IES Institute of Education Sciences

STUDY BRIEF
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Regional Educational Laboratory Northeast & Islands
At Education Development Center, Inc.

# The Cost-Effectiveness of Providing Early College Programs in Rhode Island

This study examined the cost-effectiveness of three early college programs in Rhode Island: dual enrollment, concurrent enrollment, and Advanced Placement (AP). Each program had a positive effect on participants' enrolling in college within one year of high school graduation, persisting to a second year of college, and starting at a four-year college. For the most part, students experienced these positive effects regardless of whether they were academically proficient at the start of high school. The average annual estimated incremental cost per student for each program (the cost beyond that of providing business-as-usual programs) varied considerably by local education agency. AP had the lowest estimated cost per student. Concurrent enrollment had a somewhat higher estimated cost per student, though the cost reported in this study does not include the substantial expense of obtaining the graduate-level training required for high school teachers who teach these courses. Dual enrollment had the highest estimated cost per student for three key reasons. First, dual enrollment typically served a very small number of participants over whom fixed costs could be spread. Second, the fees paid to postsecondary institutions represented a relatively large portion of the program cost. Finally, some local education agencies dedicated more staff time to dual enrollment to support students in registering, persisting, and ultimately succeeding. While the size of program effects was similar across the three programs, the difference in costs meant that the cost per outcome was lowest for the AP program. The study findings should be considered in the context of the population of students served by dual enrollment, which reaches more students from populations that have been less likely to enroll in college when compared with concurrent enrollment and AP. Future research could provide policymakers valuable contextual information through a more comprehensive analysis of broader societal benefits such as workforce participation that are attributable to these programs, which was beyond the scope of this study.

## Why this study?

Decisionmakers in Rhode Island's K-12 and postsecondary education agencies seek evidence to inform the targeting of resources to increase college readiness among youth and reduce gaps in college completion between lower-income students and other students. To address these concerns, the state has invested in expanded opportunities for high school students to take postsecondary and Advanced Placement (AP) courses, which this study refers to collectively as *early college programs*. Students can earn both high school and college credits through dual enrollment in college courses taught by public state college instructors, through concurrent enrollment in approved college courses taught by specially qualified instructors at the students' high school, and through AP test-taking.

Through a partnership among the Rhode Island Department of Education (RIDE), the Rhode Island Office of the Postsecondary Commissioner (RIOPC), and the Regional Educational Laboratory (REL) Northeast & Islands, an earlier REL Northeast & Islands study found that participating in one of the state's three early college programs had positive effects on students' high school graduation and college-enrollment.[1] Aiming to expand benefits to a wider range of students, RIDE and RIOPC wanted to understand the effects of each program individually, to examine additional outcomes such as four-year college enrollment and college persistence, and to identify any differences in effects related to academic proficiency at the start of high school that should be considered when deciding whether to expand a program.

As state partners were considering where to focus limited investment resources across the three early college programs, they wanted information about the costs of achieving three near-term outcomes in each program: enrolling in college within one year of high school graduation, persisting to a second year of college, and starting at a four-year college. This study provides new evidence that decisionmakers can use to broaden access to early college programs while being mindful of each program's resource use and differences in the populations served.

## What was studied and how?

The study addressed three questions about Rhode Island's early college programs:

1. What effects do dual enrollment in Rhode Island public colleges, concurrent enrollment, and AP test-taking each have on high school graduates' postsecondary education outcomes, including college enrollment within one year of high school graduation, persistence to a second year of college, and initial enrollment in a four-year or two-year college:

   a. How do these effects differ for high school graduates who were academically proficient at the start of high school and those who were not?

2. What is the cost associated with dual enrollment, concurrent enrollment, and AP courses beyond the cost of a typical high school course?

3. What is the cost per outcome associated with dual enrollment in public colleges, concurrent enrollment, and AP enrollment in Rhode Island?

The analyses of program effects are based on results for first-time grade 9 students in Rhode Island public schools in the 2014/15 school year who graduated on time in spring 2018, the most recent cohort for which both grade 8 standardized test scores and college persistence data were available. The analyses of student outcomes included a matched sample of participants in early college programs and nonparticipants drawn from this cohort who were statistically similar before starting high school. The sample for analyzing costs included all students enrolled in each program for the 2014/15-2017/18 school years, though estimated costs are reported only for 2017/18 because of the large differences in programs in the earlier years, especially in program scale. In addition to administrative records, primary cost data came from interviews and focus groups with staff from 12 local education agencies. Because participating in both concurrent enrollment and AP test-taking was the most common mode of participation in early college programs in Rhode Island, the effects and costs of this combination were also analyzed.

1. Shields, K. A., Bailey, J., Hanita, M., & Zhang, X. (2021). *The effects of accelerated college credit programs on educational attainment in Rhode Island* (REL 2021-103). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northeast & Islands. https://eric.ed.gov/?id=ED612887.

## Findings

### *Effects of early college programs*

- **Each early college program had a statistically significant positive effect on college enrollment within one year of high school graduation.** The programs had positive effects ranging from an 11 to a 15 percentage point higher predicted probability of enrolling in college for participants than for nonparticipants.

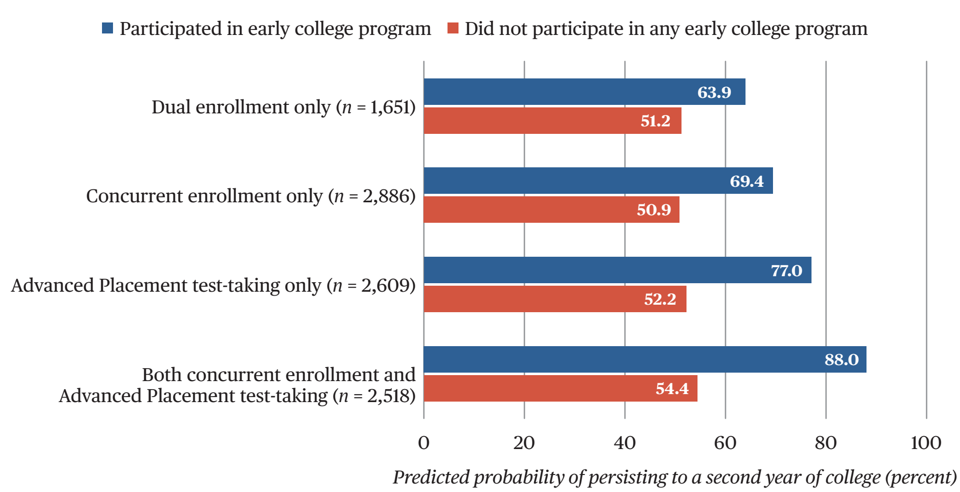
- **Each early college program had a statistically significant positive effect on being enrolled in college 24 months after high school graduation.** The programs had positive effects ranging from a 13 to a 34 percentage point higher predicted probability of being enrolled in college 24 months after high school graduation for participants than for nonparticipants (figure 1).

- **The positive effects of early college programs on college enrollment appear to be driven largely by increases in four-year rather than two-year college enrollment.** Participating in each program increased college enrollment mainly by affecting enrollment in four-year institutions. For high school graduates who participated in both concurrent enrollment and AP test-taking, the effect on college enrollment appeared to be solely from attending a four-year institution.

- **The positive effects of concurrent enrollment and AP test-taking extended to high school graduates who did not score at an academically proficient level in math in grade 8.** This pattern held for both initial college enrollment and college persistence. Although nonproficient dual enrollment students were

**Figure 1. Participants in early college programs who graduated from high school were more likely than matched nonparticipants to be enrolled in college 24 months after high school graduation, 2014/15 grade 9 cohort**

*Predicted probability of persisting to a second year of college (percent)*




Note: Predicted probabilities are based on an analysis of matched samples drawn from Rhode Island public school students in the fall 2014 grade 9 cohort who graduated on time from high school in the state in spring 2018, consisting of participants in each program category and similar students who did not participate in any early college program (see appendix B). Each program category was estimated to have a statistically significant effect on the probability of attaining the outcome (see tables C1, C3, C5, C7, C9, and C11 in appendix C). The parenthetical value for *n* refers to the total matched sample for a given analysis. The samples consisted of 189 participants and 1,462 comparison students for dual enrollment only; 794 participants and 2,092 comparison students for concurrent enrollment only; 969 participants and 1,640 comparison students for AP test-taking only; and 1,021 participants and 1,497 comparison students for the combination of concurrent enrollment and AP test-taking.

Source: Authors' analysis of data from the Rhode Island Department of Education.

predicted to enroll in college and persist at a higher rate than nonparticipating nonproficient students, the difference was not statistically significant for either outcome.

### *Cost and cost-effectiveness of early college programs*

- **The estimated average annual incremental cost per student to provide each early college program in 2017/18 varied widely across programs—from $900 to $6,400—and within programs.** The average estimated incremental cost per student was $900 for AP, $1,600 for concurrent enrollment, and $6,400 for dual enrollment. However, these costs varied widely across local education agencies within each program.

- **Because of differences in program models and contexts, estimated cost per student for the early college programs varied widely across local education agencies.** Each program requires more staff time for activities such as administration and student support than does a typical high school course (business as usual). Dual enrollment had a particularly wide range of K-12 personnel costs, reflecting variation in how the local education agencies in the sample designed and implemented their programs. Some agencies reported large amounts of direct staff support to participating students in addition to staff support for program administration and coordination activities. Some dual enrollment programs may have provided this additional staff support to meet the needs of students in this program, which reached a higher proportion of students from populations that have been less likely to enroll in college than did the other two early college programs.

- **Across the three programs the cost per student tended to decline as program participation increased, providing suggestive evidence of economies of scale.** This pattern was one factor in the higher costs of the dual enrollment programs, which typically served a very small number of participants over whom fixed costs had to be spread.

- **Program fees to public colleges were another important factor contributing to the higher costs of dual enrollment.** Dual enrollment tuition and fees are paid to public colleges to cover the costs associated with high school students taking the course at the college (including instructors' time, administration, and facilities use). The lower fees for concurrent enrollment likely reflect the fact that classes take place at the high school.

- **Cost-effectiveness varied across the early college programs; dual enrollment had the highest estimated average cost per student outcome.** To increase the probability of student success by 5 percentage points across all outcomes, AP required investment of $100-$300 per student and concurrent enrollment required investment of $300-$700. Dual enrollment required a much higher investment of $1,900-$2,900 per student.

## Implications

This study provides evidence that Rhode Island's early college programs are putting students on a path to college success. Each program demonstrated positive effects on college enrollment and persistence. Also important, the effect of these programs is not limited to students who were academically proficient when they started high school. Given this evidence, policymakers might consider expanding early college access to a wider range of students, with appropriate supports. State policymakers could also consider the additional information about the cost and cost-effectiveness of the three programs as they target limited resources to achieve the greatest student impact. AP yielded slightly larger effects on college persistence at a lower cost than dual enrollment or concurrent enrollment.

Although the estimated cost-effectiveness of dual enrollment is lower than that of the other two programs, a larger proportion of the students in the program were from populations that have been less likely to enroll in college, and the program effects were positive. The cost estimates may reflect the higher investment required to support these students rather than the typical cost of providing dual enrollment to the average student. As a reference point for programs targeting students from populations that have been less likely to enroll in college, the dual enrollment costs estimated in this study are comparable to those found in one of the few similar cost-effectiveness studies available, which evaluated the comprehensive P-TECH model in New York City schools.