

Unpacking Program Enrollments and Completions With Equity in Mind

By John Fink and Davis Jenkins

Across the country hundreds of community colleges are implementing

whole-college guided pathways reforms to create clearer paths to college and career success for students.¹ The aim of these reforms is to help students explore and decide upon career and education goals that align with their interests and aspirations, and to plan and complete a program of study to achieve those goals. As part of these reforms, colleges redesign intake and advising processes around broad career fields sometimes called “meta-majors”; this helps entering students make sense of the large number of program options that are available and engages them with faculty, advisors, and other students in a field of interest right from the start (Jenkins et al., 2020). Guided pathways reforms are challenging for colleges to pursue; they entail the participation of all staff in modifying practices around a far-reaching notion of student success (Jenkins et al., 2019). They require a shift in mindset wherein college personnel ask not only “Are students persisting and completing?” but also “Do our programs really lead to the education and career outcomes students seek?” and “Is student representation across our programs equitable?”

Critically examining what programs students are entering and completing is particularly important given that some community college programs lead to substantially higher economic returns than others (Belfield & Bailey, 2017; Dadgar & Trimble, 2015). A substantial literature base reveals not only that returns to higher education programs are stratified but also that this stratification operates along racial/ethnic, gender, and socioeconomic lines (Carnevale et al., 2016; Castex & Decher, 2014). Though this research has focused primarily on the four-year sector, it may be that community colleges are in even more danger of facilitating inequitable stratification since their programs vary by subject area as well as length (corresponding, e.g., to short- and long-term certificates, applied associate degrees, and associate of arts degrees designed to prepare students for upward transfer to bachelor’s degree programs). There is a wide range in the economic returns to different types of community college awards, with longer programs and those leading to bachelor’s degrees in math-intensive fields, for example, leading to stronger labor market returns.



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This guide presents examples and instructions for data analyses colleges can conduct to better understand student enrollments and completions in particular programs. Such analyses can help colleges scrutinize representation of historically marginalized groups in programs leading to relatively more opportunity after graduation. There is an equity imperative in this effort. Without disaggregating program enrollments with an eye to what those programs lead to—and interrogating and redesigning practices and policies perpetuating inequities—student success reform approaches such as guided pathways will likely continue to reinforce existing racial/ethnic, gender, and socioeconomic stratification. Examining representation across college programs with equity in mind—using example analyses and questions to reflect upon disaggregated program enrollments as we outline in this guide—is an important complement to the work colleges are doing to increase completion rates overall and close equity gaps. Further questioning—“Completion of what and by whom?”—prompts difficult yet important conversations around disparities in access to programs that lead to greater opportunity in terms of higher occupational earnings or better transfer outcomes.

To unpack program enrollments with equity in mind, we recommend that colleges undertake a series of data exercises and reflective discussions based on the following three questions:

1. What programs are our students currently enrolled in?
2. What opportunity does each program lead to in terms of further education (e.g., transfer to bachelor’s programs or bridges into more advanced workforce credentials) and/or immediate job prospects and earnings. Which programs lead to greater or lesser opportunity?
3. Is student representation across programs proportionate? Which subgroups of students (by race/ethnicity, gender, socioeconomic status, and age) are underrepresented in higher-opportunity programs?

To answer these questions, we show how to carry out a set of relatively simple data analyses that colleges can replicate using their own data. Nearly identical analyses could be used to examine program completions, though we focus on program enrollments in this guide. We originally developed the analyses in partnership with the Washington State Board of Community and Technical Colleges (SBCTC) and tested the activities through workshops with the Washington community colleges. While we think these exercises would be useful to any community college seeking to critically examine its program enrollments and completions, we have found through the workshops that they can be particularly useful for colleges seeking to encourage or sustain institutional momentum for guided pathway reforms.

Analyzing Equity in Program Enrollments

In the following we describe equity analyses of program enrollments that we conducted using data from Washington State’s 34 community and technical colleges, which as a system are implementing guided pathways reforms. We worked with the Washington SBCTC to develop a Tableau tool that Washington colleges could use to analyze their own data. Other colleges can conduct these same analyses using Excel, with a [template](#) available on CCRC’s website.

1. What programs are our students enrolled in?

The first step in these analyses is to produce a dataset with information on the program every student is currently enrolled in, based on the most specific program codes in a college's student information system. This includes not only students in well-defined programs like *nursing*, *criminal justice*, and *business*, but also students in more general programs like *AA/AS*, *general education*, and *pre-nursing*, as well as students who are indicated as *undecided*, *high school dual enrollment*, or *adult basic education* or whose program information is missing. To get the fullest picture of college enrollments, we recommend running this analysis for all students, including degree and non-degree seeking, full- and part-time, dual enrollment, and noncredit students (if data are available). To help connect these data back to policy and practice at the program level, the program enrollment information on each student should be as fine-grained as is available.

To illustrate, we provide a list from a college in Washington showing the 10 programs with the highest number of students enrolled. Here, more than half of students are enrolled in the top three programs, which are fairly general categories, while 20% of students are enrolled across the 163 programs beyond the top 10. This type of distribution—in which most students are in general or undefined programs—is typical at many community colleges, and indeed analyses showing results like these have served to motivate guided pathway reforms.

Table 1.
College A: Top 10 Enrolled Programs

Program Title	Percent of Total Fall 2018 Enrollment
Assoc in Arts/Sci	29.7%
Running Start (high school dual enrollment)	18.1%
Missing program title	12.2%
Pending	4.4%
Nursing	3.4%
Business Admin	3.0%
Prerequisites	2.5%
Associate in Sci	2.2%
Transfer/Undecided	2.2%
Undecided	2.2%
Other Programs (<i>n</i> = 163)	19.9%

Most colleges offer many programs. One way to get an overarching snapshot of a college's enrollments by program is to visualize them with a treemap, as shown in Figure 1. (If colleges do not have easy access to Tableau or other software that makes it possible to develop such illustrations, they are relatively easy to make in Excel.) Each rectangle represents one program (defined by the college's program code), with the area of the rectangle proportional to the share of overall enrollments.

Figure 1.
College A: Treemap of Program Enrollments

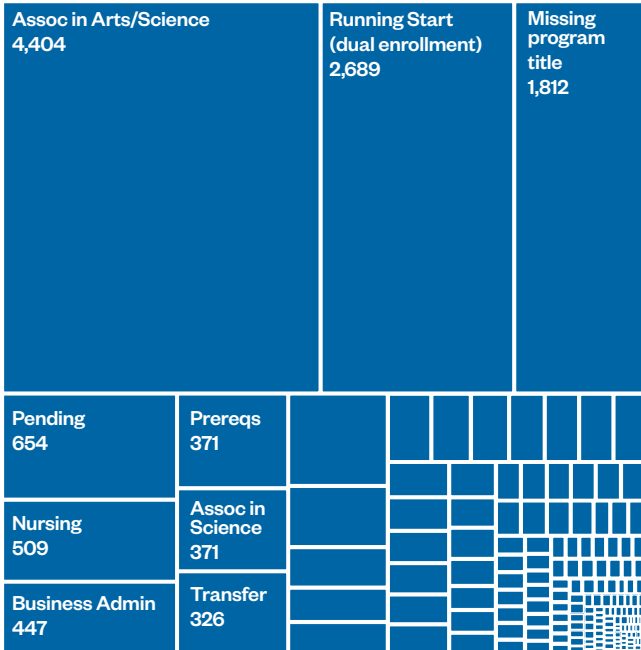
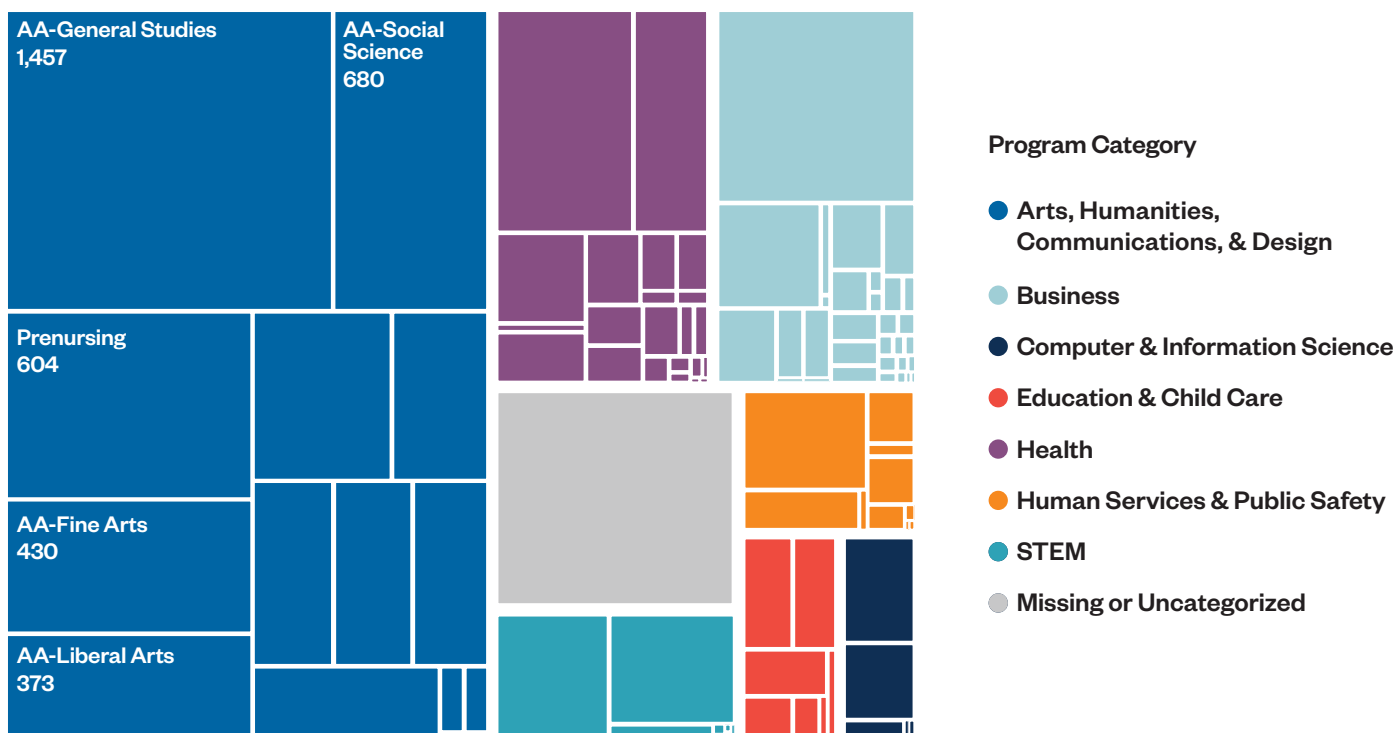


Figure 1 shows that, like most community colleges, College A offers a lot of programs. However, the largest groups of students are classified into general AA/AS, *Running Start* (Washington’s primary dual enrollment program), or *Missing program title*. Many programs, particularly in career-technical fields, enroll relatively small numbers of students. This kind of pattern is typical of many if not most community colleges.

Classifying programs by meta-major, or broad field of study, provides another useful illustration of what kinds of programs students are enrolled in. Figure 2 shows a similar treemap from another Washington community college (College B), but here we simulate what it would look like to nest individual programs within broader program categories (of the same color). Colleges could replicate these analyses to examine program enrollments within their own meta-majors, academic divisions, or other broad programmatic groupings. As you can see, while the largest group of students at this college is still enrolled in the broad program, *AA-general studies*, most students in the Arts, Humanities, Communication, and Design meta-major are classified into specific pre-major transfer programs.

Figure 2.**College B: Treemap of Program Enrollments by Meta-Major**

Note. The broader groupings in Figure 2 are based on CCRC analysis intended to illustrate common meta-major categories and are not the meta-major definitions of any particular college.

In addition to using broad field or meta-major indicators, college researchers should include in the dataset information that will enable colleges to disaggregate program counts by student race/ethnicity, gender, and age, as well as first-time vs. returning status, dual enrollment vs. post-high school enrollee, credit vs. non-credit student, etc. This will be important when assessing equitable student representation in program enrollments.

2. What opportunity do our programs lead to?

Once colleges have mapped enrollment in programs, the next step is to classify those programs by whether they lead to higher or lower opportunity outcomes for graduates. In our work in Washington State we developed the framework shown in Table 2. In this framework, we categorize career-technical programs into whether those programs lead to lower- or higher-paying jobs for graduates based on a study of the actual earnings of graduates from those programs by researchers at the Washington SBCTC.² For students in transfer programs, we distinguish between structured transfer programs—those that are explicitly designed to prepare students for transfer with junior standing in a major at a four-year destination college—from unstructured general education associate of arts programs, based on research from Washington and California indicating that students in structured transfer programs are more likely to transfer, earn bachelor's degrees, and to do so with fewer excess credits than those in unstructured transfer programs (Baker, 2016; Washington State Board for Community and Technical Colleges, 2014, 2018).

Table 2.
Program Classification by Post-Graduation Opportunity

Opportunity Category	Description	Examples
Workforce: Low	Program places students into lower-paying jobs (e.g., less than \$14 per hour*)	automotive technology, criminal justice, early childhood
Workforce: Medium	Program places students into middle-paying jobs (e.g., between \$14-\$17.55 per hour*)	accounting, business management, dental assistant, welding
Workforce: High	Program places students into higher-paying jobs (e.g., more than \$17.55 per hour*)	dental hygiene, nursing, radiology technology, sonography
Transfer: Unstructured	Program designed for general transfer (no pre-major or university destination necessarily specified)	AA-general studies, general transfer
Transfer: Structured	Program designed for transfer to a particular bachelor's degree major and/or a specific four-year destination college	AA-business (direct transfer agreement), AS-T (engineering)
Undeclared or Unknown	Listed as undeclared or missing program information	missing program, null, undeclared
Uncategorized or Other	Non-degree seeking, ESL, ABE, high school dual enrollment	Basic education, ESL, Running Start (high school dual enrollment)

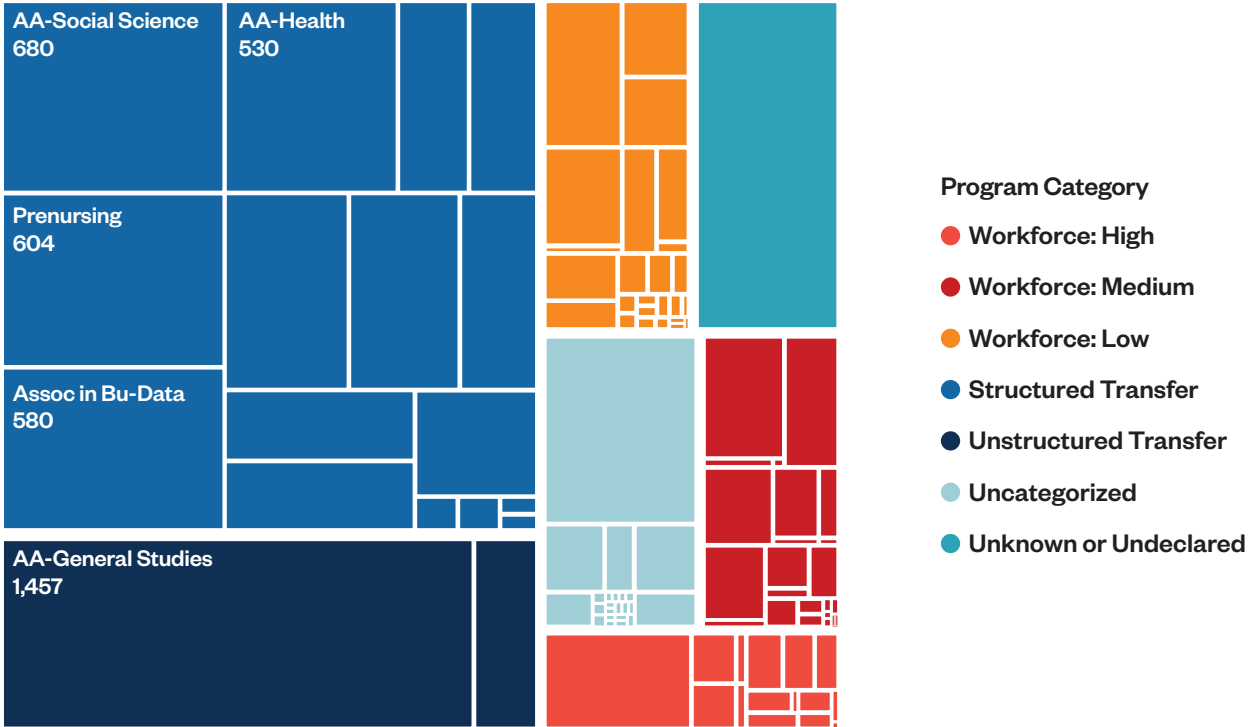
*The three hourly wage bands we use here are drawn from a 2015 analysis by the Washington SBCTC. We encourage colleges to update and adjust wage bands to be more relevant to their local labor markets.

Colleges carrying out a similar classification should be able to identify transfer programs that are well structured to prepare students to transfer with junior standing in a major from less-structured, general education-oriented associate of arts programs. And for their career-technical programs, colleges that do not have data on the actual earnings of graduates can use labor market data from state or other sources to estimate whether particular programs lead to low-, medium-, or high-paying jobs. The hourly wage bands colleges use will vary by their local labor markets.

Figure 3 shows College B's program enrollments again, but in this version we illustrate the programs nested within the opportunity categories from Table 2 (each with a different color). Note that while a substantial number of College B's students seeking to transfer are in the *AA-general studies* program, most are in structured transfer programs, such as *AA-social sciences*. Among students enrolled in workforce programs, 40% are enrolled in programs leading to lower-wage jobs. A number of students had no program enrollment information (*undeclared or unknown*) or were enrolled in programs that were not categorized.³ We encourage colleges not to exclude such students from their analyses, as it will be important to understand why they are not classified into a program with an identifiable outcome. For example, it may be that many students in programs identified as unclassified, undecided, or noncredit would like to be in a credit workforce or transfer program but are not aware of the options or not sufficiently prepared or supported to enroll in them.

Figure 3.

College B: Treemap of Program Enrollments by Opportunity Category

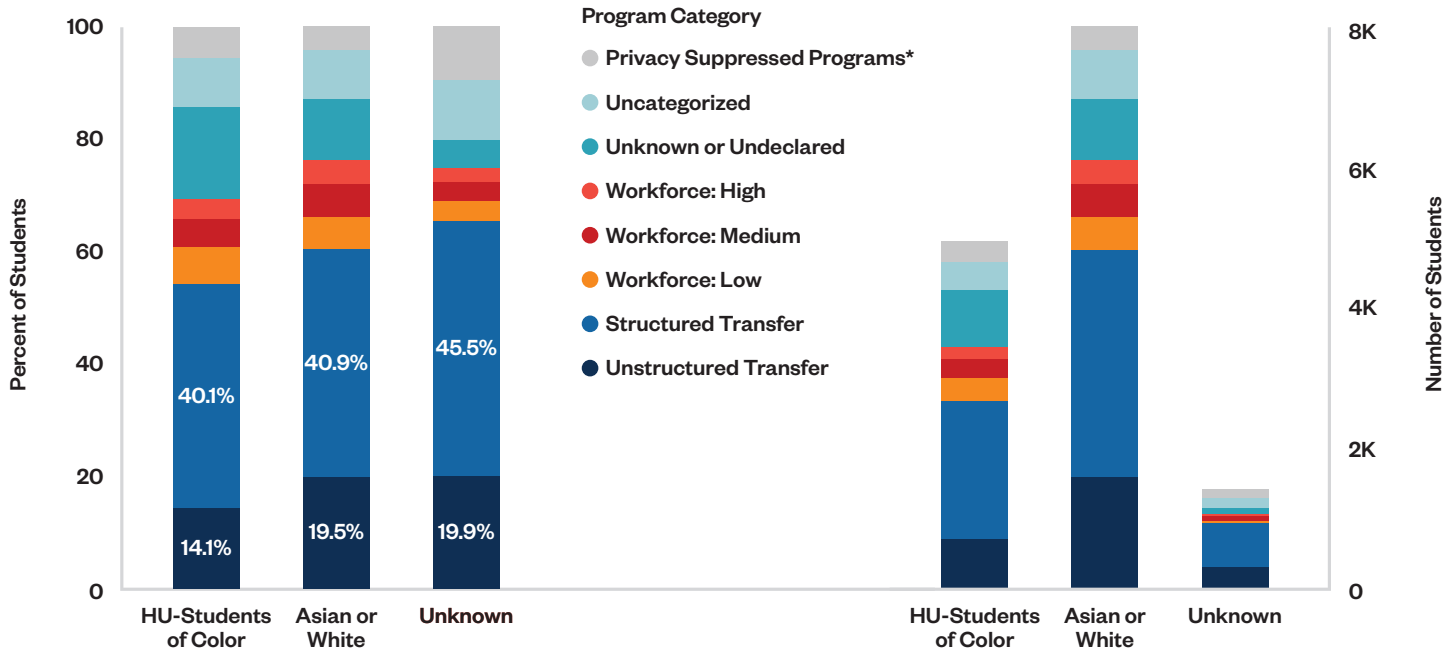


3. Is student representation across our programs equitable?

Once colleges have mapped out student enrollment in programs classified by whether they lead to higher or lower opportunity post-graduation, the question is whether representation in these programs is equitable. By equity in program enrollments, we refer to whether groups of students (e.g., by race/ethnicity, gender, income) are proportionately represented in different college programs, and specifically whether historically marginalized students (e.g., Black, Latinx, Native American, low-income) are proportionately represented in programs leading to higher opportunity post-graduation. For example, if Black students comprise 40 percent of total college enrollment but only 10 percent of students enrolled in structured transfer programs, that is not equitable representation.

Figure 4 illustrates how colleges might examine representation across programs by opportunity category. Here we compare enrollment rates (or participation rates) of different subgroups of students in programs leading to more or less opportunity. Figure 4 shows College B's program enrollments by opportunity category for historically underrepresented students of color (HU-students of color) compared to Asian and White students.⁴ One observation from this figure is that while Asian/White students and HU-students of color are enrolled at similar rates in unstructured transfer programs, nearly 20% of Asian/White students are enrolled in structured transfer programs, compared to 14% of HU-students of color.

Figure 4.
College B: Program Opportunity Categories by Race/Ethnicity

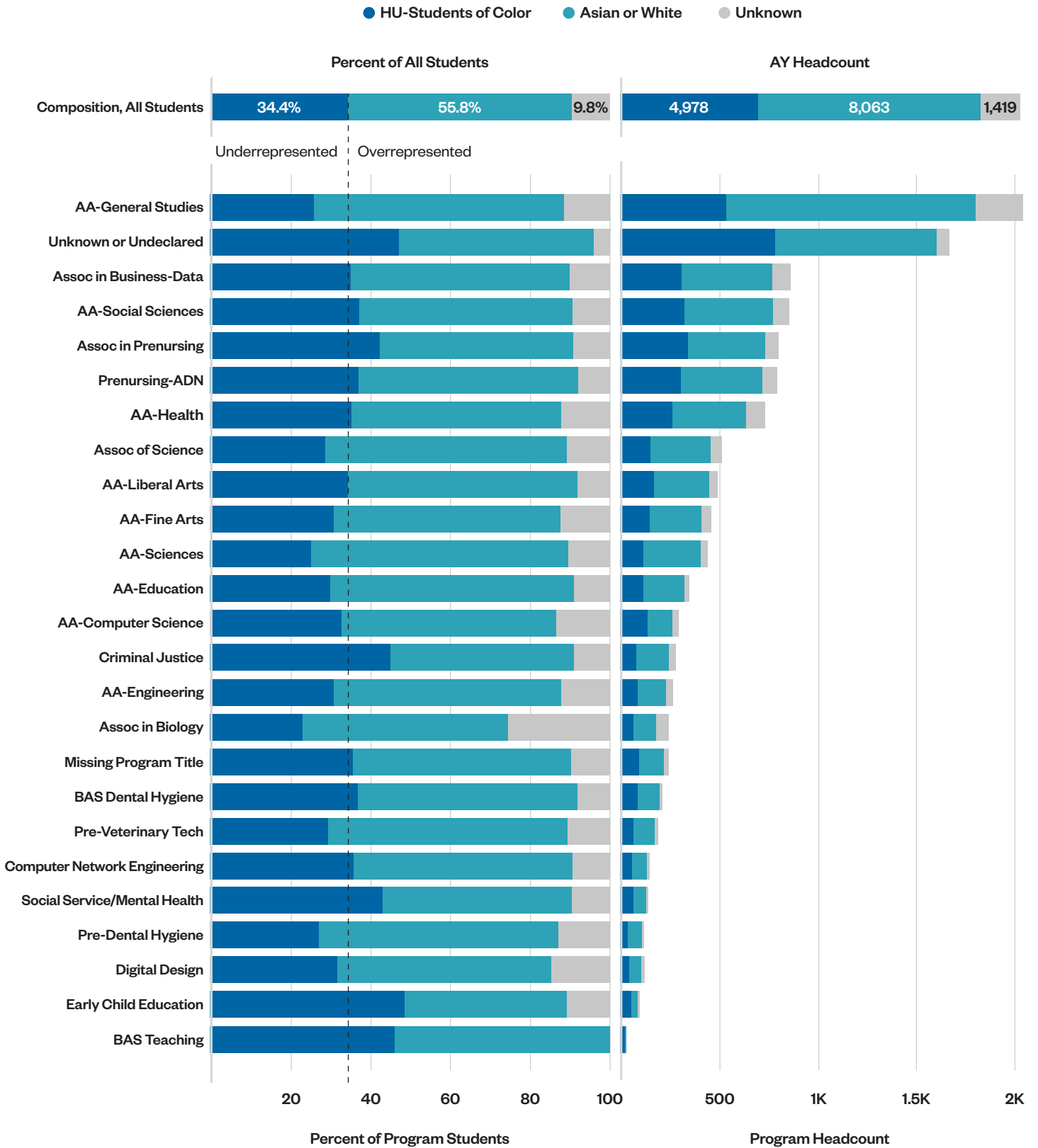


*This figure is based on a CCRC analysis of SBCTC data that required the suppression of program information among those programs with fewer than 10 students enrolled.

Another relatively simple and intuitive way of assessing equity in representation across different programs is to compare the demographic composition (e.g., gender, race/ethnicity) of the college as a whole to a specific program or group of programs (e.g., structured transfer programs or workforce programs leading to higher-paying jobs). Comparing compositions in this way gets at whether participation in higher-opportunity programs is proportionate across demographic subgroups. We recommend that colleges look both at the representation of student subgroups in different opportunity categories broadly defined (as shown in Figure 4) as well as in specific programs (as shown in Figure 5, keeping in mind what opportunity each program leads to).

Figure 5 shows the distribution of historically underrepresented students of color among College B’s top programs. It allows the comparison of the overall racial/ethnic composition of the college (34% HU-students of color) to that of each program, ranked by program size. By overlaying a line on the chart as we have, it becomes clear in which programs students of color are over- and under-represented. For example, HU-students of color are overrepresented in the *unknown or undeclared* program category and in three programs leading to lower wages (*criminal justice*, *early childhood education*, and *social services/mental health*). Figure 5 also shows that HU-students of color are underrepresented in many transfer programs, including the largest transfer program (unstructured *AA-general studies*) and several structured transfer programs (e.g., *AA-sciences* and *AA-engineering*). In order to inform and catalyze work aimed at more equitable representation of students in a college’s programs, we encourage colleges to replicate similar analyses using more detailed racial/ethnic categories as well as groupings based on student socioeconomic status, gender, and age.

Figure 5.
College B: Racial/Ethnic Composition of Top-Enrolled Programs



Getting Started: Data Exercise and Discussion

For colleges beginning to unpack program enrollments and completions with equity in mind, we recommend the following data exercise and accompanying discussion questions to support work to identify and address inequitable representation across programs of study. Disaggregating data on program enrollments and completions is an important starting point for working toward equitable representation, but in many ways the more challenging task is examining and redesigning practices through an equity lens. To do so, as scholars at the University of Southern California’s Center for Urban Education argue, requires “equity-mindedness” among college practitioners. Equity-minded practitioners not only examine disaggregated data, as described in this guide, but also critically reflect upon and address individual and institutional practices that lead to inequitable student outcomes. In order to benefit from the data exercise and questions outlined here, it is essential for colleges to foster equity-mindedness among college leaders, advisors, faculty, and other administrators, and to bring this mindset to free and open discussions of how to reform practices and policies to ensure equitable representation across college programs.⁵ This requires everyone to be involved, and we encourage college leaders to seek wide-ranging input from faculty, advisors, and students to examine and redesign college practices that may reinforce inequitable student representation in programs of study.

Data Exercise

To inform college discussion and planning around increasing equitable representation across programs, the following data exercise combines the three analyses described in the previous section into one table for discussion (following the template provided in Table 3). To complete the exercise, colleges should list their programs, ranked from largest to smallest enrollments, with the corresponding workforce/transfer opportunity category and demographic composition for each program. We recommend doing the exercise separately for two different two cohorts of students: (1) all new students at the college in a given term or academic year (identifying their initial program enrollment), and (2) all students enrolled at the college in a recent term (including first-time and continuing students, credit and noncredit students if available, degree- and non-degree-seeking students, full- and part-time students, and current and former dual enrollment high school students).⁶ Examining program enrollments on the first population will prompt discussion and planning around students’ initial entry into programs, while examination of the second population of students will provide the broadest view of all students enrolled at the college. Colleges may also find it useful to complete this exercise separately for student populations of particular interest to the college, such as high school dual enrollment students. We encourage colleges to build onto the template shown in Table 3, adding more sophistication to capture program enrollment patterns in more detail (e.g., examining gender and race/ethnicity combinations).

Table 3.
Information on Top-Enrolled Programs (Template)

Program Name	Workforce / Transfer Opportunity Category	Student Count	Demographic Composition (Examples)					
			Pct. Black/ Afr. Am.	Pct. Hispanic/ Latinx	Pct. White	Pct. Pell	Pct. Female	Pct. 25+
Collegewide								
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
Number of other programs with at least 1 student:								

Discussion Questions for College Teams

As colleges examine the information they have gathered, we encourage reflection on the following questions, as well as others that may surface, in order to move toward insight and action to advance equitable representation in program enrollments.

What programs are our students enrolled in, and what direct opportunities for further education and careers do those programs lead to?

- Which of our programs lead to relatively more and less opportunity in terms of immediate job prospects, earnings, transfer outcomes, or other opportunities for further education (e.g., bridges into more advanced workforce credentials)?
- How many students are enrolled in an unstructured or undefined program (e.g., *general studies, general transfer, or unknown/undeclared*)?
- What process does our college follow to identify which programs students are in? Do students indicate their program on their initial application? When and how is program information verified and updated?
- What supports are currently in place to help students explore program options and interests, gain experiences in a program of interest, and develop academic and career plans?

What student subgroups are over- and under-represented in our top enrolled programs?

- Compared to the demographic composition of the college overall (first line of Table 3), which programs have substantial differences in the proportion of Black/African American, Hispanic/Latinx, Native American, and Pacific Islander students? And which programs have substantial differences in the proportion of women, older students, and low-income students?
- What patterns do we observe between over-/under-representation in programs leading to higher and lower opportunity? For example, are Black students underrepresented in structured transfer programs?
- What is the student experience in exploring, selecting, and entering a program of study, and what might explain why certain groups are over- and under-represented across college programs? What practices and mindsets perpetuate inequitable representation across programs, and what is needed to work toward equitable representation?

Conclusion

Community colleges play an indispensable role as open-access institutions connecting students to opportunity. This is particularly true in economic downturns, such as that brought about by the COVID-19 pandemic, where diminished resources and financial uncertainty make it even more important for colleges to ensure that every student can both choose a program that advances their opportunity and develop a plan that helps them complete that program as efficiently and affordably as possible. It is especially important to increase opportunity for students from populations that have been underserved in higher education and marginalized in broader society, such as Black, Latinx, and Native American students. By clarifying the value of college programs to students and communities and ensuring equitable access to higher-opportunity programs, community colleges can strengthen their essential role as engines of community recovery and revitalization.

Endnotes

1. More than 300 community colleges across the country are implementing guided pathways reforms through formal initiatives (e.g., through state student success centers); CCRC has been studying the adoption of guided pathways reforms in 120 colleges nationally. See Jenkins et al. (2018).
2. An analysis by David Prince (Washington State Board for Community and Technical Colleges, 2015), updated by the SBCTC in 2018, categorized workforce degrees into those leading to higher- and lower-paying jobs based on state unemployment insurance wage records from graduates. Here we build upon this analysis by creating college-specific crosswalks that allow us to identify which programs led to the credentials attained by students who earned relatively more or less in the labor market post-graduation. For more technical details on this method, see Lin et al. (forthcoming).
3. Although our method for classifying programs in Washington accounts for college-specific program variation, grouping programs by what opportunity they lead to post-graduation will be most accurate when done locally. Our intention here is not to classify programs definitively but rather to describe a framework so college practitioners can adapt and apply it to their local contexts.
4. The Washington SBCTC includes American Indian/Alaska Native, Black/African American, Hispanic/Latinx, and Pacific Islander students in its category for historically underrepresented students of color.
5. For more information and resources on equity-mindedness, see the University of Southern California's Center for Urban Education [website](#), as well as its associated trainings, webinars, and other resources. For additional professional development to support equity-minded discussions, we also recommend the "Exploring and Engaging Equity" [video module](#) from the Office for Community College Research and Leadership at the University of Illinois.
6. Students enroll at community colleges for wide-ranging purposes, including noncredit upskilling through a single course (non-degree seeking students). We encourage colleges to begin in this exercise with the broadest view of their students in order to paint the fullest picture of who is enrolled at the college and how their program or purpose for attending is recorded. Colleges can then home in on subgroups of students (e.g., degree-seeking) through filters and subsequent analyses.

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Funding for this research was provided by the Pathways Collaborative Equity Partners Fund from the Office of Community College Research and Leadership at the University of Illinois and by the Bill & Melinda Gates Foundation. The findings and conclusions contained within are those of the authors and do not necessarily reflect positions or policies of the foundation. The authors are grateful for the contributions of Yuxin Lin, Maggie Fay, and Hana Lahr on this project, as well as for the support of the Washington community colleges and the Washington State Board for Community and Technical Colleges.

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