externally imposed by institutional scheduling rather than chosen

by students. Results from this specification remain directionally consistent with our main findings, although modestly attenuated.

Potential threat to SUTVA. Another concern is that taking condensed course formats could divert time and cognitive resources away from other courses a student is taking concurrently, thereby harming performance in those traditional-length courses. This would violate the Stable Unit Treatment Value Assumption (SUTVA) by allowing the treatment (enrolling in a condensed course) to influence outcomes in untreated units (traditional length courses taken during the same term), which could bias the estimated effect of condensed courses upward.

To explore this possibility, we conduct a student-by-term level analysis, where the outcome is GPA calculated only from traditional-length courses in a given term, and the key predicting variable is the proportion of credits taken in condensed formats during that term. If cross-course interference from condensed course enrollment indeed exists, we would expect that as a student takes more condensed courses in a given term, their performance in the remaining traditional-length courses would decline. Our results shown in Appendix Table 5 indicate a positive association between the share of condensed course formats and GPA in traditional courses, suggesting that condensed course enrollment does not detract from—and may even enhance—performance in concurrent traditional-length courses. These patterns imply that results from our two-way fixed effects model may in fact be a conservative estimate of the effects of condensed course format on student course performance.

Variation in grading practices and course rigor. Another concern is that the estimated effects of condensed formats may partially reflect instructor grading practices rather than true differences in instructional effectiveness. For example, if condensed courses are disproportionately taught by instructors with more lenient grading tendencies, this could inflate estimates of their effectiveness. To address this concern, we conduct two robustness checks. First, we include instructors' historical average course grades as a control variable in our model to capture persistent grading patterns at the instructor level. As shown in Appendix Table 6, the inclusion of this variable has minimal effect on our estimated treatment effects, suggesting that variation in instructor grading stringency does not account for the observed advantages of condensed courses.

As a more stringent test, we re-estimate our models with instructor fixed effects, which control for all time-invariant instructor-level characteristics, including grading style, pedagogy, and course organization. This specification compares students taught by the same instructor in different course formats, thereby holding constant any characteristics that remain fixed for a given instructor. The results, shown in Appendix Table 7, remain consistent with our main findings. Together, these analyses provide strong evidence that the estimated benefits of condensed courses are not driven by instructor assignment or grading leniency.

However, one remaining concern that cannot be fully addressed by the instructor fixed effects is the possibility of format-specific grading leniency, where instructors may apply different grading standards or reduce instructional rigor specifically when they teach in condensed-format sections. For example, instructors might cover fewer topics, reduce the number or difficulty of assessments, or shift toward lower-stakes grading components (e.g., weekly quizzes rather than cumulative exams) to accommodate the accelerated pace. These adjustments could lead to higher grades in condensed courses at the cost of preparing students less well for subsequent learning in more advanced coursework. To address this possibility, we examine students' performance in the subsequent course in the same subject area, which provides a more objective assessment of content mastery and skill transfer. If higher grades in condensed courses reflect reduced rigor rather than deeper learning, we would expect students to perform worse in follow-on courses. Below we discuss the empirical strategy we used to examine downstream outcomes beyond concurrent course performance.

Empirical model for downstream outcomes

Students' experience with condensed courses in their initial course within a subject area may affect their subsequent course enrollment behaviors and performance in multiple ways. To capture downstream impacts, we construct three measures using a three-year time window following students' initial college enrollment: 1) whether a student enrolls in a subsequent course within the same subject area after their initial exposure,[5] 2) whether a student enrolls and also completes a subsequent course within the subject area, and 3) conditional on enrollment, their

[5] Subsequent enrollment includes any course taken after the initial enrollment—either in a later term or in a later session within the same term (e.g., enrolling in a second 8-week course after completing the first 8-week course that term).

academic performance in the next class in the same subject area. For the first two outcomes, we evaluate the impact of condensed courses using the fixed effects models described in equation [1].

To assess the impact on subsequent course performance conditional on course enrollment (the third outcome), we use a separate model that further includes next-class fixed effect to control for students' strategic selection of subsequent classes based on their initial experience:

$$Y_{is+1c+1jt+1} = \alpha + \beta Condensed_{iscjt} + \tau_i + \gamma_{cj} + S_{s+1c+1jt+1} + X_{scjt} + \mu_{is+1c+1jt+1} \quad [2]$$

which relates student *i*'s outcome in the next class section *s*+1 of the subsequent course *c*+1 at college j during time *t*+1 to the format of the course that the student had during their initial exposure to this subject area ($Condensed_{iscjt}$, and is equal to one if the course is condensed). Equation [2] includes all variables from equation [1] but further includes a new term $S_{s+1c+1jt+1}$, which incorporates information about the college, course, and specific section of the next class a student chooses to enroll in after initial exposure to a subject area. As a result, this model specification compares student performance in exactly the same subsequent course section. By doing so, it controls for the potential influence of a student's initial experience in a field on their choice of the next course, as well as their preference for condensed course format subsequently.

RESULTS

Current course outcomes

Table 5 presents the estimated effects of condensed course format on the performance of a student's initial exposure to a field of study based on five outcome measures: (i) whether students persist to the end of the course (versus withdrawing), which intends to offer insights into retention and engagement; (ii) whether students pass the course with a grade of D or higher (versus failing or withdrawing), which aims to provide a basic benchmark for academic success and continuation; (iii) whether students achieve a grade of C or higher—as opposed to earning a D, failing, or withdrawing—which distinguishes between minimal achievement and the more robust performance often required for degree attainment; (iv) students' grades, ranging from 0 to

4, which allow for a more nuanced evaluation of course performance; and (v) whether students retake the course later.

Overall, the findings indicate a positive impact of enrolling in a condensed format on students' outcomes compared with traditional-length courses. Specifically, students who enrolled in condensed course formats experienced a 0.7 percentage point increase in course persistence, a 2.1 percentage point increase in passing the course with a grade of D or higher, and a 3.1 percentage point increase in passing the course with a grade of C or higher. Notably, the effect size associated with the condensed format increases as the performance standards increase, suggesting that students across various academic distributions are likely to benefit from this instructional approach. Overall, condensed course format is associated with a 0.1 point increase in course grade on a 0 to 4 grading scale, and a reduction of the likelihood of retaking the course by 1 percentage point, compared with the traditional-length courses.

To contextualize these effects, Table 5 provides baseline sample means for each evaluated outcome, which serve as reference points to better understand the magnitude of the observed changes. For example, the baseline average for students achieving a grade of C or higher across all course sections is 68 percent. With a 3 percentage point increase in condensed formats, this number rises to 71 percent, representing a 4 percent relative improvement in the number of students achieving a grade of C or higher. To illustrate, consider a college with 1,000 first-time-in-college (FTIC) students. If each of these students switched one of their traditional-length courses to a condensed format during their initial term, this shift would lead to approximately 40 more course completions with a grade of C or higher, instead of a D or failing.

Downstream outcomes

Table 6 presents results of taking a condensed course format during students' initial exposure to a field of study on the probability of taking another course in the same field, and their chances of both enrolling in and passing these courses within three years after their initial enrollment. The results consistently demonstrate a positive influence. Students who initially enrolled in a condensed course format within a subject, on average, experienced a 3.2 percentage point increase in the likelihood of enrolling in subsequent courses in the same field. The size of the effects is fairly similar for both enrolling in and passing subsequent courses with a grade of D or higher (3.1 percentage point increase) and for enrolling in and passing with a grade of C or

higher (2.9 percentage point increase). Given that only 41 percent of students enroll in subsequent courses within a subject on average, the impact of the condensed course format would boost this rate by 8 percent. The fact that the size of the effect is fairly similar in these outcomes—enrollment, passing with a grade of D or higher, and achieving a grade of C or higher—suggests that the positive effects on downstream outcomes are primarily driven by the increased chance of taking another course in the same field of study.

As mentioned previously, assessing the impact of the initial condensed course format on students' later academic performance is challenging due to the possibility that students' course choice preferences might be influenced by their initial course experiences. For example, if students who start with a condensed course format are more likely to choose an easier or more challenging course subsequently based on their initial experiences in a given field, failure to control for variations in course choices could lead to bias in our estimation. To directly provide insights into this possibility, we examine whether students who initially enrolled in condensed courses are more likely to choose courses with historically higher average grades, which are calculated from records from the same course spanning the prior three years at the same institution. This analysis helps determine if the condensed format inadvertently encourages students to seek out courses perceived as 'easier' or 'more challenging' based on past grade distributions. Results presented in Column (4) of Table 6 indicate that the difference in course selection is not statistically significant.

Nevertheless, we estimate a separate model (equation [2]) that controls for the specific classes in which students enroll. This allows us to compare only students who enrolled in the identical course section at the same college during the same term for their subsequent course in a given field, focusing on their academic outcomes in that specific classroom. Results presented in Table 7 suggest that students whose initial course was in a condensed course format show a 1.94 percentage point increase in the likelihood of persisting to the end of subsequent course, after controlling for the exact course section they enrolled in. However, no significant differences were found in passing rates with a grade of C or higher, passing rates with a grade of D or higher, or in overall course grades. Taken together, these findings suggest that taking an initial course through a condensed format improves the likelihood of enrolling in subsequent courses within the same field without negatively impacting subsequent course performance.

Heterogeneity analysis

One of the primary motivations for offering condensed courses is their flexible structure, which may better accommodate students with diverse responsibilities outside of school, such as adult students and those from disadvantaged backgrounds. Indeed, the descriptive statistics presented above indicate that students enrolled in condensed courses are more likely to be adult students and Black students, even after accounting for factors such as declared major, college, and course enrollment. Thus, it is important to examine whether the impact of condensed courses is particularly pronounced for these student populations. To explore potential heterogeneous effects of the condensed course format on both current and downstream academic outcomes, we incorporate an interaction term into equations [1] and [2]. This interaction term captures the relationship between a specific student demographic characteristic and the condensed course format. For example, when examining differences between adult learners and younger learners, we first include the interaction term using adult learners as the reference group. This allows us to estimate the main effect on adult learners. Next, we use younger learners as the reference group to estimate their main effect and determine the difference between the two groups based on the interaction term.

Table 8 presents the impact of condensed course formats on both current and downstream academic outcomes for two key student demographics: adult versus younger students (Panel A) and URM versus non-URM students (Panel B). The results indicate that condensed courses benefit both adult and younger students (age 25 or younger upon college enrollment) across most outcome measures. Yet, the nature of these benefits differs between the two groups. Specifically, younger students in condensed courses tend to experience larger immediate gains in current course performance metrics. For instance, the condensed format increases younger students' average course grades by 0.13 points (on a 0-4 grading scale), which is twice the size of the 0.07-point increase observed for adult learners. However, adult learners see significantly larger benefits in terms of downstream academic engagement: Adult students in condensed courses experience a substantial 6.1 percentage points increase in the likelihood of enrolling in additional courses in the same field of study and a 4.7 percentage points improvement in enrolling and passing the subsequent course with a C or above, both of which are significantly higher than the benefits for younger students.

As for the moderating role of URM status, the results suggest that URM and non-URM students benefit equally in terms of current course performance, as the interaction terms are consistently insignificant. However, when it comes to downstream outcomes, URM students experience notably greater benefits from the condensed format compared to their non-URM peers. Specifically, URM students in condensed courses are 4.7 percentage points more likely to enroll in and pass subsequent courses within the same field of study with a grade of C or higher, compared to a 1.9 percentage points increase for non-URM students. Taken together, results from the heterogeneity analyses indicate that while all students benefit from the condensed format, adult learners and minority students see particularly strong gains in subsequent academic engagement and performance. These results underscore the value of condensed courses as a means to address the needs of non-traditional and underrepresented student populations.

Supplementary analysis on credit accumulation and degree attainment

Our findings thus far indicate that taking a condensed course as an initial exposure to a field significantly increases students' likelihood of continuing in subsequent courses within that same field. This impact may manifest in one of two distinct ways: First, a positive initial experience through a condensed course may increase students' interest in the subject, leading to higher enrollment in follow-up courses. Second, and perhaps more crucially, the flexibility of a condensed course format may also enhance students' overall commitment to their college education, a crucial factor in college persistence and progression, especially for students from disadvantaged backgrounds (Bettinger, 2004; Herbaut & Geven, 2020).

To examine how condensed formats in students' early college experience influence their persistence and performance in subsequent semesters, we conduct a student-level exploratory analysis that relates the proportion of course credits taken through condensed formats during a student's initial semester in college to several downstream progression metrics, including students' probability of persisting into the second semester in college, total number of credits attempted within the first three years of college, and receiving any sub-bachelorette credentials (including the Associates, Diploma, and Certificates) within three years. To account for differences in course selection, we use a college-course-set fixed effect model, comparing students who took the same set of courses at the same college in their initial term, while controlling for term and student characteristics.

Table 9 presents the results of our exploratory analysis. For easier interpretation, we multiply the proportion of credits taken through condensed format by 10 (such as converting 2 percent to 20 percent). The coefficients hence measure the estimated effects on the outcome measure given a ten percentage point increase in condensed format credits during the initial term. Our findings indicate that a ten-percentage-point increase in condensed format credits during the first term is associated with an average gain of 0.07 additional credits earned within three years of initial enrollment. Additionally, students with a ten-percentage-point higher proportion of condensed format credits in their first term are 0.07 percentage points more likely to earn a credential within three years of starting college. While these results need to be interpreted with caution due to potential remaining selection bias that cannot be fully controlled by the college-course-set fixed effects model, they provide suggestive evidence that the option of condensed courses may not only facilitate immediate academic progress but may also play a supportive role in helping students stay on track in the long run.

DISCUSSION AND CONCLUSION

The growing adoption of condensed course formats in community colleges shows an increasing need for flexible, efficient educational structures that fit the complex schedules of diverse student populations. Using administrative data from a statewide community college system, our analysis demonstrates that students who take condensed courses during their initial exposure to a field of study generally exhibit improved performance in concurrent courses. The results show higher rates of course completion and better course grades. Importantly, we also find positive impacts of condensed courses on the likelihood of students enrolling in and completing subsequent courses within the same field. Additional exploratory student-level analysis suggests that the early gains of condensed formats would extend to a modest but significant impact on the total number of credits attempted and probability of earning a community-college-awarded credential.

These findings show the value of condensed courses in community colleges as a flexible educational strategy that meets students' different needs. Our heterogeneous analysis further reveals that for adult and underrepresented minority (URM) students, the positive effects on subsequent course enrollment and completion are particularly pronounced. Existing literature

indicates that consistent enrollment is one of the key predictors of student long-term educational attainments (Attewell et al., 2012). Yet, adult learners and URM students often face greater challenges to balance learning with other family and work responsibilities, and therefore are subject to lower college persistence rates (Choy, 2002; Libassi, 2018). Our results indicate that for students who may struggle to persist in traditional-length courses, access to condensed-format options can support continued progress or even acceleration toward their goals.

Beyond the impact of condensed courses, our study also highlights several promising directions for future research. The mechanisms underlying the effects of these condensed formats relative to traditional-length courses remain partially understood and call for deeper exploration. Prior research with survey data has illuminated differences in student perceptions across various course formats. But findings on workload and stress levels in condensed courses remain mixed (Lutes & Davies, 2013, 2018; Walsh et al., 2019). Future studies can clarify the nuanced ways that condensed formats influence student perceptions. Such studies can discover evidence-based practices that help institutions and instructors to improve course deliveries and enhance student learnings.

In addition, the variation in teaching techniques across different course formats presents another intriguing avenue for research. Existing studies indicate that pedagogical approaches can significantly influence student learning and retention, and different strategies may prove more or less effective in condensed settings (Mena-Guacas et al., 2023; Vreven & McFadden, 2007). Investigating which teaching techniques best support learning in condensed courses and how these approaches might differ from those in traditional formats could yield valuable insights for curriculum design and instructor training. Such research could inform best practices, ensuring that condensed courses not only accommodate diverse students' scheduling needs but also optimize their learning experiences and outcomes.

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Table 1. Institutional Characteristics of the Virginia Community College System (VCCS) and a National Sample of Public Two-Year Colleges, Fall 2010

	National Sample of Public Two-Year Colleges	VCCS
Panel A: Enrollment		
Full-time enrollment	3,026	3,026
Percent of GRS[a] cohort	39%	42%
12-month undergraduate: 2010-11	11,091	12,475
Graduation rate, total cohort	20%	18%
Panel B: Student Demographics and SES		
Percent of White	55%	61%
Percent of Black or African American	15%	21%
Percent of Hispanic/Latino	15%	7%
Percent of Asian/Native Hawaiian/Pacific Islander	5%	6%
Percent of American Indian or Alaska Native	1%	0%
Percent of race/ethnicity unknown	6%	3%
Percent of nonresident alien	1%	1%
Percent of female	57%	58%
Percent of receiving any financial aid	70%	59%
Panel C: Institution Finance		
Tuition and fees, 2010-11	2,703	3,157
Expenses per full-time equivalent student:		
Instruction expenses per FTE	4,729	4,184
Research expenses per FTE	14	0
Public service expenses per FTE	213	73
Academic support expenses per FTE	938	871
Student service expenses per FTE	1,198	650
Institutional support expenses per FTE	1,742	1,318
All other expenses per FTE	1,956	1,210
Percent of core revenues		
Tuition and fees	18%	30%
State appropriations	26%	32%
Local appropriations	16%	0%
N	798	23

Note: This table is based on data derived from the IPEDS 2010 Fall dataset.
[a]GRS represents full-time, first-time degree- or certificate-seeking students.

Table 2. Student Descriptive Statistics by Exposure to Condensed Course Format in Initial Term

	All students	Students ever enrolled in condensed courses in initial term[c]	Students never enrolled in condensed courses	Statistical Significance
Female	50%	47%	51%	***
Age	21.73	23.76	21.17	***
	(7.82)	(9.39)	(7.22)	
Adult students (aged 25 or older)	18%	28%	15%	***
Race/ethnicity				
White	56%	52%	57%	***
Black	23%	26%	22%	***
Hispanic	10%	10%	10%	
Asian	5%	6%	5%	***
Other race[a]	5%	5%	5%	
Pell Grant eligible	49%	50%	49%	***
First-generation student	37%	38%	37%	***
High school completion	97%	98%	97%	***
Initial Fall enrollment[b]	72%	52%	77%	***
Associate's degree intent	76%	70%	78%	***
Full-time enrollment indicator	55%	44%	59%	***
N	179,146	38,655	140,491	

Note: This table uses data aggregated at the student level. Standard deviations are in parentheses. Significance level: *** p<0.001, ** p<0.01, * p<0.05.

[a]Other race includes American Indian/Alaskan, Hawaiian/Pacific Islander, two or more races, and unknown/not specified.

[b]Initial Fall enrollment refers to students who first enrolled in VCCS during Fall semester, rather than Summer or Spring semesters.

[c]To maintain consistency in the analytic sample, "Students ever enrolled in condensed courses in initial term" refers to students who enrolled in a condensed course as one of their initial courses within a subject. The same definition applies to those who never enrolled in such courses.

Table 3. Descriptive Statistics of Course Sections and Student Outcomes, by Course Format

	Condensed Course Formats	Traditional-Length Courses
Panel A: Course-Section Characteristics		
Face-to-face section	61%	77%
Online section	26%	17%
Hybrid section	12%	5%
Other mode section	1%	2%
Class size	19.48	22.74
	(8.99)	(9.62)
Course on weekend	4%	1%
Course during the day	76%	80%
Course credit hours	2.84	3.09
	(0.92)	(0.65)
Female instructor	49%	51%
White instructor	80%	81%
Black instructor	14%	12%
Hispanic instructor	2%	2%
Asian instructor	3%	4%
Instructor of other race	1%	1%
Full-time instructor	39%	45%
VCCS teaching experience (month)	56.99	58.46
	(32.46)	(33.23)
N	24,163	97,244
Panel B: Current Course Outcomes		
Persist to the end of the course	93%	89%
Pass the course (D or higher)	81%	73%
Pass the course (C or higher)	77%	66%
Course grade	2.65	2.21
	(1.31)	(1.24)
N	24,163	97,244
Panel C: Subsequent Outcomes		
Student-by-field outcomes		
Take additional course	42%	35%
Take additional course and pass (C or higher)	33%	26%
N	24,163	97,244
Student next-class outcomes (conditional on subsequent enrollment in the same subject)		
Persist to the end of the course	93%	92%
Pass the course (C or higher)	77%	75%
Course grade	2.63	2.51
	(1.35)	(1.23)
N	13,022	54,837

Note: This table uses data aggregated at the course-section level from student transcript records. Standard deviations are in parentheses.

Table 4. Predictors of Enrollment in Condensed Course Formats (College-by-Course-by-Term Fixed Effects Model)

	Condensed course enrollment
Panel A: Student Characteristics	
Female	-0.0053***
	(0.0014)
Adult learner	0.0261***
	(0.0063)
Race/ethnicity (reference: White)	
Black	0.0190***
	(0.0046)
Hispanic	0.0051
	(0.0046)
Asian	0.0100***
	(0.0016)
Other race	0.0046**
	(0.0022)
Pell Grant eligible	0.0065
	(0.0050)
First-generation student	-0.0029***
	(0.0007)
High school completion	0.0000
	(0.0052)
Associate's degree intent	-0.0081
	(0.0066)
Full-time enrollment indicator	-0.0405***
	(0.0141)
Panel B: Course-Section Characteristics	
Course modality (reference: face to face)	
Online section	0.0839**
	(0.0299)
Hybrid section	0.1615***
	(0.0246)
Other mode section	0.0160
	(0.0174)
Class size	-0.0020***
	(0.0003)
Course credit hours	-0.0813***
	(0.0204)
Panel C. Instructor Characteristics	
Female instructor	-0.0058
	(0.0048)
Race/ethnicity (reference: White)	
Black instructor	0.0064
	(0.0044)
Hispanic instructor	-0.0037
	(0.0045)
Asian instructor	0.0091
	(0.0115)
Other race instructor	-0.0284***

	(0.0080)
Full-time instructor	-0.0275**
	(0.0106)
Teaching experience (Total months)	-0.0000
	(0.0001)
Constant	0.4500***
	(0.0667)
College-course-term FE	YES
Declared major control	YES
Missing control (female, race, race_instructor)	YES
Observations	447,573
R-squared	0.4398

Note: This table reports results from regressions estimated using student course enrollment data. Robust standard errors are in parentheses. Standard errors are clustered at the college level. Significance level: *** p<0.01, ** p<0.05, * p<0.1.

Table 5. Impact of Condensed Course Format on Introductory Course Outcomes

	Persist to the end of the course	Pass the course (D or higher)	Pass the course (C or higher)	Course grade	Course retaking
	(1)	(2)	(3)	(4)	(5)
Condensed Courses	0.0070**	0.0212***	0.0308***	0.1224***	-0.0091***
(Courses less than 10 weeks)	(0.0035)	(0.0048)	(0.0052)	(0.0188)	(0.0034)
Course section features control	YES	YES	YES	YES	YES
Student FE	YES	YES	YES	YES	YES
College*Intro-course FE	YES	YES	YES	YES	YES
Sample Mean	0.907	0.748	0.679	2.255	0.100
Observations	447,573	447,573	447,573	447,573	447,573
Adjusted R-squared	0.6325	0.7285	0.7220	0.7808	0.5470

Note: This table reports results from regressions estimated using student course enrollment data. Course grades are measured on a scale from zero to four. Each model incorporates controls for student individual fixed effects and college-by-course fixed effects. Furthermore, the models account for course section characteristics, including course modality (online versus face-to-face), the total number of students in the course section, and the course schedule (weekend or weekday, day or evening). Instructor attributes are also included, including gender, race/ethnicity, employment status (full-time versus part-time), and teaching experience. Classes below the college level, student developmental courses, and courses graded on a pass/fail basis are excluded. Robust standard errors are in parentheses. Standard errors are clustered at the college level. Significance level: *** p<0.01, **p<0.05, *p<0.1.

Table 6. Impact of Taking Introductory Courses in Condensed Formats on Subsequent Outcomes in the Same Subject Area

	Take additional course	Take additional course and pass (D or higher)	Take additional course and pass (C or higher)	Average grade of the next course (course difficulty)
	(1)	(2)	(3)	(4)
Condensed Courses	0.0321***	0.0314***	0.0294***	0.0051
(Courses less than 10 weeks)	(0.0053)	(0.0051)	(0.0048)	(0.0058)
Course section features control	YES	YES	YES	YES
Student FE	YES	YES	YES	YES
College*Intro-course FE	YES	YES	YES	YES
Sample Mean	0.405	0.330	0.304	2.403
Observations	447,573	447,573	447,573	179,735
Adjusted R-squared	0.6494	0.6405	0.6329	0.9375

Note: This table reports results from regressions estimated using student course enrollment data. Course grades are measured on a scale from zero to four. Each model incorporates controls for student individual fixed effects and college-by-course fixed effects for the introductory courses. Furthermore, the models account for section characteristics of the introductory courses, including course modality (online versus face-to-face), the total number of students in the course section, and the course schedule (weekend or weekday, day or evening). Instructor attributes are also included, including gender, race/ethnicity, employment status (full-time versus part-time), and teaching experience. Courses below the college level, student developmental courses, and courses graded on a pass/fail basis are excluded. The observations in column (4) are fewer than the observations in Table 7 because some courses were not offered before thus no average historical grade can be used. Robust standard errors are in parentheses. Standard errors are clustered at the college level. Significance level: *** p<0.01, **p<0.05, *p<0.1.

Table 7. Impact of Taking Introductory Courses in Condensed Formats on Subsequent Course Performance in the Same Subject Area (Conditional on Enrollment)

	Persist to the end of the course	Pass the course (D or higher)	Pass the course (C or higher)	Course grade
	(1)	(2)	(3)	(4)
Condensed Courses	0.0194***	0.0017	0.0048	0.0112
(Courses less than 10 weeks)	(0.0074)	(0.0091)	(0.0099)	(0.0318)
Course section features control	YES	YES	YES	YES
Student FE	YES	YES	YES	YES
College*Intro-course FE	YES	YES	YES	YES
Subsequent-course-section FE	YES	YES	YES	YES
Sample Mean	0.924	0.813	0.749	2.487
Observations	181,487	181,487	181,487	181,487
Adjusted R-squared	0.9242	0.9364	0.9336	0.9532

Note: This table reports results from regressions estimated using student course enrollment data. Course grades are measured on a scale from zero to four. Each model incorporates controls for student individual fixed effects, college-by-course fixed effects for the introductory courses, and subsequent course-section fixed effects. Furthermore, the models account for section characteristics of the introductory courses, including course modality (online versus face-to-face), the total number of students in the course section, and the course schedule (weekend or weekday, day or evening). Instructor attributes are also included, including gender, race/ethnicity, employment status (full-time versus part-time), and teaching experience. Classes below the college level, student developmental courses, and courses graded on a pass/fail basis are excluded. Robust standard errors are in parentheses. Standard errors are clustered at the college level. Significance level: *** p<0.01, **p<0.05, *p<0.1.

Table 8. Impact of Condensed Course Formats on Current and Subsequent Outcomes by Student Age and URM Status

	Current course outcomes			*Subsequent course outcomes*		*Subsequent course outcomes conditional on enrollment*	
	Pass the course (C or higher)	Course grade	Course retaking	Take additional course	Take additional course and pass (C or higher)	Pass the course (C or higher)	Course grade
Panel A. By Student Age							
Adult students	0.0162	0.0661*	0.0133**	0.0613***	0.0469***	0.0318	0.1091
	(0.0109)	(0.0366)	(0.0061)	(0.0119)	(0.0106)	(0.0198)	(0.0721)
Younger students	0.0330***	0.1311***	-0.0125***	0.0276***	0.0267***	0.0182**	0.0471*
	(0.0051)	(0.0189)	(0.0036)	(0.0069)	(0.0064)	(0.0079)	(0.0264)
Difference between adult and younger students	-0.0169	-0.0651*	0.0259***	0.0337***	0.0202*	0.0026	0.0003
	(0.0104)	(0.0356)	(0.0074)	(0.0128)	(0.0115)	(0.0421)	(0.1513)
Panel B. By URM Status							
URM students	0.0370***	0.1298***	-0.0125***	0.0471***	0.0471***	0.0449***	0.1389***
	(0.0068)	(0.0243)	(0.0043)	(0.0092)	(0.0089)	(0.0137)	(0.0359)
Non-URM students	0.0272***	0.1182***	-0.0071*	0.0236***	0.0194***	0.0088	0.0168
	(0.0058)	(0.0214)	(0.0037)	(0.0070)	(0.0065)	(0.0088)	(0.0305)
Difference between URM and non-URM students	0.0097	0.0116	-0.0054	0.0235**	0.0277***	0.0361**	0.1221***
	(0.0070)	(0.0265)	(0.0045)	(0.0091)	(0.0093)	(0.0161)	(0.0445)
Sample Mean	0.679	2.255	0.100	0.405	0.304	0.749	2.487
Observations	447,573	447,573	447,573	447,573	447,573	181,487	181,487

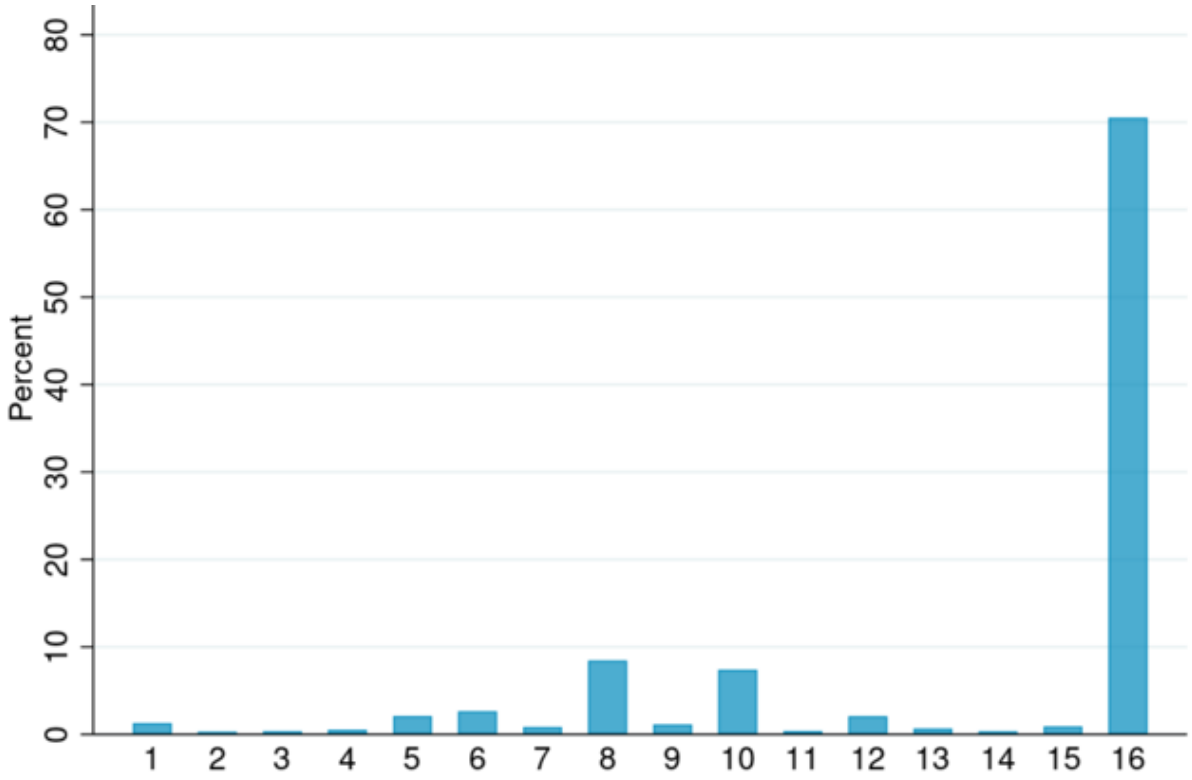
Note: This table reports results from regressions estimated using student course enrollment data. Course grades are measured on a scale from zero to four. Each model incorporates controls for student individual fixed effects, and college-by-course fixed effects for the introductory courses, and subsequent course-section fixed effects (only for subsequent course outcomes conditional on enrollment). Furthermore, the models account for section characteristics of the introductory courses, including course modality (online versus face-to-face), the total number of students in the course section, and the course schedule (weekend or weekday, day or evening). Instructor attributes are also included, including gender, race/ethnicity, employment status (full-time versus part-time), and teaching experience. Classes below the college level, student developmental courses, and courses graded on a pass/fail basis are excluded. The observations in the last two columns are fewer than the observations in other columns because these models are conditional on subsequent course enrollments. Robust standard errors are in parentheses. Standard errors are clustered at the college level. Significance level: *** p<0.01, **p<0.05, *p<0.1.

Table 9. Relationship Between Initial-Term Exposure to Condensed Course Formats and Subsequent Student Outcomes

	Persistence into the next term	Attempted credit hours within three years	Any degree/credential attainment in VCCS within three years
	(1)	(2)	(3)
Proportion of credits in Condensed Course Formats (multiplied by 10)	0.0005	0.0651*	0.0007**
	(0.0005)	(0.0379)	(0.0003)
Term Fixed Effects	YES	YES	YES
Student Characteristics	YES	YES	YES
College-by-Course Portfolio Fixed Effects	YES	YES	YES
Sample Mean	0.720	33.756	0.165
Observations	179,200	179,200	179,200
Adjusted R-squared	0.5165	0.6154	0.5822

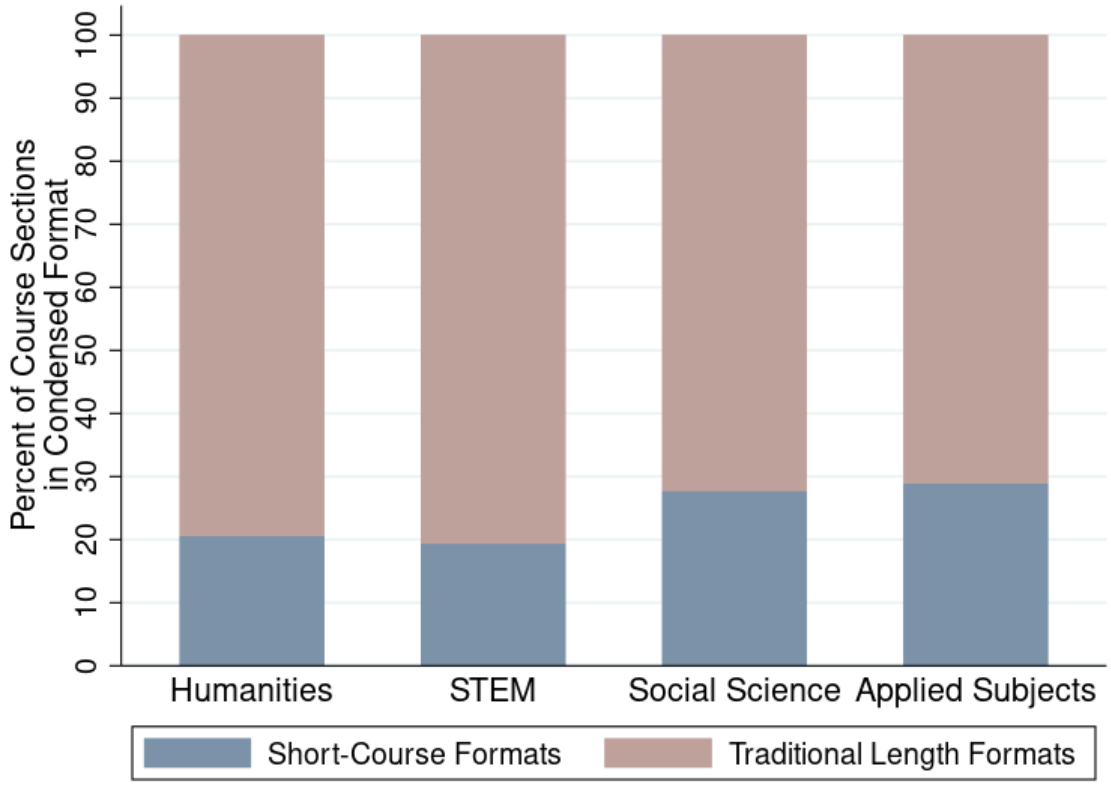
Note: This table uses data aggregated at the student level. Each model includes controls for college-by-course fixed effects, term fixed effects, college-by-course portfolio fixed effects (i.e., fixed effects for the set of courses in which students enrolled during their initial term), and student characteristics, including gender, race/ethnicity, Pell Grant eligibility, age, first-generation college student status, high school graduation status, dual enrollment status, English as a Second Language status, associate degree intentions, and full-time student status. Robust standard errors are in parentheses. Standard errors are clustered at the college level. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure 1. Distribution of Course Durations (in Weeks) in the Virginia Community College System



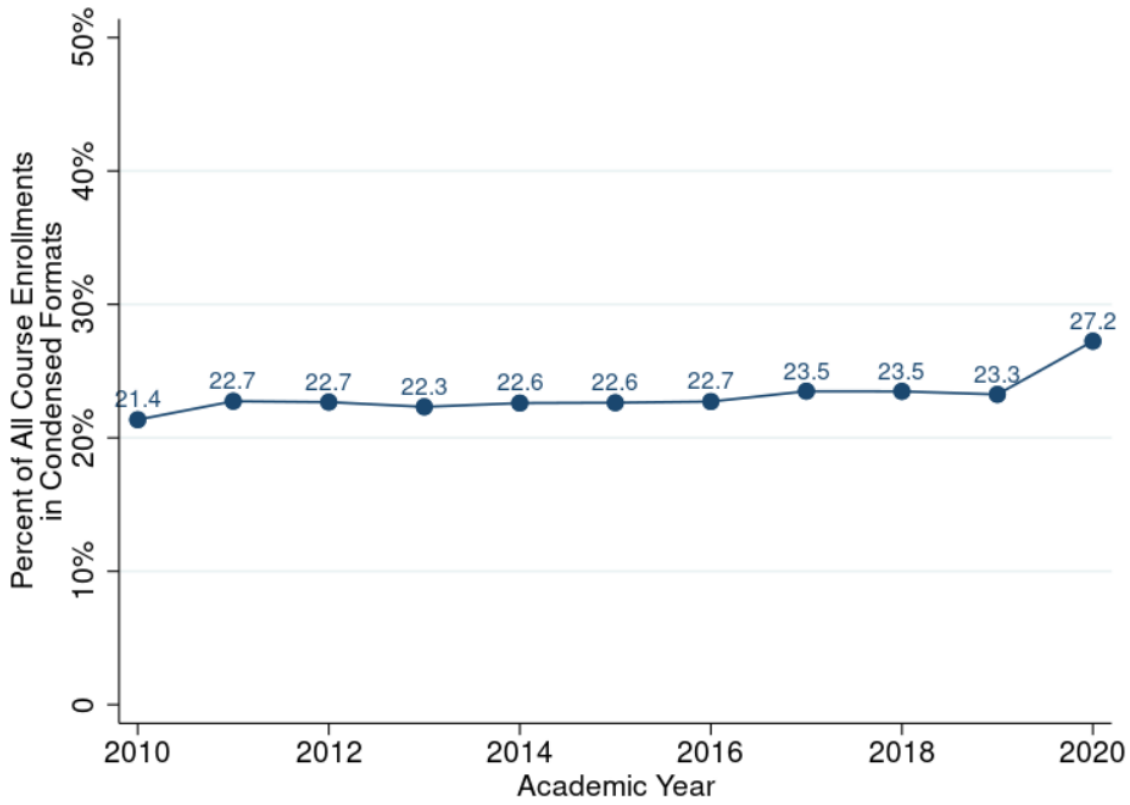
Note: This figure uses administrative course-section-level data from the Virginia Community College System (VCCS) from the 2010–2011 to 2014–2015 academic years. The horizontal axis reports the total number of instructional weeks per course section. The vertical axis displays the share of all course sections with each duration. The spike at 16 weeks corresponds to standard full-term offerings, while shorter durations represent various forms of condensed courses.

Figure 2. Share of Course Sections Offered in Condensed Formats (≤10 Weeks) by Subject Area



Note: This figure displays the proportion of credit-bearing, college-level course sections offered in condensed format (defined as courses lasting 10 weeks or fewer) by subject area across the Virginia Community College System (VCCS) between academic years 2010–2011 and 2014–2015. Subject areas are categorized based on HEGIS classifications.

Figure 3. Share of Course Enrollments in Condensed Formats in the Virginia Community College System, 2010–2020



Note: This figure is based on administrative student-by-course-section data from the Virginia Community College System (VCCS), covering the 2010–2011 to 2020–2021 academic years. It reports the percentage of all course enrollments in a given academic year that were in condensed course formats (defined as courses lasting 10 weeks or fewer).

ONLINE Appendix

Table 1. Term-Level Predictors of the Share of Credits Taken in Condensed Format

	Share of Credits Taken in Condensed Format
Employed during the term	-0.0031***
	(0.0007)
Total Credits Attempted	0.0153***
	(0.0002)
Student FE	YES
College FE	YES
Term-in-college FE	YES
Calendar Term FE	YES
Observations	604,170
R-squared	0.3590

Note: This table reports results from regressions estimated using student-by-term data where the dependent variable is the proportion of credits attempted in a given term that were taken in condensed-format courses (defined as courses with a duration of 10 weeks or fewer). The key independent variables include an indicator for whether the student had any recorded earnings during the term and the total credits attempted in that term. The model also controls for student fixed effects, college fixed effects, term-in-college fixed effects (i.e., the number of terms since a student's initial enrollment), calendar term fixed effects, and student's full time/part time status at the term. Robust standard errors are in parentheses. Significance level: *** p<0.01, **p<0.05, *p<0.1.

Table 2. The Impact of Condensed Courses on Student Outcomes with College-by-Course-by-Term Fixed-Effect

	Persist to the end of the course	Pass the course (D or higher)	Pass the course (C or higher)	Course grade	Course retaking	Take additional course	Take additional course and pass (D or higher)	Take additional course and pass (C or higher)	Persist to the end of the course	Pass the course (D or higher)	Course grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Condensed Courses	0.0055	0.0221***	0.0320***	0.1260***	-0.0108***	0.0277***	0.0278***	0.0261***	0.0189**	-0.0017	0.0042
	(0.0041)	(0.0060)	(0.0056)	(0.0199)	(0.0034)	(0.0052)	(0.0051)	(0.0049)	(0.0082)	(0.0106)	(0.0330)
Course section features control	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Student FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
College-by-Course-by-Term FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sample Mean	0.900	0.753	0.687	2.301	0.069	0.382	0.312	0.287	0.921	0.815	2.504
Observations	447,573	447,573	447,573	447,573	447,573	447,573	447,573	447,573	181,487	181,487	181,487
R-squared	0.6730	0.7560	0.7497	0.8058	0.5782	0.6897	0.6795	0.6720	0.9322	0.9428	0.9579

Note: This table uses student course enrollment data. Course grades are measured on a scale from zero to four. Each model incorporates controls for student individual fixed-effects and college-by-course fixed-effects for the introductory courses. Models from columns (9) to (11) further control for subsequent course-section fixed-effects. Furthermore, the models account for section characteristics of the introductory courses, including course modality (online versus face-to-face), the total number of students in the course section, and the course schedule (weekend or weekday, day or evening). Instructor attributes are also included, encompassing gender, race/ethnicity, employment status (full-time vs. part-time), and teaching experience. Classes below the college level, student developmental courses, and courses graded on a pass/fail basis are excluded. The observations in the last three columns are fewer than the observations in other columns because these models are conditional on subsequent course enrollments. Standard errors are clustered at the college level. Significance level: *** p<0.01, **p<0.05, *p<0.1.

Table 3. Test for Subject-Specific Sorting into Condensed-Format Courses

	Condensed-course format
Course in a subject *without* developmental placement	-0.0113
	(0.0089)
Course section features control	YES
Student FE	YES
College*Intro-course FE	YES
Observations	100,264
R-squared	0.9683

Note: This table restricts the sample to English and math courses taken by students with valid developmental placement records. We use these course records to test whether a student was less likely to take condensed-format courses in subjects where the student was previously identified as underprepared. The outcome variable is an indicator of whether a given course enrollment is in condensed format. The key independent variable indicates whether the course is in a subject area where the student was assigned to take developmental coursework. The model includes student fixed effects, section-level controls, and college-by-intro-course fixed effects. Standard errors clustered at the student level are shown in parentheses. Robust standard errors are in parentheses. Significance level: *** p<0.01, **p<0.05, *p<0.1.

Table 4. The Impact of Condensed Courses on Student Outcomes (Restricted to Courses with No Format Variation in the Term)

	Persist to the end of the course	Pass the course (D or higher)	Pass the course (C or higher)	Course grade	Course retaking	Take additional courses	Take additional courses and pass (D or higher)	Take additional courses and pass (C or higher)	Persist to the end of the course	Pass the course (D or higher)	Course grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Condensed Courses	0.0325	0.0217	0.0512**	0.1424*	-0.0009	0.0256	0.0280	0.0300	0.0018	-0.0028	-0.0191
	(0.0200)	(0.0208)	(0.0231)	(0.0761)	(0.0157)	(0.0270)	(0.0251)	(0.0250)	(0.0068)	(0.0074)	(0.0279)
Course section features control	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Student FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
College*Intro-course FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	182,108	182,108	182,108	182,108	182,108	182,108	182,108	182,108	69,606	69,606	69,606
R-squared	0.7821	0.8401	0.8360	0.8737	0.7104	0.7818	0.7759	0.7711	0.9823	0.9847	0.9883

Note: This table reports results from regressions estimated using student course enrollment data. Course grades are measured on a scale from zero to four. Each model incorporates controls for student individual fixed-effects and college-by-course fixed-effects for the introductory courses. Models from columns (9) to (11) further control for subsequent course-section fixed-effects. Furthermore, the models account for section characteristics of the introductory courses, including course modality (online versus face-to-face), the total number of students in the course section, and the course schedule (weekend or weekday, day or evening). Instructor attributes are also included, including gender, race/ethnicity, employment status (full-time versus part-time), and teaching experience. Classes below the college level, student developmental courses, and courses graded on a pass/fail basis are excluded. Robust standard errors are in parentheses. Standard errors are clustered at the college level. Significance level: *** p<0.01, **p<0.05, *p<0.1.

Table 5. Relationship Between Share of Condensed-Format Credits and Performance in Traditional-Length Courses

	Term GPA for long courses
Proportion of term credits in condensed format	0.2389***
	(0.0108)
Student FE	YES
College FE	YES
Grade/Terms of enrollment FE	YES
Term FE	YES
Observations	607,263
R-squared	0.5346

Note: This table reports results from a student-by-term regression estimating the association between the proportion of a student's term credits taken in condensed-format courses and their GPA in traditional-length courses during the same term. The model includes student fixed effects, college fixed effects, fixed effects for grade and term of initial enrollment, and calendar-term fixed effects. It also controls for full-time/part-time status and total attempted credits. Robust standard errors are in parentheses. Significance level: *** $p<0.01$, **$p<0.05$, *$p<0.1$.

Table 6. The Impact of Condensed Courses on Student Outcomes Controlling for Instructor's Grading History

	Persist to the end of the course	Pass the course (D or higher)	Pass the course (C or higher)	Course grade	Course retaking	Take additional course	Take additional course and pass (D or higher)	Take additional course and pass (C or higher)	Persist to the end of the course	Pass the course (D or higher)	Course grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Condensed Courses	0.0060	0.0138***	0.0197***	0.0758***	-0.0045	0.0308***	0.0300***	0.0294***	0.0231***	0.0057	0.0014
	(0.0037)	(0.0050)	(0.0049)	(0.0157)	(0.0037)	(0.0056)	(0.0057)	(0.0054)	(0.0084)	(0.0110)	(0.0117)
Instructor Grading History Control	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Course section features control	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Student FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
College*Intro-course FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	393,445	393,445	393,445	393,445	393,445	393,445	393,445	393,445	158,493	158,493	158,493
R-squared	0.6572	0.7531	0.7507	0.8127	0.5808	0.6712	0.6628	0.6550	0.9454	0.9524	0.9496

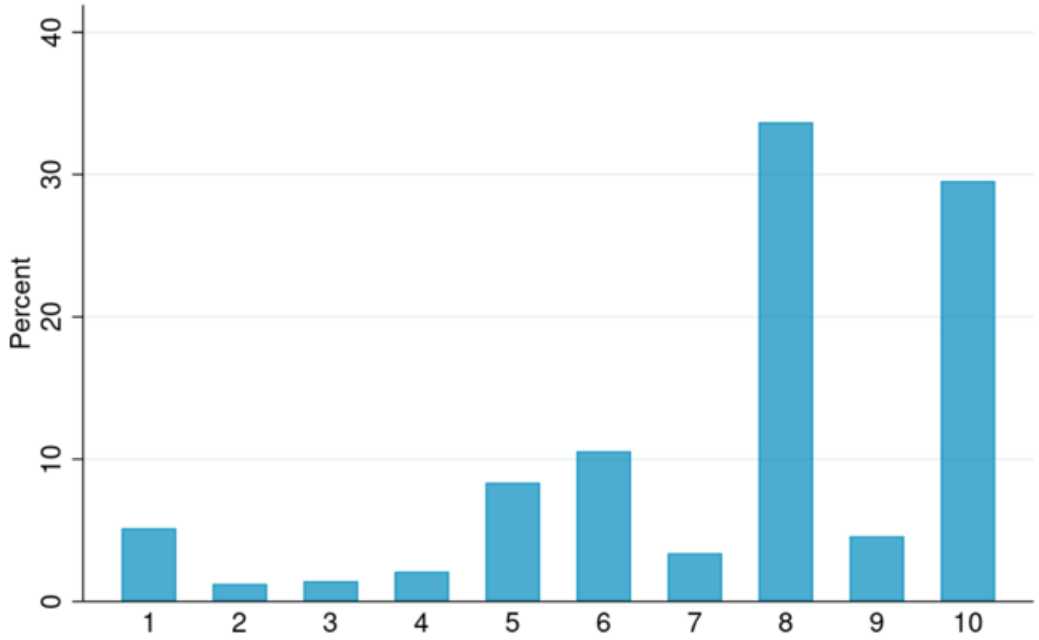
Note: This table reports results from regressions estimated using student course enrollment data. Course grades are measured on a scale from zero to four. Each model incorporates controls for student individual fixed-effects and college-by-course fixed-effects for the introductory courses. Models from columns (9) to (11) further control for subsequent course-section fixed-effects. Furthermore, the models account for section characteristics of the introductory courses, including course modality (online versus face-to-face), the total number of students in the course section, and the course schedule (weekend or weekday, day or evening). Instructor attributes are also included, including gender, race/ethnicity, employment status (full-time versus part-time), teaching experience, and grading history. Instructor's grading history is calculated as the average grades awarded in the same course taught by that instructor over the prior three years. Classes below the college level, student developmental courses, and courses graded on a pass/fail basis are excluded. Robust standard errors are in parentheses. Standard errors are clustered at the college level. Significance level: *** p<0.01, **p<0.05, *p<0.1.

Table 7 The Impact of Condensed Courses on Student Outcomes with Instructor Fixed-Effect

	Persist to the end of the course	Pass the course (D or higher)	Pass the course (C or higher)	Course grade	Course retaking	Take additional course	Take additional course and pass (D or higher)	Take additional course and pass (C or higher)	Persist to the end of the course	Pass the course (D or higher)	Course grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Condensed Courses	0.0012	0.0064	0.0130**	0.0561***	0.0028	0.0187***	0.0151***	0.0129***	0.0230***	0.0043	0.0384
	(0.0036)	(0.0052)	(0.0050)	(0.0173)	(0.0038)	(0.0053)	(0.0053)	(0.0048)	(0.0086)	(0.0109)	(0.0396)
Sample Mean	0.900	0.753	0.687	2.301	0.069	0.382	0.312	0.287	0.921	0.815	2.504
Instructor FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Course section features control	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Student FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
College*Intro-course FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	447,573	447,573	447,573	447,573	447,573	447,573	447,573	447,573	181,487	181,487	181,487
R-squared	0.6576	0.7543	0.7518	0.8182	0.5760	0.6720	0.6621	0.6546	0.9404	0.9489	0.9624

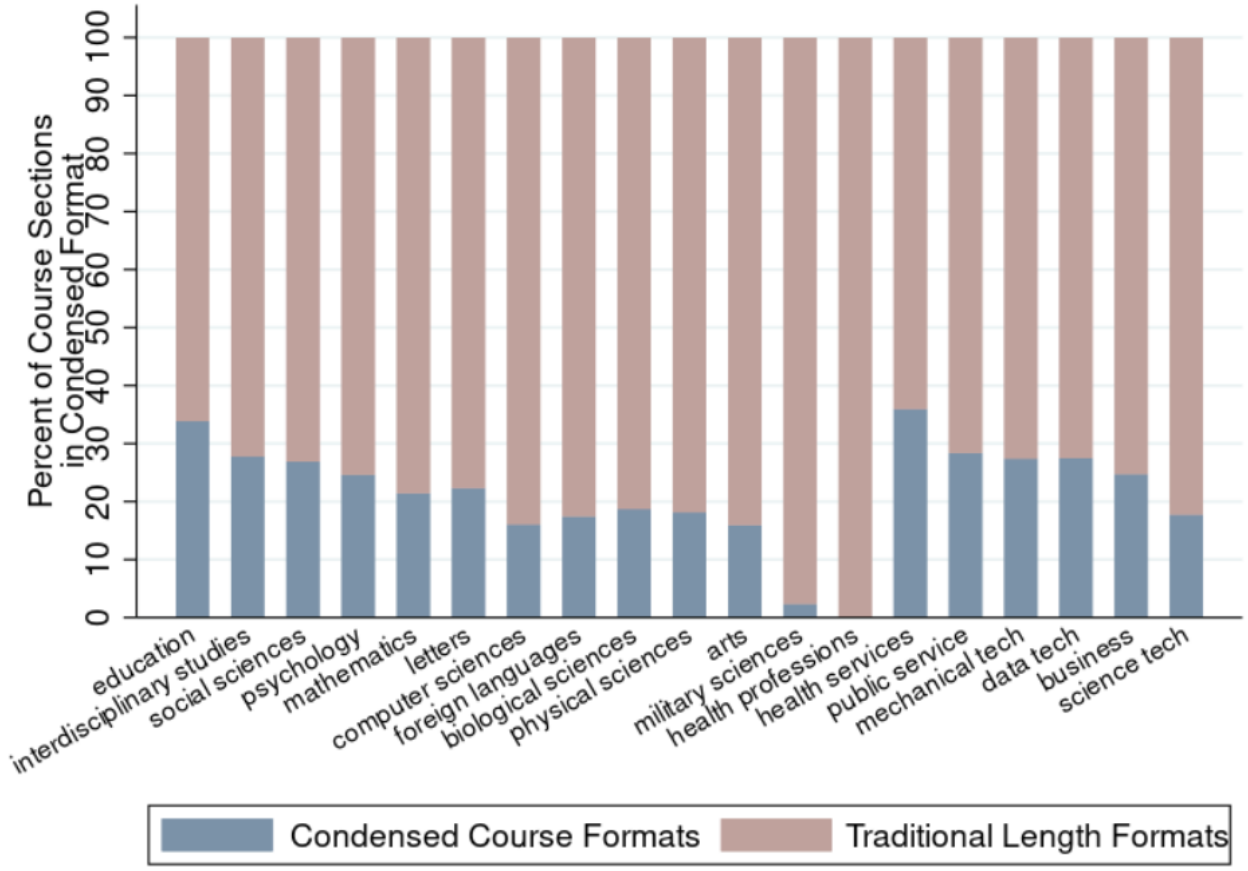
Note: This table reports results from regressions estimated using student course enrollment data. Course grades are measured on a scale from zero to four. Each model incorporates controls for student individual fixed-effects, college-by-course fixed-effects and instructor fixed-effects for the introductory courses. Models from columns (9) to (11) further control for subsequent course-section fixed-effects. Furthermore, the models account for section characteristics of the introductory courses, including course modality (online versus face-to-face), the total number of students in the course section, and the course schedule (weekend or weekday, day or evening). Classes below the college level, student developmental courses, and courses graded on a pass/fail basis are excluded. Robust standard errors are in parentheses. Standard errors are clustered at the college level. Significance level: *** p<0.01, **p<0.05, *p<0.1.

Figure 1. Distribution of Course Durations among Condensed-Format Courses (in weeks) in the Virginia Community College System



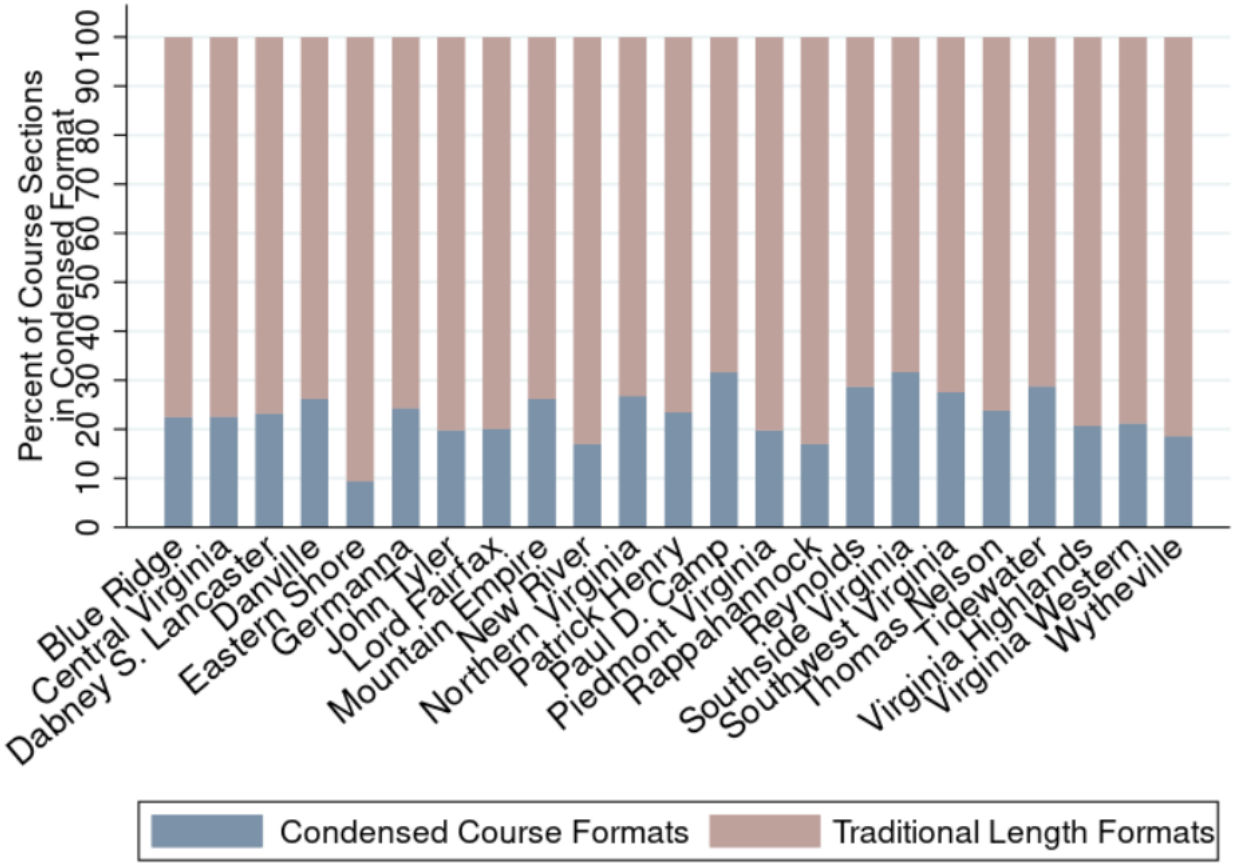
Note: This figure uses administrative course-section-level data and shows the distribution of course durations (in total weeks) for all condensed-format courses offered across the Virginia Community College System (VCCS) between academic years 2010–2011 and 2014–2015. Condensed courses are defined as those with a duration of 10 weeks or fewer. The horizontal axis indicates the number of weeks the course lasted, and the vertical axis shows the percentage of condensed-format courses with that duration.

Figure 2. Share of Course Sections Offered in Condensed Formats (≤10 Weeks) by Granular Subject Area



Note: This figure displays the proportion of credit-bearing, college-level course sections offered in condensed format (defined as courses lasting 10 weeks or fewer) by granular academic program areas across the Virginia Community College System (VCCS) between academic years 2010–2011 and 2014–2015. Academic programs are categorized based on HEGIS classifications.

Figure 3. Share of Course Sections Offered in Condensed Formats (≤10 Weeks) Across Institutions of Virginia Community College System



Note: This figure displays the proportion of credit-bearing, college-level course sections offered in condensed format (defined as courses lasting 10 weeks or fewer) across institutions of the Virginia Community College System (VCCS) between academic years 2010–2011 and 2014–2015.