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Scaling High-Touch College Advising: Causal Evidence and Program Design Insights from Tennessee

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College advising can raise postsecondary enrollment, but few programs prove effective at scale. We leverage the rollout of a statewide, professionally staffed, and centrally coordinated college advising program (Advise TN) across 33 communities to estimate causal impacts on enrollment, persistence, degree completion, and workforce participation. Using event-study and robust difference-in-differences strategies, we show the program raised immediate college enrollment by 3-4 percentage points (roughly 8%), with particularly strong effects for Hispanic, female, and rural students. We show enrollment gains were preceded by larger causal increases in FAFSA filing (7- 8 points) and state aid applications (3-4 points), suggesting a central mechanism: intensive, taskoriented advising must guide students through specific procedural barriers to college entry. We also leverage novel student-advisor interaction data to descriptively show that enrollment gains vary meaningfully by advising intensity, modality, and student-to-advisor ratios, with in-person and hybrid advising associated with substantially stronger outcomes. Consistent with prior work, we find no significant effects on persistence, degree completion, or employment—a pattern we argue reflects the limits of programs focused primarily on short-run task completion: Addressing the academic and financial barriers students face after enrollment likely requires a supplemental focus on longer-run skill development. Our findings contribute to ongoing debates about scaling high-touch interventions and offer practical guidance for program design.

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Abstract
College advising can raise postsecondary enrollment, but few programs prove effective at scale. We leverage the rollout of a statewide, professionally staffed, and centrally coordinated college advising program (Advise TN) across 33 communities to estimate causal impacts on enrollment, persistence, degree completion, and workforce participation. Using event-study and robust difference-in-differences strategies, we show the program raised immediate college enrollment by 3-4 percentage points (roughly 8%), with particularly strong effects for Hispanic, female, and rural students. We show enrollment gains were preceded by larger causal increases in FAFSA filing (7-8 points) and state aid applications (3-4 points), suggesting a central mechanism: intensive, task-oriented advising must guide students through specific procedural barriers to college entry. We also leverage novel student-advisor interaction data to descriptively show that enrollment gains vary meaningfully by advising intensity, modality, and student-to-advisor ratios, with in-person and hybrid advising associated with substantially stronger outcomes. Consistent with prior work, we find no significant effects on persistence, degree completion, or employment—a pattern we argue reflects the limits of programs focused primarily on short-run task completion: Addressing the academic and financial barriers students face after enrollment likely requires a supplemental focus on longer-run skill development. Our findings contribute to ongoing debates about scaling high-touch interventions and offer practical guidance for program design.

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Scaling High-Touch College Advising: Causal Evidence and Program Design Insights from Tennessee

Introduction

College advising is an important way high school students gain information and support while navigating the college search and application process. Although college advising activities have long existed within specific schools and communities, statewide programs evolved relatively recently as states focused more intently on broadly increasing educational attainment to meet growing workforce demands. Many such programs were also developed to target specific regions or populations of students previously underserved by existing practice, including areas without widespread college-going supports or schools with particularly depressed college enrollment rates. These programs, however, vary widely in design and effectiveness. Existing evidence provides generally strong support for college advising at raising students' application and enrollment rates (Dynarski et al., 2023), with the strongest effects flowing from programs that feature experienced and dedicated college advisors who deliver intensive supports (Barr & Castleman, 2021, 2025; Castleman & Goodman, 2018; Castleman & Page, 2015; Oreopoulos & Ford, 2019). However, many of the positive effects observed in smaller scale advising programs fail to fully replicate at the state level (Bettinger & Evans, 2019; Cunha et al., 2018; Hyman, 2020), begging the question: What types of programs do "work" at scale, and what features predict effectiveness?

In this study, we leverage statewide administrative data paired with novel student-advisor interaction records to estimate the direct impact of college advisors on students' short and long-run academic and labor-market outcomes while also descriptively interrogating some mechanisms though which advising appears to "work" at scale. We focus specifically on the rollout of Advise Tennessee (Advise TN) across 33 communities. Since 2017, Advise TN has embedded full-time college advisors in high schools across the state, fully backed by state funding and strong centralized coordination. The program employs and trains professional advisors to guide students through a variety of specific tasks, including one-on-one support for college and financial aid exploration and application. Given limited program resources, 64 high schools applied to participate in Advise TN but only 33 could be supported. We take advantage of this pseudo-random allocation of Advise to schools, allowing us to compare outcomes of qualitatively equivalent students and schools over time. Specifically, we adopt complementary event-study and robust difference-in-differences frameworks to estimate causal impacts of this scaled college advising program on college enrollment, persistence, degree completion, and workforce participation. We also leverage state financial aid records to causally explore the mechanisms through which Advise TN impacts college-going outcomes, including examining changes in students' earliest college-going tasks (i.e., filing the FAFSA filing and applying for state financial aid). Lastly, we also descriptively explore unique student-advisor interaction data to show that variation in student-to-advisor ratios, as well as both the intensity and modality of advising interactions, appear to play a critical role in this process.

Our results show that Advise TN causally raised students' immediate college enrollment rates by 3-4 percentage points (or slightly more than 8%), with particularly strong effects for female (4.5 points) and Hispanic (6.6 points) students, and those in rural communities (6.4 points). We show

these gains in enrollment followed large causal increases in students' earlier college-going behaviors, including Advise's impact of raising students' FAFSA filing rates by 7-8 points and applications for state financial aid programs also by 3-4 points, on average. In our descriptive exploration of advisor-student interaction data, we show that students with incrementally more advisor meetings—and especially those with four or more advisor interactions across their senior year—experienced greater gains in college-going relative to students who met just once with an advisor. Moreover, we also observe that college enrollment rates were descriptively highest among students who received a combination of in-person advising *alongside* virtual support, phone calls, texts, and other communications compared to those who only received in-person advising. We do not detect any meaningful increases in college-going among students who only engaged with an advisor via phone calls, texts, or other means. Finally, we also document that college-going rates were generally highest among students in schools with a student-to-advisor ratio of 300:1 or less, substantially below the national average of nearly 400:1 (American School Counselor Association, 2025).

Like most prior studies, however, we do not detect significant causal impacts of Advise TN overall on students' longer-run outcomes, including persistence, degree attainment, or workforce participation, though there are some small, possible impacts on first-year retention among rural and female students and some possible increases in longer-term degree attainment for white students in the earliest years of the program. Nevertheless, our findings point to meaningful effects of a scaled college advising intervention on raising postsecondary enrollment rates. We show this causal impact comes, in part, by causally raising earlier college-going activities (i.e., FAFSA filing, aid applications) and descriptively identify important (and malleable) program design features that appear to closely correlate with program efficacy. In this way, our work extends prior research on college advising by examining a unique, large-scale, and state-implemented advising model and contributes to our understanding of how and why such programs can be effective. We not only show that a focus on early task-completion matters but also that modality, intensity, and advisor caseloads matter, too. These insights stand to inform the ongoing operation of programs like Advise TN and to support the design and scaling of new programs nationally.

Given that researchers and policymakers alike are also focused on raising students' longer-run college persistence, degree attainment, and labor market outcomes, we leverage our evidence and draw upon prior works to conceptually argue that achieving these goals requires further attention to program design. Interventions that focus on providing students with *information and awareness* often raise students' college-going aspirations and may improve college-going behaviors but often fall short on ultimately raising enrollment (e.g., Dynarski et al., 2023; Odle, 2022). Conversely, interventions that focus on *specific task completion* (like Advise TN), often produce more medium-run impacts like raising college enrollment because they not only include information but also help students directly overcome subsequent barriers (e.g., completing an application together versus being told to complete one, filing the FAFSA with assistance versus being informed about the FAFSA; Castleman & Page, 2015; Dynarski et al., 2023). Interventions that have been shown to persist over time, including those that raise students' subsequent and longer-run outcomes, often additionally focus on cognitive and non-cognitive *skill development*. That is rather, than simply informing a student of an opportunity (e.g., to enroll in college) or even helping them take advantage of it (i.e., by helping them apply), skill development focuses

on tools that persist across contexts and situations (e.g., critical thinking, seeking out resources, navigating complex processes, time-management; Feygin et al., 2022; Mulhern, 2023). If programs intend to have persistent effects, they must likely adopt this "both-and" approach. We leverage the rollout of Advise TN—pairing rich administrative records with novel student-advisor interaction data—to explore how one such program has come to "work" at scale.

In what follows, we first review extant literature on college advising programs, including evidence from similar scaled initiatives at both the high school and college level, paying particular attention to heterogeneity in program design and outcomes. We then provide an overview of Advise TN, its operation, and its rollout across Tennessee before describing our unique data sources. We follow with a description of our empirical strategy and a presentation of our main results, heterogeneity analyses, and descriptive explorations into various advising mechanisms. We conclude with a discussion of our findings and provide a series of implications for policy, practice, and future research.

Background

College access interventions at the high school level are broadly designed to increase college-going rates, usually by lowering financial or administrative burdens for students, and offering additional encouragement to apply and attend. These programs generally target students or schools with low college-going, including students from low-income backgrounds, those in particularly urban or rural areas, and those who will be the first in their family to attend college. The type(s) of intervention(s) that programs employ range widely from very low-touch, text-based nudging (e.g., Hyman, 2020) to high-intensity, wrap-around programs that feature combined advising and mentoring, financial incentives, and other forms of support and encouragement (e.g., Carrell & Sacerdote, 2017).

Central to this broad category of college access programs is dedicated college advising. College advisors generally meet with students one-on-one or in small groups to discuss college and career options and provide direct support with, among other tasks, completing college applications, filing the FAFSA, and exploring options for public and private financial aid. Like other college access interventions, the work of an advisor typically includes providing a combination of information, technical support, guidance, and encouragement. The purpose of college advisors in high schools sometimes overlaps with that of a "counselor," who might support students through high school requirements or various life events, although both are distinct from teacher-based advising or support (Blake, 2020; Mulhern, 2023). In some models of college advising, like that of the national College Advising Corps, advisors are themselves recent high school or college graduates, known as "near-peers" (Horng et al., 2013). The capacity of advisors to deliver support matters for student outcomes, both in terms of how much education and experience an advisor brings to their role (Clayton, 2019), whether they are dedicated exclusively to college advising or fill other roles within schools (Mulhern, 2023), and a school's overall ratio of students to advisors (Bell & Meyer, 2024; Hurwitz & Howell, 2014).

Under the broad umbrella of "college advising," the effectiveness of specific interventions varies by program design and implementation. More personalized and time-intensive mentoring models, on average, yield larger effects than purely informational interventions—and especially

programs that provide students with direct supports to accomplish college-going tasks, rather than just informing them of the task (Dynarski et al., 2023; Mulhern, 2023). Indeed, information and reminders combined with advising or near-peer supports has been shown to increase college enrollment, especially among students who otherwise do not have access to college advising (Castleman & Page, 2015). Furthermore, dedicated support at crucial times, like during the summer between high school and college, can also increase college-going (Castleman et al., 2014). Support integrated into curriculum delivered during the school day is also effective for a wide range of students (Oreopoulos & Ford, 2019). However, the effects of most college access programs tend not to persist beyond college enrollment, where neither postsecondary persistence nor degree completion are often tied to pre-college advising programs (Cunha et al., 2018). This is not to say that students do not gain a variety of knowledge and skills via advising that could persist beyond high school—but rather that a variety of other frictions persist into and through college, financial and otherwise, that college advising in high school cannot overcome. Programs that often yield persistent effects are those that *additionally* focus on cognitive and non-cognitive skill development; tools students can use when facing subsequent barriers to completion and transition into the labor-market (Feygin et al., 2022; Mulhern, 2023).

Many of the same lessons that shape college advising practice at the high school level are informed by additional evidence on in-college advising. In general, college advising interventions that use a more holistic approach and combine elements like advising, financial aid, and academic support tend to improve college student persistence and completion more than programs with a more narrow scope (Feygin et al., 2022). Continuity of advising also matters. Intense, focused advising that bridges from high school into college has been shown to increase persistence to year three of college by as much as 12 points (Castleman et al., 2024). The same advising factors that help push more students into college are those that impact persistence once in college, including the frequency of meetings and task (i.e., paperwork and process) oriented supports (Bettinger & Baker, 2014; Tippetts et al., 2020). Less intense interventions like those that offer just information (“nudges”) are generally ineffective at increasing college student persistence (Oreopoulos & Petronijevic, 2019, Rios, 2019).

Often growing from smaller pilots or regional programs, several national and state-level college advising programs have proven to be successful in encouraging more students to enroll in college and at altering college choice. Virtual targeting of high-achieving, low-income students, like that of the national CollegePoint program, improved the quality of institutions that students attended and overall “match” (Sullivan et al., 2021). As noted, more intensive, in-person advising shows larger positive effects on college-going and persistence. The Boston-based BottomLine initiative provides college access support to low-income students that apply to the program. BottomLine advisors meet regularly with students throughout the college application cycle and primarily help with college match and filing key paperwork like the FAFSA (Castleman & Goodman, 2018). This more intense form of advising alters student choice, with more students enrolling in schools with higher graduation rates (Castleman & Goodman, 2018), which subsequently encourages higher retention and degree completion (Barr & Castleman, 2021, 2025). The quality of college enrollment also shapes longer-run outcomes. A growing body of evidence demonstrates that inducing students to enroll at more selective or resource-rich institutions substantially improves degree attainment and earnings (Barr & Castleman, 2025; Zimmerman, 2019). Advising programs that help students identify and apply to institutions with higher graduation rates may

thus produce longer-run effects even when overall enrollment effects are modest. Programs that focus narrowly on the *act* of enrollment—without attention to institutional fit or quality—may raise college-going rates without shifting completion or earnings, particularly if marginal enrollees sort into lower-resource institutions with already-high attrition.

One other statewide advising program, Advise TX, has evidence on embedded college advisors in high schools. Advise TX operates under a near-peer model, where advisors are recruited from state colleges and universities and trained to serve as advisors in high schools for 1 or 2 years. These advisors, who are often first-generation college students themselves, specifically target low-income and first-generation students in partner schools. However, evidence from randomized assignment of advisors to schools within the program showed no overall effect on college applications, college-going, persistence, or degree attainment (Bettinger & Evans, 2019). Although the overall effect was precisely null, there were some small positive effects on 2-year college enrollment among Hispanic and low-income students. Despite the intentional targeting of underrepresented students in higher education, the near-peer and short-term commitment model of Advise TX may explain the largely null effects of the program. That is, the program may lack many necessary "ingredients" that prior works have shown to yield larger effects, including centralized coordination, professional advisors, and sustained advising practice.

As a scaled, state-funded advising program intended to support students in underserved schools, Advise TX was, in many ways, a conceptual model for the development of Advise TN. However, important programmatic differences exist, suggesting that effects may be quite different. Using the rollout of Advise TN as a case study, our work causally explores these outcome differences and descriptively unpacks a variety of mechanisms that might explain why some programs "work" at scale, including program goals (e.g., a focus on specific task completion versus general college exploration) and variation in advising practice (i.e., intensity, modality, and student-to-advisor ratios).

Advise TN

First implemented with the high school graduating class of 2017 (2016-17 academic year), Advise TN is a state-supported college advising program operated by Tennessee Higher Education Commission (THEC) that has now grown to support over 47,000 students. Figure 1 shows the statewide reach of Advise TN, spanning each of the state's borders, urban and rural zones, and all major population centers. The explicit goal of Advise is to "dramatically increase college-going rates and ensure that more students are ready to access and succeed in higher education" alongside a focus on moving specific outcome metrics in partner schools, including FAFSA filing, scholarship applications, and college enrollment (THEC, 2016, p. 2).[1] Advise TN college advisors work within each partner school to "foster a college-going culture, devise creative approaches to reach and connect with students, and, most importantly, assist students and their families as they navigate the college-going process" (THEC, 2016, p. 3). Advisors achieve these goals by following a regimented series of scheduled tasks with each senior across fall, winter, spring, and summer months, including one-on-one meetings and technical assistance completing a variety of tasks. Specific focus areas include registering for the ACT, filing the FAFSA and applying for state financial aid (HOPE, TN Promise), exploring college options, and

[1] See https://www.collegefortn.org/advise-tn/ for more information on Advise TN.

applying to college, as well as many later steps, including completing college visits, accepting an offer of admission, and registering for classes.[2]

Operating on roughly $2.4 million annually (Tamburin, 2016), Advise TN aims to have every high school senior meet with a college advisor at least once during the academic year, though the modal student meets with an advisor substantially more often. One-on-one meetings comprise the bulk of advisors' daily work. Support during these meetings includes general college and career counseling alongside technical assistance completing college and financial aid applications and related tasks. Advisors provide information and guidance for all postsecondary options, including both 2- and 4-year colleges and universities, as well as for less-than-2-year Tennessee Colleges of Applied Technology (TCATs) and some non-college workforce options, including military service, apprenticeships, and on-the-job training opportunities. Beyond one-on-one support, advisors also engage in school-wide efforts through informational and text-based campaigns to increase general college knowledge, organize in-person "College Application Weeks" and "FAFSA Frenzy" events for students and families, coordinate senior field trips to nearby campuses, host college fairs, and more. Advisors also follow students through the summer after graduation, providing virtual and text-messaging based support to reduce summer melt during a students' transition to college. Advisors at each school focus on an identical set of activities, with similar timelines, providing consistent statewide services.

Advise TN operates by placing full-time advisors in partner high schools across the state. Schools applied to receive these state services. To be initially eligible in 2016, high schools were required to have an immediate college enrollment or "college-going" rate below the rolling three-year state average and not be receiving support from other college access initiatives (e.g., GEAR UP). From a list of over 100 high schools that were initially eligible and invited to apply, 64 ultimately applied. Given limited resources, THEC selected 33 of those schools with an explicit intent to balance the distribution of services across the state and maintain no more than a 350:1 student-to-advisor ratio. While all applicants were required to "demonstrate a commitment to the Advise TN partnership" in their proposals, this pseudo-random selection process yielded two groups: (1) eligible schools who applied and were selected for Advise TN and (2) eligible schools who applied and were not selected for almost as-good-as-random reasons.[3] We leverage this latter group as a natural comparison group.

After school selection, advisors were recruited, hired, and trained by THEC at the state level and then allocated across partner schools. Partner schools committed to having an advisor embedded in their school for at least three years, to provide that advisor with a physical office space or

[2] HOPE is Tennessee's merit-based financial aid program education funded by the state lottery. Students can receive more than $20,000 in total grant aid to attend an in-state public or private technical college, community college, or university. TN Promise is the state's last-dollar, free-community and technical college program, providing students with grant aid to cover all tuition and mandatory fees while they pursue an associate degree or technical certificate.

[3] As discussed later, Table 1 shows that, even though groups were not truly randomly assigned, they are, in fact, similarly balanced on outcomes of interest and student demographics. Our identification strategy does not rely on this randomness or make an assumption that college advisors were randomly assigned by Advise TN. Rather, we simply leverage this application and selection process (1) to net out schools' endogenous application for Advise TN services [thus only comparing applicant schools to other applicants] and (2) as strong justification for a counterfactual comparison group [one with minimal differences to its treated peer].

classroom, and to robust data-sharing with THEC.[4] Advise TN advisors were also explicitly noted to "supplement, not replace, existing high school counseling staff" (THEC, 2016, p. 3). Thus, as state-funded employees (not school- or district-funded staff), advisors are administratively overseen by THEC's Advise TN program leadership (not by school principals) and are precluded from engaging in any non-advising work in schools (e.g., front office support, lunch duty, transportation). THEC also asserts strong control and centralized coordination of Advise TN. The program is overseen by a statewide director and three regional coordinators who manage local advisors. Advisors undergo an intensive initial training followed by annual professional development activities. Advisors also participate in regular virtual and in-person convenings that facilitate a collaborative network among advisors and propel the sharing of knowledge and best practices. Importantly, since 2019, advisors have been required to closely document all student engagements in a customer relationship management (CRM) platform, pairing all texts, calls, emails, and in-person student interactions with students' self-reported, advisor-observed, and administratively-derived student outcome data.

Advise TN advisors are considered "professional" by multiple metrics: The average advisor brings several years of experience to their role, with many being former college counselors, admissions office professionals, or financial aid advisors. Many hold advanced degrees in counseling, higher education, social work, or other related fields. The median age is 40 (ranging from 24 to 60), and the state provides robust compensation for these roles, with a minimum salary of $50,000 per advisor—well above median *household* income in most parts of the state. Additionally, the program aimed to place advisors in schools and regions with which they are familiar, increasing the contextual knowledge and understanding that advisors have of their students, local education and workforce contexts, and the community's general college-going culture. Many are, in fact, graduates of the school they serve or come from a nearby community.

In all, Advise TN presents as a uniquely scaled college advising program that varies significantly from others, including Advise TX and the College Advising Corps. Importantly, Advise TN features strong centralized control and coordination, including ongoing professional development, metric tracking, and reporting, alongside the employment of full-time, professional advisors with long tenures and community embeddedness. In addition to observing how design factors like program coordination, advisor features, and student-to-advisor ratios may relate to program outcomes, novel CRM records on student-advisor interactions in this scaled setting also allow us to explore how advising efficacy may vary by modality and intensity. These realities set a strong foundation for future comparative work that can consider how such variation program design features *across* programs may also relate to efficacy.

Data

Our primary data come from TN DATA, Tennessee's state longitudinal data system. TN DATA capture individual records that follow all students from pre-K through any public high school enrollment to any public or private postsecondary institution in the nation (via the National Student Clearinghouse) and later into the state's workforce. In doing so, TN DATA observes a host of important outcomes, including college enrollments, degree completions, and UI-based

[4] While a three-year commitment was required for initial eligibility, all schools in our sample continued participation in Advise TN through the end of our study window.

employment and earnings. TN DATA records thus allow us to perfectly observe our primary outcomes of interest: students' immediate college enrollment behaviors anywhere, and, for enrollees, whether they persisted (i.e., fall-to-fall or fall-to-spring retention) and ever earned a degree. We can also observe students' status in the Tennessee labor-market, including whether they ever had any earnings by quarter after high school, and, if so, those wages.[5] TN DATA also captures a host of demographic features, such as gender and race/ethnicity.[6] Information on students' high school careers also allow us to observe pre-college factors, including whether they took the ACT, participated in dual enrollment, or completed any career-and-technical education (CTE) coursework. Finally, TN DATA records of course connect students to specific high schools, allowing us to additionally observe specific school features, such as whether a school is eligible for Title I funding (a measure of low-income status) or designated as rural or economically depressed by the U.S. Department of Health and Human Services or other entities.

We additionally pair four novel sources of data with our TN DATA enrollment, degree, and workforce records. First, we received student-level financial aid records from THEC capturing whether a student ever completed the FAFSA or applied for state financial aid programs, including TN Promise; two additional outcomes of interest. Second, we received additional administrative records from THEC on Advise TN, identifying all high schools in Tennessee that applied for Advise, schools that ultimately received an advisor, and the year(s) in which Advise began or persisted at the school-level. Third, Advise TN leaders provided full access to their Slate/CRM database, allowing us to merge student-advisor interaction records at the student-level. We of course cannot observe advising activity at non-Advise TN schools or at Advise TN schools prior to Advise TN, so we treat these records as descriptive supplements to our administrative data. Importantly, however, they do capture every student-advisor interaction in the program's later years, allowing us to observe the number of interactions, as well as each interaction's modality (i.e., text, email, phone, in-person meeting, or other) and a short summary of the interaction. Fourth, and finally, as the statewide coordinating agency for higher education, THEC also provided an inventory of college access initiatives in the state, capturing both local and scaled programs and their year(s) of operation at the high school level. This inventory allows us to perfectly observe all postsecondary college access initiatives in the state (e.g., Advise TN, as well as federal GEAR UP programs, services from nonprofit partners, and others).[7]

Our combined data capture student-level records for high school cohorts across all 33 Advise TN schools and the 31 others who applied but were not selected from academic years 2010-11 to 2019-20, covering all program years through the beginning of the COVID-19 pandemic. Recall

[5] One limitation of UI-based employment measures is that workers employed outside of Tennessee are not observed in UI records and thus appear as non-employed in our analyses. This is a common limitation of UI-linked longitudinal data (Foote & Stange, 2022). We expect this issue to be modest in our setting: Advise TN schools are disproportionately rural and located in economically disadvantaged communities, populations with substantially lower rates of out-of-state migration than college-going students broadly. Furthermore, since treatment and control schools are drawn from the same pool of qualifying applicants with similar demographic profiles (see Table 1), any out-of-state employment bias is likely to affect both groups comparably and leave our estimates largely unaffected. Nonetheless, following Foote and Stange (2022), we note that our employment estimates should be interpreted as effects on *in-state employment* rather than overall employment.

[6] TN DATA codes ethnicity (Hispanic/Non-Hispanic) and race separately. We re-coded any student with a Hispanic ethnicity as also Hispanic for race and relied on a single, combined race/ethnicity variable for all analyses.

[7] As discussed later, this is ultimately useful by ensuring that neither Advise TN nor comparison schools in our sample were contemporaneously treated with other interventions.

that Advise TN began with the 2017 high school graduating cohort. Schools were eligible for the program if they had a college-going rate below the state average and were not receiving support from other college access initiatives. Advise TN began with 30 schools in the 2016-17 academic year. In 2018-19, two of those initial schools began receiving federal GEAR UP supports and thus became ineligible for the program. THEC transferred advising services to two other initial-applicant schools and added advisors to three others in the 2018-19 academic year (2019 cohort). This meant that, among the 33 Advise schools, 28 phased-in in 2017 and the remaining 5 phased-in in 2019. We remove those two GEAR UP recipient schools from our treatment pool because they were contemporaneously treated by other interventions and only received Advise services for two academic years. All other Advise schools, including the 28 remaining schools in the 2017 cohort and all 5 in the 2019 cohort, maintained Advise TN throughout our study window and were never additionally treated by other college access initiatives at local, regional, or state levels. We similarly removed three non-Advise schools from our control group who eventually received GEAR UP grants or other services, resulting in a final pool of 28 comparison schools. In all, our administrative records observe 121,630 students across 33 Advise TN schools and 28 non-Advise schools from 2010-11 to 2019-20.

Table 1 presents baseline descriptive statistics on student outcome metrics and demographics for the class of 2016 in Advise TN schools and non-Advise TN schools. The table also reports mean differences between groups and the *p* value on a *t*-test of those mean differences. Recall that Advise TN was allocated through a pseudo-random process, where schools were eligible and applied but were unable to be served given limited program resources. This process produced treatment and control schools that are well-balanced. These schools not only similarly qualified for Advise TN but also both applied, expressing a similar level of motivation and commitment of resources to engage in the program. In fact, Advise and non-Advise schools had nearly identical and statistically indistinguishable aid application rates, college-going, persistence, degree attainment, and employment outcomes prior to the program's launch. The one mean outcome difference between those groups was on FAFSA filing, where Advise TN schools were 1.7 percentage points below non-Advise TN schools. Schools were similarly strongly balanced on demographic measures, including by gender, Title I status, and CTE coursetaking. Advise TN schools had, on average, more white students, fewer Black students, and were slightly more rural. While neither outcomes nor demographics need to balance to facilitate our identification strategy, these descriptives suggest that our pool of schools who applied but were ultimately not selected for Advise TN represents a strong comparison group.

Empirical Strategy

We employ complementary event study and robust difference-in-differences strategies to estimate the causal impacts of Advise TN as a scaled college advising program. Our approach leverages within-school and across-cohort variation in outcomes, where we compare outcomes for students in Advise TN schools to students in similar non-Advise TN schools over time. This allows us to estimate the direct impact of college advisors on both students' short and long-run academic and labor-market outcomes. Specifically, we first estimate

$$y_{ijc} = \gamma_0 + \gamma_{1c}\text{AdviseTN}_{ijc} \times \text{I}_{c-2016} + \mathbf{X}_i'\beta + \mu_j + \phi_c + \varepsilon_{ijc} \quad . \quad (1)$$

Here, y_{ijc} represents a primary outcome of interest for student i in school j and cohort c. AdviseTN_{ijc} is an indicator for whether high school j had an Advise TN advisor for cohort c, and $\mathbf{X}_{ij}$ captures a vector of individual student covariates, including race/ethnicity, gender, and both dual-enrollment and CTE participation. We interact AdviseTN_{ijc} with cohort (or year) dummies I_c across our study window in an event study framework, allowing us to recover a series of γ_{1c} coefficients that represent the mean difference between students in Advise TN schools and non-Advise TN schools in each year, relative to a 2016 baseline. We then extend this strategy to estimate

$$y_{ijc} = \alpha_0 + \alpha_1 \text{AdviseTN}_{ijc} \times \text{I}_c \sum_{i=2017}^{2020} + \alpha_2 \text{AdviseTN}_{ij} + \mathbf{X}_i'\beta + \pi_j + \rho_c + \nu_{ijc} \quad . \quad (2)$$

Equation (2) is setup similarly to Equation (1) but now recovers the average treatment effect by interacting our AdviseTN_{ijc} indicator with a single post-treatment factor I_c, which takes the value of 1 for any years 2017 and later (or 2019 for the second cohort of Advise TN schools). α_1 thus represents the causal impact of Advise TN on our outcome of interest, or the average difference between groups net of any level differences prior to the program's introduction (α_2). Both equations are conditioned on high school and cohort fixed effects, and we estimate robust standard errors clustered at the school level to account for serial correlation in outcomes between students in the same school.

We estimate the impacts of Advise TN on six primary outcomes, including whether a student filed the FAFSA, applied for TN Promise, enrolled in any college within one year of high school graduation, persisted in college, or ever earned a degree. We also assess whether Advise TN altered a student's likelihood of employment immediately after high school graduation. We define college enrollment as a student having any postsecondary record within one year of expected high school graduation, including at any public or private 4-year, 2-year, or less-than-2-year institution. We define persistence as having an additional postsecondary record in the following semester or within one year (i.e., capturing a traditional fall-to-spring or fall-to-fall retention rate), and degree attainment is defined as ever being awarded a long-term certificate, associate degree, or bachelor's degree within our study window—completely observable via TN DATA records and National Student Clearinghouse supplements. Lastly, we define working as having any positive earnings within one year of high school graduation, captured by state UI records. Persistence, degree attainment, and workforce participation are not conditional on college enrollment. Each of these primary outcomes are observed in TN DATA administrative records. Students' FAFSA filing and scholarship application outcomes are observed in THEC's financial aid records.

Our data capture four post-treatment years of Advise TN, starting with the 2017 cohort and running through the end of our study window (2020 cohort). For our first two outcomes (FAFSA filing and TN Promise applications), THEC's administrative records only capture two pre-treatment years (for the 2015 and 2016 cohorts) at the time of this study, but we observe all six pre-treatment years for all other outcomes (i.e., enrollment, persistence, degree completion, and labor-market participation from 2011 through 2016 and then after Advise TN began).

Recent advances in econometrics have shown that two-way fixed effects estimators may be inconsistent in the presence of treatment effect heterogeneity or variation in treatment timing

(Goodman-Bacon, 2021). To ensure our estimates are not biased by the semi-staggered rollout of Advise TN or the potential for differences in effectiveness across schools, we additionally implement Callaway and Sant'Anna's (2021) doubly-robust difference-in-difference estimator. Callaway and Sant'Anna's (2021) strategy computes a weighted average of 2x2 difference-in-differences estimates (i.e., group-time treatment effects) for each treatment cohort and year, where never-treated units serve as controls, removing improper comparisons of early-adopters to late-adopters, and reducing the strong assumption of treatment effect homogeneity by conditioning parallel-trends on observable covariates.

Assumptions

Before presenting results, we discuss the primary identifying assumption in our setting given our event study and difference-in-differences approach: parallel trends. Both strategies estimate causal impacts by taking mean differences across groups relative to a specific time period (either a baseline year for an event study or across the entire pre/post-treatment period for difference-in-differences), where it is assumed that any outcome deviation between groups in years after a treatment is due to the treatment itself and not other contemporaneous shocks or systematic differences between those groups. That is, in our setting, we assume that Advise and non-Advise TN schools would have followed similar outcome paths from 2017 through 2020 in the absence of Advise—and that differences in these years that did not already exist between groups is thus due to the implementation of Advise TN. We provide support for this assumption in an event study framework presented in Figure 2 and estimated by Equation (1).

For each outcome of interest, we show that outcomes for Advise and non-Advise schools are not only nominally small but are also broadly statistically indistinguishable from one another in the pre-treatment period, providing strong support for the assumption that these schools were following similar outcome paths.[8] We show evidence of Advise's impact in post-treatment years, where there are large and statistically significant increases in immediate college enrollment, FAFSA filing, and TN promise application rates. There also appears to be a possible, albeit small increase in degree attainment but no apparent changes in retention rates among college enrollees or in rates of employment among non-college goers. In all, this provides strong support for our identification strategy and points to meaningful impacts of Advise TN on students' early college-going behaviors and ultimate enrollment.

As with any time-series strategy, we also assume that the introduction of Advise TN represents the only shock separating our treatment and control groups across the pre-post window. As noted, as the statewide coordinating board for higher education, THEC provided a comprehensive inventory of all college access initiatives in the state, capturing both local and scaled programs and their year(s) of operation at the high school level. This inventory allows us to perfectly observe any potential contemporaneous treatments and ensure that neither our treatment nor control groups were exposed. We supplemented this understanding through press scans and conversations with state policymakers, THEC and Advise TN leaders, and local

[8] While Figure 2 shows that Advise and non-Advise schools have nominally similar and statistically indistinguishable differences in FAFSA filing and TN Promise applications prior to the introduction of Advise TN, recall that we are only able to assess parallel trends with one pre-treatment year because financial aid records are only available from 2014-15 (2015 cohort) onward.

advisors and college access staff during in-state presentations, counselor convenings, and in-person site visits by the research team. The one notable policy change in the state around this period was the introduction of TN Promise, the state's free-community-college program, but this program was universally introduced and available to all students beginning in 2016.

Results

Table 2 presents estimated impacts of Advise TN on our outcomes of interest (by column). The first row reports estimates derived from our two-way fixed effects strategy given by Equation (2). The second row reports results from the Callaway and Sant'Anna (2021) doubly-robust difference-in-difference estimator. Baseline means, the average outcome among students at Advise TN schools in earlier cohorts (2011-2016), are also provided for ease of interpretation. Given the number of outcomes we examine, we implement a Benjamini-Hochberg false discovery rate correction across our six primary outcomes and report adjusted q-values for formal tests of significance.

Our primary finding is that Advise TN raised students' likelihood of immediately enrolling in college by approximately 3-4 percentage points. Given an average college-going rate of 48.1% among Advise schools prior to implementation, this represents an 8.3% increase from baseline. We show that this increase in college enrollment followed qualitatively larger increases in students' earlier college-going behaviors, including raising FAFSA filing rates by 7-8 percentage points (or 9-10%) and applications for state financial aid programs by 3-4 points (or roughly 4%)—both tasks being an explicit focus of Advise TN's technical support for seniors. These results are consistent across our two-way fixed effect and doubly-robust estimation strategies. In all, these results suggest that Advise TN not only increased students' earliest college-going behaviors but that those increases also persisted through college enrollment.

Like the majority of similar work (Bettinger & Evans, 2019; Cunha et al., 2018), we do not detect significant increases in students' later academic or labor-market outcomes. Advise TN does not appear to increase the likelihood a student persists in college, though there is potentially suggestive evidence of a small 2.7-point (5%) increase in persistence. However, this result is not consistent across estimators. Advise also does not appear to alter ultimate degree attainment or in-state employment outcomes.[9]

Heterogeneity

While advising provided through Advise TN was universally applied to all students in partner schools, many college advising programs are targeted not only toward specific regions but also

[9] Estimated impacts on persistence and degree completion *conditioned on enrollment* are null and slightly negative (TWFE: -0.010, SE: 0.009), suggesting marginal enrollees induced by Advise TN may persist at somewhat lower rates than prior enrollees, though neither conditional nor unconditional estimates suggest large adverse in-college consequences. Moreover, conditional degree attainment estimates (TWFE: +0.019, SE: 0.011) *are* directionally consistent with unconditional estimates (+0.014), suggesting no particularly meaningful long-run negative impact. That said, we cannot fully rule out adverse welfare consequences for non-completers that are not captured in our labor-market data, including out-of-state employment or long-run debt burdens (also unobservable in our data). Recall that our UI-based employment measure cannot observe out-of-state employment; estimates should thus be interpreted as effects on in-state employment.

toward specific populations of students. Prior works have shown the differential impact of college advising and similar interventions at raising students' outcomes, which has proven to be particularly impactful for lower-income and racially/ethnically minoritized groups (Dynarski et al., 2023; Bettinger & Evans, 2019; Odle, 2022). Table 3 reports two-way fixed effects estimates of the impact of Advise TN on our primary outcomes of interest (by column) across a variety of student and school features (given by row), including race/ethnicity, gender, rural status, and Title I eligibility.

For our primary outcome, where we detect statistically significant improvements in immediate college enrollment, impacts are particularly large for Hispanic (6.6 percentage points) and female (4.5 points) students, and students in rural schools (6.4 points). Black and white students, as well as those in Title I schools, also experienced meaningful increases in college-going ranging from roughly 3.2 to 3.9 percentage points. As with our pooled analysis, these college enrollment increases followed large increases in students filing the FAFSA and applying for state financial aid. Here, we again observe large improvements in FAFSA filing as a result of Advise TN particularly among Hispanic students (10.9 percentage points), and, this time, among Black students (8.9 points). While these groups' benefits were particularly large, every group again experienced a meaningful improvement to FAFSA filing. Likewise, applications for the state's free-community-college program, TN Promise, also improved, particularly among Black (4.2 percentage points) and female (3.6 points) students, and among students in lower-income, Title I schools (3.7 points). In all, Advise TN had robust impacts on students' earliest college-going behaviors and subsequent enrollments overall but was particularly impactful across groups historically underrepresented in higher education.

Recall that our primary analysis provided some suggestive evidence of a small increase change in early-college retention. Our heterogeneity analysis suggests that Advise TN raised first-year persistence by 4.6 points among students from rural schools and may have also raised female persistence by 2.9 points. Likewise, Advise may have boosted white students' degree attainment by roughly 2.0 points, though this estimate is imprecise. Finally, like our primary analysis, we also do not detect any significant changes in students' labor-market participation.

Discussion

Our study is among first to estimate causal impacts of a fully scaled, state-funded, professionally staffed college advising program. We show that the introduction of Advise TN made students approximately 3-4 percentage points more likely to enroll in college immediately after high school (a roughly 8% gain). These improvements in enrollment were preceded by substantial increases in FAFSA completion and applications for state aid. Our findings are consistent with prior evidence suggesting that pre-college advising programs can be particularly effective at changing students' early college-going behaviors (Castleman & Page, 2015; Dynarski et al., 2023). It also points to a mechanism though which programs like Advise TN come to "work" at scale: by providing students with high-touch, technical assistance to complete specific college-going tasks (Dynarski et al., 2023; Mulhern, 2023).

Other large-scale advising initiatives, such as Advise TX and the College Advising Corps, have generally proven to have little if any impact on a host of college-going behaviors (Bettinger & Evans, 2019; Horng et al., 2013). Although our work here does not causally test the impact of

specific mechanisms from differences *between* these programs, our efforts help point to several program features that may explain this difference. Advise TN employs full-time professional advisors rather than recent, "near-peer" college graduates, who serve short-term placements. The advisors are older, on average, and remain in their schools for many years, building trust and continuity in student relationships. Many advisors hold advanced degrees and have extensive, related professional experience, and all advisors receive initial and ongoing professional development from one centralized agency. Advising is also primarily delivered to students in-person in dedicated school spaces for Advise TN advisors. In these ways, students experience a high "intensity" of quality advising in terms of time spent with their advisor and adherence to a regimented series of scheduled tasks accomplished within a given meeting and throughout each student's senior year. This focus of Advise TN on task-oriented support like paperwork and process-completion—and sustained advisor-student relationships—is rooted in evidence on what "works" in college access programming (Castleman & Goodman, 2018; Mulhern, 2023). Our work is among the first to show these features *can* work at statewide scale and helps contextualize the program's notable impact on early college-going tasks and ultimate enrollment.

Student-Advisor Interactions and Program Design

Novel data on student-advisor interactions also allow us to further unpack features descriptively associated with program effectiveness—particularly regarding service delivery. Recall that Advise TN has required advisors to track all student interactions, including both in-person and virtual meetings, phone calls, texts and emails, and other touchpoints from the 2019 cohort onward. Thus, among students in Advise TN schools, we can fully observe the number of interactions each student has with an advisor, as well as each interaction's modality (i.e., text, email, phone, in-person meeting, other), and a short summary of the interaction. Leveraging these data, we define measures of advising intensity and modality and explore their variation relative to our outcomes of interest. To begin, we split students into terciles of intensity defined by how many total meetings they had with an advisor during their senior year, which roughly corresponded to "low" intensity being 1 meeting, "medium" corresponding with 2-3 meetings, and "high" intensity corresponding with 4 or more meetings. With these categories, we can then descriptively explore how students' college-going outcomes vary by intensity level among later cohorts. Table 4 presents these differences by re-estimating Equation (2) and interacting every intensity level with our Advise TN treatment variable and a post-treatment indicator.[10]

Table 4 first descriptively shows that, students who were represented in Advise TN program records (i.e., those who received "Any Advising") were 10.4 percentage points more likely to immediately enroll in college than students in non-Advise schools. This point estimate is of course qualitatively larger than our primary models shown in Table 2 because it descriptively proxies for an estimated treatment effect on the treated (TOT) by only capturing students who verifiably participated in advising; the former being an intent-to-treat (ITT) estimate capturing all seniors in a given Advise TN school. Thus, again, these coefficients are not causally estimated in the same manner as our primary analysis and therefore should be interpreted as descriptive

[10] We fully acknowledge that students' advising intensity and modality is largely endogenous as students make decisions of if and how to engage with advisors. Though all regressions using these categories include high school and year fixed effects alongside student-level covariates, this is still a purely descriptive exercise to explore how program factors and advising delivery correlate with student outcomes.

patterns rather than direct program impacts. However, like our primary models, we also observe that this increase in college-going appears to follow larger descriptive increases in early college-going tasks among students who took-up advising, including roughly 15-point increases in FAFSA filing and TN Promise applications.

For each outcome, we show that higher levels of engagement with an advisor are positively correlated with college enrollment, FAFSA, and TN Promise outcomes. For college enrollment specifically, students who met with an advisor 2-3 times during their senior year were 11.6 percentage points more likely to enroll in college than peers without Advise TN services. Students who participated in 4 or more meetings were, likewise, 19.2 points more likely to enroll within one year of expected high school graduation. Regarding advising modality, we observe that enrollment outcomes are descriptively higher (+16.8 points) for students who received "hybrid" advising services, defined as experiencing both in-person support alongside virtual meetings, calls, texts, and other communications. Students who only participated in in-person meetings were 8.8 points more likely to immediately enroll in college than their non-Advise TN peers. Importantly, and similar to the "nudge" literature, we do not observe any descriptive impact of advising for students who only received virtual support or calls/texts/emails.

TN DATA records also allow us to consider one final program feature likely correlated with advising efficacy: student-to-advisor ratios. For those same 2019 and later cohorts, we place schools into one of four groups with a similar number of high school seniors per advisor, including 1-99 students per advisor, 100-199 students, 200-299 students, and 300 or more students per advisor. Similarly implementing Equation (2) as above shows that, on average, students in schools with a student-to-advisor ratio of less than 300-to-1 experienced the highest descriptive gains in college-going (Table 4). Students in schools with the smallest ratio (1 advisor per up to 99 students) were 11.4 percentage points more likely to immediately enroll in college than non-Advise TN peers, and those in schools with 200-299 students per advisor were 12.7 points more likely to enroll—each compared to an only 10.5-point gain among students in schools with more than 300 students per advisor.

In all, these investigations into further potential mechanisms though which Advise TN comes to "work" suggest that advising intensity, modality, and case load are important. Although we find little evidence of robust downstream effects on persistence, degree attainment, or employment, this evidence does suggest that the program did not induce tradeoffs between college and workforce participation, mitigating concerns that scaled advising might distort postsecondary or labor-market choices.

Impacts in Context

Our primary, causal impacts on access are both substantively large and policy-relevant—and were particularly pronounced among student groups historically underrepresented in higher education. The absence of longer-term effects on persistence or completion aligns with most prior evaluations of pre-college advising (Cunha et al., 2018; Bettinger & Evans, 2019). Advising is inherently front-loaded, addressing informational and procedural barriers to college entry but not the academic, social, or financial frictions that students encounter up through and after enrollment (Delaney & Odle, 2025; Odle et al., 2023). While Advise TN successfully

expanded access to postsecondary education, its limited effects beyond enrollment indicate that additional, complementary supports are needed to sustain these gains once students reach college. Indeed, while the impacts we observe for Advise TN (an intervention that focuses most notably on task completion) are meaningfully higher than prior interventions that focus simply on information and awareness (e.g., as discussed in Castleman & Page, 2015; Dynarski et al., 2023; Odle, 2022), they do not persist in ways that interventions focused on *skill development* are able to (Feygin et al., 2022; Mulhern, 2023). If programs intend to have persistent effects, they must likely adopt this "both-and" approach, equipping students with knowledge and skills to address subsequent barriers to degree completion.

One additional pathway through which pre-college advising can affect longer-run outcomes is the quality of enrollment. Barr and Castleman (2025) show that the degree attainment effects of BottomLine's intensive advising operate substantially through routing students toward institutions with higher graduation rates, not merely through increasing enrollment. Zimmerman (2019) similarly demonstrates large returns to marginal enrollment at selective institutions. Future work should examine whether programs like Advise TN alter enrollment quality alongside enrollment rates.

Taken together, the findings demonstrate that the scaling of intensive advising is feasible and can potentially be effective when implemented through a professionalized, well-coordinated state model. Advise TN's design—centralized training, data tracking, professional staffing, and embedded presence in schools—appears to contrast sharply with the lighter-touch or short-term models that dominate practice and extant literature. These results contribute to ongoing debates about the scalability of high-touch interventions, suggesting that fidelity to evidence-based design, rather than the mere expansion of services, is critical for impact. Moreover, through detailed administrative records and student-advisor interaction data, we show that program design and method of delivery are two features that policymakers and practitioners alike may want to carefully consider. These findings reinforce a broader body of evidence that proximity, continuity, and depth of engagement are likely central to effective college advising, particularly for students who traditionally lack access to college-going supports.

Conclusion

Advise TN offers evidence that intensive, professionalized advising can improve college access at scale. By embedding full-time advisors in schools with historically low college-going rates, the program increased FAFSA completion, applications for state financial aid, and immediate college enrollment across student groups, with especially large effects for women, Hispanic students, and those in rural communities.

Several lessons emerge for policy and practice. First, an explicit focus on task completion appears to matter. Intentional programmatic features of Advise that directly target specific outcomes (e.g., FAFSA filing, scholarship applications) make the initiative distinct among college advising efforts. Through regular interaction and personalized planning, advisors help students navigate complex application and financial aid processes that subsequently raise enrollment. Embedded, in-person advisors provide continuous, individualized support that extends beyond basic informational guidance. This stands in contrast to lighter-touch or virtual

advising models which do not replicate effectively at scale. Second, program design decisions such as centralized oversight, manageable caseloads, and robust data reporting also appear important to achieving effectiveness and monitoring progress. Advise TN's relatively modest annual cost of roughly $2.4 million, driven almost entirely by advisor salaries, also compares favorably with other statewide initiatives such as Tennessee Promise, which costs nearly ten times more annually. In this sense, the program represents a cost-efficient mechanism for advancing statewide attainment goals. At the same time, the program's effects are concentrated at the point of college entry. As policymakers seek to improve not only access but also completion, integrating pre-college advising with postsecondary student success initiatives may be necessary. Partnerships between high schools, community colleges, and universities could ensure continuity of advising beyond matriculation, extending the relational and informational support that appears crucial in the high school context. Similarly, combining advising with financial or academic supports and embedding opportunities for cognitive and non-cognitive skill development could address the multifaceted challenges students face after enrollment.

For researchers, Advise TN underscores the value of rich administrative records and the use of novel interactional data or implementation indicators for unpacking both causal and descriptive mechanisms in scaled interventions. CRM records provided rare, albeit descriptive insights into the dose-response relationships and structural differences between advising intensity and modality and student outcomes, suggesting that treatment heterogeneity within schools can be substantial even in an ostensibly universal program. Future evaluations should continue to exploit such linked datasets to assess how program design, advisor characteristics, and institutional context mediate effectiveness—which could include experimentally altering any or all of these dimensions. Importantly, future work with access to student or school-level data *across* advising programs may also be able to further unpack how program design features, advisor qualities, or other characteristics moderate efficacy.

In all, our work shows that that large-scale advising programs can "work" when implemented with high fidelity to empirically guided program components. Advise TN's specific impacts on early college-going behaviors are not only statistically significant but practically meaningful, representing thousands of additional college entrants from schools and communities with historically low college-going rates. For states seeking to raise college enrollment, this offers a replicable model of scalable, evidence-based advising that complements rather than replaces other college access initiatives. While the program does not eliminate disparities in college completion or workforce participation, it meaningfully expands the front door to higher education—a necessary but insufficient condition for later completion. While near-peer advising and those based on text-based nudges, reminders, and purely informational interventions are all less costly than hiring experienced professionals, the overall quality of advising that Advise TN and its peers deliver appears to be what makes programs like them effective. This already-scaled success can offer a model for other states looking to implement effective advising programs.

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Table 1. *Student demographics and outcome descriptives at baseline.*

	Advise TN (Treatment)	Non-Advise TN (Control)	Mean Difference
Student Demographics			
Black	22.0%	27.0%	-0.045***
Hispanic	7.0%	7.0%	-0.007
White	69.0%	63.0%	0.053***
Female	50.0%	49.0%	0.008
Rural	51.0%	46.0%	0.052***
Title I	89.0%	90.0%	-0.009
CTE	47.0%	48.0%	-0.008
Dual Enroller	23.0%	25.0%	-0.02*
Outcomes			
Filed FAFSA	76.0%	78.0%	-0.017*
Applied for TN Promise	88.0%	87.0%	0.004
Enrolled within 1 Year	51.0%	51.0%	0.002
Persisted	49.0%	48.0%	0.015
Earned Degree	22.0%	21.0%	0.003
Working	82.0%	83.0%	-0.007
Student N	7,125	5,060	
School N	33	28	

Source: TN DATA and THEC administrative data, 2016 cohort.

Notes: Table reports mean demographics and outcomes for students in Advise TN and non-Advise TN schools in 2016, the year immediately prior to the launch of Advise TN, alongside a significance test (p value of t-test) of absolute mean differences between groups. Rural is defined by the U.S. Department of Health and Human Services. Filing the FAFSA and applying for TN Promise are defined as completing those tasks during a student's senior year. Enrolled within 1 Year measures immediate college enrollment, defined as a student having any postsecondary record within one year of expected high school graduation, including at any public or private 4-year, 2-year, or less-than-2-year institution. Persistence is defined as having an additional postsecondary record in the following semester or within one year (i.e., fall-to-spring or fall-to-fall retention), and Degree attainment is defined as ever being awarded a long-term certificate, associate degree, or bachelor's degree within six years or by the end of our study window. Working is defined as having any positive earnings within one year of high school graduation. Persistence, Earned Degree, and Working are not conditional on college enrollment. Figures rounded to whole integers as required by the Tennessee Department of Education (TDOE). Descriptive statistics for American Indian/Alaska Native students, Asian or Other Pacific Islander students, students with more than one race, and students with Other or Unknown races are suppressed as also required by TDOE.

Table 2. *Impacts of Advise TN, by outcome and estimator.*

	Filed FAFSA	Applied for TN Promise	Enrolled within 1 Year	Persisted	Earned Degree	Working
TWFE/Event Study	0.070**	0.037*	0.040*	0.027+	0.014	-0.006
	(0.018)	(0.016)	(0.015)	(0.013)	(0.010)	(0.008)
Heterogeneity Robust DD	0.079**	0.033+	0.034*	0.009	0.004	0.003
	(0.022)	(0.017)	(0.017)	(0.016)	(0.014)	(0.009)
Baseline	0.764	0.868	0.481	0.496	0.203	0.803
Observations	73,129	73,129	121,630	121,630	121,630	121,630

Source: TN DATA and THEC administrative data, 2011-2020 cohorts.
Notes: Significance indicators are adjusted for multiple comparisons and reflect Benjamini-Hochberg FDR-adjusted q-values: + q < .10, * q < .05, ** q < .01, *** q < .001 (Anderson, 2008). Table reports coefficients and robust standard errors (in parentheses) estimating the causal impact of Advise TN by outcome (columns) and identification strategy (rows). TWFE/Event Study implements Equation (2) from the text, and Heterogeneity Robust DD implements Callaway & Sant'Anna (2021). Records for Filed FAFSA and Applied for TN Promise did not begin until the 2015 cohort, so sample sizes are smaller. Baseline means capture outcomes of students at Advise TN schools across pre-treatment years. Standard errors are clustered at the school level. Each cell represents a separate model. Figures rounded. Filing the FAFSA and applying for TN Promise are defined as completing those tasks during a student's senior year. Enrolled within 1 Year measures immediate college enrollment, defined as a student having any postsecondary record within one year of expected high school graduation, including at any public or private 4-year, 2-year, or less-than-2-year institution. Persistence is defined as having an additional postsecondary record in the following semester or within one year (i.e., fall-to-spring or fall-to-fall retention), and Degree attainment is defined as ever being awarded a long-term certificate, associate degree, or bachelor's degree within six years or by the end of our study window. Working is defined as having any positive earnings within one year of high school graduation. Persistence, Earned Degree, and Working are not conditional on college enrollment.

Table 3. *Impacts of Advise TN, by outcome and student subgroup.*

	Filed FAFSA	Applied for TN Promise	Enrolled within 1 Year	Persisted	Earned Degree	Working
Black	0.089***	0.042+	0.039+	0.025	0.003	-0.020
	(0.023)	(0.023)	(0.020)	(0.021)	(0.014)	(0.012)
Hispanic	0.109***	0.046	0.066***	0.030	0.013	0.002
	(0.025)	(0.038)	(0.014)	(0.019)	(0.022)	(0.026)
White	0.056*	0.030+	0.032+	0.022	0.020+	-0.002
	(0.022)	(0.018)	(0.017)	(0.015)	(0.011)	(0.008)
Female	0.051**	0.036*	0.045**	0.029+	0.014	-0.003
	(0.019)	(0.016)	(0.016)	(0.016)	(0.011)	(0.010)
Rural	0.064*	0.029	0.064**	0.046*	0.019	0.003
	(0.030)	(0.026)	(0.020)	(0.020)	(0.014)	(0.012)
Title I	0.061**	0.037*	0.034*	0.021	0.009	-0.008
	(0.019)	(0.015)	(0.016)	(0.014)	(0.010)	(0.009)

Source: TN DATA and THEC administrative data, 2011-2020 cohorts.

Notes: + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Table reports coefficients and robust standard errors (in parentheses) estimating the causal impact of Advise TN by outcome (columns) and selected subgroup (rows) using TWFE/event study given by Equation (2) and categorical interactions. Standard errors are clustered at the school level. Each cell represents a separate model. Figures rounded. Rural is defined by the U.S. Department of Health and Human Services. Filing the FAFSA and applying for TN Promise are defined as completing those tasks during a student's senior year. Enrolled within 1 Year measures immediate college enrollment, defined as a student having any postsecondary record within one year of expected high school graduation, including at any public or private 4-year, 2-year, or less-than-2-year institution. Persistence is defined as having an additional postsecondary record in the following semester or within one year (i.e., fall-to-spring or fall-to-fall retention), and Degree attainment is defined as ever being awarded a long-term certificate, associate degree, or bachelor's degree within six years or by the end of our study window. Working is defined as having any positive earnings within one year of high school graduation. Persistence, Earned Degree, and Working are not conditional on college enrollment.

Table 4. *Descriptive impacts of Advise TN: Treatment-on-the-treated and by advising intensity, modality, and advisor case load.*

	n	Filed FAFSA	Applied for TN Promise	Enrolled within 1 Year
Any Advising	10,014	0.148***	0.150***	0.104***
		(0.024)	(0.020)	(0.017)
Intensity				
Low (1 meeting)	3,919	0.111***	0.132***	0.040**
		(0.020)	(0.017)	(0.014)
Medium (2-3 meetings)	3,272	0.171***	0.158***	0.116***
		(0.027)	(0.022)	(0.020)
High (4+ meetings)	2,823	0.177***	0.168***	0.192***
		(0.033)	(0.024)	(0.030)
Modality				
Text, Call, Email, Virtual	434	-0.015	0.114**	0.026
		(0.053)	(0.036)	(0.034)
Hybrid	2,515	0.136***	0.166***	0.168***
		(0.035)	(0.025)	(0.032)
In Person	7,065	0.162***	0.147***	0.088***
		(0.021)	(0.020)	(0.015)
Case Load				
1:99	519	0.141	0.181*	0.114*
		(0.092)	(0.079)	(0.046)
100:199	2,547	0.128***	0.140***	0.082**
		(0.036)	(0.028)	(0.028)
200:299	2,084	0.204***	0.173***	0.127***
		(0.052)	(0.046)	(0.027)
300+	4,864	0.135***	0.143***	0.105***
		(0.034)	(0.027)	(0.026)
Observations		34,082	34,082	34,082

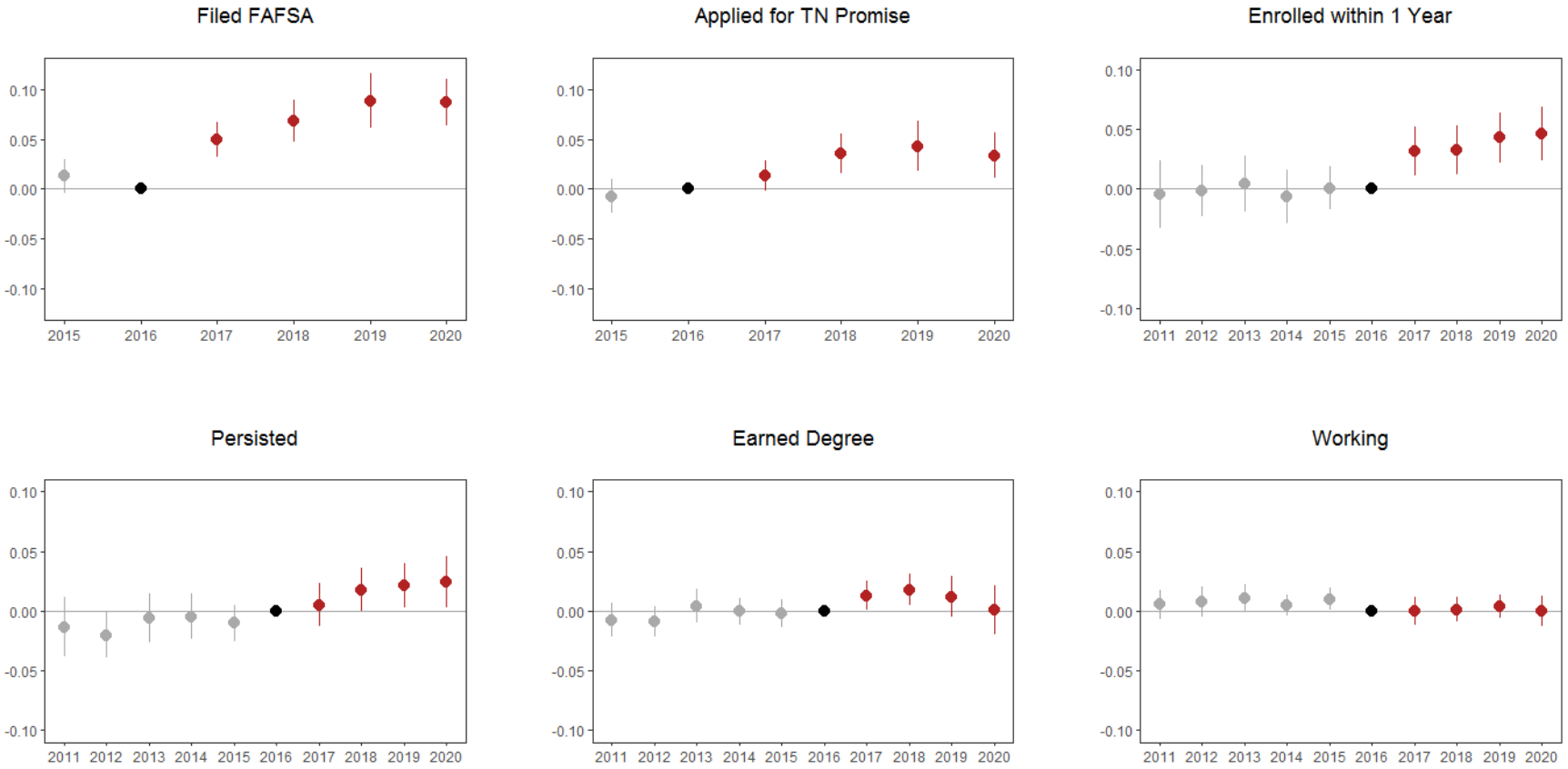
Source: TN DATA and THEC administrative data, 2015-2020 cohorts.
Notes: + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Table reports coefficients and robust standard errors (in parentheses) estimating descriptive differences in outcomes (column) by variation in advising practice/context (rows) using TWFE/event study given by Equation (2) and categorical interactions. Advising records are only available for the 2019 cohort and later; financial aid records for the 2015 cohort and later. Any advising is defined as a student appearing in an Advise TN student-advisor interaction record, not just those enrolled in an Advise TN school (i.e., TOT versus ITT), thus student counts are lower (comparing students in Advise TN schools who received/took-up advising to students in control schools). n captures number of unique Advise TN students overall or in a given category. Intensity is split by tercile. Modalities are exclusive categories: A student either received exclusively in-person contact with an advisor, virtual/call/text/email/other interactions, or a combination of both ("hybrid"). Case load is the number of students in the senior class per Advise TN advisor. Standard errors are clustered at the school level. Each cell represents a separate model. Figures rounded. Filing the FAFSA and applying for TN Promise are defined as completing those tasks during a student's senior year. Enrolled within 1 Year measures immediate college enrollment, defined as a student having any postsecondary record within one year of expected high school graduation, including at any public or private 4-year, 2-year, or less-than-2-year institution.

Figure 1. *Counties and schools served by Advise TN.*

Alvin C. York Institute *^
Austin East High School ^
Bledsoe County High School *^
Brainerd High School ^
Cheatham County Central High School *^
Chuckey-Doak High School *^
David Crockett High School ^
Dickson County High School *^
Dyer County High School *^
East Hickman High School *
Franklin County High School *
Fulton High School ^
Grundy County High School *^
Halls High School *
Hancock High School *^
Hickman County High School *^
Humboldt Junior and Senior High School *^
Hunters Lane High School ^
Jefferson County High School ^
Kenwood High School
Lake County High School *^
LaVergne High School ^
Lenoir City High School ^
Liberty Technology Magnet High School ^
Lincoln County High School *^
Mitchell High School ^
North Greene High School *^
Northwest High School ^
Overton High School ^
Sequoyah High School *^
Van Buren County High School *^
Warren County High School *^
White County High School *^

Source: THEC Advise TN program records.
Notes: Figure maps counties containing 33 Advise TN high schools included during the study window. Listing identifies all high school partners. An * identifies schools designated as rural by the U.S. Department of Health and Human Services and ^ identifies Title I schools or those deemed economically disadvantaged by the Appalachian Regional Commission.

Figure 2. *Event study plots: Impact of Advise TN, by outcome.*



Source: TN DATA and THEC administrative data, 2011-2020 cohorts.
Notes: Figures plot γ_{1c} coefficients and 95% confidence intervals described in Equation (1) comparing student outcomes in 33 Advise TN schools to those in 28 non-Advise TN schools relative to the 2016 baseline cohort. Grey points (2011-2015) are pre-treatment; red (2017-2020) are post-treatment. All outcomes are binary, thus the Y-axis represents a percentage-point difference in the likelihood of a given outcome. Recall that financial aid records are only available from 2014-15 (2015 cohort) onward, thus FAFSA and TN Promise comparisons have fewer pre-treatment years. Axes are standardized for convenience and may make true variance for some outcomes appear smaller. Filing the FAFSA and applying for TN Promise are defined as completing those tasks during a student's senior year. Enrolled within 1 Year measures immediate college enrollment, defined as a student having any postsecondary record within one year of expected high school graduation, including at any public or private 4-year, 2-year, or less-than-2-year institution. Persistence is defined as having an additional postsecondary record in the following semester or within one year (i.e., fall-to-spring or fall-to-fall retention), and Degree attainment is defined as ever being awarded a long-term certificate, associate degree, or bachelor's degree within six years or by the end of our study window. Working is defined as having any positive earnings within one year of high school graduation.