

# INVESTIGATING THE PREDICTORS OF FIRST TIME STUDENT RETENTION AT UW

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AUGUST 2019

FIRST-TIME STUDENTS RETENTION  
UNIVERSITY OF WYOMING

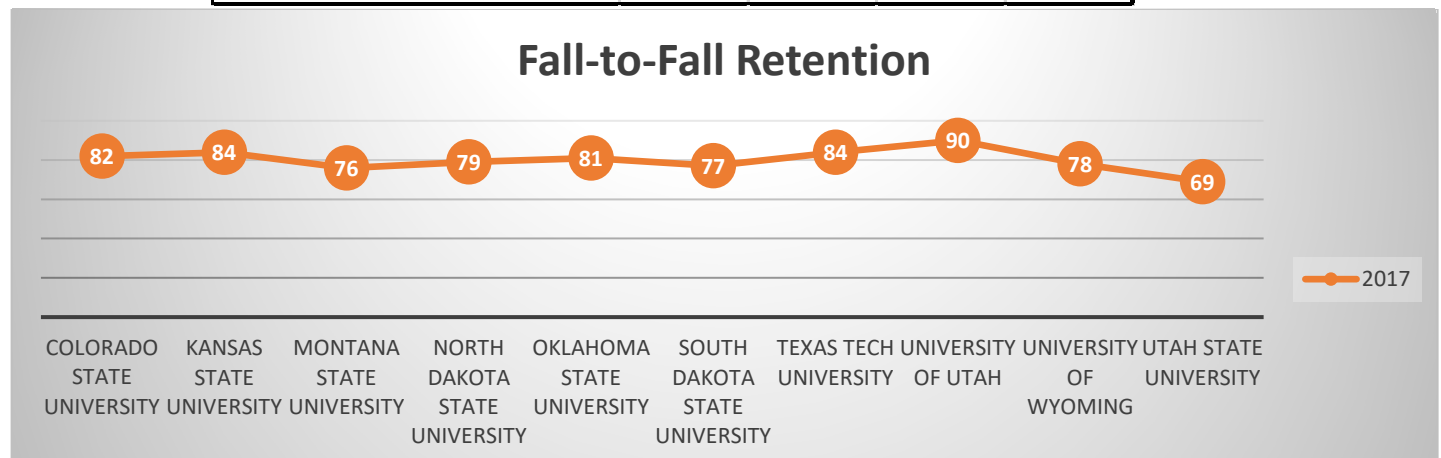
INTRODUCTION

Many factors influence first-time student retention. At public Ph.D. granting institutions in the United States, approximately 22% of first-year college students do not return for their sophomore year, it is incumbent upon higher education institutions to focus on student success and determine predictors of student retention.<sup>1</sup> The purpose of this study to examine the predictors of first-time retention at the UW to provide decision support concerning the development of an enrollment management plan. The findings may also help around the issues of retention and graduation to forward UW efforts to obtain the 2022 strategic plan goal of an 80% retention rate.

Table 1 provides the retention statistics trend of selected institutions to establish UW's relative position among other institutions and the scope for improvement.

**Table 1**  
**Fall-to-Fall Retention Rate by Cohort**

Peer Institutions	2014	2015	2016	2017
University of Utah	89%	89%	90%	90%
Kansas State University	83%	83%	85%	84%
Texas Tech University	83%	83%	84%	84%
Colorado State University	85%	87%	86%	82%
Oklahoma State University	81%	81%	81%	81%
North Dakota State University	80%	78%	80%	79%
University of Wyoming	76%	77%	77%	78%
South Dakota State University	77%	76%	79%	77%
Montana State University	76%	76%	76%	76%
Utah State University	71%	71%	73%	69%



Source: IPEDS The fall retention rates represent the percentage that entered in that fall term then returned to in the following fall. For example, the fall 2017 retention rates represent the percentage that entered UW in fall 2017 then continued at UW in fall 2018

<sup>1</sup> ACT (2011). National collegiate retention and persistence to degree rates. Retrieved October 1, 2011 from [http://www.act.org/research/policy\\_makers/pdf/retain\\_2011.pdf](http://www.act.org/research/policy_makers/pdf/retain_2011.pdf)

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## METHOD

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For this study, first-time student retention was operationally defined as first-time fall semester to second-year fall semester retention. Independent (predictor) variables representing existing retention theories included student gender, ethnicity, residency, first-generation status, cumulative GPA, High School GPA, total credits, cumulative credit hours, ACT composite score, on-campus living, and Wyoming high school graduates. A detailed description of the variables is discussed in the variable section.

The sample of student data was cleaned and analyzed using SPSS 24. Descriptive statistics (Table 2), including the numbers and percentages, were developed for the sample. UW student's data from fall 2012 to fall 2018 was utilized for this analysis. The sample includes full-time and part-time students. Multi-nominal logistic regression model (Table 3) was conducted to predict the odds of student retention.

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## KEY FINDINGS

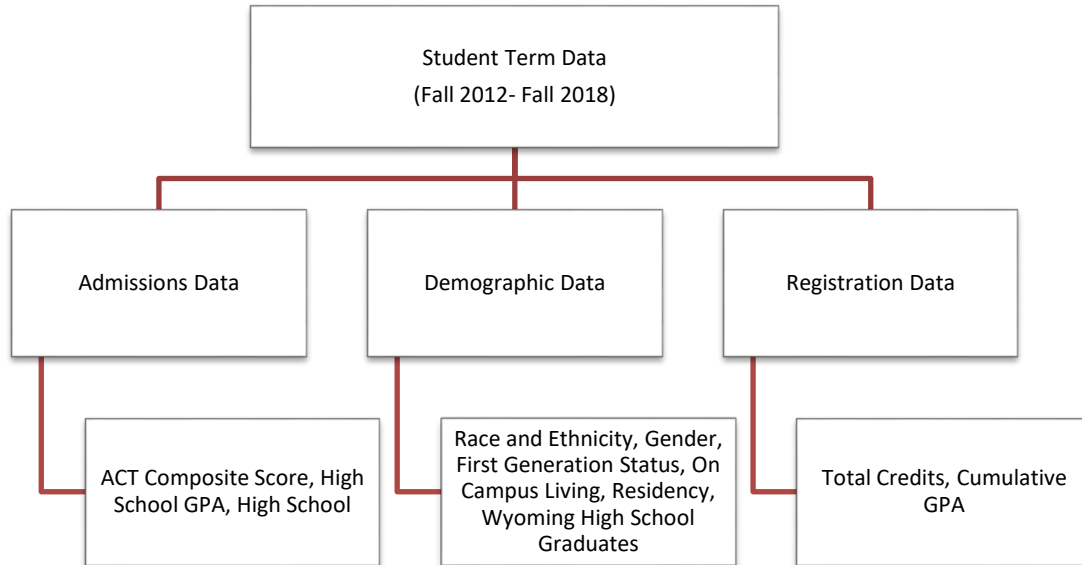
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- Student's first-generation status, on-campus living, gender, credit hours, cumulative UW GPA, and high school GPA are significant predictors of the first-time retention at the UW.
- Odds of retaining the first-generation student compared to not-first-generation students are significantly lower (26.5%).
- Students living on campus are more likely to be retained (14%).
- Students with higher cumulative GPA are more likely to be retained (3.1 times).
- Credit hours have a positive and linear relationship with the first-time retention.
- Students with higher high-school GPA are more likely to be retained (1.5 times).
- Odds of retaining a female student compared to a male student is significantly lower (12%).
- Student's ACT composite score, ethnicity, residency, and Wyoming high school graduated are not statistically significant predictors.

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 VARIABLES
 

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**Cumulative GPA:** The sum of all grade points earned throughout the University of Wyoming divided by the sum of all credit hours attempted through the University except for credit hours in which grades of W, S, U, or I were assigned.

**Total Credits:** Attempted credit hours

**Residency:** Residency for tuition purposes. Residents (Graduate Assistant, In-State Resident, International Graduate Assistant, and International resident Rate) Non-Residents ( Alumni Rate, Entrepreneurial, International, International 150% Rate, Out-of-State Resident).

**High School GPA:** Student High School GPA calculated at a 0 to 4.0 scale

**On-campus Living:** Students living in residence halls sometime during their first semester

**Wyoming High School Graduates:** Any student who graduated from Wyoming High School.

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Student's ACT composite score, ethnicity, residency, and Wyoming High School Graduates were not statistically significant after controlling for covariates. This model's effect size, Nagelkerke  $R^2$ , is .34; in other words, about 34% of the variance in the dependent variable is explained by the model. The regression analysis depicted in Table 3 demonstrates that positive predictors of fall-to-fall retention at the University of Wyoming (ordered from strongest to weakest) are cumulative GPA, HS GPA, first-generation status, on-campus living, of the student, gender, and total credits.

**Table 2**  
**Descriptive Statistics (N= 9,672)**

Variable	Explanation	N	%
Gender	Female	4,872	50.4
	Male	4,800	49.6
First Generation Status	First Generation	1,789	18.5
	Not First Generation	7,883	81.5

*Note: For detailed descriptive statistics go to Brown and Gold Report <http://www.uwyo.edu/oia/dashboard/>*

**Table 3**  
**Logit Regression Model Predicting Retention: Fall to Fall (N=9,672)**

	B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Constant	-5.007	.321	243.469	1	.000			
Total Credits	.065	.018	13.506	1	.000	1.071	1.035	1.109
Cumulative GPA	1.141	.035	1055.022	1	.000	3.121	2.914	3.343
High School GPA	.415	.078	28.351	1	.000	1.515	1.300	1.765
On-campus Living	.236	.325	8.140	1	.044	1.143	.674	1,161
ACT Composite Score	.001	.009	.026	1	.872	1.002	.985	1.019
Gender	-.132	.058	5.163	1	.023	.882	.788	.989
Residency	-.022	.150	.021	1	.885	.979	.729	1.313
Race/Ethnicity	.010	.067	.067	1	.876	1.019	.894	1.160
First Generation Status	-.306	.068	20.086	1	.000	.735	.643	.841
Wyoming HS Graduates	.290	.059	23.772	1	.071	1.312	.977	1.763

The results of multi-nominal logit regression are summarized in Table 3. After examining the prediction of odds of retaining a student in his first year at the UW following inferences can be made.

- A student with a cumulative GPA that is 1 standard deviation higher than the mean increases the odds of his first-time retention by 3 times.
- Credit hours have a positive and linear relationship with odds of first-time retention.
- A student with a high school GPA that is 1 standard deviation higher than the mean increases the odds of his first- year retention by 1.5 times.
- Odds of retaining a female student compared to a male student is 0.88 times.

- Odds of retaining the first-generation student compared to not- first-generation students are significantly lower (0.73 times).

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## CONCLUSION

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This research provides an initial snapshot of the predictors, which is affecting first-time retention at the UW. One key result is that living on campus has a strong positive influence on retention among first-time students at UW. As a first step, UW may seek ways of fostering support to the first-generation students, at the same time developing an on-going assessment of UW's efforts to provide student success through a first-time experience intervention. The results also suggest conducting further research to determine department-specific factors around the retention of female students. Many issues are beyond the scope of this study, and therefore, additional and ongoing research is necessary to guide sound decision making by the University administration. A future study with a comprehensive model can be conducted, including predictors related to financial aid, student services, and satisfaction. Based on the results, we can utilize machine learning tools to identify at-risk student groups and provide them support to be successful. A qualitative study based on the results of this study can be conducted to complement the findings of this study.