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FULL REPORT:

An Examination of Postsecondary Enrollment Trends of Pennsylvania High School Graduates During the COVID-19 Pandemic

Candy M. Miller and Rhonda Johnson

Pennsylvania Department of Education

Compliance Office, Office of Administration



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Evaluation

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Abstract

During the COVID-19 pandemic enrollment in postsecondary institutions declined nationally (NSC, 2020). While early statistics suggested there was an overall postsecondary enrollment decline in Pennsylvania (2020), less is known about how the postsecondary enrollment of new high school graduates was affected. In an attempt to address questions from the Pennsylvania Department of Education's (PDE) [Research Agenda](#), this research examines how the COVID-19 pandemic impacted postsecondary enrollment for students who graduated in the Class of 2020. This research also explores enrollment differences in postsecondary institution type, sector and residential status among high school graduates who enrolled in postsecondary and whether or not there were differences by student characteristics. Descriptive statistics suggest the COVID-19 pandemic may have negatively impacted postsecondary enrollment such that a smaller proportion of students from the Class of 2020 enrolled in postsecondary compared to previous years. Differences in enrollment were also identified by student characteristics. Specifically, differences in post-pandemic enrollment were identified by racial/ethnic group, economic disadvantage, special education and EL status. Among students who enrolled in postsecondary, a higher percentage of students enrolled in 4-year institutions than other types of institutions post-pandemic. Differences in institution type were also identified by race/ethnicity, EL status and socioeconomic disadvantage. These findings demonstrate how the COVID-19 pandemic altered the educational trajectory of Pennsylvania high school graduates and that some student groups were more impacted than others. Additional findings are discussed.



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Research and Evaluation

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The Pennsylvania Department of Education (PDE) Evaluation and Research project is an effort that was established through a State Longitudinal Data System (SLDS) Grant from the Institute of Education Sciences (IES), National Center for Education Statistics (NCES), awarded in October 2015. The Research and Evaluation project is an initiative to make full use of the P-16+ system data and other data sources to answer priority questions from the PDE research agenda, to form collaborative research partnerships, and to increase PDE's capacity to conduct research. Our mission is to evaluate and analyze data to provide insight that can be used to positively impact policy, inform decision making and lead to improved student outcomes.

Julie Patton | SLDS Grant Manager | PDE Project Manager
Phone: 717.346.1085 | jupatton@pa.gov

Candy M. Miller | Research and Evaluation Manager
Phone: 717.705.6499 | c-candmill@pa.gov

Pennsylvania Department of Education | Office of Administration
333 Market Street | Harrisburg, PA 17126-0333
Phone: 717.705.6499 | Fax: 717.787.3148

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The mission of the Department of Education is to ensure that every learner has access to a world-class education system that academically prepares children and adults to succeed as productive citizens. Further, the Department seeks to establish a culture that is committed to improving opportunities throughout the commonwealth by ensuring that technical support, resources, and optimal learning environments are available for all students, whether children or adults.

This research addresses questions from the Pennsylvania Department of Education’s (PDE) Research Agenda to better understand the ways in which COVID-19 has impacted postsecondary enrollment for Pennsylvania students.

Introduction

In recent years the COVID-19 pandemic has impacted the nation, as well as the Commonwealth of Pennsylvania, in ways that were previously inconceivable. While all facets of society have been impacted by the pandemic, education is arguably one of the most visibly affected. The measures that have been taken to ensure safety and health have touched elementary, secondary and postsecondary students alike. The impact of the pandemic on elementary and secondary school students has been widely discussed in popular media, as well as in the empirical literature (Huck & Zhang, 2021). Challenges related to access, student mental health, demographic concerns and learning loss abound the research literature concerning the impact of COVID-19 on students in Grades K – 12. Similar research is warranted to examine the effects of the pandemic on postsecondary education. This research addresses questions from the Pennsylvania Department of Education’s (PDE) Research Agenda ([PDE Research Agenda](#)) to better understand the ways in which COVID-19 has impacted postsecondary enrollment among Pennsylvania students. This research has the following objectives:

- **Investigate differences in postsecondary enrollment outcomes overall** and based on student demographic characteristics during the COVID-19 pandemic.
- **Compare postsecondary enrollment outcomes** between students pre- and post-COVID-19 pandemic.
- **Conduct research that helps guide policy decisions** geared towards improving postsecondary enrollment for Pennsylvania high school graduates.

Institution Type and Postsecondary Enrollment Trends During COVID-19

According to the National Center for Education Statistics (NCES) (U.S. Department of Education, 2019a), the number of students enrolling in postsecondary institutions has declined consistently over the past decade. Between 2013 and 2018 there was a 3.6% decline in postsecondary enrollment nationally. While the reasons for enrollment declines during this time are unclear, there have been assertions that a scarcity of jobs during economically challenging periods facilitates postsecondary enrollment (Oster, 2021; Schmidt, 2018). Conversely, the availability of employment during economically prosperous periods discourages enrollment (Oster, 2021; Schmidt, 2018). During a period of simultaneous economic prosperity and declining postsecondary enrollment nationally, the NCES reports that postsecondary enrollment in Pennsylvania decreased by 8.5% between 2013 and 2018 (U.S. Department of Education, 2019a), more than double the national statistic. While recent trends in postsecondary enrollment contribute to understanding, there is little doubt that the onset of the COVID-19 pandemic requires an even more timely and focused examination of postsecondary enrollment patterns. In fact, during the initial days of the COVID-19 pandemic, a survey of 192 college presidents revealed that 86% of college presidents felt fall and summer enrollment was the most pressing issue facing them (American Council on Education, 2020). As an example, researchers found that eleven percent of undergraduate students at a large, public university on the west coast withdrew from spring 2020 classes as a result of the pandemic (Aucejo et al., 2020). The effects of the pandemic were not limited to the spring 2020 semester. In fall 2020, among households where there was at least one student with plans to enroll in a community college, 40% of those households reported that the prospective student cancelled their enrollment plans (Belfield & Brock, 2020). Research conducted in the first few months of the pandemic revealed that 48% of high school seniors who initially planned on enrolling in a 4-year university, were likely to defer their enrollment or search for a different school if the fall semester was remote (Kim et al., 2020). An examination of data from a west-coast higher education system revealed that declines among first-time students (22%) outpaced declines among returning students (18%) (Bulman & Fairlie, 2021).

The onset of the COVID-19 pandemic requires a timely and focused examination of postsecondary enrollment patterns.

The pandemic altered the ways in which postsecondary institutions carried out their mission of educating students.

The pandemic altered the ways in which postsecondary institutions carried out their mission of educating students. Institutions across Pennsylvania confronted circumstances and challenges that would have seemed inconceivable previously. Concerns regarding the health and safety of students facilitated the implementation of remote instruction at levels never seen before (U.S. Department of Education, 2021). Beginning March 2020, and continuing into fall 2020, remote instruction became the predominant mode of instruction for colleges and universities nationally (see The College Crisis Initiative, 2021). In the face of COVID-19 surges, many postsecondary institutions continue to utilize remote instruction as a mode of instruction when needed. Despite the health and safety benefits of remote instruction during the pandemic, there is evidence to suggest this mode of instruction may not be an optimal option for some students. Hence, students who were not already connected to a postsecondary institution were less likely to persist with their education when forced to confront the impact the pandemic would have on their postsecondary experience.

While one can assume that concerns regarding remote instruction discouraged enrollment, particularly among high school seniors ready to move into postsecondary, it may not have been their primary concern. Among students still planning to enroll in a postsecondary institution in fall 2020, twenty-one percent of them indicated that they were changing their first-choice school, citing cost and location (Kim et al., 2020). Specifically, data suggests students who changed their top-choice school were most concerned that the cost of attendance was too high or that the school was not close enough to home (2020). These concerns were echoed by a nationally representative sample of parents of college-bound high school seniors. Specifically, 65% of parents indicated that the pandemic made them more cautious about the financial impact of tuition, while 40% of parents preferred their child attend a school closer to their home (Brian Communications, 2020). Another 63% of parents had a discussion with their child about attending a different school in fall 2020 (2020). Despite concerns related to cost and location, other data suggests there was not a net change in the proportion of high school seniors planning to enroll in postsecondary for the fall 2020 semester (Kim et al., 2020). In fact, while there was a small percentage of students who decided to forgo full-time enrollment in the fall semester, a similar proportion of students with alternate plans (students who were initially not planning to enroll in a postsecondary institution, students planning to attend a part-time program, and students planning to attend a 2-year program) instead decided to enroll full-time into a 4-year bachelor's program upon graduation from high school (2020). Collectively, these studies suggest the COVID-19 pandemic impacted postsecondary enrollment in fall 2020. However, it would be simplistic to assume that the only impact of the pandemic would be declining enrollment, when this research suggests shifts in enrollment are just as likely.

Data from the National Student Clearinghouse suggests there was a decrease in undergraduate postsecondary enrollment for fall 2020 across the nation (NSC, 2020a).

Data from the National Student Clearinghouse, or NSC, suggests there was a decrease in undergraduate postsecondary enrollment for fall 2020 across the nation (NSC, 2020a). Undergraduate postsecondary enrollment declined by 3.6% in fall 2020, more than twice the decline reported in fall 2019. Moving past fall 2020, data suggests spring 2021 undergraduate enrollment declined at an even higher rate (4.9%) nationally compared to the same time last year (NSC, 2021). While national declines in postsecondary enrollment are notable, it is interesting that these declines were not felt equally across postsecondary institutions. Declines in postsecondary enrollment varied across public and private institutions, as well as 2-year and 4-year institutions. The most substantive postsecondary enrollment losses in fall 2020 were identified at public 2-year institutions, where enrollment declined 10.1% nationally (NSC, 2020a). This trend continued into the spring of 2021, where a 9.5% decline was reported among public 2-year institutions (2021). These declines were more than triple the decline reported in the previous four years. Conversely, undergraduate enrollment at public 4-year institutions only decreased by 0.7% in fall 2020 compared to the previous year. The year-to-year decline in enrollment at public 4-year institutions was even larger for the spring 2021 semester, 1.9% (NSC, 2021). Enrollment declines were also evident at 4-year private institutions in fall 2020 (1.4%) (NSC, 2020a) and spring 2021 (2.8%) (NSC, 2021). The declines at those institutions were larger than declines in fall 2019. Overall, data from the NSC indicates undergraduate enrollment declined across all sectors of postsecondary education. However, the declines in enrollment were not evenly spread across institutions, as enrollment declines at 2-year institutions outpaced declines at other institutions.

Smaller studies support the disparate undergraduate enrollment data presented by the NSC during the COVID-19 pandemic. For instance, a study of postsecondary enrollment during COVID-19 found that

students who planned on enrolling at 2-year institutions cancelled their enrollment plans at twice the rate of students at 4-year institutions (Belfield & Brock, 2020). A separate study of postsecondary enrollment compared 2-year public and 4-year public institutions in California. The data demonstrated that there were increases in enrollment at 4-year institutions, yet 15% enrollment declines at 2-year institutions (Bulman & Fairlie, 2021). Hence, the onset of the COVID-19 pandemic resulted in lower postsecondary enrollment at 2-year institutions year-over-year, as well as when compared to 4-year institutions during the COVID-19 crisis. While there is not an explicit explanation for the disparity between enrollment trends at 2-year and 4-year institutions, there has been some suggestion that students at 2-year institutions face more economic challenges, therefore making them less likely to enroll in postsecondary (2020). Other evidence suggests students enrolled, or planning to enroll, in 2-year institutions were more fearful of contracting COVID-19 than their counterparts at 4-year institutions, making them less likely to enroll in a postsecondary institution (Belfield & Brock, 2020). However, the reason could be more straightforward. Students simply may have taken advantage of test-optional policies implemented at the height of the pandemic. These policies, which waived standardized testing requirements for admission, may have helped students who would not typically qualify for 4-year institutions be accepted into these institutions.

Data from the NSC suggests enrollment declines were even more pronounced among student's entering postsecondary for the first time.

Enrollment disparities are also evident within 4-year institutions. Specifically, declines in postsecondary enrollment were much more pronounced among students seeking a 2-year degree than students seeking a 4-year degree. At public 4-year institutions the decline in enrollment between fall 2019 to fall 2020 among students seeking an associate degree was 5.9%; compared to a decline of 6.6% from fall 2018 to fall 2019. However, the year-to-year decline in enrollment among students seeking a bachelor's degree at these same institutions in fall 2020 was significantly lower, 0.5% (NSC, 2020a). A similar pattern was identified among students attending private 4-year institutions. Compared to the previous year, fall 2020 enrollment declined 4.0% among students at these institutions seeking an associate degree, but only 1.3% among students seeking a bachelor's degree. These data suggest enrollment disparities are not just evident between different types of institutions, but also within the same types of postsecondary institutions. This nuance deserves additional attention.

Data from the NSC suggests enrollment declines were even more pronounced among student's entering postsecondary for the first time. Compared to fall 2019, freshmen student enrollment declined 13.1% in fall 2020 (NSC, 2020). Similar to enrollment patterns identified among the larger population of postsecondary students, the steepest first-time student declines were found at public 2-year institutions (22% decrease). Declines in enrollment were also identified at private 4-year institutions (10.5%) and public 4-year institutions (8.1%). It is worth noting that enrollment declines were noticeably larger among first-time students than the general student population across all institution types (2-year, 4-year, private and public institutions). Furthermore, compared to data trends from fall 2018 to fall 2019 (see NSC, 2020a), these data suggest the COVID-19 pandemic may have influenced the type of postsecondary institution students selected for fall 2020.

Disparities have also been reported for enrollment status. Across full-time and part-time students there were disparities in postsecondary enrollment. Among full-time students there was a 2.2% decline in postsecondary enrollment between fall 2019 and fall 2020; the decline in enrollment was slightly higher for part-time students, 3.1%, during the same time period (2020a). A closer examination of the data by institution type indicates there is a much more complex postsecondary enrollment dynamic at play among full-time and part-time students. According to NSC reports, there were postsecondary enrollment

increases in fall 2020 among part-time students attending 4-year public and private institutions, but very slight decreases in enrollment among full-time students (2020). Conversely, large declines in postsecondary enrollment were identified among full- and part-time students at 2-year public institutions, ranging from 9.9% – 10.6%. These data are consistent with the overall postsecondary enrollment data which suggests the largest decreases in enrollment were among 2-year public institutions.

Demographic Trends in Postsecondary Enrollment

Postsecondary enrollment variations during the COVID-19 pandemic may not be limited to the *types of institutions* students enroll in, but also the *types of students* who enroll. Differences in fall 2020 postsecondary enrollment were evident for gender (NSC, 2020a). Across all institutions there was a 5.1% decline in enrollment among men from the previous year, but only a 0.7% decrease among women (2020a). Fall 2020 postsecondary enrollment declines among women were slightly higher than previous years, but enrollment declines among men doubled declines from fall 2019. There is also data to suggest postsecondary enrollment plans differ by race and ethnicity. Early research by Simpson Scarborough (2020) revealed that Latino students, more than students from any other racial/ethnic group, were “very likely” to alter their postsecondary plans and that their options for enrollment were impacted by the COVID-19 pandemic. Furthermore, close to one-third of Latino high school seniors indicated that they would not enroll in a postsecondary institution in the fall due to the pandemic. Despite these prognostications, data from the NSC (2020b) suggests enrollment declines were largest among Native American (9.6%) and Black students (7.5%). Declines were also evident among White (6.6%), Hispanic (5.4%) and Asian-American (3.1%) students. There is also evidence to suggest that the economic impact of the pandemic disproportionately impacted students of color. Simpson Scarborough (2020) found that close to one-quarter or more of returning Latino, Black and Asian students indicated that their parents had been laid off or furloughed due to the pandemic. In comparison, only 18% of returning White students experienced similar financial changes. Hence, the unequal economic impact of COVID-19 on students of color may exacerbate an existing postsecondary enrollment disparity that has persisted for decades (Baker et al., 2018). Consistent with other postsecondary trends, this data suggests students of color faced more challenges related to postsecondary enrollment during the COVID-19 pandemic than their White counterparts.

The extent to which national data generalizes to Pennsylvania is unclear.

The extent to which national data generalizes to Pennsylvania is unclear. While the NSC reports that there was a 3.1% decrease in postsecondary enrollment in Pennsylvania between fall 2019 and fall 2020 (2020a), additional research is warranted to identify the nuances that have been discovered nationally and in other states. The current study will explore postsecondary enrollment trends in the Commonwealth during the COVID-19 pandemic.

Primary and Secondary Research Questions

Gaining clarity on the ways in which COVID-19 has impacted postsecondary enrollment in Pennsylvania is warranted, as the nation and the Commonwealth have approached, but not completely returned to, a pre-pandemic normal. As efforts to understand the relationship between the pandemic and student outcomes evolve, scholars worry that existing educational attainment gaps will widen during this crisis (Dorn et al., 2020). To gain a more nuanced understanding of the extent to which COVID-19 has altered the educational landscape for students across Pennsylvania, this research proposes to address the following research questions and sub-questions from the PDE Research Agenda:

- **PK–20 Policy:** How did COVID-19 impact postsecondary outcomes (enrollment in postsecondary) for students who graduated in the class of 2020, by student’s home location/school, student demographics and postsecondary institution?
- **Access to Postsecondary Education:** How did postsecondary enrollment of PA high school graduates change pre- and post-COVID-19?
 - o Are there differences based on institution type and sector (2 year/4 year, private/public), or attendance in-state versus out-of-state?
 - o Are there differences based on race, ethnicity, gender, socioeconomic status, geography?

Ultimately, this research will inform PK-20 Policy and Access to Postsecondary Education Research Agenda priority areas.

Methodology

Procedures and Data File Preparation

Data from the NSC Student Tracker Services and Pennsylvania Information Management System (PIMS) were used to address the research questions. The NSC data was used to determine whether a student enrolled in a postsecondary institution after graduating from high school. Despite having multiple postsecondary entries, across multiple years for most students, the current study was only interested in postsecondary enrollment that occurred within the first year of students’ high school graduation. In instances where a student had multiple enrollments within the first year after high school graduation, the researcher used an array of data points to manually select one of the enrollment points. The NSC dataset provided information regarding student enrollment status, which included *full-time* and *part-time* (half-time, three-quarters time, less than half-time) response categories. Additional outcomes of interest included residential status (*in-state* versus *out-of-state*) and institution type (*less than 2-years* versus *2-years* versus *4-years*; *public* versus *private*).

The PIMS dataset is a statewide longitudinal data system that provides extensive quantitative data for students in grades K – 12. Though the PIMS data files are particularly extensive, this research only used the *Student* template to acquire student demographic information (*gender, race/ethnicity, economic disadvantage, special education, EL status, urbanicity* and *region*) among four cohorts of Pennsylvania high school graduates from 2016/2017 through 2019/2020. See Table 1. Using students’ secure

identification number, the NSC and PIMS files were linked so that a data file was available for each cohort of high school graduates. The final files included NSC postsecondary enrollment information, as well as student demographic data. For the purposes of this study, cohorts 2016/2017 – 2018/2019 are identified as *pre-pandemic*, while cohort 2019/2020 is identified as *post-pandemic*.

TABLE 1. High School Graduation Cohorts by Postsecondary Enrollment Year

	Cohort	High School Graduation Year	Postsecondary Enrollment Year			
			2017/2018	2018/2019	2019/2020	2020/2021
Pre-Pandemic Cohorts	Cohort 1	2016/2017	X			
	Cohort 2	2017/2018		X		
	Cohort 3	2018/2019			X	
Post-Pandemic Cohort	Cohort 4	2019/2020				X

SAMPLE

Across all four cohorts the sample included 504,224 Pennsylvania high school graduates. Generally, the sample was equally distributed with regards to gender, as a little over 50% of the graduates identified as male and 49% identified as female. Across all cohorts about 70% of the sample identified as White, approximately 13% identified as Black and between 8.6% – 10.5% identified as Hispanic depending on the cohort. Though there was variation between cohorts, Asian, Multiracial, American Indian/Alaskan Native and Native Hawaiian/Pacific Islander students collectively represented five to seven percent of the sample. With regards to economic disadvantage, close to 40% of the sample was classified as being economically disadvantaged. Roughly 15% of the sample was identified as a special education student, and even fewer identified as EL students (2.3% – 3.1%). Concerning urbanicity, just under 55% of the sample graduated from a high school in a suburban area. Approximately 19% of the students represented in this research graduated from a high school located in a city, just under 17% graduated from a rural high school and a little more than 9% graduated from a high school located in a town. More than one-third of the students graduated from a high school in the Southeastern region of the state. Close to 20% graduated from a school in the South Central region, and approximately 18% of students graduated from schools in the Southwestern region of Pennsylvania. Students from Northeastern high schools represented approximately 13% of the sample, while students from Central/North Central and Northwest high schools each represented less than 10% of the high school graduates in Pennsylvania. See Table 2 for specific demographic data by cohort.

TABLE 2. Demographic Characteristics for Full Sample by Cohort

	Cohort 1 % (n)	Cohort 2 % (n)	Cohort 3 % (n)	Cohort 4 % (n)
Postsecondary Enrollment				
Enrolled	61.7 (77,808)	61.2 (77,371)	60.1 (75,958)	55.1 (69,088)
Not Enrolled	38.3 (48,311)	38.8 (49,072)	39.9 (50,340)	44.9 (56,276)
Gender				
Male	50.4 (63,588)	50.3 (63,567)	50.4 (63,675)	50.5 (63,297)
Female	49.6 (62,531)	49.7 (62,876)	49.6 (62,623)	49.5 (62,067)
Race				
Am. Indian/Alaskan Native	0.1 (167)	0.1 (162)	0.2 (190)	0.1 (185)
Black/African American	13.5 (17,061)	13.1 (16,608)	13.4 (16,864)	13.4 (16,849)
Hispanic	8.6 (10,906)	9.0 (11,437)	9.9 (12,506)	10.5 (13,179)
White/Caucasian	72.1 (90,921)	71.6 (90,476)	70.1 (88,574)	69.1 (86,667)
Multiracial	1.8 (2,327)	2.1 (2,660)	2.3 (2,881)	2.5 (3,141)
Asian	3.7 (4,629)	3.9 (4,983)	4.1 (5,178)	4.2 (5,239)
Native Hawaiian/Pac. Islander	0.1 (108)	0.1 (117)	0.1 (105)	0.1 (104)
Economic Disadvantage				
No	60.9 (76,762)	61.4 (77,668)	62.4 (78,769)	62.4 (78,179)
Yes	39.1 (49,357)	38.6 (48,775)	37.6 (47,529)	37.6 (47,185)
Special Education Status				
No	84.7 (106,804)	84.4 (106,728)	84.2 (106,340)	83.6 (104,787)
Yes	15.3 (19,315)	15.6 (19,715)	15.8 (19,958)	16.4 (20,577)
EL Status				
No	97.7 (123,266)	97.4 (123,158)	97.1 (122,584)	96.9 (121,527)
Yes	2.3 (2,853)	2.6 (3,285)	2.9 (3,714)	3.1 (3,837)
Urbanicity				
City	18.9 (23,881)	18.8 (23,666)	19.2 (24,271)	19.6 (24,522)
Suburb	54.4 (68,665)	54.5 (68,758)	54.7 (68,981)	54.7 (68,578)
Town	9.7 (12,227)	9.8 (12,410)	9.6 (12,069)	9.6 (11,989)
Rural	16.9 (21,335)	16.9 (21,352)	16.5 (20,771)	16.1 (20,209)
Region				
Central/North Central	5.7 (7,213)	5.8 (7,357)	5.8 (7,329)	5.8 (7,232)
Northeast	13.3 (16,728)	13.3 (16,828)	13.4 (16,909)	13.3 (16,659)
Northwest	7.4 (9,333)	7.4 (9,329)	7.1 (8,910)	6.9 (8,697)
South Central	20.5 (25,818)	20.8 (26,257)	20.8 (26,166)	21.0 (26,327)
Southeast	34.9 (44,032)	34.6 (43,673)	35.3 (44,570)	35.4 (44,384)
Southwest	18.2 (22,995)	18.0 (22,742)	17.6 (22,208)	17.6 (21,999)

Results

■ Research Question 1:

How did COVID-19 impact postsecondary outcomes (enrollment in postsecondary) for students who graduated in the class of 2020, by student's home location/school and student demographics?

Descriptive analyses were conducted to examine rates of postsecondary enrollment across cohorts. Pre-pandemic postsecondary enrollment ranged from 60.1% to 61.7%, compared to a lower rate of 55.1% among students who were in the post-pandemic cohort. See Table 2.

Descriptive statistics, including frequencies and percentages, were run to assess demographic characteristics of non-enrolled and enrolled postsecondary students by cohort. Specifically, statistics by gender, race/ethnicity, economic disadvantage status, special education status, EL status, urbanicity and region were examined. For clarity, descriptive statistics are shown separately for non-enrolled and enrolled postsecondary students in Table 3 and Table 4 below.

TABLE 3. Demographic Characteristics for Students Not Enrolled in Postsecondary by Cohort

	Cohort 1 % (n)	Cohort 2 % (n)	Cohort 3 % (n)	Cohort 4 % (n)
Postsecondary Enrollment				
Enrolled	*****	*****	*****	*****
Not Enrolled	38.3 (48,311)	38.8 (49,072)	39.9 (50,340)	44.9 (56,276)
Gender				
Male	58.1 (28,051)	58.6 (28,755)	58.9 (29,671)	58.7 (33,035)
Female	41.9 (20,260)	41.4 (20,317)	41.1 (20,669)	41.3 (23,241)
Race				
Am. Indian/Alaskan Native	0.2 (87)	0.2 (79)	0.2 (92)	0.2 (99)
Black/African American	16.6 (8,034)	16.3 (8,007)	17.2 (8,673)	17.1 (9,628)
Hispanic	12.1 (5,861)	12.4 (6,099)	13.6 (6,855)	14.5 (8,186)
White/Caucasian	67.1 (32,423)	66.8 (32,804)	64.6 (32,539)	63.3 (35,644)
Multiracial	2.1 (1,020)	2.4 (1,158)	2.6 (1,310)	3.0 (1,666)
Asian	1.8 (847)	1.8 (887)	1.7 (842)	1.8 (1,008)
Native Hawaiian/ Pac. Islander	0.1 (39)	0.1 (38)	0.1 (29)	0.1 (45)
Economic Disadvantage				
No	46.3 (22,369)	46.6 (22,870)	48.2 (24,261)	49.0 (27,589)
Yes	53.7 (25,942)	53.4 (26,202)	51.8 (26,079)	51.0 (28,687)
Special Education Status				
No	71.4 (34,496)	71.4 (35,048)	71.7 (36,116)	72.2 (40,613)
Yes	28.6 (13,815)	28.6 (14,024)	28.3 (14,224)	27.8 (15,663)
EL Status				
No	96.2 (46,485)	96.0 (47,098)	95.4 (48,034)	95.2 (53,582)
Yes	3.8 (1,826)	4.0 (1,974)	4.6 (2,306)	4.8 (2,694)

	Cohort 1 % (n)	Cohort 2 % (n)	Cohort 3 % (n)	Cohort 4 % (n)
Urbanicity				
City	23.3 (11,253)	23.3 (11,391)	24.6 (12,310)	24.9 (13,982)
Suburb	44.9 (21,701)	44.7 (21,811)	45.0 (22,556)	45.8 (25,768)
Town	12.4 (5,996)	12.5 (6,083)	12.2 (6,094)	11.7 (6,575)
Rural	19.4 (9,352)	19.5 (9,533)	18.3 (9,177)	17.6 (9,886)
Region				
Central/North Central	6.8 (3,309)	6.7 (3,293)	6.7 (3,363)	6.5 (3,675)
Northeast	12.6 (6,089)	12.8 (6,230)	12.8 (6,400)	12.9 (7,279)
Northwest	8.4 (4,034)	8.5 (4,145)	8.2 (4,096)	7.6 (4,293)
South Central	24.2 (11,702)	24.8 (12,119)	24.5 (12,282)	24.3 (13,658)
Southeast	30.4 (14,701)	29.9 (14,590)	31.0 (15,537)	31.8 (17,881)
Southwest	17.5 (8,476)	17.3 (8,441)	16.9 (8,459)	16.8 (9,425)

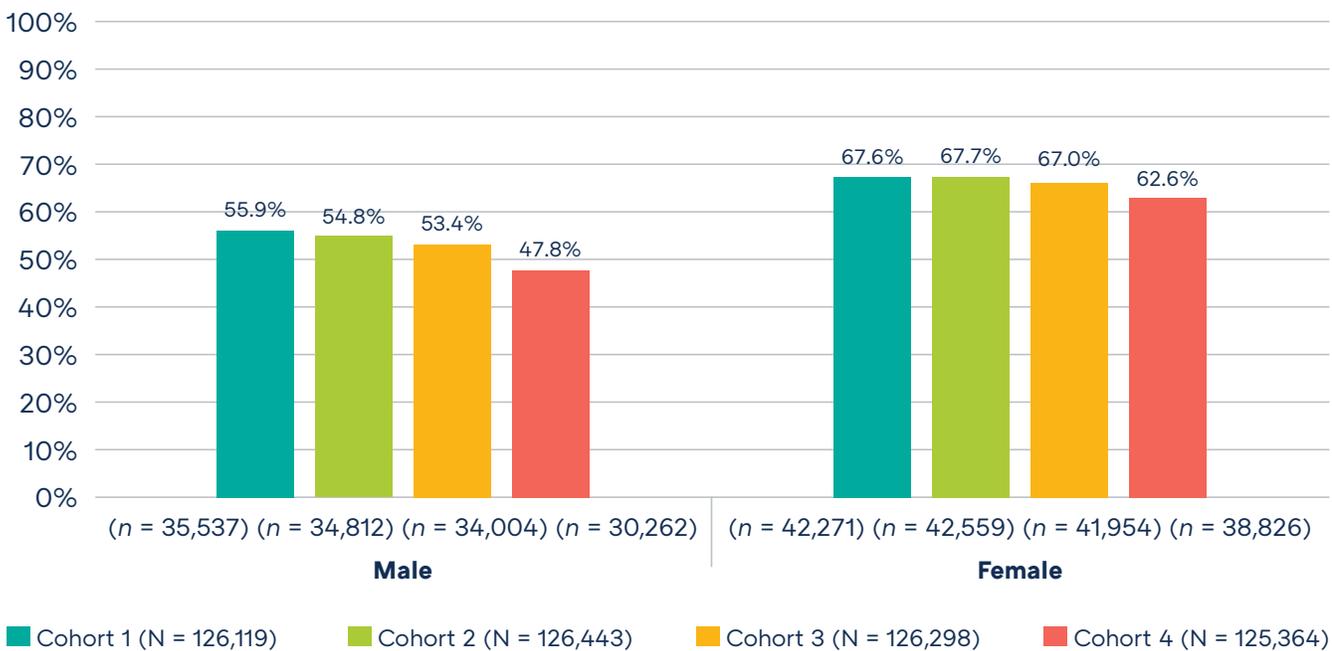
TABLE 4. Demographic Characteristics for Students Enrolled in Postsecondary by Cohort

	Cohort 1 % (n)	Cohort 2 % (n)	Cohort 3 % (n)	Cohort 4 % (n)
Postsecondary Enrollment				
Enrolled	61.7 (77,808)	61.2 (77,371)	60.1 (75,958)	55.1 (69,088)
Not Enrolled	*****	*****	*****	*****
Gender				
Male	45.7 (35,537)	45.0 (34,812)	44.8 (34,004)	43.8 (30,262)
Female	54.3 (42,271)	55.0 (42,559)	55.2 (41,954)	56.2 (38,826)
Race				
Am. Indian/Alaskan Native	0.1 (80)	0.1 (83)	0.1 (98)	0.1 (86)
Black/African American	11.6 (9,027)	11.1 (8,601)	10.8 (8,191)	10.5 (7,221)
Hispanic	6.5 (5,045)	6.9 (5,338)	7.4 (5,651)	7.2 (4,993)
White/Caucasian	75.2 (58,498)	74.5 (57,672)	73.8 (56,035)	73.9 (51,023)
Multiracial	1.7 (1,307)	1.9 (1,502)	2.1 (1,571)	2.1 (1,475)
Asian	4.9 (3,782)	5.3 (4,096)	5.7 (4,336)	6.1 (4,231)
Native Hawaiian/ Pac. Islander	0.1 (69)	0.1 (79)	0.1 (76)	0.1 (59)
Economic Disadvantage				
No	69.9 (54,393)	70.8 (54,798)	71.8 (54,508)	73.2 (50,590)
Yes	30.1 (23,415)	29.2 (22,573)	28.2 (21,450)	26.8 (18,498)
Special Education Status				
No	92.9 (72,308)	92.6 (71,680)	92.5 (70,224)	92.9 (64,174)
Yes	7.1 (5,500)	7.4 (5,691)	7.5 (5,734)	7.1 (4,914)
EL Status				
No	98.7 (76,781)	98.3 (76,060)	98.1 (74,550)	98.3 (67,945)
Yes	1.3 (1,027)	1.7 (1,311)	1.9 (1,408)	1.7 (1,143)
Urbanicity				
City	16.2 (12,628)	15.9 (12,275)	15.7 (11,961)	15.3 (10,540)
Suburb	60.4 (46,964)	60.7 (46,947)	61.1 (46,425)	62.0 (42,810)
Town	8.0 (6,231)	8.2 (6,327)	7.9 (5,975)	7.8 (5,414)
Rural	15.4 (11,983)	15.3 (11,819)	15.3 (11,594)	14.9 (10,323)
Region				
Central/North Central	5.0 (3,904)	5.3 (4,064)	5.2 (3,966)	5.1 (3,557)
Northeast	13.7 (10,639)	13.7 (10,598)	13.8 (10,509)	13.6 (9,380)
Northwest	6.8 (5,299)	6.7 (5,184)	6.3 (4,814)	6.4 (4,404)
South Central	18.1 (14,116)	18.3 (14,138)	18.3 (13,884)	18.3 (12,669)
Southeast	37.7 (29,331)	37.6 (29,083)	38.2 (29,033)	38.4 (26,503)
Southwest	18.7 (14,519)	18.5 (14,301)	18.1 (13,749)	18.2 (12,574)

Pre-Pandemic and Post-Pandemic Differences in Postsecondary Enrollment by Gender

Crosstab analyses were conducted to assess *differences in student demographic characteristics among cohorts that enrolled in postsecondary institutions pre-pandemic (Cohort 1, Cohort 2 and Cohort 3) and cohorts that enrolled post-pandemic (Cohort 4)*. An examination of postsecondary enrollment among pre-pandemic and post-pandemic cohorts shows a slight, but similar, decrease in enrollment for males and females. As Figure 1 shows, a larger proportion of male and female students enrolled in postsecondary institutions pre-pandemic than post-pandemic. Among the pre-pandemic cohorts, postsecondary enrollment ranged from 53.4% (Cohort 3) to 55.9% (Cohort 1) for males and 67.0% (Cohort 3) to 67.7% (Cohort 2) for females. However, enrollment in the post-pandemic cohort, Cohort 4, was noticeably lower for both males (47.8%) and females (62.6%).

FIGURE 1. Percentage of Students Enrolled in Postsecondary by Gender for Cohort 1 through Cohort 4

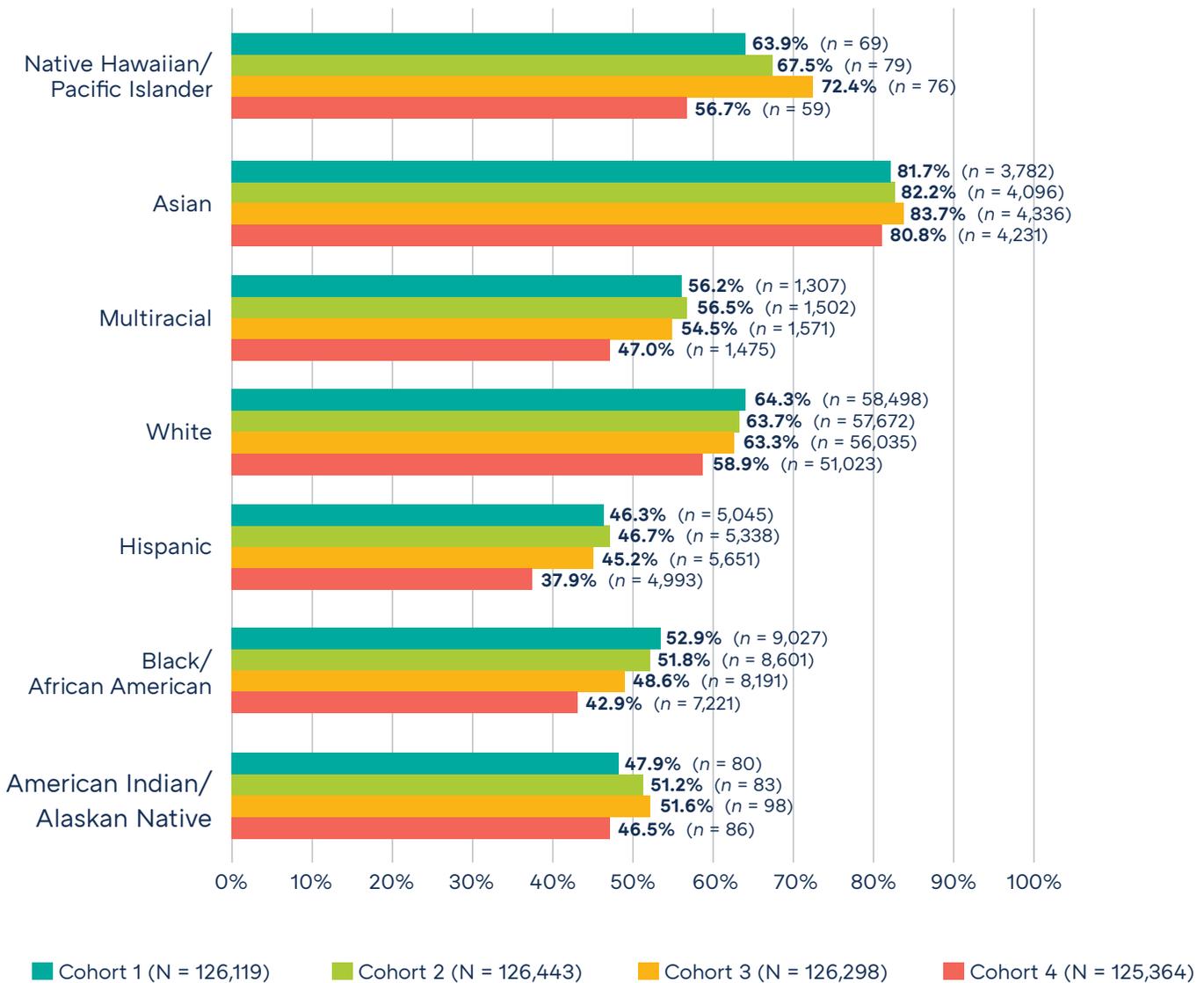


Pre-Pandemic and Post-Pandemic Differences in Postsecondary Enrollment by Race/Ethnicity

Although each racial/ethnic group experienced a notable decrease in postsecondary enrollment pre- to post-pandemic, analyses show differences in the amount of change within and between groups. Among Native Hawaiian/Pacific Islander students there was a noticeable yearly increase in enrollment for Cohort 1 (63.9%), Cohort 2 (67.5%) and Cohort 3 (72.4%). However, from Cohort 3 to Cohort 4 (post-pandemic) there was a marked decrease in enrollment (56.7%). The decrease in enrollment in this group outpaced all other racial/ethnic groups. Among pre-pandemic cohorts of Multiracial students' rates of postsecondary enrollment spanned 54.5% (Cohort 3) to 56.5% (Cohort 2) but dropped to 47.0% ($n = 1,475$) for school year 2019/2020. Among White and Black/African American students, postsecondary enrollment was

trending down slightly between Cohort 1 and Cohort 3. However, enrollment declined to a much lower level for post-pandemic Cohort 4 for White (58.9%) and Black/African American (42.9%) students. Conversely, postsecondary enrollment among Hispanic and American Indian/Alaskan Native students was trending up between Cohort 1 and Cohort 3. Yet rates among these groups also declined for Cohort 4 (Hispanic: 37.9%; American Indian/Alaskan Native: 46.5%). There was also a decrease in postsecondary enrollment between pre-pandemic and post-pandemic cohorts for Asian students. However, the decline in enrollment for Asian students was less than other student groups. See Figure 2.

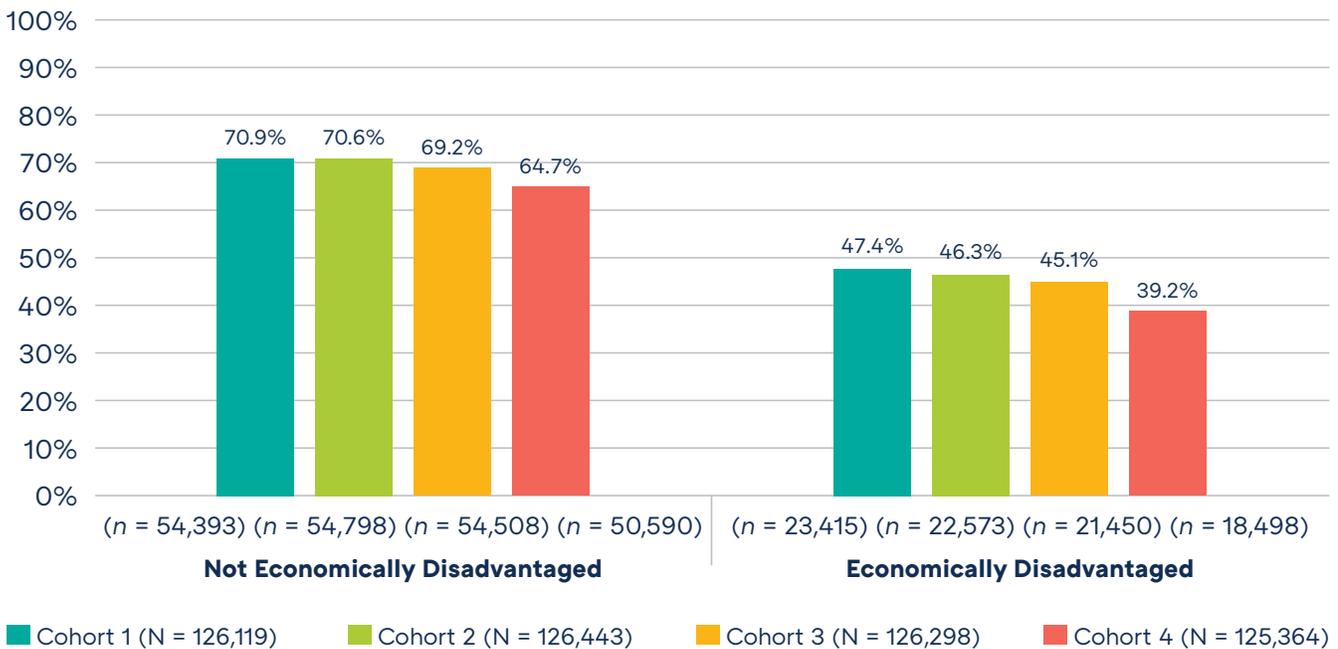
FIGURE 2. Percentage of Students Enrolled in Postsecondary by Race/Ethnicity for Cohort 1 through Cohort 4



Pre-Pandemic and Post-Pandemic Differences in Postsecondary Enrollment by Economic Disadvantage

Crosstab analyses showed substantial differences in postsecondary enrollment among pre-pandemic and post-pandemic cohorts regardless of economic disadvantage. With regards to students who experienced economic disadvantage, between 45.1% (Cohort 3) and 47.4% (Cohort 1) of students enrolled in postsecondary pre-pandemic, compared to 39.2% post-pandemic. Students who were not economically disadvantaged also experienced a decrease pre- to post-pandemic of almost five percentage points, 64.7% post-pandemic compared to a range of 69.2% to 70.9% pre-pandemic.

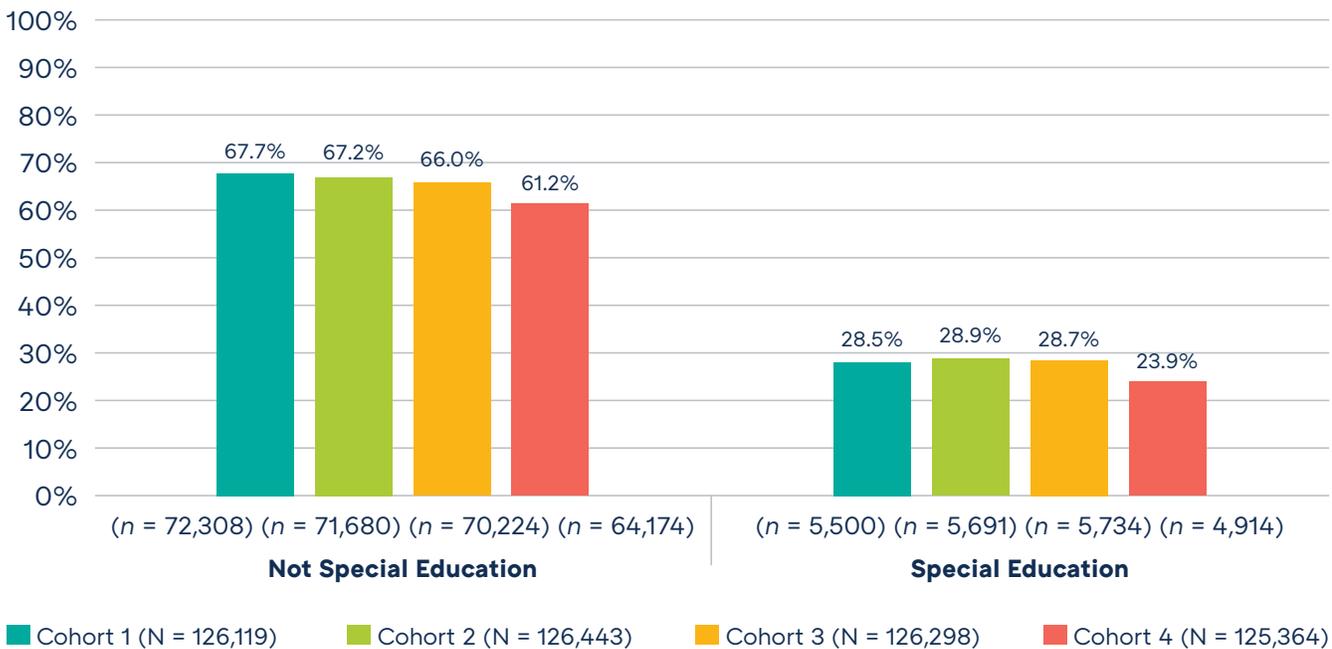
FIGURE 3. Percentage of Students Enrolled in Postsecondary by Economic Disadvantage for Cohort 1 through Cohort 4



Pre-Pandemic and Post-Pandemic Differences in Postsecondary Enrollment by Special Education

Like economic disadvantage, declines in postsecondary enrollment were similar regardless of a student's special education status. Enrollment for Cohorts 1, 2 and 3 (pre-pandemic) hovered close to 29% for special education students and dropped to 23.9% in Cohort 4 (post-pandemic). Similar pre-pandemic and post-pandemic declines in enrollment were also noticeable among students who were not special education, indicating enrollment declines were comparable across special education status. See Figure 4.

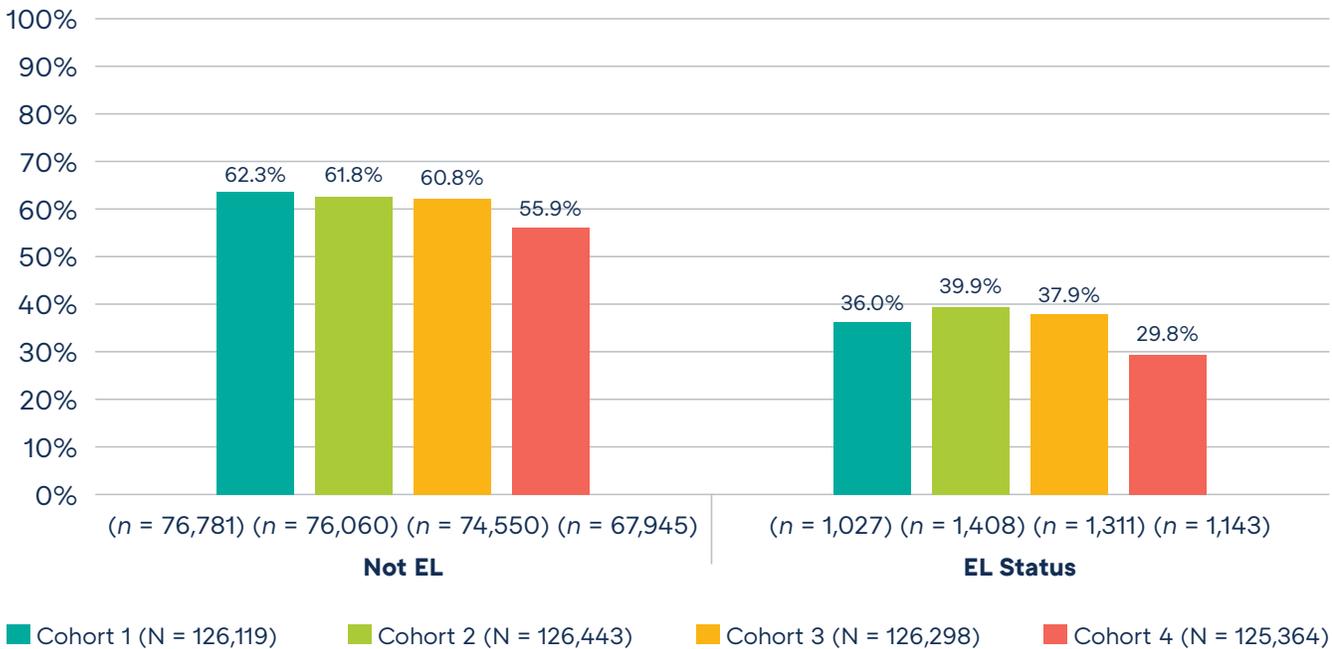
FIGURE 4. Percentage of Students Enrolled in Postsecondary by Special Education for Cohort 1 through Cohort 4



Pre-Pandemic and Post-Pandemic Differences in Postsecondary Enrollment by EL Status

Pre- and post-pandemic declines in postsecondary enrollment were observed among students who identified as EL and students who did not identify as EL. Cohort 1 postsecondary enrollment among EL students sat at 36.0%, 39.9% for Cohort 2 and 37.9% for Cohort 3. Yet enrollment fell to 29.8% for Cohort 4. While initial levels of enrollment were higher among non-EL student's post-pandemic postsecondary enrollment declined among this group as well, but to a lesser extent. Pre-pandemic enrollment among non-EL students ranged from 60.8% to 62.3% but dropped to 55.9% post-pandemic. While there were declines in enrollment among both groups, there was a steeper decline among EL students compared to their non-EL counterparts.

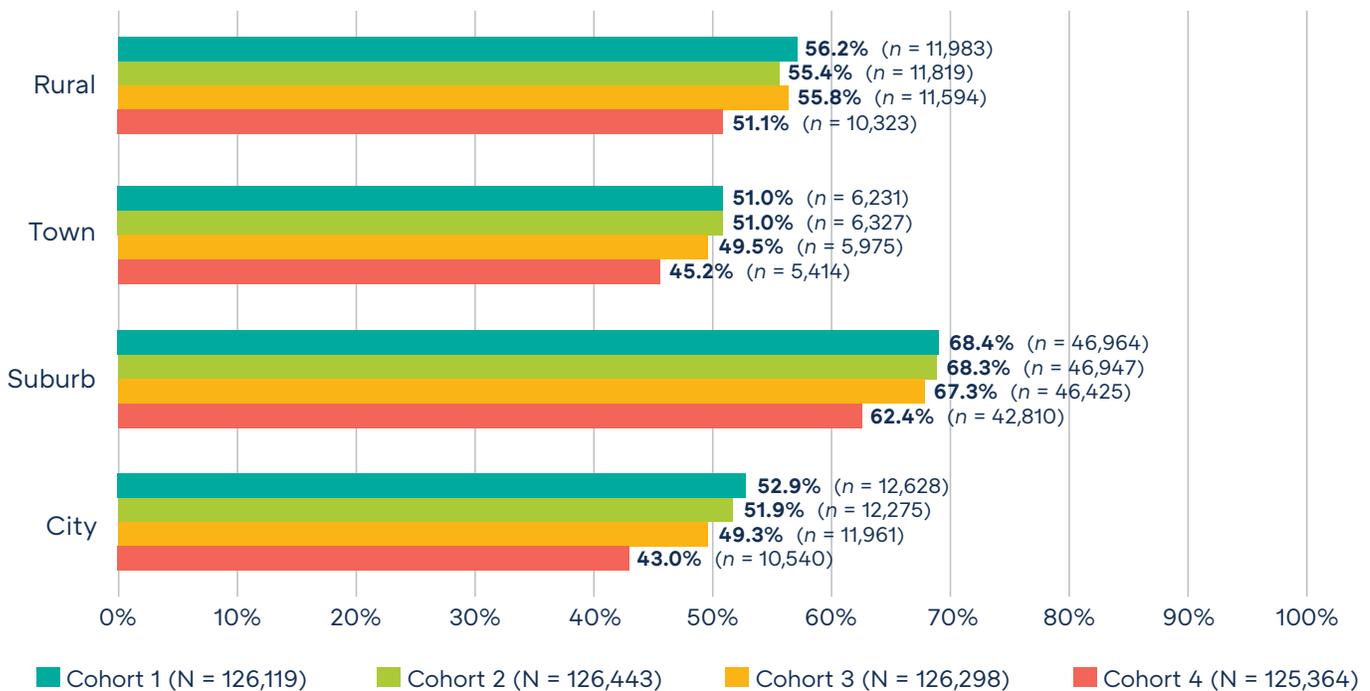
FIGURE 5. Percentage of Students Enrolled in Postsecondary by EL Status for Cohort 1 through Cohort 4



Pre-Pandemic and Post-Pandemic Differences in Postsecondary Enrollment by Urbanicity

Pre-pandemic and post-pandemic differences in enrollment were identified for students across all location types (see Figure 6). The decline in enrollment was comparable among students from rural communities, towns and suburban areas. Compared to students from rural communities, towns, and suburbs there was a slightly larger decrease in post-pandemic enrollment among students who graduated from high schools in the city. Among students who graduated from high schools in the city, only 43.0% of students in the post-pandemic cohort enrolled in postsecondary, while 49.3% to 52.9% students enrolled from pre-pandemic cohorts. This enrollment decline was slightly larger than what was reported for students from rural communities, towns, and suburbs.

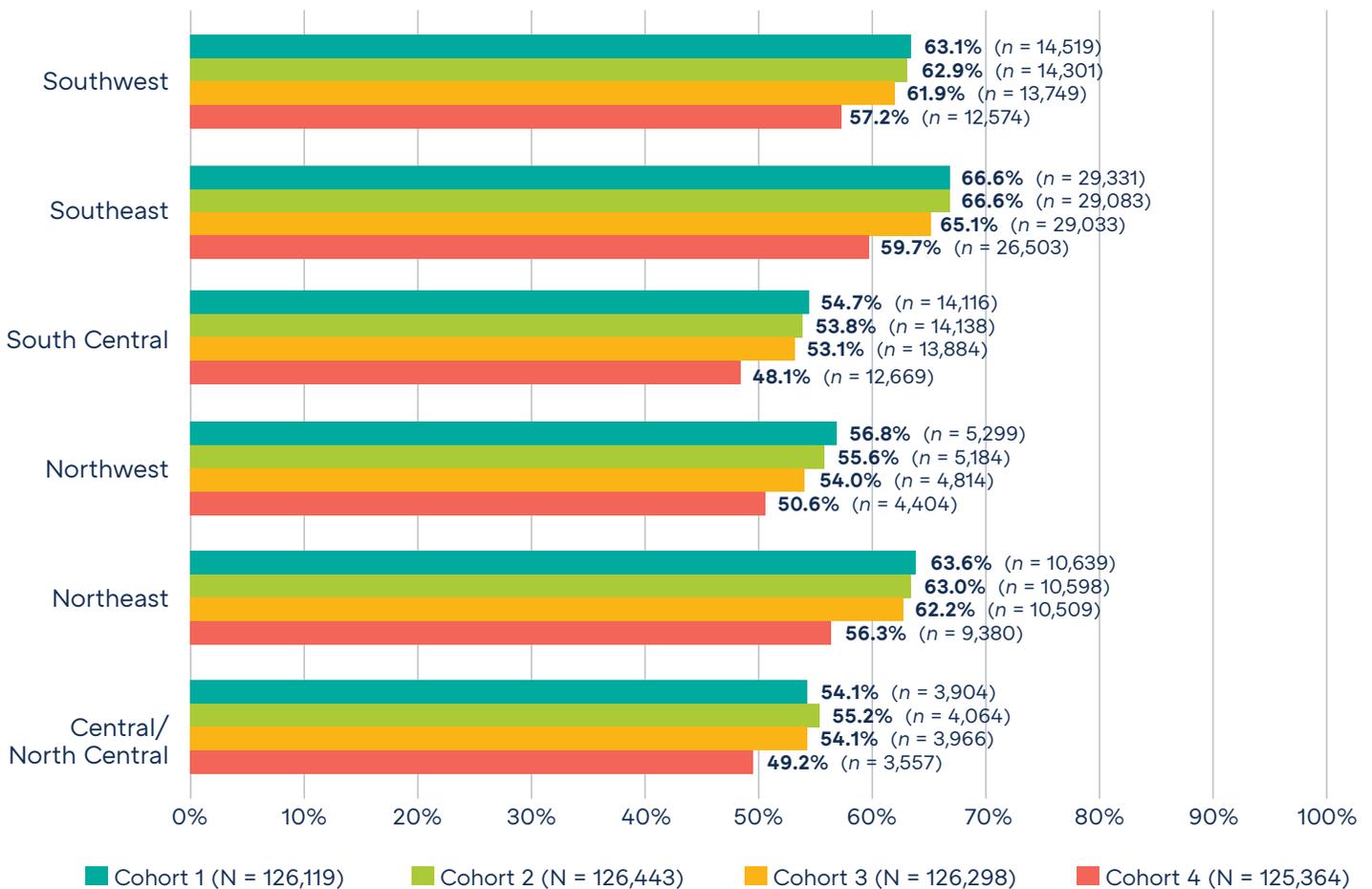
FIGURE 6. Percentage of Students Enrolled in Postsecondary by Urbanicity for Cohort 1 through Cohort 4



Pre-Pandemic and Post-Pandemic Differences in Postsecondary Enrollment by Region

Crosstab analyses showed comparable pre- and post-pandemic postsecondary enrollment declines across regions. Rates of post-pandemic postsecondary enrollment decreased at similar rates for students from the Southwest, Southeast, South Central, Northwest and Central/North Central regions of Pennsylvania. The decrease in postsecondary enrollment was slightly higher among students who resided in the Northeastern region of the Commonwealth. Pre-pandemic enrollment ranged from 62.2% to 63.6% but dropped to 56.3% post-pandemic. Hence, the decline in enrollment was slightly higher among students from Northeastern Pennsylvania. See Figure 7.

FIGURE 7. Percentage of Students Enrolled in Postsecondary by Region for Cohort 1 through Cohort 4



■ Research Question 2:

How did postsecondary enrollment of PA high school graduates change pre- and post-COVID-19?

- Are there differences based on institution type and sector (2 year/4 year, private/public), or attendance in-state versus out-of-state?
- Are there differences in institution type and sector for student groups based on race, ethnicity, gender, socioeconomic status, geography?

Descriptive analyses were conducted for each cohort to examine differences in enrollment status, residential status and type of postsecondary institution. Analysis for this research question focused exclusively on students who enrolled in a postsecondary institution within one year following high school graduation. Overall, there were no large differences across cohorts in enrollment status, residential status, or institution type. Across all cohorts slightly more than 89% of all students enrolled for full-time status and close to 11% enrolled for part-time status. Regarding residential status, between 80.2% – 81.6% of students enrolled in postsecondary institutions in Pennsylvania. Another 18.4% – 19.8% of students were enrolled in postsecondary institutions outside of the Commonwealth. More than three-quarters of students enrolled in 4-year institutions across all cohorts. Enrollment in 4-year institutions was slightly higher among students in Cohort 4 (78.4%, n = 54,166) compared to students in pre-pandemic cohorts (Cohort 1: 76.4%; Cohort 2: 76.8%; Cohort 3: 76.6%). Across pre-pandemic cohort’s enrollment in 2-year institutions rested around 23%. Fewer than one percent of students enrolled in institutions that were classified as *Less Than 2-Year*. Across all cohorts roughly 69% of students enrolled in public postsecondary institutions, while 30% enrolled in private postsecondary institutions. Refer to table 5.

TABLE 5. Postsecondary Enrollment Characteristics by Cohort

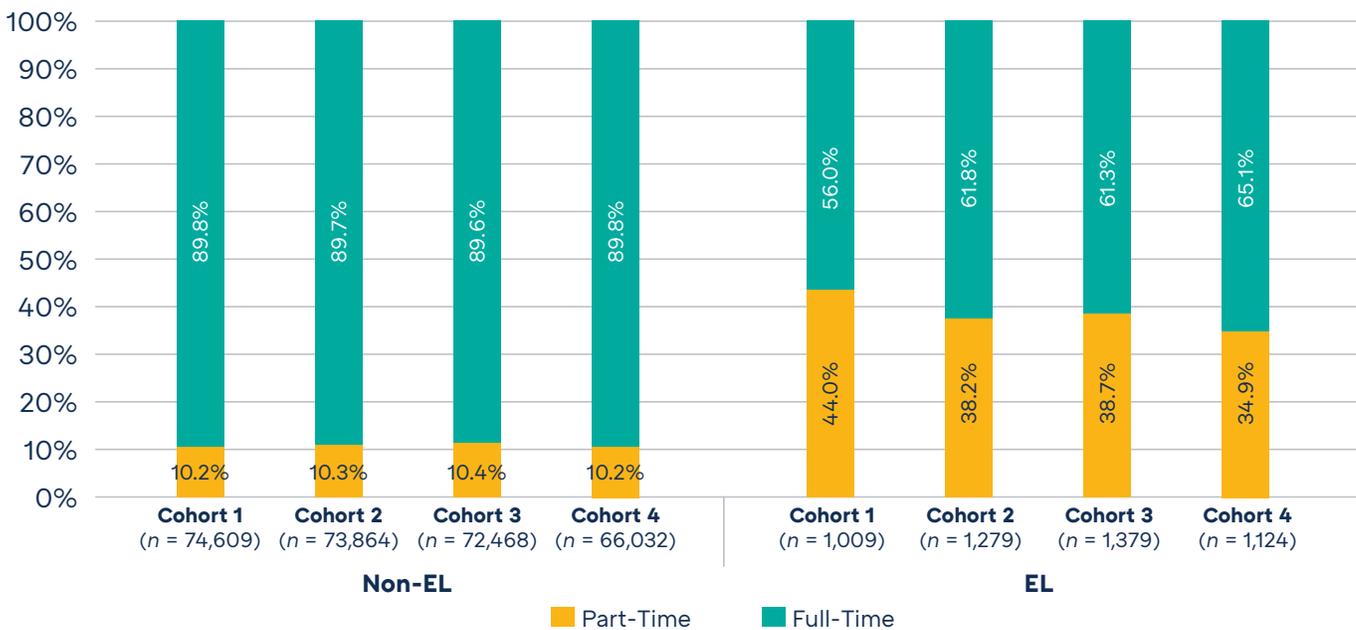
	Cohort 1 % (n)	Cohort 2 % (n)	Cohort 3 % (n)	Cohort 4 % (n)
Postsecondary Enrollment Status				
Full-Time	89.4 (65,468)	89.3(65,050)	89.0 (63,549)	89.4 (58,021)
Part-Time	10.6 (7,770)	10.7 (7,810)	11.0 (7,825)	10.6 (6,871)
Residential Status				
In-state	81.6 (63,462)	81.2 (62,814)	80.6 (61,236)	80.2 (55,417)
Out-of-State	18.4 (14,344)	18.8 (14,539)	19.4 (14,722)	19.8 (13,670)
2-Year vs. 4-Year				
Less Than 2-Years	0.2 (147)	0.2 (127)	0.2 (161)	0.2 (120)
2-Year	23.4 (18,212)	23.1 (17,843)	23.1 (17,576)	21.4 (14,801)
4-Year	76.4 (59,447)	76.8 (59,383)	76.6 (58,221)	78.4 (54,166)
Public vs. Private				
Public	69.4 (54,001)	68.8 (53,212)	69.1 (52,511)	69.5 (47,993)
Private	30.6 (23,805)	31.2 (24,141)	30.9 (23,447)	30.5 (21,094)

Although no large differences were found across cohorts for enrollment status, residential status, or institution type, analyses were conducted to assess differences based on student groups. Extensive analyses were run and differences in enrollment were found based on EL status. Differences were also found based on gender, race/ethnicity, EL status, economic disadvantage, special education, region and urbanicity for institution type. Those differences are discussed below. No differences were found for residential status.

Pre-Pandemic and Post-Pandemic Cohort Differences in Enrollment Status by EL Status

Pre-pandemic and post-pandemic cohort differences in enrollment status were identified among EL students. Among pre-pandemic cohorts between 56.0% – 61.8% of EL students were enrolled in postsecondary full-time. A slightly higher percentage of EL students, 65.1%, enrolled full-time in postsecondary from Cohort 4. Conversely, rates of part-time enrollment were higher among pre-pandemic cohorts (38.2% – 44.0%) compared to the post-pandemic cohort (34.9%). See Figure 8. Interestingly, pre-pandemic and post-pandemic differences in enrollment status were not present for non-EL students.

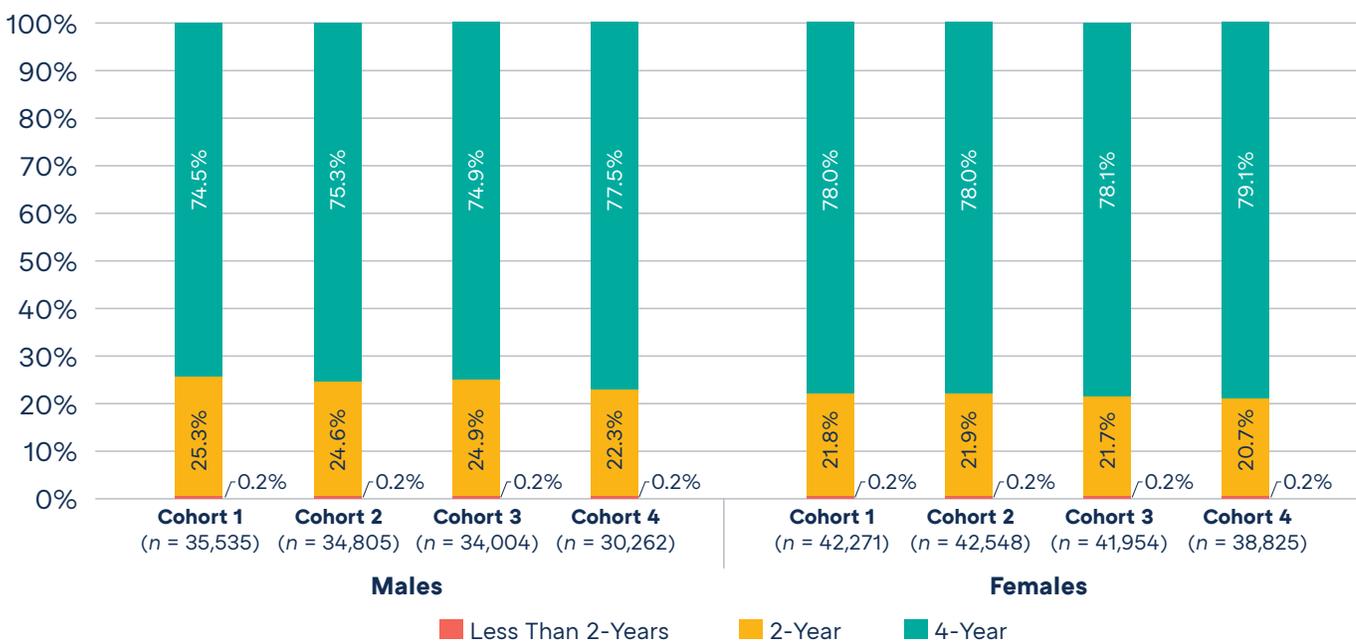
FIGURE 8. Enrollment Status Among Non-EL and EL Students Enrolled in Postsecondary for Cohort 1 through Cohort 4



Pre-Pandemic and Post-Pandemic Cohort Differences in Institution Type (2-Year/4-Year) by Gender

Across cohorts, regardless of gender, a majority of students enrolled in 4-year institutions. Pre- and post-pandemic differences in enrollment varied slightly by gender in that the decline in enrollment in 2-year institutions was larger among males. Pre-pandemic male students' enrollment in 2-year institutions ranged from 24.6% to 25.3%, but the proportion of post-pandemic male students to enroll in 2-year institutions was slightly lower at 22.3%. Conversely, pre- and post-pandemic female enrollment in 2-year institutions held steady around 21.0%. Pre-pandemic enrollment in 4-year institutions for male students spanned 74.5% to 75.3% but increased slightly to 77.5%. Among females, enrollment in 4-year institutions rose to 79.1%, a very small increase compared to pre-pandemic enrollment (78.0% – 78.1%). See Figure 9.

FIGURE 9. Postsecondary Enrollment Across Cohorts by Institution Type (2-Year/4-Year) Based on Gender



Pre-Pandemic and Post-Pandemic Cohort Differences in Institution Type (2-Year/4-Year) by Race/Ethnicity

Pre-pandemic and post-pandemic cohort differences in institution type were also identified among various racial/ethnic groups. Generally, the crosstab analyses indicated pre-pandemic and post-pandemic differences were present for American Indian/Alaskan Native, Hispanic and Asian students with all groups showing an increase in the proportion of students who enrolled initially at a 4-year institution and a decrease in 2-year institution enrollment. Among American Indian/Alaskan Native students there was a notable pre- to post-pandemic increase in 4-year enrollment (79.1% versus 58.8% to 68.7%). There was a similar, yet smaller, shift in enrollment among Hispanic students with pre-pandemic enrollment in 2-year institutions hovering around 46.0% and dropping to 41.1% post-pandemic. Conversely, enrollment in 4-year institutions increased for Hispanic students (58.8% versus 53.1% to 53.9%). Though there was a slight upward trend in enrollment in 2-year institutions (16.8% to 18.2%) and a slight downward trend in enrollment in 4-year institutions (83.1% to 81.8%) among Asian students in pre-pandemic cohorts, this trend reversed in the post-pandemic cohort with 15.9% enrolling in a 2-year institution and 84% enrolling in a 4-year institution.

TABLE 6. Postsecondary Enrollment Across Cohorts by Institution Type (2-Year/4-Year) Based on Race/Ethnicity

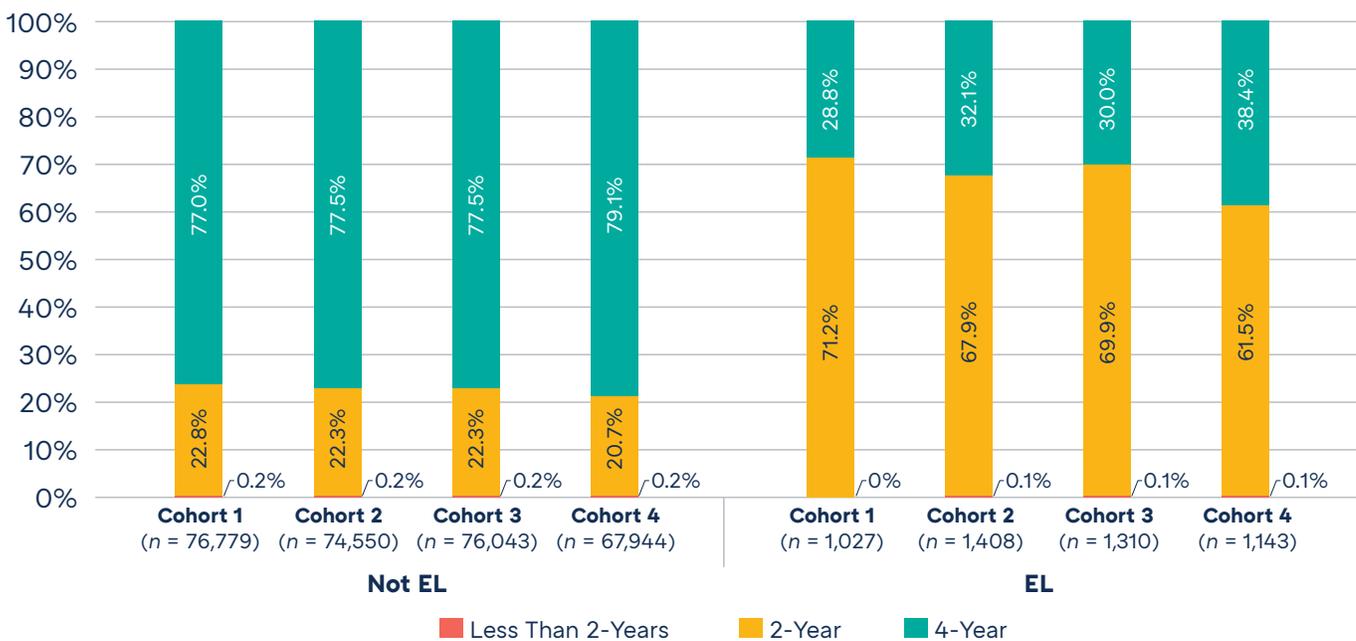
	2-YEAR				4-YEAR			
	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 1	Cohort 2	Cohort 3	Cohort 4
American Indian / Alaskan Native	40.0 (32)	31.3 (26)	32.7 (32)	*	58.8 (47)	68.7 (57)	67.3 (66)	79.1 (68)
Black / African American	34.2 (3,091)	35.4 (3,045)	34.6 (2,834)	31.3 (2,261)	65.7 (5,928)	64.5 (5,547)	65.3 (5,346)	68.6 (4,952)
Hispanic	46.8 (2,361)	46.4 (2,477)	46.0 (2,597)	41.1 (2,054)	53.1 (2,678)	53.5 (2,852)	53.9 (3,048)	58.8 (2,936)
White / Caucasian	20.0 (11,700)	19.3 (11,122)	19.4 (10,892)	18.4 (9,401)	79.8 (46,667)	80.5 (46,426)	80.3 (45,001)	81.4 (41,516)
Multiracial	28.8 (376)	27.1 (407)	26.7 (419)	25.9 (382)	71.2 (930)	72.7 (1,092)	73.3 (1,151)	74.0 (1,091)
Asian	16.8 (637)	18.2 (744)	18.2 (787)	15.9 (673)	83.1 (3,144)	81.8 (3,352)	81.8 (3,548)	84.0 (3,556)
Native Hawaiian / Pacific Islander	*	27.8 (22)	*	*	76.8 (53)	72.2 (57)	80.3 (61)	79.7 (47)

*NOTE: Students who were enrolled for Less Than Two Years are not shown, as the counts were too low to report.

Pre-Pandemic and Post-Pandemic Cohort Differences in Institution Type (2-Year/4-Year) by EL Status

Crosstab analyses revealed significant changes in institution type over time that varied slightly based on EL status. Although both EL and non-EL students experienced an increase in the percentage of students who attended 4-year institutions pre- to post-pandemic, EL students experienced a larger increase. Prior to the pandemic the proportion of EL students to enroll in 2-year institutions spanned between 67.9% to 71.2%. However, post-pandemic enrollment in 2-year institutions decreased to 61.5%. Conversely, enrollment in 4-year institutions increased among the post-pandemic EL students, from a high of 32.1% pre-pandemic or 30% in the year directly prior to the pandemic, to 38.4% post-pandemic. There was approximately a 1.5% increase in the proportion of non-EL students who attended 4-year institutions pre- to post-pandemic, compared to an increase of 8.4% for EL students when compared to the year prior to the pandemic. See Figure 10.

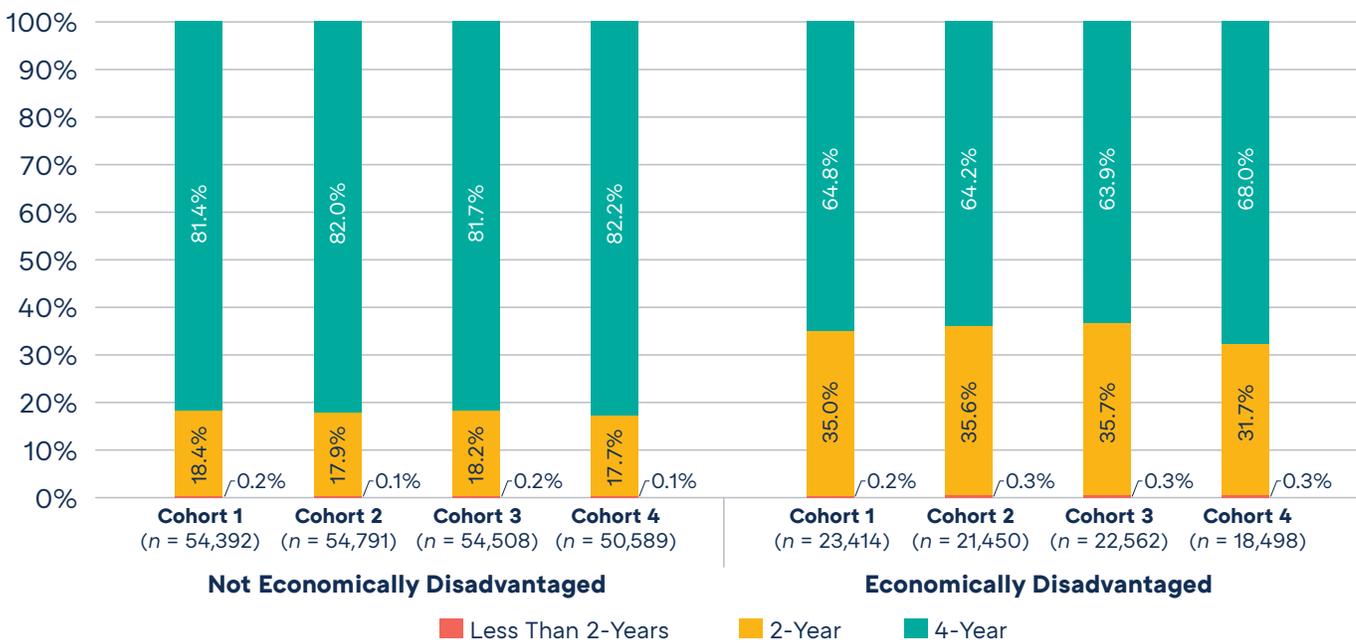
FIGURE 10. Postsecondary Enrollment Across Cohorts by Institution Type (2-Year/4-Year) Based on EL Status



Pre-Pandemic and Post-Pandemic Cohort Differences in Institution Type (2-Year/4-Year) by Economic Disadvantage

Among economically disadvantaged students who enrolled in postsecondary, there were differences in the type of institution they enrolled in pre-pandemic and post-pandemic. The proportion of economically disadvantaged students to enroll in 2-year institutions in the pre-pandemic cohorts spanned 35.0% – 35.7%. The percentage of students to enroll in these institutions in the post-pandemic cohort dropped to 31.7%. Conversely, enrollment in 4-year institutions increased over time. Enrollment in 4-year institutions ranged from 63.9% to 64.8% for economically disadvantaged students in pre-pandemic cohorts but rose slightly to 68.0% in the post-pandemic cohort. Pre-pandemic and post-pandemic cohort differences in institution type were not present among students who did not experience economic disadvantage.

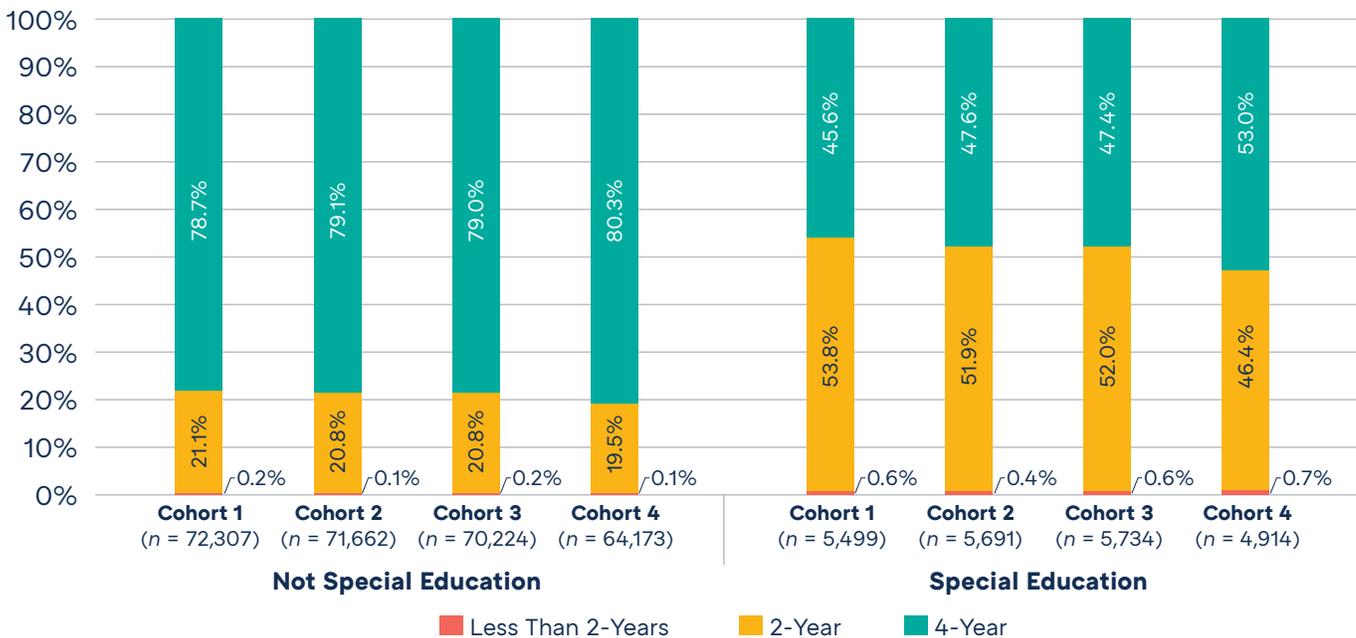
FIGURE 11. Postsecondary Enrollment Across Cohorts by Institution Type (2-Year/4-Year) Based on Economic Disadvantage



Pre-Pandemic and Post-Pandemic Cohort Differences in Institution Type (2-Year/4-Year) by Special Education

The proportion of students to attend 4-year institutions increased pre- to post-pandemic for special education students and students who were not identified as special education. However, there was a larger increase in enrollment at 4-year institutions among special education students. Similar to trends identified above based on other student group comparisons, the proportion of special education students to enroll in 2-year institutions decreased pre- to post-pandemic (51.9% – 53.8% versus 46.4%) and enrollment in 4-year institutions increased (45.6% – 47.6% versus 53.0%). As Figure 12 shows, students who were not special education had similar pre- to post-pandemic enrollment rates, or only a minimal increase in their rates of 4-year institution enrollment post-pandemic.

FIGURE 12. Postsecondary Enrollment Across Cohorts by Institution Type (2-Year/4-Year) Based on Special Education



Pre-Pandemic and Post-Pandemic Cohort Differences in Institution Type (2-Year/4-Year) by Region

Pre-pandemic and post-pandemic differences in institution type were also identified among students from the Northwest, South Central, Southeast and Southwest regions of Pennsylvania. Compared to pre-pandemic cohorts, the proportion of students from the Northwest, South Central, Southeast and Southwest regions to enroll in 2-year institutions decreased slightly and the proportion to enroll in 4-year institutions increased slightly in the post-pandemic cohort. No differences were found for students from the Central/Northcentral and Northeast regions. Refer to Table 7.

TABLE 7. Postsecondary Enrollment Across Cohorts by Institution Type (2-Year/4-Year) Based on Region

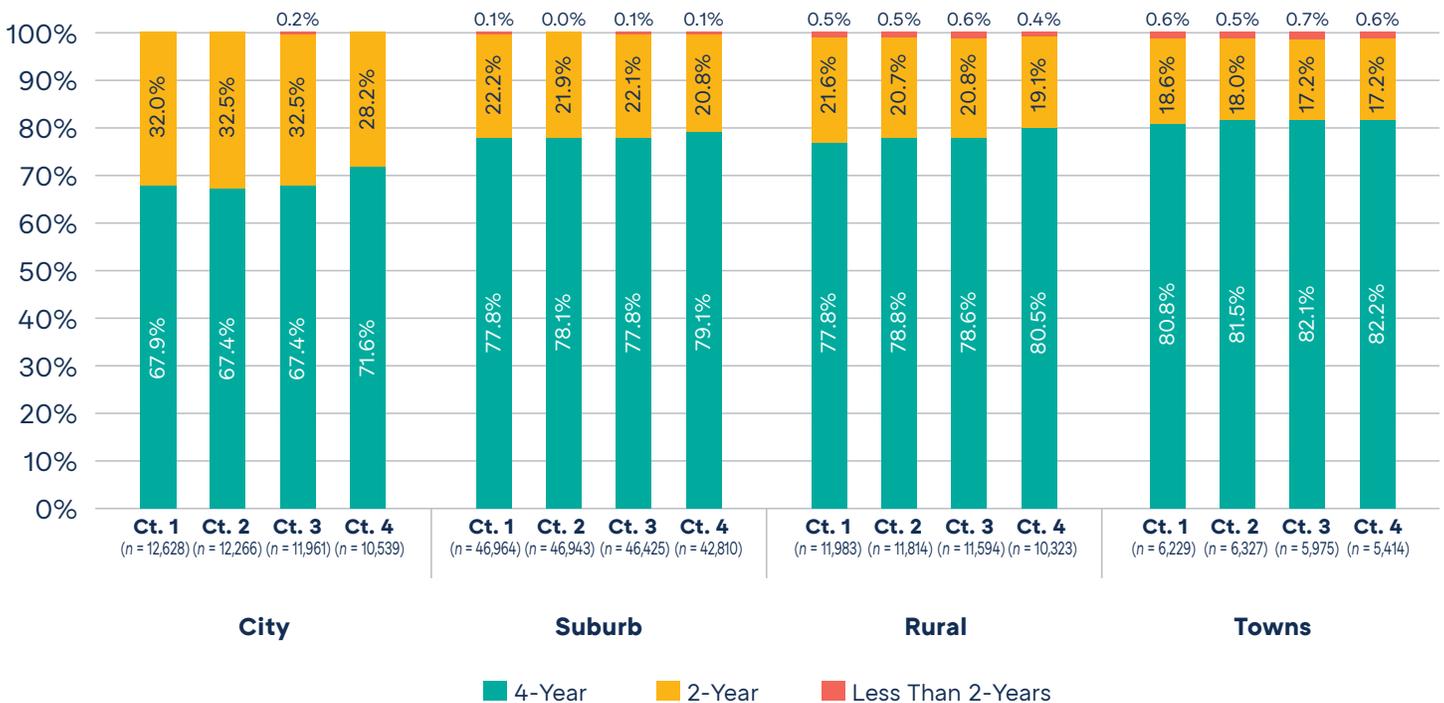
	2-YEAR				4-YEAR			
	% (n)	% (n)	% (n)	% (n)				
	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 1	Cohort 2	Cohort 3	Cohort 4
Central/North Central	7.5 (294)	7.0 (286)	6.9 (273)	6.5 (231)	90.8 (3,542)	91.8 (3,732)	91.8 (3,640)	92.5 (3,292)
Northeast	31.8 (3,381)	30.2 (3,197)	30.9 (3,250)	29.3 (2,752)	68.2 (7,254)	69.8 (7,389)	69.0 (7,256)	70.6 (6,622)
Northwest	14.5 (769)	14.5 (752)	13.9 (670)	12.6 (556)	85.4 (4,527)	85.3 (4,422)	85.9 (4,136)	87.1 (3,838)
South Central	23.3 (3,284)	22.9 (3,238)	23.1 (3,201)	20.5 (2,598)	76.3 (10,775)	76.7 (10,840)	76.4 (10,608)	79.0 (10,007)
Southeast	24.1 (7,077)	24.4 (7,102)	24.3 (7,059)	22.7 (6,014)	75.8 (22,244)	75.6 (21,971)	75.7 (21,964)	77.3 (20,486)
Southwest	23.5 (3,407)	22.8 (3,266)	22.7 (3,121)	21.1 (2,649)	76.5 (11,105)	77.1 (11,028)	77.2 (10,616)	78.9 (9,921)

*NOTE: Students who were enrolled for Less Than Two Years are not shown, as the counts were too low to report.

Pre-Pandemic and Post-Pandemic Cohort Differences in Institution Type (2-Year/4-Year) by Urbanicity

Slight differences in postsecondary enrollment by institution type for pre-pandemic and post-pandemic cohorts were also noted based on urbanicity. Among rural students, pre-pandemic enrollment in 2-year institutions ranged from 20.7% to 21.6% and dropped slightly to 19.1% in the post-pandemic cohort. Similar pre-pandemic to post-pandemic declines in the proportion of students to enroll in 2-year institutions were noted among students from suburban areas and cities. See Figure 13. There was also a slight increase in the proportion of rural, suburban and city students to enroll in 4-year institutions in the post-pandemic cohort. The largest increase in 4-year institution enrollment was seen among students who lived in cities, increasing from 67.0% pre-pandemic to 71.6% post-pandemic. Although similar trends were identified among suburban and rural students, the increase was less than 2%.

FIGURE 13. Postsecondary Enrollment Across Cohorts by Institution Type (2-Year/4-Year) Based on Urbanicity



NOTE: Data for Less Than 2-Years was not presented for City Cohort 1, Cohort 2 and Cohort 4 due to the counts being too low to report. Ct. = Cohort

Pre-Pandemic and Post-Pandemic Cohort Differences in Institution Type (Public/Private) by Race/Ethnicity

Analyses were also conducted to assess student group differences in enrollment in public and private institutions. Differences were identified by race/ethnicity and EL status. No other differences were identified.

Regarding racial/ethnic status, differences in pre-pandemic and post-pandemic enrollment in public and private institutions were found among Hispanic and Asian students. Pre-pandemic enrollment among Hispanic students in public institutions was between 73.0% – 74.9% but decreased to 70.5% among students in the post-pandemic cohort. Enrollment in private institutions increased to 29.5% in the post-pandemic cohort, an increase from 25.1% – 27.0% in the pre-pandemic cohorts. A similar, but less robust, trend was identified among Asian students. See Table 8.

TABLE 8. Postsecondary Enrollment Across Cohorts by Institution Type (Public/Private) Based on Race/Ethnicity

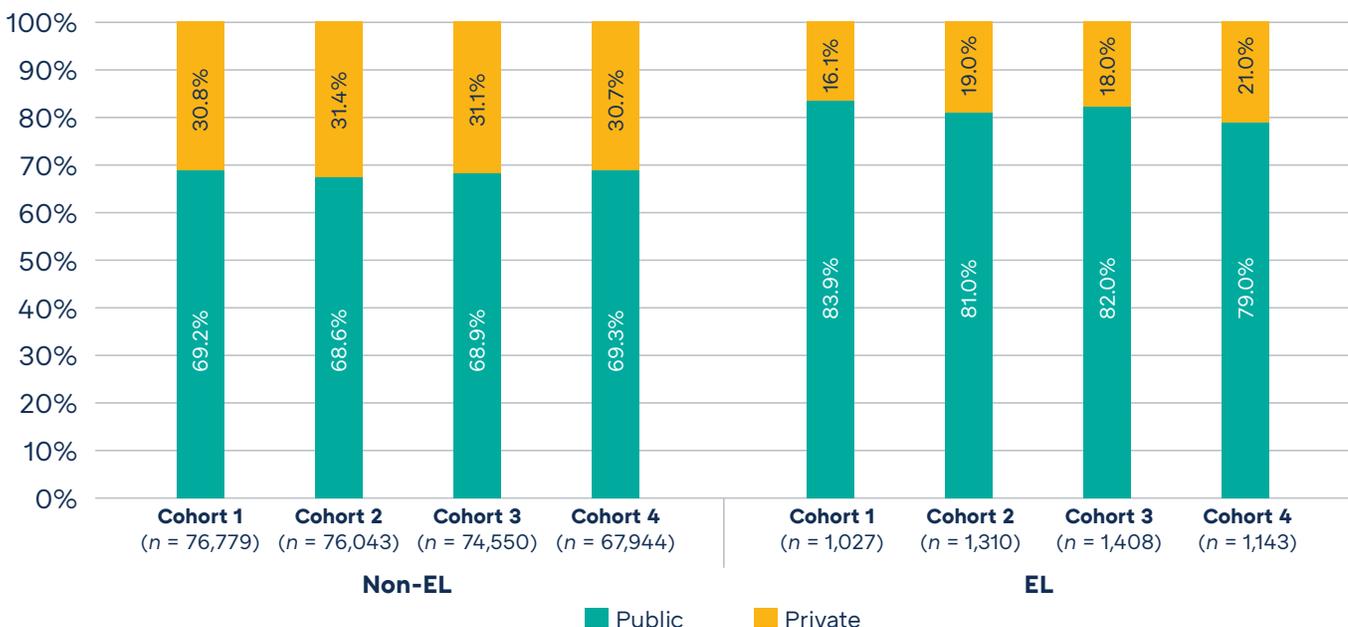
	PUBLIC				PRIVATE			
	% (n)							
	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 1	Cohort 2	Cohort 3	Cohort 4
American Indian / Alaskan Native	81.3 (65)	73.5 (61)	68.4 (67)	70.9 (61)	*	26.5 (22)	31.6 (31)	29.1 (25)
Black / African American	74.1 (6,690)	72.4 (6,226)	73.0 (5,983)	72.2 (5,210)	25.9 (2,337)	27.6 (2,375)	27.0 (2,208)	27.8 (2,010)
Hispanic	74.9 (3,781)	73.0 (3,891)	74.0 (4,183)	70.5 (3,522)	25.1 (1,264)	27.0 (1,442)	26.0 (1,468)	29.5 (1,471)
White / Caucasian	68.4 (40,035)	68.2 (39,314)	68.4 (38,353)	69.3 (35,334)	31.6 (18,461)	31.8 (18,345)	31.6 (17,682)	30.7 (15,689)
Multiracial	70.6 (923)	66.8 (1,004)	68.7 (1,079)	69.6 (1,027)	29.4 (384)	33.2 (498)	31.3 (492)	30.4 (448)
Asian	65.1 (2,462)	64.8 (2,655)	64.4 (2,793)	66.1 (2,798)	34.9 (1,320)	35.2 (1,441)	35.6 (1,543)	33.9 (1,433)
Native Hawaiian / Pacific Islander	65.2 (45)	77.2 (61)	69.7 (53)	69.5 (41)	34.8 (24)	*	30.3 (23)	*

*Counts too low to report.

Pre-Pandemic and Post-Pandemic Cohort Differences in Institution Type (Public/Private) by EL Status

Compared to pre-pandemic cohorts, enrollment in public institutions decreased among EL students. Enrollment in public institutions in pre-pandemic cohorts was between 81.0% to 83.9%. The proportion of EL students from the post-pandemic cohort to enroll in public institutions declined to 79.0%. Conversely, EL student enrollment in private institutions increased for the post-pandemic cohort from 16.1% – 19.0% (pre-pandemic) to 21.0% (post-pandemic). See Figure 14.

FIGURE 14. Postsecondary Enrollment Across Cohorts by Institution Type (Public/Private) Based on EL Status



Discussion

This research examined postsecondary enrollment among four cohorts of Pennsylvania high school graduates before and after the COVID-19 pandemic began. The primary aims of this study were to explore student group differences in postsecondary enrollment pre- and post-pandemic, as well as group differences in enrollment status, residential status and institutional type.

■ **Research Question 1:**

How did COVID-19 impact postsecondary outcomes (enrollment in postsecondary) for students who graduated in the class of 2020, by student's home location/school and student demographics?

Between 2016/2017 to 2019/2020 there was a decline in postsecondary enrollment among Pennsylvania high school graduates. The decline in enrollment was steady across all years examined in this study. However, the enrollment decline was much steeper post-pandemic than pre-pandemic. The robust decline in enrollment among the post-pandemic cohort could be interpreted as an indicator that fewer students choose to enroll in a postsecondary institution because of the pandemic. Despite not having empirical evidence to explain the decline in enrollment, the trend in the data across cohorts supports this theory. Specifically, the decrease in enrollment between 2016/2017 thru 2018/2019, compared to the decline in enrollment from 2018/2019 to 2019/2020, was much larger. Also, previous empirical efforts (Brian Communications, 2020; Kim et al., 2020) suggest the pandemic, and factors related to the pandemic, were very influential in decisions to move forward, or not, with postsecondary enrollment in fall 2020.

The decline in postsecondary enrollment among high school graduates in Pennsylvania is consistent with previous research suggesting students, particularly first-year postsecondary students, enrolled in postsecondary at lower rates due to the pandemic (Bulman & Fairlie, 2021). While there is a growing body of literature examining the effects of the pandemic on postsecondary enrollment, this study is one of only a few that highlights the experiences of *high school seniors* transitioning, or not, into postsecondary.

Results from this study also showed pre-to post-pandemic student group differences in postsecondary enrollment. Specifically, differences in enrollment were apparent for race/ethnicity, special education, EL status, locality type, and region.

Regarding racial/ethnic group membership, dramatic declines in post-pandemic enrollment were found among Native Hawaiian/Pacific Islander students. Smaller post-pandemic declines were also identified among Multiracial, Hispanic and Black/African American, White and American Indian/Alaskan Native students. Asian students were the only racial/ethnic group to experience relatively small declines in enrollment post-pandemic. The changes in enrollment among Hispanic and Black/African American students, as well as other students of color, are consistent with past research that has examined the relationship between racial/ethnic group membership and postsecondary enrollment during the COVID-19

The robust decline in enrollment among the post-pandemic cohort could be interpreted as an indicator that fewer students choose to enroll in postsecondary because of the pandemic.

pandemic (NSC, 2020b). The findings from this research are interesting in that every racial/ethnic group experienced some level of enrollment decline, no group escaped the consequences of the pandemic. However, the impact of the pandemic, including related financial and health challenges, may not have been experienced equally across all groups. This is particularly relevant considering research that suggests close to one-quarter or more of returning Latino, Black and Asian students indicated their parents had been laid off or furloughed due to the pandemic, while only 18% of returning White students experienced similar financial changes (Simpson & Scarborough, 2020). Obviously, there are other factors that explain the disparate post-pandemic enrollment declines among different racial/ethnic groups, but previous research suggests this is an area that deserves more attention.

Interestingly, declines in post-pandemic enrollment were present among students who experienced economic disadvantage, as well as among students who did not experience economic disadvantage.

While the pandemic may have impacted the economically disadvantaged and those who were not similarly, it is important to note that economically disadvantaged students were already less likely to enroll in postsecondary than their counterparts with more economic resources. Hence, the pandemic depressed enrollment among a group that was already suffering from lower rates of entry into postsecondary. Like economic disadvantage status, declines in postsecondary enrollment occurred regardless of special education status. Enrollment in postsecondary decreased whether a student was identified as special education or not. On the surface this suggests the impact of the pandemic effected both student groups equally. However, similar to economic disadvantage, rates of postsecondary enrollment were already much lower among special education students, making any decrease in enrollment consequential for the overall special education population. Taken together, postsecondary enrollment declines for economically disadvantaged and special education students serve as a reminder that similar rates of enrollment decline among dissimilar student groups (e.g., economically disadvantaged vs. not economically disadvantaged) may have very different implications. As an example, economically disadvantaged and special education students are already underrepresented in Pennsylvania colleges and universities. When enrollment decreases among these groups it makes for a less diverse student postsecondary population in the Commonwealth, altering the college experience for students from all backgrounds.

Results suggest the pandemic had an undue influence on the postsecondary enrollment of EL students. While there was a post-pandemic decline in enrollment among non-EL students, there was a more conspicuous drop in enrollment among EL students. It is possible that the students and their families were disproportionately impacted by the pandemic in ways that their native English-speaking counterparts were not.

Interestingly, pre-pandemic and post-pandemic enrollment differences were also evident by geographic type and location. With regards to locality type, post-pandemic enrollment declined slightly more among students who graduated from high schools in cities, despite declines in enrollment for students from other types of communities including rural communities, towns and suburbs. Though the decrease in enrollment was slightly higher among students from cities, the difference in pre-pandemic and post-pandemic enrollment

Post-pandemic declines in enrollment occurred among groups that were already suffering from lower rates of entry into postsecondary.

While there was a post-pandemic decline in enrollment among non-EL students, there was a more conspicuous drop in enrollment among EL students.

rates were generally consistent across geographic types. This suggests the COVID-19 pandemic may have influenced postsecondary enrollment, regardless of the type of community a student resided in. As an example of this, students from suburban districts enrolled in postsecondary at noticeably higher rates than their peers from rural communities, towns and cities across all years. However, these students were still impacted by the COVID-19 pandemic and experienced similar declines in enrollment as their counterparts who resided in rural communities, town and cities. Enrollment patterns also played out similarly with regards to region. Specifically, rates of post-pandemic postsecondary enrollment declined among students from all regions of the Commonwealth, but slightly more among students from the Northeast. Considering the economic and topographical diversity that exists within the Commonwealth, the fact that postsecondary enrollment declines were felt for students from all regions demonstrates the vast impact the COVID-19 pandemic had across the state.

■ **Research Question 2:**

How did postsecondary enrollment of PA high school graduates change pre- and post-COVID-19?

- *Are there differences based on institution type and sector (2 year/4 year, private/public), or attendance in-state versus out-of-state?*
- *Are there differences in institution type and sector for student groups based on race, ethnicity, gender, socioeconomic status, geography?*

Among enrolled students overall, there were few pre- to post-pandemic differences in enrollment by institution type (private/public) and state residency. Across cohorts a similar proportion of students enrolled in postsecondary institutions at full-time and part-time enrollment statuses. Enrollment in public and private institutions were similar across cohorts as well. This is in contrast with national data on first-time freshman enrollment (NSC, 2021) where noticeable decreases in postsecondary enrollment were identified pre- and post-pandemic. Furthermore, where *marginal* differences were present for residential status, the differences were essentially negligible. Generally, these results suggest post-pandemic enrollment patterns were consistent with pre-pandemic enrollment patterns for institution type (private/public) and residential status. Given the lack of cohort differences overall, one might assume that demographic differences in enrollment trends would also be absent. Results revealed this was not the case and that marginal demographic differences in enrollment trends were present in this study. Despite lower levels of overall postsecondary enrollment among EL student's post-pandemic, data from this study suggests that of those EL students that did enroll, a greater proportion of them enrolled full-time. Interestingly, changes in enrollment status were not observed between non-EL pre-pandemic and post-pandemic cohorts.

Post-pandemic differences in institution type (2-year/4-year) were identified in this study overall, such that a larger proportion of students enrolled in 4-year institutions than other types of institutions. The increase in enrollment in 4-year institutions among post-pandemic male and female students was marginal at best, but there was a robust increase in enrollment in 4-year institutions among Hispanic and Asian students. It is notable that enrollment in 4-year institutions increased among racial/ethnic groups with low and high levels of enrollment. Specifically, the proportion of Hispanic

Generally, these results suggest post-pandemic enrollment patterns were consistent with pre-pandemic enrollment for institution type and residential status.

students to enroll in postsecondary was much lower than the proportion of Asian students, but both groups enrolled in 4-year institutions at noticeably higher rates post-pandemic than pre-pandemic. Again, this suggests there was something about the post-pandemic experience that encouraged enrollment in 4-year institutions among a diverse group of students.

Similar to increases in full-time enrollment, the proportion of EL students to enroll in 4-year institutions increased significantly. Again, despite the overall decrease in enrollment for this subgroup of students, a greater proportion of those to enroll selected 4-year institutions. A similar increase in enrollment in 4-year institutions was also evident among special education and economically disadvantaged students. Interestingly, there was not an increase in 4-year institution enrollment among students who did *not* experience economic disadvantage. EL, special education and economically disadvantaged students may have also taken advantage of test-optional admissions to enroll in 4-year institutions. Test-optional policies, which did not require standardized test scores for admission, were largely introduced because of and during the COVID-19 pandemic. Scholars and practitioners believe these policies may promote a more inclusive applicant pool and student body (Camara & Mattern, 2022), which is particularly beneficial for EL, special education and economically disadvantaged students who are generally underrepresented in postsecondary institutions (see Babineau, 2018; Newman et al., 2010; Nunez et al., 2016).

An increase in post-pandemic enrollment in 4-year institutions was also evident among special education and economically disadvantaged students.

Across all regions and locality types within the Commonwealth, enrollment in 4-year institutions increased marginally post-pandemic. Regardless of location and community type a higher proportion of students enrolled in 4-year institutions than other types of institutions post-pandemic. In other words, the COVID-19 pandemic impacted postsecondary enrollment plans, regardless of where students lived in the Commonwealth. Although students often attend 2-year institutions as a cost-saving measure before moving on to 4-year institutions to complete their degree (Tibbetts et al., 2018), the proportion of students to enroll in 4-year institutions increased slightly post-pandemic. Additional research is needed to determine what processes shaped the increase in enrollment at 4-year institutions.

Interestingly, pre-pandemic and post-pandemic demographic differences in public/private enrollment were rare in this study. While the proportion of Hispanic students to attend private institutions increased slightly and the proportion of Asian students to attend private institutions decreased marginally, other background differences in public/private enrollment were absent. The relative absence of demographic differences in public/private enrollment could be reflective of the stability in public/private enrollment rates before and after the pandemic.

Limitations and Suggestions for Future Research

This research adds to our understanding of the ways in which Pennsylvania high school graduate's postsecondary enrollment decisions may have been altered by the COVID-19 pandemic in fall 2020. While this research is necessary and informative, there are methodological limitations that should be considered. First, for many students there were multiple entries for postsecondary enrollment in fall 2020. A sizeable number of students were enrolled in multiple postsecondary institutions simultaneously or were enrolled in two institutions at different times, but only days apart. To identify the most relevant postsecondary institution for each student the researcher manually analyzed the date, length of enrollment and type of institution attended by each student. Using that information, a single postsecondary institution was selected for each student where appropriate. While standards were developed to assure reliability during this process, given the volume of data, it is possible that some institutions were identified as the primary enrollment institution when they were not.

The findings from this study suggest race/ethnicity and economic status were associated with postsecondary enrollment, enrollment status and enrollment type. As an example, noticeable post-pandemic enrollment declines were noted among all racial/ethnic groups, but it is possible that the most robust declines were experienced among racial/ethnic groups where students disproportionately experienced economic disadvantage. There is a substantial body of supporting literature that suggests race/ethnicity and economic status intersect to impact multiple postsecondary outcomes (Lundy-Wagner, 2012; Nunez, 2014). In other words, being a member of particular racial/ethnic groups may magnify economic disadvantage, and vice versa. Interestingly, rates of economic disadvantage were much higher among student populations of color (American Indian/Alaskan Native, Black, Hispanic, Multiracial, Asian and Native Hawaiian/Pacific Islander) than White student populations in this study. Specifically, the proportion of students to experience economic disadvantage was 37.8% or higher among populations of color, but only 19.2% for White students. This study did not explicitly analyze the interacting effects of economic disadvantage and race/ethnicity on postsecondary enrollment. Future work could explore this association. This research also did not assess causation. While there were clear differences between the pre-pandemic and post-pandemic cohorts, we cannot conclude that the onset of the pandemic *caused* the differences between the cohorts.

Finally, the current study captures postsecondary enrollment at a particular moment and time when the COVID-19 pandemic was in its earliest phase. At that time much was unknown about the virus, but also about the ways in which it would continue to impact people's health, economic opportunities and education. Now that the pandemic is nearing endemic levels, it is worth conducting additional research to assess the extent to which COVID-19 may, or may not, influence postsecondary education enrollment plans.

While there were clear differences between the pre-pandemic and post-pandemic cohorts, we cannot conclude that the onset of the pandemic caused the differences between the cohorts.

It is worth examining the extent to which the COVID-19 pandemic may, or may not, influence future postsecondary enrollment plans.

Conclusion

There is little doubt that the COVID-19 pandemic upended the educational plans and experiences of many students across the country. Findings from this study underscore the ways in which student's postsecondary engagement, in the aggregate, changed after the pandemic began and demonstrated that the effects of the pandemic were not felt evenly, as some groups (students of color, economically disadvantaged, EL students, etc.) were more impacted than others. In addition to identifying pre- and post-pandemic changes in postsecondary enrollment, this research highlights the need for more empirical research that investigates how students in Pennsylvania have navigated their educational experiences in the years since 2020. These efforts would inform how the Commonwealth can move forward to support students who were unduly affected by the COVID-19 pandemic.

Findings from this study underscore the ways in which student's postsecondary engagement, in the aggregate, changed after the pandemic began.

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Pennsylvania Department of Education | Office of Administration
333 Market Street | Harrisburg, PA 17126-0333
Phone: 717.705.6499 | Fax: 717.787.3148

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