



Non-traditional Student Advising Before College: Lessons from Navigate Reconnect

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Prospective college students benefit from tailored advising and guidance about whether, where, and how to enroll. Support for college planning drops sharply after students leave high school, however, leaving non-traditional students largely on their own. We study Navigate Reconnect, a Tennessee advising program that intends to fill this gap. We evaluate how Navigate Reconnect access and participation relate to post-secondary enrollment, credential completion, and short-term workforce outcomes. First, we link expansion of the Reconnect model across Tennessee to growth in non-traditional student enrollment at colleges and universities in or near a Tennessee Reconnect Community. Then, we use a matched difference-in-difference framework to estimate the effect of Reconnect participation on individual post-secondary and workforce outcomes. Reconnect participation coincides with a spike in applications for unemployment benefits and a small decline in earnings. Relative to matched non-participants, Reconnectors earn 53% more post-secondary certificates over the three years following program intake, along with more than 4.5 times as many associate's degrees and 22% more bachelor's degrees. At the end of three years Reconnectors are 3% more likely to have in-state employment.

VERSION: September 2026

Suggested citation: Carruthers, Celeste K., and Emily Pratt. (2026). Non-traditional Student Advising Before College: Lessons from Navigate Reconnect. (EdWorkingPaper: 26-1594). Retrieved from Annenberg Institute at Brown University: <https://doi.org/10.26300/fk39-ny33>

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Abstract

Prospective college students benefit from tailored advising and guidance about whether, where, and how to enroll. Support for college planning drops sharply after students leave high school, however, leaving non-traditional students largely on their own. We study Navigate Reconnect, a Tennessee advising program that intends to fill this gap. We evaluate how Navigate Reconnect access and participation relate to post-secondary enrollment, credential completion, and short-term workforce outcomes. First, we link expansion of the Reconnect model across Tennessee to growth in non-traditional student enrollment at colleges and universities in or near a Tennessee Reconnect Community. Then, we use a matched difference-in-difference framework to estimate the effect of Reconnect participation on individual post-secondary and workforce outcomes. Reconnect participation coincides with a spike in applications for unemployment benefits and a small decline in earnings. Relative to matched non-participants, Reconnectors earn 53% more post-secondary certificates over the three years following program intake, along with more than 4.5 times as many associate's degrees and 22% more bachelor's degrees. At the end of three years Reconnectors are 3% more likely to have in-state employment.

I. Introduction

Navigate Reconnect is a college advising program in Tennessee for prospective students who are over age 23 or financially independent. The program serves a population that generally goes by the shorthand “non-traditional students,” and we follow that convention in this study. But we acknowledge that “non-traditional” minimizes how common it is to have an interrupted or self-funded transition between high school and college. About one-third of U.S. college students were at least 25 years old in 2021, and more would have been considered independent for the purposes of federal financial aid. We also note that “student” obscures an important difference between Navigate Reconnect and most large-scale systems of post-secondary advising. Navigators work with individuals who are enrolled in post-secondary institutions and pursuing post-secondary credentials—“students,” in the strictest sense—but much of a Navigator’s time is spent helping individuals before they are students. Navigators help *prospective* students determine if a college education would further their goals, and if so, they help them plan and prepare to enroll.

We examine if and how Navigate Reconnect affects post-secondary and workforce outcomes among non-traditional students in Tennessee. The program built from local efforts in Memphis, expanded to several Tennessee Reconnect Communities (TRCs) in 2016 and 2017, and became a statewide initiative in 2019. Between 2019 and 2021, several thousand Reconnectors connected with one of the program’s Navigators to at least explore their interest in college. Navigate Reconnect is one component of broad statewide efforts to increase post-secondary credential attainment, joining tuition-free Tennessee Promise scholarships for traditional-aged students and Tennessee Reconnect grants for non-traditional students in two-year community and technical colleges.

The program’s phased rollout allows us to assess if non-traditional college enrollment increased in an area after the Navigate Reconnect model expanded to cover that area. Specifically, we estimate the effect of two expansion phases of the Reconnect model on total non-traditional student enrollment in nearby institutions. Results link community Reconnect participation with 25% higher levels of total non-traditional enrollment in area schools, with concentrated gains in public and private non-profit schools. Other policies and events coincided with the timing of Reconnect expansion phases, however, so we are not able to confidently attribute gains in non-traditional student enrollment with Navigator coaching alone.

We then narrow our focus to the statewide phase and individual Reconnectors to assess if their college and workforce outcomes were significantly different from others in the Tennessee workforce who were statistically very similar to Reconnectors. Specifically, we match each Reconnector with up to four workers from a random extract of all Tennessee workers covered by Unemployment Insurance (UI), in terms of their demographic profile and recent history of employment, earnings, and unemployment benefit receipt. We then apply difference-in-difference and event study identification to the matched sample to estimate the effect of

contacting the program on later college enrollment, credential receipt, employment, and earnings.

Relative to Tennessee workers who did not engage with the program, we find that Reconnectors were 15.5 percentage points more likely than similar individuals in the Tennessee workforce to be enrolled in a college three years of speaking with a Navigator, and they earned 53% more post-secondary certificates, over 4.5 as many associate's degrees, and 22% more bachelor's degrees.

This higher level of engagement with college coincided with about the same level of employment but somewhat lower earnings. Both patterns started to change 1 – 2 years after program contact. After three years, the longest post-contact window we observe, Reconnectors were on their way back to their pre-program level of earnings and were 2 – 3 percentage points more likely to be employed. About 16% of Reconnectors who spoke with a Navigator between 2019 and 2021 (a time period that included the COVID-19 recession and recovery) had just applied for unemployment benefits. Reconnectors' UI application rates fell shortly thereafter, in parallel with higher rates of employment.

When students are in high school, they benefit from a longstanding network of faculty, staff, and counselors who provide information and guidance about going to college, evaluating post-secondary options, and applying to enroll and pay for college. This network includes college admission counselors who work directly with high school staff and students. The effectiveness of this system is uneven (Mulhern, 2023) and benefits from supplemental support (Barr & Castleman, 2025), but nevertheless, it is much richer, more comprehensive, and more proactive than college coaching for non-traditional students. Navigate Reconnect is intended to help fill the gap. Our findings indicate that Navigate Reconnect succeeds in this effort and supports non-traditional students in getting to and through college.

II. Program Background

Navigate Reconnect History

Navigate Reconnect grew from two parallel efforts to better serve adults returning to school or hoping to enroll in college for the first time.

The first was Graduate Memphis, a replication of the Graduate! Philadelphia program and part of The Graduate! Network (TGN). Like other programs in TGN, Graduate Memphis offered institution-neutral advising and focused on individuals who were older than traditional-aged college students—usually aged 25 or greater—and who had previously enrolled in college but had left without a degree (known as comebackers in TGN). Also following TGN, Graduate Memphis was based on a collective impact model that organized input and resources from employers, government, and schools in the community around a central backbone entity (Kania & Kramer, 2011).

The second impetus for what would become Navigate Reconnect was Tennessee's Drive to 55 (D55), which was introduced in 2014 and helped to sustain momentum from the 2010 Complete College Tennessee Act (CCTA). Among other things, the CCTA introduced an outcomes-based funding formula which attached state funding to completed credentials and other outcomes for the state's public colleges and universities. A few years later, D55 established a college attainment target for Tennessee, aspiring to have 55% of the state's working-age adults with a college credential by the year 2025. D55 was led by Governor Haslam's administration and the Tennessee Higher Education Commission (THEC), who sought to address a large projected gap between college-educated workers in the state (estimated at 39% of the working-age population in 2014) and labor market needs over the coming years (Carnevale and Smith, 2012; Carnevale et al., 2013).

The most prominent part of D55 was Tennessee Promise, which offered last-dollar tuition grants for traditional community college students—that is, new high school graduates who enrolled directly in a community or technical college. Tennessee Promise was the inspiration for similar programs in several other states and two federal proposals. The D55 attainment goal would not be met with new high school graduates alone, however, and many working adults in the state had at least a latent interest in college.

Through D55, THEC introduced multiple programs under a broad “Reconnect” umbrella for current and prospective non-traditional students. Some initiatives addressed financial needs among this population, including last-dollar Tennessee Reconnect grants that were first available in 2015. Tennessee Reconnect grants were initially limited to older students in one of the state's 27 Tennessee Colleges of Applied Technology (which award certificates and diplomas but not degrees), but then expanded to cover non-traditional students in community colleges starting in 2017 (Tennessee Office of the Governor, 2017). Non-traditional students also tend to face a wide-ranging and unpredictable array of non-financial challenges on the way to or through college. With this in mind, THEC surveyed different models of college advising and coaching support for older and independent students. They identified Graduate Memphis as a promising and scalable system. The program's community focus and institution-neutral strategy were appealing, since they would conceivably allow THEC to reach more potential learners across the state's rural, suburban, and urban areas.

Taking Graduate Memphis and TGN as a starting point, THEC introduced Tennessee Reconnect Communities (TRCs) in 2016 and 2017 through two competitive grant cycles. Eight TRCs were created through this process. Each received \$225,000 in funding along with organizational and technical support from THEC and TGN to implement the basic TGN parameters, tailored to their own community. Departing somewhat from the TGN model, TRCs broadened the target population to include individuals under age 23 who could be considered independent for the purposes of federal financial aid, as well as prospective students who had no previous college experience. TRCs ranged in size from one to thirteen counties. In the second grant cycle, THEC also integrated “adopter communities,” which were smaller-scale and pre-existing programs for

adult learners. These included Graduate Memphis as well as federally funded Educational Opportunity Centers.

TRCs operated from an 18-month grant timeline and were expected to be self-sustaining thereafter. In practice, however, THEC found that this would leave many parts of the state underserved as TRCs either phased out without renewed funding or did not materialize through the competitive grant process. In 2019, THEC centralized the TRCs into a single, statewide model with sustained state funding. The program came to be known as Navigate Reconnect.

Centralization afforded Navigate Reconnect statewide coverage and a stable funding stream, but at some cost to the community-rooted structure central to TRCs, TGN, and the collective impact model. Day-to-day, this meant that there was more regularity in program management and how students engaged with Navigators but less direct involvement from local education and workforce organizations, and less tailored outreach to communities. To give one example, Navigators under the TRC model would attend high school football games, local festivals, and other community events to connect with current and potential students, whereas this approach is not as viable under a statewide program. These activities were put further out of reach by COVID-era shutdowns.

In lieu of community representation through TRCs, Navigate Reconnect staff include regional directors who create and maintain relationships with higher education institutions, employers, nonprofits, and other stakeholders. Centralization decreased the number of total Navigators as that role shifted from many part-time individuals dispersed throughout partner organizations to 12 full-time Navigators employed by the state. Finally, and pertinent to our results to follow, the 2019 centralization of TRCs led to a data management system that allowed for comprehensive and consistent measures of student intake, participation, enrollment, and completion. These data allow us to study the effect of the Navigate Reconnect model, and specifically the post-2019 statewide framework, on post-secondary and labor outcomes.

Navigate Reconnect Today

From a student's perspective, they might first encounter Navigate Reconnect through any of the major media platforms: social media, TV, radio, billboards, institutional and state websites, and so forth. They might also meet a Navigator in person at a regional or college event, or they might be directed to contact a Navigator after applying for the Tennessee Reconnect grant. At some point they complete a simple form where they provide their contact information and describe their basic demographic information, educational background, income, employment, public assistance receipt, recent incarceration history, and whether they are aware of any unpaid student loan or institutional fee balances. All questions are required but most include "unsure" or "prefer not to say" as valid answers. Submitting this form initiates the Inquiry phase of the Reconnector's involvement with the program.

Reconnectors are then prompted to schedule an intake interview (“Goal Call”) with a Navigator. Statewide, 12 Navigators serve four regions, grouped by community college service area. The inquiry phase is meant to move a Reconnector from initial interest in college to a commitment to enroll, or at least a better understanding of whether college is suitable for their circumstances and goals.

During the intake interview, a Navigator learns why the Reconnector is interested in college, what they hope to gain from college, and what concerns they have about enrolling in college. Navigators follow the appreciative advising model (Bloom et al., 2008), which emphasizes that the Reconnector’s perspective and goals should drive this initial conversation. Common concerns that Navigators are prepared to address include “I would be the oldest student in my class,” “College doesn’t fit into my life now,” and “How can a degree help me find a job?”

The inquiry phase concludes after the intake interview. At that point, the Reconnector moves into the Pre-enrolled role if they are committed to enrolling in college. Others might instead conclude that college is not right for them, at which point they move to the Inactive role in program records. Others may elect to remain in the inquiry role indefinitely or until their circumstances change. Finally, some Reconnectors are shifted into the Out-Referral role at this point if they need English as a Second Language services or a high school equivalency credential before taking additional steps toward college. Navigators may make additional referrals at this or later phases if a Reconnector might benefit from public services such as EBT/SNAP assistance, cash assistance, or Medicaid health insurance.

For those who move into the pre-enrolled phase of Navigate Reconnect, Navigators use what they learned in the intake interview and subsequent connections with the Reconnector to determine college readiness and survey the available options. The appreciative advising model emphasizes Reconnect/Navigator collaboration, and together, they co-create a plan for applying to college and applying for financial aid. Articulating college and career goals is a critical part of this, and Navigators will help students understand where specific colleges, programs, and financial aid opportunities might fit on the way to meeting those goals. Navigate Reconnect is institution-neutral, meaning that the program does not direct students toward a specific set of institutions. This allows advisers to provide more differentiated guidance to prospective students.

Also during the pre-enrollment phase, students work with Navigators to put their plan into motion, identify barriers to starting college, and overcome those barriers if possible. For example, some students will learn that they have an unpaid balance at an institution that they previously attended, which prevents them from obtaining a transcript until the balance is cleared. Others will learn that they have federal student loans in default, which prevents them from applying for new aid. Navigators work with Reconnectors around these and other challenges to the extent possible, helping them collect everything they need to submit applications for financial aid and enrollment.

Some Reconnectors will stay in the pre-enrolled stage if they are committed to enroll but need to pause their enrollment plan indefinitely while they rehabilitate student loans or prior institutional balances. Others may move into the inactive role if they change their intentions about enrolling in college, or if they are non-responsive after six attempted contacts by their Navigator. Reconnectors conclude their pre-enrolled role after they have been accepted to enroll in a college or university.

Reconnectors who move into the Enrolled role and phase of Navigate Reconnect maintain contact with their Navigators. These connections are less frequent, however, since Navigators advise on the logistics of getting to college more so than course planning, study habits, or other things that are more in the purview of academic advisors. Navigators might discuss the purpose of orientation with their Reconnectors, how to prepare for the first day of classes, or what they can do when unanticipated problems or schedule conflicts arise. They have, at times, helped to identify and resolve systemic issues that affect Reconnectors as well as their non-Reconnector classmates. For example, Navigators learned that some Reconnectors had been purged from course rolls because a pending state grant had not yet been recorded in their financial aid profile. Navigators corrected the discrepancy with institutions, alleviating what might have otherwise been an onerous and disruptive process for many students.

More generally, Navigators check in with enrolled Reconnectors for status updates, and as needed, help enrolled Reconnectors troubleshoot and identify solutions to problems that may affect their ability to persist in college. Some enrolled Reconnectors will subsequently move into the inactive role if they stop out of college or lose contact with their Navigator for more than two semesters.

A Reconnector moves into the Alumni role once they have completed the goal or goals that they articulated in their intake meeting, or once they have attained a post-secondary credential and have no plans to pursue additional education. Navigators are not expected to maintain contact with their Reconnectors once they meet this milestone.

III. Related Research

Research on Navigate Reconnect has been largely limited to internal program snapshots and brief mention in the Tennessee Comptroller's report on the Reconnect Grant (Spires et al., 2022). Most related to our study are descriptive reports on Navigate Reconnect and Reconnector outcomes after the 2019 statewide expansion and centralization (Carruthers & Pratt, 2024, 2025). These reports showed that 33% - 43% of Reconnectors enrolled in college (typically a Tennessee community college) within one year of first speaking with a Navigator. Reconnectors were much more likely to persist in college for two years than other non-traditional students, and/or earn a post-secondary credential in that time (55% versus 44% in community colleges). This is a very large gap favoring Reconnectors and the Navigate Reconnect model of college planning, but it is not necessarily an accurate estimate of how the model changes an individual's pathway to or through college.

It is important to consider why Reconnectors chose to reach out for help with their college plans. They may have been more motivated to pursue a college education, and that motivation may be partly or wholly responsible for why they persisted in college and completed credentials at higher rates than other non-traditional students. On the other hand, Reconnectors may have reached out for help because they faced bigger obstacles than other students. Carruthers & Pratt (2024) report that 86% of Reconnectors cited financial concerns as one of their biggest challenges to enrolling in college. They were also more likely than other non-traditional students to be working when they enrolled. If Reconnectors were at more of a baseline disadvantage than other non-traditional students, they may also have had a lower baseline rate of persistence and completion.

Estimated outcomes in the absence of Navigate Reconnect, i.e., counterfactual outcomes, are necessary for a causal evaluation of how the program affected students. In this study, we narrow in on two different kinds of counterfactuals: communities who did not host the program prior to 2019, and matched non-participants with a statistically similar education and employment background as Reconnectors.

Ours is one of the first evaluations of a college advising program targeting would-be non-traditional students before they enroll. Most prior research focuses on coaching or advising for non-traditional students who are already enrolled in college (Weiss et al., 2019; Evans et al., 2020), on traditional-aged students who receive a similar degree of planning and logistical support as Reconnectors (Barr & Castleman, 2021), or on traditional-aged students and their responsiveness to low-touch nudges and reminders about college and financial aid applications (Castleman and Page, 2015; Gurantz et al., 2020; Avery et al., 2021; Bird et al., 2021).

Perhaps closest to the Navigate Reconnect context, Barr et al. (2024) report on the results of a large, randomized controlled trial that provided information and advising support to service members in the U.S. Army. As in our study, they focused on a college advising program for a population of would-be non-traditional students before they enrolled. Through emails, text messages, and letters, the intervention encouraged service members to consider affordable, high-quality colleges and universities after they left the Army. Such institutions could be a substantial improvement over colleges with poor graduation rates or low labor market value, where veterans have historically been over-represented. The researchers provided each individual with a personalized list of four academically and geographically well-matched institutions, as well as access to text-based advising. Barr et al. (2024) find no effect of this form of low-touch information or advising on veterans' college choices.

This body of prior research helps us form expectations for how Navigate Reconnect may have affected students. We know from Evans et al. (2020), for example, that a case management approach to advising can help low-income students complete college. Navigate Reconnect similarly aims to identify non-academic barriers to college, and to help prospective students work through them. We also know from recent field experiments that local or personalized

connections can be more effective at helping students enroll in college than standardized, low-touch advising (Castleman and Page, 2015; Gurantz et al., 2020; Avery et al., 2021; Bird et al., 2021; Barr et al., 2024). Navigate Reconnect’s model centers on personalization, and Navigators are based in the same region of Tennessee as their Reconnectors.

Finally, we know from prior work that intensive one-on-one college coaching can be particularly effective at helping students enroll in college and ultimately complete degrees (Barr & Castleman, 2025). The Bottom Line program that Barr & Castleman studied is an intensive college coaching program for economically disadvantaged, college-ready high school students in Boston, Worcester, New York City, and Chicago. They find that access to Bottom Line advising increased the likelihood of earning a college degree by 8 percentage points, or 16% of baseline rates. Navigate Reconnect shares key features with Bottom Line, even though the two programs focus on very different populations of prospective students, and Bottom Line represents a stronger dosage of college coaching. Both center around one-on-one planning between students and advisors, and both provide personalized plans for applying to college and applying for financial aid. Navigate Reconnect exceeds Bottom Line’s 60:1 caseload, and Bottom Line is somewhat less institution-neutral, directing students toward target schools with strong outcomes. Bottom Line advisers also follow advisees after they enroll in college, maintaining support for as many as six years after high school.

IV. Methods

Sections to follow report results for two different comparisons: multi-county metro areas that participated in Tennessee Reconnect Communities versus areas that did not (Section V), and individuals who contacted Navigate Reconnect and spoke with a Navigator versus other working Tennesseans who did not participate in the program (Section VI). For individual-level analyses, we focus on Reconnectors who contacted the program in the 2019-20 and 2020-21 academic years and completed an intake interview. Program data are more comprehensive for these cohorts, who engaged with Navigate Reconnect after centralization of the TRCs and after THEC organized program and participant information within one data system. With workforce and post-secondary data through mid-2024, we observe up to three years post-contact or post-enrollment to assess the short-term effect of Navigate Reconnect on individual outcomes.

We use a similar identification strategy for each of the two comparisons. If we think of metro area TRC participation or individual program contact as the “treatment” of Navigate Reconnect, our target is an estimate of the average effect of treatment on the treated (ATET) t periods later:

$$(1) \text{ ATET}(t) = \mathbb{E}[Y_t(1) - Y_t(0)],$$

where $Y_t(1)$ represents the value of an outcome Y at time t for Reconnect places or individuals, and $Y_t(0)$ represents what their outcome would have been if they had not engaged with Navigate Reconnect. The term $\mathbb{E}[Y_t(1) - Y_t(0)]$ is the expected, or average, treatment effect. For each of the two comparisons, we identify the six-month time period g when a place or individual first

engaged with the program, whether that engagement was by adopting the program along with a TRC or contacting a Navigator. The ATET will depend in part on that timing:

$$(2) ATET(g, t) = \mathbb{E}[Y_t(1) - Y_t(0)|G = g],$$

We estimate $ATET(g, t)$ using augmented inverse probability weighting (AIPW) as described by Callaway & Sant'Anna (2021), Caetano & Callaway (2024), and StataCorp (2025). The AIPW estimator essentially transforms our panel of outcomes for place or individual i over time periods t (Y_{it}) into a set of classic 2x2 difference-in-difference models comparing treated outcomes at time t with treated outcomes prior to treatment ($Y_t - Y_{g-1}$), net of our estimate of what $Y_t - Y_{g-1}$ would have been without treatment. To characterize this counterfactual change, we rely on places and individuals who do not engage with Navigate Reconnect in the window of time we observe ($G = \infty$) and estimate $m_{gt}(\mathbf{X}, \mathbf{Z}) = \mathbb{E}(Y_t - Y_{g-1} | \mathbf{X}, \mathbf{Z}, g = \infty)$, where $\mathbf{X}$ represents time-varying controls and $\mathbf{Z}$ represents time-invariant controls. Within each 2x2 treatment/control, pre/post comparison, treatment and control outcomes are weighted by a function of the estimated likelihood of being in group g : $p_{gt}(\mathbf{X}, \mathbf{Z})$.

Each of these pieces come together in the following estimator of the ATT:

$$(3) \widehat{ATE}_{gt} = \frac{1}{n} \sum_{i=1}^n (\omega_{gt}^1(\mathbf{X}_{it}, \mathbf{Z}_i) - \omega_{gt}^0(\mathbf{X}_{it}, \mathbf{Z}_i)) \left((Y_t - Y_{g-1}) - \widehat{m}_{gt}(\mathbf{X}_{it}, \mathbf{Z}_i) \right).$$

The weight applied to treated observations in group g at time t ($\omega_{gt}^{1,aipw}$) is the inverse propensity of being in group g :

$$(4) \omega_{gt}^1(\mathbf{X}_{it}, \mathbf{Z}_i) = \frac{\mathbf{1}(G_i=g)}{\widehat{\pi}_g}$$

The weight applied to control observations is a function of their estimated propensity of being in group g :

$$(5) \omega_{gt}^0(\mathbf{X}_{it}, \mathbf{Z}_i) = \frac{\mathbf{1}(G_i=\infty) \cdot \frac{\widehat{p}_{gt}(\mathbf{X}_{it}, \mathbf{Z}_i)}{1 - \widehat{p}_{gt}(\mathbf{X}_{it}, \mathbf{Z}_i)}}{\frac{1}{n} \sum_{j=1}^n \mathbf{1}(G_j=\infty) \cdot \frac{\widehat{p}_{gt}(\mathbf{X}_{jt}, \mathbf{Z}_j)}{1 - \widehat{p}_{gt}(\mathbf{X}_{jt}, \mathbf{Z}_j)}}.$$

There are three main advantages to using AIPW over alternatives such as linear two-way fixed effects (Caetano & Callaway, 2024). First, AIPW estimates are doubly robust, meaning that $\widehat{ATE}_{gt}$ is a consistent estimator of ATE if the outcome model for ΔY_t or the propensity model for $p(\mathbf{X}, \mathbf{Z})$ is misspecified. And second, the AIPW weights balance covariates $\mathbf{X}$ and $\mathbf{Z}$ across groups. And finally, AIPW estimates allow us to include time-invariant covariates $\mathbf{Z}$ in the model, letting estimated treatment effects on $Y_t - Y_{g-1}$ flexibly depend on levels of characteristics like gender, race, and ethnicity.

For all AIPW estimates, we assess statistical significance using standard errors that allow for clustering at the area or individual level. For pre-treatment, post-treatment, and control estimates

at time t , the base period is $g - 1$, i.e., the $t = -1$ period just before treatment. All pre-treatment and post-treatment estimates are “long differences” relative to the last pre-treatment period (Roth, 2024).

Like traditional difference-in-differences, AIPW relies on a set of assumptions. First, in order for any estimated effect to be considered causal, we assume that treatment and control outcomes would have evolved in parallel, had treatment never occurred, conditional on observables. Inverse propensity score weighting additionally requires that treated and control groups be sufficiently similar. To support this latter assumption in the Section VII analysis of individual outcomes, we assess common support using pre-treatment covariates and restrict the sample to matched Reconnectors and other workers.

The assumption of parallel potential outcomes is more difficult to maintain and is fundamentally untestable. In our Section V analysis of college-level outcomes, parallel trends mean that—if we were to remove Navigate Reconnect from the timeline—would-be TRC and non-TRC metro areas would have experienced the same rate of change in non-traditional student enrollment. TRCs were awarded through a competitive grant process, and it is possible that winning communities were building on relatively high non-traditional student growth. Our event study research design allows us to assess this possibility with estimates of pre-treatment differences and trends.

In our Section VI analysis of individual outcomes, statewide access combined with participant-driven engagement make it difficult to argue that the Reconnect treatment is as good as random. Here, too, a long history of outcomes helps us evaluate pre-existing differences between Reconnectors and non-Reconnectors. This history further allows us to compare post-treatment outcomes with a Reconnector’s own pre-treatment pattern of education and employment, as with evaluations of the returns to sub-baccalaureate credentials (Jacobson et al., 2005; Jepsen et al., 2014; Dynarski et al., 2018). Similar to Carruthers & Sanford (2018), data on non-Reconnectors from the broader Tennessee workforce afford us an additional level of comparison. As described in more detail in Section VI, we narrow this comparison group of non-Reconnectors to those who had observably similar histories of education and employment as Reconnectors. Although we cannot completely rule out endogenous selection into Reconnect, our research design comes as close as possible to controlling for the observed and unobserved factors that distinguish Reconnectors from other age 23+ Tennesseans.

V. Did the 2012 – 2019 Navigate Reconnect Expansion Affect Total Non-traditional Student Enrollment?

We first test for high-level program effects on the volume of non-traditional aged students using a difference-in-differences approach and focusing on the expansion phases of Navigate Reconnect. Note that contextual details described below limit the causal inferences that we can make about the isolated effect of Navigate Reconnect on total non-traditional student

enrollments, but this high-level view offers a good starting point for the student-level analysis to follow.

Institution-Level Data

We construct an institution-level panel of fall enrollment and institutional characteristics using three surveys conducted by the National Center for Education Statistics (NCES) as part of its Integrated Postsecondary Education Data System (IPEDS): Fall Enrollment, Institutional Characteristics, and Distance Education. We focus on 8 odd-year waves of these surveys from 2009 – 2023, when fall enrollments are reported by broad age groups. Our two outcomes of interest in the IPEDS data are the log of total non-traditional student enrollment, defined as the number of students age 23 – 64 attending an institution, and the non-traditional share of total enrollment.

We identify the official county location for each institution, as well as the broader Metropolitan Statistical Area (MSA) or non-metro area based on the US Census Bureau’s 2023 delineations. Tennessee has 10 MSAs anchored by urban areas as well as 4 non-metro areas that group proximate counties.¹

Starting with the sample of all Title IV eligible institutions in IPEDS (two-year or less, four-year, public, private non-profit, and private for-profit), we restrict the sample to colleges and universities in the Southeast region that reported any non-traditional student enrollment in at least one IPEDS survey prior to 2016, when the first TRCs were implemented, and that we observe in at least one IPEDS survey after 2016. Because outcomes and treatment are defined at the metro/non-metro level, we further restrict the sample to institutions whose student populations are more likely to be tied to physical location by excluding institutions where the average pre-treatment share of exclusively distance-enrolled students is 50 percent or greater. This leaves 1,415 Southeast institutions in total, with 146 located in Tennessee.

Finally, we restrict the sample of metro/non-metro areas to those sharing common support in terms of the $p(\mathbf{X}, \mathbf{Z})$ likelihood of adopting a TRC, estimated by logit. Predictive features are all measured prior to 2016 and include average metro/non-metro population, per-capita income, and the total number of post-secondary institutions by sector and control (public, private, and for-profit). These propensities are also used in Equations (3) – (5) to reweight control units so that comparisons place greater weight on areas that are more observably similar to TRC areas.

We supplement the IPEDS odd-year panel of non-traditional enrollment with county-level population and real personal income from the Bureau of Economic Analysis, and state-level employment shares by industry from the Bureau of Labor Statistics Quarterly Census of Wages and Employment. These economic indicators are assigned to each institution-year observation

¹ The 10 metro areas cover Nashville, Memphis, Knoxville, Chattanooga, Clarksville, Johnson City, Kingsport-Bristol, Jackson, Morristown, and Cleveland. The 4 non-metro areas include groups of counties in Western, South Central, East, and North Central Tennessee.

based on the institution's county location. Controls represented by X_{it} and Z_i in Equation (3) include pre-policy average county populations, per-capita real income, institution sector and ownership, as well as state-level measures of unemployment, labor force participation, and shares of employment by broad industry.

The first cohort of TRCs began providing services in March 2016 and included the Southwest, Middle, and Upper Cumberland subdivisions of the state. This first cohort covered 35 Tennessee counties, resulting in 6 treated metro/non-metro areas. The second cohort of five TRCs—Graduate Memphis, Northeast, Northwest, Smoky Mountain, South Central, and 3 additional counties—began in November 2016. This second cohort included 36 counties and covered an additional 5 metro/non-metro areas. Finally, statewide centralization went into effect in late summer 2019, adding the remaining 24 counties and 3 metro/non-metro areas.

IPEDS data on non-traditional enrollment are only available for odd-numbered fall years. These waves map onto two distinct adoption cohorts: the first and second waves of TRCS map to an in-sample treatment timing of Fall 2017 for 11 parts of the state and statewide centralization to Fall 2019 for the remaining 3. Our difference-in-difference identification strategy is significantly disadvantaged by distinguishing only these two phases of the expansion from various TRCs to the statewide Navigate Reconnect model. Both points in time coincided with other events that likely affected non-traditional student enrollment.

Fall 2017 was just a few months after implementation of the Tennessee Reconnect Act, which pledged free tuition to adults age 23 and older who attended one of the state's public community colleges (Tennessee Office of the Governor, 2017). Fall 2019 was just one term before COVID-19 disruptions, which constrained community college enrollments through 2020-21 (Schanzenbach and Turner, 2022) and thereafter led to a tighter labor market, falling unemployment, and less demand for community college education (Goodman and Winkelmann, 2025). Results described below are consistent with a positive effect of Navigate Reconnect on non-traditional student enrollment in college, but we are not able to determine the extent to which estimated effects are amplified by the free tuition policy, or offset by post-COVID dynamics unique to Tennessee's higher education and the labor market.

Results

Figure 1 depicts results for log total non-traditional enrollment and non-traditional enrollment share for all institutions in a metro/non-metro area (Panels A and C, respectively), and separately for all public and private non-profit institutions (Panels B and D). Navigate Reconnect advising is institution neutral, and Navigators can assist students in their consideration of public, private non-profit, or private for-profit institutions. Nonetheless, there is reason to think that Reconnectors might be less likely to enroll in for-profit schools. The pre-enrollment phase of planning for college with a Navigator would have emphasized affordability and the cost of attendance across a range of post-secondary options. This may have decreased the likelihood that Reconnectors enrolled in for-profit schools, which tend to have higher tuition than public options

(Hanson, 2025) and less access to state-funded financial aid. In all Figure 1 panels, coefficients can be interpreted as relative to the period immediately prior to adoption ($t = -1$). For the first adoption cohort, this is 2015; for the statewide expansion cohort, $t = -1$ is 2017.

Looking first to Panel 1.A. of Figure 1, we find that TRC adoption preceded a weakly significant increase in non-traditional student enrollments, measuring 22.2 log points or 25%. Pre-treatment coefficients are small and statistically indistinguishable from zero, helping bolster the assumption of parallel pre-treatment enrollment trends in TRC and comparison schools.

Excluding for-profit institutions (Panel 1.B.), the average post-treatment effect is 36 log points (43%) and statistically significant at the 1 percent level, indicating a large increase in the number of non-traditional students following TRC or Navigate Reconnect adoption.

Figures 1.C. and 1.D. present event study estimates using the share of non-traditional students as the outcome. In both cases, pre-treatment coefficients are statistically indistinguishable from zero, again providing support for the assumption of parallel pre-trends in outcomes. For the full sample including for-profits (Figure 1.C.), post-treatment estimates are positive but imprecise and indistinguishable from no effect. When we exclude for-profit institutions, we see dynamics that more closely follow the effects on log non-traditional enrollment. Estimates illustrated in Panel 1.D. indicate that the non-traditional student share grew in public and private non-profit schools by 4.7 percentage points after area Reconnect adoption.

We reiterate, however, that the timing of program adoption aligns closely with the introduction of a state financial aid policy for non-traditional students as well as labor market dynamics that potentially confound estimated effects of the program on its own. With these limitations in mind, we narrow the comparison from treated and comparison schools to participating and non-participating individuals in the Tennessee workforce.

VI. Did Navigate Reconnect Participation Affect Enrollment, College Completion, and Workforce Outcomes?

Individual-Level Data

We rely on linked, de-identified state administrative data from THEC and the Tennessee Independent Colleges and Universities Association. THEC collects and maintains administrative data on Tennessee's public technical colleges, community colleges, and four-year universities. TICUA data cover students who enroll in 22 small-to-medium private institutions. Student-level data from THEC and TICUA include gender, race, Hispanic ethnicity, enrollment history, and credential receipt from 2004 forward. Enrollment data are organized around terms: two large semesters (Fall and Spring), one short and uncommon Winter term, and one Summer term. In order to align the timing of enrollment and employment data, we group Winter, Spring, and Summer terms together and increment enrollment into half-year periods.

We link post-secondary THEC and TICUA with data from two additional domains: Tennessee employment and earning records, and Navigate Reconnect program records. Employment and

earnings records are provided by the Tennessee Department of Labor and Workforce Development and date back to 2000. For each working individual covered by Unemployment Insurance, we observe quarterly in-state earnings, the North American Industry Classification System (NAICS) code for employers, and employee demographics. Notably, these records exclude employment and earnings not covered by the state UI system, i.e., independent contractors, self-employed individuals, and individuals employed by firms outside of Tennessee. We group quarterly data into half-years for each person (quarters 1-2 and 3-4) and aggregate their earnings across employers.² All earnings figures are in real, inflation-adjusted mid-2024 dollars.

Critical for our research design, Navigate Reconnect records tell us when a prospective student completed their intake interview and entered the Pre-Enrolled phase. We use this timing to assign Reconnectors to contact cohorts, i.e., the six month period during which they spoke with a Navigator and began the treatment that we seek to evaluate. Another important feature of these data is that we observe employment and earnings for Reconnectors as well as a subsample of 300,000 workers selected at random from all individuals in UI-covered Tennessee jobs. This allows us to estimate the effect of contacting a Navigator on the likelihood of enrollment, a principal goal of the program.

A benefit of this comparison is that we can evaluate the potential effect of working with a Navigator on the likelihood that a Reconnector starts a college enrollment spell. The first-order purpose of the program is to advise students before they start or re-start college, and the random extract of Tennessee workers allows us to characterize the pool of workers that Reconnectors came from. The major drawback is that we observe a limited amount of demographic information about UI-covered workers, along with their employment and earnings histories. We do not observe other factors that might affect their ability to enroll in college, such as first-generation status, family composition, family income, or interest in college. Despite these omissions, we find that the non-student comparison group tends to be fairly similar to pre-contact Reconnectors in terms of education and workforce outcomes.³

² For results shown below, we impute missing earnings to be equal to zero, given (1) high rates of employment in the population of non-traditional students, and (2) the high likelihood that missing wage data are true zeros for the subpopulation of enrolled non-traditional students. Results and conclusions are similar when we omit periods with missing earnings.

³ In results not shown, we focus on Reconnectors who enroll in college after contact and compare their post-secondary and labor market outcomes with a matched sample of other non-traditional students. We add first-generation status, adjusted gross income, and ACT score to the matching criteria used in the main analysis. Despite these additional controls, we find that pre-treatment trends for Reconnectors are notably dissimilar from other enrolled non-traditional students. For example, Reconnectors have a considerably higher likelihood of prior enrollment and prior degree receipt than non-Reconnectors, in contrast to very similar pre-treatment trends when compared with non-participants in the workforce (Figures 2-4). This suggests to us that Reconnectors have more in common with the broad Tennessee workforce than with the subset who enroll as non-traditional students. This is sensible given the program's intended purpose of reaching individuals who might not otherwise (re)enroll in college.

Note also that while we observe a large majority of Tennessee’s post-secondary students in THEC and TICUA administrative files, these data omit non-TICUA private institutions and for-profit schools. For post-secondary outcomes like enrollment and credential completion, our estimated effects of Reconnect contact should be viewed as effects on student progression through the observed sectors. Results may overstate the effect of program participation on *any* college enrollment or completion, if Navigate Reconnect advising influences students to enroll in a THEC or TICUA institution.

We start with 5,732 Reconnectors who completed an intake interview in the 2019-20 and 2020-21 school years, i.e., between Fall 2019 and Spring/Summer 2021. We omit 883 who had no earnings over the 2014 – 2024 period, or who were not age 23 – 64 when they contacted the program. The second criterion also excludes individuals who were missing age and birth year in all available records. Finally, we exclude a large number of Reconnectors who were enrolled in college at some point during the two years prior to speaking with a Navigator (1,035), focusing on prospective students who were more removed from college. These filters yield 3,814 Reconnectors, or 66.5% of the broad group of individuals who contacted the program and completed an intake interview. When we apply the same filters to non-Reconnectors, the extract of 300,000 Tennessee workers is trimmed down to 189,655 individuals (63%).

We use UI data to determine employment status, earnings, and unemployment benefit receipt/eligibility for Reconnectors and non-Reconnectors over each six-month period between the first quarter of 2014 and the second quarter of 2024, as well as the number of jobs held during each six-month period. We merge the employment and earnings panel to student-level enrollment and credential awards in public colleges and universities. As with the UI data, we limit the window of higher education information to 2014 – 2024.

Unlike Reconnect contacts, individuals drawn via the random sample of employment records lack a natural focal point after which we would be interested in their decision to enroll in higher education. Similar to Carruthers and Sanford (2019), we randomly assign each non-participant a contact cohort and examine their outcomes relative to that period. Random focal terms are grouped to match the distribution of Reconnectors across the four six-month terms between the second half of 2019 and the first half of 2021. For example, since 31% of the 2019 – 2021 Reconnector population contacted the program in Fall 2020, we give 31% of non-Reconnectors a focal term in the second half of 2019.

Table 1 summarizes Reconnectors and non-Reconnectors in the workforce. Since the non-Reconnector sample was drawn at random (conditional on having non-missing age and demographic information), these summary statistics give us a sense of how Reconnectors compared with the UI-covered, age 23 – 64 Tennessee workforce who are also at least two years removed from college.

Comparing Columns 1 and 3, Reconnectors were younger than other workers (34 years versus 39), much more likely to be female (69% versus 56%), and more likely to be Black and/or

Hispanic. Over 1 in 5 Reconnectors (21%) enrolled in the same six-month period that they spoke with a Navigator, compared with only 1.5% of non-Reconnector Tennesseans.

Reconnectors had fewer post-secondary certificates and associate's degrees than non-Reconnectors at the contact/focal term, and a much smaller rate of bachelor's degree attainment. Note that in Table 1 and regression results to follow, we define post-secondary credentials cumulatively, i.e., we estimate how the program affected the total number of certificates that an individual has earned to date, the total number of associate's degrees, and the total number of bachelor's degrees. This cumulative construction is more suitable for the population of non-traditional students, some of whom have prior awards, than binary definitions for having any certificate, any associate's, or any bachelor's. A more technical advantage is that we can define total award receipt consistently across pre-treatment and post-treatment periods, permitting an event study empirical design. Nevertheless, by the end of the panel only 2.7% of Reconnectors and 2.0% of non-Reconnectors have more than one certificate, and fewer than 1% have multiple associate's or multiple bachelor's degrees. Estimated treatment effects are a close approximation of the percentage point gain in the likelihood of having earned a certificate, associate's, or bachelor's at a point in time.

The gap in previous bachelor's degree receipt is one of the wider ones between Reconnectors and non-Reconnectors (27.3% versus 1.2%). Earnings were another prominent difference. Although Reconnectors are somewhat similar to non-Reconnectors in terms UI-covered employment rates (82% versus 90%), Reconnectors earned 48% less than non-Reconnectors during the six-month period when they contacted the program (\$14,910 versus \$28,516). In addition, Reconnectors spread these earnings across more jobs than non-Reconnectors: 1.2 unique employers in a six-month period versus 1.1 for non-Reconnectors. The 2019 – 2021 focal terms span the COVID-19 recession and recovery, and both groups of workers have atypically high rates of UI eligibility or receipt. About 16% of Reconnectors applied for unemployment benefits in the same period that they contacted the program, compared with 7% of the broader extract of workers. The typical rate of UI application prior to 2019 was 1-2%.

Looking across Columns 1 and 3 of Table 1, we conclude that Reconnectors had some things in common with typical Tennesseans in the workforce—they had similar rates of employment in their focal term, and similar race/ethnicity profiles. They were somewhat younger, on average, much more likely to be female, and much less likely to have a bachelor's degree. They also exhibited more precarity in labor force outcomes: lower earnings, multiple jobs, and over twice the rate of unemployment applications.

With these differences in mind, we narrow the comparison group of non-Reconnectors to those who were most observably similar to Reconnectors in terms of demographics and prior education and employment. Specifically, we estimate Mahalanobis distance metrics between each Reconnector and non-Reconnector, minimizing the difference between two vectors of characteristics: gender, race (indicators for Black individuals and other non-White individuals),

Hispanic ethnicity, age, indicators for enrollment and certificate, associate's, or bachelor's receipt prior to the focal term, employment and inflation-adjusted earnings over 1-4 previous half-years (i.e., the preceding two years), and UI applications over 1-4 previous half-years. For each Reconnector, we identify up to four nearest non-Reconnector neighbors in terms of Mahalanobis distance, allowing each non-Reconnector to match more than once. This results in 14,107 matched non-Reconnectors for 3,814 Reconnectors.

Figure 2 depicts unmatched and matched differences between Reconnectors and non-Reconnectors in each of the Mahalanobis matching variables. The unmatched gaps, in blue, mirror the comparisons apparent from Table 1, but in standardized units that allow for comparisons across variables. Reconnectors were most dissimilar from non-Reconnectors by gender and previous bachelor's degree receipt, since unmatched standardized differences were furthest from zero for those two variables. The standardized differences in earnings histories also tended to be wide in the unmatched sample. For all characteristics, matched differences depicted in red are very close to zero. This suggests that the Mahalanobis matching procedure effectively identified non-Reconnectors with a similar demographic, education, wage, and UI profile.

We can also see these similarities in Table 1, which lists summary statistics for the matched subset of Reconnectors in Column 2. Matching closes the gender gap between Reconnectors and non-Reconnectors from 12.1%, favoring women, to 2.3%. The disparity in focal-term earnings narrows from \$13,606 to \$1,897. Although the two-year history of UI applications is very similar between matched Reconnectors and non-Reconnectors (Figure 2), Reconnectors remain much more likely than matched non-Reconnectors to apply for unemployment benefits *in* their focal term (15.8% versus 10.5%). This, along with focal-term enrollment, employment, and earnings, are potential outcomes of contacting Navigate Reconnect for advice about returning to college. In addition to advising about college/program selection and enrollment, Navigators can advise Reconnectors on social programs that they may be eligible for.

Having selected a group of workers that is observably similar to Reconnectors, we move on to estimated effects of contacting Navigate Reconnect on future enrollment, credential receipt, employment, UI claims, and earnings, following the AIPW identification strategy outlined in Section IV. We limit the sample to Reconnectors and matched non-Reconnectors. In this application, the treatment indicator is equal to one for Reconnectors during and after their contact term, i.e., the six-month period when they completed an intake interview with a Navigator.

For post-secondary enrollment, we specify Y_{it} to be a binary indicator equal to one if individual i was enrolled at time t . We define employment similarly, as a binary indicator equal to one if individual i was observed with UI-covered earnings at time t . For credential outcomes—certificate, associate's degree, and bachelor's degree receipt—we continue to define Y_{it} as equal to the number of each respective credential that an individual received during or prior to t .

Figure 3 illustrates the estimated effect of contacting Navigate Reconnect on the likelihood of enrolling in college in later terms as well as three credential outcomes. Term-by-term estimates are shown in figures, with overall *ATE*Ts and cluster-robust standard errors listed with outcome headings.

As in the Section V analysis of institution-level enrollment outcomes, we can examine pre-treatment estimates to evaluate the assumption that Reconnectors and non-Reconnectors would have followed a similar enrollment trajectory after their respective focal terms. The enrollment gap between Reconnectors and non-Reconnectors is very small and close to zero up to five years prior to the dashed line representing treatment terms.⁴ Although the parallel trends assumption is untestable, these narrow pre-treatment differences give more credibility to interpreting post-treatment estimates as unbiased measures of the *ATE*T.

In the period $t = 0$ term, Reconnectors were 20.0 percentage points more likely than matched non-Reconnectors to be enrolled in college. Estimated effects attenuated somewhat after that point, to 15.5 percentage points in $t = 6$, three years after contact. The overall post-contact *ATE*T is a statistically significant 27.6 percentage points.

Turning to credential outcomes, we see cumulative certificates and associate's degrees increase significantly for Reconnectors, beginning in the $t = 0$ term when they complete intake interviews and climbing in later terms. Three years after contacting the program, Reconnectors had about 8 additional certificates per 100 individuals, a 53% gain over non-Reconnectors focal-term mean.

Estimated effects on associate's degree attainment are larger at term $t = 6$, at 13.7 additional degrees per 100 Reconnectors, or 458% of the non-Reconnector mean. Bachelor's degree receipt also climbed for Reconnectors relative to non-Reconnectors. Three years after contact, Reconnectors had accumulated 1.3 additional bachelor's per 100 individuals than non-Reconnectors, or 22% of the non-Reconnector mean.

Figure 4 illustrates AIPW estimates for four workforce outcomes: employment, earnings, number of employers, and UI benefit eligibility. Here, we see limited evidence of a classic "Ashenfelter's Dip" (Ashenfelter, 1978) and the idea that college crowds out work and earnings in the short term. Reconnector earnings fell by a significant \$812 per six-month period over the three years after contact, relative to their matched counterparts. If this dip is driven by a 27.6-point higher likelihood of being enrolled, the implied drop in earnings is close to \$3,000 per six-month period (\$6,000, annualized) for college-going Reconnectors.

Lower earnings post-contact were not driven by lower employment, however, as we show in Panel A of Figure 4. Reconnectors were not significantly more or less likely to be working than

⁴ Note that the unconditional difference in enrollment between Reconnectors and non-Reconnectors is zero over event-time $t = [-4, -1]$, since by construction, we omit individuals with a history of enrollment in those terms. Figure 3, Panel A depicts very small, non-zero treatment effects for those terms due to non-zero weights and counterfactual estimators in Equation (3).

matched non-Reconnectors in the terms leading up to contact or over the first two post-contact years. Three years after contact, however, Reconnectors were 2.9 percentage points more likely to have UI-covered employment (3.3% of the non-Reconnector mean). Panels A-B indicate that Reconnectors worked less on the intensive margin, on average, after contacting the program but were unlikely to leave the workforce. This is consistent with Panel C, which shows that Reconnectors had about the same number of employers before, during, and after their Navigate Reconnect intake interview.

Steady employment around program contact masks an interesting pattern in the likelihood of applying for unemployment benefits (Panel D). The figure illustrates that Reconnectors had consistently *lower* likelihood of UI application over the five years leading up to contact, relative to non-Reconnectors, despite having a comparable level of employment and earnings. We explored this pattern further, finding that Reconnectors in the Fall 2020 and Spring 2021 cohorts had elevated UI application rates in the base $t - 1$ term just prior to contact (Spring 2020, and Fall 2020, respectively). Their application rates over the preceding years were low by comparison. Reconnectors in those two cohorts as well those who contacted a Navigator in Spring 2020 were subsequently even more likely to file UI applications in their contact period, as seen from the $t = 0$ spike in estimated treatment effects in Panel D. New UI applications fell after that point in time, to a level that was similar to Reconnectors' pre-contact rate.

Viewed in light of estimated effects on employment and earnings, the UI application pattern suggests that some Reconnectors contacted the program during a period of unemployment, but that unemployment spells were not long or severe enough to have a substantial effect on earnings. A related possibility, keeping our 2019 – 2021 contact window in mind, is that pandemic-era employment shocks led Reconnectors to seek UI support and advice about enrolling in college to a greater extent than non-Reconnectors.

Together, Figures 3 – 4 suggest that Navigate Reconnect helped prospective students enroll in college at substantially greater rates than they would have otherwise. Those prospective students were also more likely to earn post-secondary certificates and associate's degrees somewhat quickly after contacting Navigate Reconnect, and more likely to earn bachelor's degrees at the end of three years. Investing time in a college education may be motivated in part by job loss, since Reconnectors are likely to have applied for UI around the time that they contacted the program. Job losses were not long-lasting, on average, and earnings fell modestly below expectations after contact. Both patterns reverse within two years of contact, after which we see wage shortfalls begin to close along with significantly higher rates of employment. We do not observe enough time after contact to see if or when Reconnectors' earnings grow beyond their pre-contact level, or to determine if they realized a significant return on college enrollment and credential attainment.

VII. Conclusion

When the Tennessee Reconnect Community model expanded to include a new area, that area's colleges and universities saw significant growth in non-traditional enrollment, both in terms of the total number of non-traditional students and the non-traditional share of total enrollment. The points of expansion that we can observe, however, coincided with other state supports for non-traditional students in 2016-2017 and pandemic-era shocks shortly following 2019. This makes it difficult to pinpoint the extent to which this enrollment growth was directly attributable to Navigate Reconnect.

However, the aggregate view aligns with what we can observe at the individual level. Reconnectors were much more likely than matched non-Reconnectors to enroll in college over the three years following their engagement with the program. By the end of three years, they had attained significantly more post-secondary credentials than our best assessment of counterfactual outcomes without Reconnect, including more than 4.5 times as many associate's degrees. We emphasize, however, that we cannot observe why Reconnectors reached out in the first place, or if their motives for doing so would have driven them to succeed in college regardless. Another way to describe the evidence from our individual-level analysis is that Reconnectors significantly outpaced individuals with a similar history of employment, UI, and education. This is consistent with a causal effect of the program but nonetheless vulnerable to biases from non-random unobserved factors.

Another limitation of our study is that it is too soon to tell if Reconnect has a significant return on investment in terms of higher rates of employment and earnings for participants. We observe only three years of post-contact college and workforce data for individuals who initially engaged with the program between mid-2019 and mid-2021. Within that window, however, we can infer that Reconnectors often came to the program in proximity to job loss, and that they experienced a period of slightly lower earnings after engaging with a Navigator. Both patterns reversed within two years, and Reconnectors were more likely to be working for a UI-covered Tennessee employer by 2024.

Rising earnings and employment, combined with higher rates of college completion, suggest that Reconnectors will attain a higher tier of the labor market than the one they occupied before contacting the program. High school students have long benefited from a network of high school and college counselors who help them find their post-secondary path. Our evaluation of Navigate Reconnect indicates that comparable support for non-traditional students—personalized, proactive, and available before enrollment—can be similarly consequential.

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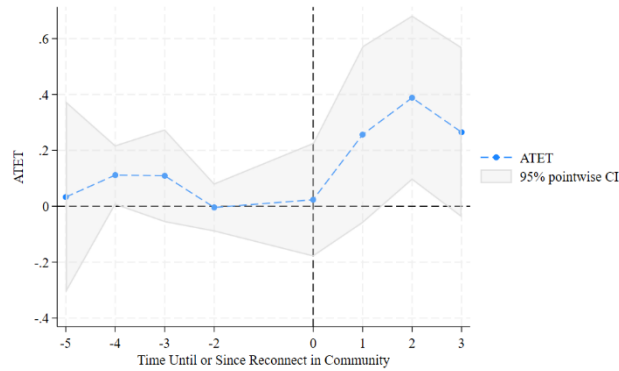
Acknowledgements

We are grateful to THEC staff for providing background material and institutional knowledge on Navigate Reconnect. We thank Tennessee's Office of Evidence and Impact for funding in support of this work. De-identified administrative Tennessee data was provided by the Tennessee Department of Labor and Workforce Development, Tennessee Higher Education Commission, and Tennessee Independent Colleges and Universities and compiled by TN DATA, Tennessee Data Analytics for Transparency and Accountability, Tennessee's longitudinal integrated data system. All opinions and errors are our own. IRB UTK IRB-22-07054-XM. The authors acknowledge AI assistance in coding figure layouts, and in proofreading the text for grammatical correctness and consistency. All errors are our own.

Figure 1. Estimated effect of Tennessee Reconnect Communities on Institution-Level Non-Traditional Student Enrollment

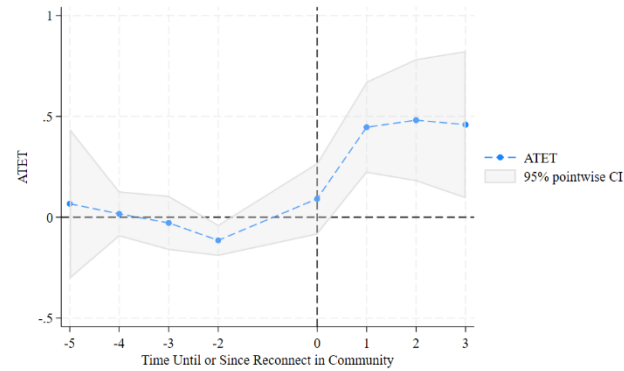
A. Log total non-traditional student enrollment (all institutions)

0.222* (0.117)



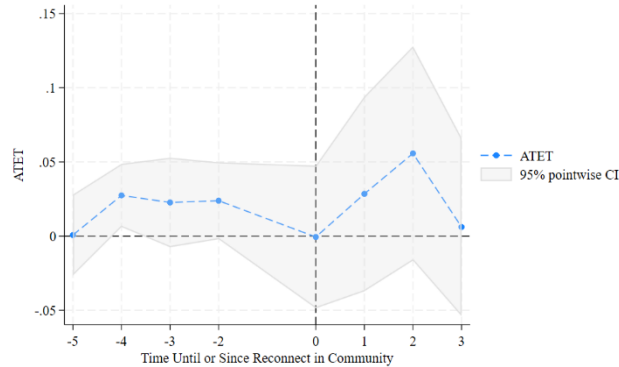
B. Log total non-traditional student enrollment (excluding for-profit institutions)

0.363*** (0.107)



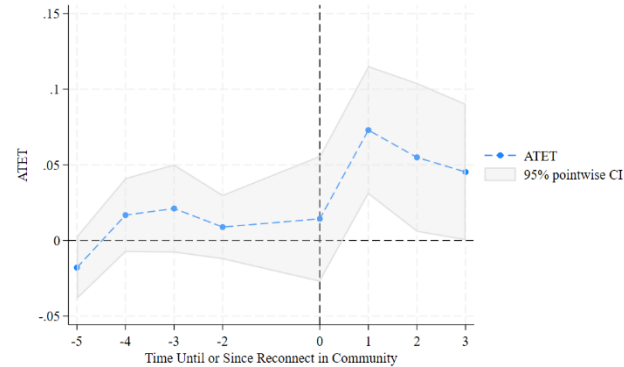
C. Non-traditional student share of enrollment (all institutions)

0.022 (0.027)



D. Non-traditional student share of enrollment (excluding for-profit institutions)

0.047*** (0.018)



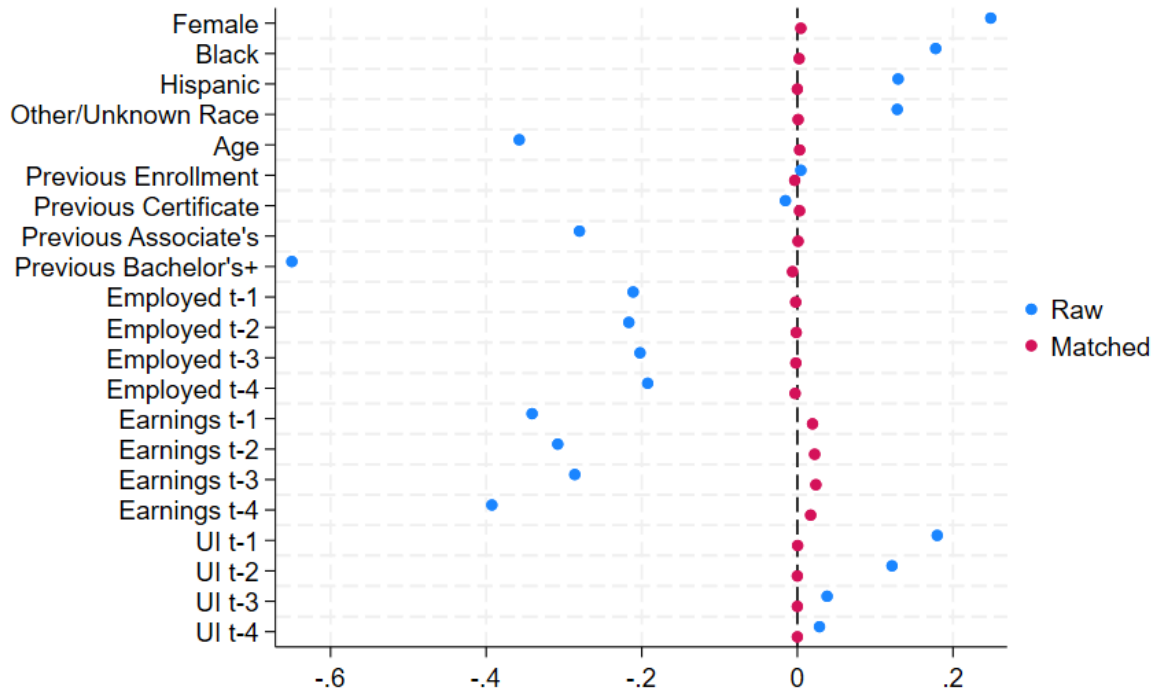
Notes: Figures illustrate estimated effects of Tennessee Reconnect Communities on institution-level non-traditional student enrollment totals (in logs, Panels A and B) or as a percent of all students (Panels C and D). Estimates are derived from augmented inverse probability weighting between schools in TRCs and schools outside of TRCs and/or outside of Tennessee. Confidence intervals are derived from standard errors that allow for clustering at the school level. Overall ATET estimates are listed with panel headings, as well as cluster robust standard errors in parentheses. *** Significant at 1% ** 5% * 10%.

Table 1. Summary Statistics as of Contact/Focal Term

	(1) Workforce Extract	(2) Matched Workers	(3) Reconnectors
Female	0.564	0.662	0.685
Black	0.205	0.286	0.267
Hispanic	0.022	0.046	0.050
White	0.685	0.556	0.573
Other or Unknown Race	0.110	0.157	0.160
Age	38.71 (10.33)	34.63 (9.05)	34.07 (8.87)
Enrolled	0.015	0.023	0.213
Total Certificates to Date	0.136	0.141	0.108
Total Associate's to Date	0.081	0.030	0.017
Total Bachelor's to Date	0.273	0.059	0.012
Employed	0.897	0.866	0.816
Six-Month Earnings	28,516 (42,409)	16,807 (14,246)	14,910 (13,688)
Number of Employers	1.102 (0.66)	1.140 (0.77)	1.181 (0.93)
Current UI Application	0.073	0.105	0.158
Number of Individuals	189,655	14,107	3,814

Notes: The table lists average values for demographic, enrollment, attainment, and workforce indicators for an extract of the Tennessee workforce (Column 1), the subset of Column 1 that is identified as nearest-neighbors to Reconnectors in terms of demographics, prior enrollment and credentials, and employment history (Column 2), and Reconnectors (Column 3). Standard deviations are in parentheses below age, earnings, and number of employers. Reconnectors are described as of their contact term. Non-Reconnectors are described as of their focal term, a randomly selected six-month period between the second half of 2019 and the first half of 2021.

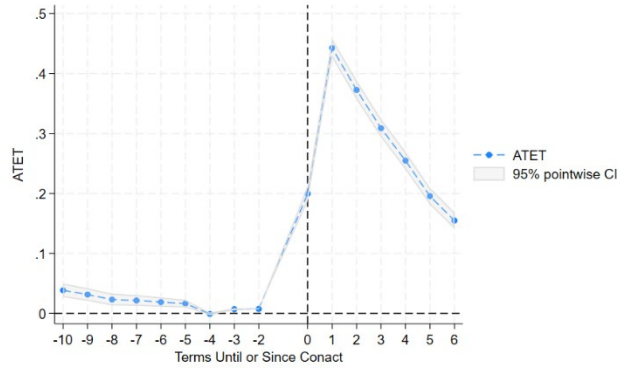
Figure 2. Standardized Mean Differences Between Reconnectors and Extract of UI-Covered Workforce, Unmatched and Matched Samples



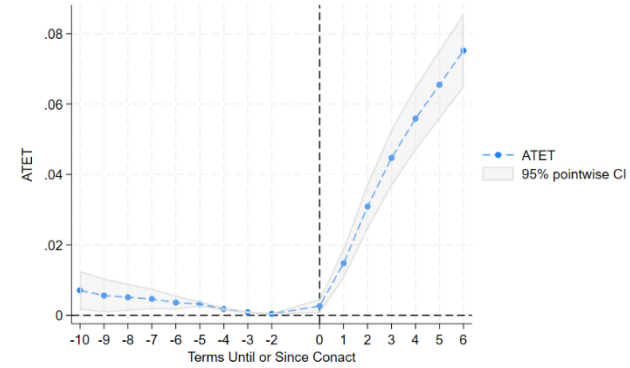
Notes: The figure illustrates standardized mean differences between Reconnectors and other UI-covered Tennessee workers, before and after matching ("Raw" blue markers and "Matched" red markers, respectively). Each Reconnector is matched to at least four non-Reconnectors in terms of Mahalanobis distance between vectors of individual characteristics listed at left.

Figure 3. Estimated Effects of Reconnect Contact on Enrollment and Credential Receipt

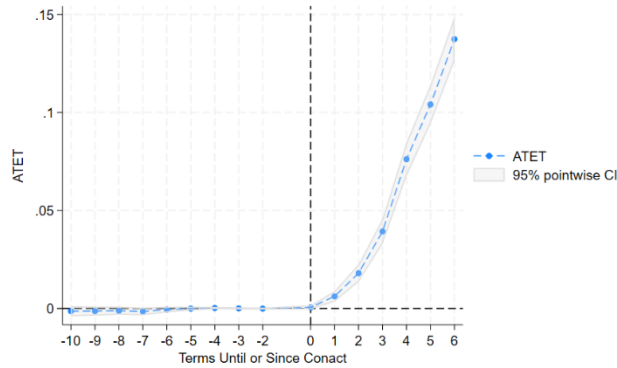
A. Enrolled in College: 0.275*** (0.000)



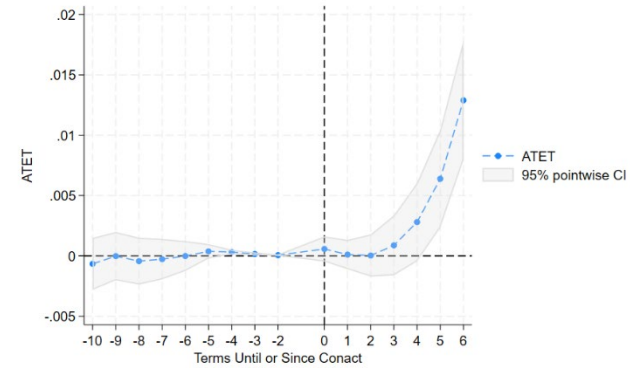
B. Total Certificates: 0.041*** (0.000)



C. Total Associate's Degrees: 0.054*** (0.000)



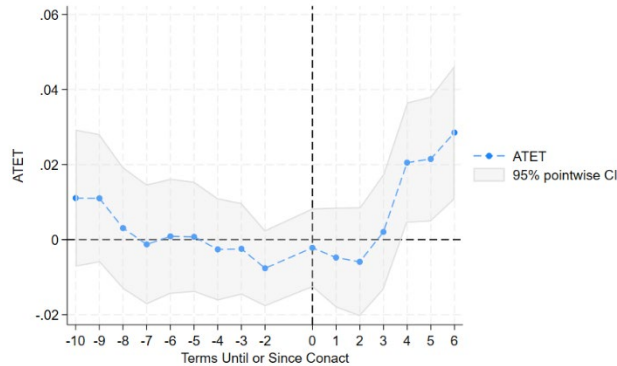
D. Total Bachelor's Degrees: 0.003*** (0.002)



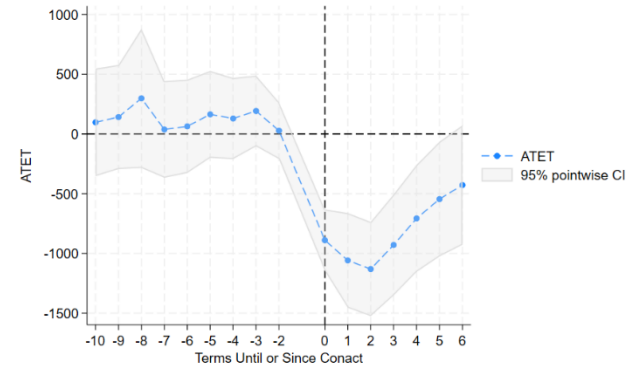
Notes: The figure illustrates estimated effects of contacting Navigate Reconnect on college outcomes. Estimates are derived from augmented inverse probability weighting between Reconnectors and nearest neighbors in a random extract of individuals in the Tennessee workforce. Nearest neighbors are determined from Mahalanobis distance functions of demographic indicators, prior enrollment and awards, and recent earnings and UI claims. The contact period is depicted with a vertical dashed line. Points to the right of the contact period represent average treatment effects on the treated (ATETs). Confidence intervals are derived from standard errors that allow for clustering at the individual level. Overall ATET estimates are listed with panel headings, as well as cluster robust standard errors in parentheses. *** Significant at 1% ** 5% * 10%.

Figure 4. Estimated Effects of Reconnect Contact on Employment Outcomes

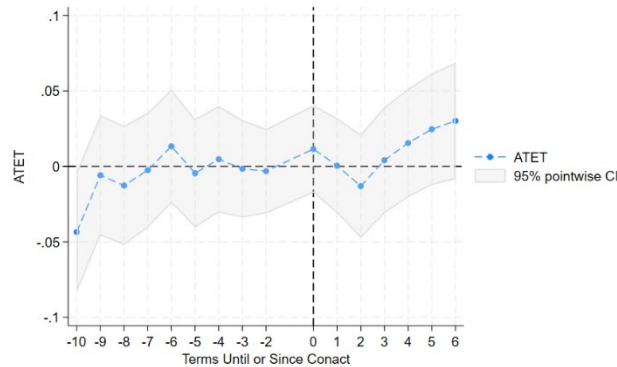
A. Employed: 0.008 (0.007)



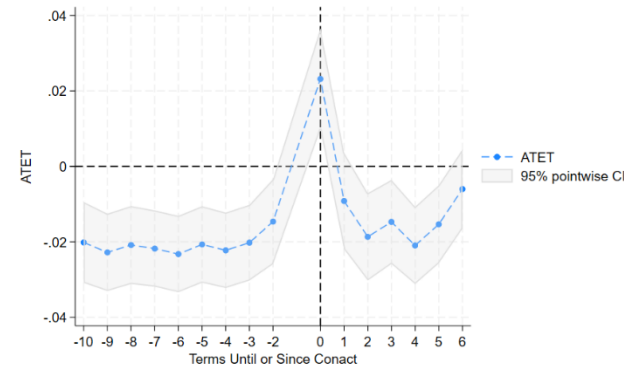
B. Six-Month Earnings: -812*** (171)



C. Number of Employers: 0.010 (0.014)



D. Applied for UI: -0.009* (0.004)



Notes: The figure illustrates estimated effects of contacting Navigate Reconnect on workforce outcomes. Estimates are derived from augmented inverse probability weighting between Reconnectors and nearest neighbors in a random extract of individuals in the Tennessee workforce. Nearest neighbors are determined from Mahalanobis distance functions of demographic indicators, prior enrollment and awards, and recent earnings and UI claims. The contact period is depicted with a vertical dashed line. Points to the right of the contact period represent average treatment effects on the treated (ATETs). Confidence intervals are derived from standard errors that allow for clustering at the individual level. Overall ATET estimates are listed with panel headings, as well as cluster robust standard errors in parentheses. *** Significant at 1% ** 5% * 10%.