

INVESTIGATING THE PREDICTORS OF TRANSFER STUDENT SUCCESS AT UW

January 2022

Chen Zong, Ph.D.
Sue M. Koller

Office of Institutional Analysis
oia@uwyo.edu
<http://www.uwyo.edu/oia/>



UW

Office of
Institutional
Analysis

Investigating the Predictors of Transfer Student Success at UW

The purpose of this study is to examine the predictors of transfer student success at the University of Wyoming. For this study, the transfer student success was defined as 1-year (fall-to-fall) retention or graduation of a transfer student at UW. The findings of this study may provide useful information to improve transfer student retention and graduation rate at UW. The research question leading this study is: What are the statistically significant predictors of transfer student success in the first year at UW?

Key Findings

Significant Positive Predictors:

- *On-Campus or Distance Education*: Transfer students who studied on the Laramie and Casper campuses (on-campus instruction) are more likely to succeed than those who studied in distance education in the first year.
- *Cumulative GPA*: Transfer students with higher cumulative GPA are more likely to succeed in the first year.
- *Tuition Residency*: Transfer students who are paying resident tuition are more likely to succeed than those who are paying non-resident tuition in the first year.
- *Transferable Degree*: Transfer students who have a transferable associate degree are more likely to succeed than those who do not have a transferable degree in the first year.
- *Student Classification*: Transfer students entering UW in a higher classification (junior or senior) are more likely to succeed in the first year.
- *Total Credits*: Transfer students who have earned more total credits are more likely to succeed in the first year.

Significant Negative Predictors:

- *Undeclared Major*: Transfer students who have selected their majors are more likely to succeed than those who have not decided their majors (undeclared major) in the first year.
- *Current Age*: Younger transfer students are more likely to succeed in the first year.

Methods

Data Source and Sample

The UW transfer student retention data from Fall 2015 to Fall 2019 cohort were used for the analysis. The sample included 5,041 transfer students. The demographic information of the students is presented in Table 1.

Table 1

Transfer Student Sample Demographics

Variable		Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Total
Gender	Female	505	505	576	597	546	2,729
	Male	426	462	510	478	436	2,312
Race/Ethnicity	American Indian or Alaska Native	9	8	11	11	13	52
	Asian	10	10	10	15	10	55
	Black or African American	9	17	4	7	13	50
	Hispanics of any race	52	77	75	58	41	303
	Native Hawaiian or Other Pacific Islander	2	2	2	2	0	8
	White	635	551	624	685	703	3,198
	Two or more races	23	30	48	44	36	181
	Nonresident Alien	42	65	66	41	27	241
Current Age	Unknown	149	207	246	212	139	953
	17-19	59	97	132	143	114	545
	20-24	582	607	662	687	609	3,147
	25+	290	263	292	245	259	1,349
Tuition Residency	Resident	721	717	771	784	749	3,742
	Non-Resident	210	250	315	291	233	1,299
WY Institution	Yes	619	629	665	699	686	3,298
	No	312	338	421	376	296	1,743
Total		931	967	1,086	1,075	982	5,041

Data Analysis and Variables

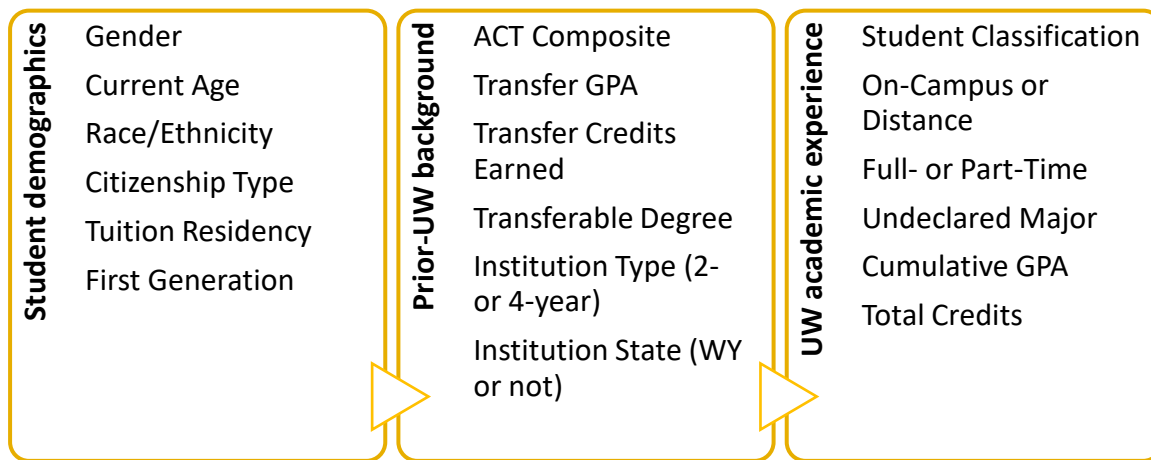
Binary logistic regression analysis was conducted using R software to assess whether the selected variables were statistically significant predictors of transfer student success.

The dependent (outcome) variable is the 1-Year Transfer Student Success represented by the third semester Retention or Graduation indicator with three values: *Graduated*, *Retained*, and *Not Retained*. This variable was recoded to two categories for the binary logistic regression: 1 = Succeed (Graduated or Retained) and 0 = Not Retained.

Based on the reviews of existing literature about transfer student success, 18 variables were selected as the independent variables for the base model, including six variables related to student demographic information, six variables related to student's prior-UW academic background, and six variables related to UW academic experience (Figure 1). The detailed definitions and values of the variables can be found in Appendix A.

Figure 1

Selected Independent Variables for the Base Model



Note. The definitions of the variables can be found in Appendix A.

Findings

Descriptive Statistics

The descriptive statistics of the 1-year transfer student success by the 18 independent variables are presented in Table 2. The percentages of Retention/Graduation or Not Retained for each group were calculated based on the total count of each row. The bold font indicates the group that has the higher percent of students who succeeded in the first year. For example, about 76% of 2,729 female transfer students, and 75% of 2,312 male transfer students graduated or retained after one year, indicating that the female group had higher percent (1%) of 1-year transfer student success than the male group for the UW sample from Fall 2015 to Fall 2019 ($n = 5,041$). Please note that the results are only descriptive statistics based on the specific sample, and are not necessarily statistically significant or generalizable to other samples.

Table 2

One-Year Transfer Student Success by Various Characteristics

	Retention or Graduation After 1 Year		Not Retained After 1 Year		Total
Demographic					
Gender: Female	2,076	76%	653	24%	2,729
Gender: Male	1,725	75%	587	25%	2,312
Current Age: 17-19	416	76%	129	24%	545
Current Age: 20-24	2,463	78%	684	22%	3,147
Current Age: 25+	922	68%	427	32%	1,349
Race/Ethnicity: Underrepresented Minority	471	73%	178	27%	649
Race/Ethnicity: White	2,439	76%	759	24%	3,198
Race/Ethnicity: Unknown	891	75%	303	25%	1,194
Citizenship Type: Yes	3,591	75%	1,209	25%	4,800
Citizenship Type: No	210	87%	31	13%	241
Tuition Residency: Resident	2,887	77%	855	23%	3,742
Tuition Residency: Non-Resident	914	70%	385	30%	1,299
First Generation: Yes	1,286	73%	471	27%	1,757
First Generation: No	2,515	77%	769	23%	3,284
Prior-UW academic background					
Transferable Degree: Yes	1,794	82%	404	18%	2,198
Transferable Degree: No	2,007	71%	836	29%	2,843
Post-Secondary Institution Type: 2-Year	3,149	76%	971	24%	4,120
Post-Secondary Institution Type: 4-Year ^a	641	71%	267	29%	908
Post-Secondary Institution State: Wyoming	2,567	78%	731	22%	3,298
Post-Secondary Institution State: Non-Wyoming	1,234	71%	509	29%	1,743
Average ACT Composite Score	22.7 (n = 2,125)		21.7 (n = 519)		22.5 (n = 2,644)
Average Transfer GPA	3.2 (n = 3,778)		2.9 (n = 1,225)		3.1 (n = 5,003)
Average Transfer Credits Earned	69.7 (n = 3,778)		66.1 (n = 1,225)		68.8 (n = 5,003)
UW academic experience					
Student Classification: Freshmen	286	59%	201	41%	487
Student Classification: Sophomore	836	72%	318	28%	1,154
Student Classification: Junior	1,979	81%	471	19%	2,450
Student Classification: Senior	548	74%	188	26%	736
Student Classification: Second Bachelor ^b	152	71%	62	29%	214
Full-Time	3,074	79%	793	21%	3,867
Part-Time	727	62%	447	38%	1,174
Undeclared Major: Yes	148	55%	119	45%	267
Undeclared Major: No	3,653	77%	1,121	23%	4,774
On-Campus Instruction (Laramie & Casper)	3,131	79%	836	21%	3,967
Distance Education (Outreach)	670	62%	404	38%	1,074
Average Cumulative GPA	3.1 (n = 3,774)		2.1 (n = 1,122)		2.8 (n = 4,896)
Average Total Credits	12.7 (n = 3,801)		11.1 (n = 1,240)		12.3 (n = 5,041)
Total	3,801	75%	1,240	25%	5,041

Note. Bold font indicates the group that has the higher percent of students who succeed in the first year. Please note that the results are only descriptive statistics based on the specific sample, and not necessarily statistically significant or generalizable to other samples. ^aThe analysis excluded 13 students with unknown institution type. ^bThe analysis excluded the second bachelor's students.

Logistic Regression

Logistic regression was conducted to assess whether the selected predictor variables significantly predicted whether or not a transfer student is successfully retained or graduated in the first year.

All 18 variables were entered as the predictor variables in the base model, and the recoded 1-year transfer student success (retention/graduation) was entered as the outcome variable. The base model was run with the binomial logistic regression analysis in R. Then the base model was simplified by removing the non-significant variables stepwise. Only one variable with the largest p -value ($\geq .05$) was deleted in each step, and the revised model was rerun until all variables were statistically significant ($p < .05$).

Table 3 presents the results of the final logistic regression model predicting 1-year transfer student success (retained or graduated). The results suggest that the odds of student success are increasingly greater as the values of On-Campus or Distance, Cumulative GPA, Tuition Residency, Transferable Degree, Student Classification, Total Credits increase. However, the odds of 1-year transfer student success are decreasing as the value of Undeclared Major, Current Age increases.

Table 3

Significant Predictors of 1-Year Transfer Student Success

Predictor	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-2.66	0.29	-9.04	<0.001
Current Age	-0.03	0.01	-4.43	<0.001
Tuition Residency	0.42	0.09	4.53	<0.001
Student Classification	0.19	0.05	3.62	<0.001
On Campus or Distance	1.11	0.12	8.99	<0.001
Undeclared Major	-0.44	0.16	-2.77	0.006
Cumulative GPA	0.93	0.04	23.54	<0.001
Total Credits	0.03	0.01	2.55	0.011
Transferable Degree	0.29	0.09	3.20	0.001

Significant Positive Predictors:

- For a student studied *On-Campus* (1), versus distance education (0), the log odds of 1-year transfer student success **increases** by 1.11, meaning that students who studied on-campus are more likely to succeed than those who studied in distance education in the first year.
- For a one unit increase *Cumulative GPA* (0 to 4.0), the log odds of 1-year transfer student success **increases** by 0.93, meaning that students with higher Cumulative GPA are more likely to succeed in the first year.
- For a student with *Resident Tuition* (1), versus non-resident tuition (0), the log odds of 1-year transfer student success **increases** by 0.42, meaning that students who are charged resident tuition are more likely to succeed than those who are charged non-resident tuition in the first year.

- For a student with *Transferable Degree* (1), versus no transferable degree (0), the log odds of 1-year transfer student success **increases** by 0.29, meaning that students who have a transferable associate degree are more likely to succeed than those who have no transferable degree in the first year.
- For a one unit increase in *Student Classification* (1 = Freshmen, 2 = Sophomore, 3 = Junior, 4 = Senior), the log odds of 1-year transfer student success **increases** by 0.19, meaning that transfer students entered UW in a higher classification are more likely to succeed in the first year.
- For a one-unit increase in *Total Credits* (1 to 29), the log odds of 1-year transfer student success **increases** by 0.03, meaning that students who have earned more total credits are more likely to succeed in the first year.

Significant Negative Predictors:

- For a student enrolled in the *Undeclared Major* (1), versus who enrolled in a specific/declared major (0), there is a 0.44 **decrease** in the log odds of 1-year transfer student success, meaning that students who have selected their majors are more likely to succeed than those who have not decided their majors (undeclared major) in the first year.
- For a one-unit increase in *Current Age* (17 to 71), there is a 0.03 **decrease** in the log odds of 1-year transfer student success, meaning that younger age students are more likely to succeed in the first year.

Conclusion

This research report explores the predictors of transfer student success at the University of Wyoming. The findings indicate that the significant predictors of the 1-year transfer student success at UW include: on-campus or distance education, cumulative GPA, tuition residency, transferable associate degree, student classification, total credits, undeclared major, and current age. Some practical recommendations for improving transfer student retention and graduation rate at UW are discussed below:

1. On-campus education has a strong positive effect on transfer student success at UW. To meet the different learning needs of students, distance or online courses should also be developed with better strategies, and the online learning experiences should be improved. Consulting and teaching support is provided by the Ellbogen Center for Teaching & Learning (<http://www.uwyo.edu/ctl/>). Distance education technical support is offered to both faculty and students by IT Help Desk and the Office of Distance Education Support. (<http://www.uwyo.edu/distance/centers/laramie.html>)
2. The cumulative GPA is another strong positive predictor of transfer student success. UW may consider offering more support or interventions to transfer students who have a lower cumulative GPA (<3.1), and let them know that there are many kinds of learning resources available at UW. For example, free tutoring on different subjects are offered by

many colleges and centers such as STEP Tutoring Center, Online Tutoring via NetTutor, Supplemental Instruction (SI), Writing Center, etc. (<https://www.uwyo.edu/step/tutoring/>)

3. An undeclared major may have a moderate negative effect on transfer student success. UW should consider offering more support and interventions to transfer students who have not declared/decided their majors, to help them find their career interests and develop career goals to make decisions on their majors. The Advising Career Exploratory Studies Center (ACES) provides academic advising, career counseling, and career services support to UW students. (<http://www.uwyo.edu/aces/>)
4. Tuition residency has a moderate positive effect on transfer student success. More opportunities for scholarship or financial aid should be equally available for non-resident transfer students.
5. Although the effects of transferable degree and student classification maybe relatively small comparing to the factors above, appropriate support should also be provided to transfer students without a transferable associate degree or those in their freshmen or sophomore years.

Appendix A

Definition of Variables

	Variable	Definition and Values
Outcome	1 Year Student Success	Whether a student graduated or retained in their first year at UW 1 = Success (retained or graduated) 0 = Not retained
Student Demographics	Gender	1 = Male, 0 = Female
	Current Age	Student age when enrolled at UW 17 to 71 (for the specific data from Fall 2015 – Fall 2019)
	Race/Ethnicity	1 = White 0 = Underrepresented Minority: American Indian or Alaska Native, Asian, Black or African American, Hispanics of any race, Native Hawaiian or Other Pacific Islander, Two or more races Not coded = Unknown: Nonresident Alien, Race and Ethnicity unknown
	Citizenship Type	1 = Yes: U.S. Citizen, Permanent Resident 0 = No: Nonresident Alien/International
	Tuition Residency	Tuition rate charged to students 1 = Resident: In state Resident, International Resident Rate 0 = Non-Resident: Alumni Rate, International, International 150% Rate, Out of state Resident
	First Generation College Student	Based on the question: Do either of your parents have a 4-year baccalaureate degree? 1 = First Generation 0 = Not first generation
Prior-UW background	ACT Composite Score	12 to 35 (for the specific data from Fall 2015 – Fall 2019)
	Transfer GPA	Transfer GPA are totaled from all transfer work, not only transfer work from individual community colleges. 0 to 4.0
	Transfer Credits Earned	Transferred Credit Earned accepted as of their first semester at UW 0 to 305.5 (for the specific data from Fall 2015 – Fall 2019)
	Transferable Degree	1 = Transferable Associate Degrees: AA, AS, AB, ADN 0 = Non-Transferable Degrees: AAA, AAB, AAS, AE, AFA, or no degree
	Institution Type	2 = Two-Year, 4 = Four-Year
	Institution State	1 = WY, 0 = Non-WY
UW Academic Experience	Student Classification*	1 = Freshmen, 2 = Sophomore, 3 = Junior, 4 = Senior
	On-Campus or Distance Instruction	1 = Laramie & Casper: On-Campus Instruction 0 = Outreach: Distance Education
	Full-Time or Part-Time	1 = Full time 0 = Part time
	Undeclared Major	1 = Undeclared major 0 = Major selected
	Cumulative GPA	Cumulative GPA at the end of the first semester 0 to 4.0
	Attempted Credits	Attempted credits for the first semester at UW 0 to 29 (for the specific data from Fall 2015 – Fall 2019)

Note. Bold font indicates the statistically significant predictors of 1-year transfer student success.

*Second bachelor is excluded for analysis.