



State of the Field

Findings From the 2020
National Survey of Postsecondary
Competency-Based Education

Acknowledgments

This report was coauthored by Jessica Mason, Kelle Parsons, and Quy Nhi Cap. We deeply appreciate the institutional representatives who responded to the National Survey of Postsecondary Competency-Based Education in 2020 despite all the surveys in their inbox and the challenges of navigating institutional operations in 2020. Their responses provided helpful insight and data that made this report possible. In particular, we thank members of the Competency-Based Education Network for their questions and comments that informed this report.

Special thanks to Kyosin Kang, Arifah Hasanbasri, Todd Nobles, and Mickey Jackson of the American Institutes for Research (AIR) for their work supporting the survey administration and analysis. In addition, we are grateful to Alexandria Walton Radford of AIR; Frank Essien, Zainab Okolo, and Wendy Sedlak of Lumina Foundation; and members of the National Advisory Board of the National Research Collaborative on Postsecondary Competency-Based Education and Learning for their thoughtful guidance and feedback on drafts of this report and survey design. This survey series benefited from the counsel and support of Howard Lurie, Eduventures Principal Analyst of ACT® | National Research Center for College and University Admissions (NRCCUA®), particularly in developing the original survey instrument.

The authors are grateful to Lumina Foundation for their financial support, which makes this work possible.

Executive Summary

This report presents findings from the 2020 National Survey of Postsecondary Competency-Based Education (NSPCBE), the third in a series of three annual surveys by the American Institutes for Research (AIR). The goal of the survey series is to understand and track the landscape of postsecondary competency-based education (CBE) in the United States, providing stakeholders—from institution leaders to policymakers—with an assessment of the field to inform their actions. Key topics of exploration include perceptions of CBE, interest in CBE, implementation, and adoption progress.

A key takeaway from the 2020 administration of the NSPCBE is that, despite the major disruptions to institutional operations due to the COVID-19 pandemic, we see evidence of growth in programs and optimism about the future of CBE, even though barriers remain. And in some cases, shifts in operations due to the pandemic appear to have had an impact on institutions' interest in CBE.

This report presents findings related to four key topics about the state of the field in 2020:

1. CBE Adoption. Which institutions are adopting CBE, what are their motivations for doing so, and what pathways to adoption do institutions take? How has the COVID-19 pandemic affected CBE adoption?

CBE adoption efforts span all institution types and are motivated by the potential of CBE to support workforce readiness and improve learning outcomes. Still, CBE adoption remains piecemeal, with many institutions adopting some but not all elements of CBE. Most institutions regard CBE as an approach that fits certain programs or certain students, rather than the primary mode of operation for the institution. Increased familiarity with technology tools and remote teaching and learning due to the COVID-19 pandemic have influenced institutions' motivations for adopting CBE, as have perceived shifts in the broader higher education landscape.

2. CBE Programs. What do we know about the structure and scale of CBE programs?

CBE programs continue to serve relatively small numbers of students through a range of different modalities (online, hybrid, face to face). The most commonly offered disciplines—nursing and health professions, business administration, and computer and information sciences—are consistent with nationwide trends. And faculty continue to fulfill a wide range of roles in CBE programs.

3. CBE Students. How are CBE programs serving students?

Further research is needed, but this survey suggests that CBE programs may tend to serve a greater proportion of adult learners and learners with prior credits than traditional programs do. These findings also suggest that some CBE programs are adopting subscription models, which have the potential to reduce prices for some students, but many continue to use per-credit or per-unit pricing models.

4. Barriers, Facilitators, and the Future of CBE. How do institutions perceive the potential to implement and scale CBE?

Despite the perceived barriers to CBE implementation—both internal and external to the institution—most institutions remain optimistic about the future of CBE nationally and at their own institution.

Findings from the 2020 NSPCBE suggest that CBE's value proposition remains compelling for most institutions, perhaps even more so after the disruptions of 2020. However, barriers and pressures persist—especially those related to internal business processes and costs as well as external regulation—which may lead to more piecemeal adoption. We conclude this report by reflecting on key questions facing the field in 2020, particularly concerning the ways in which institutions reacted to the COVID-19 pandemic and whether CBE is perceived as a solution to some of the challenges exacerbated and highlighted by the disruptions of 2020.

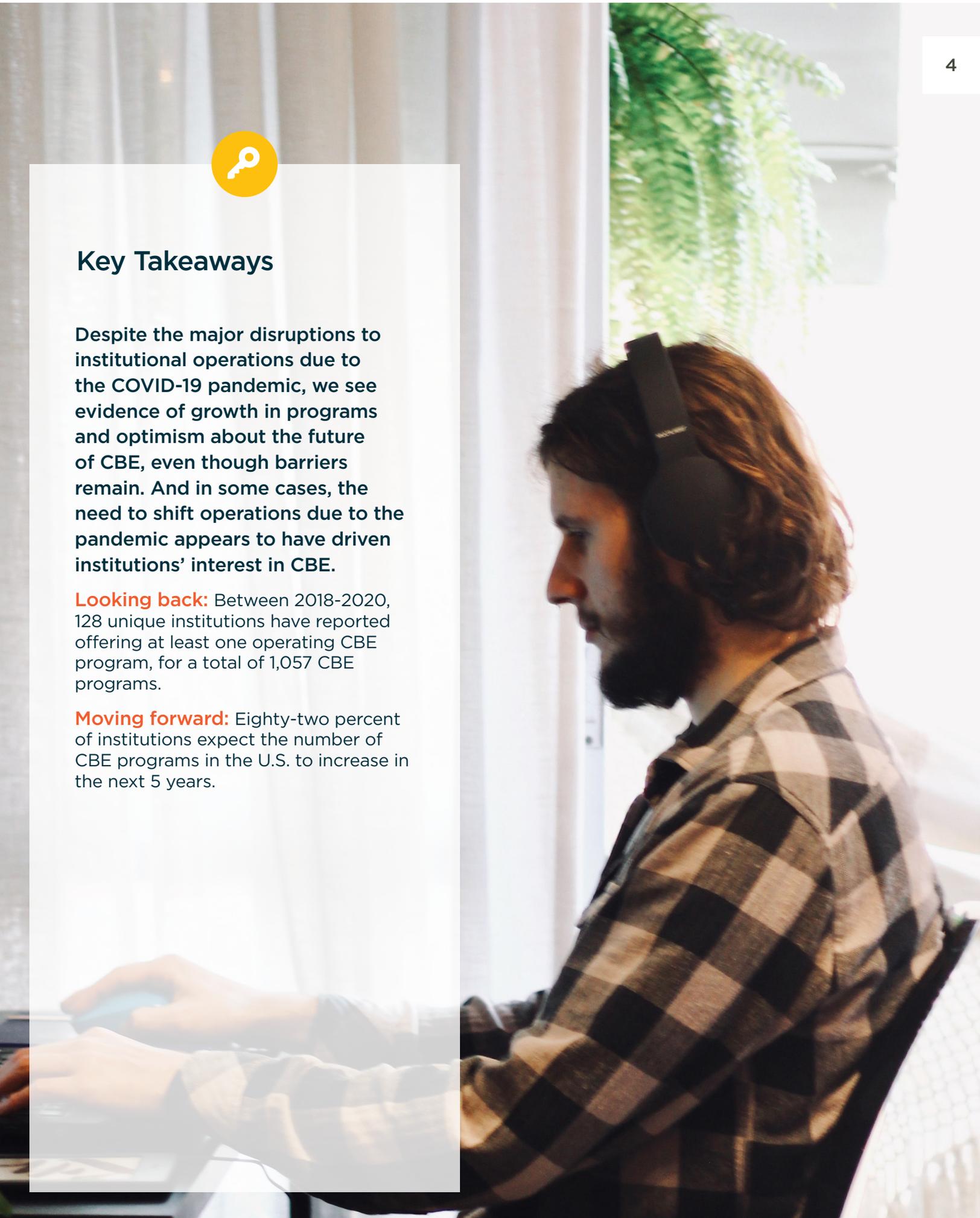


Key Takeaways

Despite the major disruptions to institutional operations due to the COVID-19 pandemic, we see evidence of growth in programs and optimism about the future of CBE, even though barriers remain. And in some cases, the need to shift operations due to the pandemic appears to have driven institutions' interest in CBE.

Looking back: Between 2018-2020, 128 unique institutions have reported offering at least one operating CBE program, for a total of 1,057 CBE programs.

Moving forward: Eighty-two percent of institutions expect the number of CBE programs in the U.S. to increase in the next 5 years.



Introduction

The National Survey of Postsecondary Competency-Based Education (NSPCBE) is an annual survey by the American Institutes for Research (AIR) that seeks to understand the landscape of postsecondary competency-based education (CBE) nationwide. This survey aims to track the evolution of CBE by asking college and university leaders about their perceptions of, and adoption of, CBE.

The 2020 NSPCBE is the third annual survey, conducted in the fall of 2020, just months after institutions across the country found themselves moving to “emergency remote teaching” and then trying a variety of online and hybrid approaches to teaching while keeping students, faculty, and staff safe and healthy. In an effort to address these massive changes in practice, AIR added questions to the survey about how CBE programs fared during the COVID-19 pandemic-related disruptions of 2020 and how institutions explored changes in practice or attitudes that might facilitate adoption of CBE-related practices. This report also provides updated findings from the 2018 and 2019 versions of the NSPCBE.

Varied definitions of CBE exist in the field, but the definitions have several common components:

- **Curricula are designed around specific competencies.**
- **Advancement focuses on a demonstration of competency.**
- **The time that students take to demonstrate a competency can vary.**

What Is CBE?

CBE has attracted attention from leaders of institutions of higher education,¹ policymakers, and other stakeholders. It has gained popularity, in part, as an effort to find a solution or new model to address some of the core challenges in higher education—access and equity, completion, cost, and quality—especially during calls for transformation in higher education. In principle, CBE ties learning to competencies rather than to grades and credit hours, as in traditional programs). Given this focus on learning rather than seat time, CBE can be seen as a learner-centered model with the potential to improve the quality of learning, expand access for nontraditional students,² and reduce costs for students.

What Are We Learning About CBE Nationally?

In the 2018 and 2019 versions of the NSPCBE, a broad picture of the landscape came into focus: The learner-centric logic of CBE appeared to be compelling to many institutions, as evidenced by the steady growth in CBE adoption (the institutions reported 588 CBE programs in 2019, slightly more than in 2018 – see [State of the Field: 2020](#)), and the widespread optimism that CBE would grow nationwide (Lurie, Mason, & Parsons, 2019; Mason & Parsons, 2019). That said, our findings also reflect significant headwinds and challenges in committing to, and building, CBE programs, because many of the factors that make CBE valuable also require significant shifts in the ways that traditional postsecondary institutions operate.

¹ Throughout this report, we use the term *institutions* to refer broadly to institutions of higher education, particularly colleges and universities. The Methods section includes more detail about our study population.

Why is continued research important?

Although we anticipated that the field would continue to evolve, and therefore that further research would be valuable, we never anticipated the massive shifts to teaching and learning—or to general campus operations—that occurred in 2020. Most or all postsecondary students and faculty transitioned to emergency remote learning, trying different pedagogy, assessment, and coping approaches along the way. Faculty and administrators recognized key nonacademic issues affecting students' work other than effort or ability, including lack of access to the internet or laptops to support synchronous participation, basic needs insecurity, health issues, emotional and mental health issues caused or exacerbated by the pandemic, inequitable systems and resources, and altered work schedules that affected students' ability to participate or stay enrolled.³ Further, widespread protests and consciousness-raising led to calls for social institutions, including higher education, to examine how their current structures and culture uphold racial injustice and inequity.

In addition, the policy environment has changed and appears likely to continue evolving. Since the 2019 survey, the U.S. Department of Education ended the Experimental Sites Initiative experiments that aimed to support CBE-friendly practices, citing a separate negotiated rulemaking panel's consensus about a rule that may resolve these issues.⁴ In addition, the Higher Education Act of 1965 remains overdue for reauthorization, and CBE may or may not be addressed in final legislation.

The 2020 NSPCBE, which is generously supported with funding from Lumina Foundation, continues our effort to understand this evolving area. We hope the NSPCBE series provides a baseline for future research and supports institutional leaders and policymakers in understanding the current state of CBE implementation and perceptions.

This report presents findings related to four key questions about the state of the field in 2020, particularly against the backdrop of 2020's disruptions:

1. **CBE Adoption:** What types of institutions are adopting CBE, and what are their motivations for doing so?
2. **CBE Programs:** What do we know about the structure and scale of CBE programs?
3. **CBE Students:** How are CBE programs serving students?
4. **Barriers, Facilitators, and the Future of CBE:** How do institutions perceive the potential to implement and scale CBE?

Broadly, we find that despite the major disruptions to institutional operations due to the COVID-19 pandemic, we see evidence of growth in programs and optimism about the future of CBE, even though barriers remain. In some cases, shifts in operations due to the pandemic appear to have increased institutions' interest in CBE. [Appendix A](#) provides descriptive statistics for key survey question responses, further highlighting patterns of implementation among those that have CBE programs or are in the process of adopting them.

³ See, for example, Turk & Ramos (2020).

⁴ See Fain (2019).

Survey Development

Measuring an area of “innovation” through a survey—particularly when words or phrases may mean slightly different things to different people—is a challenging task. We acknowledge that the survey necessarily relies on self-reported data, and because the findings represent one response per institution, the appropriateness of the respondent also is important. An advisory board of key leaders and experts involved in leading or studying CBE provided guidance and insight on the questions,

response options, and necessary changes from last year to better understand the field. The survey instrument for 2020 remained largely consistent with the 2019 and 2018 instruments, with some limited exceptions, such as the ways in which perspectives and actions have been influenced by transitions associated with the COVID-19 pandemic. Details regarding survey question changes and methods are outlined in [Appendix B](#).



Sample

Broadly, the survey administration protocol followed last year's approach. The 2020 NSPCBE invitation was sent to 3,217 institutions in fall 2020, representing more than two-thirds of the 2- and 4-year institutions listed in the Integrated Postsecondary Education Data System (IPEDS).⁵ In most cases, the invitation went to provosts and institutional research contacts, with the same request as last year that they forward it to another contact person as appropriate. In the survey itself, AIR asked respondents to report their roles.

Of the 3,217 institutions invited to participate in the 2020 NSPCBE, 488 responded, which represents 114 fewer institutions responding this year than last year and an overall response rate of 15.2%. The AIR team expected a decrease in the response rate given the substantial demands on campus leaders' time, as well as the number of surveys administered throughout 2020 with the goal of understanding the quickly evolving status of campus operations. Of the 488 respondents to this year's survey, 182 responded in 2019, and 144 responded in 2018; 85 responded to the NSPCBE in all 3 years. Where relevant, we present findings from longitudinal analyses that the AIR team conducted.

Figure 1. Respondents by Institution Type

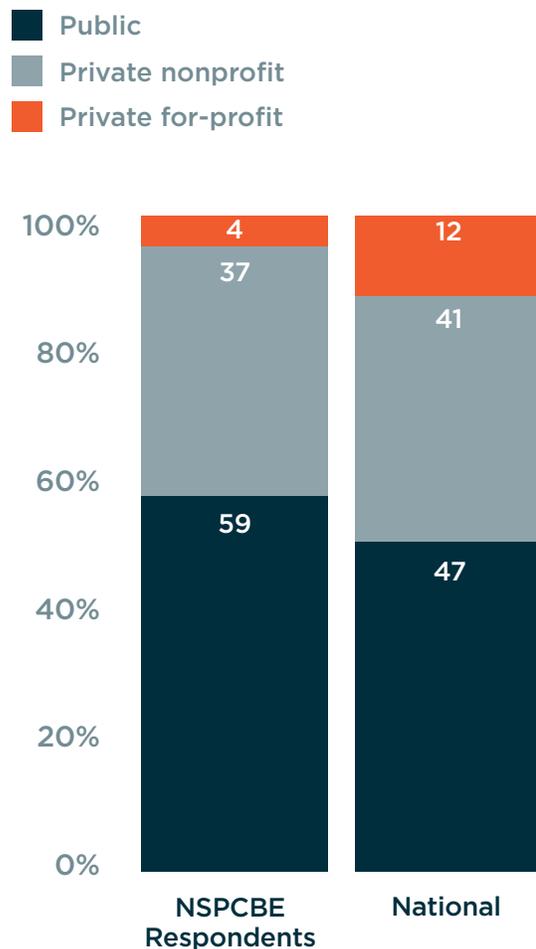
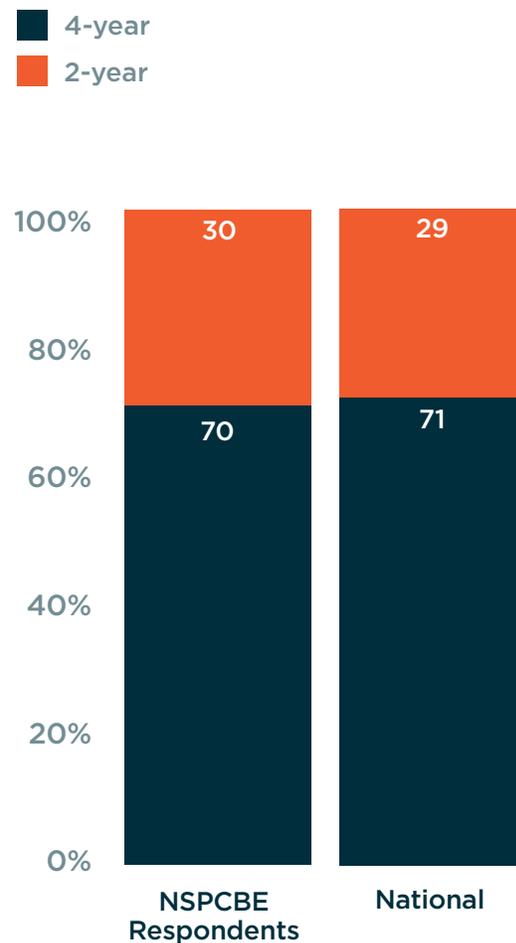


Figure 2. Respondents by Level



⁵ IPEDS is a data system that includes every U.S. college, university, and technical and vocational institution that participates in the federal student financial aid programs. Two thirds is the proportion of 2- and 4-year institutions for which we could obtain contact information. For more information about this process, [see Appendix B](#).

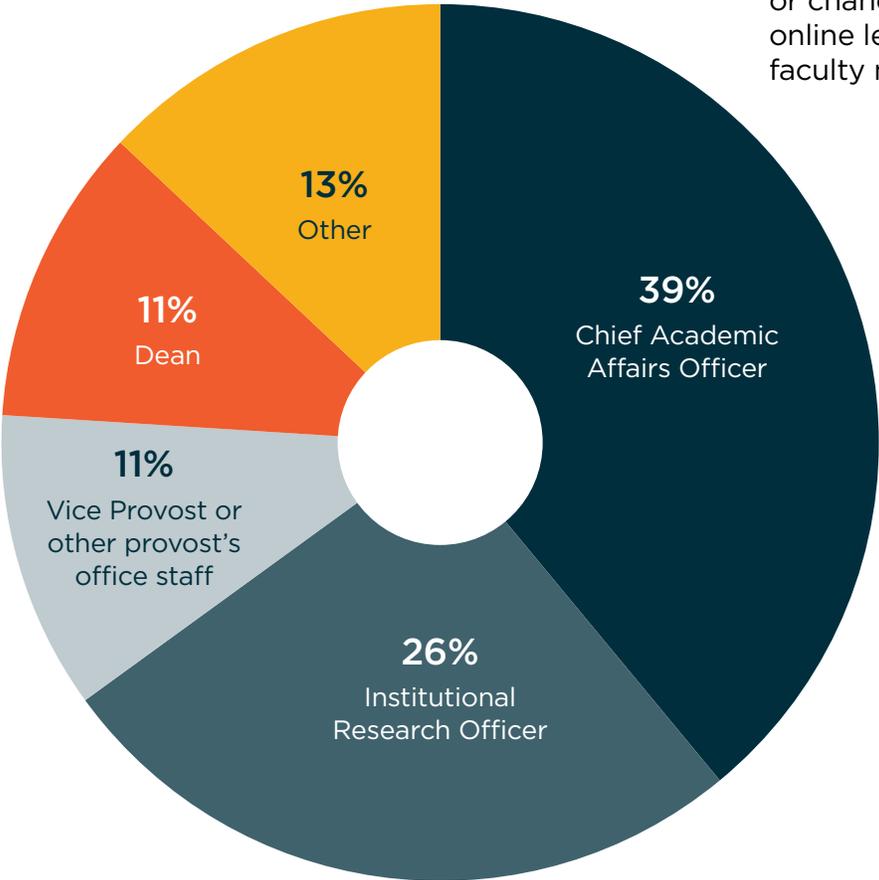
Looking more closely at the 488 institutions that responded in 2020, we see that 59% of the responses were from public institutions, 37% of the responses were from private nonprofit institutions, and 4% were from private for-profit institutions (Figure 1). This means that public institutions were over-represented and private for-profit institutions were under-represented relative to the population of 2- and 4-year institutions in IPEDS. By level, 70% of the responses were from 4-year institutions, and 30% of the responses were from 2-year institutions, which is in line with the overall distribution of our target population (Figure 2).

Given that institutions with CBE programs or an interest in adopting them may be more likely to respond, there is always the possibility that those responding may not represent the full population of institutions nationwide. To address

this potential bias in our sample, the AIR team assigned a weight to each responding institution based on how likely comparable institutions were to respond to the survey. This means that our weighted findings represent the national set of 2- and 4-year institutions. Counts and percentages reported throughout this section on methods and sample are *not weighted*, whereas percentages reported in our key findings and appendices are *weighted*. For a more detailed description of the survey weights and the overall methodological approach, [see Appendix B](#).

To better understand respondents' perspectives on CBE, we asked the respondents to identify their role on campus. Because the NSPCBE is based on a survey of institutions, the findings are based on self-reported data from institutional leaders. Thirty-nine percent of the respondents identified as a chief academic affairs officer (provost or vice president of learning), 26% of the respondents identified as institutional research or assessment staff, 11% of the respondents identified as the vice provost/provost's office staff, and 11% of the respondents identified as a dean. The remaining 13% of the respondents identified as presidents or chancellors, department chairs, director of online learning/e-learning, director of assessments, faculty members, or other (Figure 3).

Figure 3. Respondents' Roles on Campus



Defining CBE

Although considerable variation exists in the specifics of how CBE is defined in the field, at its core, CBE is characterized by two key features: (a) curricula that are designed around competencies and (b) a model that allows time to vary, while holding expectations for learning constant.⁶ As in previous administrations of the NSPCBE, to acknowledge variation among CBE programs, the 2020 survey respondents were asked to answer a series of questions regarding their adoption of, or interest in, several elements associated with competency-based approaches. The elements (see sidebar) included in the definition were selected with input from the NPSCBE advisory board, balancing the interests in accounting for widely recognized key components of CBE and capturing the variety of program types that currently exist.⁷

To support analyses of adoption that may indicate an institution is “on the path” toward adopting a full CBE program, the AIR team sought to capture information about the implementation of elements that did not meet the CBE definition threshold. This survey does not, however, attempt to include the full set of related approaches, termed *competency-based learning approaches*.⁸ We explore findings about adoption pathways in the [CBE Adoption](#) section of this report.

AIR tailored the survey questions (using skip logic) depending on the institutions’ responses about their adoption or interest in CBE programs, and we present the results separately throughout this report, where applicable, to explore differences among those groups. Those institutions that reported no interest received a shorter survey that focused on their perceptions of CBE and reasons for their lack of interest. Those institutions that reported interest but did not indicate in-progress adoption received a similar survey, with additional questions about reasons for their interest as well as barriers to

moving toward adoption. Finally, those institutions that reported adoption or in-progress adoption of key elements received questions about whether they had adopted those approaches at the course level or for entire programs of study. Then they received a longer survey exploring the details of their adoption or planned adoption of CBE, including questions about the model of any existing programs.

As noted, surveys on evolving topics are particularly challenging because they rely on a common understanding of key terms or concepts. Nearly no terms associated with CBE, except for *Direct Assessment approval*, have common and well-established definitions. We therefore advise readers to interpret these findings with these caveats in mind and caution that we have attempted to highlight areas that we consider open to differences in interpretation.

How Is CBE Defined in the NSPCBE?

To be classified as a CBE program, an **entire program** must contain at least **one** of the following elements:

1. Learning is measured in competencies and either quantified without reference to seat time or mapped to measures of seat time.
2. Students advance from the course or complete the program based on mastering all required competencies.
3. Courses or programs offer flexible pacing.

⁷ In the 2019 NSPCBE, the definition was adjusted to reflect “flexible pacing” rather than “self-pacing” based on a recommendation from the advisory board.

⁸ Competency-based learning includes structured and unstructured opportunities for learning and/or the assessment of learning, both self-created and those designed by employers, education institutions, and training providers, which are aligned to competencies and may lead to a recognized education credential. These approaches may include military training, apprenticeships, workforce development programs, and other related opportunities.

State of the Field: 2020



Of the 488 respondents in 2020, 14% expressed no interest in CBE, 26% reported interest but had not yet started adopting CBE, 47% reported being in the process of adopting CBE, and 13% (65 institutions) reported current operation of at least one full CBE program (Figure 4). Some of the 65 institutions offering any CBE programs offer many: Altogether, they offer a total of 551 programs in 2020. Of these programs, 415 programs (75%) were undergraduate programs, and 136 programs (25%) were graduate programs (Figure 5).

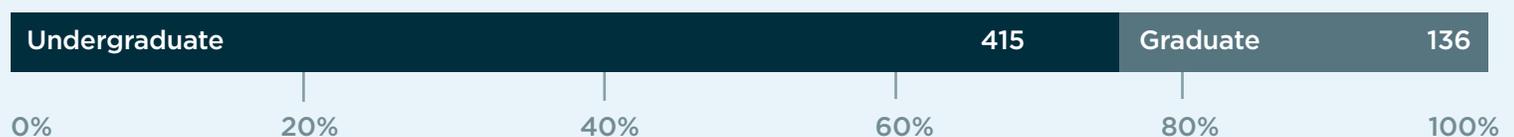
That number of programs might appear lower than the 588 programs reported last year; however, this difference is due to the lower number of institutions responding this year, including those who previously reported CBE programs. For example, 63 institutions

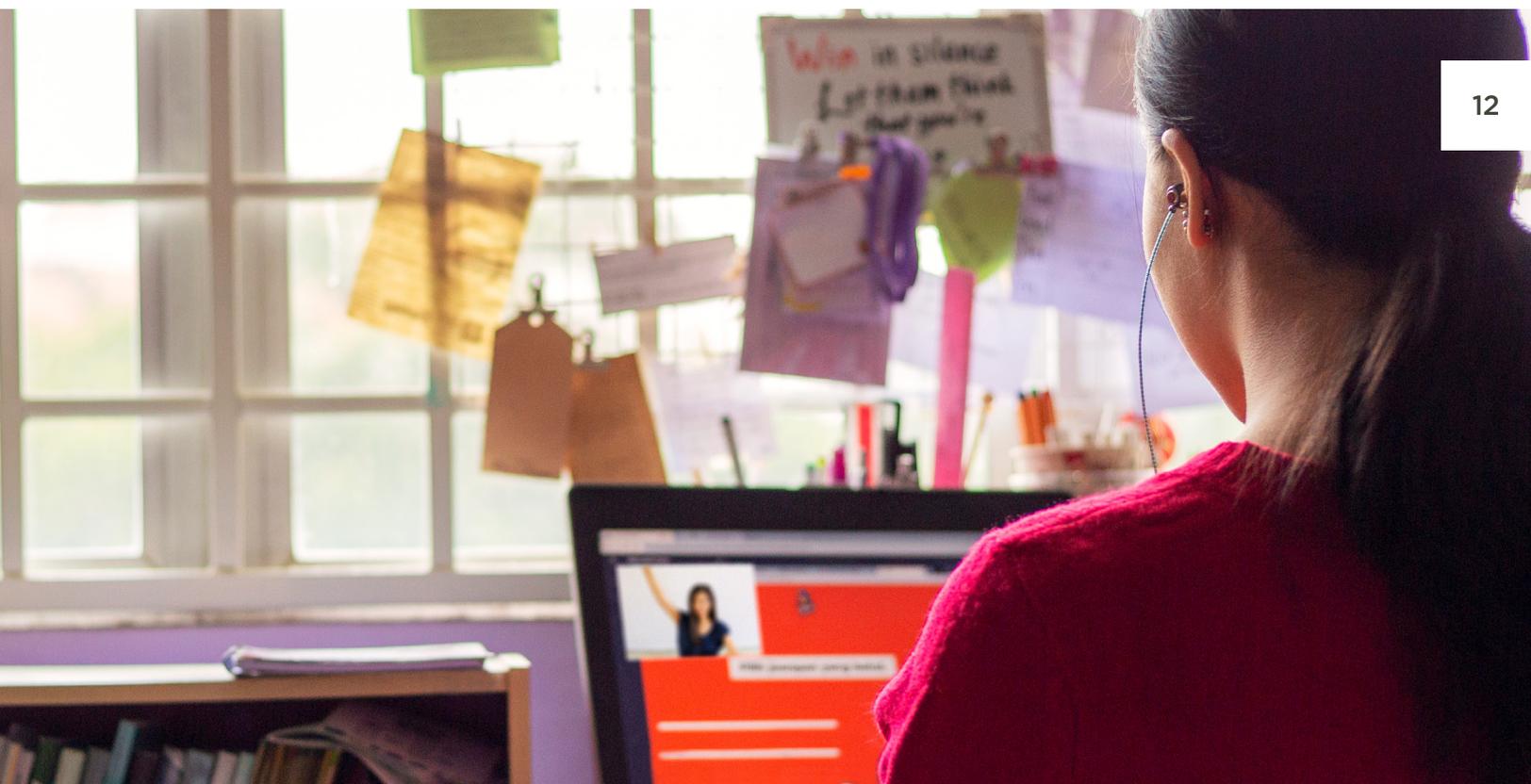
that responded in either 2018 or 2019 and reported CBE programs at that time did *not* respond to the 2020 version of the survey. Thus, they are not included in the total of 551 programs in 2020. All told, over the 3 years during which we have conducted this survey, we have heard from 128 institutions that report offering at least one operating CBE program. Using each institution's most recent response, these **128 institutions offer a total of 1,057 CBE programs**. Of the institutions that responded to our survey in multiple years, just four reported a decrease in their number of CBE programs offered, while 40 reported adding new CBE programs, for a net gain of 191 CBE programs at these institutions. While this number represents a limited set, it provides some indication that institutions have increased their number of programs since 2018.

Figure 4. Institutions' Interest and Adoption Status



Figure 5. Undergraduate and Graduate CBE Program Offerings





CBE Adoption

This section presents trends in institutions' CBE adoption, including the types of institutions that adopt CBE, the elements of CBE that institutions adopt, institutions' stage of adoption and adoption pathways, and their motivations and ambitions for adopting CBE. We update findings from 2018 and 2019 and explore additional questions related to how institutions' motivations and ambitions have been affected by the pandemic-related operational shifts in 2020.

The survey analyses focused on understanding the scope of, and motivations and goals for CBE adoption and identified several trends, which are largely consistent with previous years' findings:

- Adoption efforts at most institutions continue to fall short of a total CBE program; rather, institutions appear to choose elements that work for individual contexts and goals.
- Most responding institutions reported being at the course- or program-level adoption stage. The most common first steps that institutions took in adopting CBE were those that typically require less support outside of academic units, such as competency and assessment development.
- Institutions continue to be motivated to support workforce readiness and improve learning outcomes through CBE implementation.
- Many institutions may find CBE programs or approaches effective for specific purposes, but most do not expect to see CBE as their primary mode of operation in the future.
- For more than half of institutions, the COVID-19 pandemic had at least some impact on their motivations for adopting CBE, most commonly because they perceived a longer term shift in the higher education landscape and gained experience with online and hybrid approaches.

What are institutions' motivations for adopting CBE?

How institutions define and understand the challenges they are trying to address by implementing CBE programs may have an impact on how the field evolves and CBE adoption patterns. A key finding in the 2018 and 2019 survey administrations was that a primary motivation for those institutions that either were adopting CBE or had expressed interest in adopting CBE was to expand access for nontraditional learners and to improve workforce readiness. In 2020, we again surveyed institutions about their motivations for adopting CBE, based on common challenges in the field of higher education. Respondents selected all options that influenced their motivations for adopting CBE.

Of institutions that had a CBE program or were in the process of adopting one (Figure 6), the top three motivations were a desire to improve learning outcomes (75%), responding to workforce needs (71%), and viewing CBE as part of a broader initiative on educational innovation (60%). For institutions that reported being interested in CBE but had not yet adopted (Figure 7), the picture is somewhat different. The top three motivations for this group of institutions were a desire to expand access for nontraditional learners (67%), responding to workforce needs (59%), and a desire to improve learning outcomes (56%).

These findings are largely consistent with those from previous survey administrations, with one exception in the 2020 survey: Institutions that had CBE programs or that were in the process of adopting programs were more likely than in previous years to indicate that CBE was part of a broader initiative on educational innovation. This uptick may be related to institutions' experiences with operational changes due to the COVID-19 pandemic (see the section [“How have institutions' motivations and ambitions changed as a result of the COVID-19 pandemic?”](#) for more details), but it could also be a result of existing goals or initiatives related to innovation at institutions that already have experience with innovating through CBE.



Figure 6. Why has your institution moved to adopt competency-based education programs (CBE)?

(Select all that apply) Institutions with a Program or Currently Adopting

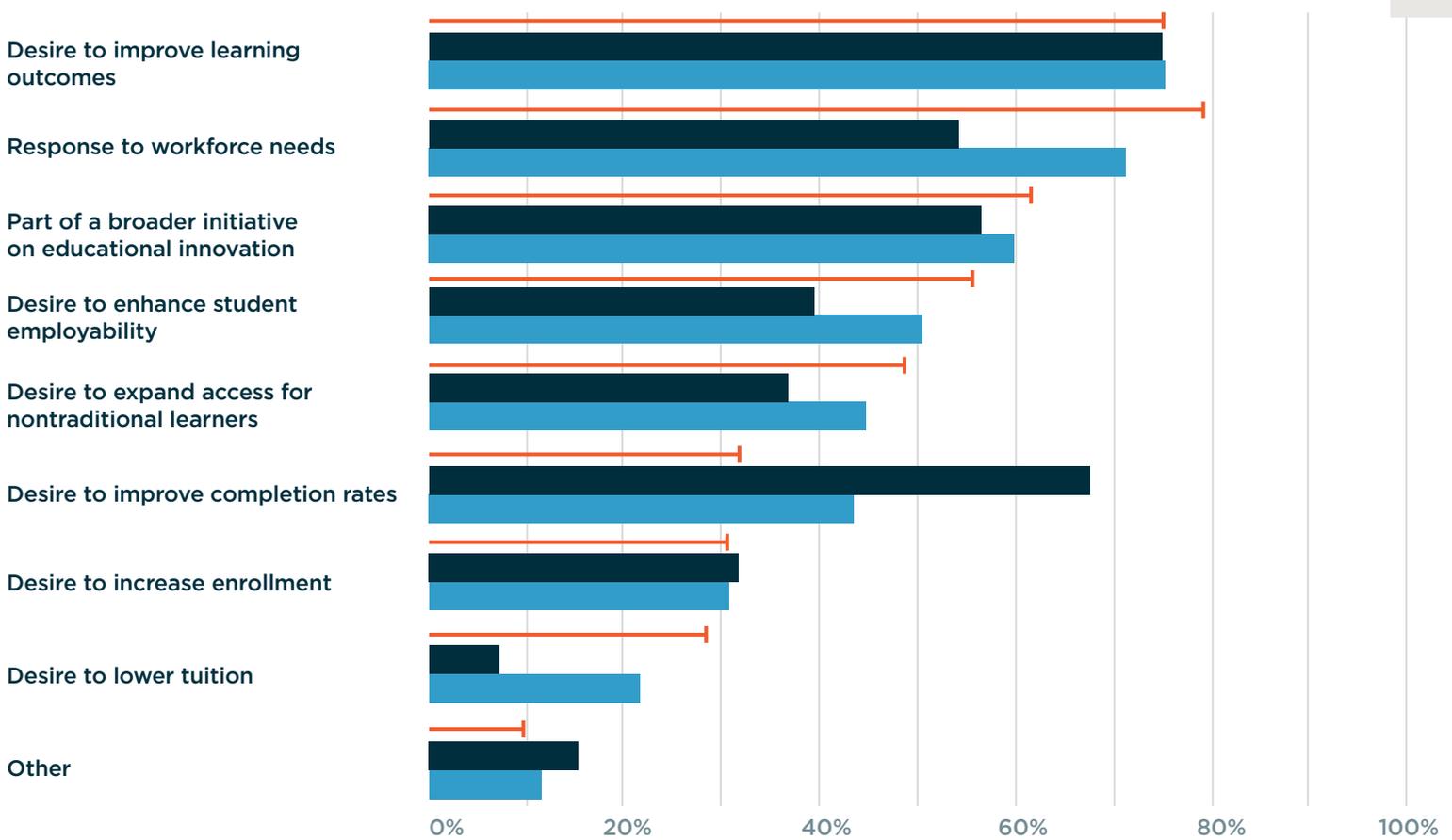
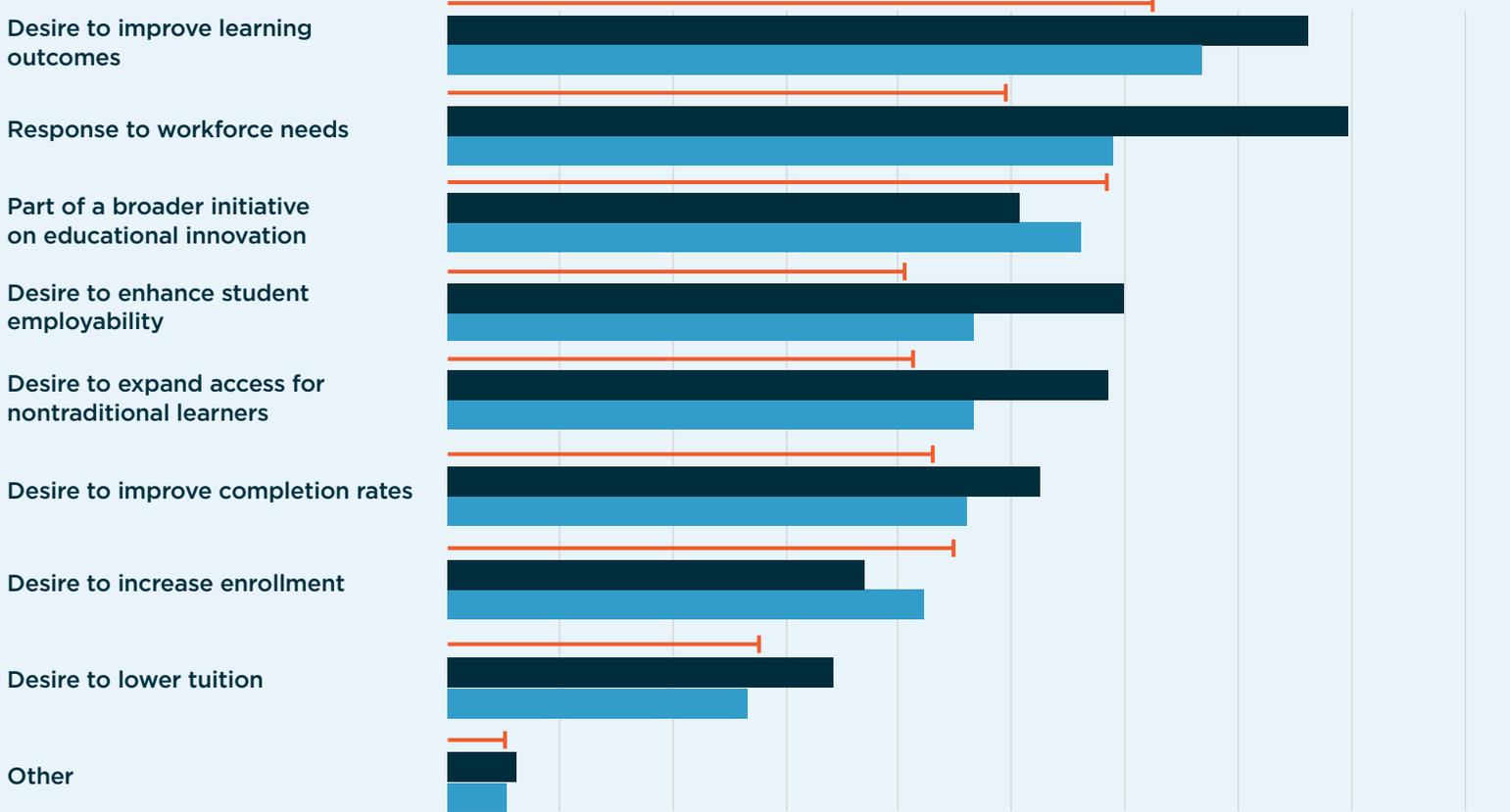


Figure 7. Why has your institution moved to adopt competency-based education programs (CBE)?

(Select all that apply) Institutions with interest in CBE, but no program or plans

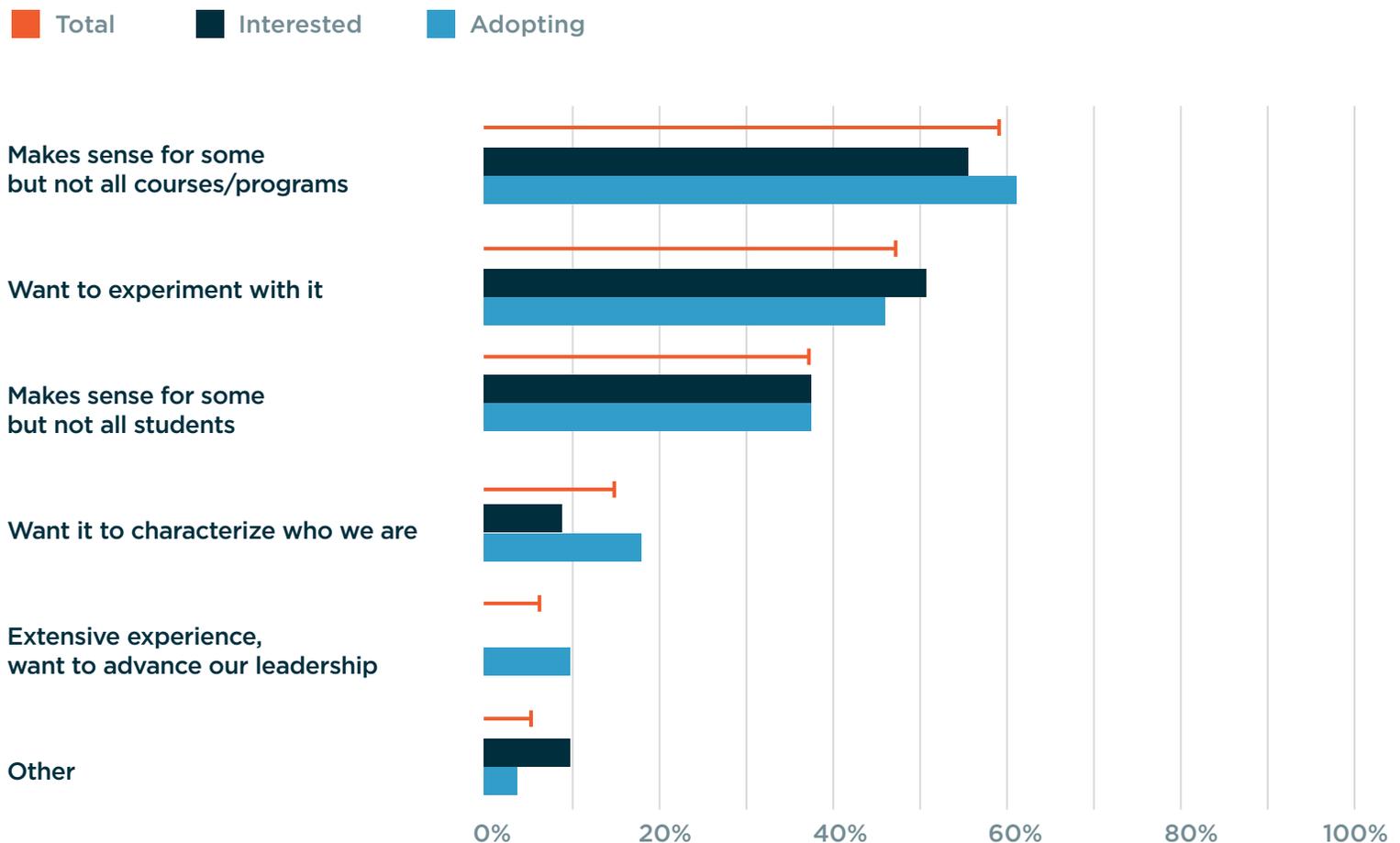


What are institutions' ambition for using competency-based approaches and full CBE programs?

To understand institutions' ambitions for adopting either full CBE programs or some competency-based approaches, the survey asked institutions to reflect on their stance on competency-based approaches and full CBE programs. We asked this question both of those institutions who had a full CBE program in place or were adopting one (categorized together as adopting for analysis purposes in Figure 8), as well as those who had expressed interest in CBE but did not have a program (categorized as interested). As Figure 8 shows, most institutions responding—from both groups—reported that CBE “makes sense for

some but not all courses/programs.” The second and third highest rated options from both groups were “*makes sense for some but not all students*” and “*want to experiment with it.*” Few institutions reported having extensive experience and wanting to advance their leadership or wanting it to “characterize who we are.” These findings suggest that many institutions may find CBE programs or approaches effective for specific purposes, but most to do view CBE as a primary mode of operation in the future. These findings are consistent with findings from 2019, when this question was introduced.

Figure 8. Which of the Following Best Describe(s) Your Institution's Stance on Competency-Based Approaches? (Select all that apply.)



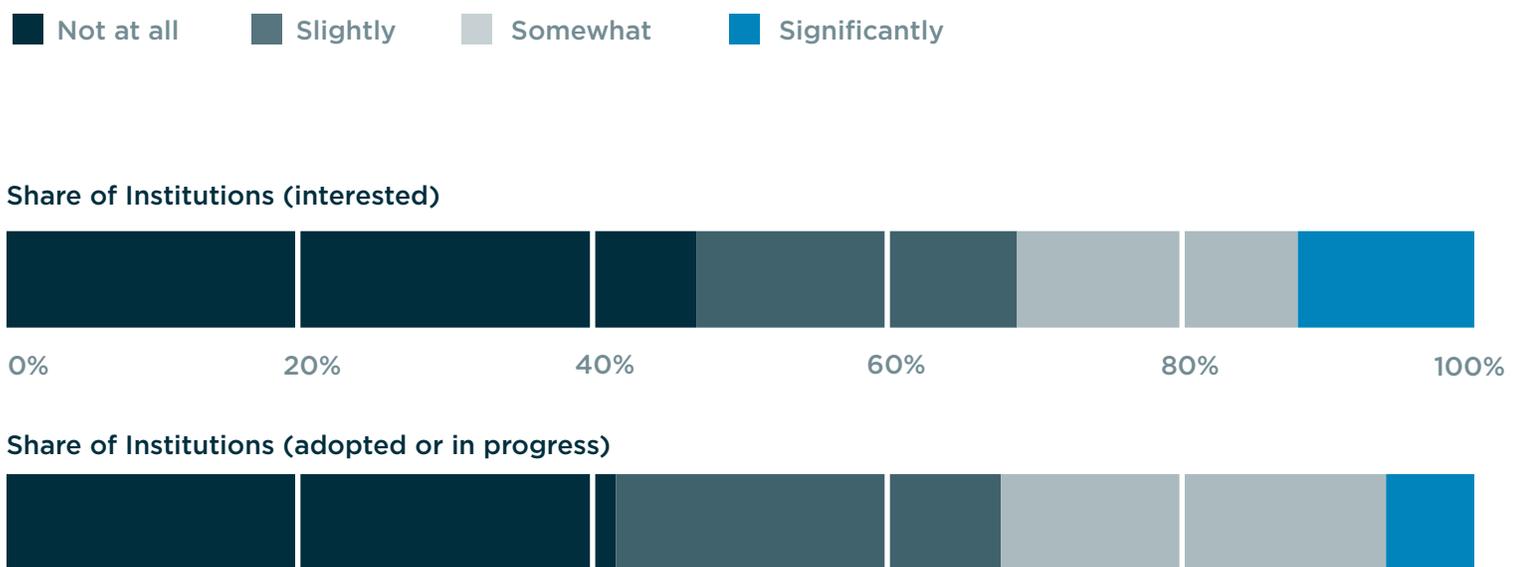


How have institutions' motivations and ambitions changed as a result of the COVID-19 pandemic?

In light of the major impact that the COVID-19 pandemic has had on postsecondary institutions, particularly in terms of moving to remote learning and the resulting shift in approaches to teaching and learning, we asked institutions several questions related to the impact of the COVID-19 pandemic on their perspectives about CBE.⁹

First, we asked institutions to what extent transitions caused by the COVID-19 pandemic affected their motivation to adopt or expand CBE on campus (Figure 9). For institutions interested in adopting CBE but without a program, just over half of responding institutions (53%) said that the COVID-19 pandemic transitions had at least some effect on their motivations to adopt CBE. For those institutions with CBE programs or in the process of adopting CBE, we observed a similar trend: Fifty-nine percent of institutions reported COVID-19 transitions having at least some impact on their motivation to adopt or expand CBE on campus.

Figure 9. To what extent have transitions caused by the COVID-19 pandemic affected your institution's motivation to adopt or expand CBE?



⁹ When interpreting these findings, it is important to note that we did not ask institutions to report on the *direction* of the influence; that is, the influence the pandemic had on adopting CBE could have been negative.

To support a deeper understanding of these motivation shifts, we also asked institutions about the impact of different experiences they may have had as a result of the pandemic (Figures 10 and 11). For both groups, the most common factor that institutions reported as having an impact on their interest in CBE was the perception of a long-term shift happening in the higher education landscape. Both groups also reported that the experience their campus gained with online or hybrid instructional approaches had an impact on their interest in CBE.

For institutions with CBE programs or in the process of adopting one, another commonly reported factor was that institutions thought CBE models could help their institution respond to future disruptions or uncertainties. In contrast, for institutions with interest in CBE but no program, the comfort level that faculty gained with technology tools was a common factor influencing their interest in CBE. This difference may speak to the experience of implementing CBE. Those institutions that have adopted CBE understand its value and are familiar with technology needed to implement it, while those that have not yet implemented CBE may have seen technology as a barrier to implementation, and this perception may have changed as faculty gained more experience using those technology tools. Another notable difference was that 85% of 2-year institutions with programs or in-progress adoption reported that gaining experience with an online or hybrid approach influenced their interest in CBE (compared to just 42% of 4-year institutions).



Figure 10. Which of the following factors related to COVID-19 influenced your institution's motivation to adopt or expand CBE?

(Select all that apply) Institutions with a Program or Currently Adopting

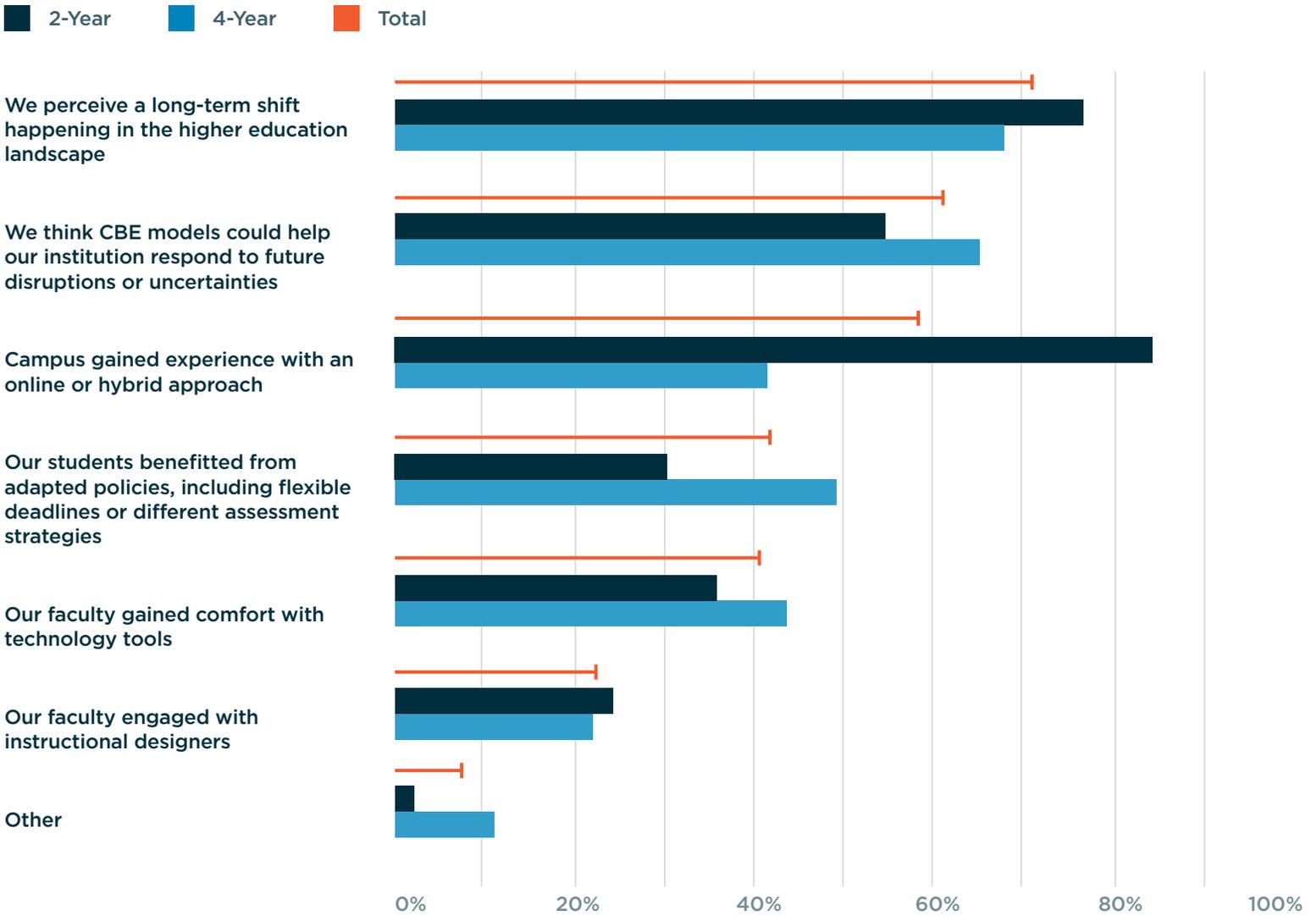
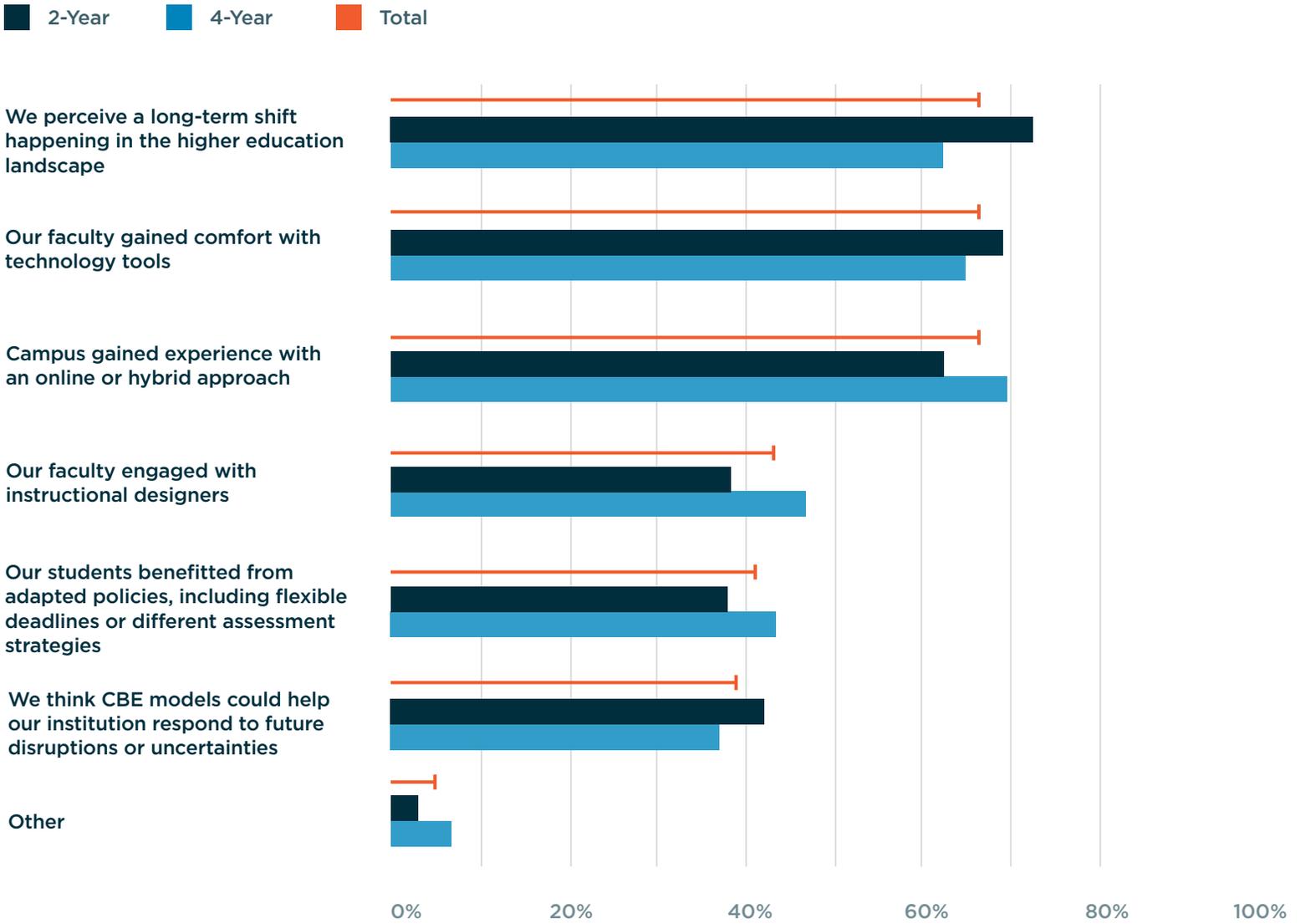


Figure 11. Which of the following factors related to COVID-19 influenced your institution's interest in CBE? (Select all that apply) Institutions with interest in CBE, but no program or plans



Which elements of CBE are institutions adopting?

A key finding in previous administrations of the NPSCBE was that many institutions reported course-level, rather than program-level, adoption. In addition, it is common for institutions to adopt some, but not all, elements related to CBE. This trend continued into 2020, with institutions more commonly adopting elements related to CBE but not meeting the full threshold.

Still, 42% of the institutions have adopted at least one of the individual elements that met the threshold for CBE in our survey (Figure 12):

- Measuring learning in competencies, either quantified without reference to seat time or mapped to measures of seat time;
- Requiring mastery of all required competencies for advancement between unit to unit or for program completion; or
- Allowing students flexible pacing in courses or programs.

Although implementing elements related to CBE that do not meet the threshold for CBE does not represent CBE implementation, we hypothesize that implementation of these elements may point to steps that institutions are taking on the path toward CBE. As such, we consider these elements important to explore. The most common activities for both 2-year and 4-year institutions included developing clear definitions of competencies at both the course and program levels (Figure 12). The use of prior learning assessment to award credit was also common: Forty-two percent of 4-year institutions and 48% of 2-year institutions reported using prior learning assessment.

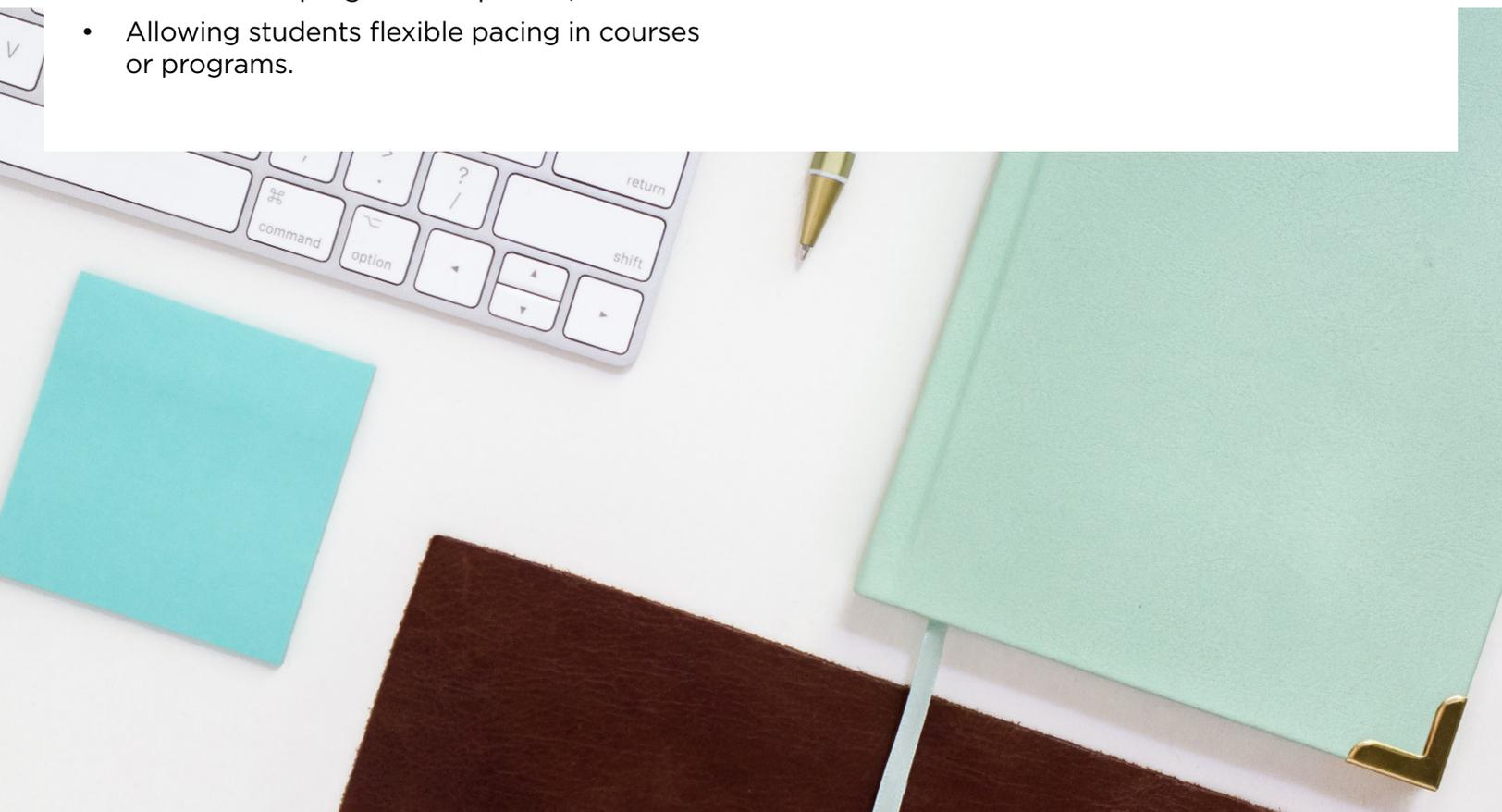
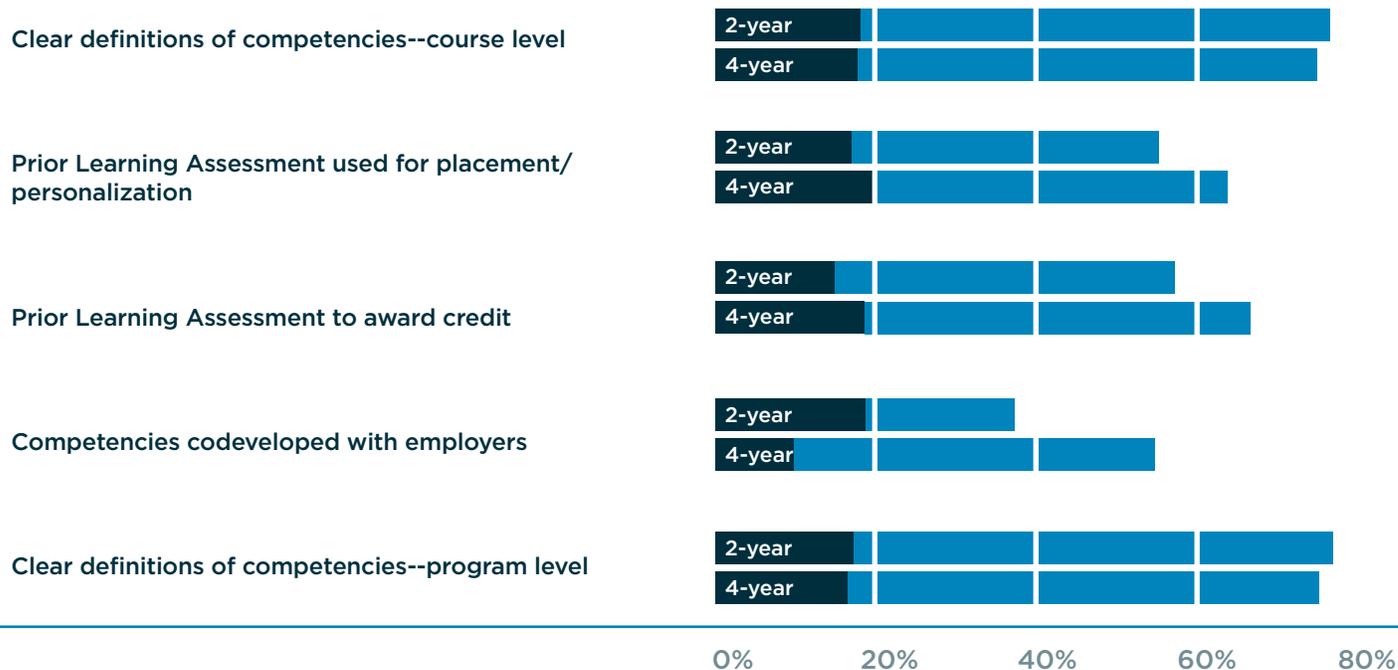


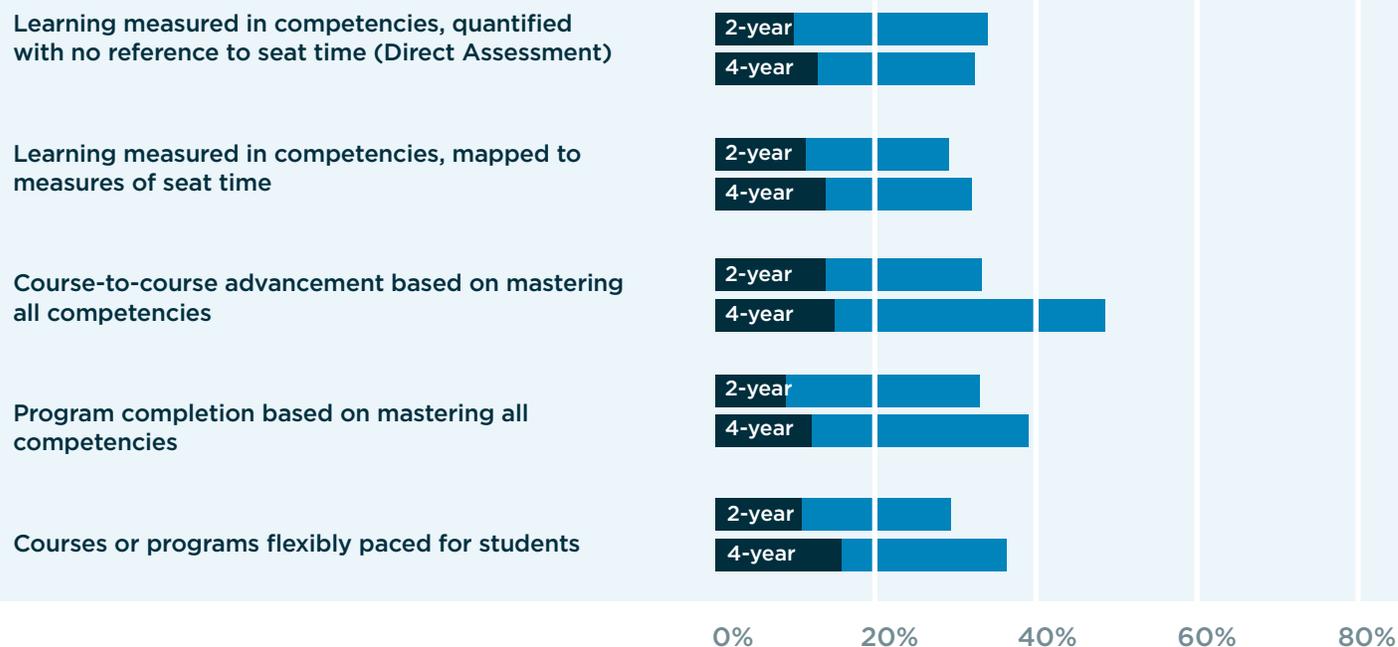
Figure 12. To what extent have each of the following practices been adopted anywhere at your institution, including individual academic units?

■ In progress ■ Adopted

Not Considered CBE Elements



CBE Elements



What are the stages of CBE adoption?

As in previous survey administrations, we asked institutions that indicated current or in-progress adoption of CBE elements that meet our threshold to describe their stage of adoption. Stages of adoption include planning stage, course-level adoption stage, or program adoption stage

(Figure 13). This year, most institutions responding to the survey reported that they were at either the program level-adoption stage (32%) or the course-level adoption stage (22%). Twenty-seven percent were in the planning stage, and 19% of institutions did not plan to offer any CBE courses.

Figure 13. Which of the following best describes the scale of competency-based approaches to teaching and learning at your institution?

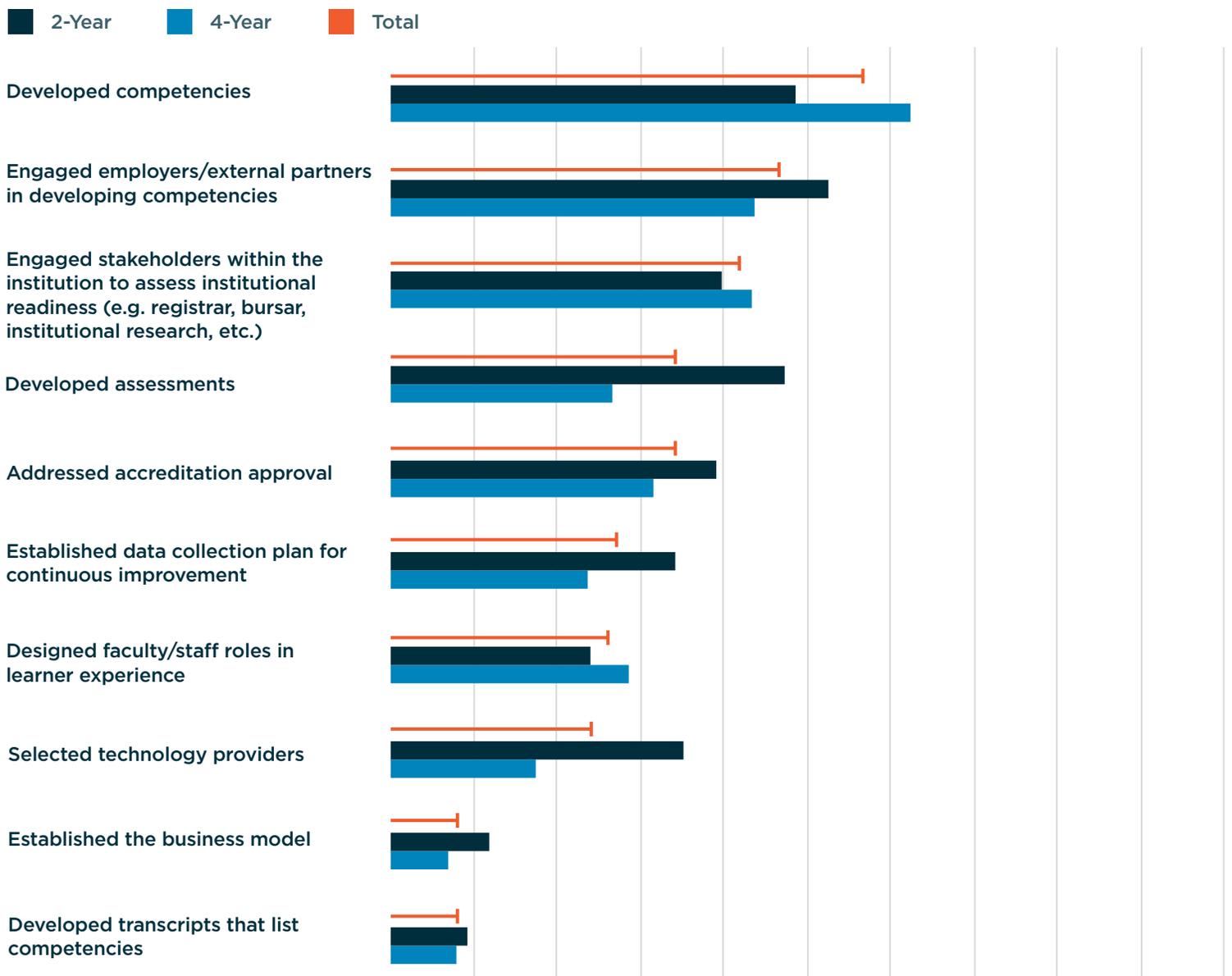


What are the different pathways to CBE adoption?

To better understand potential pathways to CBE adoption and to shed light on the kinds of activities those institutions that report being in the planning stages may be undertaking, we asked institutions which steps they took during their planning phase (Figure 14). Consistent with findings in 2019, we observe that 57% of institutions in the planning stages reported developing competencies. Nearly half (47%) involved employers or other external partners in the development of competencies. This year, we added a step related to gathering information or advice from existing CBE programs, consultants,

or other organizations; 46% reported taking that step. These activities likely require involvement only at the academic unit level (and possibly existing or new employer relationships). On the other hand, activities that were less commonly undertaken include selecting technology providers and establishing a business model, which may require the attention of and collaboration with other units or departments within the institution. There are also some substantial distinctions between 2- and 4-year institutions, including progress toward assessment development and selection of technology providers.

Figure 14. What actions has your institution taken while planning for CBE?



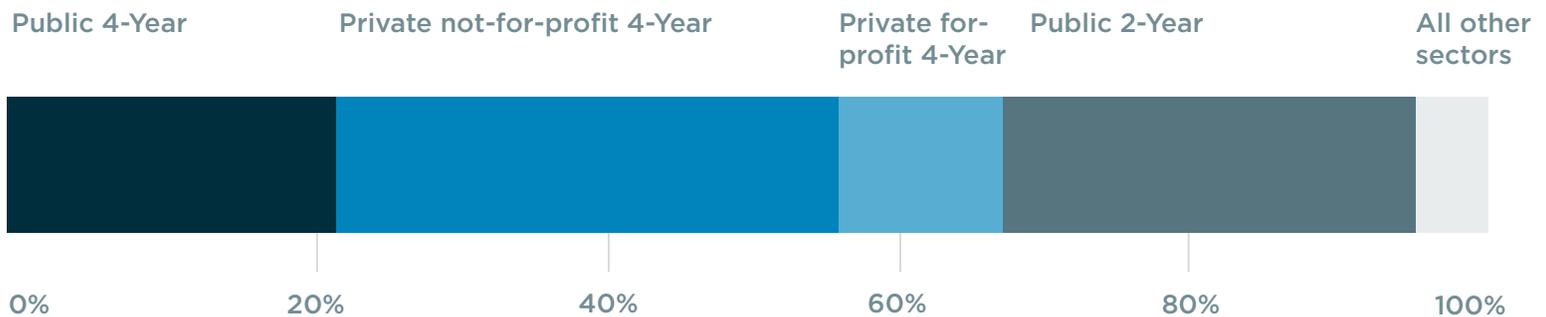
What types of institutions are adopting or exploring CBE?

Having explored trends in institutions' adoption of CBE and motivations for doing so, we turn to questions about the types of institutions that are more likely to have adopted CBE or to be interested in doing so. We also explore whether institutions' ambitions for CBE vary across institution type. Overall, we find that nearly all categories of institutions are adopting CBE, including rural community colleges, R1 universities, and minority-serving institutions such as historically Black colleges and universities and tribal colleges.¹⁰

What types of institutions have a CBE program or are in the process of developing a CBE program?

Of the 13% of surveyed institutions that responded that they have a CBE program, most are 4-year institutions. More specifically, 23% of the institutions with a CBE program are public 4-year institutions, 34% are private nonprofit 4-year institutions, and 11% are private for-profit 4-year institutions (Figure 15). Another 28% of the institutions with a CBE program are public 2-year institutions.¹¹ These findings support the argument that CBE programs are possible in any sector and are not limited to a specific institution type.

Figure 15. Distribution of Institution Type, of Institutions with a CBE Program

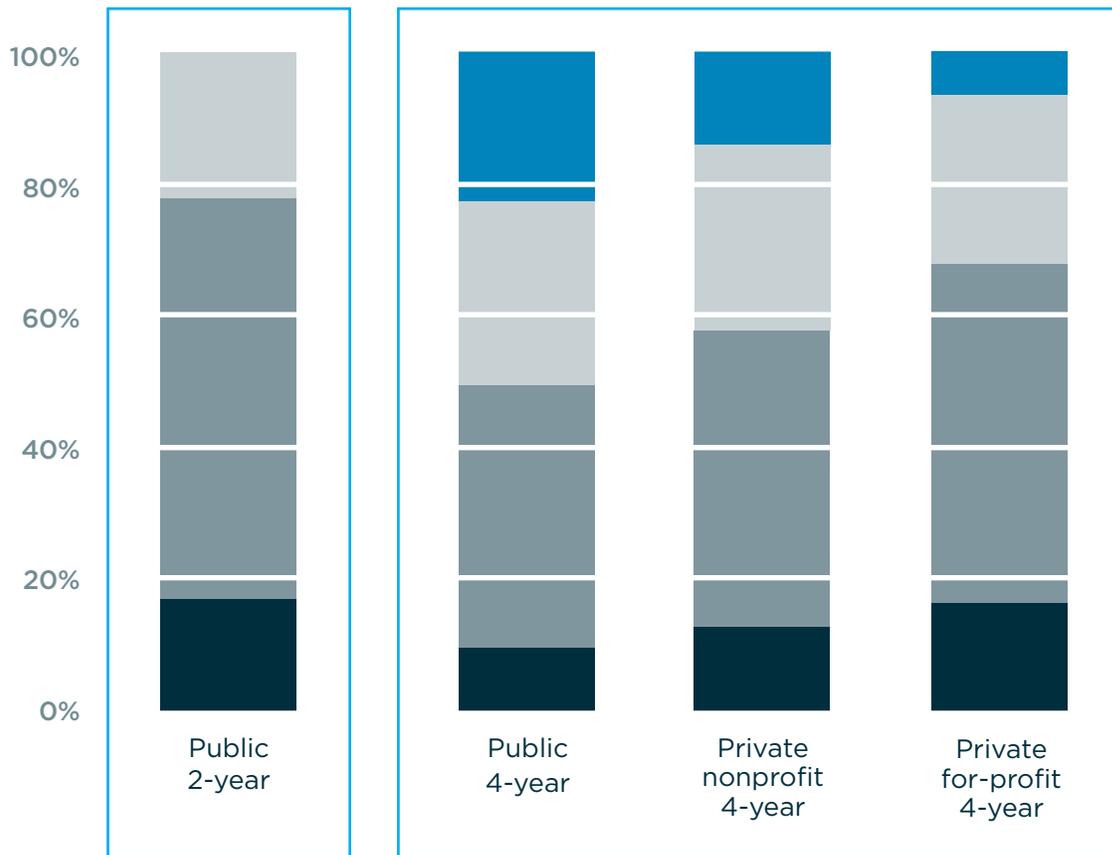


¹⁰ R1 is a Carnegie Classification® that denotes doctoral universities involving very high research activity. For more information, see <http://carnegieclassifications.iu.edu/>

¹¹ The remaining 5% fell into the other sector categories, such as private 2-year institutions.

Figure 16. Adoption and Interest in CBE, by Institution Type

■ Has CBE ■ In progress ■ Interested ■ Not interested



AIR also sought to understand whether institution types differ in their stage of adoption (Figure 16). Of public 4-year institutions, 13% have CBE programs, and 55% are in the process of adopting CBE. Similarly, of public 2-year institutions, 16%

have full CBE programs, and 52% report in-progress adoption. Overall, private nonprofit institutions were most likely to report having no interest in CBE (23%), and none of the for-profit institutions indicated having no interest.



CBE Adoption: Key Findings in 2020

CBE adoption efforts span all institution types and are motivated by the potential of CBE to support workforce readiness and improve learning outcomes. Still, CBE adoption remains piecemeal, with many institutions adopting some but not all elements of CBE. Most institutions regard CBE as a tool for advancing specific institutional goals, rather than the primary mode of operation for the institution. Changes in institutional operations due to the COVID-19 pandemic have influenced institutions' motivations for adopting CBE, as have perceived shifts in the broader higher education landscape.

CBE Programs

A key goal of this survey is to shed light on the landscape of full CBE programs in the United States and to understand how institutions are implementing those programs. In this section, we explore the modality of CBE programs, student enrollment, the most common fields of study, the role of faculty, and how programs fared in 2020. Key findings include the following:

- Institutions offer CBE programs through a range of modalities (online only, face to face, and hybrid or blended models), with nearly half of institutions relying on hybrid or blended models.
- Most CBE programs are still serving relatively small numbers of students, with more than half of the institutions reporting programs with fewer than 200 students. A small number of programs experienced growth in enrollment between 2018 and 2020.
- The most commonly offered CBE disciplines—nursing and health professions and business administration—are consistent with nationwide trends in bachelor's degrees conferred.
- Generally, institutions reported that their CBE programs weathered 2020 very successfully, reporting minimal disruption and, in some cases, increased enrollment.

Are CBE programs offered online or face-to-face?

To better understand how institutions are delivering CBE programs, AIR explored the share of institutions offering CBE programs entirely online, in a hybrid or blended format, or face-to-face.

Although a common perception of CBE is that it is synonymous with online coursework or distance learning, just 38% of the institutions with a CBE program reported offering programs that are entirely online.¹² The hybrid or blended modality was the most common delivery model, representing 49% of institutions responding (Figure 17). Thirteen percent of institutions with a CBE program offered entirely face-to-face programs. These findings are consistent with those from 2018 and 2019.

Figure 17. How do your students access and participate in CBE offerings?



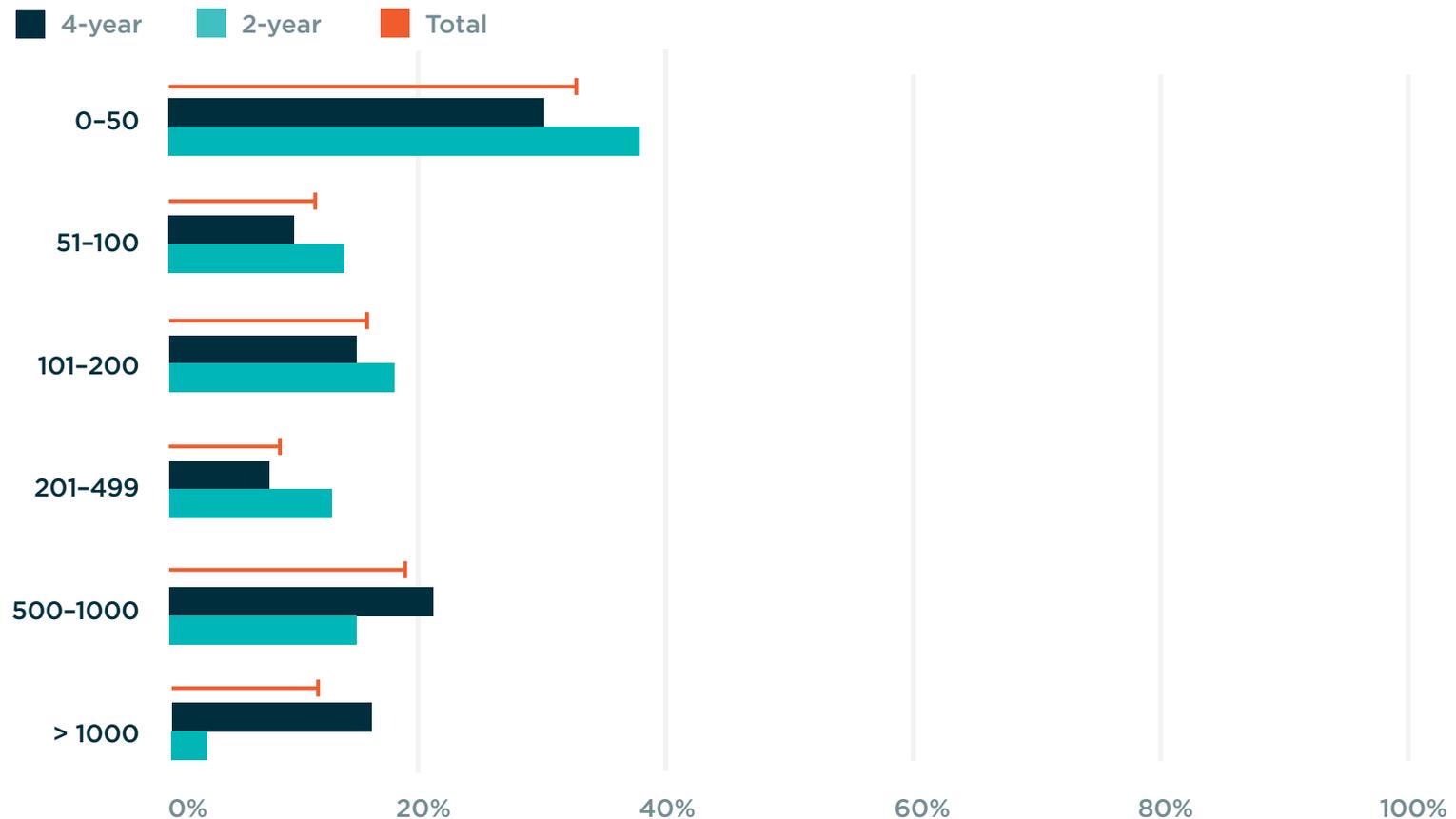
¹² Modality information was collected from institutions with a CBE program about their programs as a whole rather than individual CBE programs; the survey did not ask respondents to report the modality separately for each CBE program. We anticipate that it is rare for individual institutions to offer CBE programs in different modalities; individual institutions with CBE programs using different modalities likely selected “hybrid or blended modality” given the response options. Results should be interpreted with this consideration in mind.

What is the scale of enrollment in existing CBE programs?

To better understand the scale of individual CBE programs in terms of the students served, the AIR team asked institutions with full CBE programs to share recent estimates of student enrollment in their programs. Overall, some undergraduate CBE programs remain relatively small: Thirty-three percent of institutions reported enrollment of fewer than 50 students in the previous academic year. In contrast, some other CBE programs demonstrate the possibility of scale; another 33% report having over 500 students in their CBE programs, with 12% reporting more than 1,000 students (Figure 18). In contrast, the share of programs that enroll more than 1,000 students has remained relatively consistent, with 12% of institutions reporting enrollment of more than 1,000 students. This points to the potential to scale CBE programs, if desired. Some differences observed in 2020 (e.g., growth in the number of programs serving 50 to 200 students) may be attributed to increases in enrollment in existing programs; however, this change also is also due to a different set of institutions responding in 2020.

These trends are consistent across both 2- and 4-year institutions, with 2-year institutions less likely to report programs with more than 1,000 students. This survey does not necessarily explain why many programs are relatively small; potential causes range from low student demand to a lack of supporting technology and internal business processes or lack of interest from the institution in further growing the program. Of those institutions that responded in all 3 years, we observed some movement between categories in student enrollment in CBE programs. Of the 42 institutions that responded to the NSPCBE in all 3 years, 10 institutions reported growth in enrollment. It is worth noting, however, that some change may have occurred but was not captured by the provided response options. For example, if a program increased enrollment from 250 to 350, it would remain in the same category.¹³ Or a program could nearly double in size from 51 students to 100 students without a change in response category.

Figure 18. How many undergraduate students are currently enrolled in your CBE programs?



¹³ We chose to use ranges as the response options rather than asking respondents to report integers, because we had low confidence that most respondents would be prepared to report precise numbers. In such scenarios, open-ended questions often result in response heaping (Gideon, Helppie-McFall, & Hsu, 2017)—that is, the over-reporting of estimated round numbers (e.g., 100 rather than 112).

In the last academic year ...

33%

programs had
fewer than 50
students enrolled

33%

programs had
between 51-499
students enrolled

33%

programs had
more than 500
students enrolled

In what disciplines and at what levels are CBE programs offered?

To explore whether CBE may be well suited for specific disciplines or fields, AIR asked institutions to report on both the levels of certificates or degrees they offered and, separately, the disciplines or fields for which CBE programs were offered. Of responding institutions with a CBE program, about half offered at least one CBE bachelor's degree program (52%), and about half offered at least one associate's degree program (50%). Another 37% of institutions reported offering a CBE certificate, and 19% provided noncredit CBE courses.¹⁴ These findings differ from 2019, when we found that bachelor's degrees and certificates were the most commonly reported programs; this difference is driven by the different set of institutions responding in 2020.

The most commonly offered undergraduate disciplines at institutions with CBE programs are nursing and health professions (49%), business administration (41%), and computer and information sciences (30%). To better understand how these fields of study results align with national trends, we explored national data about bachelor's degree fields. The most commonly reported disciplines on the survey are in line with the most commonly conferred degrees nationwide. For example, business, along with nursing and health professions, are the two most commonly awarded bachelor's degrees nationally (U.S. Department of Education, 2017). Although computer and information sciences does not fall in the top five degrees nationwide, it has been one of the fastest growing fields since 2010. This finding suggests that it may not be the case that certain fields are better suited for CBE; rather, this trend may reflect a greater demand for programs in those fields.¹⁵

¹⁴ Institutions that offered multiple programs were able to select multiple degree levels. It thus may be incorrect to conclude that bachelor's degrees are the most commonly offered CBE degree programs. The slightly smaller percentage of institutions offering associate's degrees may actually offer many more associate's degree programs per institution, which would make this level the most common CBE program level offered.

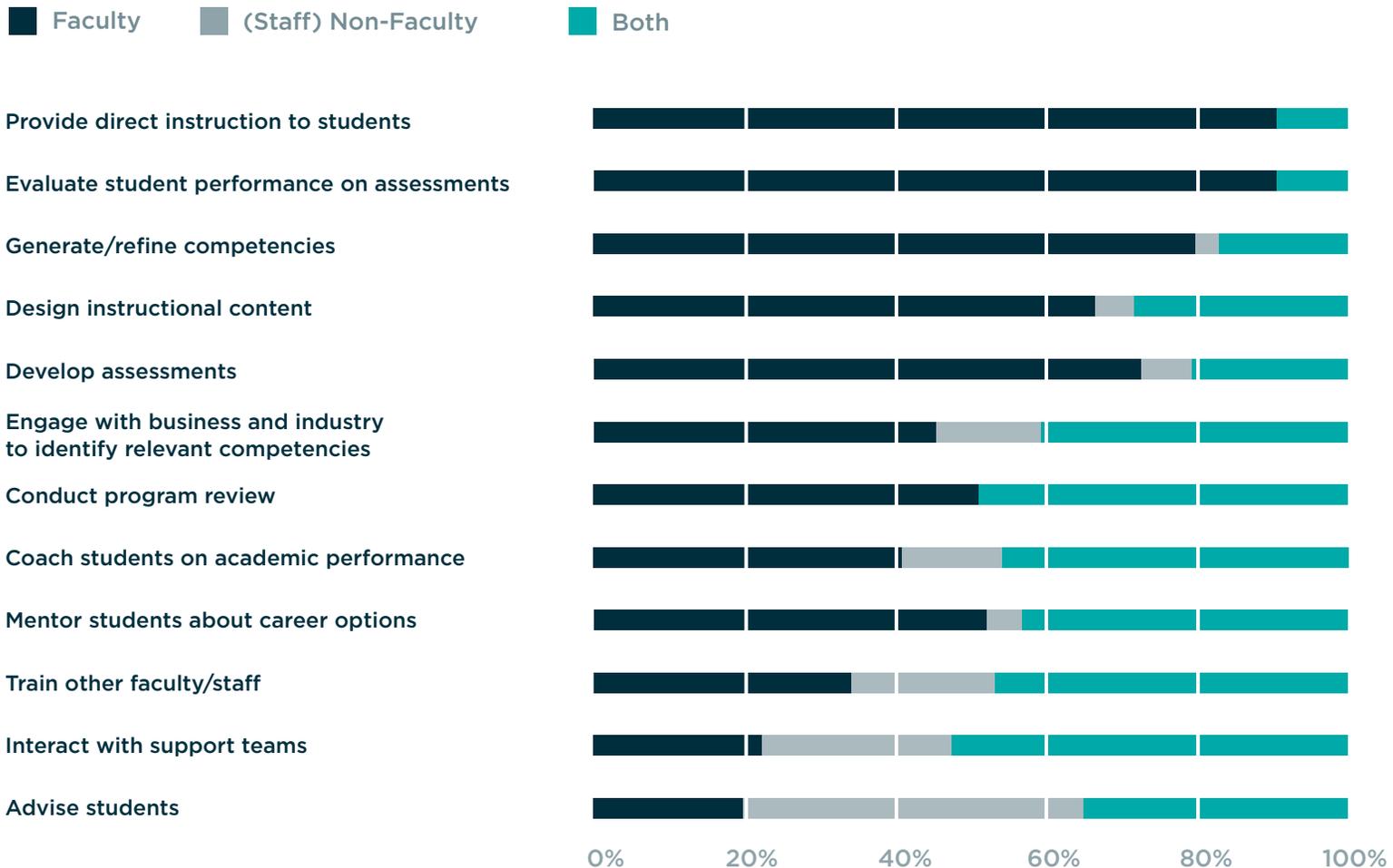
¹⁵ This section focuses on undergraduate CBE programs. The number of institutions offering graduate CBE programs is sufficiently small, so we cannot report on those findings without advising extreme caution in interpreting the numbers.

What roles do faculty and staff fulfill in CBE programs?

To support a continued understanding of how faculty roles in CBE programs can be structured to support student learning and to maximize meaningful contact between students and faculty, AIR asked institutions to report on the types of roles that faculty and staff fulfilled in CBE programs (Figure 19). Consistent with previous administrations of this survey, we find that faculty fulfill a wide range of roles in CBE programs. The most common roles that faculty are fulfilling are content-driven roles, such as direct instruction (90%), student performance evaluation on

assessments (90%), and competency development (80%), whereas nonfaculty staff more often fill advising and related student support roles. To better understand whether the same faculty are fulfilling multiple roles (traditional model), or whether different faculty are fulfilling different roles (disaggregated model), we asked institutions about how their faculty model. Most institutions with CBE programs (71%) use a traditional faculty model; 12% of institutions use a disaggregated model; and 17% use a mix of the two models.

Figure 19. Who fills the following roles in your CBE offerings? (Select all that apply)





How did CBE programs fare during the transitions of 2020?

We were particularly interested in how CBE programs fared during the COVID-19 pandemic.

To our knowledge, no other survey asked college leaders about their CBE programs in particular. We also anticipated potential reasons that CBE programs may have been less negatively affected, particularly given the learner-centric flexibility in terms of time (students affected by the pandemic did not automatically “miss” classes, for example). We inserted an open-response text box in the survey to solicit comments; 39 of the 65 institutions with CBE programs entered comments that offered important insights.

Nearly all comments from responding institutions indicated that their CBE programs were generally unaffected, and that they were less affected than traditional programs; no comments suggested that CBE programs were *more* negatively affected than their traditional programs. Many institutions emphasized that their CBE programs experienced “smooth” or “relatively easy” transitions. Many cited their program’s flexibility and online learning capacity and tools as key to that smooth transition. The one exception appears to be CBE programs with in-person assessment components—in line with traditional programs, for instance, health-related fields and some technical fields rely on in-person competency assessments.

In terms of their students, responses from the institutions highlighted that CBE models afforded students important flexibility during an unpredictable time. Some students were able to accelerate during the additional time they had during quarantine, while CBE allowed others to pause their progress (particularly, for example, caregivers or healthcare workers who needed to work more). One comment described CBE as “resilient” because it “allows students to continue their education in a flexible, self-paced manner.”

Many comments addressed enrollment, particularly noting that they saw enrollment growth in 2020.

For example, one respondent said:

“Our CBE enrollment is booming. CBE seems less radical to many faculty who previously opposed it now that we all live in the digital realm. They are more open to development, and multiple new courses are in development as a result. CBE and strong eLearning infrastructure most definitely set us up for success in the current environment.”

Another respondent echoed that increase:

“Enrollment data during COVID-19 has increased drastically.”

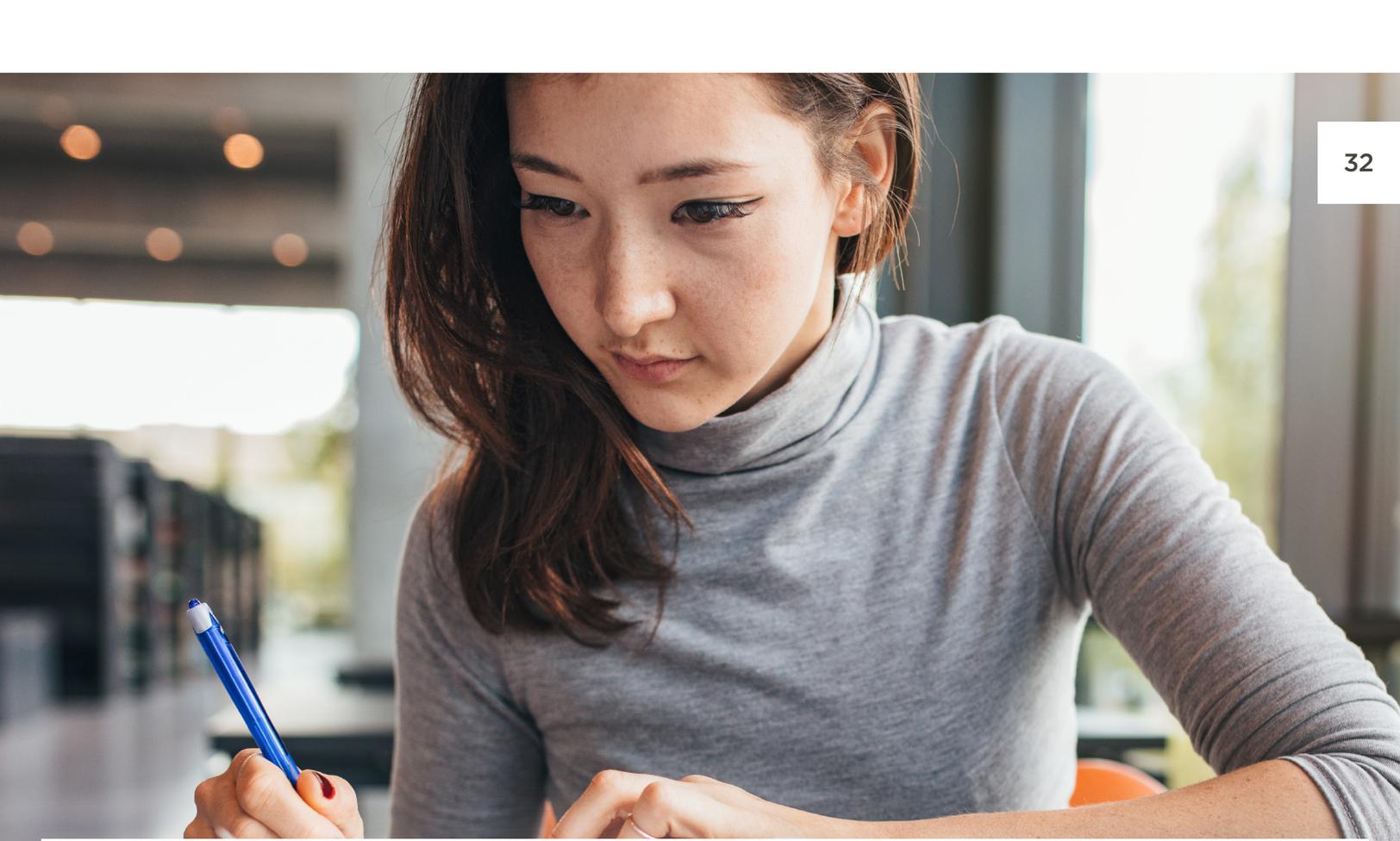
Finally, a few respondents noted that they saw increased internal interest and buy-in for CBE, but that bandwidth among faculty and staff to build more quality CBE programs was limited. **For example, one respondent said:**

“Long term, COVID will advance CBE at our institution.... In the short term, faculty and staff are so burned out responding to the current operating situation that we are not in an “innovation” headspace at the moment.”



CBE Programs **Key Findings in 2020**

CBE programs continue to serve relatively small numbers of students through a range of different modalities (online, hybrid, and face to face). The most commonly offered disciplines—nursing and health professions, business administration, and computer and information sciences—are consistent with nationwide trends. And faculty continue to fulfill a wide range of roles in CBE programs.



CBE Students

The commonly cited value propositions for CBE are typically centered on how these models might offer a student-centered approach. Although this is a survey of institutions, rather than students, we asked institutions with CBE programs a limited set of questions about the students in those programs. We focus broadly on questions related to the “iron triangle,”¹⁶ representing the value propositions of higher education, because CBE has been proposed as an opportunity to “break” the iron triangle by improving access, cost, and quality simultaneously (Bushway, Dodge, & Long, 2018).

Our findings are limited, but we hope this information can serve as a starting point to inspire further research:

- Compared with traditional programs, CBE programs may be serving more adult students (age 25 and older) and students with prior credits.
- The majority of programs qualify for federal student aid; most continue to use per-credit or per-unit pricing models, but some are beginning to use subscription pricing models, in which the price varies for each student, depending on how long they take to complete the program.

Given the limitations of survey research—especially surveys of institutions—in answering these questions about students, further research is needed to better understand the student experience, especially as it relates to quality and equity.

¹⁶ The iron triangle of higher education often refers to the challenges that institutions face in increasing quality, access, and affordability simultaneously.

Who enrolls in CBE?

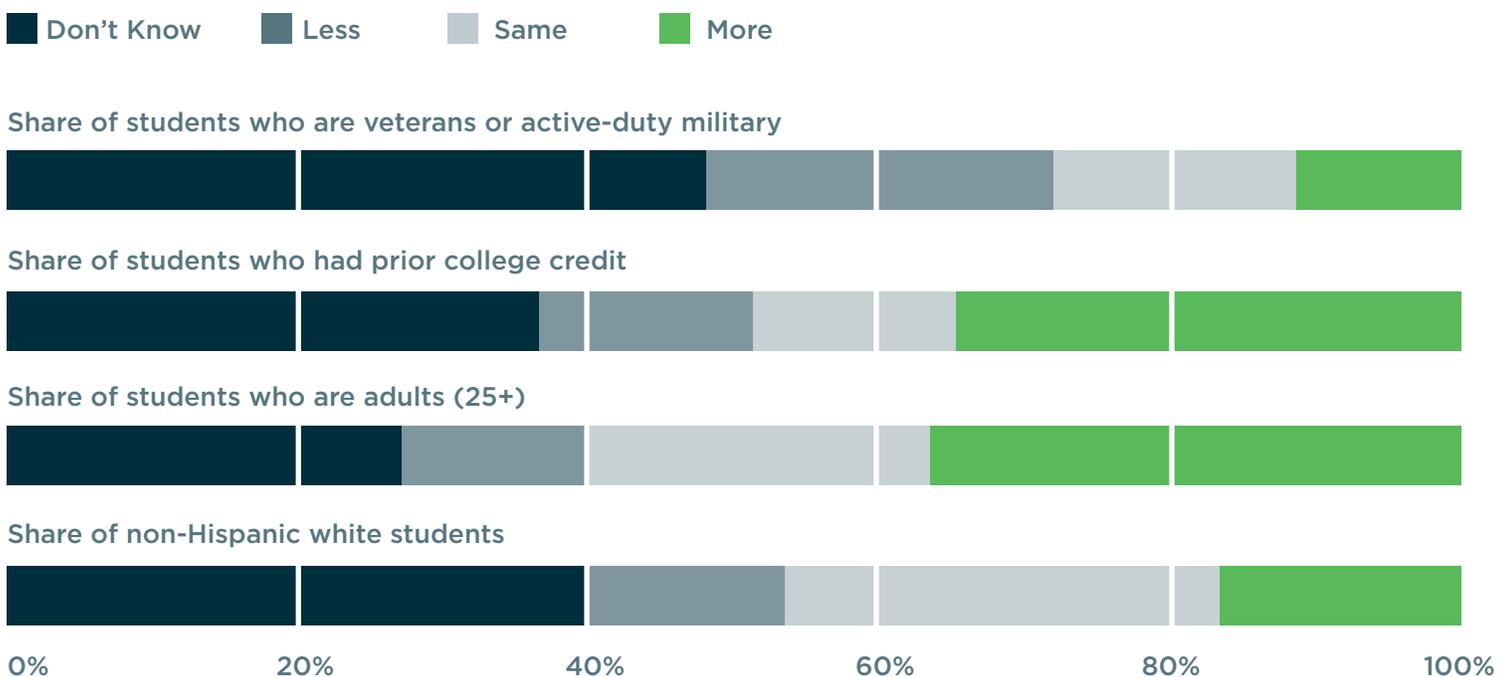
CBE is often associated with efforts to expand access and, ideally, to improve equity. As reported earlier, many institutions see CBE as an opportunity to expand access for nontraditional (or new traditional) students.¹⁷ To better understand how students in undergraduate CBE programs compare with students in traditional programs—and whether CBE contributes to equity—the AIR team asked institutions with CBE programs to compare students in their CBE programs with students in their traditional programs in terms of race/ethnicity, age, prior college experience, and military/veteran status (Figure 20).

The most common answer that respondents gave to all these questions, except for the question about age (the share of adult learners 25 or older), was that they “Do not know.” There may be many reasons for this, including *who* responded to the survey and how frequently they review their student demographic data. The question about age may have been easier to answer because CBE programs may have been designed with adult learners in mind.

Analyzing just those respondents who did have information about students in their CBE programs, we found that the most common responses by student characteristic were as follows:

- For race/ethnicity, the most common response was that the student populations in CBE and traditional programs are similar.
- For the share of students who had prior college credit and the share of adult students over age 25, the most common response was that CBE programs had more adult students than traditional programs.
- For military/veterans, the most common response was that CBE programs may have a smaller share of military/veteran students in their programs.

Figure 20. How does the demographic distribution of CBE program participants compare with traditional program participants?



¹⁷ As noted in footnote 2, this report uses “nontraditional” students to refer broadly to student populations that are older than students coming directly from high school (typically age 25 or older), in line with the description provided by the National Center for Education Statistics at <https://nces.ed.gov/pubs/web/97578e.asp>. These populations are referred to as “new traditional” or “today’s students” as well, reflecting the fact that they are now the majority population participating in postsecondary education.

What cost do students incur in CBE programs?

Affordability is a common concern in conversations about college options, and CBE programs are often raised as one option for potentially improving affordability. The assumption that CBE may improve affordability rests on two components: (a) allowing students to accelerate their time to earning a degree, and (b) using a pricing model that allows for lower costs, though this actually could *increase* costs for some students. Although a survey cannot fully answer these questions, AIR asked institutions three questions about their funding and pricing model to better understand the landscape: whether their CBE programs were eligible for federal financial aid, what pricing model they used, and how the price of their CBE programs compared with the price of their traditional programs.

The majority of institutions with CBE programs (71%) reported that those programs were eligible for Title IV federal financial aid (Figure 21). That is, students in these programs can access critical support, such as Pell Grants and federal student loans (20% responded that they didn't know, and 9% reported that their programs were not eligible for federal financial aid). Of those institutions with

eligible programs, most (73%) use course-based CBE models, which maintains a stronger connection (or mapping) to credit hours and courses (Figure 21). A relatively small share of institutions (21%) reported receiving approval for Direct Assessment by the U.S. Department of Education, and 6% selected "Other."¹⁸

We then asked about the pricing model that their CBE programs use. Outside of CBE, the traditional pricing approach is to charge per credit hour, or per range of credit hours (also referred to as *banded tuition*, in which a student pays the same flat amount whether they take 12 or 15 credit hours). In CBE models, though, we see a new option emerging: subscription pricing, or a set fee per amount of time, regardless of how many competencies or credits the learner engages in and demonstrates during that time. That means that the price of the program varies by student and how long they take to complete their degree. Subscription pricing is not *required* for a CBE model, though, and institutions may choose to continue pricing per (mapped) credit hour or competency ("per unit").

Figure 21. Which of the following best describes your institution's federal financial aid eligibility?



Figure 22. What pricing model does your institution use for CBE?



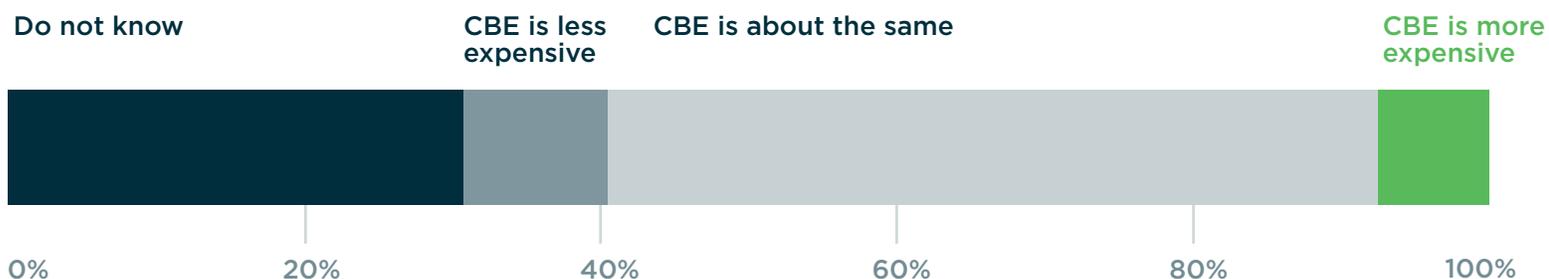
¹⁸ Those selecting "Other" typically wrote in the supporting text field that they were part of Experimental Sites initiatives or had multiple programs in different categories.

To understand the distribution of each option, we asked each institution with CBE programs to share the primary pricing model that they use for their CBE programs (Figure 22). We observe that “per-unit” (per credit or per competency) pricing remains the most common pricing approach, with 49% of respondents indicating that they used this pricing model. Subscription pricing was the second most common response, with 22% of respondents selecting this option. Finally, “per degree or credential” was the least common pricing model, with 20% of institutions selecting that option. Those institutions using a “per degree or credential” pricing model commonly offered graduate programs or undergraduate certificates or noncredit credentials.

Finally, AIR asked the institutions using per-unit or per-credential pricing whether their prices were set such that CBE programs were less expensive than, more expensive than, or about the same price as their traditional programs. More than half of the institutions (52%) reported that the price of their CBE program was “about the same” (Figure 23). The second most common answer was “Don’t know” (31%); a relatively small share of institutions said their prices were less expensive (10%), and an even smaller group said they were more expensive (8%). This question seems to suggest that CBE programs that do not use subscription pricing may be priced at the same level as traditional credit-hour pricing and, therefore, the potential savings for CBE students might be limited to the lower opportunity cost of being able to complete the degree more quickly.¹⁹

This question does not result in a firm answer about whether CBE meets the value proposition about affordability, but it does provide a look at the landscape in terms of how institutions are choosing to structure their pricing models, including through new options like subscription pricing. It also indicates that CBE programs are most commonly designed to have “about the same” total price as traditional programs.

Figure 23. How does the price of your CBE programs compare with the price of your traditional programs?



¹⁹ Here, *opportunity* cost refers to the time spent in education and learning, rather than working for wages. If students can complete the program more quickly and return to the labor market with higher earnings, they can face a lower opportunity cost for their time.

How do CBE programs affect academic quality and completion?

The third common value proposition for CBE is about quality: Because of how CBE models are built, they might (a) improve completion rates and (b) provide those who complete the program with evidence that they have demonstrated each competency required by the program. A survey is not well suited to understanding quality; instead, further research about understanding program

quality features and the long-term outcomes of students can help us understand whether CBE is achieving this goal.²⁰ In addition, research about how and whether employers value the demonstration of competencies in CBE programs will continue to advance conversations about quality and the validation of programs in the labor market.

²⁰ For more information, see the Competency-Based Education Network's Quality Framework: https://www.cbenetwork.org/wp-content/uploads/2018/09/1st_button_CBE17016_Quality_Framework_Update.pdf.



CBE Students: Key Findings in 2020

Further research is needed, but this survey suggests that CBE programs may tend to serve a greater proportion of adult learners and learners with prior credits than traditional programs; these findings also suggest that some CBE programs are adopting subscription models, but many continue to use per-credit or per-unit pricing models.

Barriers, Facilitators, and the Future of CBE

To understand the future prospects of CBE, the survey asked respondents about barriers to and facilitators of implementation and interest, as well as their perceptions of whether CBE will grow nationally and on their own campus. We considered these questions particularly important to revisit this year, after all that 2020 brought in terms of challenges, potential support for innovation, and calls for transformation in higher education.

The key findings were as follows:

- Institutions still perceive substantial barriers to CBE implementation. Even if COVID-19 pandemic transitions affected institutions' perceptions of a status quo bias, barriers remain.
- Specific barriers vary by institution type, but among those interested (but not yet adopting CBE), the most common barriers are internal to the institution (e.g., other priority initiatives, internal business processes).
- A large majority of institutions, regardless of their own adoption of or interest in CBE, expressed optimism that CBE adoption will grow in the next few years.
- When asked about CBE adoption at their own institution, 64% of institutions who have adopted CBE said they expect to grow the number of programs at their institutions. Of those who are not yet adopting CBE but are interested, 75% expect that, over the next 5 years, they will adopt some elements of CBE, or that CBE programs will be developed in certain departments.

What are the perceived barriers to and facilitators of implementing CBE?

For the two previous versions of this survey, AIR tracked common barriers and facilitators that institutions perceive in adopting CBE, and we observed relatively little change in responses. However, all the change and transitions associated with the COVID-19 pandemic upended our assumptions about barriers and facilitators, and renewed our questions about whether CBE is poised for growth. We wondered, for example, whether the transformative nature of 2020 would reduce any status quo bias and increase institutions' openness to new models. We also thought it possible that institutions would be so strapped for bandwidth that no new or innovative work could occur. We also were curious about the extent to which state authorization and state licensure boards might help or hinder adoption. To address these questions, the survey asked institutions about factors that help or hinder adoption or interest in CBE.

For those adopting CBE, the factors most commonly selected as barriers that “somewhat” or “significantly” hindered implementation were, in fact, similar to the responses to last year's survey. This lack of change may be unsurprising, since many of those who adopted CBE did so before the 2020–21 academic year. The top barriers included internal business systems and processes, Federal Student Aid regulations and processes, program start-up costs, and other priority initiatives (Figure 24). In terms of factors that were most commonly cited as “helping,” the list included support of the institution's leadership, ability to align to industry standards (for both 2- and 4-year institutions, but especially for 2-year institutions), evidence of CBE programs' potential impact on cost and outcomes for students, and education

technology resources. Education technology resources represents a good example, though, of a split decision; unlike some factors, education technology was cited almost equally as both a hindrance and a helper. Other factors perceived as both a barrier and a facilitator include accreditors' regulations and processes, and faculty perceptions of CBE programs. This finding may suggest that, while these *may* be challenges at some institutions, these factors, once aligned toward CBE, can be particularly helpful.

"Don't know" was an especially common response to our new questions about state authorization and state licensure boards, as well as to our questions about demand from students and employers. This response was particularly common among 4-year institutions. This result may mean that the respondent had not yet encountered the issue, considered the factor "neutral," or did not know what the text described.

For institutions expressing interest in CBE but not yet implementing it, the most common barriers appear to be primarily internal to those institutions: other priority initiatives, CBE program start-up costs, on-campus expertise about CBE, and internal business systems and processes (Figure 25). We note that on-campus expertise, much like that in 2018 and 2019, is a key difference between this group and those adopting CBE: "On-campus expertise" was among the top responses that represented a *significant* barrier for this group.

The most common "helping" factors included the ability to align to industry standards, evidence about CBE programs' potential impact on cost and outcomes for students, and the support of the institution's leadership. Again, we see a sizable share of respondents selecting the answer "Don't know" regarding many of the factors, particularly student and employer demand, and the state authorization and licensure board factors added this year. In general, 4-year institutions were more likely to report that they "Don't know" whether a factor is helping or hindering their interest.

Finally, institutions that indicated having no interest in CBE reported a mix of internal and external barriers to their interest in CBE (Figure 26). The top responses included other priority initiatives, on-campus expertise about CBE, accreditors' regulations and processes, and internal business processes and systems. Again, "Don't know" responses were high for some factors, including evidence about cost and outcomes for students, as well as faculty members' perceptions of CBE.

The patterns we observe in this section are consistent with some of the patterns identified in institutions' pathways to adopting CBE. In particular, some of the factors related to institutional resources outside an academic department (internal business processes, program start-up costs, institutional leadership support) appear to be common barriers and steps that institutions in the planning stages have been less likely to complete so far, like establishing a business model and a data collection plan ([see CBE Adoption section](#)). We also do not see substantial changes in the most commonly cited factors since 2019, with the exception of the "significantly helped" trend among those interested in CBE. Broadly, it's clear that even among institutions with interest or plans, CBE is competing for attention and resources against other priority initiatives on campus.

Figure 24. To what extent is the adoption of CBE at your institution helped or hindered by the following factors?
Institutions with a Program or Currently Adopting

■ Significantly hindered ■ Somewhat helped
■ Somewhat hindered ■ Significantly helped

Note. Factors are sorted in order of the total share of institutions citing that factor as “significantly hindered” or “somewhat hindered” across 2- and 4-year institutions.

Don't Know

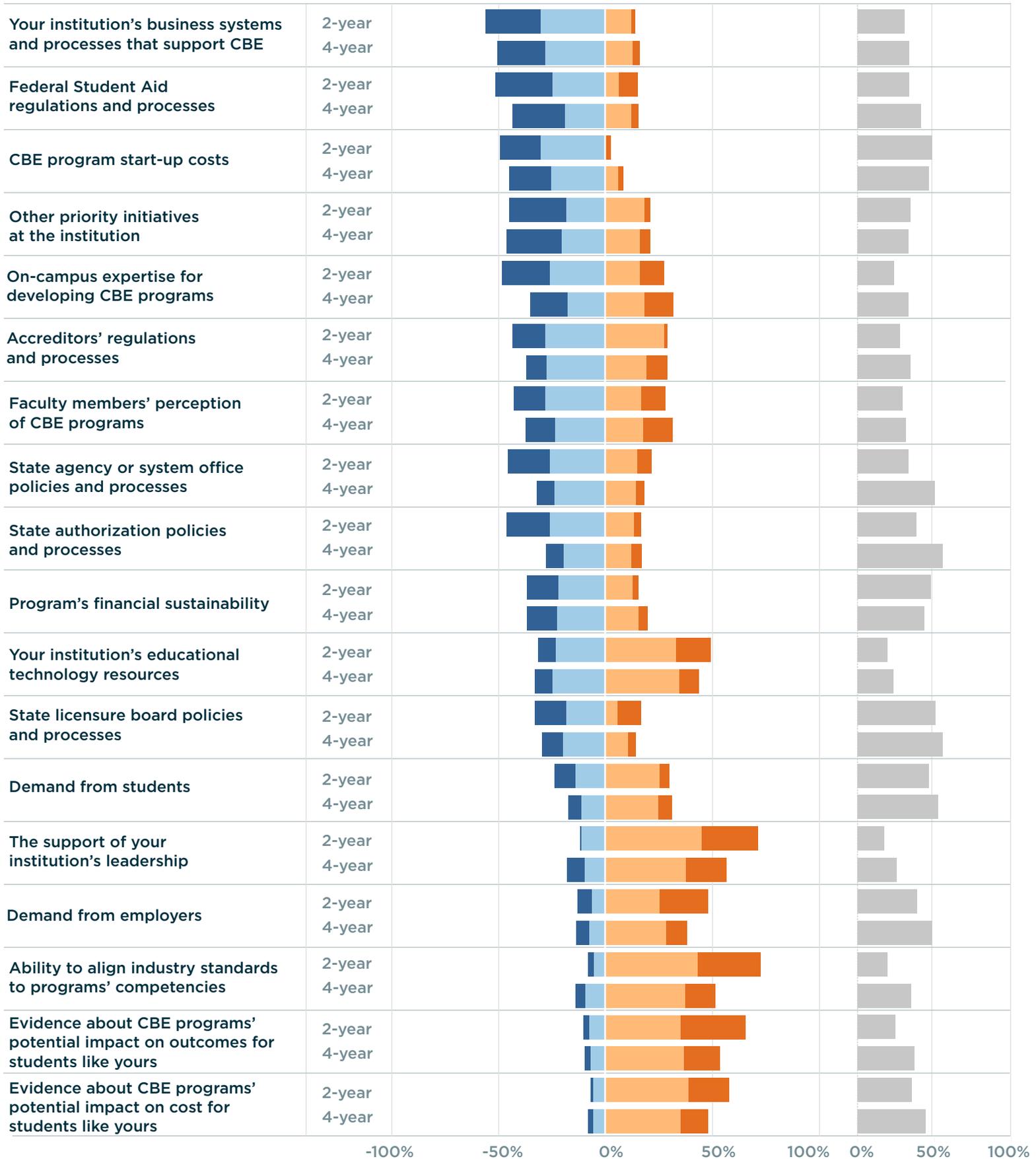


Figure 25. To what extent is the adoption of CBE at your institution helped or hindered by the following factors?
 Institutions with interest in CBE, but no program or plans

■ Significantly hindered ■ Somewhat helped
■ Somewhat hindered ■ Significantly helped

Note. Factors are sorted in order of total share of institutions citing that factor as “significantly hindered” or “somewhat hindered” across 2- and 4-year institutions.

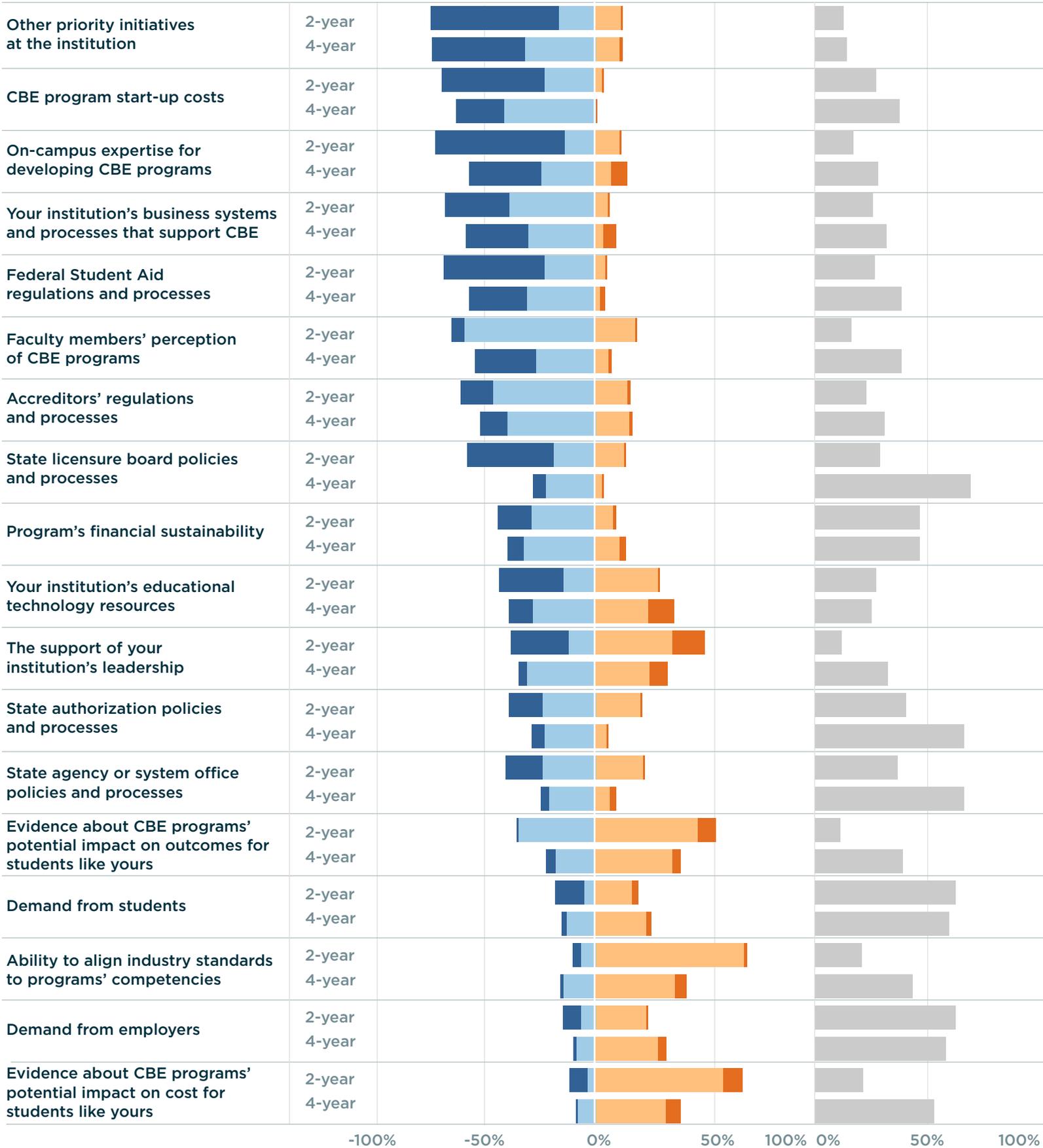
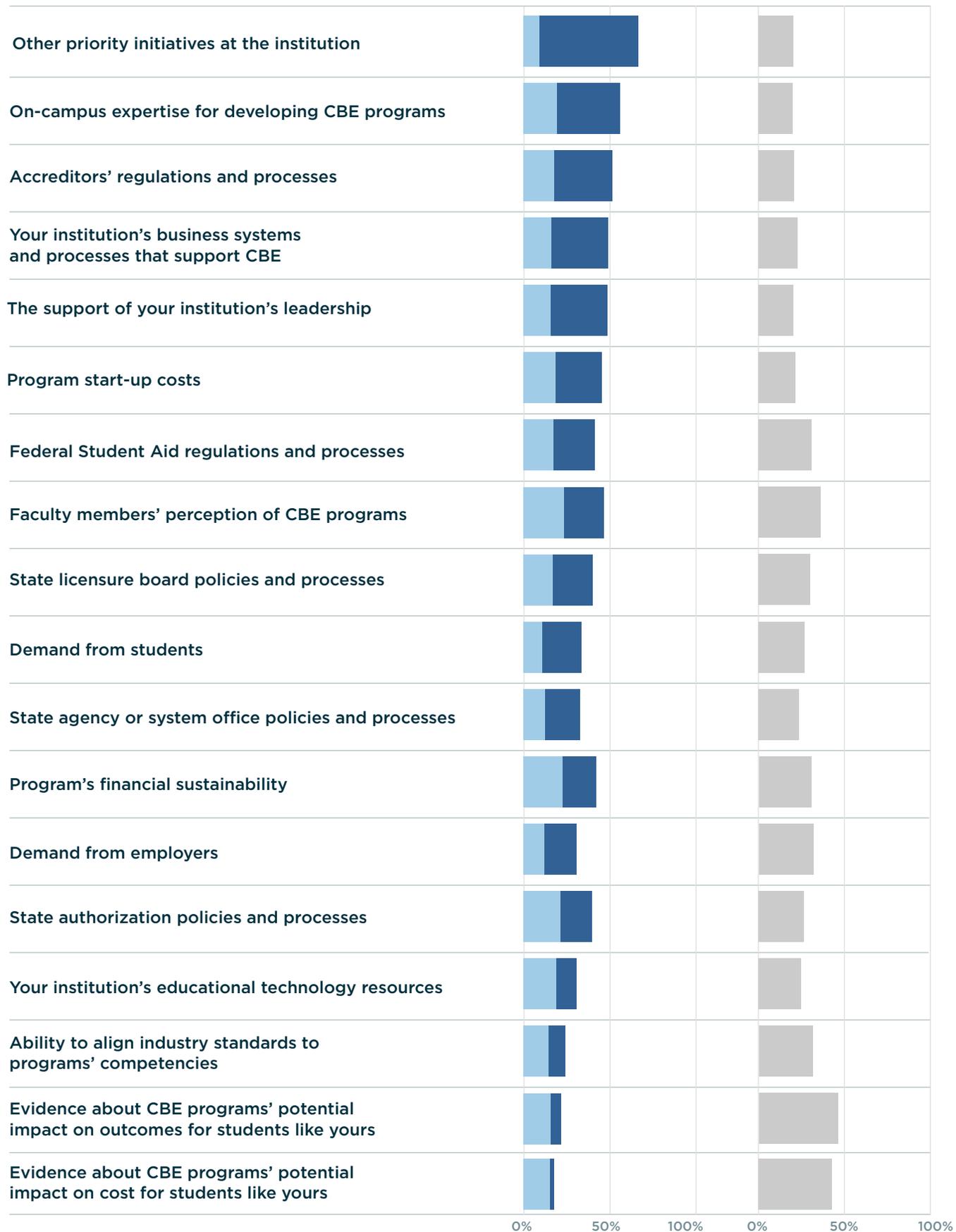


Figure 26. To what extent is each of the following a factor in your institution's lack of interest?

■ Major Factor ■ Minor Factor ■ Don't Know



How do institutions perceive the future of CBE?

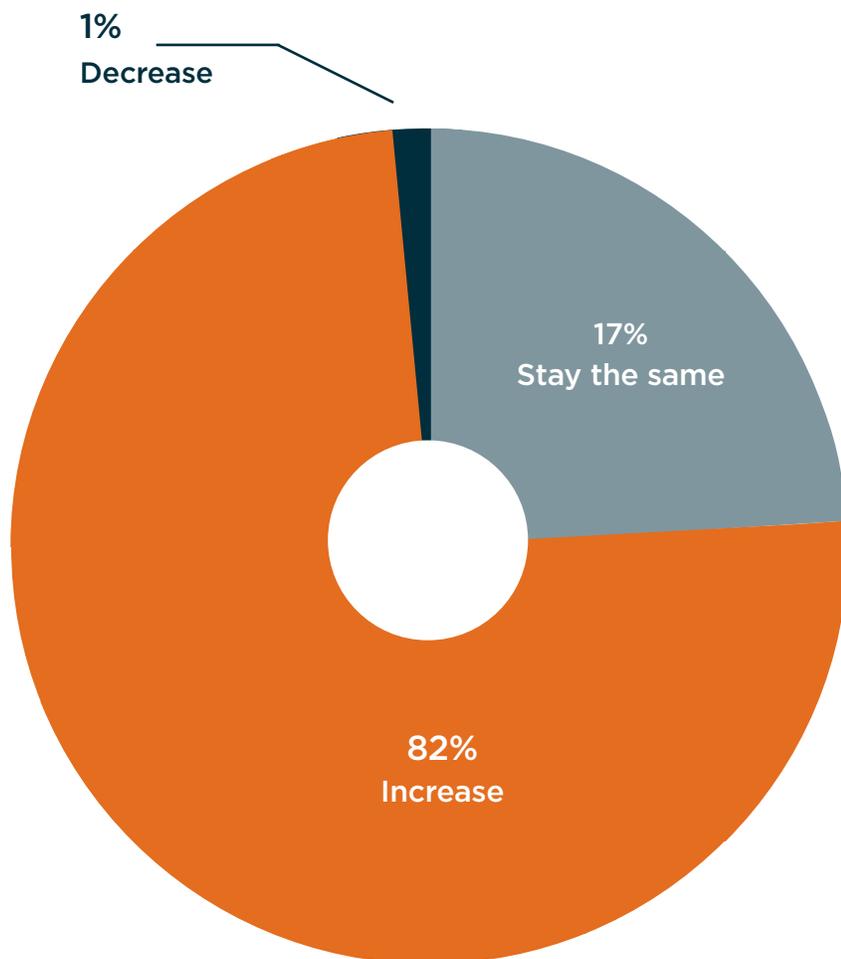
In past years, AIR asked about institutions' perceptions of the future of CBE. In the 2019 survey, we found relatively high optimism that CBE would grow nationally (76%) and at their own institution (61%). Despite all the transitions and tumult of 2020, we see that optimism persisting. This year, 82% of respondents said they expect CBE to grow nationally over the next 5 years, and we saw little difference between 2- and 4-year institutions, with 87% and 80% expecting growth, respectively (Figures 27 and 28). Much like last year, we see strong optimism about CBE growth among those who already adopted CBE and had interest in CBE, but even 58% of the respondents with no reported interest in CBE still expect it to grow nationally (Figure 29).



For institutions that responded in both 2019 and 2020, expectations were relatively consistent; in 2019, 81% said they expected CBE to grow nationally, and 84% said the same in 2020.

82%

Figure 27. Expected Growth of CBE Nationally in 5 Years



respondents say they expect CBE to grow nationally

Figure 28. Expected Growth of CBE Nationally, by Level of Institution

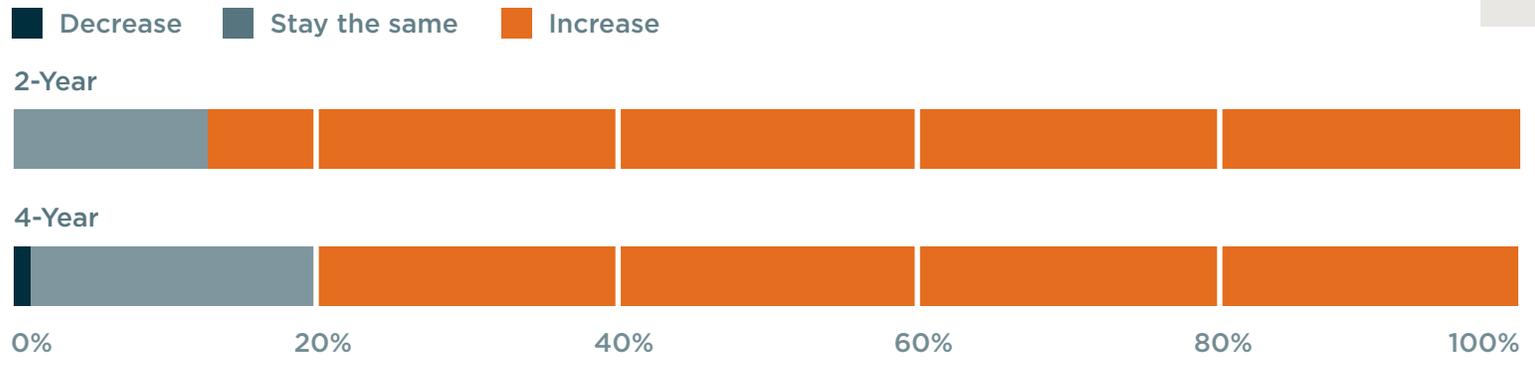
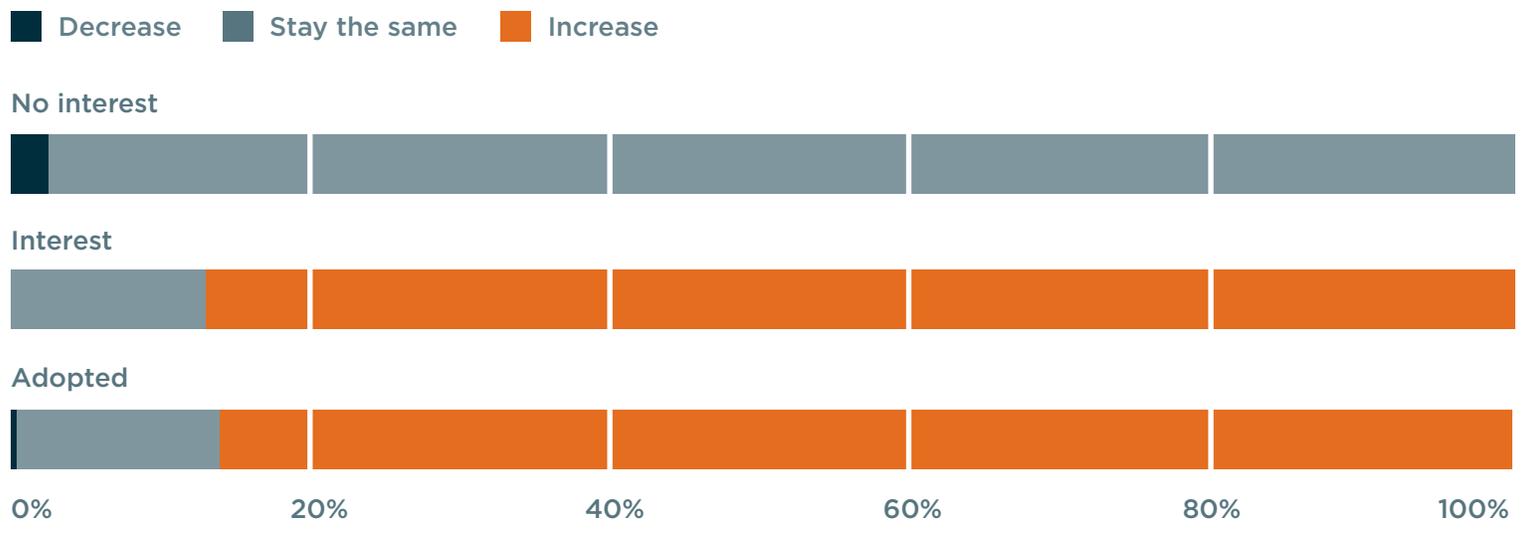


Figure 29. Expected Growth of CBE Nationally, by CBE Adoption



When we asked respondents with CBE programs whether CBE will continue to grow at their own institution, we found general optimism: Sixty-four percent of institutions expect to add more CBE programs in the next 5 years (Figure 30). Only 2% expect CBE to decrease at their institution, and 34% expect their number of CBE programs to stay the same—potentially indicating that about one-third of institutions consider CBE to be already “at scale” at their institution.

Of those institutions that expressed interest in CBE but were not yet adopting it, we asked how they expect CBE will grow on their campus (Figure 31). Our findings were remarkably consistent with those of last year. The most common response among institutions was that they would apply certain features of CBE but not all aspects of it (45%), followed by the response that they expected CBE to “take hold” in certain departments or programs but not in all (30%). Only 3% said that CBE would grow to become a major feature at their institution, suggesting that very few institutions plan to truly embrace a fully CBE model. So, while institutions expect CBE to grow at their own institutions, they appear to anticipate using only some features of CBE, or they anticipate growth in particular departments only.

Figure 30. Expected Growth in CBE, at Individual Institutions

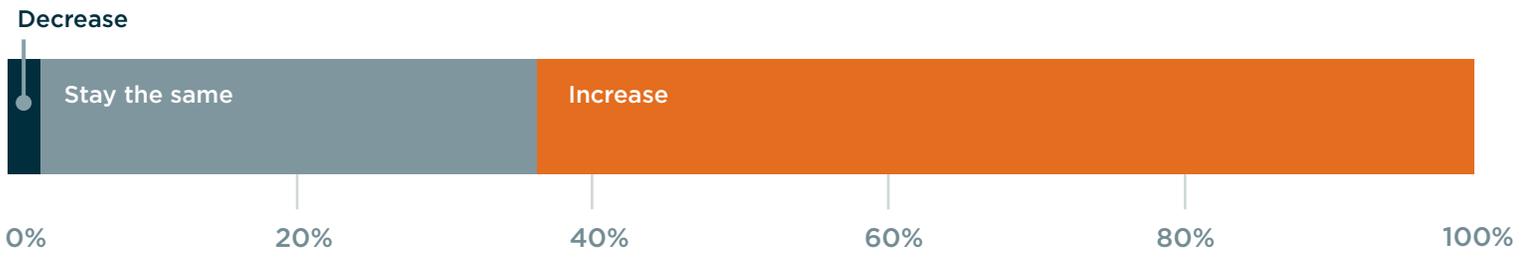
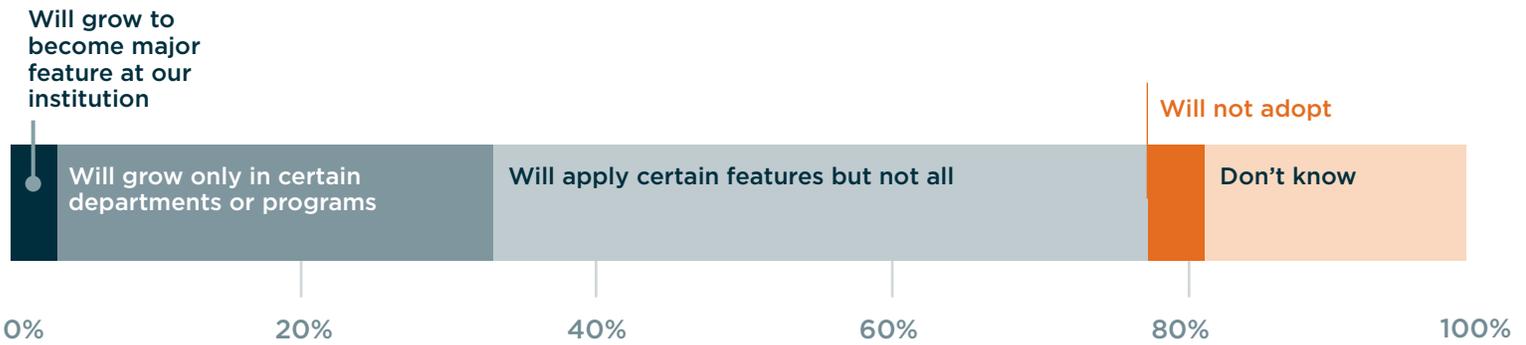


Figure 31. Expected Adoption of CBE in the Next 5 Years, Among Institutions with Interest in CBE



Barriers, Facilitators, and the Future of CBE: Key Findings in 2020

Although barriers to CBE implementation persist, a substantial majority of institutions remain optimistic about the future growth of CBE.

Critical Questions Facing the Field

CBE Beyond 2020

Much like in previous years, the 2020 survey finds evidence of growth and high optimism about the future potential of CBE. Broadly, institutions still appear to find the learner-centered logic of CBE compelling, even though barriers to implementation remain. That said, this year we see signs that the experiences of 2020 may have influenced interest in CBE, whether by lowering perceived barriers or as a solution to calls for transformation in the higher education landscape.

To provide context for our findings, we consider the Rogers (2010) technology adoption life cycle, which seeks to explain the rate at which an idea or technology spreads by segmenting groups of adopting organizations into innovators, early adopters, early majority, late majority, and laggards. For each group, this work articulates five stages of adoption: knowledge/awareness of the innovation, persuasion, decision (to implement), implementation, and confirmation. Even before the COVID-19 pandemic-related disruptions of 2020, locating CBE in this life cycle was challenging, particularly because adoption typically involves individual programs within institutions (rather than whole institutions becoming aware of and deciding to transform using CBE). In general, we estimate that CBE programs are still limited to innovators and some early adopters and are not yet common among the early majority of institutions. That said, the substantial adoption activity of CBE elements in courses (short of full program implementation) may indicate that competency-based courses are farther along, even if they are not yet aligned to full program CBE models that benefit learners.²¹ Again, this context is not a rigorous assessment of CBE progress, but considering CBE alongside this framework may be useful to inform additional questions.

²¹ For an alternative perspective on adoption cycles, see <https://www.gartner.com/en/research/methodologies/gartner-hype-cycle> for information on the Gartner Hype Cycle.

None of this context, of course, accounted for the disruptions of 2020; now, a key question for the field is how and whether 2020 will affect CBE interest and adoption moving forward. The findings from our survey show promise that CBE may grow after the disruptions of 2020: We see indications that the status quo bias has decreased, and perhaps this will have long-lasting effects if institutions use it as an opportunity to test new approaches that borrow most or all of the elements of CBE. For example, optimism about the future growth of CBE remains persistently high, and we see indications that 2020 may have lowered institutions' barriers to adopting CBE (e.g., faculty gaining comfort with technology) while increasing their motivation to adopt (e.g., recognizing a long-term shift in the higher education landscape and engaging with instructional designers).

That said, this survey asked questions about the effects of 2020 as of its administration in fall 2020—after the initial emergency remote teaching transitions of spring 2020, but still amid the challenges of potential quarantining on campuses, partial campus reopening, hybrid teaching models, and calls for institutions to examine their approaches to racial justice. By that time, nearly every faculty member and student experienced emergency versions of online or hybrid teaching, and many administrators and faculty came to a deeper understanding of *who* their students are and the competing demands of their lives outside the classroom. Even if some institutions reported that burnout was already high, the COVID-19 pandemic continues to affect work and life in 2021, and it may contribute to further burnout, overloaded bandwidth, or other emerging priorities that might that optimism and opportunity for growth of CBE. Either way, it's clear that the ways in which institutions choose to leverage this moment—whether aligned to CBE or not—will affect whether or not CBE grows.

Policymakers and institution leaders interested in expanding CBE can use the lessons of this survey to assess whether CBE may be a useful approach to recovering, rebuilding, and adapting to future disruptions. In addition, state agencies and policymakers can use the barriers reported in this survey to inform efforts to remove obstacles to using CBE. In particular, mobilizing content expertise and technical assistance in CBE or providing start-up grants to institutions or individual departments to support program development may be useful steps to take.

Looking ahead, several important questions remain:

- How will CBE interest and adoption change after the disruptions of 2020? What factors facilitates and impede development?
 - At what level of adoption will a larger share of institutions feel comfortable making the considerable changes needed to adopt CBE?
 - What policy conditions affect interest and adoption?
 - Given that so many institutions see CBE as appropriate for some departments, but not all, under what conditions can limited CBE programs thrive in otherwise traditional institutional contexts?
- How are programs continuing to evolve to serve students equitably? How are students experiencing these programs, and what are their outcomes?

We also intend for this survey to inspire researchers to explore and ask some of the most pressing questions to gain insights from the field beyond those that the NSPCBE can capture. Qualitative exploration of themes identified in this survey includes CBE implementation, perceptions, and faculty and student experiences. In addition, further quantitative analysis will be crucial to understanding faculty experiences as well as student enrollment and outcomes. Taken together, these questions will contribute to answering important questions about how and whether CBE serves students and how it contributes to equitable pathways and outcomes for students.

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Appendix A Survey Descriptive Statistics

The following tables provide details on responses to questions related to program implementation. These responses are based on respondents who indicated that they had a CBE program, which is a subset of the overall respondents. We advise caution in interpretation for this reason, and instances where fewer than 50 institutions responded are noted.

Table A1. How long has your institution offered competency-based courses?

Time	Percentage
Less than 1 year	4%
1-2 years	27%
3-4 years	15%
5-7 years	10%
More than 7 years	27%
Don't know	17%

Table A2. How long has your institution offered entire programs that are exclusively CBE?

Time	Percentage
Less than 1 year	8%
1-2 years	13%
3-4 years	14%
5-7 years	18%
More than 7 years	34%
Don't know	13%

Table A3. Do your CBE programs . . .

	Don't know	No, none do	Yes, some do	Yes, all do
Lead to a certificate, undergraduate degree, or graduate degree, if completed?	8%	3%	43%	46%
Require mastery learning of all competencies in a program?	4%	0%	40%	56%
Primarily require students to demonstrate their competency via authentic assessments?	10%	3%	44%	43%
Use "backward design," where the competencies to be mastered drive students' learning journey?	8%	3%	43%	46%

Table A4. At which award levels are your undergraduate CBE programs offered? (Check all that apply.)

Award level	Percentage
Noncredit	19%
Certificate	40%
Associate's degree	50%
Bachelor's degree	52%

Table A5. In what disciplines are your undergraduate CBE programs offered? (Check all that apply.)

Discipline	Percentage
Biological and life sciences	7%
Business administration	41%
Computer and information sciences and support services	30%
Construction trades	9%
Education	21%
Liberal arts and humanities	13%
Mechanic and repair technologies	13%
Nursing and health professions	49%
Physical sciences (e.g., chemistry, engineering)	8%
Social sciences (e.g., psychology, sociology, political science, economics)	8%
Other	29%

Table A6. At which award levels are your graduate (postbaccalaureate) CBE programs offered? (Check all that apply.)

Award level*	Percentage
Noncredit	25%
Certificate	0%
Master's degree	85%
Professional degree	0%
Doctoral degree	34%

* All award levels have fewer than 50 institutions with applicable data for this item.

Table A7. In what disciplines are your graduate (postbaccalaureate) CBE programs offered? (Check all that apply.)

Discipline ^a	Percentage
Biological and life sciences	15%
Business administration	52%
Computer and information sciences and support services	32%
Construction trades	0%
Education	33%
Liberal arts and humanities	0%
Mechanic and repair technologies	0%
Nursing and health professions	48%
Physical sciences (e.g., chemistry, engineering)	0%
Social sciences (e.g., psychology, sociology, political science, economics)	10%
Other	27%

^a All disciplines have fewer than 50 institutions with applicable data for this item.

Table A8. For the most recent academic year for which you have data available, about how many graduate (postbaccalaureate) students are enrolled in CBE programs that are entirely competency based?

Number of students	Percentage
0-50	23%
51-100	13%
101-200	3%
201-499	18%
500-1,000	19%
More than 1,000	25%

* Fewer than 50 institutions have applicable data for all numbers of students.

Table A9. For the most recent academic year for which you have data available, which best describes the composition of graduate students enrolled in your certificate and degree programs that are entirely competency based?

Demographic composition*	Percentage of graduate students enrolled in your certificate or degree programs that are entirely competency based				
	Don't know	0%-24%	25%-49%	50%-74%	75% or more
Percentage who are White, non-Hispanic	33%	23%	16%	28%	33%
Percentage who are at least 25 years old	22%	18%	7%	54%	22%
Percentage who are veterans or active duty military personnel	64%	3%	26%	7%	64%

* Fewer than 50 institutions have applicable data for all demographic groups.

Table A10. Have you used the following resources as you developed your program (for institutions with programs or in the process of adopting)?

Resource	Percentage
Quality Framework published by the Competency-Based Education Network	47%
The Connecting Credentials Framework/Beta Credentials Framework ^a	3%
LEAP/VALUE rubrics published by AAC&U ^b	23%
Resources provided by the U.S. Department of Labor (O*NET, Building Blocks)	20%
Degree Qualifications Profile ^c	40%
Employer or industry competency models	41%

^aSponsored by the Lumina Foundation. ^bLEAP is Liberal Education and America's Promise. VALUE is Valid Assessment of Learning in Undergraduate Education. AAC&U is the Association of American Colleges and Universities. ^cDeveloped by the Lumina Foundation.



Table A11. Which of the following have helped you and your institution or department learn about competency-based approaches to learning (*for institutions with programs, in the process of adopting, or with interest but no program*)?

Resource	Percentage
CBE advocacy groups	28%
Professional associations	52%
Vendors (technology and other solution providers)	15%
Accreditors	41%
Regulators (federal or state)	17%
Research advisory firms	7%
Independent consultants	8%
Institutions with established programs	36%
State based initiatives	27%



Table A12. How do you use prior learning assessment for students at the start of their CBE program (for institutions with programs or in the process of adopting)?

Prior Learning Assessment	Percentage
Articulate transfer credit from previous credit-based programs	61%
Recognize industry certifications, allowing students to move past related competencies/courses	45%
Use portfolio-based assessment	27%
Offer standardized exams (examples include College Level Examination Program [CLEP], DANTES Subject Standardized Tests [DSST], or others)	43%
Do not use prior learning assessment	14%

Table A13. What approach do you use for assessments (for institutions with programs or in the process of adopting)?

Approach	Percentage
Project-based or performance task assessments with rubrics	87%
Project-based or performance task assessments without rubrics	19%
Selected response/multiple choice assessments	54%
Traditional academic essays/papers	36%

Appendix B Technical Documentation

This appendix outlines the methods of the **National Survey of Postsecondary Competency-Based Education (NSPCBE)**, a web-based survey administered from September 29 to November 20, 2020

Survey Instrument Changes

The survey instrument for 2020 remained largely consistent with that in 2019, with some limited exceptions:

- One question on the respondent's role and two questions on the number of undergraduate and/or graduate students who expected to be enrolled in 5 years or who have ever graduated were removed for the 2020 survey.
- Due to the COVID-19 pandemic in 2020, a few changes were added to assess whether the pandemic was influencing the adoption/expansion or interest in CBE programs:
 - Additional instruction was added, in which institutions were asked to answer survey questions based on their CBE programs and not on emergency remote instructional measures they may have applied in response to transitions caused by the COVID-19 pandemic.
 - Two questions were added to learn whether the COVID-19 pandemic affected the institution's motivation to adopt/expand or take interest in CBE programs, and if so, which pandemic-related factors influenced their motivation.
 - One open-ended question was added in which institutions were asked how CBE programs have fared during the COVID-19 pandemic.

Population and Sampling

The NSPCBE was intended to be given to administrators at all 4,230 degree-granting, 2- and 4-year institutions of higher education in the United States. A list of these institutions was drawn from the Integrated Postsecondary Education Data System (IPEDS). Because this is a census, no sampling occurred.

Not all institutions were contacted for the survey, however; if the institution could not be successfully “rostered” (i.e., the research team could not obtain email contact information for at least one administrator who may be knowledgeable about CBE programs), then the institution was not contacted. Contact information was obtained from directory files available through Higher Education Publications' HigherEd Direct (HED) database of higher education institutions, which was purchased by the research team. As a result, 3,219 institutions were contacted about participating in the survey.²²

Because this was a census and not a probability sample, no estimates of sampling error will be reported.

Recruitment and Survey Follow-Up

The online survey was administered in English. The full survey instrument was made available by request.²³

A survey prenotification email was sent to all rostered institutions on September 24, 2020, to make them aware of the upcoming survey request. A survey invitation email that included a link to the survey was sent on September 29, 2020. Four email reminders were sent to nonrespondents.

About half of the institutions had email addresses available for more than one contact person. The prenotification and survey invitation emails were sent only to the person listed as the primary contact. However, all email reminders were sent to all available email addresses. To minimize duplication of responses from a single institution, once one reply was received for an institution, the survey was closed for that institution, and no additional email reminders were sent to any of the contact persons for that institution.

The survey closed on November 20, 2020.

²² Post-collection, two of these institutions were classified as ineligible because they were listed in IPEDS as “closed.” Thus, the eligible sample size was 3,217.

²³ To request a copy of the full survey instrument, please contact the research team at postseccebe@air.org.

Response Rates

The overall response rate for this survey was 15%; 488 of the 3,217 rostered institutions responded.

Response rates may be calculated in a variety of different ways. The American Association for Public Opinion Research (AAPOR) applies standardized response-rate calculations across the survey and polling industry, providing a variety of different options for researchers.²⁴ In this study, AAPOR's Response Rate 2 (RR2) was used to calculate response rates:

$$\text{AAPOR RR2} = (\text{Completes} + \text{Partials}) / (\text{Completes} + \text{Partials} + \text{Eligible Nonrespondents})$$

Partial responses were counted as such if the respondent completed the screener (through Question 5) but did not complete the rest of the survey. If individuals logged into the survey but did not complete the screener, they were considered nonrespondents. We counted individuals who completed at least one relevant survey item beyond the screener as completers.

Weighting

The target population for the NSPCBE consists of institutions of higher education in the United States. For weighting purposes, the target population was defined as the 4,230 institutions meeting both of the following criteria:

- The institution is included in the data from the most recent IPEDS cycle (2018).²⁵
- IPEDS indicates that the institution is a degree-granting, 2- or 4-year institution that was open in the 2018 IPEDS cycle.²⁶

Weights were calculated such that weighted estimates will be representative of all such institutions in the United States. This definition differs from the definition used in the response rate calculation, which is limited to the 3,217 institutions for which contact information was available for sending the survey invitation.

An institution's response to the NSPCBE can be understood as the outcome of a two-stage process. The first stage is **contactability**—whether contact information was obtained for an institution. The second stage is **cooperation**—whether, conditional on being contacted, the institution completed enough survey items to be classified as a full or partial respondent. The characteristics associated with contactability may differ from those associated with cooperation. For this reason, a two-stage weighting process, with separate adjustments for noncontactability and noncooperation, was used.

This weighting approach, and therefore the implied target population, is the same as those for the 2019 NSPCBE²⁷ but differ from the weighting approach and implied target population for the 2018 NSPCBE. In 2018, the weighting procedure included an adjustment for cooperation but not an additional adjustment for contactability. Thus, respondents were weighted only to the characteristics of the contactable sample, implying that weighted estimates were representative only of the contactable institutions rather than the full IPEDS universe. In the 2019 NSPCBE, an analysis of the consequences of this different approach demonstrated very small differences, none of which were large enough to affect the directionality of findings or conclusions in either report.

Creation of Weighting Cells

To calculate the weights, first the full target population of 4,230 institutions was partitioned into 11 noncontact adjustment cells using a classification and regression tree (CART).²⁸ CART is a machine learning algorithm that automatically identifies predictors associated with a dependent variable of interest—in this case, the IPEDS variables that are most associated with the likelihood of having contact information. The algorithm then successively partitions the universe into cells defined by those variables, with the aim of maximizing between-cell variability in the percentage of institutions with contact information.

²⁴ See [https://www.aapor.org/Standards-Ethics/Standard-Definitions-\(1\).aspx](https://www.aapor.org/Standards-Ethics/Standard-Definitions-(1).aspx) for more information.

²⁵ Three institutions of higher education that did not appear in the 2018 IPEDS universe files, but were in the HED database, were retained in the target population because they are known CBE users. These were Calbright College, Nexford University, and the College of Traditional Midwifery.

²⁶ More specifically, the following institutions were included: those where DEGRANT equals 1 (degree-granting institutions), SECTOR equals 1 through 6 (public, private nonprofit, and private for-profit 2- and 4-year institutions), and ACT is not equal to "D" or "M" (closed). As exceptions, two administrative units with SECTOR = 0 were included in the target population and weighted separately because they were contacted for the survey and are members of the Competency-Based Education Network.

²⁷ As exceptions, the following were two differences between the 2019 and 2020 definitions of the target population: (a) the 2019 NSPCBE included all administrative units (SECTOR = 0 in IPEDS) in the target population, while the 2020 NSPCBE included only the two that were contacted for the survey; and (b) the 2020 NSPCBE, unlike the 2019 NSPCBE, excluded closed institutions (ACT = "D" or "M" in IPEDS) from the target population.

²⁸ The specific CART implementation was the **rpart** function in R, available in the **rpart** package. For the noncontactability adjustment, a minimum cell size of 85 was specified; for the noncooperation adjustment, a minimum cell size of 65 was specified. For both, a complexity parameter of 0 was specified.

This procedure resulted in 11 noncontactability adjustment cells defined by the following variables:²⁹

- **SECTOR** (sector of institution)
- **C18BASIC** (Carnegie classification, basic)
- **STABBR** (state)
- **EFYNRALW_TOTAL_P_TOT** (nonresident alien women, percent of total enrollment)
- **FALL_ENROLL_ALLSTUDENTS** (total fall enrollment)
- **C18ENPRF** (Carnegie classification, enrollment profile)

The procedure was then repeated to create noncooperation adjustment cells using the 3,217 institutions³⁰ for which contact information was available. These institutions were partitioned into six noncooperation adjustment cells.

The following variables defined the noncooperation adjustment cells:

- **SECTOR** (sector of institution)
- **STABBR** (state)
- **C18IPUG** (Carnegie classification, undergraduate instructional program)

Calculation of Weights

First, every responding institution i was assigned a noncontact weight calculated as follows:

$$w_{i,c} = \frac{N_{i,c}}{n_{i,c}}$$

where $N_{i,c}$ is the number of institutions in the target population and $n_{i,c}$ is the number of in-sample institutions, both within the institution's noncontact adjustment cell c . That is, the noncontact weight is the ratio of the target population to the sample size within a given noncontact adjustment cell.

Second, every responding institution i was assigned a noncooperation weight calculated as follows:

$$w_{i,d} = \frac{\sum_{j=1}^{n_{i,d}} w_{j,c}}{\sum_{j=1}^{r_{i,d}} w_{j,c}}$$

where $n_{i,d}$ is the sample size and $r_{i,d}$ is the number of respondents, both within the institution's noncooperation adjustment cell d , and $w_{j,c}$ is institution j 's noncontact weight. That is, the noncooperation weight is the ratio of the sum of the noncontact weights over all in-sample institutions to the sum of the noncontact weights over responding institutions within a given noncooperation adjustment cell.

The final weight for a responding institution i was then calculated as the product of the noncontact weight and the noncooperation weight:

$$w_{i,f} = w_{i,c} * w_{i,d}$$

When calculated in this way, the sum of the final weight over all 488 respondents is equal to the size of the target population (4,230).

²⁹ The three non-IPEDS institutions were weighted separately because of the lack of data for the IPEDS predictors, and the two administrative units were weighted separately because they may differ substantially from other institutions in the IPEDS universe. The CART algorithm was run separately on the three subpopulations. In practice, due to the small size of the non-IPEDS and administrative unit subpopulations, the algorithm was unable to identify any further partitions within these cells for either noncontactability or noncooperation.

³⁰ Though 3,219 institutions were initially contacted for the survey, two were determined to be ineligible after collection because they had ACT = "D" or "M" (closed) in IPEDS.



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