

Coaching to Completion: Impacts of Success Coaching on Community College Student  
Attainment in North Carolina

by  
Jessa Lewis Valentine, DVP-PRAXIS LTD  
Derek V. Price, DVP-PRAXIS LTD

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*Address correspondence to:*

Jessa Lewis Valentine, PhD  
DVP-PRAXIS LTD  
8888 Keystone Crossing, Suite 1300  
Indianapolis, IN 46240  
(858) 922-4727  
[jessa@dvp-praxis.org](mailto:jessa@dvp-praxis.org)

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## **Abstract**

The Carolina Works project, a five-year initiative (2016 – 2020) supported by a validation grant from the U.S. Department of Education’s First in the World program, sought to improve student outcomes across 10 North Carolina community colleges through the provision of proactive, data-informed success coaching. Drawing on a large-scale randomized controlled trial (RCT) paired with an in-depth implementation study, this paper examines the impacts of success coaching on community college students’ retention and completion outcomes and explores key implementation factors correlated with success. Results from the RCT reveal that within these North Carolina community colleges, success coaching increases students’ longer-term retention by 4% over the control group mean, with especially notable impacts for full-time students (6% increase), for male students (9% increase), and for Black students (18% increase). Impacts of coaching on student retention and completion are especially pronounced when students engage with the same coach over time and when colleges implement success coaching with high fidelity to the coaching model and with strong institutional leadership, communication, and support.

## **Introduction**

Public two-year colleges are a critical access point for an estimated two out of every five students enrolled in postsecondary education (Ginder, Kelly-Reid, & Mann, 2018). However, only 40% of community college students earn a postsecondary credential of any kind within six years (Shapiro et al, 2019a). Community colleges nationwide are increasingly taking a more holistic, personalized, and proactive approach to providing support services to students in an effort to increase persistence and raise completion rates (Karp & Stacey, 2013; Klempin et al, 2019). Technology-mediated advising or coaching is one such strategy being pursued by colleges and universities in an effort to more effectively support students on their postsecondary pathway (Kalamkarian, Karp, & Ganga, 2017).

This paper presents results from a five-year (2016 – 2020), mixed-methods study of success coaching in 10 North Carolina community colleges. The Carolina Works project, supported by a validation grant from the U.S. Department of Education’s First in the World program, sought to improve students’ retention and credential completion outcomes through the provision of proactive, data-informed success coaching. Although there are mounting studies on the effectiveness of postsecondary success initiatives that include intensive advising or coaching interventions (Bettinger & Baker, 2014; Evans et al, 2020; Mayer et al., 2019; Richburg-Hayes et al, 2009; Weiss et al, 2019), the evaluation of Carolina Works is the first-ever large-scale, multi-institution experiment to isolate and test the impacts of coaching within a community college setting.

This paper explores the following research questions, the answers to which are critical as community colleges seek to adopt or expand coaching-based interventions within their institutions:

- Does being assigned to a success coach—a college staff person trained to deliver proactive, data-informed student outreach—improve community college students’ retention and completion outcomes? Do impacts vary by student characteristics?
- To what extent do impacts of success coaching on student outcomes vary by college- or coach-level implementation factors?

We find that success coaching increases students’ longer-term retention by 4% over the control group mean, with particularly large impacts for full-time students (6% increase), for male students (9% increase), and for Black students (18% increase). Impacts of coaching on student retention and completion are especially pronounced when students engage with the same coach over time, and when colleges implement success coaching with high fidelity to the coaching model and with strong institutional leadership and support.

### **Student Retention and Coaching-Based Interventions to Improve Success**

Approximately 9 million students are enrolled in public two-year institutions, which offer a lower-cost, open-access entry point to postsecondary education and credentials (Ginder, Kelly-Reid, & Mann, 2018). Public two-year institutions not only serve as an important entryway to a four-year degree through transfer, but also confer a range of shorter-term degree and non-degree credentials that have demonstrated value in the labor market (Carnevale, Rose, & Hanson, 2012; Dadgar & Trimble, 2014; Kim & Tamborini, 2019; Marcotte, Bailey, Borkoski, & Kienzl, 2005). Despite community colleges’ greater financial accessibility and the promising economic returns to postsecondary credentials earned within them, nearly two-thirds of community college students do not earn a postsecondary degree or credential of any kind (Shapiro et al, 2019a). Recent polls suggest that the country’s “college completion crisis” will only worsen in the

aftermath of the COVID-19 pandemic and associated economic downturn (Fishman and Hiler, 2020).

Research points to multiple factors contributing to high drop-out and completion rates for community college students. Several studies emphasize academic barriers faced by two-year college students, 60% of whom are assessed by their institutions as requiring developmental math, English, or reading support in order to succeed in postsecondary coursework (Attewell et al., 2006; Bailey, 2009; Bound, Lovenheim, & Turner, 2010). Other studies highlight the non-academic barriers faced by many students which can get in the way of academic goals. An increasing number of students are dealing with the consequences of poverty including food insecurity and homelessness (Goldrick-Rab, Richardson, & Hernandez, 2017). According to a Pew Center analysis, the proportion of dependent students in public two-year colleges that are in poverty or near poverty increased from 32% to 50% between 1996 and 2016, whereas a full two-thirds of independent students fit this description (Fry & Cilluffo, 2019). Student surveys on basic needs suggest that more than 40% of two-year college students experienced food insecurity in the previous month, and one-half of students had experienced housing insecurity in the previous year (Baker-Smith et al, 2020). Even community college students that are not facing immediate basic needs are often balancing their studies with part-time or full-time work, parenting, and other life responsibilities, and may struggle to continually prioritize academic goals given other more pressing responsibilities (Kalamkarian, 2017).

Another body of research emphasizes barriers to success that are a function of the institutions serving community college students. Public two-year colleges benefit from limited public resources compared to their four-year counterparts— a recent analysis estimates that community colleges receive approximately \$9,000 less in education revenue per student enrolled

than four-year institutions (Yuen, 2020). Per-student spending is intimately connected to student retention and completion, as more highly-resourced institutions can invest more in academic and non-academic student supports (Bound, Lovenheim, & Turner, 2010; Deming & Walters, 2017). A prominent critique of community colleges points to a “cafeteria-style structure” of these institutions that offers a widespread menu of options to students with little guidance to help students navigate these options (Bailey, Jaggars, & Jenkins, 2015). Although this structure maximizes options for students, “the dark side of choice and flexibility is complexity, disorientation and disconnectedness” (Bailey, 2015). Navigating the “complex choice ecosystem” of community colleges can be challenging for all students, but it may be particularly challenging for first-generation students who do not have easy access to postsecondary-specific cultural and social capital relative to students with parents or other family members with experience navigating the postsecondary landscape (Scott-Clayton, 2015). In addition, students who may be balancing multiple life responsibilities or facing financial barriers may also have less time and less mental bandwidth to deal with a confusing set of options and resources.

In an effort to more effectively support students, many community colleges are taking a more holistic, individualized, and proactive approach to providing advising and other support services (Klempin et al, 2019; Karp & Stacey, 2013).<sup>1</sup> These approaches are connected to theories of student engagement and student involvement which posit that student retention is positively related to students’ social and academic integration and to their sense of belonging on campus (Astin, 1984; Deil-Amen, 2011; Johnson et al, 2007; Rankin & Reason, 2005; Tinto, 1975). They are also connected to theories regarding the key mechanisms that matter most in

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<sup>1</sup> The Community College Research Center developed the acronym SSIPP to describe approaches to student supports that are sustained, strategic, integrated, proactive, and personalized (Klempin et al, 2019; Kalamkarian, Boynton & Lopez, 2018; Karp & Stacey, 2013).

supporting students effectively, namely: creating social relationships, clarifying aspirations and creating commitment, developing college know-how, and making college life feasible by helping students access basic needs support (Karp, 2011). Whereas a “cafeteria” or “self-service” model of college is critiqued for its lack of integration and proactive engagement which can lead students to disconnect from college, these more holistic approaches seek to engage students on a personal level, providing supports related not only to academic factors but also to the many non-academic factors that are connected to student success.

Proactive, technology-mediated success coaching – the focus of this paper – is one strategy being pursued by colleges and universities as a component of this more holistic approach to student supports. While there is no universal model of student coaching, most are informed by a case management approach to advising that is tailored to each individual student, that incorporates aspects of mentoring and counseling in addition to academic advising, and that is designed to provide sustained support for students over time to help them meet their longer-term academic and life goals (Pierce, 2016; Richardson, 2008). By providing services that are personalized, proactive, and informed by real-time data on students’ academic and non-academic progress and challenges, success coaching has the potential to greatly improve postsecondary outcomes.

The most widely-cited study of student coaching – based on a large-scale, multi-institution experiment – showed that students receiving services from a coach were significantly more likely than other students to remain enrolled in college and to complete a postsecondary credential (Bettinger & Baker, 2014). However, this study involved a mix of two-year and four-year colleges and does not allow for robust assessment of impacts of coaching within community colleges specifically. Other experimental studies assessing impacts of proactive advising or

coaching interventions in a community college setting – for example, CUNY’s ASAP program, the Opening Doors demonstrations, and the Stay the Course program – show promising results (Evans et al, 2020; Richburg-Hayes et al, 2009; Weiss et al, 2019). However, in all of these examples, proactive advising is combined with financial or other supports for students, making it impossible to isolate the impact of coaching specifically. The evaluation of the Carolina Works initiative is the first large-scale, multi-institution experiment to isolate and test the impacts of coaching within a community college setting.

### **The Carolina Works Initiative**

The Carolina Works initiative, led by Central Carolina Community College, was one of two validation grants awarded in 2015 by the U.S. Department of Education’s First in the World program to test interventions for student success that are supported by previous evidence.<sup>2</sup> Carolina Works aimed to increase student retention and credential completion across 10 North Carolina community colleges through the provision of proactive success coaching informed by Aviso Retention, a web-based early alert and advising system using predictive analytics. The colleges involved in the study include several rural institutions and provide broad regional representation across North Carolina (see Figure 1).

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<sup>2</sup> The experimental study of student coaching by Bettinger & Baker (2014) provided the stated evidence base that the *Carolina Works* initiative sought to validate in a community college context (Central Carolina Community College, 2015).



Figure 1: Participating Colleges in the Carolina Works Initiative

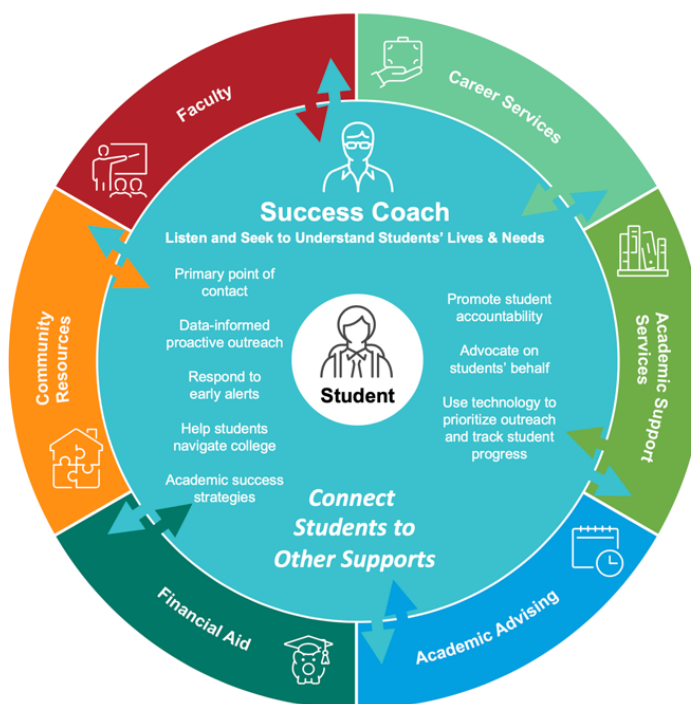


### The Intervention: Success Coaching in the Carolina Works initiative

Success coaching in the Carolina Works initiative aligns with the broader national movement to take a more holistic, personalized, and proactive approach to providing support services to college students. Key components of the success coaching model as operationalized in Carolina Works is summarized in Figure 2 (Liston, 2019). Carolina Works success coaches seek to develop personal relationships with students, serving as a main point of contact as well as a connector to other key supports and resources at the college and beyond. In addition to providing direct and proactive support to students, coaches refer students to other college personnel and resources, following up with students to help with any next steps. At each of the 10 Carolina Works community colleges, success coaches used a predictive analytics and case management software called Aviso Retention to monitor student grades, attendance, and other important information provided in real-time to help them target proactive outreach. First-hand feedback from students in the Carolina Works initiative underscores the importance of a relationship of trust that was developed between students and coaches, which helped students

engage in difficult conversations about academic or personal challenges and which served as a foundation for other services that coaches provided (Curtis & Valentine, 2020).

Figure 2: Carolina Works Model of Success Coaching



Source: Liston, 2019

In contrast to several prior studies of student coaching, including the seminal study by Bettinger & Baker (2014), success coaching in Carolina Works did not involve a third-party coaching organization. Rather, success coaches in Carolina Works were employed by the college and worked on-site, and thus had the opportunity to engage students in-person and to become familiar with institution-specific policies and procedures affecting student success. In total, 37 coaches were employed across the 10 colleges at some point during the five-year study period.<sup>3</sup> Almost all coaches possessed master's level degrees, and although many coaches had

<sup>3</sup> Although there were 37 coaches employed during the study period, there was a maximum of 21 success coaches employed at any one time across the 10 colleges.

backgrounds in counseling or education and many had extensive prior experience working within a community college setting, depth of experience in a student service role varied considerably among coaches.

All coaches underwent a two-day training provided by the lead college, Central Carolina Community College, in collaboration with Aviso Retention, which included training on use of the case management technology to inform coaching practice. Coaches were trained to provide email outreach to all students on their caseloads on the first day of each semester, followed by more individualized, proactive outreach throughout the first weeks of the term intended to intervene with students before any issues arose. In addition, coaches were also trained to reach out to students based on automatically-generated alerts they received when student attendance was problematic or when grades fell below a certain threshold, and to connect with students based on early-warning alerts generated by faculty members at their institution. Coaches received training and professional development in the theory and practice of Appreciative Advising that is based in positive psychology literature of appreciative inquiry (Cooperrider & Whitney, 2005); it involves the “intentional collaborative practice of asking generative, open-ended questions that help students optimize their educational experiences and achieve their dreams, goals, and potentials.”<sup>4</sup> Coaches also received continuous training throughout the five-year grant period on varied topics including honing outreach and communication skills, working with military affiliated or LGBTQA students, developing cultural competence, and developing the coach’s own facilitation skills.

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<sup>4</sup> The phases of Appreciative Advising are: disarm (establish rapport with students), discover (learn students’ background and context), dream (coach and student explore goals together), design (coach and student co-create academic and personal plans, deliver (plans are enacted), and don’t settle (new goals aimed at continuous improvement are established). See <https://www.appreciativeadvising.net>.

Carolina Works colleges vary considerably in terms of student enrollments, which in turn influenced the size of coaches' caseloads (i.e. the number of students assigned to them). Although it is difficult to track caseload sizes of coaches across the entire study period given coach turnover as well as student stop-out, during the first term of the study Carolina Works coaches' caseloads ranged from 41 to 286 students, with a median of 143 students per coach.<sup>5</sup> National advising organizations such as NACADA are hesitant to specify an "ideal" caseload size for college advisors; however, the median caseload size of Carolina Works coaches falls well below that of typical college advisors—the NACADA 2011 National Survey of Academic Advising showed a median caseload of nearly 450 students per full-time professional advisor at 2-year colleges (Carlstrom, 2013).

### Evaluation of Carolina Works

In collaboration with project partners, DVP-PRAXIS LTD conducted an independent evaluation of the Carolina Works initiative comprised of two components: a randomized controlled trial (RCT) to assess causal impacts of the success coaching treatment on students' retention and completion outcomes, and an implementation study based on in-depth site visits to participating colleges to assess fidelity to the coaching model as well as to assess institutional and contextual factors theorized to influence the effectiveness of implementation.

For the experimental study, new students were randomly assigned to the treatment group (assignment to a success coach) or to the control group (no coach assignment) on the first day of their first term. Students in the treatment group were 'passively enrolled' to receive success coaching, meaning that they were assigned to a coach without needing to formally accept or

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<sup>5</sup> Coaches' caseloads grew as the study progressed, as students were assigned across multiple semesters.

express desire for receipt of the treatment. Students in the treatment group received outreach and services from a coach for as long as they remained enrolled at the institution;<sup>6</sup> students in the control group received the colleges' business-as-usual services. Notably, *all* students in the study (both treatment and control) received automated alerts that were generated through the Aviso Retention technology on the basis of attendance patterns and grades; in addition, faculty at all colleges could generate early warning alerts about any student, which were routed to a campus-specific coordinator to handle these alerts. For students in the treatment group, their success coach *also* received these automatically-generated alerts and faculty alerts and followed up with the student proactively. In other words, the treatment being tested in the Carolina Works study is assignment to a dedicated success coach trained to engage in proactive and technology-informed outreach, above and beyond receipt of a college's of business-as-usual services that includes automated alerts sent to all students plus a college-wide system for responding to early-warning alerts generated by faculty.

To complement the experimental study, the evaluation of Carolina Works included an in-depth qualitative assessment of implementation fidelity across the 10 colleges. Data were collected through interviews and focus groups with coaches, college support staff, faculty, and mid- and senior-level administrators to assess six interrelated measures of implementation fidelity: three measures reflecting contextual, college-level conditions theorized to influence colleges' ability to effectively implement the intervention, and three measures reflecting proximate measures of model fidelity that relate to what coaches, faculty, and staff were expected to do as part of the treatment and study design. As described further in the next section,

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<sup>6</sup> When students stopped out of the institution or were not registered for subsequent terms, coaches were trained to reach out to these students to understand the reasons and (if appropriate) to encourage re-enrollment. However, outreach to students enrolled at the college was prioritized.

all 10 colleges were assessed on these metrics, facilitating assessment of variation in coaching impacts according to strength of implementation.

## **Data & Methodology**

We employ a mixed-methods approach to assessing the effects of success coaching on community college student retention and completion outcomes. Our quantitative assessment is based on a sample of first-time fall students enrolling in 10 North Carolina community colleges across three consecutive academic years.<sup>7</sup> Results are informed and contextualized by qualitative data collected from these same colleges to assess implementation fidelity related to coaching practices as well as institutional support for the success coaching intervention.

### *Experimental study*

Quantitative results are based on administrative records for 10,769 students first enrolling in these 10 institutions in the Fall 2016, Fall 2017, and Fall 2018 semesters. Roughly one-half of students (5,402) were randomly assigned to a success coach at the start of their first semester and constitute the treatment group for the study; randomization was conducted at the student level in a series of independent, institution-term lotteries. Retention and completion outcomes were tracked for all students through the Spring 2020 semester. Retention measures include short-term (Fall-Spring) and longer-term (Fall-Fall and Fall-to-second-Spring) retention. The credential completion measure captures completion at any point during the study period, and includes completion of associate's degrees as well as shorter-term credit-bearing postsecondary

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<sup>7</sup> New students were defined as those not enrolled at the institution in the prior three academic terms. Students enrolled at the institution in earlier years and those enrolled previously at other institutions were included in the definition of "new students."

certificates and diplomas.<sup>8</sup> All outcome measures are within-institution metrics, meaning that they capture continued enrollment or completion within the institution where a student began.<sup>9</sup>

To explore the impact of success coaching on student outcomes, we follow Bettinger and Baker (2014) in estimating a series of OLS regressions in which the outcome of interest is regressed on the “treatment” indicator (assignment to a success coach), a set of baseline controls, and randomization lottery fixed effects to control for any institutional and temporal factors.<sup>10</sup> Specifically, we estimate the “intent to treat” (ITT) models using the following equation:

$$Outcome_{ij} = \alpha + COACH_i \beta + LOTTERY_j \gamma_j + X_i \delta_i + \varepsilon_{ij}$$

where *Outcome* represents the binary retention and completion outcomes for student *i* who was assigned to treatment or control in lottery *j*. We include lottery fixed effects in order to account for institution-term specific characteristics that may vary across our pooled study sample, and we include a vector of baseline student-level covariates (*X*) to control for any pre-treatment differences between treatment and control groups that are not accounted for through randomization to increase precision of our estimates. In addition to examining outcomes for the full sample of first-time fall students, we examine outcomes for specific groups of students based on characteristics including gender, age, race, enrollment intensity (full-time versus part-time), and financial need.

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<sup>8</sup> All students in the sample could be followed for a minimum of two academic years. For each respective cohort, the completion measure reflects completion within four years (Fall 2016 cohort), within three years (Fall 2017 cohort), and within two years (Fall 2018 cohort).

<sup>9</sup> Given the use of within-institution retention and completion metrics for this study, there is zero sample attrition in the FITW study; in other words, outcomes data are available for all students in the sample.

<sup>10</sup> Our use of linear probability models was employed to facilitate interpretation of results. As a sensitivity check, logistic regressions were also run, and results are substantively identical.

### *Implementation study*

Over the course of the five-year initiative, the evaluation team conducted an in-depth implementation study with the ultimate goal of understanding how college-level variation in implementation is correlated with differences in impact of the success coaching intervention. As part of the implementation study, between March and May 2017 the evaluation team conducted two-day site visits to each college, leading semi-structured interviews and focus groups with a total of 244 college personnel across the 10 institutions including Carolina Works project leadership, success coaches, faculty, student services staff, information technology and institutional research staff, and college administrators.<sup>11</sup> Interview and focus group protocols were designed to collect data on six interrelated dimensions of implementation fidelity:

1. Strength of project leadership at the college
2. Campus communication and engagement about success coaching and Carolina Works
3. Technology adoption and use
4. Success coach fidelity to data-informed, success coaching model
5. Faculty and staff fidelity to data-informed, success coaching model
6. Fidelity to RCT design (coaching intervention for treatment group only)

Dimensions 1 through 3 reflect institution-level contextual conditions that are expected to highly influence colleges' abilities to effectively implement both the data-informed coaching intervention (reflected in model fidelity measures 4 and 5) and the RCT study design (reflected in model fidelity measure 6). Dimensions 4 through 6 reflect proximate measures of model fidelity that reflect what coaches, faculty, and staff are expected to do as part of the treatment

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<sup>11</sup> As the first cohort of students entered into the study in Fall 2016, colleges' implementation fidelity was assessed in the relatively early stages of the initiative (in Spring 2017). Importantly, at the time these visits were conducted, the only outcomes data available were short-term (Fall-Spring) and for a single cohort (Fall 2016 entrants), reducing the possibility that our qualitative assessment was biased by institution-specific early outcomes.



and study design. Following Abry et al (2015), Dimensions 1-3 are referred to as fidelity of implementation “drivers” and Dimensions 4-6 as fidelity of implementation “core components.”<sup>12</sup>

Theorized relationships among the six dimensions of model fidelity are both direct and indirect, and together they can provide a solid foundation for effective coaching. Implementation of the success coaching model with fidelity is directly affected by success coaches’ actions, understandings, and behaviors; and a coach's effectiveness is greatly influenced by faculty and staff actions, understandings, and behaviors. For example, coaches cannot respond to early warning alerts from faculty if faculty are not entering them into Aviso, and coaches cannot respond to Aviso’s automated alerts unless faculty are entering students’ grades and attendance that is the basis for these alerts. College-level project leadership, campus-wide communication and engagement about coaching, and technology adoption all serve as indirect but crucial implementation drivers that can further affect both faculty/staff and coach's actions. For example, if project leadership is not supported by senior academic, student services, and information technology leaders, it may be more difficult for coaches to get the resources they need to do their job effectively. Regular and frequent communication about success coaching increases faculty and staff awareness of the intervention and ways to support it, as does the support and buy-in of technology leaders on campus who can assure that Aviso is operating as designed and pulling from the appropriate administrative data systems to populate the auto-generated alerts that coaches use for proactive outreach.

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<sup>12</sup> Abry et al, 2015. “Using Indices of Fidelity to Intervention Core Components to Identify Program Active Ingredients.” *American Journal of Evaluation*, 36(3): 320-338.

Using a rubric aligned to the six model fidelity measures and a set of corresponding indicators, the evaluation team scored colleges on each of the six model fidelity measures on a scale of 1 (low fidelity) to 5 (high fidelity)—for a maximum model fidelity summary score of 30. These qualitative implementation scores provide the basis for exploring the extent to which high-fidelity implementation may be associated with stronger impacts of the coaching treatment.

Finally, an important aspect of implementation explored in this study relates to the tenure of coaches within institutions, which is connected to coaches' ability to form strong and sustained relationships with their caseload of students. Coach tenure varied considerably across colleges, with some colleges experiencing multiple instances of coach turnover theorized to have a negative impact on development of student-coach relationships.<sup>13</sup> Feedback collected through student focus groups emphasized the importance of developing trusting relationships with coaches that can serve as a foundation for other supports that coaches can provide, but that can take time to develop (Curtis & Valentine, 2020). We examine the importance of coach tenure by assessing effects of coaching for students assigned to success coaches who remained in place for the entire study period, which occurred in six of the 10 colleges.

## **Results**

Table 1 summarizes baseline characteristics for our sample of first-time fall students, for both the treatment group (students assigned a coach) and the control group. The random assignment process resulted in treatment and control groups of students that are statistically identical on observable student-level baseline characteristics. Like college students across the country, students in the Carolina Works sample are more likely to be female (65%). Roughly

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<sup>13</sup> High coach turnover may have been, at least in part, a function of the time-limited, grant-funded nature of the success coach positions.

30% of sample students are underrepresented students of color, with Black students representing the largest non-white racial group. Similar to community college students across the country, students in our sample are older than “traditional” 4-year college students (sample students are 26 years old, on average, when first enrolling in the college). Also similar to community colleges students nationwide, our sample has a high level of financial need (55% received a Pell award in their first term), and more than 40% of students were enrolled part-time in their first-term, defined as enrolling in fewer than 12 credits.

Table 1: Descriptive Statistics for Students Assigned a Success Coach (Treatment Group) and Students Not Assigned a Coach (Control Group)

	Treatment (n=5,402)	Control (n=5,367)
Demographic Characteristics		
Female	64.9%	65.1%
Age	25.9	26.1
Race/Ethnicity		
White	68.9%	69.6%
Black	19.2%	18.1%
Hispanic	7.9%	7.9%
American Indian	2.4%	2.7%
Asian	1.6%	1.8%
Socio-Economic Status		
Pell recipient	54.6%	54.5%
Prior academic performance and enrollment characteristics at baseline		
Enrolled in Developmental Ed	19.5%	20.7%
Prior credits earned (at enrollment)	16.8	16.3
Enrolled part-time (<12 credits)	42.0%	42.8%
High School GPA	2.8	2.8

*Note.* No statistical differences on any baseline characteristics at  $p < .10$ .

Table 2 summarizes estimates of treatment effects based on a series of OLS regressions of student retention and completion outcomes on the coaching treatment, controlling for student-level covariates as well as institution-term fixed effects. For our full sample of first-time fall

students, there are no detectable effects of coaching on students’ short-term retention (Fall-Spring). However, these effects grow larger for longer-term retention outcomes — students with a coach are 1.7 percentage points more likely to be enrolled at the end of two academic years (Fall-to-second-Spring) compared to students without a coach, representing a 4% increase in retention over the control group average of 42.5%. These results suggest that the benefits of coaching emerge over time, as coaches develop deeper relationships with students across several semesters. Students with a coach were more likely to have earned a credential during the study period, however this finding is small and not statistically significant.

Table 2: OLS Estimates of Treatment Effects of Success Coach Assignment on Retention & Completion, All Students and Select Student Groups

	Fall-Spring retention	Fall-Fall retention	Fall-to-second- Spring retention	Credential completion
<u>All students</u>				
Control mean	.669	.488	.425	.285
Treatment effect	.001 (.009)	.012 (.009)	.017* (.009)	.007 (.008)
n	10,768	10,768	10,768	10,768
<u>Male students</u>				
Control mean	.660	.472	.416	.262
Treatment effect	.022 (.015)	.036** (.016)	.039** (.016)	.020 (.014)
n	3,772	3,772	3,772	3,772
<u>Black students</u>				
Control mean	0.592	0.350	0.279	0.188
Treatment effect	-.021 (.022)	.030 (.022)	.049** (.021)	.005 (.017)
n	1,944	1,944	1,944	1,944
<u>Full-time students</u>				
Control mean	.740	.522	.457	.310
Treatment effect	.002 (.011)	.021* (.012)	.028** (.012)	.010 (.011)
n	6,203	6,203	6,203	6,203

\*Significant over 90% CI, \*\*95% CI, and \*\*\*99% CI.

*Note.* Coefficients derived from OLS regression models that control for student age, gender, race/ethnicity, Pell recipient status, prior college credits earned, intensity of enrollment, enrollment in developmental education, high school GPA, and lottery fixed effects.

In addition to assessing impacts of coaching for all students, we explored variation in outcomes by select student characteristics. Namely, we examined the extent to which impacts of coaching may vary by age (18-24 years old, versus 25 and older), socioeconomic status (proxied by Pell receipt), gender, race, and enrollment intensity. We found no substantive differences (not shown) in outcomes for older versus younger students, nor for Pell recipients versus non-recipients, suggesting that the coaching treatment is equally effective for students of different ages and with different levels of economic need. However, analyses by sub-group point to particularly large benefits of the coaching treatment for male students, Black students, and full-time students.

Male first-time fall students assigned a success coach were 3.6 percentage points more likely to be enrolled in the subsequent fall compared to male students without a coach (50.8% v. 47.2%), representing an 8% increase in Fall-Fall retention over the control group average; male students with a coach were also significantly more likely to be enrolled after two academic years (Fall-to-second Spring retention). In addition, male students with a coach were 2.0 percentage points more likely to complete a credential (28.2% v. 26.2%), representing an 8% increase in completion over the control group average.

As noted above, Black students are the largest non-white racial group in our sample, representing approximately 20% of all students. Among Black students, those assigned a success coach experienced a 3.0 percentage point boost in Fall-Fall retention (38.0% v. 35.0%), representing an 8% increase over the Black student control group average. In addition, Black students with a coach experienced a nearly 5 percentage point increase in Fall-to-second-Spring retention (32.8% v. 27.9%), representing a sizeable 18% increase over the control group average.

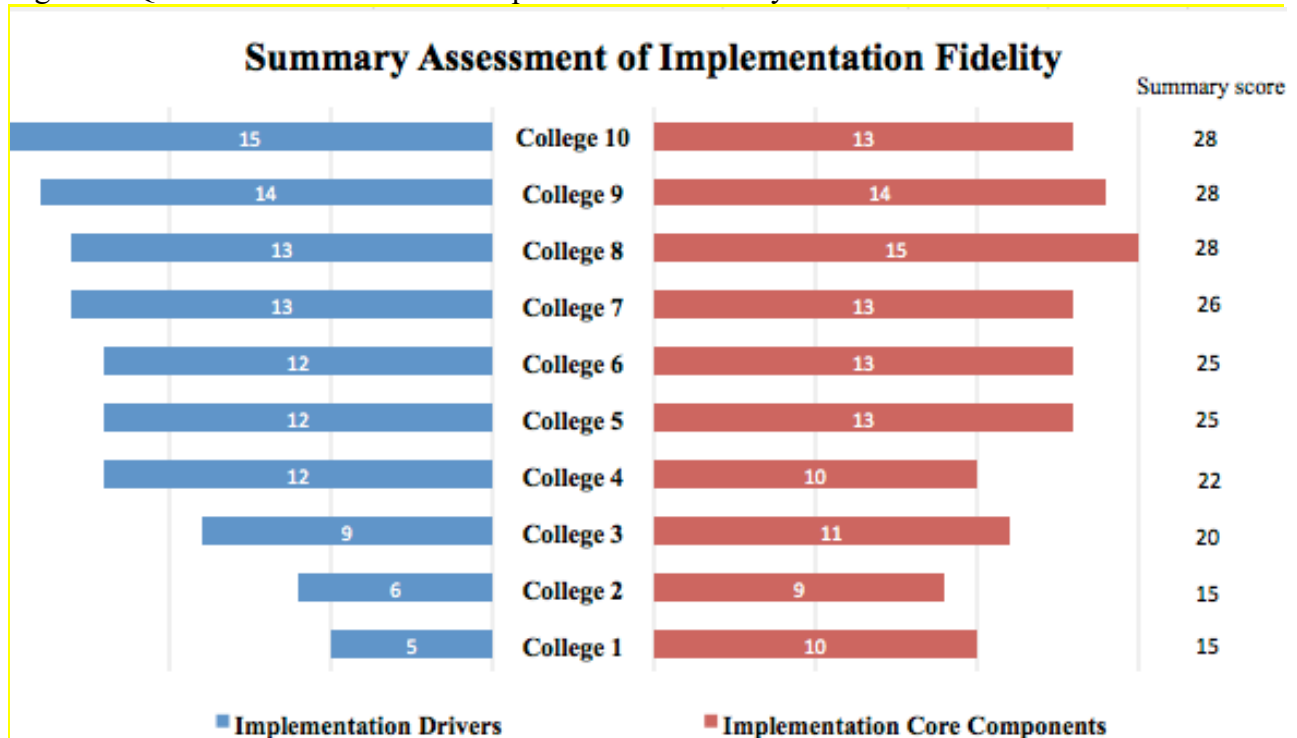
Finally, we examined outcomes for students enrolled in 12+ credits, given that many similar proactive advising interventions (e.g. ASAP) have required that students be enrolled full-time. Among full-time students, those assigned a success coach experienced a 2.1 percentage point boost in Fall-Fall retention, representing an 4% increase over the full-time student control group average. In addition, full-time students with a coach experienced a 2.8 percentage point increase in Fall-to-second-Spring retention, representing a more than 6% increase over the control group average.

As noted above, success coaches in the Carolina Works initiative were employees of the college, and thus fidelity of implementation varied not only by characteristics of coaches themselves but also by the college-specific contexts in which these coaches operated. In addition to assessing treatment effects for the full sample and by various student characteristics, we estimate effects for students within specific colleges that met various implementation criteria based on our qualitative data. First, we assessed impacts of coaches for students within three colleges flagged as high performers according to their qualitative implementation fidelity summary score based on the six implementation fidelity metrics discussed in the previous section. Second, impacts of success coaching were assessed within the subset of six colleges that had coaches in place for the duration of the five-year study; many colleges experienced multiple instances of success coach turnover, perhaps in part due to the grant-funded nature of the program.

Figure 3 displays each colleges' summary implementation fidelity scores, which is comprised of an assessment of the three implementation drivers (strength of project leadership; campus engagement and communication; technology adoption) and the three core components of model fidelity (success coach fidelity to the coaching model; faculty/staff fidelity to the coaching

model; fidelity to the RCT design). As demonstrated in the figure, there is a high correlation ( $r=.79$ ,  $n=10$ ,  $p=.007$ ) between colleges' qualitative scores on implementation drivers and their scores on implementation core components, suggesting that the strength of project leadership, the extent of campus communication and engagement, and the adoption and use of technology are highly correlated with coaches' and faculty/staff's ability to implement the intervention with fidelity to the data-informed, proactive coaching model and with fidelity to the RCT design. Of the 10 colleges, three were assessed at a high level of overall implementation fidelity, scoring 28 out of 30 across the six dimensions combined. These three colleges demonstrated strong leadership support for success coaching, successfully folding coaches into their existing staff and building institution-wide buy-in through campus-wide communication and engagement.

Figure 3: Qualitative Assessment of Implementation Fidelity



Results for these three high-performing institutions suggests that implementation matters, as the impact of coaching on student retention and completion is notably larger within institutions that implemented the intervention with high fidelity. As shown in Table 3, success coaching within the three high-fidelity colleges resulted in a 4 percentage point increase in students' Fall-to-second-Spring retention (48.3% v. 44.3%), representing a 9% increase over the control group average in these colleges. Students assigned to a coach also increased their credential completion by 2.8 percentage points (31.8% v. 29.0%), representing a 9% increase in completion over the control group average in these 3 colleges.

Table 3: OLS Estimates of Treatment Effects of Success Coach Assignment on Retention & Completion, Variation by Implementation Factors

	Fall-Spring retention	Fall-Fall retention	Fall-to-second-Spring retention	Credential completion
<u>Full sample</u>				
Control mean	.669	.488	.425	.285
Treatment effect	.001 (.009)	.012 (.009)	.017* (.009)	.007 (.008)
n	10,768	10,768	10,768	10,768
<u>High fidelity of implementation institutions</u>				
Control mean	.700	.512	.443	.290
Treatment effect	.020 (.014)	.027* (.016)	.040** (.016)	.028* (.014)
n	3,689	3,689	3,689	3,689
<u>Low Coach turnover institutions</u>				
Control mean	0.673	0.489	0.424	0.265
Treatment effect	.012 (.013)	.031** (.014)	.034** (.014)	.033** (.013)
n	4,677	4,677	4,677	4,677

\*Significant over 90% CI, \*\*95% CI, and \*\*\*99% CI.

*Note.* Coefficients derived from OLS regression models that control for student age, gender, race/ethnicity, Pell recipient status, prior college credits earned, intensity of enrollment, enrollment in developmental education, high school GPA, and lottery fixed effects.



A similar pattern emerges when examining variation in the effects of success coaching according to coach tenure: namely, students benefit more from success coaching when their coaches don't change. Within the 6 institutions with coaches in place for the entire study period, students assigned to these coaches experienced a more than 3 percentage point increase in Fall-Fall retention (52.0% v. 48.9%), Fall-to-second-Spring retention (45.8% v. 42.4%), and credential completion (29.8% v. 26.5%). Compared to the control group average in these colleges, this represents a 6% increase in Fall-Fall retention, an 8% increase in Fall-to-second-Spring retention, and – most notably – a 12% increase in credential completion.

## **Discussion and Implications**

The Carolina Works study was the first large-scale study to rigorously test the impacts of success coaching within a community college setting. Congruent with prior evidence, results from this five-year study suggest that success coaching is a promising strategy to help more community college students stay on their pathways and earn college credentials. Success coaching in Carolina Works significantly increased first-time fall students' longer-term retention outcomes, with particularly large effects for full-time students, male students, and Black students. The impacts of coaching on student retention and completion were also found to be larger when students engage with the same coach over time, and when colleges implement success coaching with high fidelity to the coaching model and with strong institutional leadership and support.

Findings from Carolina Works carry various theoretical and practical implications. First, we find that the effects of success coaching do not appear immediately, but rather emerge over time in terms of students' longer-term outcomes. This finding mirrors other studies of intensive

student coaching or advising. For example, a recent experimental study of the Stay the Course intervention, which involved intensive coaching through personalized navigators within a large Texas community college, found that the intervention was not effective in preventing drop-outs in the short-run and did not have a meaningful impact on college enrollment or completion until after six semesters. The authors of this study posit that “it takes time for the navigators and students to develop the relationship that allows comprehensive coaching and mentoring to have a substantive impact on persistence and completion, so the impact of these efforts on success in school is not evident until after a few years” (Evans et al, 2020, p. 956). Our finding that coaching impacts grow over time also aligns with a theoretical conceptualization of success coaching that is rooted in strong, trusting relationships formed between coach and student, which may take time to develop. While there is no single model of student coaching, most are informed by a case management approach to advising that is individualized, sustained, and supportive (Boynton & Lopez, 2018; Kalamkarian, Karp & Stacey, 2013; Klempin et al, 2019; Pierce, 2016; Richardson, 2008). When students have a trusted personal connection, they may be more comfortable engaging in difficult conversations about their academics, personal lives, uncertainties, goals, and futures (Curtis & Valentine, 2020). When students are able to have these difficult conversations, it could very well make the difference between continuing in college or becoming overwhelmed by the weight of navigating a complex educational system on their own.

Second, our finding that male students and Black students have especially large benefits from success coaching carry equity implications given that male students and Black students – both in the Carolina Works study sample and nationwide — tend to have less favorable postsecondary outcomes on average. Male students are less likely to enroll in college than women, and those who do enroll are less likely than women to persist and complete credentials.

Our finding that men benefit significantly more from coaching is consistent with Bettinger and Baker's seminal 2014 study of student coaching. However, other studies of coaching interventions, which have included a financial assistance component as well, have found that benefits of these interventions largely accrue to women (Angrist, Lang, & Oreopoulos, 2009; Evans et al, 2020). More research is needed to understand the dynamics underpinning these gender differences in the impacts of coaching-based interventions.

Black students in our sample persist at notably lower rates than the sample average, but the impact of coaching on their longer-term retention outcomes is remarkably large. Black students too often confront systemic racism within institutions of higher education which can affect their sense of belonging, their mental health, and ultimately their success in college (Massey & Fischer, 2005), and research points consistently to a lower perceived sense of belonging reported by students of color versus white students within the same campus environments (Johnson et al, 2007; Rankin & Reason, 2005). There is a dire need for higher education institutions to work to dismantle racist structures and attitudes that can pervade college campuses, and to put more resources into interventions that can more effectively support all students on their educational pathways. Our results suggest that success coaching may be one such promising intervention. More broadly, findings from Carolina Works suggest that groups that are underserved within higher education may benefit more from coaching, and thus intentional targeting of coaching services could help close equity gaps.

Third, our findings that success coaching is more impactful within institutions with low coach turnover and within "high-fidelity" colleges carry practical implications for other community colleges looking to integrate coaching practices within their own institutional processes and structures. Given the centrality of a strong coach-student relationship for effective

coaching, the success coach role should be a permanent position at the college, and institutions would do well to prioritize a hiring process and staff retention practices that encourage longer-term retention of coaches within colleges. Our finding that success coaching was more impactful for students within “high-fidelity” colleges points to the importance of strong institutional support, including widespread communication and engagement, that can help build campus-wide buy-in for success coaching.

Of course, there are limitations to the present study. Although Carolina Works spans 10 community colleges across the state of North Carolina that includes institutions of various sizes and geographies, results are not necessarily generalizable to community colleges in other states. Notably, our sample of colleges includes mostly rural institutions and does not include any institutions located within large urban centers. Another limitation of the present study is the relatively short time-frame for gauging impacts of coaching on longer-term completion outcomes. Depending on the cohort, students in this study can be observed for a minimum of two and a maximum of four years, but many community college students – particularly those enrolled part-time who are balancing other life responsibilities – can take far longer to complete. In recognition of the longer time horizons required for robust assessment of completion rates, in recent years the National Student Clearinghouse began reporting most comprehensively on 8-year completion rates in addition to 6-year rates (Shapiro et al, 2019b). Given the importance of 2-year public colleges as a gateway to 4-year college and a bachelor’s degree, a rigorous examination of student persistence in addition to retention is necessary to reveal a more comprehensive picture of success coaching’s impacts. National Student Clearinghouse data – which includes information on all postsecondary institution attendance – is available for more than 95% of the students in our sample. Preliminary examination of National Student

Clearinghouse data suggests that the impacts of coaching on student persistence follow a similar pattern to coaching's effects on within-institution retention; longer-term NSC data can be examined in the future to more closely examine longer-term persistence and completion trends.

An additional limitation to our study relates to the timing of our qualitative data collection efforts, which affects our ability to make causal claims related to implementation findings. Estimates of impacts for the overall student sample and for our sub-groups based on student characteristics meet the “gold standard” of rigor given the randomized controlled trial design and the fact that the student sub-groups assessed are based on student characteristics collected pre-randomization. In contrast, our findings related to the importance of coach tenure and the importance of implementing with fidelity are both based on information that became available only after randomization, which calls into question the direction of causality. It is possible, for example, that longer coach tenure is positively correlated with impacts of coaching not only because students do better when their coaches don't change, but also because coaches who have more successful students are more likely to want to stay in their position. It is also possible – even though we collected data from colleges on implementation fidelity early on, just six months after study start – that colleges with students experiencing more positive effects from coaching were more likely to be motivated to support coaches and to promote institution-wide buy-in, as opposed to vice versa. Despite these limitations, which are somewhat inherent to any study that uses implementation data collected during the study period to aid in interpretation of experimental findings, we nevertheless believe that these qualitative insights related to implementation remain important for other colleges interested in pursuing a coaching intervention.

Our study also points to several avenues for additional research. First, as noted above, our findings related to more favorable outcomes for male students and for Black students warrants further exploration of the factors driving these gender and racial differences. One interesting question for future study is whether or not the gender and/or race of the coach, and the extent to which this matches the demographic background of the student, is correlated with more or less favorable impacts of coaching. Students may have better academic outcomes when they have opportunities to connect on college campuses with instructors and other professionals that match their demographic and cultural background. Future research can also examine intersectionalities between gender and race in exploring the effectiveness of student coaching.

Second, future research can more closely examine and interrogate what “receipt of treatment” really means in a success coaching intervention, given that not all students participate equally. Importantly, the Carolina Works study sample included all first-time students and was not restricted to any particular population, nor did it impose any restrictions on students in order to have access to a coach (e.g., requiring students to enroll full-time). The estimates provided in this paper are based on intent-to-treat (ITT) analyses which does not account for whether or not students actually took advantage of any coaching services. They therefore provide a conservative estimate of the impact of actually *receiving* coaching services. The question remains, however, as to what “receipt of treatment” by a student actually means: does receiving an email from a coach constitute receipt of treatment, or can meaningful engagement with a coach only occur when coaches and students interact synchronously, either over the phone or in person? The Carolina Works study includes student-level data based on case notes written by coaches that will be used in future studies to further explore variation in treatment receipt, and to assess treatment on the treated (TOT) effects of coaching based on actual engagement with a coach.

Preliminary analyses of these data suggest that effects of coaching for students who receive the treatment are notably larger.

Third, and finally, the COVID-19 pandemic has brought to light a critical need for research on best practices and effectiveness of coaching that is delivered in a virtual environment. Although the timing of COVID-19's onset did not affect the Carolina Works study (retention measures connected to Spring 2020 term are based on enrollment status at start of term in January, and the pandemic and widespread school closings did not occur until March), we heard anecdotally, and unsurprisingly, from Carolina Works success coaches that student demand for their services only increased during the pandemic. Understanding the effectiveness of different modes of technology and different strategies for connecting with students who are not physically present on-campus will remain important not only throughout the current pandemic, but also moving forward as an increasing number of community college students are taking some or all courses on-line.

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