

# Wyoming Statewide Longitudinal Education Data System



Impact of COVID-19 Pandemic and CARES Funding on Wyoming High School  
Graduates in Postsecondary Education

August 21, 2024

## **Abstract**

Through Wyoming's collaborative Statewide Longitudinal Education Data System (SLEDS) initiative, Participating Entities utilized data to assess the statewide impacts of the 2020 coronavirus pandemic (COVID-19) on Wyoming students in postsecondary education. The SLEDS research team analyzed data on high school graduation, enrollment in postsecondary education, and persistence in postsecondary education from 2016 through 2023. Numbers of Wyoming high school graduates increased over the study period while the number of students enrolling in Wyoming postsecondary institutions immediately after high school declined. Persistence in postsecondary education statewide remained generally consistent across the study period years, but the lowest observed persistence rates were observed after Fall 2020.

The team also assessed the relationship between receiving Coronavirus Aid, Relief, and Economic Security Act funding from the state of Wyoming (CARES Funding) and persistence in postsecondary education following Fall 2020 and found that CARES funding was associated with an increase in persistence of approximately seven percentage points for students who graduated from a Wyoming high school and enrolled in a Wyoming postsecondary institution immediately after high school graduation.

## Table of Contents

Abstract	1
Table of Contents	2
1 Introduction	1
1.1 Research Questions	2
1.2 Key Terms	2
1.3 Data Sources	3
1.4 Study Sample	3
1.5 Considerations and Assumptions	4
2 First Time Postsecondary Enrollment and COVID-19	5
3 Postsecondary Persistence in Higher Education and COVID-19	10
4 Postsecondary Persistence and CARES Funding	12
4 Summary	16
5 Future Considerations	16
6 Appendix A	17
7 Authors and Version History	18
8 References	19

# 1 Introduction

The Wyoming Statewide Longitudinal Education Data System (SLEDS) research team explored student success in postsecondary education with respect to the 2020 coronavirus pandemic (COVID-19). Adhering to our research request process, the Executive Governance Board initiated the request, aligning with a supplemental Statewide Longitudinal Data System (SLDS) grant in 2020. This report evaluates the COVID-19 pandemic's potential impacts on postsecondary education students' core measurements of success—enrollment and persistence for Wyoming students.

Prior studies stemming from surveys demonstrate that a multitude of factors affected postsecondary students during these years, such as changes in a student's household, changes in learning modality from in-person to online, increases in stress regarding COVID-19 infection, the loss of close friends and family members, increases in financial concerns, and increases in stress due to isolation (Tass, Sahin, and Roman 2021, Reyes-Portillo et. al 2022). Research has shown that these factors may have affected students identifying as a minority or students from a lower socioeconomic status disproportionately (Fruehwirth et. al 2021, Aucejo et. al 2020).

Because the COVID-19 pandemic and the surrounding time period represent a singular event that simultaneously impacted a multitude of factors at the personal, institutional, and societal scales without replication, this report will provide summary information on how these core measurements vary across the years prior to, during, and after the COVID-19 pandemic without attempting to attribute these changes to a single factor or a single defined time period at this time.

In an effort to provide relief to postsecondary education students for the effects and burdens included above, Wyoming received funding as part of the Coronavirus Aid, Relief, and Economic Security (CARES) Act. The State then allocated a portion of this funding to students in the form of financial aid grants awarded in Fall 2020 (hereafter referred to as CARES funding). These grants were awarded in two categories: the CARES Wyoming Adult Grant and the CARES Wyoming College Grant. CARES funding was awarded using different criteria between the Wyoming Community Colleges (WyCC) and the University of Wyoming. WyCC required students to fill out a FAFSA prior to awarding CARES funding while the University of Wyoming used an application with questions about financial hardship but did not have FAFSA as a requirement.

Since CARES funding became available to students at a point in time during the Fall 2020 semester when most students had already enrolled in higher education, we do not anticipate that CARES funding increased enrollment in Fall 2020. Rather, we examine the relationship between CARES funding and persistence in postsecondary education in Wyoming after Fall 2020.

## 1.1 Research Questions

The focal research questions in this report cover three primary student outcomes: graduation from Wyoming high schools, enrollment in postsecondary education after high school, and persistence in postsecondary education. These research questions are as follows:

- Is there a difference in the number of students who graduated from a Wyoming high school between COVID and non-COVID time periods?
- Is there a difference in the number of students who graduated from a Wyoming high school and enrolled in postsecondary education in Wyoming between COVID and non-COVID time periods?
- Is there a difference in higher education persistence, defined as graduating or returning, between COVID and non-COVID time periods, considering whether CARES funding was received?

## 1.2 Key Terms

*CARES Funding:* Funding allocated to the state of Wyoming as part of the Coronavirus Aid, Relief, and Economic Security (CARES) Act and distributed to students in the form of financial aid grants. Funding was awarded only in Fall 2020.

*CARES Wyoming Adult Education Grant:* A grant for students between the ages of 25 and 64 who were unemployed or underemployed as a result of circumstances related to COVID-19 to pay for educational expenses.

*CARES Wyoming College Grant:* A grant for students impacted by COVID-19 to pay for educational expenses.

*Employment (Full Time):* Full time employment is defined as a student working in both quarters in a semester and earning greater than the amount of the federal minimum wage for 40 hours per week for 26 weeks per semester.

*Enrollment (Wyoming):* For the purposes of this research, enrollment is defined as the unduplicated headcount of students enrolled in any Wyoming SLEDS postsecondary institution with institutional credit hours as of the institution's official reporting date.

*Enrollment (Other):* For the purposes of this research, enrollment is defined as the unduplicated headcount of students enrolled in any U.S. institution not meeting the criteria for Enrollment (Wyoming).

*Recent Wyoming High School Graduate:* Any student who graduated from a Wyoming public high school from September 16 of the previous year and September 15 of the year of postsecondary enrollment. For

example, for Fall 2020, recent Wyoming high school graduates are students who graduated between September 16, 2019 and September 15, 2020.

*First Time Wyoming Postsecondary Student:* For the purposes of this analysis, a first-time student is defined as any recent Wyoming high school graduate who enrolled at a Wyoming SLEDS postsecondary institution the first fall semester after graduation.

*Statewide Persistence:* The percentage of students who return to any Wyoming SLEDS postsecondary institution and enroll, or graduate, by the end of the semester in question. For example, statewide persistence from Fall 2017 to Fall 2018 is calculated as the percentage of Fall 2017 enrollees who either:

- a) enrolled at any Wyoming postsecondary institution in Fall 2018
- or
- b) graduated between Fall 2017 and the end of Fall 2018.

*Wyoming SLEDS Postsecondary Institution:* Higher education institutions contributing to the Wyoming Statewide Longitudinal Education Data System. Institutions included are the Wyoming Community Colleges and the University of Wyoming.

*Wyoming Community Colleges (WyCC):* Community Colleges in the state of Wyoming: Casper College (CC), Central Wyoming College (CWC), Eastern Wyoming College (EWC), Laramie County Community College (LCCC), Northwest College (NWC), Northern Wyoming Community College District (NWCCD), and Western Wyoming Community College (WWCC).

### 1.3 Data Sources

The research workgroup utilized data from the Wyoming Statewide Longitudinal Education Data System (SLEDS) for this research. The University of Wyoming extracted data from its Banner Operational Data Store (ODS) and the colleges extracted data from the Wyoming Community College Commission's (WCCC) Data Management and Reporting System (DMARS). DMARS maintains data from all of Wyoming's community colleges. Researchers also utilized live data from each of these institutions since most of the Wyoming community colleges did not start capturing static data until 2016. The research workgroup also utilized data from the Wyoming Department of Education (WDE) to identify Wyoming high school graduates and wage and employment data from the Wyoming Department of Workforce Services (DWS). Data from the National Student Clearinghouse (NSC) was utilized to gather information about a student's postsecondary education outside of Wyoming.

### 1.4 Study Sample

The research workgroup identified a population of 46,961 recent Wyoming high school graduates who graduated from a public high school or who have records of a high-school equivalency test (HISET) in the Wyoming Department of Education records from 2016 to 2023. This population does not include students who were homeschooled or who took a HISET in another state. This subpopulation was used to assess the enrollment status of high school students after graduation (Section 2).

Of these 46,961 students, 20,293 were identified as first time Wyoming postsecondary students who were enrolled in at least one *for credit, institutional* course at one of the Wyoming Community Colleges or the University of Wyoming in the first fall semester after their graduation. This subpopulation was used to assess persistence in postsecondary education (Section 3).

Further, of these 20,293 students, 2,393 were identified for the analysis population and were first time Wyoming postsecondary students who enrolled in a Wyoming SLEDS postsecondary institution in Fall 2020. The relationship between persistence in postsecondary education and CARES funding was assessed in this subpopulation of students (Section 4). Although a much larger population of students in Wyoming higher education received CARES funding, limiting the assessment of CARES funding to recent Wyoming high school graduates controls for factors related to the stage of a student's progression through higher education. Further research may be useful to assess the impact of CARES funding on students in other stages of education.

### 1.5 Considerations and Assumptions

The SLEDS team acknowledges several considerations and assumptions related to the research and current constraints with data in the Wyoming SLEDS environment. Several of these considerations highlight areas in which further development of SLEDS data will allow for greater depth of research moving forward. Other considerations highlight the nature of assessing a one-time distribution of funding during an unprecedented global pandemic. We highlight some of the key considerations and assumptions below:

- 1. Key information related to financial aid need was not available for this research.** This information was not included in this research due to various regulatory constraints but could be an additional important measure related to CARES funding effectiveness.
- 2. Key information related to a student's intent to enroll in Fall 2020 was not available for inclusion in the research.** Many impact studies from the COVID-19 pandemic evaluate the gap between a student's intent to enroll and actual enrollment.
- 3. This report only looks at the impact of CARES funding on a subpopulation of students who received CARES funding.** Further analysis that defines information for other students attending Wyoming SLEDS postsecondary institutions - such as students from states other than Wyoming, students at different stages of their education, and adult learners may provide a more complete picture of the impacts of CARES funding and the COVID-19 pandemic.
- 4. This report was not able to evaluate workforce outcomes for Wyoming high school graduates who did not enroll in a Wyoming SLEDS Postsecondary Institution.** Key data linking high school graduation records to unemployment information data was not available at the time of this research.

**5. This report did not evaluate graduation rates of Wyoming students.** Graduation rates are commonly evaluated at 150% of the standard time it takes to complete a program. At the time of this publication, data was available for three years after Fall 2020 - this is insufficient time to evaluate graduation rates for students pursuing a number of degrees (e.g. bachelor's degrees).

## **2 First Time Postsecondary Enrollment and COVID-19**

The total number of recent Wyoming high school graduates increased across the study period from 5,592 graduates in 2016 to 6,186 graduates in 2023. A linear regression of the count of recent Wyoming high school graduates by year and enrollment outcome demonstrated that the number of graduates enrolling in Wyoming SLEDS postsecondary institutions was decreasing across the study period at a rate of approximately 53 students per year (Figure 2.1,  $p < 0.01$ , Appendix A), while the number of graduates enrolling elsewhere or not enrolling at all was increasing at a rate of approximately 77 and 159 graduates per year respectively ( $p < 0.01$  in both cases). The number of recent Wyoming high school graduates (total, or those attending Wyoming SLEDS postsecondary institutions) did not appear to vary in 2020 when compared to other years in the study period. Enrollment in Wyoming SLEDS postsecondary institutions was visualized by institution to assess trends or patterns in enrollment by institution over the study period (Figures 2.3, 2.4).



Figure 2.1 Number of recent Wyoming public high school graduates who enrolled in postsecondary education in the first fall semester after high school graduation.

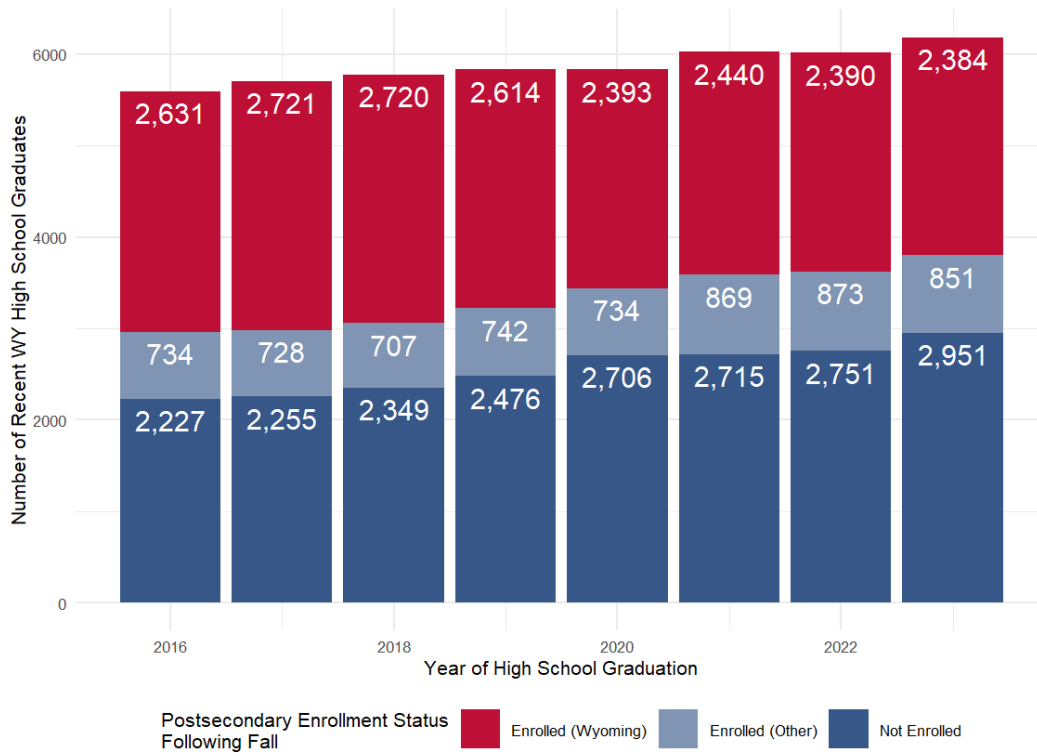


Figure 2.2 Percentage of recent Wyoming public high school graduates who enrolled in postsecondary education in the first fall semester after high school graduation.

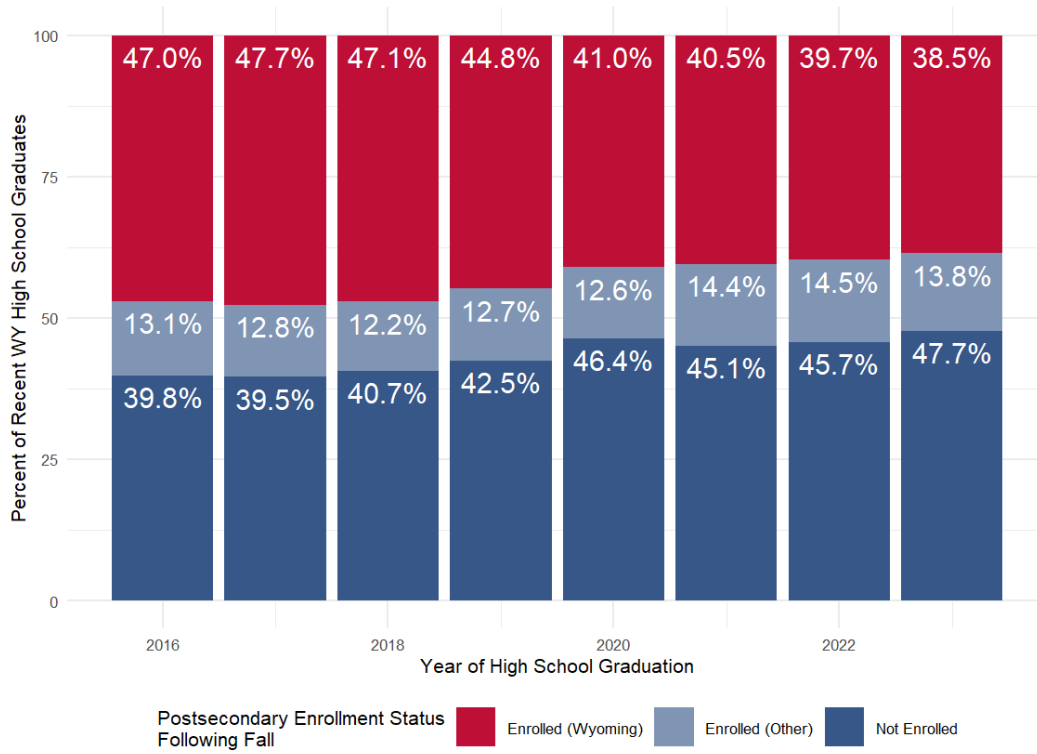


Figure 2.3 Number of recent Wyoming public high school graduates who enrolled at the University of Wyoming in the first fall semester after high school graduation.

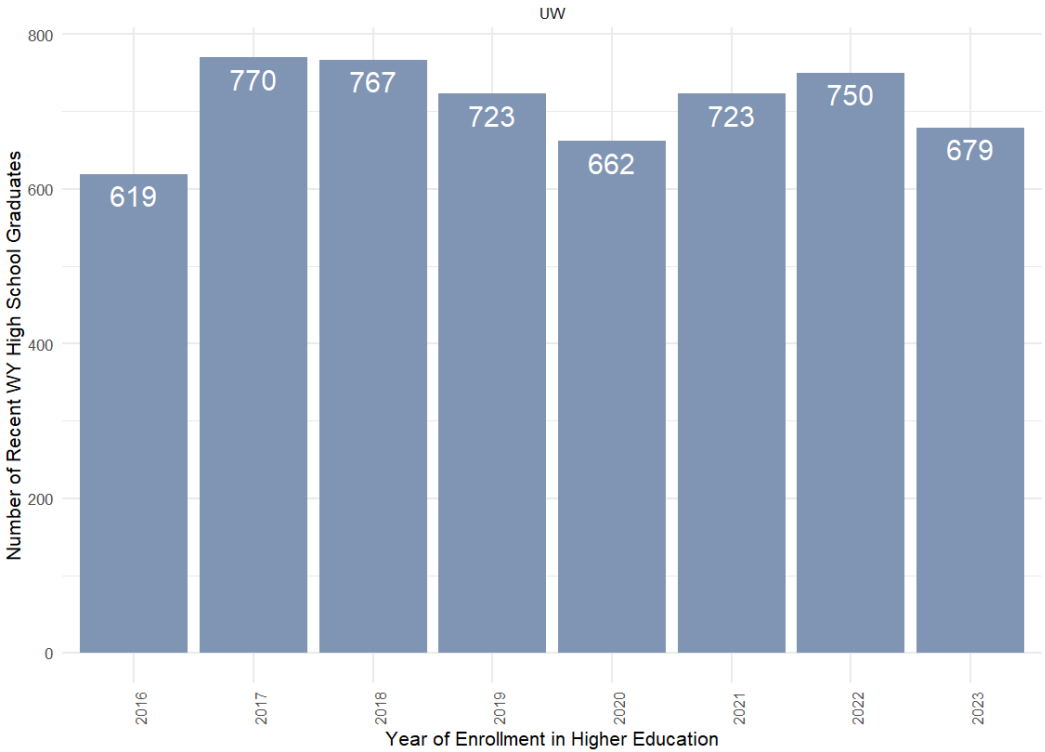
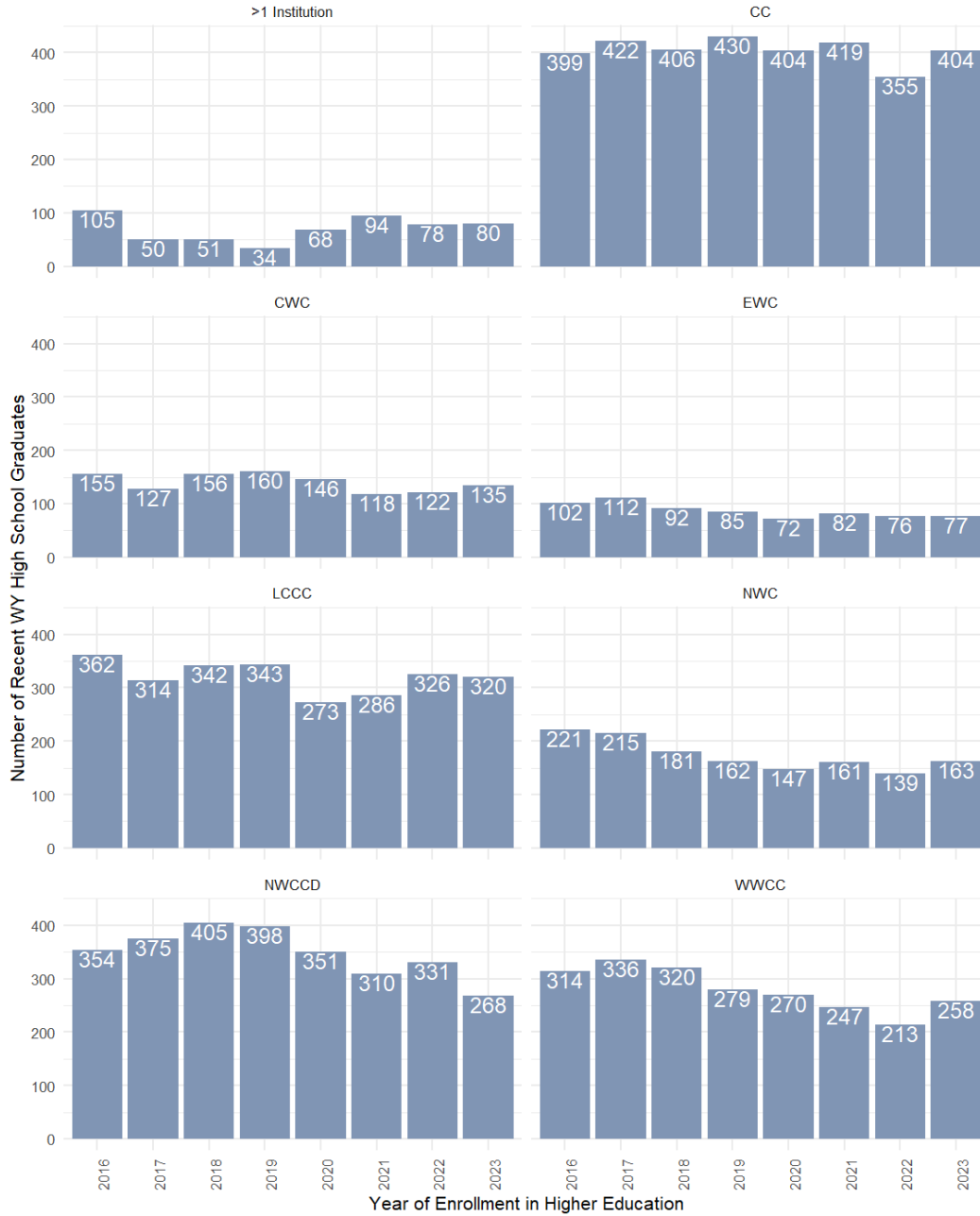


Figure 2.4 Number of recent Wyoming public high school graduates who enrolled at a Wyoming community college or more than one institution in the first fall semester after high school graduation.



### 3 Postsecondary Persistence in Higher Education and COVID-19

Persistence is a key measurement of success for students in higher education. The SLEDS research team evaluated statewide persistence in higher education for those Wyoming high school graduates who enrolled in higher education at a Wyoming SLEDS postsecondary institution. Persistence was evaluated at one semester after the initial fall enrollment and one year after the initial fall enrollment to assess short-term effects in persistence during the COVID-19 pandemic.

The average persistence across all years was 84.4% for one semester (fall to spring) persistence and 71.3% for one year (fall to fall) persistence. These persistence rates include non-degree seeking students and part-time students. Persistence rates in Fall 2020 were the lowest observed rates in the study period, (3% and 2.3%) lower than the average rates for one semester and one year persistence, respectively.

Figure 3.1 Statewide postsecondary persistence of first time students who recently graduated from public Wyoming high schools and enrolled in Wyoming SLEDS postsecondary institutions the semester after high school graduation. Persistence was evaluated from the first fall semester of enrollment in postsecondary education until the following spring semester.

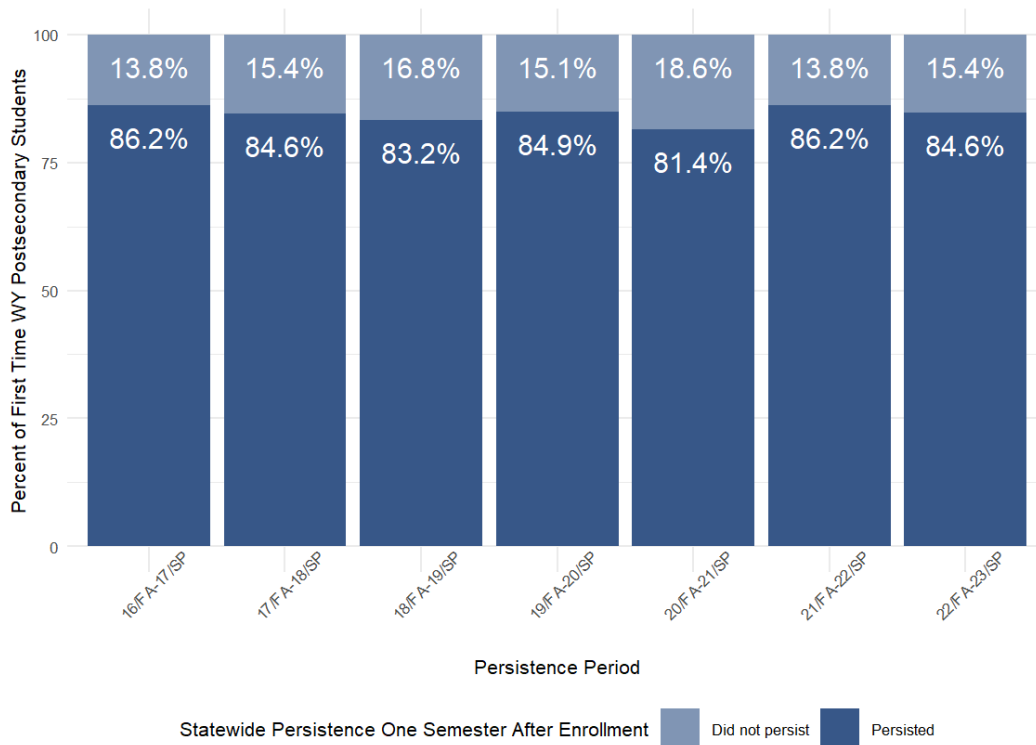
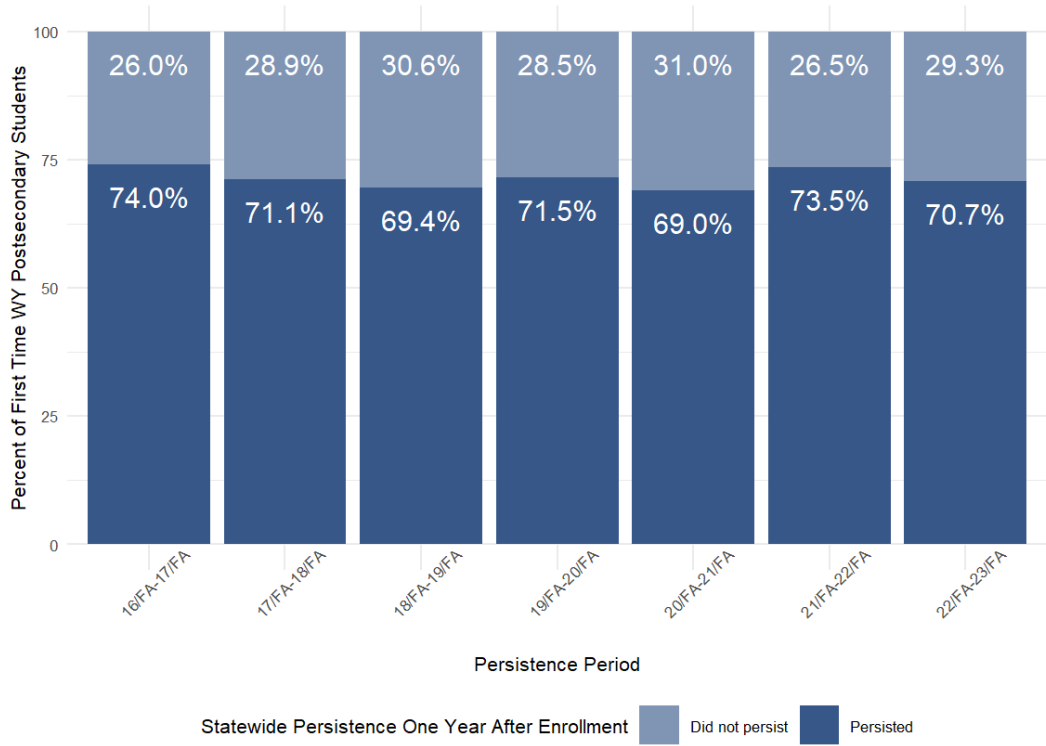


Figure 3.2 Statewide postsecondary persistence of first time students who recently graduated from public Wyoming high schools and enrolled in Wyoming SLEDS postsecondary institutions the semester after high school graduation. Persistence was evaluated from the first fall semester of enrollment in postsecondary education until the following fall semester.



## 4 Postsecondary Persistence and CARES Funding

We evaluated the association between CARES funding and persistence in postsecondary education as described in the previous section. To answer this question, we selected a subpopulation of recent Wyoming high school graduates who enrolled in postsecondary education for the first time in Fall 2020 to compare persistence rates among those who received CARES funding and those who did not.

A direct comparison of student persistence between those who received CARES funding and those who did not is not an appropriate comparison - important factors such as the type of institution attended and the number of credits a student took were associated with a student receiving CARES funding. Many factors may also affect persistence and will confound the relationship between CARES funding and persistence.

For example, persistence rates are generally lower at community colleges than four-year universities. In our sample of first-year students, there were more students from community colleges in the group who did not receive CARES funding when compared to the group who did not receive CARES funding at the University of Wyoming. If we did not standardize for this, we would not know whether lower persistence in the group that did not receive CARES funding was due to the type of institution attended or to the lack of CARES funding (Table 4.1).

The SLEDS research team selected students who received CARES and those who did not so that each student who received CARES funding was paired with a student who did not receive CARES funding through a matching process. We enforced exact matching on the type of institution so that our treatment groups each had the same proportion of UW and community college students. Combining this with a process called propensity score matching helped match students given all of the demographic variables available. Five students were excluded from this matching process due to missing information on the number of credits the student attempted during the semester.

Note that the demographic field related to race/ethnicity was simplified to the categories “White”, “Hispanic”, and “Other” to protect the privacy of students. Demographics related to race may have important associations with the impact of CARES funding but small counts of students in these groups may lead to individual identification and small cell size effects if we were to report these values. Students with more than one value for sex or race/ethnicity from multiple institutions were given the value “Varied” to indicate that this field may have changed over time unless the value for race/ethnicity was “Unknown” in which case the known value for race/ethnicity was used.

Table 4.1 Composition of each treatment group (Received CARES Funding, Did Not Receive CARES Funding) by demographic type. Composition of treatment groups are compared prior to implementing matching and after implementing matching.

Composition of Treatment Group by Demographic Type		Prior To Matching		After Matching	
		Received CARES Funding	Did Not Receive CARES Funding	Received CARES Funding	Did Not Receive CARES Funding
	Count	1,053	1,335	677	677
Type of Institution	UW	47.5%	12.1%	23.9%	23.9%
	WyCC	47.9%	87.0%	74.4%	74.4%
	UW and WyCC	4.7%	0.8%	1.6%	1.6%
WyCC by College	LCCC	11.2%	11.6%	17.4%	17.4%
	WWCC	8.1%	13.9%	12.6%	13.1%
	NWC	2.2%	8.9%	3.4%	3.1%
	EWC	2.3%	3.6%	3.5%	4.3%
	NWCCD	12.6%	16.3%	19.6%	19.1%
	CC	8.3%	23.7%	12.9%	12.6%
	CWC	3.0%	8.5%	4.7%	4.7%
	>1 WyCC	4.8%	1.3%	1.9%	1.8%
Sex	Male	41.5%	41.8%	33.7%	42.4%
	Female	58.0%	57.6%	66.2%	57.0%
	Varied	0.5%	0.6%	0.1%	0.6%
Race/Ethnicity	White	77.1%	76.4%	74.0%	76.4%
	Hispanic	8.7%	12.1%	9.9%	12.1%
	Other	2.8%	4.0%	2.2%	3.4%
	Varied	11.3%	7.6%	13.9%	8.1%
Course Load	Full Time	97.3%	87.1%	96.5%	96.2%
	Part Time	2.7%	12.9%	3.5%	3.8%
Degree Seeking Status	Degree Seeking	99.6%	98.1%	99.4%	99.4%
	Not Degree Seeking	0.4%	1.9%	0.6%	0.6%
Employment Status in Fall 2020	Full Time	11.3%	22.8%	13.7%	16.1%
	Part Time	64.3%	52.5%	72.2%	61.7%
	Not in UI Data	24.4%	24.6%	14.0%	22.2%



After the matching, we had a dataset with 677 students who received CARES and 677 students who did not receive CARES funding. We then compared the one semester and one year persistence of students among these groups.

Students who received CARES funding were 6.8 percentage points more likely to persist for one semester than those who did not receive CARES funding (Figure 4.1). They were also 7.0 percentage points more likely to persist for one year than those who did not receive CARES funding (Figure 4.2). We evaluated whether this relationship between CARES funding and increased persistence was statistically significant using a Chi-Square test of independence. Both semester persistence and year persistence were statistically significant ( $p < 0.01$  and  $p = 0.01$  for semester and year persistence respectively).

Figure 4.1 Persistence from Fall 2020 to Spring 2021 for students included in the CARES analysis population.

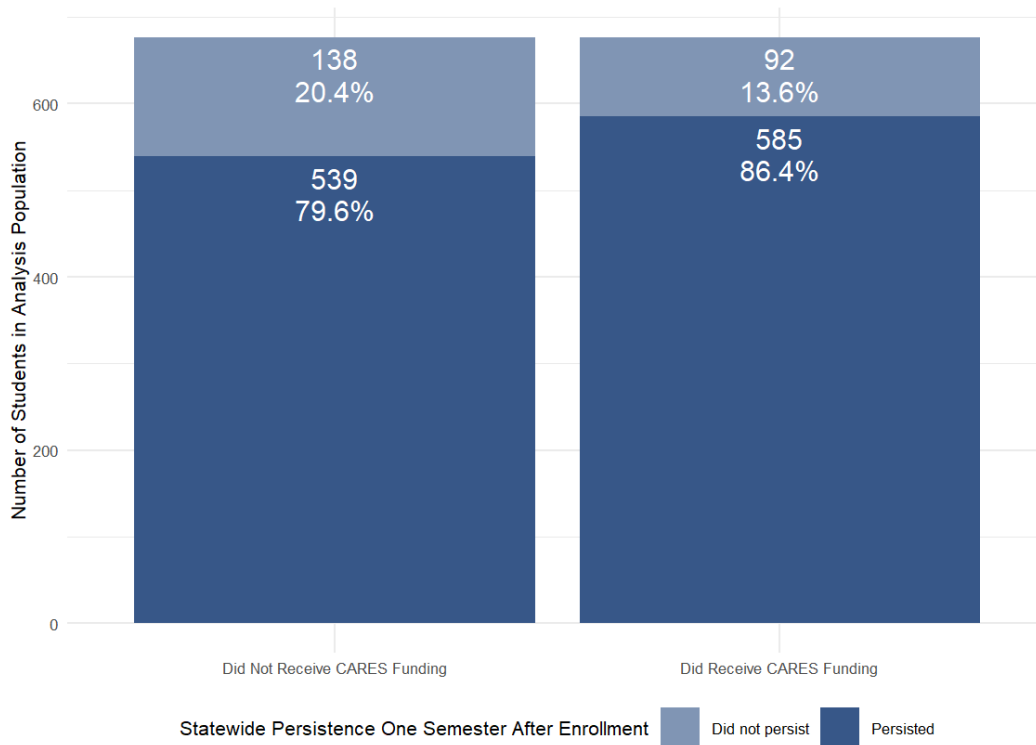
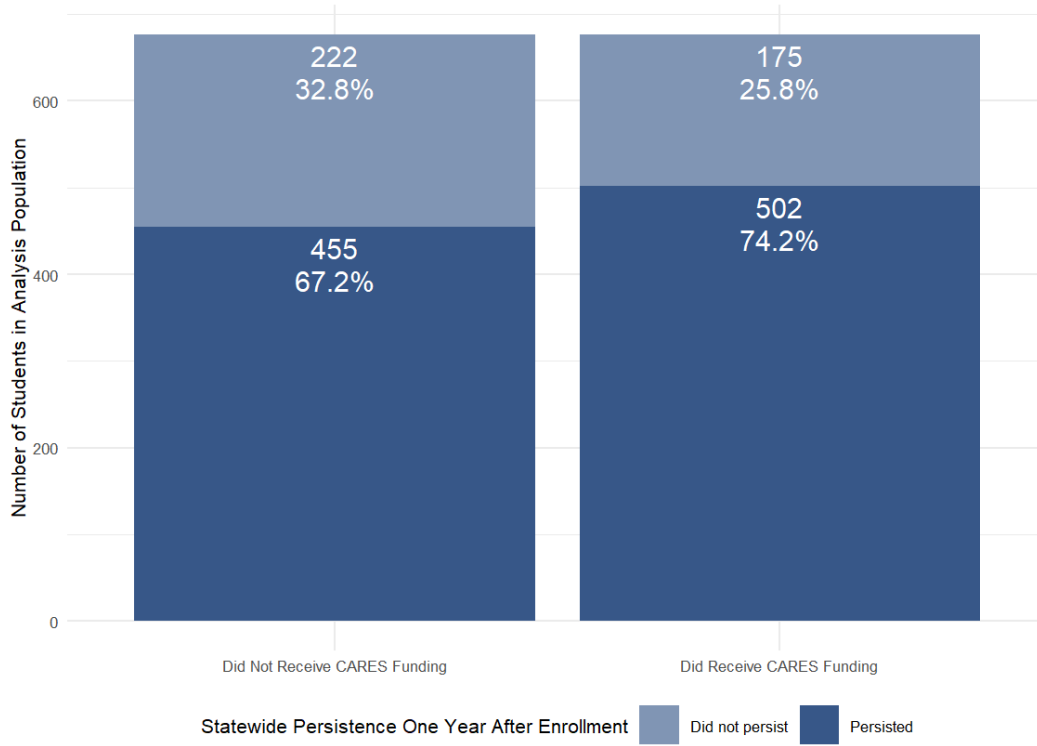


Figure 4.2 Persistence from Fall 2020 to Fall 2021 for students included in the CARES analysis population.



## 4 Summary

We did not see large declines in the numbers of graduating high school students and enrollment of high school students in postsecondary education during the pandemic years - these numbers are consistent between pandemic years and non-pandemic years. The percentage of students who persisted in postsecondary education in 2020-21 were the lowest observed percentages of the study period, and this is likely due to the effects of the COVID-19 pandemic.

When we evaluated the impact of CARES funding on first time Wyoming postsecondary students who enrolled for the first time in Fall 2020, we found that CARES funding is positively associated with increased persistence in higher education one semester and one year after Fall 2020. This association may be due to a reduced financial burden for students receiving CARES funding, correlations between students receiving other financial aid and CARES, or other factors such as a student's overall engagement in education - for example, students who intend to complete degrees may be more motivated to pursue funding sources.

Since CARES funding was associated with increased persistence rates after Fall 2020, CARES funding may have helped prevent further declines in enrollment and persistence in postsecondary education following the COVID-19 pandemic.

## 5 Future Considerations

The SLEDS research team identified key considerations and assumptions that impacted the research presented in this report. This team has also identified the following suggestions to improve future research:

1. Additional investigation and research of student financial aid would provide a more comprehensive dataset, but this may not be a priority research focus for leadership going forward.
2. Further analysis that provides definition of "other students attending Wyoming SLEDS postsecondary institutions," such as students from states other than Wyoming, students at different stages of their education, and adult learners, may provide a more comprehensive perspective of the impacts of CARES funding and the COVID-19 pandemic.
3. Information that links high school graduates to workforce data must be accessible to evaluate the outcomes for students who do not enroll in higher education. Future research should include this key information to evaluate the impact of COVID-19 on all Wyoming high school graduates.
4. Trends in graduation rates should be evaluated in the future once 150% of the standard time-to-completion has passed for relevant years of the pandemic and after the pandemic.

## 6 Appendix A

Table A.1 Parameter estimates for linear regression model of the number of recent Wyoming high school graduates from 2016-2023 by postsecondary enrollment status the following fall semester (adjusted  $R^2 = 0.988$ ).

Parameter	Estimate	95% CI	p-value
Intercept	2721.8	2636.3 , 2807.4	<0.01
Years from 2016	-52.9	-73.4 , -32.5	<0.01
Enrolled (Other)	-2026.3	-2147.3, -1905.4	<0.01
Not Enrolled	-537.9	-658.9, -417.0	0.03
Enrolled (Other) * Years from 2016	77.0	48.1, 105.9	<0.01
Not Enrolled * Years from 2016	158.6	129.7,187.5	<0.01

## 7 Authors and Version History

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Table 8.1: Revision History

Revision Number	Revision Date	Summary of Changes	Changes Marked
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Table 8.2: Approvals

Name	Date Approved
Data Governance Committee	June 11, 2024
Executive Board	August 2, 2024

## 8 References

Aucejo, E. M., French, J., Araya, M. P. U., & Zafar, B. (2020). The impact of COVID-19 on student experiences and expectations: Evidence from a survey. *Journal of public economics*, 191, 104271.

Fruehwirth, J. C., Biswas, S., & Perreira, K. M. (2021). The Covid-19 pandemic and mental health of first-year college students: Examining the effect of Covid-19 stressors using longitudinal data. *PloS one*, 16(3), e0247999.

Reyes-Portillo, J. A., Masia Warner, C., Kline, E. A., Bixter, M. T., Chu, B. C., Miranda, R., ... & Jeglic, E. L. (2022). The psychological, academic, and economic impact of COVID-19 on college students in the epicenter of the pandemic. *Emerging Adulthood*, 10(2), 473-490.

Tasso, A. F., Hisli Sahin, N., & San Roman, G. J. (2021). COVID-19 disruption on college students: Academic and socioemotional implications. *Psychological Trauma: Theory, Research, Practice, and Policy*, 13(1), 9.