

Factors Responsible for Students' Enrollment at Oklahoma State University

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ABSTRACT

It is crucial for a university to have bright students in order to become educational leaders in this increasingly competitive world. The Institutional Research and Information Management (IRIM) department at Oklahoma State University (OSU) has been playing a vital role in campus decision-making, managing institutional performance, and providing information, research, and analysis on demand. Therefore, it is very important for IRIM to collect and provide accurate information to market OSU i.e. target to the right audience (prospective students) every year. The main purpose of this research project is to help IRIM to evaluate different factors that have been driving an undergraduate student to enroll at OSU. This research will attempt to determine students who have a better chance or probability of choosing OSU over other universities.

The dataset consists of OSU students' data including demographics, admission data, and part-time employment and healthcare activities. This is a vast dataset containing approximately 45,000 students' records collected for 4 semesters – Fall 2016, Spring 2017, Summer 2017, and Fall 2017 with more than 20 suitable variables. This project will use JMP® 13 Pro and SAS® Enterprise Guide® 7.1 to conduct a descriptive analysis to evaluate factors responsible for students' enrollment at OSU.

INTRODUCTION

High school seniors are faced with a multitude of decisions during their final year of high school. What college will you attend? What will you study? Will you be able to afford it? Those are just a handful of the questions these students will have to answer.

“Choosing a university is an important decision for high school students, and finding a fit where they can thrive is really critical,” said Kyle Wray, OSU vice president for Enrollment and Brand Management. Students and their parents have so many factors to consider, including the value of the degree they will earn as a result of their hard work. According to a survey, the top 10 reasons for considering OSU and pursuing a four-year degree are great educational value, undergraduate research opportunities, OSU career services, faculty interaction, a variety of academic options, great residential life options, great culture, on-campus job opportunities, athletics, and America's greatest homecoming.

The objective of this project is to figure out if there are any more important reasons for students' enrollment at OSU based on the students' admission data and their demographics.

DATA DESCRIPTION

A critical part of any data analysis project is to understand the data involved well and then use it to generate the patterns and/or insights. Below is the data description of the main data frame. It is important to understand this main data frame was used to create multiple sub-datasets to understand the data and profile students in every semester.

Column	Description
STUDENT_ID	Student's unique ID
Round	Term of admission
Banner_Admitted_Residency	In-state/Out-state/International student

OK_County_of_Residence	County of student's residence
Non_Resident_State_of_Residence	State of student's residence
Zipcode	Zipcode of student's residence
Median_Income	Median income for student's zip code
Population	Population for student's zip code
Birthdate	Student's birthday
Age	Student's age while enrollment
Gender	Student's gender
Race	Student's race
Hispanic	Flag to check if the student is Hispanic or not
OSU_Legacy	Flag to check if the student has OSU legacy means one or more family members come to OSU as a student
Application_Student_Type	Application type of students (like freshman, transfer, readmit)
Application_Fee_Waived_NotWaived	Flag to check if student's application fee was waived or not
COLLEGE	Registered college while enrollment
DEGREE	Registered degree while enrollment
MAJOR	Registered major while enrollment
Number_of_Visits_Colvin	Number of recreation and wellness center visits by students
Employee_Hours_Worked	Number of hours worked as a part-time employee

Table 1. Data description

Full forms of the acronyms for various Colleges, Degrees, and Majors used in the paper –

Major	Full Form
UND	University Studies
ANSI	Animal Science
MGMT	Management
PSYC	Psychology
ACCT	Accounting
GNBU	General Business
NODG	Non-Degree Seeking
BIOL	Biological Science

College	Full Form
AS	Arts and Science
EN	Engineering, Architecture and Technology
SB	Spears School of Business
AG	Agricultural Science and Natural Resources
UC	University College
ED	Education, Health and Aviation
HS	Human Sciences

Table 3. College acronyms & full-forms

Table 2. Major acronyms & full-forms

Degree	Full Form
B/BS	BACHELOR of SCIENCE
BSBA	BACHELOR of SCIENCE in BUSINESS ADMINISTRATION
BSAG	BACHELOR of SCIENCE in AGRICULTURAL SCIENCES and NATURAL RESOURCES
BSHS	BACHELOR of SCIENCE in HUMAN SCIENCES
BA	BACHELOR of ARTS
NDUG	NOT DECLARED

Table 4. Degree acronyms & full-forms

DESCRIPTIVE ANALYSIS

Descriptive analysis has been performed on the main dataset and derived sub-datasets to understand the data well. Results from the datasets have been extracted and presented here in the tabular format and all inferences from the descriptive analysis have been described in the next section (data insights) –

OSU Statistics	New students	Banner Admitted Residency			Gender	
		In-state	Out-state	International	Male	Female
Fall 2016	7957	71.0%	26.0%	3.0%	50.4%	49.6%
Spring 2017	1950	80.0%	12.0%	8.0%	53.0%	47.0%
Summer 2017	614	62.5%	26.2%	11.3%	57.0%	43.0%
Fall 2017	7322	70.0%	26.8%	3.2%	50.5%	49.5%

Table 5. Students count, residency, and gender

OSU Statistics	Top 5 Counties						
	Tulsa	Payne	Oklahoma	Canadian	Rogers	Kay	Cleveland
Fall 2016	26.5%	13.3%	13.1%	4.0%	3.0%		
Spring 2017	36.0%	19.1%	8.1%	3.6%	3.2%		
Summer 2017	20.7%	23.5%	12.8%			7.9%	3.8%
Fall 2017	25.4%	8.2%	13.70%	3.8%	4.4%		

Table 6. Students coming from top 5 counties

OSU Statistics	Top 5 States							
	OK	TX	KS	CA	AR	CO	IN	IL
Fall 2016	75.4%	15.5%	1.3%	1.1%	0.9%			
Spring 2017	88.17%	5.7%	0.9%	0.6%		0.7%		
Summer 2017	72.7%	8.7%		2.7%			2.5%	2.0%
Fall 2017	73.30%	16.7%	1.50%	1.4%	1%			

Table 7. Students coming from top 5 states

OSU Statistics	Race					Hispanic	
	White	American Indian or Alaska Native	Black or African American	Asian	Native Hawaiian or Other Pacific Islander	No	Yes
Spring 2017	70.0%	12.7%	8.5%	8.5%	0.1%	93.0%	7.0%
Summer 2017	69.0%	7.8%	11.1%	11.4%	0.3%	90.5%	9.5%
Fall 2017	77.4%	10.7%	6.3%	5.1%	0.4%	91.3%	8.7%

Table 8. Students' race and Hispanic status

OSU Statistics	OSU Legacy		Application Student Type				Application Fee Waived Not Waived	
	No	Yes	Freshman	Transfer	Readmit	Other	No	Yes
Fall 2016	75.0%	25.0%	55.5%	28.5%	14.0%	2.0%	90.0%	10.0%
Spring 2017	78.5%	21.5%	12.8%	55.0%	28.2%	6.0%	82.0%	18.0%
Summer 2017	78.0%	22.0%	16.0%	32.0%	23.0%	29.0%	21.3%	78.7%
Fall 2017	75.0%	25.0%	62.0%	30.0%	7.0%	1.0%	90.0%	10.0%

Table 9. Students' OSU legacy status, application type, and application fee waived status

OSU Statistics	Mean of Median Household Income	Mean Population of zip codes of students' residence	Part time on campus job		Colvin Visits (at least 5)	
			No	Yes	No	Yes
Fall 2016	\$56,243.28	22,036	78%	22%	40.9%	59.1%
Spring 2017	\$50,293.72	21,480	87%	13%	68%	32%
Summer 2017	\$51,865.74	23,884	96%	4%	84%	16%
Fall 2017	\$57,731.34	21,694	87%	13%	54%	46%

Table 10. Students' demographics, part-time job status, and recreation center's visit status

OSU Statistics	College						
	AS	EN	SB	AG	UC	ED	HS
Fall 2016	21.5%	18.7%	18.6%	13.4%	13.2%	8.1%	6.2%
Spring 2017	24.7%	16.8%	26.7%	9.3%	6.1%	11.3%	4.9%
Summer 2017	28.6%	25.8%	21.0%	5.7%	8.6%	7.0%	3.0%
Fall 2017	24.0%	17.3%	18.1%	13.8%	12.6%	7.9%	6.3%

Table 8. Students' enrollment in various colleges every semester

OSU Statistics	Top 5 Degrees						
	BS	B	BSBA	BSAG	BSHS	BA	NDUG
Fall 2016	19.5%	17.6%	17.0%	13.2%	6.2%		
Spring 2017	20.8%	9.6%	25.2%	9.0%		8.8%	
Summer 2017	11.7%	8.6%	18.2%			7.9%	29.0%
Fall 2017	23.5%	16.7%	16.2%	13.6%	6.2%		

Table 9. Students' enrollment in top 5 degrees every semester

OSU Statistics	Top 5 Majors								
	UND	ANSI	MEEN	MGMT	PSYC	ACCT	GNCU	NODG	BIOL
Fall 2016	15.6%	5.1%	5.0%	3.9%	3.0%				
Spring 2017	9.0%		5.4%	6.8%		5.0%	4.2%		
Summer 2017	8.4%			3.4%		4.7%	4.5%	29.0%	
Fall 2017	15.0%	5.4%	3.9%	3.8%					3.40%

Table 10. Students' enrollment in top 5 majors every semester

DATA INSIGHTS

Key takeaways based on the above descriptive analysis are as mentioned below –

- Most of the students' enrollment occurred in Fall semesters followed by the Spring and Summer semesters.
- A significant portion (about 75%) of the students came from nearby zip codes.
- Almost 70% - 80% of students enrolled at OSU were from within Oklahoma State and the rest were from out of state as well as out of the nation.
- The percentage of male students enrolled at OSU was more than female students' enrollment every semester.
- Approximately 50% - 60% of students enrolled were from Oklahoma County, Tulsa County, and Payne County.
- Approximately 90% of students came from two major states; Oklahoma and Texas.

- Almost 70% - 75% of students enrolled were White Americans followed by American Indian or Alaska natives and Black or African American.
- In every semester, almost 25% of students enrolled qualified as an OSU legacy. Additionally, almost 50% of students out of total applied students having OSU legacy had enrolled in Fall 2016, Fall 2017, and Spring 2017, and 35% in Summer 2017.
- In the Fall semesters, more students enrolled were freshman followed by transferred, whereas in the Spring and Summer semesters, more students enrolled were transferred followed by readmitted.
- More than 70% of students were enrolled in the colleges SB, EN, and AS in the Spring 2017 and Summer 2017. Then, approximately 60% in Fall 2016 and Fall 2017.
- More than 70% of students were enrolled for the degrees B, BS, BSBA, and BSAG in Fall 2016 and Fall 2017 and 60% for BS, BSBA, NDUG in Summer 2017. Besides, approximately 60% for BS, BSBA, and BSAG in Spring 2017.
- Almost 50% of students and 30% of students have visited the recreation and wellness center (Colvin) more than 5 times in the Fall semesters and the Spring semester respectively.
- Mean median income for applying, but not enrolling students is more than enrolling students. Almost 50% of enrolling students in all the semesters came from areas having less than mean median income for that particular semester. Additionally, almost 30% of students in the Fall 2016 and Fall 2017 and 40% of students in the Spring 2017 and Summer 2017 came from areas having less than \$40,000 median household income.
- The median age of the significant portion of the applied and enrolled students is 18 - 19 years for Fall 2016, Fall 2017 and Summer 2017, whereas the numbers for Spring 2017 are 21 - 22 years for the applied students and 24 years for the enrolled students.

CONCLUSION

It was previously mentioned that based on a survey result, the top 10 factors responsible for students' enrollment at OSU are great educational value, undergraduate research opportunities, OSU career services, faculty interaction, variety of academic options, great residential life options, great culture, on-campus job opportunities, athletics, and America's greatest homecoming. In addition to these responsible factors, based on my analysis, it was observed that a few more factors might be responsible for students' enrollment at OSU.

First, as most of the students came from neighboring counties and cities, it can be inferred that the students prefer OSU because it is one of the best educational institute present in Oklahoma and it is easy for them to stay in contact with their family and friends. If some are willing to commute from their hometown on daily basis, then they can do that as well.

Second, one-fourth of total enrolled students and about 40% - 50% of students who applied and had OSU legacy were qualified as OSU legacy. As said earlier, legacy means these students have had one or more family members come to OSU as a student. This conveys that the alums of OSU have been influencing students to prefer OSU.

Third, a few colleges at OSU like SB, EN, and AS have a very good educational value that drives students to enroll at OSU for the top degree like B, BS, BSBA, BSAG, and NDUG.

Fourth, OSU has a huge recreation and wellness center (Colvin) and it always motivates its students to maintain a work-life balance and having a healthy lifestyle. There are numerous studies available that prove students who exercise or workout regularly along with consuming healthy and nutritious food tend to be more active in their day-to-day life, might have a sharp memory, and can focus on their studies well. Even from my analysis, it was observed that almost 50% of students had visited the Colvin center frequently. So, it might be one of the reasons that drive students' enrollment at OSU.

Fifth, as the median age of the enrolled students is 18 - 19 years, it can be inferred that students who have just graduated from high school prefer OSU to the students who delay college enrollment.

Lastly, significant portions of the incoming students belong to the lower class and middle-class families based on their median household income. Therefore, it can be said that students prefer OSU because of their affordable education to all students. As OSU is one of the public universities, it receives funds from the state government and hence they can sponsor a great education at a lower cost. Additionally, students belonging to lower class families and those who want to pay for their own education, have many on-campus job opportunities so that they can earn while they learn.

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