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INSTITUTE OF CALIFORNIA

# Dual Enrollment in California

## Promoting Equitable Student Access and Success

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# Appendix A. Data and Methods

## Research Questions

Our research on dual enrollment in California’s community colleges uses both quantitative and qualitative data to answer five overarching questions:

1. How are dual enrollment programs structured in California?
2. Do underrepresented students, including Latino, African American, and first-generation college students, have equitable access to the dual enrollment programs?
3. Do dual enrollment programs lead to a more equitable distribution of student outcomes?
4. Given the enrollment, demographic, and fiscal challenges that lie ahead, are there any effective strategies to promote more equitable programs that may be scalable across the state?
5. What are the policy barriers and solutions to expand and improve student access to quality programs?

## Data Sources

The report relies on three primary data sources, including student data, official college documents and reports, and stakeholder interviews.

### Student Data

Our student-level data comes from the Chancellor’s Office Management Information System (MIS). Dual enrollment students are identified using “special admit” flag in the MIS data. Our analytical sample includes 438,417 high school students who graduated between the 2015-16 and 2019-20 school years. Those students took at least one course during their high school years, i.e., 2012-13 to 2019-20 school years. MIS does not have much information about students’ high school records, so we infer and estimate their high school class based on the age when they first took a dual enrollment course at a community college. The California Department of Education publishes student enrollment based on **grade and age**, and we rely on this information to estimate their time of graduation (assuming graduating within 4 years), and high school grade levels. Note that our sample of “special admit” students also includes private and home schooled students; therefore, the number of students is higher than Wheelhouse (2021)—which only includes public high school students that were matched to MIS data. CCAP, ECHS, MCHS, and other dual enrollment program participation is based on our scan of college documents and reports (see next section).

- CCAP student: a student is considered a CCAP student if he/she *ever* participated in a CCAP course during high school years
- ECHS student: a student is considered an ECHS student if he/she *ever* participated in an ECHS course during high school years
- MCHS student: a student is considered an MCHS student if he/she *ever* participated in an MCHS course during high school years
- Other dual enrollment student: a student who *never* participated in any of the structured programs mentioned above (i.e., CCAP, ECHS, or MCHS).

In our analytical sample, 73% of dual enrollment students are in other types of dual enrollment only; 11% are CCAPs, 9% are ECHS, and 10% are MCHS. The numbers add up to more than 100% because there is overlap among structured program participants. For instance, some CCAPs students also participated in ECHS programs at some point.

## Scan of College Documents and Reports

An important component of our qualitative and quantitative approach involved a comprehensive scan of course catalogs, college documents, and publically-accessible information to accurately capture the types of courses associated with dual enrollment programs and how certain dual enrollment programs were structured. More specifically:

**College and Career Access Pathways (CCAP).** To gain a better understanding of how the CCAP dual enrollment program is structured and which courses are offered through the program, the California Community College Chancellor's Office (CCCCO) granted us access to the CCAP agreements college and K–12 partners drafted and signed to establish participation in the program. In total, the CCAP agreements represent 64 colleges total that participated in the program since the program's inception in fall 2016. The information from the CCAP agreements did not fully capture the full range of courses that were actually offered as part of the CCAP program. To account for this, we were also granted access to the annual reports colleges submit to the CCCCCO every year as part of the reporting requirements associated with CCAP participation, which included more detailed information about courses students enrolled in and the number and demographics of students that enrolled. Colleges may not submit their annual reports, which may lead to an under-count of participating colleges. We also followed up with dual enrollment program coordinators on the ground over the course of six months (November 2020 to May 2021) at approximately 52 colleges to get more information for colleges where we still had gaps in course and program information for. In total, we were granted access to the state reports for 71 colleges. Unfortunately, we were not able to collect relevant course and program information for all 83 colleges we've identified as participating in the CCAP program since the program's inception. However, the information we do have accounts for about 87% of all colleges we've identified as participating in CCAP.

**Early College and Middle College High School (ECHS/MCHS).** To gain a better understanding of how the ECHS and MCHS dual enrollment programs are structured and which courses were offered through each respective program, we relied on MIS for information about courses associated with each program, and supplemented this information with documentation provided to us by the Chancellor's Office and publically accessible documents. We also followed up with dual enrollment program coordinators on the ground over the course of six months (November 2020 to May 2021) at approximately 23 colleges to get more information for colleges where we still had gaps in course and program information for. In total, the information we have for MCHS programs accounts for 97% of all colleges we've identified as participating in MCHS, and 58% of all colleges we've identified as participating in ECHS.

## Interviews

To help explain our quantitative findings, we conducted 32 semi-structured interviews with 15 community colleges, 11 K–12 dual enrollment partners, and five Guided Pathways regional coordinators. Roles of participants included college dual enrollment coordinators, high school principals and superintendents, student services staff and administrators, academic affairs staff and administrators, among others. Dual enrollment K–12 and college partners were purposefully selected to be inclusive of the different approaches to dual enrollment (e.g. CCAP, ECHS, MCHS, other dual enrollment programs) and different regions of the state (as defined by [CCC Student Success Metrics](#)). Interview participants were also identified by examining equitable representation of dual enrollees with respect to the general college population (e.g. proportionality index). Throughout the recruitment process guided pathways practitioners and dual enrollment experts assisted us in identifying key dual enrollment stakeholders at community colleges. Finally, snowball sampling, where college interview participants refer us to their K–12 dual enrollment partners was also used in several cases.

Interviews were conducted via video conference on Zoom over the course of two and a half months (from April 2021 to June 2021) and were about one hour each. We asked each interviewee a variety of questions related to the implementation of dual enrollment programs, including but not limited to the institutional motivation for offering dual enrollment opportunities, course offerings, student supports, student recruitment, instruction, and challenges and opportunities to implementing and scaling dual enrollment programs. Importantly, because the COVID-19 pandemic was still ongoing during the spring 2021, we also asked about how the pandemic has affected dual enrollment programs and student enrollment and success. We audio recorded and kept notes during each interview to accurately capture the perceptions of each interviewee, as well as to synthesize themes, observations, and insights to investigate further and inform other interviews.

In summary, the 32 interviews can be broken down into the following categories:

- 16 interviews with college dual enrollment stakeholders at 15 community colleges
- 11 interviews with K–12 dual enrollment stakeholders at 11 K–12 schools and/or districts
- 5 interviews with Guided Pathways regional coordinators representing 4 different regions in the state

## Appendix B. Additional Tables and Figures

**TABLE 1**

Dual enrollment high schools serve a diverse student population but enroll more high-performing students

	High schools w/ dual enrollment	High schools w/ CCAP dual enrollment	Early college high schools	Middle college high schools	High schools w/o dual enrollment
Total enrollment (in thousands)	1.276	1.452	0.514	0.402	0.657
% Asian	6%	7%	8%	10%	5%
% Latino	54%	56%	55%	52%	52%
% Black	6%	6%	6%	8%	7%
% free/reduced lunch eligible	60%	58%	55%	57%	60%
% English learners	11%	14%	8%	3%	14%
% urban	42%	39%	50%	49%	33%
% rural	12%	8%	10%	6%	12%
% at or above proficiency, SBAC math	29%	29%	49%	52%	20%
% at or above proficiency, SBAC ELA	57%	55%	75%	86%	44%
A–G completion rate	47%	43%	60%	73%	28%
High school graduation rate	90%	89%	90%	97%	74%
High school dropout rate	7%	6%	5%	2%	16%
% graduates enrolled in college, all	62%	67%	73%	79%	51%
% graduates enrolled in college, UC	7%	6%	14%	18%	5%
% graduates enrolled in college, CSU	12%	12%	16%	20%	8%
% graduates enrolled in college, CCC	35%	42%	34%	32%	32%
N of high schools	654	226	26	17	2335

**TABLE 2**

Overlap in CCAP/ECHS/MCHS colleges

	CCAP	ECHS	MCHS
CCAP	83	23	17
ECHS	23	26	7
MCHS	17	7	17

SOURCES: Authors' calculations.

NOTES: CCAP college: a college ever participates in a CCAP program between 2012/13 and 2019/20. ECHS and MCHS colleges are defined similarly.

**TABLE 3**

Disciplines of non-transferrable courses, by dual enrollment programs

Disciplines of non-transferrable courses	All DE courses	CCAP courses	ECHS courses	MCHS courses	Other dual enrollment courses
Mathematics	27%	19%	57%	51%	24%
Interdisciplinary Studies	17%	9%	2%	10%	19%
Humanities (Letters)	15%	15%	29%	27%	14%
Health	9%	19%	7%	1%	9%
Business and Management	8%	20%	1%	2%	9%
Engineering and Industrial Technologies	8%	12%	1%	1%	9%
Fine and Applied Arts	4%	0%	1%	0%	5%
Public and Protective Services	3%	0%	0%	2%	4%
Family and Consumer Sciences	2%	1%	0%	1%	2%
Agriculture and Natural Resources	1%	0%	0%	1%	1%
Foreign Language	1%	0%	0%	0%	1%
Information Technology	1%	1%	1%	1%	1%
Biological Sciences	1%	2%	0%	0%	1%
Media and Communications	1%	1%	0%	0%	1%
Commercial Services	1%	1%	0%	1%	1%
Education	1%	0%	1%	1%	1%
Social Sciences	0%	0%	0%	0%	1%
Physical Sciences	0%	0%	2%	0%	0%
Library Science	0%	0%	0%	0%	0%
Environmental Sciences and Technologies.	0%	0%	0%	0%	0%
Law	0%	1%	0%	0%	0%
Psychology	0%	0%	0%	0%	0%
Architecture and Environmental Design	0%	0%	0%	0%	0%
Military Studies	0%	0%	0%	0%	0%

SOURCES: Authors' calculations.

**TABLE 4**

Course outcomes, by student characteristics and dual enrollment programs

	Asian	Black	Latino	White	First Gen
<i>All DE students</i>					
# of DE courses completed	2.5	2.5	2.3	2.7	2.6
# of units completed	8.2	6.6	6.5	8.1	7.3
# of transferrable units completed	7.5	5.8	5.7	7.3	6.6
% units that are transferrable	92%	88%	89%	90%	90%
GPA	3.4	2.9	2.9	3.2	3.0
<i>CCAP students</i>					
# of DE courses completed	3.5	3.1	2.6	3.0	2.8
# of units completed	10.5	8.3	7.3	9.0	8.0
# of transferrable units completed	9.8	7.6	6.7	8.2	7.4
% units that are transferrable	94%	91%	91%	91%	92%
GPA	3.3	2.8	3.0	3.3	3.0
<i>ECCHS students</i>					
# of DE courses completed	4.1	3.8	3.8	3.5	4.1
# of units completed	12.8	10.8	11.2	10.5	12.2
# of transferrable units completed	12.0	9.7	10.0	9.7	11.0
% units that are transferrable	94%	90%	90%	93%	91%
GPA	3.4	2.9	3.0	3.2	3.1
<i>MCHS students</i>					
# of DE courses completed	4.7	3.9	3.8	3.7	4.0
# of units completed	14.7	11.1	11.2	11.3	11.9
# of transferrable units completed	13.9	9.8	10.2	10.6	10.9
% units that are transferrable	95%	88%	91%	94%	92%
GPA	3.4	2.9	3.0	3.3	3.1
<i>Other dual enrollment students</i>					
# of DE courses completed	2.1	2.0	2.0	2.5	2.2
# of units completed	7.1	5.3	5.4	7.5	6.3
# of transferrable units completed	6.5	4.6	4.7	6.7	5.6
% units that are transferrable	90%	87%	88%	89%	89%
GPA	3.4	2.9	2.9	3.1	3.0

SOURCE: Authors' calculation using COMIS data, 2012/13 – 2019/20.

NOTE: Sample includes 438,417 high school students who graduated between 2015/16 and 2019/20 school year. Those students took at least one dual enrollment course during their high school years (i.e., between 2012/13 and 2019/20).

**TABLE 4**

Post-secondary enrollment, by student characteristics and dual enrollment programs

	Overall	Asian	Black	Latino	White	First Gen
<u>All students</u>						
Enrolled in 2 year	44%	32%	40%	48%	44%	49%
Enrolled in 4 year	37%	58%	36%	29%	36%	31%
<u>CCAP students</u>						
Enrolled in 2 year	53%	46%	44%	56%	52%	57%
Enrolled in 4 year	27%	43%	35%	23%	27%	24%
<u>ECHS students</u>						
Enrolled in 2 year	44%	37%	41%	48%	43%	50%
Enrolled in 4 year	38%	54%	38%	31%	37%	31%
<u>MCHS students</u>						
Enrolled in 2 year	44%	37%	39%	48%	43%	47%
Enrolled in 4 year	37%	53%	40%	32%	36%	34%
<u>Other dual enrollment students</u>						
Enrolled in 2 year	43%	30%	40%	47%	44%	48%
Enrolled in 4 year	38%	61%	35%	30%	37%	31%

SOURCE: Authors' calculation using COMIS data, 2015/16 – 2019/20.

NOTE: Sample includes 326,172 high school students who graduated between 2015/16 and 2019/20 school years. Those students took at least one dual enrollment course between 2012/13 and 2019/20. College enrollment refers to whether a student is enrolled in a post-secondary institution 12 months after high school graduation. Because COMIS does not have high school records (and hence year of graduation), we use age of enrollment as a proxy to identify a student's estimated graduation class and year of graduation. The age distribution is based on the California Department of Education's [enrollment by age file](#).





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