

# More Promising Results: Evaluating the Effectiveness of Career & College Clubs Participation on College Enrollment

TY CRUCE, PHD

KRISTA MATTERN, PHD

JAMES SCONING, PHD

## Introduction

In light of the large number of students dropping out of high school and, more generally, the failure of many students to acquire the knowledge and skills needed to pursue a personally rewarding future,<sup>1</sup> the Career & College Clubs program (CCC; [careerandcollegeclubs.org](http://careerandcollegeclubs.org)) was developed to assist middle school youth in becoming ready for a college education and future career. The underlying model of CCC has three main components: early engagement, student-driven learning, and a fun and supportive learning environment. The program emphasizes early engagement because, the reasoning goes, middle school is a critical period for students to define their future and establish strong personal skills such as ambition and leadership. Intervening at a later date may be too late to have the needed effect on college and career success. The program is student-driven in that the peer-to-peer learning that takes place empowers the students to take ownership over their learning. Finally, the learning environment is fun and supportive because the program's theory of action is that "if we engage at-risk middle school students in a peer-to-peer learning environment where they lead fun activities on the topics of career, college,

and life skills; then these students will feel a greater sense of empowerment, as well as an intrinsic drive to plan for, and achieve, success in high school, college, and life."<sup>2</sup>

The program implementation works through a distributed system. Within a school, a coach (typically a counselor or a teacher) invites a subset of students to participate as CCC mentors. Coaches are advised to recruit students who are perceived as influential in the school. That is, students are chosen based on their leadership qualities. Working with the coaches, CCC mentors are provided a defined curriculum designed to increase awareness of the antecedents of career, college, and life success.<sup>3</sup> The curriculum is divided into two areas: exploration and engagement. Sample exploration topics include "Why Higher Education?," "Exploring Career Options," and "Financial Literacy." Sample engagement topics include "College Admission Process" and "College Life." The CCC mentors pass on what they have learned from the CCC curriculum to their peers. The goal is to infuse the curriculum throughout the school; in turn, this should lead to greater success for the student body as a whole.

**Ty Cruce** is a director in Statistical and Applied Research specializing in the study of student preferences and decision making during the college choice process.

**Krista Mattern** is a director in Statistical and Applied Research specializing in the validity and fairness of assessment scores as well as more general issues in higher education such as enrollment, persistence, and graduation.

**James Sconing** is a retired assistant vice president for Research at ACT specializing in predictive modeling.

## Acknowledgements

The authors would like to thank Joseph Booth and Quentin Wilson from ALL Management Corporation and Michelle Croft and Kurt Burkum from ACT for providing feedback on early drafts of this manuscript.

ACT Technical Briefs provide reliability, validity, and other psychometric analyses on ACT education and workforce development assessments, services, and programs and those of its partners. For more on ACT Explore, visit [www.act.org](http://www.act.org).

Previous research conducted by ACT found that CCC mentors had more academically challenging education plans and intentions than similar students attending a school that did not participate in the CCC program.<sup>4</sup> Specifically, CCC mentors were more likely to indicate that they were planning to take a core curriculum in each subject area in high school,<sup>5</sup> to earn a bachelor’s degree or higher, and to have a career in science or technology.

Building on the previous study that examined intentions about postsecondary aspirations, this study tested whether CCC mentors are more likely to enroll in college directly after high school than similar students attending a school that did not participate in CCC. Such findings would provide evidence for the proposed theory of action where participation as a mentor in CCC is linked to college success.

## Methods

### Sample

Two groups comprised the sample for this study. The treatment group consisted of students who were identified as CCC mentors while in eighth grade at one of nine different public middle schools in California ( $N = 111$ ). Compared to the typical middle school, these schools tend to have higher proportions of students who are receiving either a free or reduced-price lunch and

higher proportions of students who are African American, American Indian, or Hispanic. The control group consisted of a random sample of eighth graders from other comparable “underserved” public middle schools across the nation that did not implement CCC ( $N = 968$ ).

### Data Sources

Data for this study were collected over two time periods: during the 2009–10 school year when members of both the CCC group and control group were in eighth and during the 2014–15 school year when these students could be enrolling in college directly after completing high school. The baseline data from the 2009–10 school year come from ACT Explore®, an assessment of student achievement offered during late middle school and early high school that was a part of the ACT college and career readiness system. College enrollment during the 2014–15 school year was determined by matching the records of these ACT Explore-tested students with enrollment records that colleges provided to the National Student Clearinghouse (NSC). Data submitted to the NSC account for 95% of all enrollments in Title IV degree-granting institutions in the United States.

### Variables

The outcome of interest in this study was college enrollment during the 2014–15

school year. Operationally, the outcome is dichotomous, where:

$$y_i = \begin{cases} 1 & \text{enrolled in college} \\ 0 & \text{did not enroll in college.} \end{cases}$$

For this study, we hypothesized that the decision to attend college is a function of the students’ participation as a CCC mentor, their prior academic achievement, whether or not they were a member of a traditionally underserved racial or ethnic group (i.e., African American, American Indian, or Hispanic), the percentage of underserved students at their school, and the percentage of students at their school who were eligible for either a free or reduced-price lunch. The measure of prior academic achievement used in this study is each student’s ACT Explore Composite score, defined as the arithmetic average of the student’s scores across the four subject tests (i.e., English, mathematics, reading, and science) offered as part of the test battery. The student’s racial/ethnic identity was self-reported on a survey provided as a standard part of the ACT Explore test materials. School-level data regarding both the percentage of students receiving free or reduced-price lunch and the distribution of students by race/ethnicity originated from the National Center for Education Statistics’ Common Core of Data for the 2009–10 school year and was matched to students’ test records by school identifiers. Descriptive statistics for all study variables are provided in table 1.

Table 1. Means (Standard Deviations) for Study Variables

	CCC mentors	Control group	Combined
ACT Explore Composite score	14.50 (3.09)	14.13 (3.24)	14.17 (3.23)
Underrepresented minority	0.72 (0.45)	0.48 (0.50)	0.51 (0.50)
Percent underrepresented minority	77.23 (20.55)	54.21 (34.31)	56.58 (33.89)
Percent free or reduced-price lunch	67.40 (24.17)	64.46 (24.24)	64.76 (24.23)
Enrolled in college during 2014–15	0.62 (0.49)	0.46 (0.50)	0.48 (0.50)
<i>N</i>	111	968	1,079

### Analysis

To examine the difference in college enrollment between the CCC group and the control group, we estimated a binary logit regression model which takes the form

$$\ln\left(\frac{p_i}{1-p_i}\right) = x_i\beta,$$

where  $p_i$  is the probability of student  $i$  enrolling in college;  $x_i$  is a vector of predictors for student  $i$ , including his or her membership in the CCC group or control group, prior academic achievement, and the aforementioned student and school demographic characteristics; and  $\beta$  is a vector of parameter estimates that correspond with the predictors.

### Results

When the college enrollment rate is examined descriptively, 62% of the 2009–10 eighth-grade CCC program mentors had enrolled in college during the 2014–15 school year, compared to only 46% of the eighth graders within the comparison group (see table 1). Note that the two groups did differ significantly in terms of minority status representation, both at the individual and school level. Therefore, statistical methods were employed to examine the impact of CCC participation on college enrollment to control for group differences on relevant characteristics.

After statistically controlling for differences between the CCC group and the control group in terms of students' prior academic achievement levels (ACT Explore scores), their status as a member of an underrepresented racial or ethnic group, the percentage of students at their school who were underrepresented racial or ethnic minority students, and the percentage of students at their school who were receiving a free or reduced-price lunch, the difference in the college enrollment rate between the CCC mentors and students within the comparison group remained roughly the same.

When the model estimate for the variable representing membership in the CCC group is converted into an odds ratio, we can interpret the difference in the following way: the odds of enrolling in college during the 2014–15 school year are 85% higher for CCC mentors than for students in the comparison group (table 2). Specifically, when all other variables in the model are held at their mean values, the predicted probability of enrolling in college is 0.62 for a CCC mentor and 0.46 for a student in the control group—essentially the same difference we observed before statistically controlling for other key predictors of college enrollment.

### Discussion

The current study found a strong association between participating in the CCC program as a mentor and subsequent college enrollment.

These positive results are extremely encouraging. A great deal of research exists pointing to the fact that underserved students are less likely to pursue postsecondary plans. Based on national statistics for the 2013 high school graduating cohort, for example, 66% enrolled in college the following fall; however, the rate for low-income students was under 50%.<sup>6</sup> The results from the current study indicate that the CCC mentors had enrollment rates that were more similar to the national rate than their underserved peers. Interventions that can effectively improve college enrollment for underserved students hold great promise in reducing educational and occupational disparities that exist by race/ethnicity and socioeconomic status.

With that in mind, the findings from the current study are correlational, not causal. Although the findings presented here cannot attribute the higher college enrollment rates of the CCC mentors solely to that treatment, the findings do not rule out this possibility. In this study we learned that, given two students who were the same with respect to their eighth-grade achievement level, the status of their membership within an underserved minority group, and the socioeconomic and racial/ethnic representation within their middle school, the student who participated in CCC as a mentor would have far greater chances of enrolling in college than the student who did not participate in the program.

Table 2. Logistic Regression Results

	Parameter estimate	Standard error	Odds ratio
CCC mentor	0.61*	0.22	1.85
ACT Explore Composite score	0.22*	0.02	1.24
Underrepresented minority	-0.03	0.17	0.97
Percent underrepresented minority	0.00	0.00	1.00
Percent free or reduced-price lunch	-0.01	0.00	0.99
Intercept	-2.86	0.43	

\*  $p < 0.01$ ;  $-2$  Log Likelihood = 135775 (Likelihood Ratio = 136.19, DF = 5,  $p < 0.0001$ )

Given the magnitude of the difference in the enrollment rates between the two groups—even after the introduction of a modest set of statistical controls into the estimated model—further research that overcomes some of the limitations of the current study would bolster evidence for CCC’s effectiveness. By design, students are not randomly assigned to participate as a mentor in CCC. If students were selected on the basis of some personal characteristics such as motivation or strong academic behaviors, which have also been positively linked to education success, the magnitude of the effect that we have reported may be partly due to unobserved differences in the groups rather than to the CCC program per se.<sup>7</sup> Although we attempted to statistically control for differences between the two groups using typical observed characteristics of the students and their schools, adding measures

of currently unobserved characteristics (such as student motivation) would strengthen the evidence for the impact of CCC program participation on college enrollment.

Also by design, the CCC mentors addressed in this study were meant not only to take part in the program curriculum, but also to bring these lessons back to their school and share them more widely with their peers. Additional research should examine student differences in CCC program compliance and the potential effects of the program on other students at the mentors’ schools. In particular, evaluating the impact of the CCC program on college enrollment for peer students who are exposed to the CCC curriculum via mentors is needed to understand the effectiveness of the program at a school level. Additionally, a more robust research design that offers a better method for accounting for the educational experiences and opportunities

afforded to students during the high school years could improve upon the current study. Finally, it would be worthwhile to examine whether the CCC mentors continue to achieve educational success at higher rates than their peers in terms of college grades, persistence, and ultimately graduation. Future research should address these research questions.

The earlier ACT evaluation of the effectiveness of the CCC program led to the conclusion that the program has had some success.<sup>8</sup> However, a true test of the program’s effectiveness could not be conducted until college enrollment information was available for these students. Now those data are available and are the subject of the current study, we reiterate our initial conclusion that the CCC program shows promise in improving educational outcomes for at-risk students. ■

## Notes

- 1 Krista Mattern, Jeremy Burrus, Wayne Camara, Ryan O’Connor, Mary Ann Hanson, James Gambrell, Alex Casillas, and Becky Bobek, *Broadening the Definition of College and Career Readiness: A Holistic Approach*, ACT Research Report Series 2014 (5) (Iowa City, IA: ACT, 2014), [http://www.act.org/research/researchers/reports/pdf/ACT\\_RR2014-5.pdf](http://www.act.org/research/researchers/reports/pdf/ACT_RR2014-5.pdf).
- 2 “Approach,” Career & College Clubs, accessed July 1, 2015, <http://careerandcollegeclubs.org/about-the-program/>.
- 3 The CCC curriculum is aligned with grades 6–8 Common Core State Standards and the American School Counselor Association National Standards for Students. In addition, the curriculum was developed to support student proficiency in 21st Century Skills. For more details, see <http://careerandcollegeclubs.org/about-the-program/>.

- 4 Career & College Clubs, *Promising Results: Evaluating Effectiveness of Career & College Clubs* (Los Angeles: Career & College Clubs, 2013), <http://careerandcollegeclubs.org/wp-content/uploads/2015/01/ACT-Report-on-Career-College-Clubs-June-2013.pdf>.
- 5 The core curriculum ACT recommends consists of four years of English and three years each of mathematics, science, and social studies.
- 6 Grace Kena, Susan Aud, Frank Johnson, Xiaolei Wang, Jijun Zhang, Amy Rathbun, Sidney Flicker-Wilkinson, Paul Kristapovich, Liz Notter, and Virginia Rosario, *The Condition of Education 2014*, NCES 2014-083 (Washington, DC: US Department of Education, National Center for Education Statistics, 2014), <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2014083>.

- 7 Steven Robbins, Jeff Allen, Alex Casillas, Christina Peterson, and Huy Le, “Unraveling the Differential Effects of Motivational and Skills, Social, and Self-Management Measures from Traditional Predictors of College Outcomes” *Journal of Educational Psychology* 98, no. 3 (2006): 598–616. doi: 10.1037/0022-0663.98.3.598.
- 8 Career & College Clubs, *Promising Results*.