

# **Institutional Effectiveness: The Retention Effect of Dual Enrollment Students**

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More than half of First Time in College (FTIC) students at EWU enroll with college level credits that are earned through AP or Running Start<sup>1</sup>. In this study, we analyzed how the number of college level credits brought into the university by a student affects Fall-to-Fall retention. We collected data consisting of three FTIC cohorts from Fall 2018, 2019, and 2020 and hypothesized that:

- students who bring in credits have higher odds of persisting ( $H_{1.1}$ ),
- the pandemic affected FTIC retention rates negatively ( $H_{0.1}$ ),
- a higher number of credits increases the odds of persisting ( $H_{2.1}$ ),
- previous Running Start (RS) students have higher odds of persisting compared to all other FTIC students ( $H_{3.1}$ ),
- previous EWU RS students have higher odds of persisting than non-EWU RS students ( $H_{4.1}$ ),
- and previous On Campus RS<sup>2</sup> students have higher odds of persisting than previous College in the High School <sup>3</sup>(CiHS) students ( $H_{5.1}$ ).

Key findings:

- Fall Quarter 2020 Cohort (COVID Cohort) students were approximately 16%-19% less likely to persist than students from previous year cohorts (reject  $H_{0.0}$ ).
- Students who bring any number of credits are 30.2% more likely to persist than students with zero credits (reject  $H_{1.0}$ ).
- With each additional 15 credits, students are 5.8% more likely to persist (reject  $H_{2.0}$ ).
- Previous RS students were 16.1% more likely to persist (reject  $H_{3.0}$ ).
- While historically non-EWU RS students had slightly higher retention rates, there is statistical evidence to suggest that EWU RS students are 22.5% less likely to persist than non-EWU RS students (fail to reject  $H_{4.0}$ ).
- Even though previous On Campus RS students had slightly higher retention rates, no statistical evidence was found to suggest that previous On Campus RS students had higher odds of persisting than previous CiHS students (fail to reject  $H_{5.0}$ ).

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<sup>1</sup> 51.6% of FTIC students had college level credits with an average of 51.7 credits.

<sup>2</sup> On Campus RS students attend courses taught by EWU faculty in an EWU campus.

<sup>3</sup> CiHS students attend courses that are approved by EWU departments and taught by teachers in their respective high schools.

## Methodology

We gathered a dataset ( $n = 5119$ ) of First Time in College (FTIC) students from Fall 2018, 2019, and 2020. FTIC students are from the following populations:

- freshmen with or without college credits,
- previous running start students,
- and international freshmen.

A binary indicator [0, 1] was added to the Fall 2020 Cohort as a measure to control for the COVID-19 pandemic. Several Logistic Regressions were produced in order to test the above hypotheses. Table 1 presents Descriptive Statistics for the populations and Table 2 presents Descriptive Statistics for the subset of students who brought in credits.

*Table 1. Descriptive Statistics.*

Variable	Frequency ( $n = 5119$ )	
	n	%
Retained	3528	68.92
Initial Credits		
0-15	3262	63.72
16-30	289	5.65
31-45	258	5.04
46-60	131	2.56
61-75	263	5.14
76-90	741	14.48
90+	175	3.42
Student Population		
Freshmen with College Credits	206	4.03
Freshmen with No College Credits	2458	48.02
International Freshmen	21	0.41
Previous Running Start	2434	47.55
EWU RS	589	11.51
College in High School	331	6.47

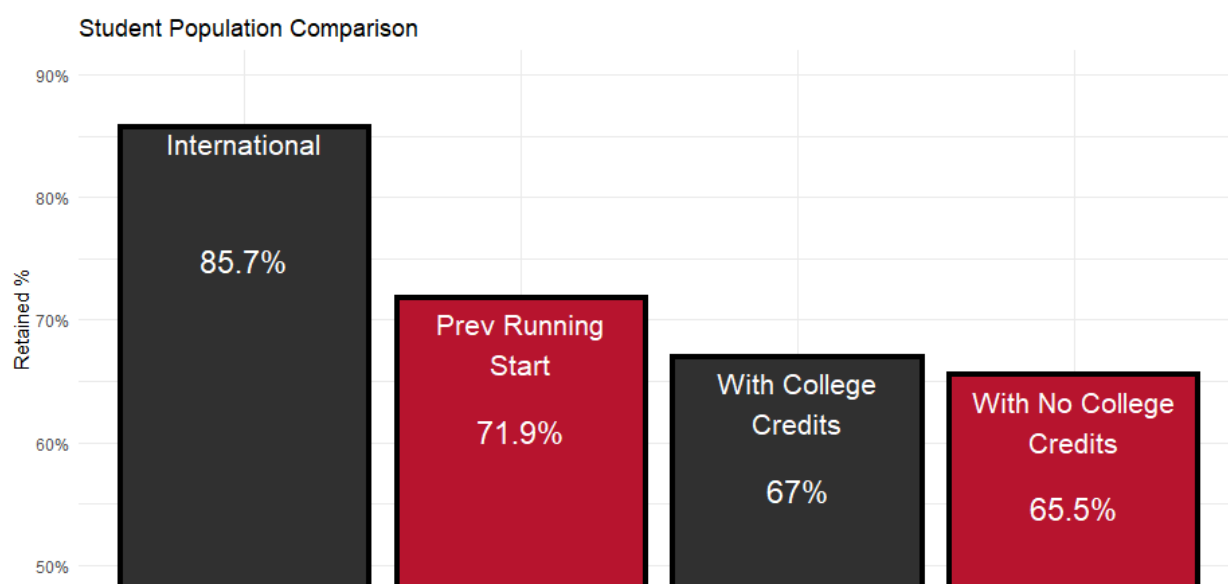
*Table 2. Descriptive Statistics for Initial Credits.*

Variable	Descriptive Statistics				
	Mean	SD	Q1	Median	Q3
Initial Credits	51.65	33.21	17	55	85

## Retention Rates

Figure 1 and Figure 2 show the Fall-to-Fall Retention Rate comparisons between FTIC Student Populations, though Figure 2 is a more in-depth comparison. It is important to note that while there does not seem to be much difference between students with college credits and those without college credits in Figure 1, Previous RS and International students can also enroll with college credits. See the second bar graph in Figure 2 for a more accurate comparison between students with or without college credits.

The key takeaway from Figure 2 is that previous RS students are retained more than other Student Populations, excluding International students. Regression 4 from Table 3 shows a similar result – previous RS Students are 16.1% more likely to persist than all other Student Populations.



*Figure 1. Retention Rates by Student Population.*

The first bar graph in Figure 2 shows that the COVID Cohort had a lower retention rate than the pre-COVID Cohorts. Evidence from five out of six regressions from Table 3 shows that the pandemic has negatively affected student persistence.

The second graph in Figure 2 compares retention rates between students who enrolled with college credits and students with zero credits. Regression 1 from Table 3 supports this comparison by showing that students with credits are 30.2% more likely to persist than students without.

The third bar graph shows that previous EWU RS students had a slightly lower retention rate than all other previous RS students. Interestingly, Regression 5 from Table 3 suggests that there is evidence to support that previous EWU RS students have lower rates of persisting compared to previous non-EWU RS students.

The fourth graph in Figure 2 shows that On Campus EWU RS students had a slightly higher retention rate than CiHS students. Unlike the EWU RS to All Other RS comparisons, no evidence was found to suggest that previous On Campus RS students show greater rate of persisting than previous CiHS students.

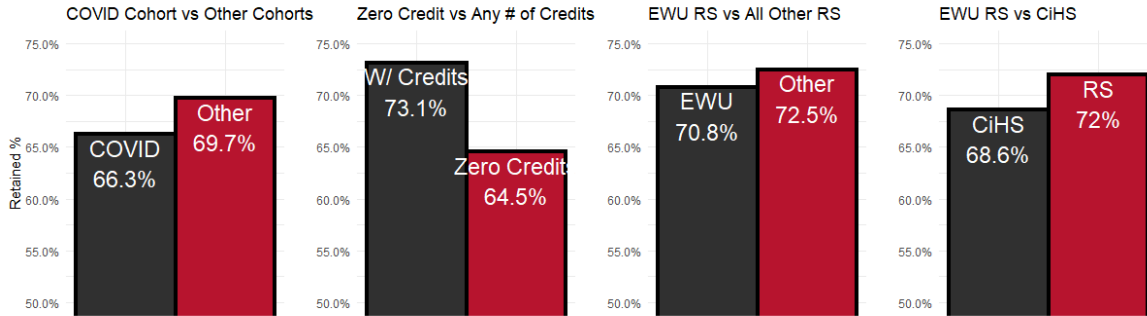


Figure 2. Retention Rates Continued.

### Retention Rates and # of Credits

Figure 3 shows the relationship between Retention Probabilities and the Number of Credits brought into the university. Credits are broken down to 15 Credit Increments in order to simulate a one quarter credits load. The second chart in Figure 3 breaks down the relationship by COVID and pre-COVID Cohorts.

Both charts demonstrate a significant difference in Retention Probabilities between students with zero and fifteen credits. The probabilities stay stable past fifteen credits until about seventy credits, after which there is a considerable spike upward. This is in line with Regression 2 from Table 3, which showed that there is statistical evidence to suggest that students with 16-30 credits have better odds of persisting than students with 0-15 credits. The regression also showed that students with 76 and more credits also have better odds of persisting than students with 31-75 credits.

The second chart stays consistent with the first chart and shows how the pandemic has dramatically decreased the probabilities of students being retained.

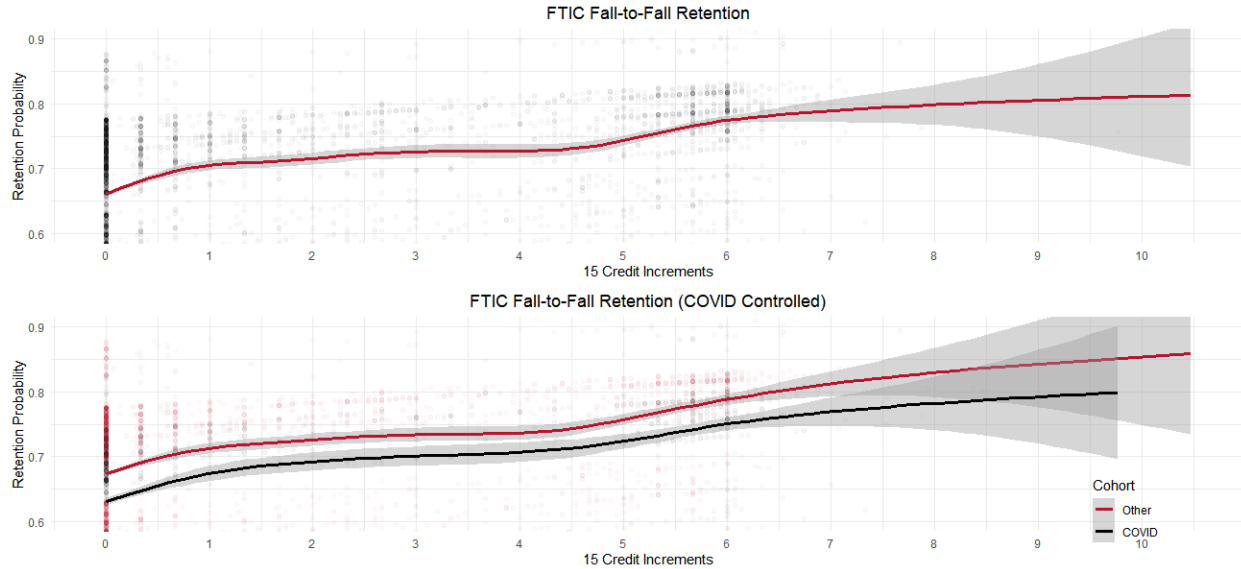


Figure 3. Retention Probability vs # of Credits in 15 Credit Increments.

## Regressions

The following are Logistic Regressions that were produced to test all stated hypotheses.

Table 3. Data in Regression 5 was limited to only Previous RS students, and data in Regression 6 was limited to only Previous EWU RS students.

Variable	Estimate	Std. Error	Persisted		Odds Ratio	
			z value	Pr(> z )		
<b>Regression 1</b>						
With Credits	0.264	0.068	3.877	0.000	***	1.302
COVID	-0.178	0.068	-2.622	0.009	**	0.837
<b>Regression 2</b>						
Credits Bin						
16-30	0.380	0.145	2.626	0.009	**	1.463
31-45	-0.033	0.145	-0.231	0.817		0.967
46-60	-0.218	0.194	-1.122	0.262		0.804
61-75	-0.087	0.146	-0.596	0.551		0.917
76-90	0.434	0.108	4.038	0.000	***	1.544
90+	0.628	0.206	3.053	0.002	**	1.873
COVID	-0.197	0.068	-2.888	0.004	**	0.821
<b>Regression 3</b>						
15-Credits Increment	0.057	0.016	3.455	0.001	***	1.058
COVID	-0.178	0.070	-2.555	0.011	*	0.837
<b>Regression 4</b>						
Previous RS	0.150	0.067	2.224	0.026	*	1.161

COVID	-0.171	0.068	-2.529	0.011	*	0.843
Regression 5						
EWU RS	-0.255	0.106	-2.405	0.016	*	0.775
COVID	-0.192	0.101	-1.906	0.057	.	0.826
Regression 6						
On Campus RS	-0.049	0.210	-0.234	0.815		0.952
COVID	0.000	0.168	0.000	1.000		1.000

.  $p < 0.1$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

### **H<sub>0.1</sub>: The pandemic affected FTIC retention rates negatively.**

Five of six regressions showed that there is statistical evidence to suggest that the pandemic has negatively affected student retention. Students from the COVID Cohort were roughly 16-19% less likely to persist than the students from pre-COVID Cohorts.

### **H<sub>1.1</sub>: Students with credits have higher odds of persisting**

Regression 1 indicates that FTIC students who enrolled with college credits were 30.2% more likely to persist than students without college credits.

### **H<sub>2.1</sub>: Higher number of credits increases the odds of persisting**

The results from Regressions 2 and 3 demonstrate that the more credits FTIC students bring, the higher their chances of persisting compared to their peers with fewer credits.

Regression 2 shows students with 16-30 credits are 46.3% more likely to persist than students with 0-15 credits. The same regression also shows that students with 76+ credits have significantly higher odds of persisting than students with 31-75 credits. Regression 3 shows that with each additional 15 Credits, the odds of persisting increase by 5.8%.

### **H<sub>3.1</sub>: Previous RS students have higher odds of persisting compared to all other FTIC**

Regression 4 demonstrates that Previous RS students are 16.1% more likely to persist than all other students.

### **H<sub>4.1</sub>: Previous EWU RS students have higher odds of persisting than non-EWU RS students**

Regression 4 demonstrates that previous EWU RS students were 22.5% less likely to persist than all other previous RS students.

### **H<sub>5.1</sub>: Previous On Campus RS students have higher odds of persisting than previous College in High School (CiHS) students**

Regression 6 shows that no evidence was found to suggest that On Campus RS students have higher chances of persisting than CiHS students.