

TABLE OF CONTENTS

College in High School Programs & COVID-19	1
Methodology	2
The Big Picture Impact of COVID-19	3
The Pandemic's Challenges	6
Positive Developments Due to the Pandemic	8
Profile: Trident Technical College Moved to Multiple Measures	10
Profile: Tompkins Cortland Community College Virtualized Faculty Professional Development	10
Profile: Portland Community College Deepened Their Relationship with K–12 Partners	11
Continuing Online Instruction	12
Profile: Colorado Mountain College Expanding Online Concurrent Enrollment	13
Profile: Lamar State College Port Arthur is Expanding Online Dual Credit	13
Federal & State Support	14
Profile: Oregon Higher Education Coordinating Commission Staff Ran Weekly Check in Calls	14
Conclusion	15
Acknowledgments	16

COLLEGE IN HIGH SCHOOL PROGRAMS & COVID-19

The COVID-19 pandemic has had fundamental and transformative impacts across the entire education system. Many of those impacts will take years to fully understand.

In addition to difficult and complex challenges created by the pandemic, there are also positive developments in the education system that have been instigated or accelerated by the health crisis. Many stakeholders are examining the impact of the pandemic on either the K–12 or higher education system, but few are considering the impact of the pandemic on postsecondary transition programs like college in high school programs that bridge across both K–12 and higher education.

The College in High School Alliance (CHSA) has been seeking to understand the impact of the pandemic on college in high school programs over the last year and a half, both positive and negative. As we make progress towards emerging from the immediate health crisis, there is a general recognition that — just as there have been big changes in K–12 and higher education generally — there have been changes for college in high school programs too.

Some of the changes are to the benefit of those programs and provide entry points to new mechanisms or policies to scale equitable access to college coursework in high school. But some challenges will create long-term problems for many college in high school programs moving forward.

This resource is designed to help policymakers and practitioners better understand how college in high school programs have been impacted by the pandemic, both positively and negatively, in the context of wider changes in the K–12 and higher education systems.



What are College in High School Programs?

College in high school programs — which are referred to by many terms in states across the country including dual enrollment, concurrent enrollment, and early college high school — promote partnerships between secondary school systems and institutions of higher education that provide high school students with intentionally designed, rigorous, and authentic postsecondary experiences leading to officially transcripted and transferable college credit towards a recognized postsecondary degree or credential.

METHODOLOGY



The College in High School Alliance, in partnership with its Steering Committee member the National Alliance of Concurrent Enrollment Partnerships (NACEP), hosted a national survey in April 2021 for secondary and postsecondary respondents on the impact of COVID-19 on their college in high school programs.

The survey received 303 respondents from 38 states and the District of Columbia, which were about evenly divided between secondary and postsecondary respondents. In addition to the survey, the findings of this report were supplemented by targeted interviews with survey respondents and several discussion sessions of CHSA's COVID-19 Working Group. This included two discussions for a diverse group of policymakers and practitioners in September 2021 to understand how conditions had changed for the Fall 2021 semester given the rise of the Delta variant of COVID-19.

THE BIG PICTURE IMPACT OF COVID-19



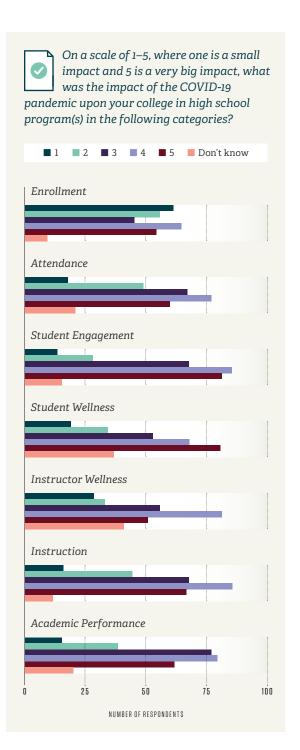
COVID-19 Had a Significant Impact on College in High School Programs

Across the surveyed categories of enrollment, attendance, student engagement, student wellness, instructor wellness, instruction, and academic performance, COVID-19 had a significant impact on college in high school programs. When asked to rate the impact in each of these categories between small (1) and very big (5) impact, the average survey response was between 3 and 4. The biggest impacts identified by the survey were student engagement, instruction, and academic performance.

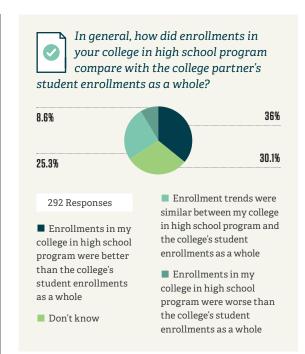
One thing that was made clear by the survey data is that there were consistently large levels of concern around instruction and mental health. Student engagement, instruction and academic performance, as well as student and instructor wellness ranked consistently high as areas of concern. This is perhaps unsurprising given the interrelated nature of these academic and cognitive well-being elements, but does strongly indicate that as colleges and high schools continue to struggle with issues related to student mental health that these impacts will persist well beyond the end of the immediate health crisis.

Enrollment Challenges Need Context

Though the impact of COVID-19 on enrollment was rated to be an average of a 3 on the 1–5 survey response scale, it is important to put that figure in context given the significant variability in responses. Though the pandemic has had a significant impact on college in high school program enrollments, approximately 60 percent of respondents indicated that the impact on enrollment to their college in high school program was the same or smaller than the postsecondary institution partners' enrollments as a whole.







This finding is supported by the <u>National Student Clearinghouse</u>'s data for spring 2021, whose estimates for enrollment during that semester found dual enrollment students experienced the smallest decline (0.6 percent for students under 18, compared to five percent for students aged 18–24) of any age group. In addition, <u>an initial estimate for fall 2021</u> shows dual enrollment participation effectively stable over the previous year, compared to falling enrollments for other age categories.

This indicates that, in many cases, enrollments in the college in high school program were better than for the college as a whole. Less than nine percent of survey respondents indicated that college in high school program enrollments had suffered worse than enrollments as a whole at the partner college.

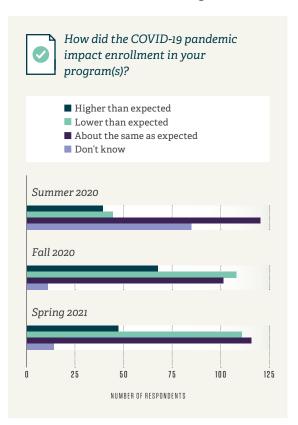
Individual program contexts are also a significant factor in differentiating between enrollment impacts across programs. A pair of separate surveys of NACEP members carried out early in the pandemic indicated that programs with strong partnerships and established habits of collaboration and communication were better able to jointly problem solve and adapt to changes. Based on subsequent discussions with a variety of programs, it is apparent that those lacking a clear pre-existing

commitment, and program
connection and cohesion, or those
lacking extensive structure, tended to see
these programs as "add ons," or nice to have options,
not endemic to the work or "must haves."

These programs have always been a niche in education, living neither solely in the high school nor the college but in both simultaneously. They exist and persist due to either deep commitment or policy requirements and they thrive when they are part of both the district or high school's strategic work and the institution of higher education's strategic work. Shared commitment may be a key contextual piece to understanding the enrollment changes reported by respondents.

College in High School Programs Received Limited State and Federal Support

Only 30 percent of respondents were able to affirmatively indicate that their college in high school program had received some kind of support from their state or from the federal government in





some form, such as funding, guidance, or other supports. And very little of that support appeared to be specific to the college in high school programs, as opposed to funding or guidance that was made available for K–12 and higher education generally that the college in high school program benefited from, such as the availability of funding to purchase technology for students to make remote learning an option.

Such a finding is not particularly surprising, given the significant challenges that the COVID-19 pandemic created for the core functions of both K–12 and higher education, and the fact that college in high school programs live in a middle space between both sectors.

Despite a lack of survey respondents identifying the availability of state and federal support for their programs, there are significant allowable uses under COVID-19 relief funds provided by Congress over the course of the pandemic, and most recently through the American Rescue Plan, that allow funding to be used to support college in high school programs in both K–12 and higher education. For more information, see the College in High School Alliance's COVID-19 Funding Guidance.

THE PANDEMIC'S CHALLENGES



Survey respondents commonly identified the following challenges that face college in high school programs as a consequence of the COVID-19 pandemic:

Enrollment Challenges Do Exist

Though enrollment challenges may not have been as big of an issue for college in high school programs as they were for higher education more generally, the national data previously discussed shows there have been enrollment declines, and a number of programs reported in the survey that they will need to make a big extra push to recruit students in future semesters to return to prepandemic student recruitment. Several survey respondents indicated that part of the challenge would be reasserting the value of students participating in a college in high school program.

Student Preparedness & Engagement Has Fallen

The field is concerned about declining levels of student preparation for taking college in high school classes after the lost instructional time during the pandemic, as well as the level of student engagement in the courses, particularly for historically marginalized students.

These will both be complex and difficult issues to unpack moving forward, in which the college in high school programs will need to be willing partners in engaging and addressing student preparedness issues, including beginning to implement new pre-college programs for students in 9th and 10th grade who may be just short of college readiness but for whom additional supports would set them up for success in college classes.

In addition, programs will need to assess and adapt to practices that their data show improves student engagement. While many college in high school programs are looking seriously at extending their virtual offerings to more students, that is not necessarily a successful engagement strategy for all students. Programs will need to be prepared to examine what works best for their students specifically, and dial up or down the availability of remote instruction or entirely in-person learning experience depending on what their data indicates is most effective for the program's student population.

Pandemic Flexibilities May Be Eliminated

A number of programs are concerned, as the pandemic begins to ease, that a number of the flexibilities afforded to their programs to accommodate the health crisis will begin to be removed. Most notably, a number of those programs that moved towards adopting multiple measures to determine student eligibility would prefer that the new eligibility criteria remain, rather than revert to the placement testing mechanisms used prior to the pandemic.

Fewer Oualified Instructors are Available

According to survey respondents, the pandemic has exacerbated problems with recruiting and retaining instructors who are credentialed to teach dual enrollment courses. Instructor availability, particularly in high-need subject areas like STEM and CTE, was an issue pre-pandemic, especially in those states that have strict instructor credentialing standards when using high school teachers as the primary course instructor. But those challenges have been exacerbated by the pandemic's impact on the teacher workforce.



Getting CTE Programs Restarted Is Challenging

A number of programs that required an in-person learning or assessment component, particularly technical courses, were suspended during the pandemic when many school districts assessed it to be safer to suspend the course rather than continue offering it and requiring students to undertake the in-person component. A number of survey respondents identified that getting those programs up and running again will be challenging, as a lot of class recruiting relied on word of mouth from one grade to the next and among parents. However, with no students having taken the class in the 2020–2021 academic year, more intentional student recruitment will be necessary to connect with students and parents and to re-engage students in these courses.

A Need to Rebuild Program Culture & Relationships

Many college in high school programs thrive on the culture built in the program and the relationships shared between students and staff. Survey respondents reported that building a supportive culture among program participants was much harder to do virtually, and will be challenging to quickly reassert with in-person schooling having started back up again.

Mismatched Vaccine and Mask Mandates Retween Sectors

In some states, the K–12 and higher education partners are having to navigate different policies on COVID-19 vaccine and mask mandates between the two sectors. This is particularly relevant when high school students, where there are very few vaccine mandates presently, travel to the college campus, for which vaccine mandates are more common. College in high school programs are having to navigate whether and how to ensure high school students who take classes on the college campus are vaccinated, which can often involve a number of delicate discussions with those students and their parents.

Uncertainty in the 2021–2022 Academic Year Due to COVID Variants

The rise of the delta variant of COVID-19 earlier in the fall, and the rise of the omicron variant as we approach the end of 2021, has created significant uncertainty for college in high school programs, as questions emerge about whether schools and colleges will be able to reliably maintain in-person instruction as the 2021-2022 academic year continues. In addition to the uncertainty caused by the delta and omicron variants, their sudden rise is a reminder for many programs that circumstances on the ground could change quickly and again disrupt the semester and students' plans, necessitating some contingency planning particularly around how to handle large numbers of students who are under quarantine due to COVID-19 exposure or who have been asked to quarantine repeatedly.

POSITIVE DEVELOPMENTS DUE TO THE PANDEMIC



Despite the challenges, survey respondents also reported a number of changes to their programs that had been induced by the pandemic that they felt positive about and were hoping would persist beyond the end of the immediate health crisis.

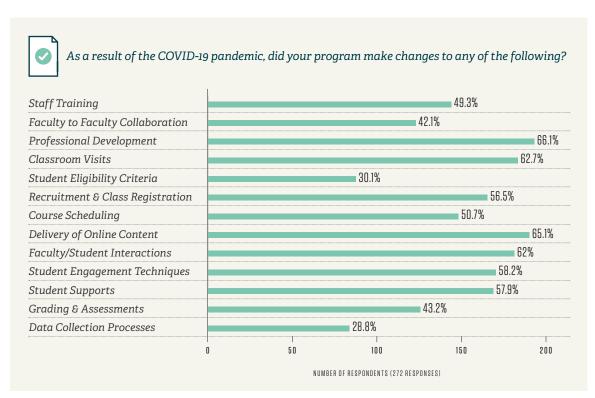
Changing Student Eligibility Criteria

Though changing student eligibility criteria was identified by respondents as one of the changes that was made infrequently by college in high school programs as a result of the pandemic, the programs that did make a change to eligibility criteria reported it positively as highly impactful. A number of the states and programs who reported making these changes to student eligibility criteria as a result of

the pandemic — such as <u>Florida</u> and <u>Ohio</u> — are in the process of implementing a more permanent change to keep a version of these changes in effect beyond the end of the health crisis.

Virtualized Administrative Processes

Many programs made important upgrades in the way that they perform their administrative functions, largely by shifting those functions from paper to online records. These changes were widely received positively, including for registrations, advising, and professional development. Some colleges have used the availability of federal COVID-19 relief funds to invest in technology to support these improvements. For more information on using COVID-19 relief funds to support college in high school programs, please refer to CHSA's COVID-19 funding guidance.





Improved Faculty Collaboration and Professional Development

The transition to remote and online learning spurred innovation and fluidity in the way that college in high school programs conduct their faculty collaboration and professional development, particularly when those programs use high school teachers as the primary instructors for the courses on the high school campus (also widely known as concurrent enrollment). NACEP has noted that its members — for whom these kind of activities are critical to ensuring high program quality — are reporting that the pandemic drove new virtual professional development opportunities, community of practice building, and workshops for faculty in areas including instructor onboarding and annual discipline-specific instructor professional development for high school faculty. Many programs report that these innovations are likely to be retained due to the convenience and decreased cost.

New Engagement Opportunities in Faculty Classroom Visits

Respondents also indicated that site visits by college faculty to high school classrooms, which is an important part of NACEP's accreditation standards for concurrent enrollment, were more convenient when completed virtually and allowed for new engagement opportunities between college and high school faculty. Classroom visits give faculty liaisons insight into student interactions with one another and with the concurrent enrollment instructor, as well as how closely that interaction mirrors what happens in the college classroom. Respondents indicated that the reconfiguration of site visits has created a new opportunity to better engage with instructors and school administration, and create a space for thoughtful dialogue about teaching and learning.

Improved Student & Parent Communication

Though many programs reported increased challenges in engaging students in their coursework, a number of survey respondents reported that the shift of student outreach and communication mechanisms to virtual,

particularly for student advising, allowed in certain circumstances for closer and more frequent communication with students who prefer virtual methods of engagement to face-to-face meetings.

Survey respondents also indicated that they experienced that moving parent information sessions online encouraged a wider audience to attend because it was more convenient for the parents to fit into their schedules, and allows for these sessions to be accessed remotely if they were recorded.

Improvements to Distance Learning

As a result of nearly all college in high school programs shifting to virtual instruction at some point during the pandemic, and then with many subsequently continuing a hybrid version of in-person and virtual instruction once in-person classes resumed, many programs reflected that the experience had allowed them to improve their distance learning considerably in the last 18 months.

Instructor Comfort with Using Technology

According to survey respondents, many college in high school program instructors became more comfortable with the use of technology and familiar with its use, as a result of the necessary shift to virtual instruction at various points throughout the pandemic. Survey respondents believe that has likely spurred more use of technology in the classroom that will persist beyond the end of the health crisis, improving student engagement and learning opportunities.

Commitment to Shared Problem Solving Across Sectors

Though many programs reported that secondary and postsecondary partners in the college in high school program did not align their decision making and policies during the earliest days of the pandemic, a number of survey respondents reported examples of programs where the two sectors have worked together more closely as a result of the pandemic.





Trident Technical College, located in Charleston, South Carolina, shifted its eligibility criteria for the college's dual enrollment program to multiple measures as a consequence of the pandemic. Prior to COVID-19, students had to demonstrate eligibility for dual enrollment through their scores on the SAT, ACT, or AccuPlacer tests. But with the lack of availability of standardized testing opportunities for students during the pandemic, the college pivoted quickly to determine alternate placement criteria — for both the college's traditional student population and its dual enrollment students. Trident Technical will now accept pre-ACT scores, PSAT scores, a high school GPA of 3.0 or greater, successful completion of relevant high school coursework, and will also look at a student's unofficial high school transcripts to understand better whether the student might be ready for college level work. According to a recent internal analysis by the college, the shift in eligibility criteria has been a success in fact, students admitted under the alternative eligibility criteria have been faring better as a whole than students who are admitted under the traditional standardized test route. High school counselors have also favorably received the change. Based on the success of the shift to date at Trident Technical, the college is working with the South Carolina Technical College System to extend the new criteria statewide, and to make them permanent.



PROFILE ➤ Tompkins Cortland Community College Virtualized Faculty Professional Development

Tompkins Cortland Community College, which is part of the State University of New York (SUNY) system and located in the Finger Lakes area of New York state, made significant shifts in its faculty and student support service infrastructure to virtual, and expects to keep many of those changes in place beyond the pandemic. Shifting professional development opportunities for concurrent enrollment teachers online allowed for the sessions to be recorded and shared with teachers who were not able to attend, and is also contributing to a bank of professional development videos that new teachers can refer to in their onboarding. Moving the institution's professional development for concurrent enrollment online has also allowed it to connect with other professional development providers who are not proximate to the college, including the wider SUNY system. The college has also found it to be more cost effective to run these opportunities online. In addition to the faculty professional development opportunities, Tompkins Cortland has also seen an increase in the number of students using the college's online library resources and electronic textbooks — the college is promoting the use of more open educational resources (OER) — and classes are beginning to engage with these resources too. The pandemic has also accelerated a move by the college towards shifting to multiple measures of entry in light of reduced standardized testing during the pandemic, as well as adopting more co-requisite courses, and is hopeful that this will be extended to concurrent enrollment students as well.



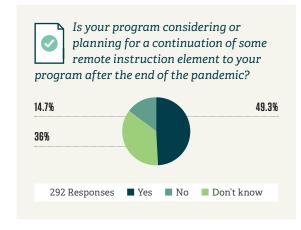


During the pandemic, Portland Community College in Portland, Oregon deepened the relationship between the college and their dual credit high school partners through working together to address the shared challenges presented by the pandemic and developing solutions that put students first. The college began internal planning for how to respond to the pandemic before lockdown orders had become widespread, and began communicating everything they knew to their K–12 partners beginning the day that Oregon's lockdown order was issued by the governor. The college asked campus faculty who at that point had more experience with offering online learning — to provide as many resources as possible to help the high school dual credit teachers transition their classes online. This support, which dual credit teachers expressed gratitude to the college for, continued through the remainder of the 2019-2020 academic year and into the 2020–2021 academic year, as did the open lines of communication between the college and high schools to get as much information as possible into the hands of teachers and students as quickly as possible.

12

CONTINUING ONLINE INSTRUCTION

Half of survey respondents indicated that their college in high school program was planning to continue some remote instruction after the end of the health crisis, which is likely to significantly increase the availability of virtual college in high school program options for students compared with pre-pandemic.



Respondents indicated that the new availability of and comfort with online college in high school programming would make it possible for their program to offer synchronous online instruction between the college and the high school, or Hyflex models that give students the choice about whether to attend any particular class online or in-person. Respondents also indicated this would allow for more instruction to originate on the main campus, and potentially address shortages of credentialed teachers in the high school classroom by transitioning the course to online where the on campus college faculty could teach the class. Some programs may also look at deploying both synchronous and asynchronous instruction for courses depending on the student populations and their needs.

Respondents also indicated that virtual advising for students was likely to continue post-pandemic in a more significant fashion than it had existed before the start of the health crisis. All of these changes are made possible because many students are both more acclimated to and confident with learning and receiving supports online, and because instructors and counselors are more comfortable with delivering the course content and providing their services in a virtual format.

Expanding online college in high school program availability has promise and peril for programs and most especially for students. While it can be leveraged successfully as an equity strategy, particularly for reaching rural areas and small schools that cannot support their own college in high school programs due to small student sizes and limited staff capacity, the expansion of virtual college in high school options will not automatically accrue to students the benefits of participating in college courses while in high school. Programs will need to engage critically and seriously with the question of how to expand virtual college in high school options in a high quality way, ensuring that whatever model they choose provides students with an authentic college course learning experience that advances their college and career success.

More virtual college in high school program access holds big potential for expanding access for more students, but that expanded access is only valuable if students are benefiting from high quality experiences that appreciably advance their college and career journey.





Colorado Mountain College (CMC) is a rural community college with 11 campuses throughout the Rocky Mountains in western Colorado. The college's footprint covers 12,000 square miles, and across the college's 11 campuses it serves 15,000 students. Because of the shift to virtual instruction during the pandemic, CMC is thinking expansively about how virtual instruction can be continued postpandemic to expand access to concurrent enrollment for students in the high schools in their service area, a number of which have high populations of students of color. CMC recently secured a Relevant Information to Strengthen Education (RISE) grant from the Colorado Department of Education which will allow them to build smart classrooms that allow for students in multiple high schools to participate in one concurrent enrollment class simultaneously. It is hoped that expanding this model of instruction will ease the burden on a number of high schools in CMC's service area where there is low availability of teachers with the appropriate credentials to teach concurrent enrollment in the high school classroom. In addition to the expansion of online concurrent enrollment as an equity strategy, the college also adopted multiple measures of eligibility to determine student readiness for college coursework.



PROFILE ► Lamar State College Port Arthur is Expanding Online Dual Credit

Lamar State College Port Arthur, which is located in southeast Texas, is one of only three two-year institutions and one four-year institution that serves the region. As a result of the shifts to virtual learning during the pandemic and full virtual learning that was offered by the college in fall semester of 2020, Lamar State College Port Arthur is now working to expand its online dual credit offerings to more high schools and students who are too far away to physically travel to the college campus, and do not have a closer college available to them. In fall 2021, the college partnered with a new school district to offer three program opportunities: medical coding, computer aided drafting, and process technology. The college has found that, if the school district is able to build the online course into the high school schedule and put a high school teacher in the room to act as a monitor, students can be successful. In addition to offering dual credit course options for more students located far from campus in new high schools, the college is also looking to transition some of the coursework it already offers at local high schools to an online format. This will reduce the need for travel and allow students the opportunity to take more courses, which will allow those students to complete a certificate while in high school. Additional online opportunities for students reduces the constraints around scheduling, travel times, and transportation logistics. The college is exploring both asynchronous and synchronous online instruction options, depending on the course. Given frequent extreme weather events in southeast Texas, the college anticipates it will need to be more flexible in the future and pivot between learning modalities.

FEDERAL & STATE SUPPORT



Though few survey respondents noted receiving much specific support for their college in high school programs from federal and state policymakers, some programs did, and there were several bright spots.

State Support for College in High School Programs

The programs that received support from their state reported receiving funding to support student technology costs, particularly for low income students whose lack of technology access made remote learning difficult, as well as specific guidance and training on offering remote learning to students. Respondents in some states, such as Oregon and Georgia, praised their state policymaker partners at the Oregon Higher Education Coordinating Commission and the Technical College System of Georgia for establishing regular conference calls for college in high school program stakeholders to communicate information to programs and providing a forum to share and discuss their specific issues.

Federal Support for College in High School Programs

Many survey respondents did not know how federal stimulus funds provided to school districts and colleges in response to COVID-19 were being used to support their college in high school programs. But those that did indicated that it was being used to support emergency financial aid for students, covering tuition and book costs for students, providing tuition waivers for students, covering some instructor costs, and for necessary COVID-19 safety measures such as personal protective equipment and sanitization services. For more information on how COVID-19 relief funds can be used to support college in high school programs, see CHSA's COVID-19 Funding Guidance.



PROFILE ▶ Oregon Higher Education Coordinating Commission Staff Ran Weekly Check in Calls

When the pandemic started, the Oregon Higher Education Coordinating Commission (HECC) began using some of the state's existing infrastructure, including the professional association for Dual Credit Coordinators in the state whose mailing list HECC administers, and its existing relationships with programs from Oregon's state-level peer review process for college in the high school programs, to begin pulling together stakeholders from programs across the state for weekly virtual check ins. On the agency level, HECC and the Oregon Department of Education (ODE) also used weekly interagency meetings to discuss aligning messaging and policies regarding college in high school for both secondary and postsecondary stakeholders. HECC and ODE established a weekly one-hour forum periodically in 2020 to provide a space for stakeholders to log in, ask questions, and learn from their peers about how they were dealing with many of the complex issues created by the pandemic for student learning and program administration. These meetings allowed for peer-to-peer communication and were highly valued by the participants, who in many cases were the only individual at their college who was engaged with challenges specific to college in high school. The dialogue between HECC and the programs also created an opportunity to discuss how to maintain program standards and develop creative solutions to meet students' needs and ensure the coursework remained rigorous.

CONCLUSION



It is easy to become overwhelmed by the serious and significant challenges that the COVID-19 pandemic has posed for K–12 and higher education. Those challenges will take a lot of time and resources to solve.

But our analysis of the ways in which the COVID-19 pandemic has impacted college in high school programs reveals that there are a number of promising developments that have been accelerated by the pandemic, such as greater uptake of virtual services and a more equity-minded approach to student eligibility for participating in these programs.

There is both promise and peril in the continued expansion of online college in high school program access beyond the immediate health crisis, that will require significant and careful attention to ensure it is being implemented and expanded in a way that advances student success. But the potential to do so, and to make big gains in expanding course access to underserved students, is undeniable and deserves further consideration. CHSA stands ready to support policymakers and practitioners in continuing to understand and implement the lessons from COVID-19 for this work, and to continue advancing student access and success to college in high school programs.



ACKNOWLEDGMENTS

This paper was authored by Alexander Perry from Foresight Law + Policy and the College in High School

Alliance, in partnership with Amy Williams & Dianne Lassai Barker from the National Alliance of Concurrent

Enrollment Partnerships and Nick Mathern from Achieving the Dream. Thanks to Foresight Law + Policy
colleague Jamie Brandon for reviewing.

Special thanks to Jennifer Zinth of Zinth Consulting LLC, Carol Carlson of Colorado Mountain College, Tanisha Seraphin from Trident Technical College, Erin Weeks-Earp and Eric Juenemann of the Oregon Higher Education Coordinating Commission, Victoria Zeppelin of Tompkins-Cortland Community College, Frank Smith of Portland Community College, and Hilda Billups of Lamar State College Port Arthur for reviewing the paper and offering expert advice and counsel. Any subsequent errors are entirely the fault of the author.